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PACIFIC WEST REGIONAL OFFICE Memorandum

L7617 (PWRO-PP)

29 JUN 2011

Memorandum

To: Superintendent, Death Valley National Park

From: Regional Director, Pacific West Region

Subject: Environmental Compliance for Devils Hole Monitoring Plan

The finalized *Finding of No Significant Impact* for long term ecosystem monitoring at Devils Hole is approved.

This program builds upon the Site Plan improvements which were approved by Acting Regional Director Westberg on March 5, 2010. Congratulations on the concerted efforts of your staff to bring this much anticipated stewardship effort to fruition.

Christine S. Lehnertz

Attachment

FINDING OF NO SIGNIFICANT IMPACT
DEVILS HOLE LONG TERM ECOSYSTEM MONITORING PLAN

Death Valley National Park

June 2011

INTRODUCTION

This Finding of No Significant Impact (FONSI) has been prepared for the Devils Hole Long Term Ecosystem Monitoring at Death Valley National Park, in accordance with the National Environmental Policy Act (NEPA). This document describes the selected alternative and provides an explanation of why it will have no significant effects on the human environment. As stated in the Devils Hole Long Term Ecosystem Monitoring Plan Environmental Assessment (EA), the proposed action includes expansion on the current monitoring program by increasing the number of abiotic and biotic parameters that will be measured. The proposed action would establish goals and objectives for long-term monitoring of Devils Hole and will consist of a series of SOPs that define how each abiotic and biotic parameter will be collected and or sampled. Each SOP will be open for critical review at regular time intervals to make sure each meets the objectives of the Long Term Ecosystem Monitoring Plan (LTEMP).

Devils Hole is a 40-acre site located on lands within the Ash Meadows National Wildlife Refuge (AMNWR) but managed as a detached unit of Death Valley National Park ("the Park"). At the heart of the site lies a cavepool (limnocrene), the collapsed top of a stretch fault leading to a flooded cave system, which contains the single remaining population of an endangered species, the Devils Hole pupfish (*Cyprinodon diabolis*). The Park manages the ongoing recovery actions for the species in collaboration with the U.S. Fish & Wildlife Service (USFWS) and Nevada Department of Wildlife (NDOW), and attempts to secure and enhance the remaining population while building public support for protection of the habitat features on which the species relies—in particular, maintaining the groundwater table at sufficiently high depth below ground to allow for normal feeding, breeding, and spawning activities of the fish.

PURPOSE AND NEED FOR FEDERAL ACTION

The purpose of this project is to increase the scientific rigor of ecosystem stewardship strategies and recovery recommendations for the Devils Hole pupfish through the accurate collection of pertinent data. Collection of data would meet the following objectives:

1. Describe spatial and temporal patterns of variation in diverse ecological parameters thought to influence fundamental physical and biological processes
2. Describe spatial and temporal patterns of variation in the abundance of resident taxa
3. Connect sporadic and intensive ecological research with a more continuous and sustained record of ecosystem conditions
4. Provide preliminary data for the development or refinement of research hypotheses
5. Provide early warning of regional or global threats to resident taxa or ecosystem function

6. Maintain a current and accurate understanding of ecosystem conditions to share with the public
7. Provide scientifically defendable and credible information to managers

It is believed that a more holistic commitment to scientific understanding is necessary to effectively steward the Devils Hole ecosystem and the resident endangered Devils Hole pupfish (*Cyprinodon diabolis*). Long-term monitoring will provide a more accurate and current understanding of complex ecological patterns and processes occurring in Devils Hole. The main purpose of the LTEMP is to increase the scientific rigor of ecosystem stewardship strategies and recovery recommendations of the Devils Hole pupfish while satisfying basic legal obligations.

Past management decisions have typically been driven by dramatic population declines of the Devils Hole pupfish. The first of these occurred in the late 1960's in response to a drawdown of the water table at Devils Hole by nearby groundwater production. This lead to the ruling of the United States Supreme Court in favor of the National Park Service (NPS) and in protection of their federally-reserved water right at Devils Hole (Cappaert v. United States 1976). In 1996 the population once again began a steady decline reaching as few as 38 individual adults by 2007. Unlike the population decline witnessed during the 1960s and 1970s the decline that started in the 1990s lacks a clear cause. Several hypotheses have been put forward as to the cause of this decline, but most of these hypotheses cannot be supported or refuted due to the lack of sufficient data.

