

**Errata
for
Devils Hole Site Plan Environmental Assessment**

The Devils Hole Site Plan Environmental Assessment (EA) was distributed for public review from June 12 – August 12, 2009. The original EA, together with the FONSI (including mitigation, minimization, and avoidance activities) comprise the full and complete record of the environmental impact analysis/conservation planning for this project.

The corrections to the EA as documented in this Errata do not change the project activities or increase the degree of impact described in the EA. Changes to the text and justification are provided below. Following the Errata is a summary of responses to comments received.

CHANGES TO THE TEXT

Existing text to remain is in *italics*, additions to the text are underlined, and deleted text is shown in ~~strikethrough~~.

Page ii, last paragraph

Alternative A will have minor short-term adverse impacts on soil and water resources due to construction of the new fence, enclosing the visitors platform and removing the fencing below, creating an enclosed access trail, installation of the ships ladder, and creation of a sectional portable monitoring platform. It ~~should~~ will have beneficial ~~long-term moderate impacts~~ effects to surface and ground water flow due to the partial restoration of natural flows from extension of the fence further towards the natural drainage, which will restore natural sediment and nutrient flows into Devils Hole.

Page iii, last paragraph

Alternative B would have minor short-term adverse impacts on soil and surface water resources due to construction of the new fence, erection of permanent handrails down the cliffside, building the railed access trail, and removal of fencing under the visitors platform. It ~~should~~ will have beneficial effects to surface and groundwater flow due to the restoration of natural flows from extension of the fence to encompass the natural drainage, which will restore natural sediment and nutrient flows into Devils Hole.

Page 13 – 14, Land Use

The proposed project would not change the land use of the Devils Hole site. It will still be dedicated to the recovery of the pupfish, and to visitor interpretation of the site. ~~If the No Action alternative were chosen, and site security continued to degrade over time, it could possibly result in further degradation and perhaps elimination of the pupfish. If this scenario were to unfold to its conclusion and the pupfish were eliminated from Devils Hole, the federal water right could be overturned by the appeals of private interests. This in turn could lead to additional groundwater~~

~~pumping by developers in the Amargosa Valley, in pursuit of further development in the region. Ultimately, the pace of development in the Valley would quicken, hastening land use changes. However, this chain of events, if it ever began to unfold, would do so over decades and would be heavily litigated. At this point, it is purely speculative. Therefore, land use was dismissed from further analysis in this EA.~~

Page 32, last bullet point under Soil & Water Resource Best Management Practices

~~Under all circumstances, sediment runoff from the site should be captured and prevented from entering any nearby surface or groundwater;~~

Pages 37 – 40, Table 2.2

Table 2-2. Impact Comparison of Alternatives

Impact Topic	No Action Alternative	Alternative A	Alternative B
Soils	<i>Adverse, long-term, minor, and medium-ranged impacts to soils from continued risk of erosion and disturbance due to visitor use and <u>current monitoring access solution</u>.</i>	<i>Adverse, short-term, minor, and medium-ranged impacts to soils due to construction activities. Beneficial, long-term, minor and medium-ranged impacts to soils due to the addition of new fencing, enclosed visitors trail and <u>improved monitoring access solution</u>. Negligible cumulative impacts to soils.</i>	<i>Adverse, short-term, minor, and medium-ranged impacts to soils due to construction activities; more intensive than Alt A (more fencing and more disruption from monitoring platform). Beneficial, long-term, minor and medium ranged impacts to soils due to the addition of new fencing, enclosed visitors trail and <u>improved monitoring access solution</u>. Negligible cumulative impacts to soils.</i>
Water Resources	<i>Adverse, short-term, minor, and localized impacts to Devils Hole from <u>placement of access ladder</u>; adverse, long-term, minor and localized impacts to Devils Hole from potential erosion due to visitor use and fence line location.</i>	<i>Adverse, short-term, minor, and medium-ranged impacts to surface water due to construction activities. Beneficial, long-term, minor and medium-ranged impacts to surface water due to limited restoration of natural surface water flow, removal of monitoring infrastructure, and protection of site from vandalism. Negligible cumulative impacts to surface water resources.</i>	<i>Adverse, short-term, minor, and medium-ranged impacts to surface water due to construction activities. Higher risk than Alt A of rock deposition from monitoring platform installation. Beneficial, long-term, moderate and medium-ranged impacts to both surface water and groundwater due to a <u>fuller more complete restoration of natural surface water flow, and protection of site from vandalism</u>. Potentially adverse, moderate, long-term, and project area-wide cumulative impacts to surface and groundwater from proposed water projects. Negligible cumulative impacts to surface water resources</i>

