

## **APPENDIX G**

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### **FLOODPLAINS STATEMENT OF FINDINGS**



**Statement of Findings for  
NPS Directors Order 77-2, "Floodplain Management"**

**Death Valley National Park**

**Saline Valley Management Plan**

**Death Valley, California**

_____ Recommended:	_____ Superintendent Death Valley National Park	_____ Date
_____ Certification of Technical Adequacy and Servicewide Consistency:	_____ Chief, Water Resources Division	_____ Date
_____ Concurrence:	_____ Regional Safety Officer, Pacific West Region	_____ Date
_____ Approved:	_____ Regional Director , Pacific West Region	_____ Date



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## ACRONYMS AND ABBREVIATIONS

MOU	Memorandum of Understanding
NPS	National Park Service
park plan/EIS	Death Valley National Park Management Plan and Environmental Impact Statement
SOF	statement of findings
Tribe	Timbisha Shoshone Tribe

## STATEMENT OF FINDINGS

### INTRODUCTION

Pursuant to Executive Order 11988, “Floodplain Management” and Director’s Order 77-2: *Floodplain Management*, flooding hazards have been evaluated related to the proposed alternatives for the project. It is National Park Service (NPS) policy to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. This statement of findings (SOF) describes the proposed project, project site, floodplain determination, use of floodplain, investigation of alternatives, flood risks, and mitigation for the continued use of facilities within the floodplain.

### PROJECT AREA

The National Park Service prepared a management plan and environmental impact statement (plan/EIS) to consider the environmental consequences related to the management of the Saline Valley Warm Springs Area of Death Valley National Park (the park) (figure G-1). The Saline Valley Warm Springs Area is in the northwestern portion of the park and bounded by the Saline Range of mountains to the north, the Last Chance Range to the east, and the Inyo Mountains to the west. The National Park Service has defined the Saline Valley Warm Springs Area as approximately 1,100 acres of backcountry surrounded by designated wilderness. It has not been formally or systematically developed for use by the National Park Service but does have a number of user developed and maintained structures and facilities. This non-wilderness area, along with several additional features, comprises the area analyzed for this plan/EIS (figure G-1).

### PREFERRED ALTERNATIVE

The preferred alternative aims to engage user groups in the management of the area to provide visitors with the types of experiences they currently value while protecting park resources and ensuring compliance with applicable NPS, state, and federal regulations. The user groups would be engaged in carrying out many of the actions needed to protect human health and park resources through memoranda of understanding (MOUs) that could identify responsibilities for maintenance of facilities, maintenance of the airstrip, and maintenance and protection of natural and cultural resources.

In an effort to protect the health and safety of the Saline Valley Warm Springs Area visitors, the preferred alternative would require the National Park Service to consult with the Office of Public Health to develop an approach for water quality monitoring, add signs at the sinks to inform visitors of nonpotable water, incorporate a subterranean system for treating wastewater, and make the tubs accessible, to the extent practical while still preserving potential significant historical features. Further actions to protect public health would include fencing the source springs and the settling pond. This would prevent feral burro access to water sources and protect visitors, especially children, from accidental drowning. The vehicle support facility would be removed (when the current camp host leaves or three years, whichever happens first), and emergency vehicle assistance should not be expected by the visiting public. All hazardous materials used or stored at the vehicle support facility would be removed from the site.

The preferred alternative would also take steps to improve and restore the natural and cultural environments by controlling nonnative plant species, removing user-created fire rings, requiring visitors to haul out ash and charcoal, requiring visitors to either use vault toilets or pack out their waste, encouraging the use of NPS-provided firepans or other fire enclosures at the campsites, and treating the Saline Valley Warm Springs Area as an area of ethnographic and historic significance for the Timbisha

Shoshone Tribe (the Tribe) and recreational users, respectively. The preferred alternative would establish an onsite monitoring and response program for the protection of natural and cultural resources and include the option to install food storage boxes to deter wildlife habituation. This alternative includes restoration measures, such as removing the diversion piping from Burro Spring. The National Park Service would gather data on visitor use patterns through formal visitor use studies to understand current visitor use trends and impacts, prohibit the manipulation of natural or cultural resources for the purpose of art, and remove all non-historic art from wilderness.