The LTEMP is being developed in response to observed declines in abundance of the Devils Hole pupfish, as well as to the need for sufficient data to test ecosystem hypotheses. For over 30 years, records of adult pupfish abundance and water level have been kept. Recent efforts include preparation of a long-term monitoring plan for a suite of abiotic and biotic determinants (Blinn 2003) and a review of ecosystem monitoring approaches and priorities by a panel convened by the Pacific West Regional Directorate in March of 2007 (USGS 2007). Furthermore, a workshop was held at DVNP in September of 2007 to consider improved methods of data management for efforts at Devils Hole.

RANGE OF ALTERNATIVES CONSIDERED

Two alternatives were fully evaluated in the EA. These included the Proposed Action Alternative and the No Action Alternative. Under the No Action Alternative the monitoring program would remain the same and no new parameters would be measured to help answer possible changes to the Devils Hole ecosystem and possible causes of the decline in pupfish numbers. The No Action does not meet the objectives of the project but was analyzed as a "baseline" in accordance with NEPA requirements.

Selected Alternative

The selected actions expand on the current monitoring program by increasing the number of abiotic and biotic parameters that will be measured in order to implement a holistic approach necessary for understanding of ecosystem function and community state(s) of Devils Hole, and allows DVNP personnel and cooperating agencies to better manage and protect Devils Hole. The LTEMP establishes goals and objectives for long-term monitoring of Devils Hole and consists of a series of

standard operating procedures (SOPs) that defines how each abiotic and biotic parameter is collected and or sampled. Each SOP will be open for critical review at regular time intervals to make sure each meets the objectives of the LTEMP. The LTEMP consists of the following SOPs:

Water Quality (SOPI)
Water Temperature (SOPII)
Water Level and Depth (SOPIII)
Substrate Surveys (SOPIV)
Algae, Protozoa, and Invertebrates (SOPV)
Allochthonous Carbon (SOPVI)
Devils Hole Pupfish (SOPVII)
Equipment Use and Decontamination (SOPVIII)

SOPI: Water Quality

Parameters currently monitored include dissolved oxygen, pH, conductivity, and temperature. Two different YSI water quality data loggers collect data at continuously at 15 minute intervals. One is deployed over the southern portion of the shallow shelf, the second just above a shelf at 5 meters depth. Six data logging temperature probes are deployed over the shallow shelf. Data are collected at 15 minute intervals. Nutrients will be sampled from the water column over the shallow shelf and deep pool, and from the interstitial pore-water of the shallow shelf (to be taken every other month at each location). Nutrient samples from the water column are collected by placing sterile bottles under the surface of the water to remove air and completely fill the sampling bottle. Nutrient pore-water samples are collected by placing a hypodermic needle that is attached to a syringe into the substrate.

SOPII: Water Temperature

Temperature readings will be collected at 15-minute intervals the water quality data loggers as described under SOPI and from six small Hobo® temperature data loggers. The Hobo® data loggers are distributed equally over the shallow shelf at six locations.

SOPIII: Water Level and Depth

Water level and depth have been collected over the past three decades and are currently overseen by DVNP hydrologists and the Water Resources Branch of the NPS. Two smaller (35 mm ID) stilling wells each containing a transducer are used to monitor both water level and depth.

SOPIV: Substrate Surveys

Substrate surveys of the shallow shelf will be conducted annually or following a major disturbance (e.g. earthquakes and/or floods). Annual surveys are conducted in winter when algal production is lowest reducing disturbance to the ecosystem. Along each transect, 10 evenly spaced points are determined width-wise. At each of these points substrate size-class is determined and depth from substrate to water surface is noted. A total of 220 point measurements are taken. From this, percent composition of each size class is determined. Size classes include fine sand (< 1.0 mm), gravel (2-15 mm), pebble (16-60 mm), cobble (61-150 mm), and bedrock (>151 mm).

SOPV: Algae, Protozoa, and Invertebrates

Invertebrates are currently monitoring by sampling the benthic community on the shallow shelf Sixteen samples are collected every other month from randomly selected locations. A 10 cm OD by 70 cm length of flexible stove pipe is used to take each sample. This amounts to 0.01% of the shelf being sampled for each collection date. Methods used to monitor the benthic community are the same as described above. However, plankton, protozoa, meiofauna, neuston, and the flatworm *Dugesia* sp. will also be monitored.