Impact Topic	No Action Alternative	Alternative A	Alternative B
Vegetation	<i>Adverse, long-term, negligible and localized impacts to vegetation from access to cavern. Potentially adverse, long-term, negligible and localized, cumulative impacts from proposed transportation upgrades in the adjacent AMNWR.</i>	<i>Adverse, long-term, minor and localized, impacts on vegetation from the installation of new facilities. Beneficial, long-term, minor and localized impacts from habitat restoration, improved access to the cavern for researchers, and limitation of access to improved trails. Potentially adverse, long-term but negligible and localized cumulative impacts from proposed transportation upgrades in the adjacent AMNWR.</i>	<i>Adverse, long-term, minor and localized, impacts on vegetation from the installation of new facilities. Beneficial, long-term, minor and localized impacts from replanting of native species, habitat restoration, improved access to the cavern for researchers, and limitation of access to supervised tours. Potentially adverse, long-term, negligible and localized, cumulative impacts from proposed transportation upgrades in the adjacent AMNWR.</i>
Wildlife	<i>Adverse, short-term, negligible and localized impacts to wildlife from vehicles using the roadway, visitation, and monitoring of conditions in the cavern. Potentially adverse, long-term, negligible and localized cumulative impacts from proposed transportation upgrades in the adjacent AMNWR.</i>	<i>Adverse, short-term and long-term, negligible and localized impacts to wildlife from temporary displacement during construction activities and the permanent exclusion of large terrestrial wildlife species from the fenced area. Potentially adverse, short-term, negligible and localized cumulative impacts from vehicles using the roadway, visitation, monitoring activities, and proposed transportation upgrades in the adjacent AMNWR.</i>	<i>Adverse, short-term and long-term, negligible and localized impacts to wildlife from temporary displacement during construction activities and the permanent exclusion of large terrestrial wildlife species from the fenced area. Potentially adverse, short-term, negligible and localized cumulative impacts from vehicles using the roadway, visitation, monitoring activities, and proposed transportation upgrades in the adjacent AMNWR.</i>

Impact Topic	No Action Alternative	Alternative A	Alternative B
<i>Threatened and Endangered Species</i>	<i>Adverse, long-term, major and localized impacts to the Devils Hole pupfish due to habitat alterations caused by the existing fence, <u>existing monitoring infrastructure, and existing vulnerabilities to vandalism.</u> Potentially adverse, long-term, major and localized cumulative impacts to the Devils Hole pupfish from past groundwater pumping, monitoring activities, and proposed future water projects, from water level declines associated with ongoing and past groundwater uses.</i>	<i>Beneficial, long-term, moderate and localized impacts to the Devils Hole pupfish from replacement of the existing fence to restore natural sediment flow into Devils Hole, <u>from removal of existing monitoring infrastructure, from installation of a low-profile monitoring access platform, and from protection of site from vandalism.</u> Potentially adverse, long-term, major and localized cumulative impacts to the Devils Hole pupfish from past groundwater pumping, monitoring activities, and proposed future water projects, from water level declines associated with ongoing and past groundwater uses.</i>	<i>Beneficial, long-term, moderate and localized impacts to the Devils Hole pupfish from replacement of the existing fence to restore natural sediment flow into Devils Hole <u>and from and from protection of site from vandalism.</u> Potentially adverse, long-term, major and localized cumulative impacts to the Devils Hole pupfish from past groundwater pumping, monitoring activities, and proposed future water projects, from water level declines associated with ongoing and past groundwater uses.</i>
<i>Visitor Use and Experience</i>	<i>Adverse, major, long-term impacts from site degradation.</i>	<i>Both adverse and beneficial, minor, and long-term. While visitors might perceive the enclosed tunnel and platform negatively, the interpretive experience itself will be enhanced by the addition of improved interpretive material, complemented by the offsite exhibits and web site.</i>	<i>Beneficial, moderate, and long-term impacts. Interpretive experience will be enhanced by tours and improved interpretive material. The offsite interpretive exhibits web site will further enhance the overall visitor experience.</i>
<i>Park Operations</i>	<i>Adverse, moderate, long-term impacts from security failures and safety risks.</i>	<i>Beneficial, moderate, and long term, from increased researcher safety and improved deterrence of vandals. No cumulative impacts.</i>	<i>Beneficial, major, and long term from further improvements in researcher safety and site security. No cumulative impacts.</i>

Impact Topic	No Action Alternative	Alternative A	Alternative B
Cultural Resources	<i>Adverse, major, long-term impacts from continued degradation of the habitat conditions that sustain the basis of its cultural value.</i>	<i>Minor, beneficial, long-term effect from protection of the water resource; Visual impact of fence enclosure could be perceived to be major. The improvements will have minor beneficial impact by increasing public awareness of the unique and fragile nature of the site and the importance of its preservation.</i>	<i>Minor, beneficial, long-term effect from protection of the water resource; Impossible to analyze impact of supervised tour restrictions specifically without further knowledge of affected tribes' actual use. Visual impact of fence enclosure could be perceived to be major. The improvements will have minor beneficial impact by increasing public awareness of the unique and fragile nature of the site and the importance of its preservation.</i>

Page 43, 3rd paragraph:

