Sand Hollow State Park

Resource Management Plan
April 2010

Utah State Parks

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Utah State Parks
&
Sand Hollow State Park
Resource Management Planning Area
Legend:
Utah State Park Locations
Resource Management Plan Locality
Bear Lake
Hyrum
Willard
Lost Creek
Antelope Island
East Canyon
Jordan River
Rockport
Great Salt Lake
This Is The Place
Mordanelle
Historic Union Pacific Rail Trail
Wasatch Mountain
Deer Creek
Red Fleet
Steinaker
Utah Field House Of Natural History
Stagecoach Inn
Camp Floyd
Utah Lake
Starvation
Scofield
Yuba Lake
Huntington
Palisade
Millsite
Territorial Statehouse
Green River
Fremont Indian
Goblin Valley
Dead Horse Point
Piute
Otter Creek
Anasazi
Escalante
Iron Mission
Edge Of The Cedars
Kodachrome Basin
Mountain Meadow
Gunlock
Snow Canyon
Quail Creek
Sand Hollow
Coral Pink Sand Dunes
Goosenecks

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Acknowledgements

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Executive Summary

Sand Hollow State Park is part of the Sand Hollow Recreation Area, a complex of recreation sites surrounding Sand Hollow Reservoir. The recreation area includes the state park on land owned by Washington County Water Conservation District (WCWCD) and the US Department of Interior Bureau of Land Management's (BLM) Sand Mountain Special Recreation Management Area. The Division of Utah State Parks and Recreation (Division) operates and manages the park and the BLM sites within the recreation area through a Memorandum of Agreement among all three parties. Recreational activities at Sand Hollow State Park are boating, swimming, fishing, beach use and other water-related activities. Sand Mountain Recreation Area is used primarily by off-highway vehicles (OHVs) with some use by hikers and equestrians.

In June 2008, staff from the Division met with community stakeholders from Washington County to initiate a resource planning process for the Sand Hollow Recreation Area. Stakeholders at this meeting nominated several community members to serve on the planning team for Sand Hollow. From this list, the park manager and area manager chose 13 people to serve on the Sand Hollow Planning Team (Team).

The Sand Hollow Planning Team—a citizen-based team representing community leaders, interested users, local residents, neighbors and agency representatives—was at the core of the process. The planning effort was based on public input and involvement. The recommendations contained in this document represent several months of work by the planning team.

This plan provides recommendations based on eight primary vision elements that will guide future management of Sand Hollow Recreation Area. These elements focus on the following:

- Developing, maintaining and enhancing facilities that offer safe and suitable water- and land-based recreational opportunities for visitors year-round.
- Providing management that preserves the park's traditional recreational experiences while being open to appropriate new experiences.
- Being a positive factor for local and state economic stability and development.
- Planning and cooperating with residents, civic groups, businesses and agencies to improve and promote recreational opportunities and to protect park and area resources.
- Protecting and preserving park resources by exercising good stewardship practices.
- Offering interpretive and educational programs that provide visitors the opportunity to develop an appreciation of the park and its natural and heritage resources.
- Ensuring that the park has adequate funding, staff, equipment and support to adequately provide for public safety,

protect park resources and to maintain facilities and visitor experiences.

- Continuing to support the Division's statewide boating and off-highway vehicle programs.

These objectives are geared toward improving and expanding Sand Hollow Recreation Area's recreational opportunities, protecting its resources and providing visitors with safe, enjoyable experiences. Achievement of these vision elements will require the continued support of users, legislative and community leaders, and the Division.

The team developed a number of specific recommendations in support of the plan's vision elements. Five issue areas form the basis of the team's recommendations. Each issue area with a summary of recommendations is outlined below. In addition to the recommendations developed by the planning team, the Utah Division of Homeland Security identified an issue area for natural hazards.

Planning Team Tour of Sand Mountain

A more comprehensive discussion of each issue and recommendation is found in the chapter titled **Issues and Recommendations** at the end of this document.

Management of Park Resources

- Develop strong resource management partnerships with BLM, WCWCD, city and community representatives for issues of shared concern and opportunities for facility development and marketing of park.
- Develop strategies and partnership for management of sand migration as it affects park operations, recreational resources and traffic safety.
- Implement programs and partnerships to prevent or mitigate invasive species such as the quagga mussel at Sand Hollow State Park.
- Work with WCWCD to protect water quality at Sand Hollow Reservoir.
- Use interpretive and educational programs as a tool to encourage visitors' concern for park resources.
- Work with local planning and zoning agencies and nearby landowners on issues that could affect scenic resources.
- Develop building standards and site plans which protect visual and aesthetic resources within park boundaries.

Facilities and Recreational Opportunity Development

- Maintain a single entrance to Sand Hollow State Park while continuing to implement annual pass programs for OHV riders who enter the park.
- Work with Utah Department of Transportation (UDOT) and local officials on placement of Southern Parkway, including plans for

interchanges, culverts and other structures that impact park access and resources.
- Work with BLM, WCWCD, Hurricane City and private landowners to determine best locations for OHV access points to Sand Mountain Recreation Area.
- Maintain and expand partnerships with BLM and local law enforcement agencies to accomplish public safety and law enforcement goals.
- Work with BLM, local officials and OHV representatives to plan, fund, develop and maintain trailheads for access from both the east and west sides to the Sand Mountain Recreation Area.
- Develop non-motorized trail opportunities at Sand Hollow Recreation Area.
- Develop a site plan for Sand Hollow State Park which designates areas for information kiosks, parking, group sites, boat storage and other facility needs.
- Develop campground policies that assure the maximum use of facilities during peak times such as weekends and off-peak seasons.
- Plan for and develop additional day-use and campground amenities such as shade, additional restrooms, pay showers, playground facilities, fire pits, and air compressors.
- Upgrade campground areas designed for OHV users with showers, shade, cement pads, utilities and improvements to driveways.
- Determine OHV trails within park from reservoir to tunnel to provide convenient and safe access for all users.

Marketing of Recreation Area and Enhancing Local Economy

- Implement advertising and marketing campaigns using local newspapers, events, calendar of activities, public service announcements or handouts to local hotels to promote Sand Hollow Recreation Area and other state parks in the area.
- Partner with near-by developers and landowners for programs to promote the recreation area.
- Start a Friends of Sand Hollow group to advocate for and promote the recreation area.
- Implement programs such as discounts, short-term passes or passport stamp program which encourages visits to other state parks.

Education and Interpretation

- Develop a comprehensive interpretive plan for the recreation area.
- Create a park naturalist or education position as means to educate users about the recreation area, its opportunities and its resources.

Funding and Budget

- Address issues of limited funding and staff.
- Develop concession opportunities for personal water craft (PWC) and OHV rentals, boat storage, sale of food and convenience items.

Natural Hazard Mitigation

- Develop plans to address natural hazards as identified by the Utah Division of Emergency Services and Homeland Security.

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Mission and Vision

Mission Statement

Mission Statement

The mission of Sand Hollow Recreation Area is to provide a variety of desirable water and land based recreation opportunities to the public, enhance state and local economies and protect and preserve park resources.

Team members developed the mission statement recognizing that Sand Hollow Recreation Area is an important provider of recreational opportunities in southwestern Utah. Sand Hollow Recreation Area has the potential of becoming an important regional recreational resource because of the park's location in an area of rapid population and economic growth, proximity to a large urban population in Las Vegas and the presence of many national and state parks in the area. Sand Hollow Recreation Area is a new park, opened in 2003, but is already one of the state's busiest parks. Facilities are new and still being developed as park managers adapt to the diverse recreational demands. The recreation area's natural and water resources need to be protected for present visitors as well as for the future.

Vision Statement

A vision statement is like a compass; it charts a destination, guides the Sand Hollow Planning Team and Sand Hollow Recreation Area in the development of recommendations and sets the course of action to reach the shared vision. Using the principles developed in the mission statement, the planning team created a vision to guide the development of the plan's recommendations that balances recreational demands with preservation of Sand Hollow Recreation Area's resources, offers new opportunities, and encourages community involvement.

Vision Statement

Sand Hollow Recreation Area will accomplish its mission by:

- Developing, enhancing and maintaining facilities that offer safe and suitable water and land-based recreational opportunities for visitors.
- Providing management that preserves the park's current recreational opportunities, while being open to appropriate new activities.
- Being a positive factor for local and state economic stability and development.
- Working with residents, civic groups, businesses and agencies to improve and promote recreational opportunities and park and area resources.
- Protecting and preserving park and water resources by exercising good stewardship practices.
- Offering interpretive and educational programs that provide visitors the opportunity to develop an appreciation of the park and its natural and heritage resources.
- Ensuring the park has ample funding, staff, equipment and support to adequately provide for public safety, law enforcement, maintenance of facilities and visitor experiences, and protection and preservation of park and water resources.
- Fulfilling the Division of Utah State Parks and Recreation's statewide boating and off-highway vehicle program on-and-off park requirements.

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Resource Management Plan Purpose and Process

Purpose of the Plan

Sand Hollow State Park is part of the Sand Hollow Recreation Area, a complex of recreation sites which includes WCWCD lands surrounding Sand Hollow Reservoir and large portions from BLM's Sand Mountain Special Recreation Management Area. The Division manages the complex of lands through a cooperative agreement with BLM and WCWCD signed in 2002.

This Resource Management Plan (RMP) is intended to help guide the Division's stewardship obligations for Sand Hollow Recreation Area. Planning for Sand Hollow is essential, as the recreation area will become increasingly important as a destination park for Utah's growing population. Sand Hollow has many unique opportunities and resources that need to be managed and protected over the coming decade.

A number of issues ranging from resource management partnerships to budget and funding were developed from input provided by various groups, including planning team members and members of the general public. A Sand Hollow State Park visitor survey was conducted prior to the beginning of the planning process. Team members aggregated the issues into five categories: resource management; facilities and recreational development opportunities; marketing and economic development for local communities; education and interpretation; and funding and budgets. This plan and its recommendations address each of the issue areas. It provides flexible guidelines for the management and development of Sand Hollow Recreation Area for the next five to 10 years. More importantly, the plan is based on a foundation of public input and consensus of the key stakeholders rather than by unilateral direction by the Division.

The Planning Process

Planning for a rapidly growing area like southwestern Utah is required for the best use and development of Sand Hollow Recreation Area within constraints of state and local budgets. The planning process is also necessary for the long-term protection of Sand Hollow's natural and cultural resources. This RMP is required by the Utah State Legislature and the Board of Utah State Parks and Recreation to guide short and long-term management and capital development.

The Division's long-range strategic plan, Vision 2010, outlines required planning actions needed to effectively meet recreational and leisure needs into the future. Vision 2010 identifies resource management planning as essential to the effective administration and operation of all parks in the agency's system. Under the guidance of Vision 2010, each RMP is developed around one core concept: meeting the needs and expectations of customers, visitors and the citizens of the state of Utah while protecting each park's unique resource base. In short, the process is customer-driven and resource-based.

The planning process recommends acceptable changes and a future vision for

Sand Hollow Recreation Area. Specifically, the process: (1) recognizes impacts will result from use and enjoyment of the park; (2) defines how much and what types of impacts may be accommodated while providing reasonable protection of the resources for future visitors; (3) incorporates values of resource sustainability, quality facilities, education and interpretation for visitors; and (4) seeks to determine the conditions under which this can be attained.

In June 2008, Division representatives met with community stakeholders to familiarize them with the planning process and the need for creating a RMP for Sand Hollow Recreation Area. During this meeting, the Division solicited the names of community members and various users who have an interest in Sand Hollow and the surrounding area. Team members were selected from the list generated by the stakeholders in accordance with park planning policies.

All team members participated on a voluntary basis and expressed a willingness to give a significant portion of their time and expertise to the process. Eleven individuals were selected to serve on the team along with the park manager and assistant manager and the Division's southwest region manager. Three representatives from the Division served as staff to the team.