Protozoa, more specifically Ciliates, will be sampled from the interstitial spaces of the shallow shelf. A needle attached to a syringe is slowly placed into the sediment to a depth of 5 cm and water is slowly drawn into the syringe and then placed into a sample bottle. Meiofauna are invertebrates that range in size from 50 to 500 µm. A 5 X 5 cm template will be placed on the shallow shelf at nine randomly selected locations. A siphon (turkey baster) is then used to extract material to a depth of 5 cm. The total surface area of one sample is 0.06 m^2. Nine samples would cover < 0.01% of the shallow shelf. Neuston is a habitat that is located at the water's surface. It consists of calcium carbonate ($CaCO_3$), algae, invertebrates, and detritus (terrestrial plant matter) that floats on the water surface. A 10 cm diameter screen will be used to collect eight neuston samples from over the shallow shelf. Each sample collects a surface area of 0.008 m^2, which would be < 0.01% of the water surface covering the shallow shelf. The nocturnal behavior of *Dugesia* requires monitoring to be conducted after dark. A 20 x 20 cm template will be randomly placed at 30 locations and the location and the number (abundance) of *Dugesia* will be recorded.

SOPVI: Allochthonous Carbon

Allochthonous carbon (terrestrial material falling into Devils Hole) has been shown to be an important energy source to the Devils Hole food web and the Devils Hole pupfish (Wilson and Blinn 2007), and will be monitor twice annually. Four large funnels (30 cm diameter) will be suspended over the water surface using rope. These funnels will be deployed for the month of February (winter energy) and August (summer energy).

SOPVII: Devils Hole Pupfish

Current monitoring of pupfish life history traits consists of biannual adult surveys, and twice monthly surveys for early life stages (fish larvae (i.e. fry)). Adult surveys require the use of SCUBA and are conducted in the spring and autumn. Early life stage surveys are conducted on the shallow shelf and use trays composed of 4.5 cm inner diameter PVC piping cut in half length-wise into 30 cm pieces. Surveys are conducted at night using 27 trays. These trays cover only approximately 9% of the surface area of the shallow shelf

SOPVIII: Equipment Use and Decontamination

Proper equipment use and decontamination protocols are essential to preclude invasion of exotic species into Devils Hole. A thorough SOPVIII procedure contains two main steps that will be used. Step one is a Cleaning and Chemical disinfection process. This step requires the physical cleaning of equipment and disinfection with Quaternary ammonium detergent disinfectant. Step two, physical disinfection contains three options. Option one is extended desiccation (drying) of equipment for a minimum of 14 days. Option two requires equipment to be frozen at or below -10°C (14°F). Equipment in the freezer must be maintained at or below -10°C overnight. If this can't be documented, this method will not be used. The third option is a superheated water bath

(maintained at or above 50°C (120°F)). Equipment in the superheated water bath must be maintained at or above this temperature for a minimum of one hour.

The SOP's listed above are intended to improve the quality and quantity of data collected at Devils Hole while minimizing impacts to the Devils Hole pupfish and other aquatic resources. The LTEMP contains two conceptual models that convey the current understanding of the Devils Hole ecosystem and pupfish life history. The fist model is an ecosystem model of Devils hole which shows major linkages between and among abiotic and biotic parameters, and the second is a stage-specific model of the Devils Hole pupfish population.

ALTERNATIVES CONSIDERED BUT DISMISSED

During public scoping for the Devils Hole Site Plan EA a comment was received that cameras should be used to count adult pupfish. Due to the habitat structure and movement of fish within the cavern system, cameras would not be feasible to count adult pupfish. For these reasons this method has been dismissed from consideration in this EA.

An alternative that would eliminate all monitoring at Devils Hole was also considered. However, given the status of the Devils Hole pupfish and the uncertainty surrounding factors that influence the population it was decided that eliminating monitoring would not be a reasonable alternative at this time. Additionally, eliminating monitoring would not meet the objectives of the GMP, which states long-term status of the Devils Hole pupfish would be monitored and that a long-term monitoring program would be developed for the entire biological community at Devils Hole (pp.30-31).

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the course of action which will best promote the national environmental policy expressed in NEPA (Section 101(b)). This environmental policy is stated in six goal statements, which include:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural, and natural aspects of our national heritage, and maintain wherever possible, an environment which supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (NEPA, 42 USC 4321-4347).

Based on the impact analysis, the Proposed Action is the environmentally preferred alternative. The No Action Alternative would realize a lower number of positive, long-term impacts because it provides less information for management decisions and ecosystem conditions. The Proposed

Action Alternative would realize greater positive impacts over the long-term because it would provide a more holistic ecosystem approach to gaining information for stewardship of Devils Hole by providing greater information for management decisions. This would best fulfill the objectives of criterion one and two, above.

The Proposed Action Alternative is also the Agency Preferred Alternative because it would best implement the objectives of the GMP which states that long-term status of the Devils Hole pupfish will be monitored and that a long-term monitoring program will be developed for the entire biological community at Devils Hole (pp.30-31). The Proposed Action would implement the direction of the GMP and meet the purpose and need described in the LTEMP EA.