Over the past several decades, water level fluctuations within Devils Hole and nearby wells have been linked primarily to pumping in the vicinity of Devils Hole, and secondarily to earthquake activity and possibly climate change. Between the 60s and the late 1970s, water levels within Devils Hole declined; this was during a period of active groundwater withdrawal in the region. Throughout the 1980s, water levels in these same wells rose, until the late 1980s when water levels declined through 1997. This is linked to the curtailment of pumping in the vicinity of Devils Hole. Water levels rose between 1998 and 1999, ~~due to~~ presumably foretelling a significant earthquake in 1999. Following this earthquake, water levels began to decline and continued to do so through 2005. In addition to responding to groundwater pumping activities, further analysis of this data by comparison to other wells indicates that natural processes other than recharge rates – most likely earthquakes and fluctuations in climate – impacted water levels within this region (USGS, 2002; Back, 2008). The average daily water level at Devils Hole has risen approximately 0.23 feet since 2005. USGS researchers have noted a similar response in other carbonate wells within the regional Death Valley flow system. The response at Devils Hole may be related to a number of possible factors, including the cessation of up-gradient pumping, a significantly wet year in 2005, or other unknown factors (Jennifer Back, National Park Service, personal communication).

Page 44, 2nd full paragraph

While Devils Hole is the predominant surface water feature in the area, there are numerous springs, seeps, and wetlands in the surrounding area (USFWS, No date; NPS, 2002). ~~These features are most likely all hydrologically connected, however due to the heterogeneity of the geology here,~~ While these features all likely originate from a common groundwater source, due to the heterogeneity of the geology here, it is difficult to determine the exact connections. Approximately 5 miles to the northwest of Devils Hole is Carson Slough which drains from a marshy region formed by Fairbanks Spring. Directly to the southeast of the site are a series of springs including Point of Rocks Spring, King Spring, Jack Rabbit Spring and Big Spring (USGS, 1993). These springs discharge an average of 17,000 acre-feet/year of water (USGS, No date).

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Following these actions, the pupfish survey stabilized at an average of 324 individuals and reached a high of 582 individuals in a September 1994 survey (Riggs and Deacon, 2002). From 1995 to 2004 the population survey declined to an average of less than 225 individuals (Riggs and Deacon, 2002). Then, in 2004, the population dropped dramatically following an incident where one third of the existing population was accidentally killed when traps used to monitor the fish were washed into Devils Hole by a flash flood (Florida Museum of Natural History, 2006). By April of 2006 the population survey had fallen to a low of 38 individuals. Fall pupfish surveys in 2006 and 2007 recorded 85 and 92 fish respectively (NDOW, 2008).

Following these actions, pupfish numbers rebounded, with surveys frequently exceeding 200 fish in the spring and 500 fish in the fall by 1978. During 1995, another population decline began, though this time there was no clear cause. Perhaps exacerbating this ongoing decline, in 2004 the population dropped dramatically following an incident where one third of the existing population was accidentally killed when traps used to monitor the fish were washed into Devils Hole by a flash flood. From then, the survey continued to decline, eventually falling below 40 fish in the spring of 2006. More recently, numbers have been slowly increasing, with an average of 70 fish counted on back-to-back mornings in April of 2009 (NPS, unpublished data).

Though the cause of the most recent decline of the Devils Hole pupfish decline remains unknown, a number of ~~hypotheses~~ theories have been promoted ~~that could singly or cumulatively be responsible.~~ Factors could include inbreeding depression (Wilcox 2001), declining solar radiation or allochthonous nutrients (Wilson and Blinn 2007), shifts in algal community state (Riggs and Deacon 2005), changes in sediment dynamics (Lyons 2005; Riggs and Deacon 2005), loss of a key prey species (i.e., an ostracode) from the primary feeding habitat (Herbst and Blinn 2003), continuing water level declines (Riggs and Deacon 2005; Deacon et al. 2007), and increasing water temperature due to global warming and/or declining water levels (Threlloff and Manning 2003).