A public meeting was held at Sand Hollow State Park on March 4, 2008 to identify and prioritize issues relating to the recreation area.

The planning team met five times between March 2008 and July 2009 to develop issues and recommendations for Sand Hollow.

Planning Team Tour of Sand Mountain

About Sand Hollow Recreation Area

Overview

Sand Hollow Recreation Area is located in Washington County within the boundaries of Hurricane City, and within ten miles of St. George. The recreation area, established in 2003, is the newest water park in Utah's state park and recreation system but already serves 175,000 to 200,000 visitors annually. This attendance could grow more as the area grows and more out-of-area visitors learn about the park.

The recreation area is located in a rapidly-growing part of the state. Washington County's annual rate of population growth since 2000 has been 5.3 percent. This is the highest growth rate for any county in Utah and compares to an annual growth rate for the state as a whole of 2.5 percent.[1]

Beach Activity at Sand Hollow West Beach

The recreation area is comprised of two parcels—Sand Hollow Reservoir and Sand Mountain Recreation Area—which together total over 20,000 acres in size. The Division does not own any acreage within the park but manages the two parcels under agreements and in cooperation with WCWCD and the US DOI Bureau of Land Management (BLM). Maps 2 and 3 on the following pages show developed recreation facilities near the reservoir, and land ownership within the larger recreation area.

The two parcels managed together offer different recreation opportunities. Lands within Sand Hollow State Park are owned by WCWCD. The primary purpose of Sand Hollow Reservoir is for water storage and underground aquifer recharge. A secondary benefit is water-based recreation. The 4,047-acre tract is managed as a fee site by the Division offering primarily camping and water-based recreation—swimming, beach use, fishing, boating, PWC use, scuba diving and other activities.

Recreation facilities at Sand Hollow State Park include:

- Visitor Center/ Entrance Station
- Westside Campground—a 50-unit campground on the west side of the park with a dump station, shaded picnic tables and restrooms/showers
- Main boat ramp with four to five lanes
- Southside boat ramp (extended for low water) with parking
- Sandpit Campground—a 30-unit site (six sites with water and electrical hookups) and five large group sites.
- Primitive camping on the east and south shore areas

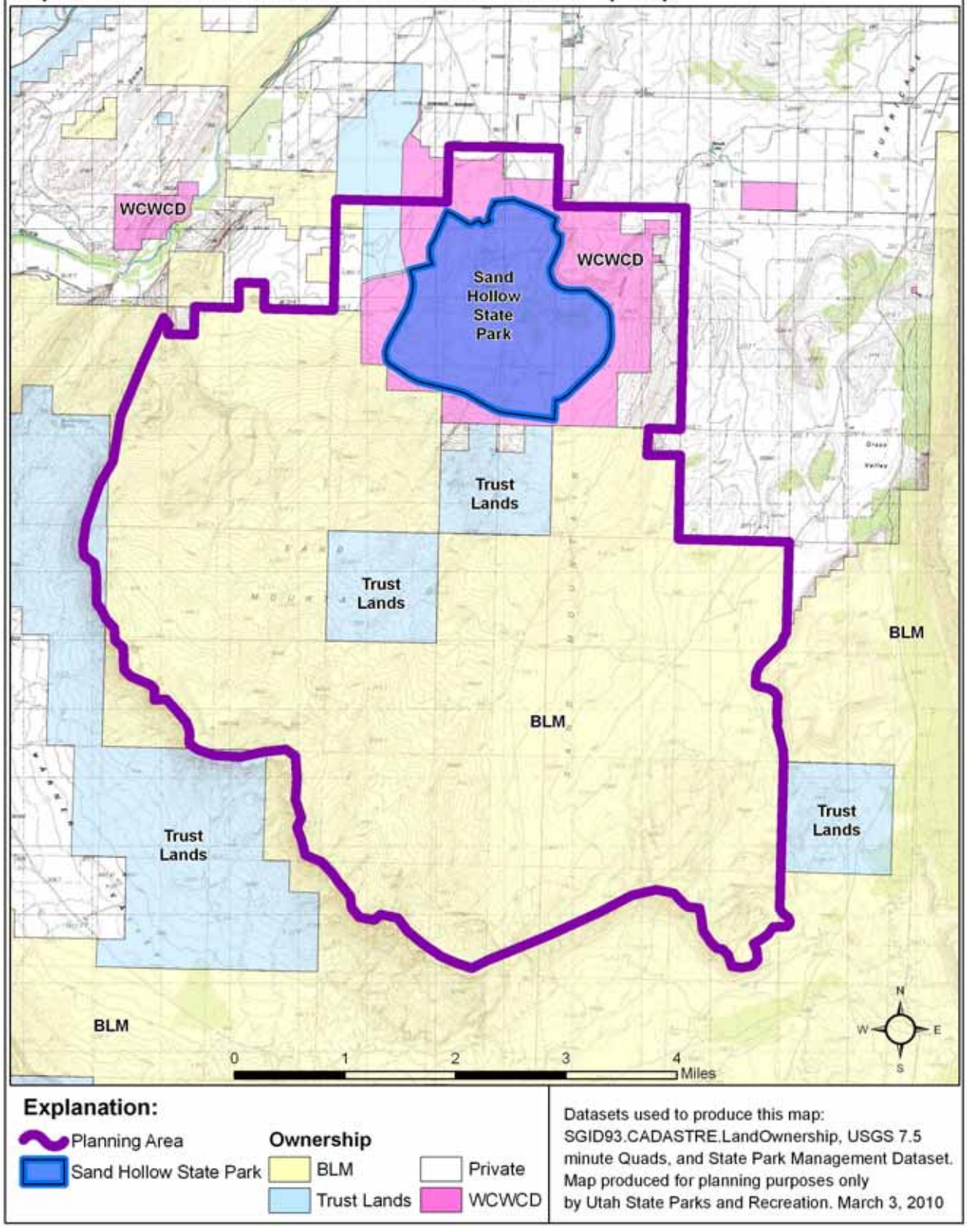
[1] Governor's Office of Planning and Budget, *Utah Population Estimates by County, p. 4,* Utah Population Estimate Committee.

Map 2. Developed Recreation Areas Near Sand Hollow Reservoir

The 16,564 acre Sand Mountain Recreation Area is owned by the BLM and has no fees associated with its use. This parcel also has tracts owned by School and Institutional Trust Lands Administration and private land owners. The area is a favorite destination for off-highway vehicle (OHV) enthusiasts. OHV use includes all terrain vehicles, four-wheel drive trucks and jeeps, dune buggies, motorcycles and sand rails. Sand Mountain Recreation Area is also enjoyed to a much lesser extent by equestrians and hikers. OHV users also access the developed facilities around Sand Hollow State Park through the entrance station or through a tunnel under Sand Hollow Road.

OHV riding opportunities include riding the sand dunes, following established trails like the West Rim Trail, and visiting rock formations or cultural/historical sites such as the Dominguez-Escalante trail.

Map 3. Sand Hollow State Park - Boundaries/Ownership Map



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History of the Park

Sand Hollow State Park was opened in 2003 but the area has been important for recreation for many years. Guidelines for management of the Sand Mountain area for recreation on BLM lands were set forth in 1997 when the BLM Resource Management Plan for the St. George Office established the Sand Mountain Special Recreation Management Area **(**SMSRMA). This area encompassed 40,725 acres of public land. Recommendations in that plan were that BLM work with local and state agencies to develop recreation plans for the proposed Sand Hollow Reservoir and that BLM consider entering into a cooperative management agreement with Utah State Parks for day-to-day management of selected lands in the Sand Mountain area.

Aerial view of Sand Hollow Reservoir

Construction of the Sand Hollow Reservoir facility was initiated in June 2000. The project was originally conceived in the early 1990s as an additional storage reservoir for the Quail Creek system. A land exchange bill passed by Congress in 1996 authorized a trade of a parcel owned by WCWCD adjacent to Zion National Park for the 4,047 acre parcel of BLM land. Reservoir construction was completed in 2002 and the reservoir filled by 2005.

The reservoir consists of two dams, one placed on the north end of the reservoir, the other located on the west end. Sand Hollow's dams do not lie across an active river or stream. Water to fill the reservoir is pumped via pipeline from the nearby Virgin River through the Quail Creek Diversion. The pipeline has the capability to send water both directions between Sand Hollow and Quail Creek reservoirs. The District fills Sand Hollow reservoir during periods of increased flow in the Virgin River between mid-October and mid to late April, and then releases water back into the Quail Creek system during the remainder of the year. Sand Hollow reservoir also recharges the aquifer in the underlying sandstone providing additional water storage.

The reservoir basin formed by the two dams has a maximum capacity of about 50,000 acre feet, and covers a surface area of approximately 1,324 surface acres. The WCWCD has designated a "drought pool" (or draw-down level) at an elevation of 3,032 feet mean sea level. This low water level provides a surface area of approximately 878 acres, or about 64 percent of the full-capacity surface area.

The planning for recreation use of the Sand Hollow reservoir and Sand Mountain took place as the reservoir was being built. In October 2000, representatives from the WCWCD, the BLM's St. George Office and the Division met with community stakeholders to begin the planning process for recreation at Sand Hollow Reservoir

and adjacent Sand Mountain Recreation Area.

The Sand Hollow Recreation Area Resource Management Plan was completed in May 2001. As part of the plan, the planning team set the boundaries for the Sand Hollow Recreation Area that would include approximately 16,564 acres of the 40,725-acre Sand Mountain Special Recreation Management Area currently operated by the BLM as well as the 4,047-acre area owned by WCWCD that includes Sand Hollow Reservoir. The team also recommended that the Division manage the area in cooperation with the BLM and WCWCD.

The boundary as designated by the team follows the existing ridge lines of Sand Mountain's western, southwestern and southern boundaries. The boundary runs eastward bordering a section of School and Institutional Trust Lands Administration (SITLA) land and intersects private lands in the northeast corner. The northern boundary coincides with WCWCD-owned property on the northeast, north and northwest corners until it intersects BLM lands near the foot of Sand Mountain's northwestern boundary. The group designated this boundary on the following considerations:

- The boundary includes area terrain (e.g., ridge lines, natural contours, etc.) that will provide users with a more natural/logical boundary;
- The designated area is commonly used by OHV enthusiasts and others and would therefore be more familiar to many users;
- Law enforcement and search and rescue efforts will be easier since the area boundary will stop on ridge lines and will not include the precipitous slopes and cliffs that exist on the Sand Hollow Recreation Area's southeast boundary *(it should be noted that recreational activities may occur beyond these boundaries, but will likely not be included in the range of opportunities found within the Sand Hollow Recreation Area)*;
- Confining recreational activities to the ridge lines will help minimize human contact with known raptor nesting sites that are found on the area's southeastern cliffs;
- The designated boundary will help prevent trespass, particularly on SITLA properties within the adjacent Warner Valley area;
- The boundary will also help avoid disturbance on known archeological sites above the area's northwestern portion.

Aerial view of Sand Mountain

Sand Hollow State Park was formally opened on April 18, 2003, with completion of the reservoir, boat ramp and parking facilities. A visitor center/office was completed in 2004 and a 50-unit full-service campground was completed in 2005

along with access roads. The park is managed as a partnership as described in the 2001 Sand Hollow Recreation Management Plan. Under this partnership, "…the WCWCD will administer lands and facilities around the Sand Hollow Reservoir area. Day-to-day management of these lands and facilities will be the responsibility of State Parks. Similarly, while BLM will continue to administer the Sand Mountain parcel, the BLM and State Parks will jointly manage recreation activities within this area. BLM will also work cooperatively with State Parks to achieve development goals on Sand Mountain."[2]

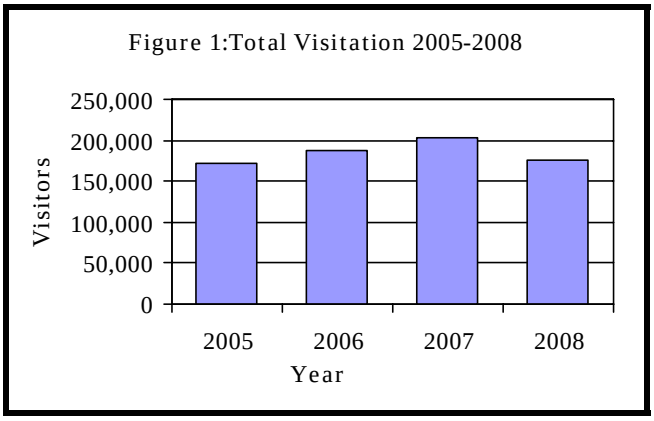
ATV Riders on Sand Mountain

The BLM's St George Resource Management Plan recognized that Sand Hollow State Park could serve as a staging area for equestrian and off-highway vehicle (OHV) use on the BLM lands. The BLM contributed funds for the construction of a staging area near the access tunnel for OHV users, the Sand Pit campground, three day-use sites with restrooms, and a maintenance building. These facilities, along with facilities already built and funded by the Division and WCWCD, were identified as needs in the 2001 management plan.