Three distinct camping zones would be established under the preferred alternative: designated dispersed camping (with car camping), overflow walk-in camping with a separate designated parking area, and no camping areas. Visitors would be unable to camp within 100 feet of the source springs. Visitors with small aircraft would continue to be able to land at the Chicken Strip airstrip (special regulation pending), camping would be allowed at the Chicken Strip, and additional tiedowns could be added. The preferred alternative would expand education through various media focused on regulatory, health and safety, and compliance information. Education would include signage and information to inform visitors on wayfinding, promoting preparedness for entering potentially harsh desert conditions, and removal of vehicle repair services. At the Saline Valley Warm Springs Area, education would include additional signs on campground boards and engagement by the volunteer camp host, and tribes would be engaged to incorporate traditional ecological knowledge. The preferred alternative incorporates community engagement in the management of the site through MOUs with interested user groups to include invasive plant removal, monitoring of the conditions at Upper Spring, campsite management, and archeological resource and wilderness boundary monitoring.

The National Park Service is legally mandated to create a cooperative agreement with the Tribe by the Timbisha Shoshone Homeland Act of 2000 (Public Law 106-423) “for the purpose of providing training on the interpretation, management, protection, and preservation of the natural and cultural resources of the areas designated for special uses by the Tribe.” Cooperative agreements are defined as understandings that ensure proposed Tribal activities are compatible with the purpose and values for which Death Valley National Park was established. A cooperative agreement for tribal use of the Saline Valley Warm Springs Area would agree with objectives described in this plan/EIS and will comply with applicable state and federal laws. The cooperative agreement would also formally recognize the contributions by the Tribe to the history, culture, and ecology of Death Valley National Park and the surrounding area and could create a richer visitor experience through potential interactions with the Tribe.

## **REGULATORY FLOODPLAIN**

Following Director’s Order 77-2, this NPS action in a floodplain location, namely providing and/or supporting visitor services, is a Class I Action and subject to 100-year floodplain compliance. Additionally, in a flash flood prone area such as this, human presence constitutes a Class III action and requires an additional standard to ensure visitor and employee safety. To protect human life, the National Park Service is required to mitigate for human safety up to the level of an extreme event such as the probable maximum flood or the extreme flood.

## **JUSTIFICATION FOR USE OF THE FLOODPLAINS**

The Saline Valley Warm Springs Area is a popular destination where visitation is tied to the location of the springs. Under the preferred alternative, the Saline Valley Warm Springs Area would be retained in its current location. The warm springs at Saline Valley (the warm springs) are located in the arid Death Valley Wash drainage subbasin. Ephemeral streams that flow in response to moderate to heavy precipitation can produce widespread flash floods across the low-lying drainage basin. Therefore, the site



is very likely within a regulatory floodplain. The reasoning for retaining the site within a potential regulatory floodplain is as follows:

- The development at the Saline Valley Warm Springs Area was in place when the National Park Service took over management and ownership of Saline Valley.
- Due to the unique setting, relocating this recreational area elsewhere in the park is not possible.
- Under the preferred alternative, the impacts on the potential regulatory floodplain would be minimal with little to no change in the ability of the area to convey floodwaters or in the value and function of the area.

## **INVESTIGATION OF ALTERNATIVE SITES**

Because this multi-use recreational area is dependent upon the warm springs located in Saline Valley, it would be impossible to relocate the Saline Valley Warm Springs Area elsewhere in Death Valley National Park.