Pages 59 – 60, Water-Related Projects

Water-Related Projects

- *The Southern Nevada Water Authority (consisting of all of the water agencies in the Las Vegas metro area) has proposed to develop approximately 8,000 acre-feet of ground water per year from an area north and northwest of Las Vegas (Tikapoo and Three-Lakes Valleys, immediately east of Creech Air Field, along the Highway 95 corridor). The location would like be roughly 35 to 45 miles east and slightly north from Devils Hole, depending on specific points of diversion. The uncertainties in timing and location of development, and in timing and magnitude of impact on Devils Hole make the project impact very difficult to evaluate. The time frame in which this drawdown would likely occur is 100 to 400 years in the future. The Nevada State Engineer ruled on these water right applications several years ago. However, SNWA has chosen to put the project on hold and there is no definitive timeline when it may be re-activated (Fisk, 2008b).*
- In July of 2007, the Nevada State Engineer ruled that committed groundwater rights, including existing domestic wells, exceeded the perennial yield of the Amargosa Desert Hydrographic Basin by 38,000 af. In November of 2008, the Nevada State Engineer issued Order 1197, which curtailed, with several exceptions, "...any applications to appropriate additional underground water and any application to change the point of diversion of an existing ground-water right to a point of diversion closer to Devils Hole, described as being within a 25 mile radius from Devils Hole within the Amargosa Desert Hydrographic Basin...". As a result of this Order, in the context of this analysis further cumulative drawdown of the water level at Devils Hole resulting from issuance of additional groundwater rights in the Amargosa Desert Hydrographic Basin has been discounted.
- Under Nevada water law, a domestic well may use up to 1,800 gallons of water per day without the need for a water right permit. Although additional water rights have been curtailed by the aforementioned Order 1197, additional domestic water wells in the Amargosa Desert Hydrographic Basin could contribute to the existing imbalance between committed resources and perennial yield, potentially affecting the water level at Devils Hole. The Nevada State Engineer in ruling 5750 found that the number of additional domestic wells could be substantial, given the amount of land available for disposal in the Amargosa Desert by the Bureau of Land Management.
- ~~The State of Nevada is considering a water rights petition heard in September 2007 involving changes in points of diversion for irrigation pumping in the Amargosa Valley. If those change applications are granted (over NPS protest), Devils Hole water levels could be affected. Again, there is insufficient information available to project how much the affect may be and when it may occur.~~
- ~~The Las Vegas metro and the Amargosa Desert and surrounding communities are desirable areas for further development, and many projects are proposed outside of the Amargosa Desert Hydrographic Basin for which the State of Nevada could issue water rights, potentially affecting the water level at Devils Hole. For example, a private company is planning a solar array near Crystal, NV, about 8 miles from Devils Hole, which would involve groundwater pumping in the Amargosa Valley. In addition, as many as 9 projects using concentrated solar power are being proposed within about 20 miles of Devils Hole. The Park Service has the right to challenge any award of water rights that it can demonstrate would threaten the federal reserved water right for Devils Hole. No other specific actions are~~

~~known at the present time, but the development pressures will undoubtedly continue in the region overall. No specific applications are known at the present time, but development pressures will undoubtedly continue in the region overall. The Park Service has the right to challenge any award of water rights that threaten the federal reserved water right for Devils Hole.~~

Page 71, 1st full paragraph

~~There have been major, direct and indirect adverse cumulative impacts to the water level in Devils Hole from past groundwater pumping activities. Given the existing imbalance between committed groundwater resources and perennial yield, current and anticipated groundwater uses within the Amargosa Desert Hydrographic Basin described in the cumulative impact scenario have Each of the proposed water related development projects described in the cumulative scenario has the potential to change groundwater levels and flow rates within the regional aquifer that includes Devils Hole. Lower groundwater levels within the regional karst aquifers could lead to changes in water chemistry. A lower water level at Devils Hole could lead to changes in surface water quality. These changes may include an increase in the dissolution of calcium carbonate as less water travels through the same aquifer conduits. Water temperature in Devils Hole would have the potential to may increase with a decline in water levels. Sunlight would reach further into the water column and the location of the photic zone would shift as water levels declined over time. General regional groundwater withdraw also would have the potential to impact levels of some of the springs within the vicinity of AMNWR. The specific interaction of proposed groundwater use activities and groundwater level and quality in Devils Hole is difficult to quantify within the scope of this EA. Any groundwater pumping within the approximately 22,000 acre preserved area surrounding the Hole is most likely to impact groundwater within Devils Hole. But this is unlikely to occur. Each of these proposed projects would occur outside of this protection groundwater region; however, given the unknown hydrogeologic connections in this region, changes in water level in Devils Hole could occur.~~

Refuge planning projects as they are currently described in the cumulative scenario are not likely to impact surface ~~or groundwater~~ waters in or around Devils Hole; when more detailed information and planning has been completed a more accurate assessment of the potential impacts can be made. With no construction activities, changes in drainage, or water levels occurring as part of the No Action Alternative, the implementation of this alternative is not likely to contribute to the overall cumulative impacts on water resources within the vicinity of Devils Hole.

In addition, the likelihood of increases in global temperature that have been predicted over the next century could increase the water temperature of the pool (IPCC, 2008). ~~Any increase in~~ water temperature could adversely impact the pupfish, given the evidence that the pupfish may already be existing at the upper edge of the temperature range for sustainable spawning and recruitment (Shrode and Gerkin, 1997).

Page 75, 1st full paragraph

~~Declining water levels resulting from groundwater pumping in Ash Meadows during the late~~

1960's and early 1970's dramatically lowered water levels in Devils Hole. Water levels recovered once ground water pumping ceased, but since the late 1980's water levels have again steadily declined. The principal threat to the Devils Hole pupfish is water loss. The continued survival of Devils Hole pupfish relies on the availability of shallow water on the upper shelf where pupfish spawn and where the bulk of the primary productivity that supports the aquatic community occurs.

Given the existing imbalance between committed groundwater resources and perennial yield, current and anticipated groundwater uses within the Amargosa Desert Hydrographic Basin described in the cumulative impact scenario have the potential to change groundwater levels and flow rates within the regional aquifer that includes Devils Hole. As one of the primary threats for which the Devils Hole pupfish was listed as an Endangered species, declining water levels at Devils Hole threaten the suitability of the population's single spawning and feeding habitat.