DECISION RATIONALE

The Park's choice of the Proposed Action Alternative is based which alternative best would meet the Purpose and Need described above. The Action Alternative will realize greater positive impacts over the long-term because it will provide a more holistic ecosystem approach to gaining information for stewardship of Devils Hole by providing greater information for management decisions. This will best fulfill the objectives set forth in the Purpose and Need. The Proposed Action Alternative also best implements the objectives of the GMP which states that long-term status of the Devils Hole pupfish will be monitored and that a long-term monitoring program will be developed for the entire biological community at Devils Hole (pp.30-31). The Proposed Action would implement the direction of the GMP and meet the purpose and need described in this EA.

MITIGATION AND MINIMIZATION MEASURES

One of the most important mitigation measures for sampling in Devils Hole is following proper equipment use decontamination protocols (SOPVIII) to remove any chance for the invasion of exotic species into Devils Hole. The SOP's in the selected alternative were designed to avoid impacts to resources, and will increase the number of habitats and water quality parameters that are sampled and measured as compared to the current monitoring program. The following measures will be used to minimize impacts to Devils Hole pupfish:

- Proper equipment use and decontamination of sampling equipment will be done in accordance with SOPVIII.
- Whenever possible the dedicated Devils Hole gear and sampling equipment will be purchased.
- The instructions of each SOP will be followed explicitly.

WHY THE SELECTED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE QUALITY OF THE HUMAN ENVIRONMENT

Implementation of all the mitigations mentioned above is integral to successful completion of the project. The Park used the following NEPA criteria defined in 40 CFR §1508.27 to evaluate whether successfully implementing the project could have a significant impact on the environment.

Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts that require analysis in an EIS.
The selected alternative was specifically designed to benefit the Devils Hole resources, in particular the Devils Hole pupfish. As described in the EA, all adverse impacts that will result from implementation of the selected alternative are minor to moderate. There will be no major adverse impacts as a result of the selected alternative.

Degree of effect on Public health or Safety.
The selected alternative will have no impact on public health or safety.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
Devils Hole is an important spiritual resource for the Timbisha and Pahrump tribes. The selected alternative will increase the number of parameters measured at Devils Hole but will not install new equipment or limit access to the site for traditional cultural purposes.

Degree to which potential effects are likely to be highly controversial.
Through internal and public scoping no controversial effects of the selected alternative were identified.

Degree to which the potential effects are highly uncertain or involve unique or unknown risks.
The selected alternative consists of increasing the number of monitoring parameters and developing a monitoring plan for Devils Hole, both of which are routine activities for the NPS and do not involve any highly uncertain, unique or unknown risks.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
The selected alternative consists of increasing the number of monitoring parameters and developing a monitoring plan for Devils Hole, both of which are routine activities for the NPS. In addition, the NPS development of a long-term monitoring plan for Devils Hole was specifically called for in the GMP; therefore, the selected alternative does not constitute a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.
The EA considered the cumulative impacts of the selected alternative with several past, present, and foreseeable future projects, and determined that implementation would result in minimal and not collectively significant cumulative effects.

Degree to which districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources may be adversely affected.
Devils Hole is believed to fit the definition of a Traditional Cultural Property, owing to its historic connection with the Timbisha Shoshone and Pahrump Paiute tribes. Additionally, both groups have identified the Ash Meadows area as a Traditional Cultural Landscape, with Devils Hole as one landmark within that larger landscape. As such, the Park has undertaken consultations with these

tribes on the effects of the proposed action pursuant to Section 106 of the National Historic Preservation Act. The tribes are also allowed access to the property under The American Indian Religious Freedom Act of 1978.

Degree to which an endangered or threatened species or its critical habitat may adversely be affected
This federal action was proposed for the specific purpose of aiding the recovery of a federally listed species, the Devils Hole pupfish. The Biological Assessment prepared for this proposal, and accompanying the EA, indicated the Park's determinations for the Devils Hole pupfish are "may affect, likely to adversely affect". The U.S. Fish & Wildlife Service concurred in this conclusion in a letter dated 20 May 2011.

Whether the actions may violate Federal, state, or local environmental protection law.
Implementing the selected alternative does not violate any federal, state or local environmental protection laws.

PUBLIC INVOLVEMENT

Development of a long-term monitoring plan for Devils Hole is one of the management actions identified in the Death Valley GMP. Extensive scoping was completed during the planning process for the GMP, which was signed on September 27, 2001. Several comments on monitoring procedures at Devils hole were received during the scoping period for the Devils Hole Site Plan EA in August 2009. The general nature of these comments expressed concern about the impacts of monitoring activities on the Devils Hole pupfish. These comments were used to inform the selection of impact topics and the analysis for this EA.