## **FLOOD CONDITIONS AT THE SALINE VALLEY WARM SPRINGS AREA**

At the time of the development of this plan/EIS, a full floodplain analysis of the Saline Valley Warm Springs Area had not been completed. However, based on existing conditions, it appears that the site is likely located within both the 100-year floodplain and the greater magnitude, extreme floodplain.

Under the present hydrologic and sediment regime, drainage patterns around the developed areas of the warm springs indicate that flood runoff is derived from three watersheds in the Saline Range to the north and northeast; the dominant drainage for the entire valley is located well to the southeast of the developed areas (figure G-2).

The source springs at the Lower Spring and Palm Spring are the areas where development is concentrated and therefore most visitors congregate. The source springs are crater-like in appearance and are surrounded by mineralized mounds that are resistant to erosion. The mounds are a result of aggradation, which is an increase in the land elevation from mineral precipitation. This is a result of the mineralized mounds being more resistant to erosion than the surrounding soil. The spring mounds have become high points in relation to the surrounding valley.

The Saline Valley Warm Springs Area is comprised of three distinct areas, the Lower Spring area, the Palm Spring area, and the Upper Spring area. The Lower Spring area (also known as Lower Spring) is the first area encountered if driving in from the west side of Saline Valley. Lower Spring is the most developed and includes the following features: Cool Pool, Sunrise Pool, Crystal Pool, Children's Play Tub, communal fire pit, library, shower, bathtub, sink for dishwashing, maintained lawn, settling pond, the camp host encampment, and two vault toilets. It is also the site of many of the communal activities that occur, such as group fires, communal dinners, and singing.

The Palm Spring area is the next area encountered, approximately one-half mile northeast from Lower Spring. There is much less vegetation in the vicinity of Palm Spring compared to Lower Spring, and unlike the Lower Spring, Palm Spring does not have a maintained lawn. Palm Spring consists of two soaking tubs that are fed by two source springs, the northern warm source spring and the southern warm source spring. Palm Spring also has a shower, dishwashing station, and one vault toilet.

Approximately 3 miles to the northeast of Palm Spring is the Upper Spring area. Upper Spring is undeveloped and enclosed by a metal chain-linked fence, initially installed to keep grazing cattle out of the Saline Valley Warm Springs Area but currently serves to exclude feral burros. Upper Spring is used by visitors but at a much lower frequency than Palm Spring and Lower Spring. There are no shower, dishwashing, or toilet facilities at Upper Spring.

The runoff to the north of Lower and Palm Springs is derived from the West Watershed that flows to the southwest out of the Saline Range then into the valley. This watershed has a contributing area of 8.1 square miles above the intersection of the drainage and Warm Springs Road (figure G-2). The drainage patterns indicate that the developed areas of Lower and Palm Springs have not been affected by recent flooding from the West Watershed. However, the Chicken Strip airstrip is within the watershed, and there is some evidence of flooding across the mid-southern portion of the airstrip.

The Middle Watershed flows to the southwest out of the Saline Range then into the valley and has a contributing area of 3.6 square miles (figure G-2). The watershed drains around the southeast of Palm Spring, and the drainage patterns indicate that the developed areas at Palm Spring have not been subjected to recent flooding. However, the expansion of the camping area has probably resulted in impromptu campsites being located within flood zones. The dominant drainage of the Middle Watershed continues along the southeast side of the spring deposits before it turns to the west towards Lower Spring. Drainage patterns and anecdotal evidence indicate that a significant amount of the developed area in Lower Spring is subject to flooding (figure G-3). As runoff enters Lower Spring, the focused channel flow spreads out around the highest parts of the spring mound. A small levee was built east of the Cool Pool at Lower Spring following a flood event in 2002. This feature diverts some of the southwesterly flow to the southeast. The energy of the runoff is further dissipated by the concentration of manmade features and vegetation surrounding Lower Spring, but below the developed area the flow becomes refocused in the drainage. There are numerous campsites that are subject to flooding below the developed area at Lower Spring. These campsites are rarely occupied during the summer when flooding is most likely. Higher ground can be found immediately to the southeast and northwest of the drainage.