The south shore facilities are close to beaches that provide areas free of motorized recreational use, and some open to OHV riding. The south shore area also provides access to Sand Mountain.

Recreation Area Visitation

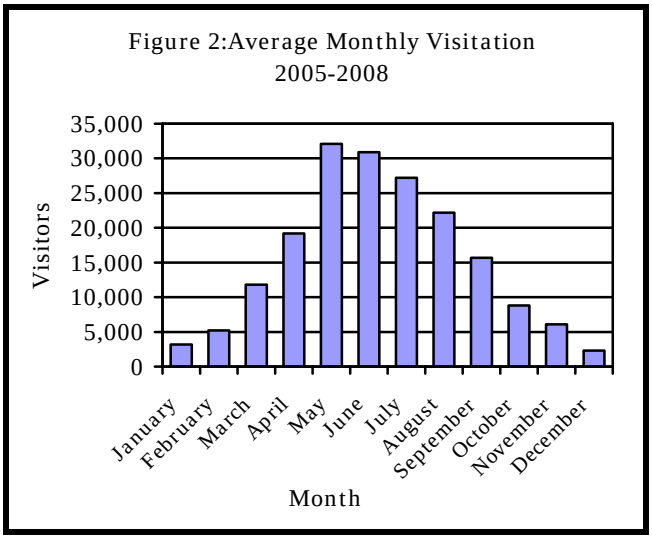
Data collected at the park show that Sand Hollow State Park receives between 150,000 to 200,000 visitors annually. The park has been popular with local residents since its opening in 2003. Most visitation occurs from March through October with peak months May through August. This peak visitation accounts for 60 percent of annual visitation.



Source: Utah State Parks Visitation Statistics, 2005-2008

These numbers do not include visitors to the non-fee area of Sand Mountain Recreation Area (except where visitation to the non-fee area is included by counting those who formally enter at the park's entrance station). Much of the use of this area takes place in winter months with some overlap in use with reservoir visitation in the spring and fall.

[2] Utah State Parks, *Sand Hollow Recreation Management Plan*, p.3, Utah Dept. of Natural Resources, 2001.



Source: Utah State Parks Visitation Statistics, 2005-2008

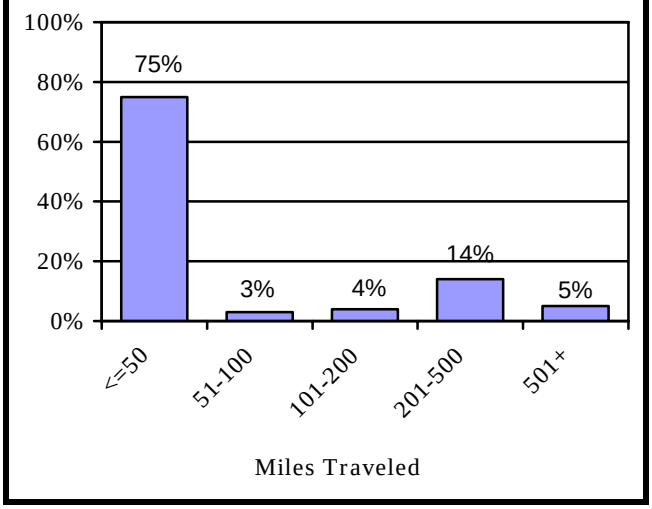
Revenue collections by the park in its first year (2003) were $140,000. The next year, revenue rose to more than $300,000 and collection in fiscal year 2009 ending in June was $560,000. The park collects between 75 and 100 percent of its operating costs, including those to manage the non-fee area on Sand Mountain.

Sand Hollow State Park Visitor Survey

Summary of Results

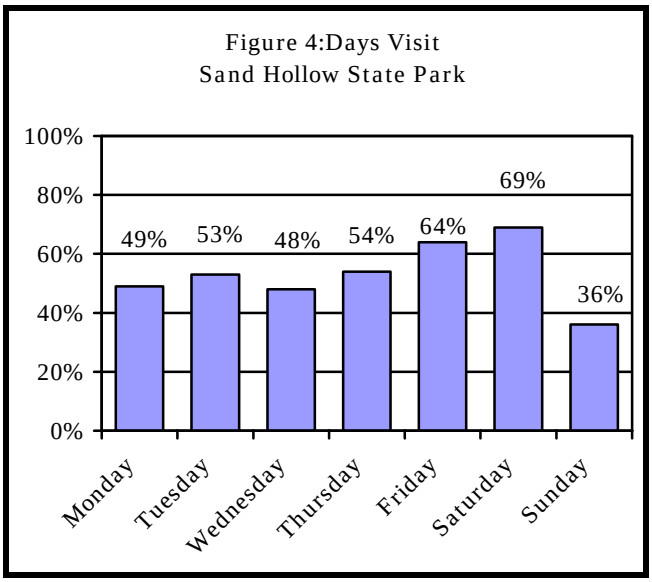
The Division administered a user survey for Sand Hollow State Park in August/September 2007 and June 2008. The survey was conducted to achieve a better understanding of Sand Hollow State Park visitors, their satisfaction with existing facilities and services, and their opinions about recreation opportunities at the park. The user survey focuses primarily on Sand Hollow reservoir facilities, since the survey was conducted within the fee area of the recreation area. Those visitors who use Sand Mountain Recreation Area often do not enter the fee area at all and according to park management, visit during the cooler months of October through April (note that all figures and information provided in this section are from this survey report which is referenced in the bibliography).

Figure 3:Distance Traveled to Sand Hollow State Park



As figure 3 demonstrates, Sand Hollow State Park is a destination park serving mostly local residents who live within 50 miles of the park. Average distance traveled was 95 miles but the median was 20 miles. Ninety percent of visitors had visited before and returned frequently, another indication of Sand Hollow State Park as a recreation source for local residents. Most visitors knew about Sand Hollow State Park through word of mouth, or by local knowledge of the area. A much smaller number found the park through signs, road atlases or park field guides.

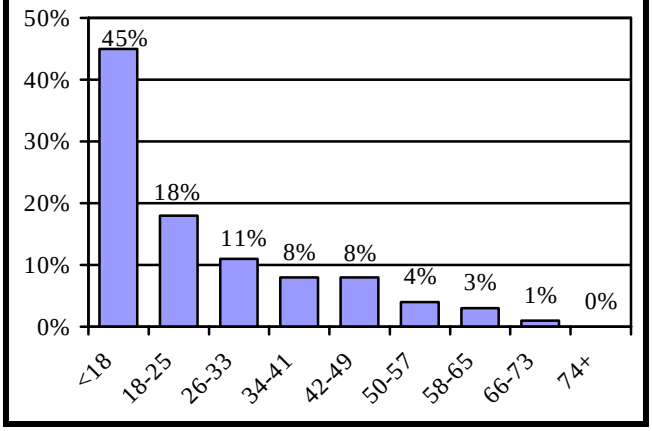
Figure 4:Days Visit Sand Hollow State Park



The user survey indicates that Sand Hollow State Park is popular with groups of family and friends who spend a relatively short time at the park—one day or less. However, they visit frequently, including on weekdays when visitation at other state parks is substantially lower than weekend visitation. Visitors rate their satisfaction with Sand Hollow State Park very highly with 86 percent saying that they are satisfied or highly satisfied with their visit.

The average age of user of the park is young—23 years old—reflecting the high number of children under the age of 18 and young adults in the age range of 18 to 26 who use the park. The average group size is nine for those visiting with children. There is, however, a wide range in group size, from two to 31. For groups visiting without children, the average group size was smaller at 2.5 and the range much narrower from one to nine.

Figure 5:Age Distribution of Visitors to Sand Hollow State Park



Visitors list swimming as a favorite activity followed by boating and sunbathing/beach use but they also take part in a other activities such as water-skiing, picnicking, fishing from a boat or from shore, OHV riding, use of PWCs and more. Facilities used reflect this emphasis on water-based recreation, with the main boat launch/view area the most used with shore areas such as the South Day Beach, North Rocks, Sandy Cove, West Shore Rocks, Desert Pearl Island and East Shore being listed in declining importance ranging from 63 percent to 19 percent. Sand Mountain sites such as the Bowl, Rim Trail, and Drop-Off are visited by 12 to 17 percent of visitors.