On September 11, 2004 eighty pupfish, one third of the population, were accidentally killed in an incident when traps used to monitor the fish were washed into Devils Hole by a flash flood.

A number of water related projects that could impact future water levels in Devils Hole are in the planning process.

- The Southern Nevada Water Authority (SNWA) has proposed to develop approximately 8,000 acre-feet of ground water per year from an area north and northwest of Las Vegas. The location would be approximately 35 to 45 miles east and north of Devils Hole. The Nevada State Engineer ruled on these water right applications several years ago, however, SNWA has chosen to put the project on hold and there is no definitive timeline when it may be re-activated.
- The State of Nevada is considering a water rights petition heard in September 2007 involving changes in points of diversion for irrigation pumping in the Amargosa Valley. If those change applications are granted, Devils Hole water levels could be affected.
- The Las Vegas metro and the Amargosa Desert are desirable areas for further development, and many projects are proposed for which the State of Nevada could issue water rights. For example, a private company is planning a solar array near Crystal, NV, over 50 miles from Devils Hole, which would involve groundwater pumping in the Amargosa Valley. The Park Service has the right to challenge any award of water rights that it can demonstrate would threaten the federal reserved water right for Devils Hole.

Page 99—2nd paragraph under Cumulative Impacts

Declining water levels resulting from groundwater pumping in Ash Meadows during the late 1960's and early 1970's dramatically lowered water levels in Devils Hole. Water levels recovered once ground water pumping ceased, but since the late 1980's water levels have again steadily declined. The principal threat to the Devils Hole pupfish is water loss. The continued survival of Devils Hole pupfish relies on the availability of shallow water on the upper shelf where pupfish spawn and where the bulk of the primary productivity that supports the aquatic community occurs.

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- The Las Vegas metro and the Amargosa Desert are desirable areas for further development, and many projects are proposed for which the State of Nevada could issue water rights. For example, a private company is planning a solar array near Crystal, NV, over 50 miles from Devils Hole, which would involve groundwater pumping in the Amargosa Valley. The Park Service has the right to challenge any award of water rights that it can demonstrate would threaten the federal reserved water right for Devils Hole.

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Declining water levels resulting from groundwater pumping in Ash Meadows during the late 1960's and early 1970's dramatically lowered water levels in Devils Hole. Water levels recovered once ground water pumping ceased, but since the late 1980's water levels have again steadily declined. The principal threat to the Devils Hole pupfish is water loss. The continued survival of Devils Hole pupfish relies on the availability of shallow water on the upper shelf where pupfish spawn and where the bulk of the primary productivity that supports the aquatic community occurs.

Given the existing imbalance between committed groundwater resources and perennial yield, current and anticipated groundwater uses within the Amargosa Desert Hydrographic Basin described in the cumulative impact scenario have the potential to change groundwater levels and flow rates within the regional aquifer that includes Devils Hole. As one of the primary threats for which the Devils Hole pupfish was listed as an Endangered species, declining water levels at Devils Hole threaten the suitability of the population's single spawning and feeding habitat.

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~~•The Las Vegas metro and the Amargosa Desert are desirable areas for further development, and many projects are proposed for which the State of Nevada could issue water rights. For example, a private company is planning a solar array near Crystal, NV, over 50 miles from Devils Hole, which would involve groundwater pumping in the Amargosa Valley. The Park Service has the right to challenge any award of water rights that it can demonstrate would threaten the federal reserved water right for Devils Hole.~~

**Concern Response Report
for
Devils Hole Site Plan Environmental Assessment**

AE1100 - Affected Environment: Water Resources

Concern ID: 21791

CONCERN STATEMENT: 4. In Section 3.2.1 (Groundwater & Hydrogeology), pp. 43, third paragraph, a description of water level fluctuations in Devils Hole is presented.

Comment: Some of the information is presented is not correct, and some of the information presented is stale.

a. The text states that "Water levels rose between 1998 and 1999, due to a significant earthquake in 1999. Following this earthquake, water levels began to decline and continued to do so through 2005 ". - Actually, water levels rose from January 1999 through October 16, 1999 and then abruptly dropped. While it is possible that this observed rise may be due, in part to the build up of stress prior to the Hector Mine Earthquake on October 16, 1999, such a relationship has not been established. The Hector Mine Earthquake resulted in a rapid decline of ~0.1 ft in the stage of Devils Hole. The water level held steady after the earthquake until mid-2001, and declined during late 2001 and early 2002. The water levels then remained steady until mid 2004 when the water level began to decline again reaching a level in late 2004 that was the lowest stage in Devils Hole since the early 1980s. Water levels in Devils Hole then began to rise and have been steadily rising for at least the last four years. By December 2008, the water level in Devils Hole had risen to its highest levels since 1993. The text should be corrected accordingly, and should be based upon the most recent information available, i.e., at least through the end of 2008.

b. The water level decline between the 1960s and 1970s was due to localized water withdrawals in the immediate vicinity of Devils Hole, not regional pumping, as stated. The text should be corrected accordingly.

c. The curtailment of pumping was done on a very localized basis not in the region as a whole, as stated. Pumping was only curtailed at the Spring Meadows Ranch wells in the Ash Meadows area close to Devils Hole. The text should be corrected accordingly.