The East Watershed is located above Upper Spring and has a contributing area of 2.1 square miles (figure G-2). The watershed flows south out of the Saline Range and then southwest down the valley. There is no indication that the elevated spring mound area has been subject to recent flooding.

## **ASSOCIATED FLOOD RISK**

The locations of watersheds were overlain with the proposed actions to determine potential impacts to human life and health, NPS investment, and natural/beneficial floodplain values. No construction or capital improvements would occur in the watersheds under the preferred alternative; therefore, there would be no potential impacts to NPS investment. Very limited development coupled with light visitor use would limit the potential impact to natural and beneficial floodplain values. Potential impacts under the preferred alternative would be to human health and safety of the visitors and employees at the Saline Valley Warm Springs Area, as flood events could occur while visitors are camping, resulting in risks to life and property.

## MITIGATION MEASURES

As described in the previous section, potential impacts during flood events would be to human health and safety on the visitors to the Saline Valley Warm Springs Area. When weather conditions present potential flooding, the following would occur:

- NPS staff would remain in direct contact with the camp host with the most current predicted conditions.
- The camp host would attempt to personally communicate with each camper to make visitors aware of the potential danger.
  - In all scenarios, the camp host would inform visitors of the locations of higher safe ground. At Lower Spring, higher safe ground is the bluff east of the developed area known as the art board or rock alignment area, and the higher safe ground at Palm Spring is the bluff southwest of the soaking tubs (figure G-3). These are large areas where visitors to the Saline Valley Warm Springs Area create artwork.
  - If flooding is imminent, campers would be requested to immediately move to the higher safe ground areas.
- If an impending flood emergency is identified, the camping areas on lower grounds would be closed to all visitors.
- The camp host would remain in contact with NPS staff to determine when the weather event was over and when campers could safely return to lower ground.

In addition to these steps, signage would be posted at the Saline Valley Warm Springs Area, depicting the higher safe ground areas and outlining the flood emergency plans. The signage would also document the potential for flooding on Warm Springs Road during rain events, as drainage patterns indicate that Warm Springs Road is subject to flooding above and below the Saline Valley Warm Springs Area. Visitors attempting to evacuate the area using Warm Springs Road are likely to encounter flooded roadways.

The camp host has the capacity to directly contact the Inyo County Sheriff's Office for emergencies, such as law enforcement, emergency medical, and search and rescue events. The art board at Lower Spring and the portion of Bat Rock Road approximately 1 mile west of the Saline Valley Warm Springs Area have limited cell coverage, and some users have success using portable cellular booster equipment. Additionally, the Saline Valley Warm Springs Area has technology in place to aid in the event of an emergency, including:

- NPS base station radio
- NPS vehicle radio
- NPS handheld Bendix King radio
- NPS satellite phone
- NPS Weather Station

## CONCLUSION

The National Park Service has determined that there are no alternate sites in Death Valley National Park for a recreational area equivalent to the Saline Valley Warm Springs Area due to the unique setting and

characteristics of Saline Valley. Under the preferred alternative, there would be no potential impacts to NPS investment, as no construction or capital improvements would occur in the watersheds. The preferred alternative would have no significant effects on natural or beneficial floodplain values.

The protection of visitors, volunteers, and park staff at the Saline Valley Warm Springs Area is a high priority to Death Valley National Park. Camping and other recreational activities would be allowed to continue at the Saline Valley Warm Springs Area, but the National Park Service would continue to make visitors aware of the potential for flooding in the area. With the help of signage and the camp host, visitors would be made aware of the locations of higher safe ground. The camp host would aid in communication with visitors of this remote area when rain events have the potential for safety concerns.

## REFERENCES

National Park Service (NPS)

2003 National Park Service Director's Order #77-2: *Floodplain Management*. September 2003.