The environmental assessment was made available to interested parties from October 26 through November 30, 2010. Copies of the EA were distributed to 39 agencies and individuals, and it was also made available at area public libraries and Park visitor contact stations to enhance the availability of the EA. The opportunity for public review was announced through issuance of a press release and mailing of a "dear friends" letter. Only one comment was received and it stated general support for the long-term monitoring plan.

AGENCY CONSULTATION

A Biological Assessment was prepared for the Proposed Action and submitted to the USFWS on 10 September 2010 to initiate formal consultation. The biological assessment looks at all monitoring activities at Devils Hole, including the existing monitoring program and the proposed new monitoring parameters described in the LTEMP EA. DVNP made the determination that the monitoring program at Devils Hole *may affect, likely to adversely affect* the Devils Hole pupfish and is now seeking a biological opinion from the USFWS. A biological opinion was received from the USFWS on 20 May 2011 and concurred with the NPS determinations. The USFWS determined the following about each SOP that may harass, harm or cause mortality to Devils Hole pupfish:

1. **Water Quality (SOPI)**: The risk of harming or killing eggs or larvae is low because the samples are scrutinized carefully by professional biologists. Experience indicates that the risk of this effect is low because it has not been observed.
2. **Water Temperature (SOPII)**: No impact to fish.
3. **Water Level and Depth (SOPIII)**: No impact to fish.
4. **Substrate Surveys (SOPIV)**: No impact to fish
5. **Algae, Protozoa, and Invertebrates (SOPV)**: Pupfish may be harassed, eggs and larvae may also be harmed or killed if they are removed from the environment when samples are collected. However, all samples are scanned visually before being removed from Devils Hole. The overall risk of this sampling is low.
6. **Allochthonous Carbon (SOPVI)**: No impact to fish.
7. **Devils Hole Pupfish (SOPVII)**: Pupfish may be harassed when humans approach the shelf, could be harmed or killed by crushing or rapid changes in water pressure during movement of equipment and swimming by SCUBA divers. Mitigation measures are in place to reduce this threat. Larval surveys could also result in take of larvae by being eaten by adults when trays are illuminated. To avoid this risk, care is taken to reduce illumination of trays when adults are present.
8. **Equipment Use and Decontamination (SOPVIII)**: No risks to Devils Hole pupfish were identified.

The Nevada Department of Wildlife (NDOW) administers state protected species programs. One state-listed species, the Townsend's big-eared bat (*Corynorhinus townsendii*) was identified as potentially occurring within the project area but no major impacts to the species were identified. NDOW, NPS and USFWS work closely on management of Devils Hole and development of the LTEMP. An electronic draft of the consultation package sent to the USFWS on 10 September 2010 was also sent to NDOW. No comments were received.

Devils Hole is a Traditional Cultural Property for the Pahrump Paiute and Timbisha Shoshone tribes. As such, DVNP initiated consultation with both tribes on 6 October 2010 as required by the National Historic Preservation Act. No comments were received from either tribe.

IMPAIRMENT DETERMINATION

In addition to dismissing the potential for significant impacts, the Park determined that implementation of the selected alternative and associated mitigation measures will not constitute an impairment of Death Valley National Park's resources and values. There would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes in the park's establishing legislation; (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park; or (3) identified as a goal in the Park's general management plan or other relevant NPS planning documents. This conclusion is based on a thorough analysis of the foreseeable environmental consequences described in the Devils Hole Site Plan EA, the accompanying Biological Assessment, the mitigation and minimization measures, agency consultations, considerations of relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in NPS Management Policies 2006.

CONCLUSION

Based upon the conservation planning and environmental impact analysis completed as documented in the EA, the capability of mitigation measures to avoid, eliminate, or reduce potential impacts, and with due consideration for the minimal public comment as well as the agency coordination undertaken, the Park has determined that the Selected Alternative is not a major federal action which will have a significant effect on the quality of the human environment. Negative environmental impacts that could occur are generally negligible or minor in intensity, and temporary. There are no significant impacts on public health, public safety, threatened or endangered species, cultural resources, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or unacceptable environmental impacts were identified. Implementation of the selected actions will not result in impairment of park values. Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared. Implementation of the Selected Alternative will begin as soon as practicable.

Recommended: _____ 6/14/2011

Superintendent Date

Approved: _____ 6/23/11

Regional Director, Pacific West Region Date