Response: We have updated the text accordingly.

Concern ID: 21792

CONCERN STATEMENT: 5. Section 3.2.2 (Surface Water) states that the numerous springs, seeps, and wetlands surrounding Devils Hole are "most likely all hydrologically connected".

Comment: In their seminal report on their extensive aquifer testing program in Ash Meadows, Dudley and Larson (1976, Effect of Irrigation Pumping on Desert Pupfish Habitats in Ash Meadows, Nye County, Nevada, U.S. Geological Survey Professional Paper 927), found a high degree of compartmentalization of the carbonate aquifer system in the vicinity of Devils Hole. These workers identified five individual compartments, which they referred to as pumping units (see their Figure 17). Pumping within an individual compartment was found to impact water levels and spring discharge rates within that compartment and in some cases, within an adjacent compartment, while no impact was observed in other compartments. The statement that the springs, seeps, and wetlands are most likely all hydrologically connected is not supported should be deleted from the draft EA.

Response: While we understand that the springs of Ash Meadows most likely originate from a common groundwater source, we recognize that the hydraulic connectivity among area springs is complex. As such, we have revised the subject text.

AE1200 - Affected Environment: Threatened and Endangered Species

Concern ID: 21794
CONCERN STATEMENT: The draft EA should be revised to accurately reflect the more recent fish counts and population trends.
Response: The text of section 3.5 was updated to include the most recent pupfish survey results.

AL3000 - Alternatives: Envir. Preferred Alt./NEPA § .101&102

Concern ID: 21790
CONCERN STATEMENT: 3. In Section 2.4 (pp. 20-31) the natural and human impacts of each project component are compared. For the fence line component and the visitor's platform, access and interpretation component, Alternative B is environmentally preferred.

Response: Comment: The fence line and visitor platform, access and interpretation components in Alternative B should be incorporated into the preferred action, as they are environmentally preferred.
We believe that when considered collectively, the components represented by Alternative A best meet the purpose and need of the project. While we acknowledge that the fenceline and visitor access solution described in Alternative B could in some ways be interpreted as environmentally preferred, in other ways they would require greater construction disturbance and may limit the Park's ability to interpret the important legacy of Devils Hole for the public.

AL4000 - Alternatives: New Alternatives Or Elements

Concern ID: 21781
CONCERN STATEMENT: We recommend that the NPS consider having regularly scheduled trips to Devils Hole for visitors during the spring when many visitors come to Death Valley National Park. Although the idea of "guided tours" only appears in Alternative B and we support having a viewing platform for "casual visitors", we also believe that the experience of visiting Devils Hole with an informed guide is necessary for understanding the complexities of this oasis in the desert which encompasses all of Ash Meadows and its springs and pools and unique sh and habitats.

Representative Quote(s): **Corr. ID:** 6 **Organization:** Sierra Club, Toiyabe Chapter
Comment ID: 108408 **Organization Type:** Conservation/Preservation
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platform for "casual visitors", we also believe that the experience of visiting Devils Hole with an informed guide is necessary for understanding the complexities of this oasis in the desert which encompasses all of Ash Meadows and its springs and pools and unique shrub and habitats.

Response: We agree that guided tours would improve the visitor experience considerably. We will work to add tours to our site interpretation approach.

CC1000 - Consultation and Coordination: General Comments

Concern ID: 21783

CONCERN STATEMENT: I have read through the Plan. I think it is extremely well done and I concur that Alternative A is the best way to proceed. Please continue to consult with the affected native American people in the planning and implementation of the project.

Response: We will continue to consult with the Timbisha Shoshone and Pahrump Paiute Tribes on this and other projects in Death Valley National Park.

Concern ID: 21784

CONCERN STATEMENT: The EA says that "[i]mpacts on the endangered pupfish from the enhancement of natural flows and habitat restoration should be beneficial, long-term and ... major." Although we recognize that there remains uncertainty when dealing with such a specialized habitat and shrub, we support the proposed expansion of the boundary fence and the restoration of overland flows into Devils Hole to bring in "natural sediment and nutrient[s]" as proposed in

Response: Alt A. We strongly encourage the NPS to consult with Dr. James Deacon on maximizing the benefits and minimizing the risk of these improvements on the Devils Hole pupfish. We will continue to consult with Dr. James Deacon and other noted experts on management of Devils Hole and the Devils Hole pupfish.