Figure 6:Recreational Activities at Sand Hollow State Park

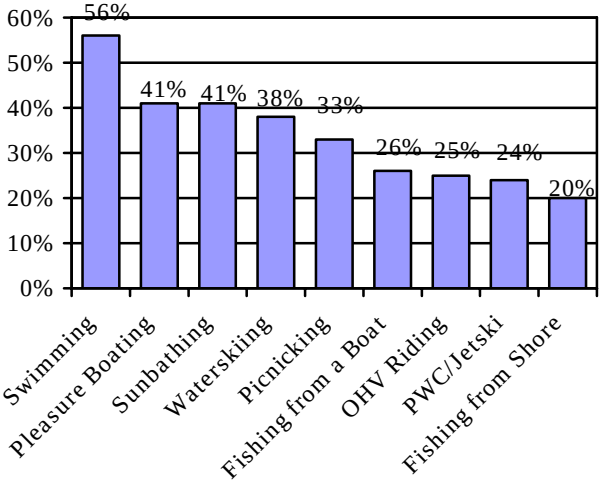
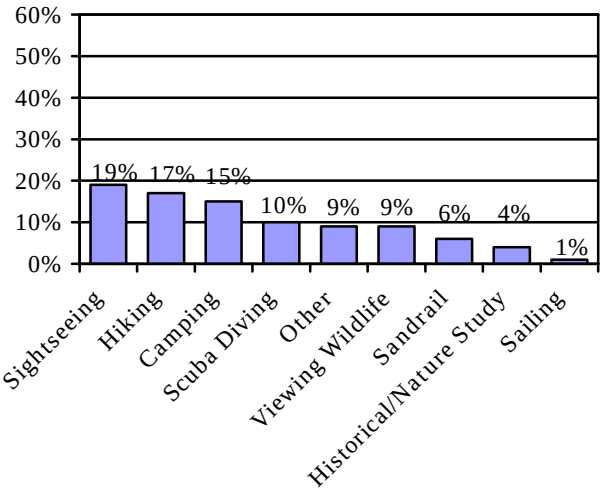
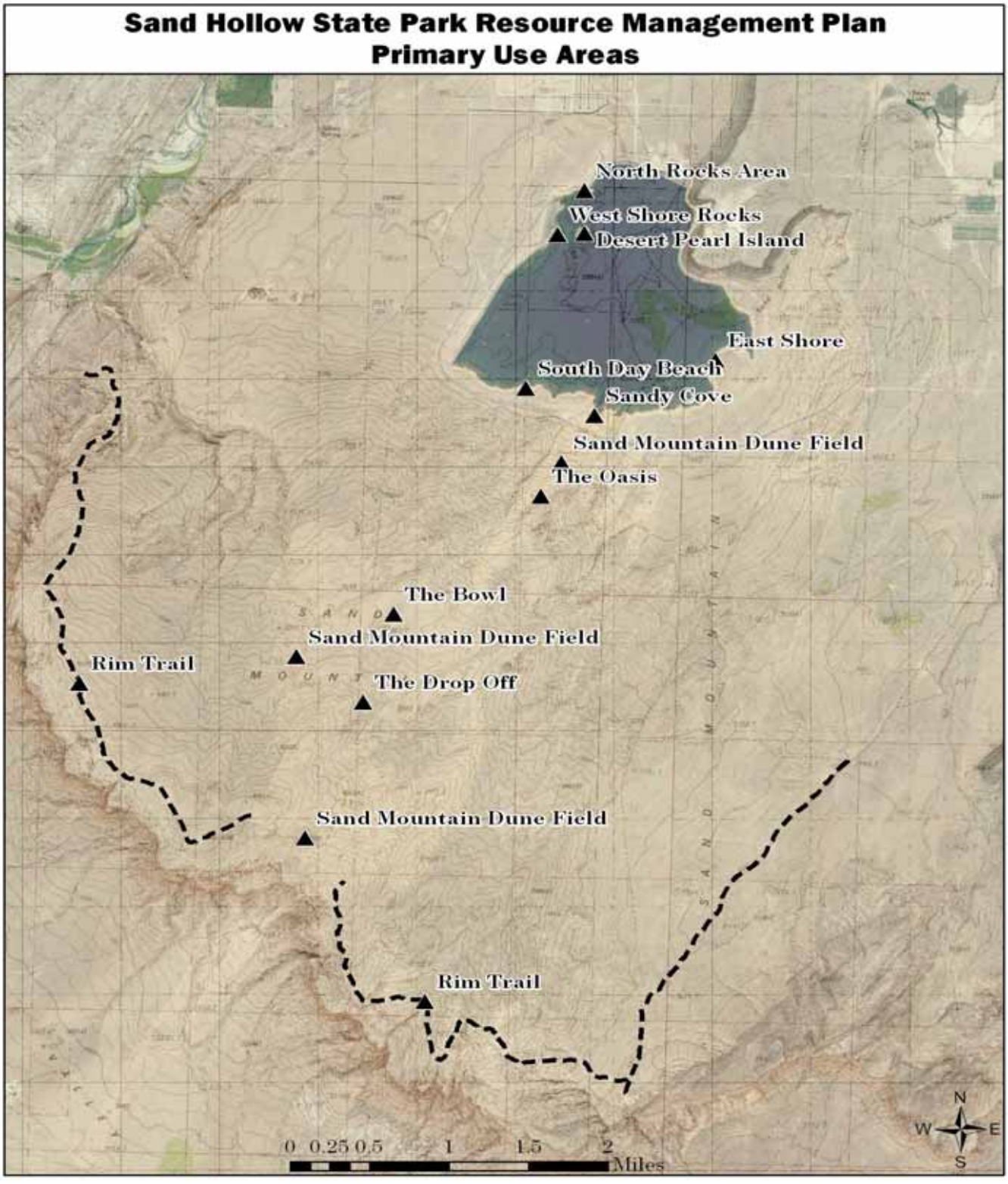


Figure 6:Recreational Activities at Sand Hollow State Park (Cont.)



These areas are visually referenced in Map 4, “Primary Use Areas” map on the following page.

Map 4: Primary Use Areas



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About Area Surrounding Sand Hollow

Demographic and Socioeconomic Information

Washington County has been an important travel destination and retirement community for many years because of its climate, scenic attractions and recreational opportunities. The area is a rapidly growing part of the state although it still represents only five percent of state's population. The rapid growth has contributed to the economic strength of the area but has created demands for recreational opportunities for local residents as well.

Table 1: Average Annual Rate of Change (AARC) in Population, Washington County

Area	Census 2000	Census 2009 Estimate	AARC 2000-2009
Washington County	91,104	145,466	5.3%
State of Utah	2,233,169	2,800,089	2.5%

Source: Governor's Office of Planning and Budget, Utah Population Estimates by County.

The 1997 Sand Hollow Reservoir Project Report cited high rates of population growth in Washington County to justify the need for recreational facilities such as Sand Hollow State Park. The report anticipated population growth rates of approximately four percent per year to the year 2020. The average annual rate of change for population for Washington County from 2000 to 2009 has been 5.3 percent. By comparison, the average annual rate of growth for the state of Utah is 2.5 percent.

Washington County's population differs from the state of Utah and the U.S. as a whole in ways that make local and easily accessible recreational opportunities important. As shown in Table 2, Washington County has a lower median age than the nation (but not the state of Utah). Household incomes are lower than state and national averages. Recreation opportunities that are affordable, local and family-oriented are therefore important to the county.

Table 2: Socio/Economic Characteristics, Washington County

Area	Median Age	Median Household Income
Washington County	29.6	$46,993
State of Utah	28.3	$53,324
United States	36.4	$50,007

Source: Economic Profile Systems, Headwater Economics.

The economy of Washington County is diverse, with heavy reliance on service-producing sectors. In 2006, the largest employment sector in Washington County was trade, transportation and utilities, followed by construction providing 23 percent and 16 percent of jobs respectively. Employment in education/health services and leisure/hospitality each provided 13 percent of jobs. Local, state and federal governments accounted for 11 percent of jobs in the county, with local governments accounting for most of those jobs.[3] According to the Utah Office of Tourism, tourism was responsible for over 6,120 (11

[3] Governor's Office of Planning and Budget, *2008 Baseline Projections.*

percent) jobs in Washington County in 2007.

Table 3 shows that Washington County has higher rates of employment in the areas of leisure and hospitality than the overall state of Utah. Likewise, a greater proportion of Washington County residents have incomes from non-labor sources than the state as a whole.

Table 3: Selected Economic Statistics for Washington County and State of Utah, 2006

Area	Percent Jobs Leisure and Hospitality	Percent of Income from Non Labor Sources
Washington County	13%	39%
State of Utah	9%	27%

Source: Economic Profile Systems, Headwater Economics.

Economic Impacts of Sand Hollow State Park

In 1999, a report on the estimated economic impacts from recreation use at Sand Hollow was prepared by Dr. John D. Groesbeck with the Department of Business at Southern Utah University. His study, An Analysis of the Economic Impact of Recreational Use of the Proposed Sand Hollow Reservoir on Washington County, Utah, predicted for the short run, the most likely outcome was 100,000 visitors to Sand Hollow, spending $21 per visitor day. This would result in close to $3.5 million (1999 dollars) in spending impacts and support 77 jobs in the area. Dr. Groesbeck's model predicted over $5 million (1999 dollars) in spending impacts and 115 jobs for visitation of 150,000. In the first year after opening the park, visitation was close to 175,000 coming mostly from communities around Sand Hollow State Park.

The Division used expenditure data from the 2007-2008 visitor survey to estimate economic contributions from Sand Hollow State Park using IMPLAN Professional Version 2.01.1025 software. IMPLAN is software used to assist in estimating economic impacts of land and resource management planning. Input data for this economic contribution analysis include visitor spending on supplies, vehicle expenses and restaurants and yearly expenditures by Sand Hollow State Park.

The results of the IMPLAN model are similar but somewhat less than Dr. Groesbeck's estimates. With current levels of visitation at 200,000, the Division calculates that Sand Hollow State Park provides for 97 jobs in the area. Total impacts are $4.4 million in direct impacts and $2.2 million in indirect and induced impacts (2006 dollars). However, value-added impacts are considered to be the best measure of economic impacts because they are expenditures that stay in the local area. These are the sum of wages and proprietors' incomes ($2.2 million), property income ($850,000) and indirect business taxes ($470,000). The value-added impacts for Sand Hollow are estimated to be $3.5 million per year (2006 dollars). Much of these spending impacts come from Washington County residents but visitor surveys indicate that up to 30 percent of visitors to the park come from outside the county.

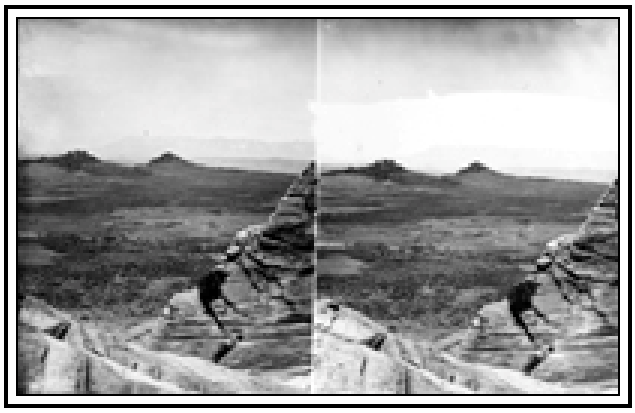
Human History around Sand Hollow Recreation Area

American Indian presence in southwestern Utah dates back 10,000 years beginning with Paleoamericans according to Richard Talbot, et al., in Shifting Sands: The Archeology of Sand Hollow based on a finding of a fluted point from the Virgin River gorge. The Archaic Period where human activity was characterized by hunting and gathering practices follows from 7000 B.C. to 300 B.C. Excavations at the Sand Hollow site found evidence of continuous human use dating back to the Early and Middle Holocene, with the earliest date at about 5600 B.C.

The Agricultural Period (300 B.C. to A.D. 1250) following the Archaic Period is defined by the introduction of agriculture along with hunter-gatherers. This period is subdivided into five phases based on the appearance of pottery, sedentary villages, arrangement of habitation sites and storage areas and tools in excavated sites. By the Pueblo II Period late in the Agricultural Period (A.D. 1000 to 1150), there is evidence of horticulture and water storage efforts among these cultures.

The Late Prehistoric Period follows the abandonment of the area by the Ancestral Puebloan groups. During this period, Numic-speaking (Ute and Paiute) groups occupied the area as hunter-gatherers and may have been a contributing factor to the Ancestral Puebloan abandonment. These people moved seasonally to take advantage of resources in different ecological zones. Talbot notes that Southern Paiute populations residing along nearby Ash Creek and the Santa Clara River were know to engage in irrigated farming practices through the development of primitive water conveyance structures.

The first recorded presence of Europeans in the area is the Dominguez-Escalante party which came through Washington County on their return to Santa Fe. The journals of the expedition noted the presence of Paiute fields and irrigation systems near Toquerville and Ash Creek. Talbot indicates that the historic Dominguez-Escalante Trail lies within or adjacent to the Sand Hollow parcels. He notes that the Dominguez-Escalante Expedition probably passed through or near the area's southeast edge during its visit to the area in 1776.



Stereograph of Region South of Toquerville and Virgin River (Jack Hillers, 1873, Powell Survey, Virgin River Canyons USGS 3D Photographs)

Mormon leader Brigham Young sent the Southern Indian Mission to the area in 1852. In 1857, settlers with the Cotton Mission established the towns of Toquerville and Washington. In 1893, the Hurricane Canal Company was organized to begin the construction of canals that would divert water from the Virgin River to the area for irrigation of vineyards, orchards, alfalfa and sugar beets. Due to

the difficulties of the route, the canal system took 11 years to complete.

The bench area near Hurricane was occupied in 1906. Water rights owned by the Hurricane Canal Company were ultimately transferred to the WCWCD and the canal system abandoned with water transferred by pipe from the original diversion dam to Quail Creek and Sand Hollow reservoirs.

Since the 1960s, the area has changed from an agricultural base to a trade and service producing economy. Wal-Mart Distribution Center is a significant employer in the area. The towns in the area are among the fastest growing in the state.