MT1000 - Miscellaneous Topics: General Comments

Concern ID: 21788

CONCERN STATEMENT: Very thorough assessment. Alternative A clearly the best of the three alternatives and well supported by the evidence presented. Had the "ships ladder" been in place in 2004, the larval traps would probably not have been stored at Devils Hole. This improvement to access and safety is far superior to Alternative B. The simple design of the monitoring platform in Alternative A should be very effective and along with the removal of the stilling well and platform will have important long-term benefits to the environment within Devils Hole. The perimeter fence flood gate should be monitored carefully, particularly after storms, and maintained to make sure it is functioning properly.

Response: We will work to ensure that the perimeter fence flood gate is properly monitored and maintained.

Concern ID: 21789

CONCERN STATEMENT: 2. Section 1.9.1 lists and briefly discussed the impact topics analyzed the EA. Each of these topics warrants analysis. Section 1.9.2 lists impact topics dismissed from further consideration including 14 individual topics. On pp. 13-14 under the category of Land Use, the EA states:

"The proposed project would not change the land use of the Devils Hole site. It will still be dedicated to the recovery of the pupfish, and to visitor interpretation of the site. If the No Action alternative were chosen, and site security continued to degrade over time, it could possibly result in further degradation and perhaps elimination of the pupfish. If this scenario were to unfold to its conclusion and the pupfish were eliminated from Devils Hole, the federal water right could be overturned by the appeals of private interests. This in turn could lead to additional groundwater pumping by developers in the Amargosa Valley, in pursuit of further development in the region. Ultimately, the pace of development in the Valley would quicken, hastening land use changes. However, this chain of events, if it ever began to unfold, would do so over decades and would be heavily litigated. At this point, it is purely speculative. Therefore, land use was dismissed from further analysis in this EA."

Comment: Many of these statements are incorrect and should be deleted. The Amargosa Desert hydrographic basin is fully appropriated and there would be no additional pumping by developers in the community of Amargosa Valley. The Devils Hole component of Death Valley National Park is surrounded by the Ash Meadows National Wildlife Refuge which provides a buffer between Devils Hole and any future changes in land use in the private lands in the basin. Speculative forecasts that threaten future litigation have no place in an EA, or even a draft EA. The third sentence through eighth sentence of this paragraph, inclusive, should be deleted from the EA.

Response: We have removed the subject text.

RF1000 - References: General Comments

Concern 21793

ID:

CONCERN 6. Section 3.5 (T&E Species) on page 47 includes reference citations that are not in the reference list **STATEME** and some apparent inaccuracies.

NT:

Comment: There is no Riggs and Deacon (2005) in the references section. Riggs and Deacon (2002) only include fish count data through 2003 and did not report the results of the 2004 count. The average of four counts taken in 2003 was 197 pupfish; the average of four measurements taken in 2004 was 168 pupfish, not the 225 stated in the EA. (See Devils Hole pupfish dive count result 1971-2006 at:

http://hegel.lewiscenter.org/users/mhuffine/subprojects/Student%20Led%20Research/pupworld/pdf/pupfish_dive_pop_counts.pdf) Note that the results published in Riggs and Deacon (2002) do not agree with the Lewis Center results after 1994. The draft EA reference citations need to fully correspond with the reference list and the numbers presented in the text need to be revised to reflect the published or agency sources.

Response: The NPS does not guarantee the accuracy or validity of information from external internet sources. A variety of methods can be used to calculate the result of the Devils Hole pupfish survey, resulting in discrepancies when information is combined from multiple sources. The text has been updated to improve consistency and avoid discrepancies.

SE4000 - Socioeconomics: Impact Of Proposal And Alternatives

TE4000 - Threatened And Endangered Species: Impact Of Proposal And Alternatives

Concern ID: 21778

CONCERN STATEMENT:

Regarding visitor access, under Alternative A, I think the conclusion that the modifications will result in a "net neutral" impact are probably optimistic. It is difficult to tell from the illustration what the access tunnel will look/feel like, but that combined with the additional fencing and small viewing holes on the platform will reduce the on-site experience considerably, regardless of the enhanced interpretive resources provided elsewhere. This will certainly be felt more by returning visitors. The addition of regularly scheduled, docent-led visits could improve this (sort of a hybrid approach between Alternatives A and B).

Response:

Based on the best available information, we have concluded that any additional shading of the water surface caused by the visitor viewing tunnel would be compensated by removal of other equipment at the water surface and replacement of the existing makeshift monitoring platform which causes a small amount of disturbance. We agree that docent-led tours could improve the visitor experience considerably. We will do our best to incorporate them into our site interpretation approach.

TE5000 - Threatened And Endangered Species: Cumulative Impacts

Concern ID: 21782

CONCERN STATEMENT:

1. Section 1.8 identifies the issues and concerns affecting the Proposed Action that were identified through scoping and agency analysis.

NT:

Comment: The draft EA does not identify the impact of researchers on the Devils Hole pupfish as an issue and/or concern. The failure to identify the past, present, and future impacts of research efforts on the species, habitat, and natural ecosystem processes is a significant inadequacy in the draft EA. Two issues identified relate to researcher safety and the inconvenience to researchers during monitoring. Security from intrusion is considered an issue, but only with respect to vandalism and malicious intrusion events. Researchers represent an intrusion into the natural ecosystem, and the impacts of research activities must be considered within the EA to adequately define the cumulative impacts of the proposed actions on the pupfish, its habitat, and the ecosystem.