Paiute Woman and Child with Dog (William R Palmer, SUU Sherratt Library Archives)

Geography and Geology

Sand Hollow Recreation Area is within the Hurricane Basin which is defined by Sand Mountain to the south and the Hurricane Cliffs on the east. The Virgin River cuts through the area to the north. Sand Hollow Reservoir was constructed in Sand Hollow Draw, an ephemeral drainage coming off Sand Mountain which drains to the Virgin River two to three miles away. The sand dunes which are attractions for OHV riders start at the reservoir and flank the northern side of Sand Mountain. The Hurricane Basin is a sub-basin of the St. George Basin in southwestern Utah. The area is at the western edge of the Colorado Plateau and at the northeastern edge of the Mohave Desert. The area is circled by mountains, canyons and plateaus to the north, east and west while the plateau of the Arizona Strip extends to the south.

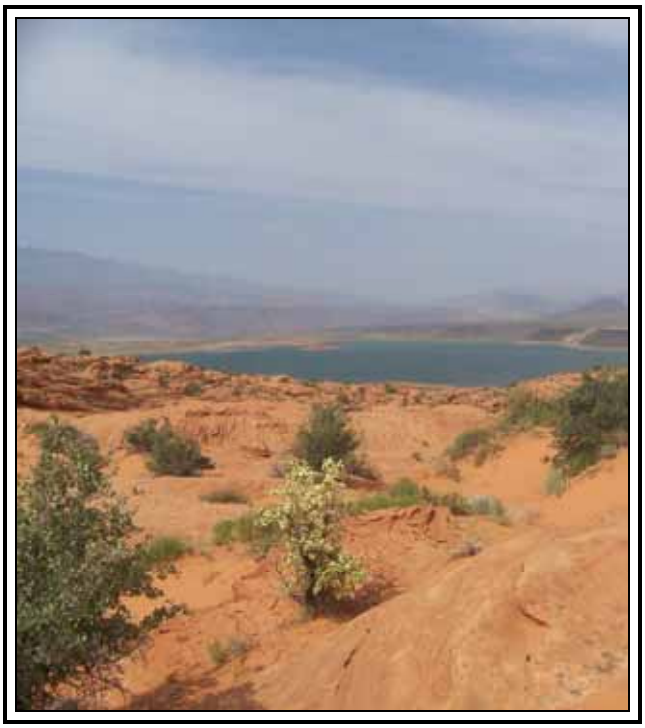
The geology of the region is Triassic and Jurassic in age. Sand Hollow Reservoir is capped with Navajo Sandstone from the Middle Jurassic Period. Mark Milligan with the Utah Geological Survey notes the recycling of 200 million-year-old formations as "modern, active sand dunes blow across ancient, 'petrified' dunes of Navajo Sandstone."[4] This porous sandstone is the aquifer for storage of water diverted to Sand Hollow Reservoir. The area also has much more recent Quaternary basalt flows overlooking the reservoir.

[4]Milligan, Mark, *Sand Dunes on the Navajo Sandstone at Sand Mountain, Washington County, Utah*, Utah Geological Survey Internet Website, http://geology.utah.gov/surveynotes/geosights/sandmountain.htm.

Sand and Sandstone, Sand Mountain

Climate

The Sand Hollow Recreation Area is located in a warm, semi-arid high desert environment marked by low precipitation, a wide daily temperature range, high summer temperatures and mild winters. Average maximum daytime temperatures during the summer months are among the highest in the state. On average, maximum daytime temperatures exceed 92 degrees from June through September. Daily maximums for July average about 100 degrees. Average minimum temperatures range from about 66 degrees in the summer to about 26 degrees in winter. Average annual precipitation is just above 8 inches per year. Most precipitation occurs between January and March. While occasional snowfall does occur in the area during the winter, it rarely stays on the ground for an extended period of time. Monsoonal flow in late summer brings brief but heavy thunderstorms to the area. These intense storms often result in local flash flooding.



View of Sand Hollow Reservoir from Sand Mountain

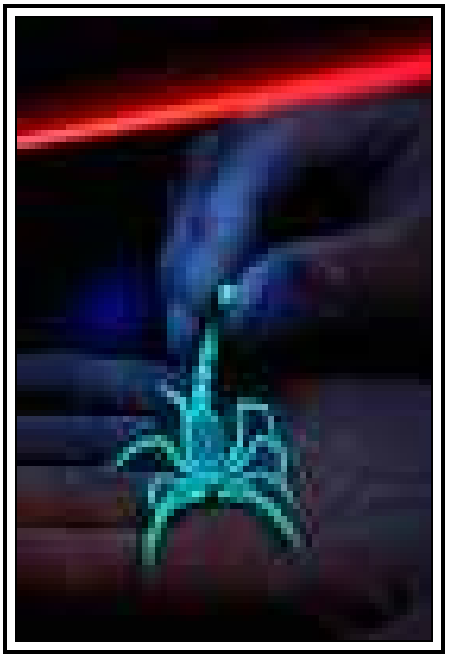
Ecosystem

At elevations ranging from 3,000 to 4,000 feet, the area around Sand Hollow combines cold and warm desert shrub communities. Cold desert shrubs include big sagebrush communities with Mormon tea, shadscale, big rabbitbrush and winterfat. Warm desert shrub communities are creosote bush with range ratany and bur sage. Scattered stands of cottonwood border the reservoir or occur in areas with high water tables in the Sand Mountain Recreation Area.

Lowland riparian areas along the Virgin River are priority habitats for several bird species in southwestern Utah but the waters of Quail Creek, Gunlock and even recently constructed Sand Hollow reservoirs have become important areas for waterfowl and shorebirds during months of migration or overwintering. All these reservoirs are recognized in Bird

Habitat Conservation Area 48 in the Intermountain West Joint Venture.

Sand Hollow Reservoir has been stocked with blue gill, large-mouthed bass, and some bull-head catfish. The reservoir has become a popular fishing hotspot for both blue gill and bass.



Scorpion under Black Light at Interpretive Program, Sand Hollow State Park (Dan Richards)

Mule deer is the primary big game species in the area although the habitat is considered to be low quality. Other fauna include coyote, raccoon, kit fox, badger, black-tailed jackrabbit, desert cottontail, and several species of ground squirrel, pocket gopher and mice. Diamondback rattlesnakes and sidewinder are found in Sand Hollow State Park especially in the spring where they are attracted to the heat from asphalted roads.

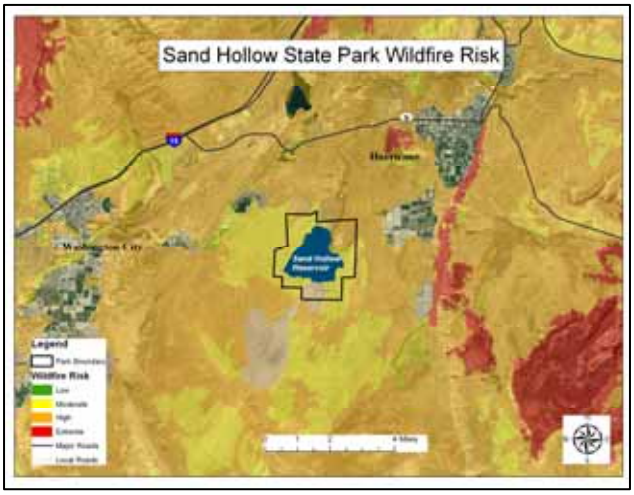
The Utah Natural Heritage Program notes the potential presence of desert tortoise and sidewinder within ½ mile of Sand Hollow State Park. There are also recent records of burrowing owl, ferruginous hawk, gila monster and zebra-tailed lizard within the Sand Mountain Recreation Area. All of these animals are on the *Utah Sensitive Species List.*

Sidewinder (Lynn Chamberlain, DWR)

Natural Hazards Analysis

The Sand Hollow Recreation Area Management Plan completed in 2001 identified the following hazards at Sand Hollow and Sand Mountain: "Wind, blowing dust, lightning and high temperatures may pose threats to Sand Hollow visitors. Southerly winds preceding a frontal system cause blowing sand and dust. Post-frontal winds funneled down from Black Ridge canyon to the north may exceed 50 mph. High micro-burst winds accompanying summer thunderstorms may also be of concern to area users. More importantly, intense lightning may be a hazard - especially on Sand Mountain's exposed ridge areas. Finally, during the hot summer months, ground temperatures may exceed 150 degrees. Rock formations - volcanic in particular - absorb tremendous amounts of heat. Such high ambient temperatures

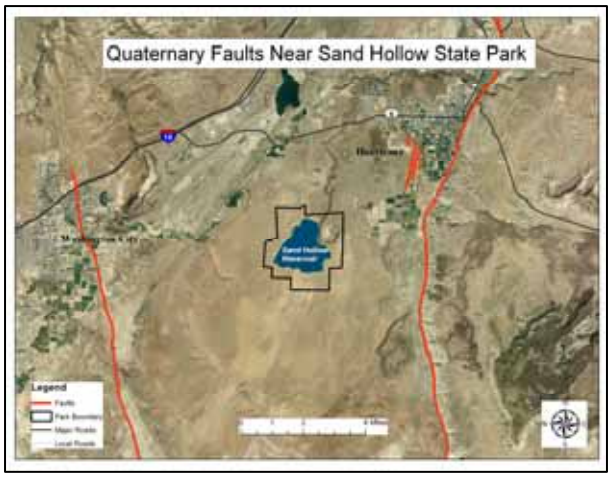
present potential health risks."[5]



A hazard mitigation report prepared in 2009 by the Utah Division of Emergency Services and Homeland Security focuses on natural hazards to the Sand Hollow Recreation Area. In addition to weather-related hazards described in the 2001 plan, the Division of Emergency Services identifies wildfire, earthquake and dam failure risks in its report.

Wildfire risks within the boundaries of Sand Mountain State Park are in the moderate risk category except for a tract in the northeast part of the park. In the Sand Mountain Recreation Area, wildfire risks are moderate to high based on vegetation communities, wind conditions, topography and levels of human activity on the land. Most wildfires are caused by lightning but can be caused by recreational use such as camping or off-highway vehicle traffic.

The two dams at Sand Hollow Reservoir are classified as high-hazard dams.[6] High-hazard dams are "those dams which, if they fail, have a high probability of causing loss of human life or extensive economic loss, including damage to critical public utilities."[7] The areas of potential flooding due to dam failure are the residential and commercial development to the north and west of Sand Hollow Reservoir.



Sand Hollow State Park lies between two quaternary fault lines—the Washington Fault Zone and the Hurricane Fault Zone. In addition are volcano mountain faults to the northeast of the park. Park facilities could be damaged by soil liquefaction, where saturated soils become like quicksand and lose bearing capacity and shear strength, especially around the reservoir. Damage could extend to the road network around the park. Earthquakes would also increase the risks of landslides, dam failure and flooding.

[5] Utah State Parks, *Sand Hollow Recreation Management Plan*, pp. 13-14, Utah Dept. of Natural Resources, 2001.

[6] Utah Division of Water Rights, Dam Safety Section, *Dam Inventory; Dam Safety Database Information Viewer, http://www.waterrights.utah.gov/.*

[7] Utah Code, Annotated, § 73-5(a)-106.

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Issues and Recommendations

The planning team, park staff and public participants identified a number of issues and corresponding recommendations for Sand Hollow during the resource management planning process. Issues discussed related to management of the park's natural resources, facilities development, creation of new recreational opportunities, promoting the sustainability of the park and the neighboring economies, developing interpretive and educational programs and assuring that the parks budgeting and staff needs are met. These issues were identified by various means, including input from planning team members, the public-at-large and through a visitor survey. In addition to the recommendations developed by the planning team, the Utah Division of Homeland Security identified an issue area for natural hazards.

An analytical technique used to determine the strengths, weaknesses, opportunities and future threats (known as "SWOT" analysis) for Sand Hollow Recreation Area helped in the development of these issues. A specific description or statement summarizing each issue was constructed to clearly identify and articulate each problem or challenge.

The planning team developed specific recommendations for the identified issues. The team's recommendations were arrived at by consensus of opinion among those who attended team meetings.

Implementation of most of the recommendations identified by the team will require assistance by the Division's external partners. However, implementation of some recommendations will be the sole responsibility of park staff and the Division. This document identifies and distinguishes such recommendations in each issue area section.

Issue: Management of Park Resources

Sand Hollow Recreation Area is a large park with a variety of resources including the reservoir and shoreline, stabilized and migrating sand dunes, rock outcrops, and occasional oasis areas with trees and heavier vegetation. The land and resources of Sand Hollow State Park are owned by the WCWCD (Sand Hollow and adjacent lands) and the BLM (Sand Mountain). These areas are managed by the Division by agreements with these two agencies. BLM shares the focus on recreation with the Division in its management goals for Sand Mountain, but the focus for WCWCD at Sand Hollow is on water storage, underground aquifer recharge, and power generation.

There are other partners in resource management as well, although not defined with a formal agreement like the MOU. These partners include: Utah Department of Transportation (UDOT) to plan for and manage the impacts of the Southern Parkway; Utah Division of Wildlife Resources (DWR) for management of wildlife, fisheries and control of invasive mussel species; Hurricane City and Washington County for assistance with public safety and law enforcement as well as input on land planning decisions that affect the park; private landowners; and

volunteer or friends groups who will be key in accomplishing many of the park's goals.

These federal, state and local agencies have different emphases in resource management goals. However, the primary goals—clean water, recreation opportunities, public safety, and economic impacts—overlap enough for partners to work cooperatively.

Park staff at Sand Hollow Recreation Area manage several resources for the benefit of visitors and partners. These include sand migration, management of invasive species, maintaining water quality and public education about all of these resources.

Sand dunes that extend from Sand Mountain Recreation Area moved and migrated freely before the construction of the reservoir, road systems and other structures. This construction has altered the pattern of movement of sand in unpredictable ways. Staff at Sand Hollow Recreation Area spend 20 or more hours a week removing sand from park roadways. Other problems are the movement of sand away from beaches and the poor placement of culverts to handle sudden floods. Management practices that address these issues within the limitations of park staff and budgets need to be developed.

Reservoirs and lakes throughout Utah are threatened by potential invasion of zebra and quagga mussels. Two reservoirs are known to be infested—Red Fleet Reservoir with quagga mussels and Electric Lake with zebra mussels. Lake Mead, 60 miles to the west in Nevada also is infested with quagga mussels. The adverse effects of these mussels include depletion of nutrients in water, accumulation of shells on power and water infrastructure and degradation of beach areas. All of these impacts have the potential of being very costly to taxpayers, recreational users and utility companies. The Utah Division of Wildlife Resources is the lead agency in preventing these species from entering Utah waters with Utah State Parks as an important partner.

Quagga Mussels on Boat Propeller

Although not the threat that non-native mussels poses, invasive plant species are a problems along the southern beaches of Sand Hollow Reservoir. Park staff has had some success with the beetles to control tamarisk but would also like to continue with mechanical controls supplemented by herbicides.

The purpose of construction of Sand Hollow Reservoir is water storage and power generation. Maintaining water quality is a high priority. Water quality is also important for the recreation and fisheries.

Education of visitors about many of the resource management issues the park faces can be as important as enforcement. This includes addressing critical issues such as prevention or management of invasive species or irritations such as swimmer's

itch. Other issues to be addressed include education of OHV users about vulnerable plant communities and safety instruction for OHV and PWC users. The placement of kiosks within Sand Hollow State Park will provide one method of outreach on these education topics.

The attractions of Sand Hollow State Park and Sand Mountain Recreation Area are in large part due to their scenic values and the unique mixture of sand, rock and water. WCWCD lands are however an enclave within private lands. These lands are being rapidly developed for both housing and commercial uses. The management partners must work together to protect the recreation area's visual resources.

Resource Management Goal #1: Natural Resource Management Partnerships

Recommendations:

1. Develop a schedule of annual meetings with park, BLM, WCWCD, city and community representatives to address concerns or issues, but with informal meetings initiated by the park manager as needed.
2. Cultivate partnership opportunities in facility development, marketing and day-to-day operations as recommended in other issues areas.

Resource Management Goal #2: Natural Resource Management Issues

Recommendations:

Sand Migration

Note that all of the following recommendations under this goal will require park staff to work in cooperation with external agencies or private entities to implement.

1. Work with UDOT and Hurricane City on southern parkway alignment, culverts and interchanges as these affect sand movement for both the park and Hurricane City Road Department.
2. Investigate partnerships with UDOT or county (for example, equipment use) to help address sand migration over roads on a regular time table, or establish a maintenance plan using rented equipment.
3. Investigate sand migration strategies, as for example, what vegetation or structures are effective in stopping sand migration and stabilizing dunes.
4. Consult and share information with other entities that deal with migrating sand.

Invasive Species—Quagga Mussels

1. Support and enhance DWR's efforts in invasive mussel prevention and control.
2. DWR has stationed a pressure washer for boat washing at Sand Hollow to aid decontamination of boats. DWR has primary responsibility for this effort. Region and park staff should coordinate with DWR to ensure that it provides the assistance needed (staffing, maintenance, and repair) to effectively carry out decontamination efforts and to ensure that park staff are not unreasonably overburdened in helping to carry out this task.
3. Develop a communication system with other reservoirs to share information about boaters not cooperating with invasive mussel prevention efforts.
4. Train staff at marinas and boat dealerships to help educate the public about invasive mussel prevention.

5. Develop a contingency plan for recreation sites to implement to deal with invasive mussel infestation.
6. Develop an internal invasive species/mussel control plan for the park. This plan should follow criteria listed in DWR's Master Mussel Control Plan. Park-specific actions should reference this plan (see www.wildlife.utah.gov/mussels)

Invasive Species—Flora

1. Continue cooperative program with WCWCD for tamarisk, cattail, algae and other nuisance species management.

Water Quality

1. Work with WCWCD staff to monitor and protect water quality.

Public Education

1. Add an interpretive-education-naturalist position to the park as an important tool for compliance of and education about rules, proper use and protection of resources and enhancement of visitor experiences.

Resource Management Goal #3: Scenic and Aesthetic Resources and Values

Recommendations:

Adjacent Land Use and Community Planning

1. Park staff should attend local planning and zoning meetings, and keep abreast of activities that may affect the park.
2. Park staff should work with local government, nearby landowners and developers to mitigate impacts to the experience of visitors and park resources in ways that are beneficial to all concerned.

Park Building Standards

1. Work within the park to protect visual and aesthetic resources. Work to blend activities and structures into surroundings, including shifting and spreading of use both by location and by times of use.

Issue: Facilities and Recreational Opportunity Development

The park's large land base contains a variety of natural and cultural resources and offers a great number of recreation opportunities, in particular OHV use, boating, swimming, beach use and camping. Other activities which could be developed more include motorized and non-motorized backcountry use, sightseeing and scuba diving. Public comments indicate that the aesthetic aspects of the recreation area are important and should be considered when adding amenities and development.

The Sand Mountain Recreation Area is made of two very different management units. One unit is Sand Hollow State Park which is a fee area with a single entrance and developed facilities. The second unit is Sand Mountain Recreation Area with a large land base and many access points. There are no developed facilities but many user-created trails. Recreational users of this area have never been charged an entrance fee.

Proposed Southern Parkway Route around Sand Hollow Reservoir

The design and future construction of a new road system referred to as the Southern Parkway will impact access to the Sand Hollow and Sand Mountain recreational areas. This roadway will ultimately extend from 2800 West in Hurricane to Exit 2 of I-15. Park management concerns are the location of interchanges along the road segment between Sand Hollow State Park and Sand Mountain Recreation Area which will affect convenient access to both areas; and the placement of culverts and other structures which can affect movement of sand and water drainage. There is also concern about aesthetic impacts, particularly traffic noise and light impacts from proposed alignments.

The WCWCD notes that access to its property and infrastructure is critical. The WCWCD plans to realign its access road at the park's southeast side. This road was removed with the recent construction of the park's new primitive campground area.

WCWCD also plans to construct additional water conveyance infrastructure in the near future. Of primary significance is the proposed Lake Powell Pipeline, a water development project planned by the WCWCD and the state of Utah to help meet water needs in Washington County. The pipeline will deliver water from the Colorado River at Lake Powell in a 69-inch buried pipeline to Sand Hollow Reservoir. The planned pipeline alignment will approach Sand Hollow Reservoir from the southeast.

A hydroelectric power generating plant will be located at the end of the pipeline where the water will discharge to the reservoir. Construction of the project is anticipated to take place from 2016 to 2020. These development actions will obviously need to be considered as recommendations listed in this section are implemented.

Sand Mountain Recreation Area has many existing access points and routes which need to be named, mapped and marked. Some of these access points and much of the Sand Mountain Recreation Area are very remote from park offices and duty stations, with access only by four-wheel drive or off-highway vehicles. Law enforcement and search and rescue operations are therefore part of planning for recreation opportunities.

Facilities at the park are new and still being developed according to recommendations of the park plan completed in 2001 as development funding becomes available. Park staff has had the unusual opportunity to alter these plans to meet the expectations of visitors. For example, many visitors come to participate in both water-based and OHV recreation

and want facilities that accommodate both. However, additional facilities such as shade, group areas, day-use access to beaches and restrooms with showers are still needed. Routes for OHV travel from campgrounds to the staging area or visitor center within the park are also a need.

Boat Ramp at Sand Hollow Reservoir

Facilities Goal #1: Park Access and Dispersed Recreation

Recommendations:

Entrance to Sand Hollow State Park

1. Maintain a single entrance to the fee area of Sand Hollow State Park.
2. Continue program to offer stickers with purchase of annual pass to place on OHVs to expedite entrance to park and facilitate enforcement of fees by park staff.

State Parks will be the primary party responsible implementation of both these recommendations.

Access Issues with Southern Parkway

1. Work with UDOT and Hurricane City on Southern Parkway alignment, culverts and interchanges as these affect access to park and OHV passage from Sand Hollow to Sand Mountain. Investigate possibility of three culverts or tunnels under the Parkway for OHV coming, OHV going and non-motorized traffic. Consider a bridge to allow for sand migration.
2. Investigate the configuration of Southern Parkway and new reservoir at Washington Dam with regard to access to both WCWCD lands and the west approaches to Sand Mountain. Resolve spillway and drainage issues as well as OHV access and staging areas.
3. Work with UDOT, WCWCD and BLM to find the least impacting alignment for the Southern Parkway.

Access Points to Sand Mountain Recreation Area

1. Consult with BLM and Hurricane City to determine best location for Sky Ranch trailhead to accommodate access by sand paddle vehicles as well as other OHVs and good access to trails.
2. In locating trailhead, consult with WCWCD on plans for placement of pipelines, water retention ponds and power generation facilities.
3. Development of trailhead is contingent upon obtaining rights of way from land-owners and commitment by Hurricane City to maintain trailhead.

Public Safety

1. Develop and maintain partnerships with local law enforcement agencies to accomplish mutually beneficial goals such as area-wide public safety, compatible radio frequencies, and other law enforcement goals.
2. BLM should place notice in Federal Register to halt firearm use from tunnel access to the rims of Sand Mountain for safety reasons.

Facilities Goal #2: Improvements to Facilities and Enhanced Recreational Opportunities--Sand Mountain Area

Recommendations:

Trails and Access Points

1. Sand Mountain should remain a non-fee area.
2. With BLM taking the lead in partnership with Hurricane City and Sand Hollow State Park, jointly develop a trailhead with parking and restroom facilities to access Sand Mountain from the Sky Ranch area.
3. Park management should seek grant money and partnerships to fund trailhead facilities and trail improvements.
4. Establish an on-going team to include representatives from BLM, Sand Hollow State Park and OHV representatives to develop recommendations for trailhead and trail needs and possibilities. These should include access from the west of Sand Mountain, historic sites such as the Dominguez-Escalante trail, Warner Valley rim as well as naming and marking existing trails. These recommendations should be consistent with the Hurricane City master plan.
5. Increase opportunities for non-motorized activities within Sand Mountain area such as hiking or equestrian trails.
6. Consider fencing to direct vehicle access across private lands from parking area to trails and to control illegal dumping.

Facilities Goal # 3: Improvements to Facilities and Enhanced Recreational Opportunities—Sand Hollow State Park (WCWCD Lands)

Recommendations:

Site Planning

1. The Division's planning section should arrange for a conceptual site plan for the park indicating general locations for recommended amenities such as group area build-outs.
2. Investigate a one-stop shopping kiosk or computer terminal for on-line purchase of out-of-state OHV permits, fishing licenses, boat registration, other recreational permits or licenses, park reservations and possible federal land agency permits.
3. Work with WCWCD to find location for boat storage within park boundaries.
4. Build boat storage unit to be operated by park staff or by concessionaire. Primary responsibility will fall to State Parks for this recommendation.
5. Plan for and develop an amphitheater for group activities and events. State Parks will plan and implement this recommendation.

Campground Use and Reservations

1. Consider minimum two-night reservation policy on Fridays during peak season to assure maximum use of campgrounds.
2. Explore opportunities at the park manager's discretion for long-term camping during off-peak seasons in compliance with local ordinances.

Note that implementation of these recommendations will fall primarily within the purview of Utah State Parks.

Campground and Day Use Improvements

1. Plan for day-use facilities such as utilities for day parking of RVs, restrooms, parking and ADA access to beach locations and other facilities.

Provide shaded areas with trees and pavilions.

2. Provide for additional parking near popular day-use beaches.
3. Build outdoor pay showers at beaches and boat ramps.
4. Develop both camping and day-use group areas with shelters and other amenities. Consider using a team of users to develop suggestions for these areas.
5. Investigate playground facilities and other recreational opportunities such as volleyball courts or horseshoe pits at sites within the park. Seek out grant opportunities to build such facilities.
6. Investigate installing fire pits fueled by natural gas or propane. These can be rented by users.
7. Consult with Forestry, Fire and State Lands or county extension service for grants and recommendations on appropriate tree species for shade, light and sound barriers at Sand Hollow campgrounds and day-use areas.
8. Seek UDOT mitigation funds for planting of trees or erection of light and sound barriers at Sand Hollow State Park.
9. Install air compressors at Sand Pit campground and at boat ramps for cleaning machines or inflating tires or beach toys.
10. Upgrade and expand Sand Pit campground for OHV users with showers, shade, improvements to roads and driveways, utilities and cement pads.
11. Apply for OHV funds for campground improvements benefiting OHV users.

As with the Campground Use and Reservation recommendations, these recommendations will fall primarily within the purview of Utah State Parks.

Primitive Camping at Sand Hollow Reservoir, East Side

OHV Routes within Park

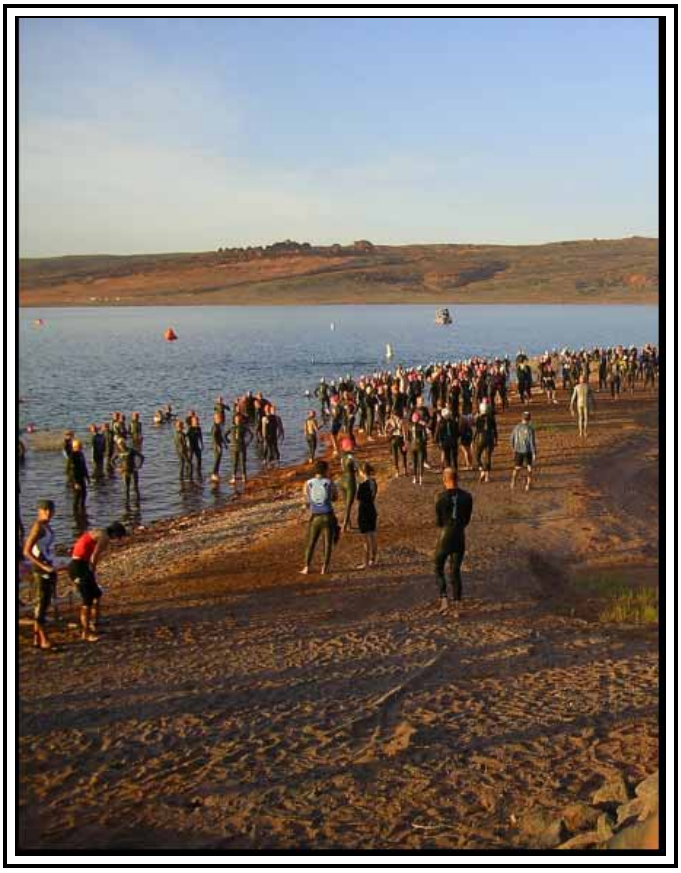
1. Determine OHV trails within park from reservoir area to tunnel to provide convenient and safe access for all users.
2. Develop, improve and maintain trails within the park between the entrance station and other facilities and campgrounds.

Issue: Marketing of Park and Economic Development for Local Community

The park is located near large and growing populations in southwestern Utah and southern Nevada and also within a day's travel from the Wasatch Front. Park supporters would like Sand Hollow Recreation Area to be a regional center to bring visitors to southwestern Utah. This vision has Sand Hollow Recreation Area serving as a hub to explore the diverse recreation sites in Washington County.

The development of Sand Hollow Recreation Area as a regional center will

depend on community support and shared marketing strategies with local communities. Summer survey results indicate that local residents visit Sand Hollow throughout the week. Many of these are young people from neighboring communities. This is an important aspect of the park but to expand the attraction of the park beyond Washington County residents will require community support and shared marketing strategies with local government, visitor centers and businesses.



Triathlon Event at Sand Hollow

Available parking is currently the limiting factor for Sand Hollow State Park. Those visitors turned away or seeking less crowded facilities could be directed to other state parks in the area, thereby prolonging their visits if from out of the area and better utilizing other state park facilities. Funding and planning are in place for expanded parking. As park visitation increases, capacity issues on reservoir and on day-use beaches will need to be addressed.

While partnerships will be critical to the successful implementation of the recommendations contained in each goal under this issue area, State Parks will assume primary responsibility for carrying them out.

Marketing Goal #1: Market the Park and its Opportunities

Recommendations:

1. Provide adequate advertising of events at Sand Hollow.
2. Increase events with social opportunities such as OHV Poker Ride and Boat Light Parade.
3. Consider appropriate new events on an individual basis.
4. Partner with near-by businesses for programs to promote use of the park, as, for example, hotels or resorts to include park fees in guest charges.
5. Develop a series of newspaper inserts on annual schedule for events, improvements, activities in other parks and area activities. This could also be available for visitors at the park.
6. Print activities on a calendar on glossy stock or laminated cards for hotels, libraries and other central points.
7. Develop park-related items such as “I got the itch” T-shirts for sale or to give away as advertisement for the park.
8. Develop PSAs to distribute to media outlets on upcoming events and announcements related to Sand Hollow State Park.

9. Provide interpretive programs or special events to attract visitors who are unlikely to visit the park otherwise.

Marketing Goal #2: Develop and Maintain Public Support for Park

Recommendations

1. Provide accurate and readable information about swimmer's itch as well as other park health and safety issues.
2. Maintain relationships with local newspaper, TV and radio shows.
3. Start a Friends of Sand Hollow group to advocate for the park and to help raise funds and promote park activities.

Marketing Goal #3: Develop and Maintain Public Support for Area State Parks

Recommendations:

1. Encourage Sand Hollow visitors to use other state parks such as Quail Creek, Frontier Homestead or Coral Pink by offering discounts on day-use fees.
2. Consider a short-term pass good at several state parks.
3. Work with the Division to create a passport stamp program with a separate stamp for each park visited.

Issue: Education and Interpretation

Education efforts at Sand Hollow State Park and Sand Mountain Recreation Area are directed at safety and health issues such as OHV and boating rules, swimmer's itch and camping rules. These efforts are essential for a park that attracts so many active recreationists who will be swimming, boating or using OHVs during their visit. The park does not have a staff person dedicated to interpretive programs at present. Survey results show that activities such as sightseeing, wildlife viewing and nature/historical study are the least popular at the park, due in part to the very young age distribution of summer visitors. There are opportunities for interpretive programs which could attract new visitors or engage current visitors in different ways.

As these recommendations deal with internal staffing and planning, Utah State Parks will assume primary responsibility for their implementation.

Education and Interpretation Goal #1: Identify Interpretive and Educational Needs, Opportunities and Methods for the Park

Recommendations:

1. Develop a comprehensive interpretive plan for the park.
2. Add an interpretive-education-naturalist position to park staff as an important tool for compliance of and education about rules, proper use and protection of resources and enhancement of visitor experiences.

Issue: Budgets, Staffing and Funding

Sand Hollow State Park covers a significant portion of operating expenses (75 to 100 percent) from revenues charged for entrance and camping fees. This is despite managing the large Sand Mountain

Recreation Area for which no fees are charged.

The park has new facilities but needs more group areas and day-use facilities such as showers and toilets, playground equipment, and benches. Development dollars are hard to come by in the best of economies, even though economic impact studies show a great benefit to local economies from visitation to state parks especially if out-of-area visitors come to the park. Sand Hollow has been fortunate to have BLM and WCWCD funds match to park funds for development of facilities.

Given the difficulty in acquiring operating and development monies, park management will look to opportunities such as rentals of equipment, concessions and more efficient operating practices to meet park needs. However, consistent general funding will be an important part of the budget mix. Recommendations regarding internal staffing, planning, or budgeting will be the responsibility of Utah State Parks.

Budget Goal #1: Develop Concessions for Needed Park Services

Recommendations:

1. Provide for rental of OHVs, PWCs and other small watercraft.
2. Provide efficient, affordable and easy-to-use refueling opportunities for watercraft. This needs to be off-water to protect water quality.
3. Provide efficient, affordable and easy-to-use refueling opportunities for OHVs within park boundaries, possibly shared with those for boats.
4. Plan for a concessionaire and concession building at the south boat ramp to provide food services and convenience items such as snacks, camp and picnic supplies, sun-screen etc. A food service cart could also serve the beach area.
5. Sand Hollow park manager should review the experience of other state parks with regard to concessionaires.

Budget Goal #2: Identify Needs for Increased Staffing and Budgets

Recommendations:

1. Additional law enforcement staff is needed to assure visitor safety and resource protection for Sand Hollow Recreation Area.
2. Coordinate law enforcement efforts with BLM law enforcement officers.
3. Partner with schools, community service and civic organizations for volunteers for some park tasks.
4. Hire interpretive staff.
5. Rotate park staffing among several parks as needs and opportunities arise.

Issue: Natural Hazards Mitigation

Weather-related hazards are the most immediate threats that park staff and visitors must prepare for within the Sand Hollow and Sand Mountain areas. These include extreme temperatures (winter and summer), wind, blowing sand, lightning and heavy rainstorms. Other potential hazards are flooding, landslides, wildfire and earthquakes. The Utah Division of Emergency Services and Homeland Security makes the following recommendations for Sand Hollow State Park staff.

Natural Hazards Goal #1: Minimize Impact from Severe Weather

Recommendations:

1. Monitor weather and disseminate information about critical weather situations to park visitors, especially during summer thunderstorm season. Supply park employees with NOAA Weather Radios and access the Salt Lake National Weather Service website to assess weather conditions and take actions to warn and protect visitors.
2. Provide safety information to park visitors regarding lightning events.
3. Educate staff and visitors about hazards from and proper response to blowing sand especially on Sand Mountain. Recreational users may become disoriented during sand storms.

Natural Hazards Goal #2: Minimize Impacts from Wildfires
Recommendations:

1. Monitor state and federal wildfire mitigation and response activities in the area.
2. Post burn restrictions. Distribute wildfire awareness material and discuss burn restrictions in surrounding areas with park visitors.
3. In the event of a wildfire, have a plan to ensure the safety of park visitors. Note possible evacuation routes, and in extreme cases, consider moving visitors to golf course grassy areas to shelter them from fire.
4. Be aware of local wildfire conditions and communicate those to park employees and visitors.

Natural Hazards Goal #3: Minimize Impacts from Dam Failure

Recommendations:

1. Develop monitoring and evacuation plans in cooperation with WCWCD.
2. Ensure adequate enforcement of all dam operations and maintenance standards.

Natural Hazards Goal #4—Minimize Impacts from Earthquakes

Recommendations:

1. Implement non-structural mitigation such as tie-downs for computer equipment, braces and secure attachments for bookcases.
2. Educate staff on after effects of earthquakes and have adequate emergency response plans. Seventy-two-hour kits should be on site and accessible.

Natural Hazards Goal #5: Minimize Impacts from Drought

Recommendations:

1. Monitor local drought conditions and consult with Utah Division of Water Resources about conservation measures.

Conclusion

This plan is a blueprint to help implement the planning team's recommendations. The plan outlines the initial steps to be taken in cooperation with Sand Hollow visitors, local communities, and other interested users to: determine the best management strategies for state park resources; develop and improve facilities to serve visitor needs now and into the future; ensure adequate staff and funding; protect the natural and cultural resources at Sand Hollow; enhance the impact of Sand Hollow on local communities and on local and state economies; and expand the recreational opportunities that Sand Hollow offers.

The continued support of Sand Hollow's many stakeholders is crucial to accomplishing the mission and vision set out by the planning team. The recommendations contained within this plan were based upon an open and collaborative process. It is important that this collaborative spirit continues as the plan's recommendations are implemented.

The plan should be reviewed on a regular basis to ensure its viability, relevance and usefulness. This document has enough flexibility to be amended in response to changing resource conditions, visitor needs and expectations, community needs, and agency priorities. Amendments may occur under the auspices of the Division. Any such changes will include input from visitors, local citizens, community leaders, Sand Hollow staff or other stakeholders with interest in Sand Hollow.

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Appendices

Appendix A
Summary of Public Comments and Responses

In November 2009, the public was invited to provide addition input on the draft plan and its recommendations. Copies of the initial draft were provided for public review at State Parks' main office. In addition, staff placed an electronic version of the plan on the State Parks website. Additional copies were made available to the public at Sand Hollow State Park and at the Department of Natural Resources building in Salt Lake City. Comments were accepted by email or in writing to the Division's Planning Section.

Five private individuals and one environmental advocacy group provided comments on the plan. The following is a summary of the comments provided along with the responses to these comments.

Comment: Provision of Handicap Access (two comments)
One individual expressed concern that the plan does not directly address fishing access for individuals with disabilities. This individual felt that it is difficult and dangerous for persons with disabilities to climb up and down the steep, rocky slopes to access the reservoir shoreline. The individual recommended that the plan included installation of a fishing pier to accommodate individuals with disabilities.

Another individual expressed similar concerns regarding the ability of many senior citizens, particularly those with limited physical mobility, to access the reservoir. This individual argues that many such people have difficulty walking in deep sand or traversing steep slopes to access the beach areas. This individual also requests that the plan consider development of an "access area" where those with limited physical mobility can access the water, sit down and fish. This individual argues that the current ramps do not have hand rails, seats, and are too narrow to accommodate both boaters and those merely seeking lake access.

This individual also recommends that park staff post signs that warn of heavy fines for leaving litter in the park, or for throwing trash into the water.

Response:
This plan identifies the concerns regarding access issues raised in these comments. Recommendation #1 under Campground and Day Use Improvements states that additional planning is needed to provide beach location access under the federal Americans with Disabilities Access (ADA) code. The planning team discussed this issue in detail and identified a number of constraints (slopes, type of design, costs) that need to be determined in the selection of optimal ADA access points. Park staff will

weigh and prioritize this development item along with the other competing facilities development needs identified in this plan. Park management notes that there are significant site constraints with such a facility and feasibility may be difficult. However, park management will explore this issue within the timeframe of this plan to determine whether this recommendation is feasible. Accessible facilities already exist in the form of campsites, restrooms, parking, information kiosks and other park facilities. There are ADA accessible fishing opportunities at nearby locations including, Quail Creek State Park, Grandpa's Pond (Hurricane City), Razor Ridge Park (Washington City), and Skyline Pond (St. George).

Comment: Concern About Impacts from Motorized Use on the Park's South End

One individual argues that the plan does not adequately address current Off Highway Vehicle (OHV) use in the Park. The individual claims that OHV use has significant negative impacts on park habitat, particularly within the park's southwestern portions and that something needs to be done to protect the dune areas. This individual also expresses concerns about conflicts (safety and aesthetic issues) between OHV users and non-motorized users and argues that bans should be placed on OHV use.

Response:

The Sand Mountain Recreation area is designated as a multiple use recreation area. OHV use, which occurs in the area predominantly on lands held by the BLM, was deemed an appropriate use by this agency. In its 1999 St. George Field Office Record of Decision and Resource Management Plan (ROD/RMP), BLM noted that the area was to be "maintained in public ownership to provide long-term stability for user groups such as the OHV community who, as a result of urbanization and land use restrictions, have lost much of their traditional open use areas." (See USDI, BLM, St. George Field Office Record of Decision and Resource Management Plan, Chapter 2, RC-20, 1999.).

In the 2001 Sand Hollow Recreation Area Recreation Management Plan, both BLM and State Parks committed to manage the area for a number of different uses, to minimize impacts on area resources, and to reduce conflicts between user groups in accordance with guiding criteria that each managing agency must follow. State Parks reaffirms its position that the area is managed in prudent compliance with these objectives.

Comment: The Plan Should Consider Waterfowl Hunting within the Park

One individual argues that the plan should include provisions to permit waterfowl hunting at the park. The individual claims that there are a large number of migratory game birds within the reservoir area at times of the year when there are

few boats or watercraft. The individual recommends that waterfowl hunting be allowed from December 1st through mid-January when park visitation is low. The individual argues that hunting is allowed at other nearby parks (Quail Creek) and does not appear to negatively impact the activities of other park users there.

Response:
The Division of State Parks opposes such a proposal because the potential safety hazards associated with it may be significant and may be unmanageable given the unique characteristics of the area. Unlike other parks, there are year round multiple-use activities occurring on or near the reservoir. Significant OHV staging and use occurs directly adjacent to the south end of the reservoir at all times of the year. In addition, there is continuous vehicular traffic occurring in close proximity to the reservoir area. There is concern that staff may not be able to reasonably manage the potential impacts upon visitor safety for all users during such a hunt.

Comment: The Plan is Weighted Toward Motorized Recreation and Economic Uses and Not Natural Resource Protection

The advocacy group, Citizens for Dixie's Future (CDF), expressed concerns that the plan needs to do more to promote what it terms efficient use of land and water, and conservation of natural resources. CDF argues that the plan overemphasizes recommendations to promote motorized recreation and other uses that generate economic benefit. They argue that protection of the scenic value, wildlife and the water quality in Sand Hollow State Park should be the primary purposes of the plan and that the plan's vision and mission statements should emphasize these purposes.

CDF suggests 10 additional recommendations that should be considered within the plan. These are listed as follows:

1. In well defined language include water quality, wildlife and scenic landscape protection in the Vision Statement.

Response:
The plan's Vision Statement adequately captures these values.

2. Find a balance between motorized and non-motorized use and natural resource protection. (BLM)

Response:
The Sand Mountain Off-Highway Vehicle (OHV) Area is on BLM-managed lands and is jointly managed by the BLM and Sand Hollow State Park through a cooperative agreement. It is considered a crucial part of the BLM's county-wide OHV strategy. Currently, the BLM St. George Field

Office manages 14 designated Wilderness Areas, two National Conservation Areas, seven Areas of Critical Environmental Concern, and 189 miles of non-motorized trails. With an ever shrinking land base, the Sand Mountain OHV Area provides an important and desirable location for motorized users. The BLM considers this area essential to protecting more sensitive areas throughout Washington County.

3. Recommend gasoline water craft engines meet EPA 2006 Standards.

Response:
Water quality standards are continually being sampled. If problems are found to be associated with Watercraft then steps can be implemented to address such problems through EPA (or similar) standards. In addition, park management currently takes steps to ensure that water quality is not impaired by boats and watercraft.

4. Consider seasonal restrictions in portions of the reservoir to provide rest areas for migrating or overwintering waterfowl and shorebirds.

Response:
Park management believes that this issue is addressed by the seasonal use of the reservoir. Park management therefore does not believe that a conflict exists regarding this issue. Likewise, no conflict has been identified by DWR, the agency responsible for monitoring waterfowl.

5. Include water quality testing to establish a baseline, and to identify factors of "swimmers itch".

Response:
Park management will continue to take actions to make the public aware of this issue. The Southwest Utah Public Health Department does not consider this to be a health risk.

6. Include a strategy on how human impacts from recreational activities on land, and water quality and wildlife will be managed; consider wildlife and plant corridors; consider how transportation routes and access will be managed, and how sensitive land resources will be protected.(BLM)

Response:
The Sand Mountain area was previously analyzed in a BLM Environmental Impact Statement (EIS) and was designated as a multiple use recreation area, with motorized use being predominant. Water quality, wildlife, botany, and transportation were all analyzed in the EIS. In the analysis, it was determined that in order to provide long-term stability for the OHV

community and enhance the protection of sensitive resources in other areas, Sand Mountain would be set aside for motorized recreation.

7. Survey the 16,564 acres of BLM lands within the Sand Mountain Recreation Area for endangered plants such as the Bear Claw Poppy and archeological resources. (BLM)

Response:
As stated in response #6, the Sand Mountain OHV Area was previously analyzed in an Environmental Impact Statement (EIS). Endangered plants and archaeological resources were analyzed as part of the analysis. In a new EIS that will begin in 2010, Congress has required the BLM to determine priority biological areas on all public lands within Washington County. This directive can be found in the Omnibus Public Lands Bill (P.L. 111-11).

8. Before opening up large areas to ATV use, include objectives to prevent the park from being rapidly degraded by unmanaged off-road vehicle use, inadequate staffing, and lack of funds to provide management of the area. (BLM)

Response:
Under the proposed Sand Hollow Resource Management Plan (RMP), no new areas are being opened up to motorized use. The areas currently being used have been exposed to cross-country OHV travel for over 20 years. The majority of this acreage is on BLM-managed lands and is comprised of sand and rock outcrops. The existing agreement between Sand Hollow State Park and the BLM allows Sand Hollow law enforcement staff to patrol BLM-managed lands, which allows for greater resource protection and increased safety for visitors. Sand Hollow State park staffing levels and funding issues were addressed in the RMP.

9. Install power lines underground for new facilities, include solar, energy and water efficient products to save money and preserve local resources.

Response:
This recommendation is consistent with the plan's mission and vision statement.

10. Protect the aquifer's water quality for Navajo Sandstone Aquifer Storage Project under Sand Hollow Reservoir.

Response:
Park management will coordinate with WCWCD regarding any changes or new infrastructure that could impact groundwater quality.

Comment: General Editorial Comments and Needed Improvements
One individual suggests some editorial comments. These are listed as follows:

- Regarding references to efforts to stabilize dunes, there appears to be a contradiction between references to efforts to stabilize dune areas (p. 27) and institution of measures that allow the dunes to migrate.
- The draft should state that the Southern Parkway extends from approximately 2800 West in Hurricane (see p. 39).
- On page 30, the word "lease" should be "least".

The individual also indicated that the park's Sand Mountain area should remain a non-fee area, recommends improvements to the park's access road, 3000 South, and argues that the Sand Hollow Road should be striped.

Response:
Dune stabilization refers only to areas where dune movement poses threats to visitor safety and/or park facilities. Currently sand is frequently removed from roadways and routes within the area to prevent potential accidents and to protect park infrastructure. This plan effectively addresses this concern.

The points regarding the Southern Parkway, fees, and editorial changes are duly noted. The final draft will incorporate these changes. Maintenance (paving and striping) on roads not within park boundaries is outside of the park's responsibility.

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