Representative Quote(s):

Corr. ID: 4

Organization:

Organization Type:

Nye County Nuclear Waste Repository Project Office

County Government

Comment ID: 108411

1. Section 1.8 identifies the issues and concerns affecting the Proposed Action that were identified through scoping and agency analysis.

Comment: The draft EA does not identify the impact of researchers on the Devils Hole pupfish as an issue and/or concern. The failure to identify the past, present, and future impacts of research efforts on the species, habitat, and natural ecosystem processes is a significant inadequacy in the draft EA. Two issues identified relate to researcher safety and the inconvenience to researchers during monitoring. Security from intrusion is considered an issue, but only with respect to vandalism and malicious intrusion events. Researchers represent an intrusion into the natural ecosystem, and the impacts of research activities must be considered within the EA to adequately define the cumulative impacts of the proposed actions on the pupfish, its habitat, and the ecosystem.

Response: The effects of research or monitoring activities at Devils Hole are outside the scope of the current environmental analysis. The Park will be completing such an analysis of a planned long-term monitoring effort in the near future.

Concern ID: 21785

CONCERN STATEMENT:

We remain concerned about the methods, equipment, and procedures used for both scientific research and the ongoing monitoring program. Although we understand changes

NT: have been made, we believe the EA should address the remedies which are now and should be in place to prevent unintended destruction of the pupfish or their habitat. The EA reminds the reader of the 2004 "accident" in which 80 pupfish were killed when traps used to monitor the site were washed into Devils Hole during a flash flood.

Response: The effects of research or monitoring activities at Devils Hole are outside the scope of the current environmental analysis. The Park will be completing such an analysis of a planned long-term monitoring effort in the near future.

Concern ID: 21795

CONCERN 8. Section 3.7.2 (Scientific Research and Monitoring) provides some details on the planned monitoring activities that are being done in conjunction with the NPS's mandate that it "will undertake active management programs to inventory, monitor, restore, and maintain listed species' habitats, control detrimental non-native species, control detrimental visitor access, and re-establish extirpated populations as necessary to maintain the species and the habitats upon which they depend." (as stated on page 35 of the draft EA).

STATEMENT

NT: Comment: Several of the proposed actions are for the safety and convenience of the researchers, and an increased level of monitoring activities is planned (see para. 1, pp 55 of the draft EA). Nowhere in the EA are the past impacts or future potential impacts from the scientific research and monitoring program identified. Rather than evaluate the impacts of research and monitoring on the pupfish and its habitat, the EA instead focuses on the impacts of the proposed actions on the researchers. This focus is misplaced.

Reports posted online by the Desert Fishes Council have documented (see http://www.desertfishes.org/meetings/dfc_meet_specific.html) the removal of more than 160 pupfish from Devils Hole for research and management purposes. The pupfish population was decimated in 2004 as a result of negligence by a researcher and park operating procedures, or the lack thereof. Even after this tragic event, more pupfish were removed from their native habitat. Yet it continues to be stated and restated that the cause of the population decline is unknown.

Response: The effects of research or monitoring activities at Devils Hole are outside the scope of the current environmental analysis. The Park will be completing such an analysis of a planned long-term monitoring effort in the near future.

Concern ID: 21796

CONCERN 8 (continued).
STATEMENT

NT: A phthalate compound was detected in one water sample from Devils Hole that may be attributable to diving gear used during a seasonal inventory; the analytical result is presented by the U.S. Geological Survey at: http://nwis.waterdata.usgs.gov/nv/nwis/qwdata/?site_no=362532116172700&agency_cd=USGS¶m_group=OOT&format=rb. The divers conducting population surveys may be detrimentally impacting the very population they are surveying. Phthalates are bioconcentrates in small fish and contribute to reproductive disorders. Repeated dive counts have the potential to expose the pupfish population to trace concentrations (present in samples but below their individual quantification limits) of several phthalates. If cameras can be used to improve site security, then the EA should include and evaluate an action that would use cameras to perform the population counts to prevent future inadvertent, but none the less adverse impacts imposed by divers.

Researchers and those tasked with conducting monitoring and maintaining the site represent the direct intrusion of a non-native species and detrimental visitor access to the ecosystem. The significant adverse impacts that have resulted from past human intrusion by researchers clearly demonstrate the need for the impacts of future human intrusion of this nature to be included in the EA.

The US Fish and Wildlife Service has stated its decision to limit access into Devils Hole and not

remove pupfish for experimental or captive propagation until the fall population exceeds 200 fish and an increasing population trend is demonstrated for three years (see USF&WS reference in Comment 7). The additional planned monitoring activities discussed on page 55 of the draft EA would require expanded access to Devils Hole which is not consistent with this decision.

Response: The effects of research or monitoring activities at Devils Hole are outside the scope of the current environmental analysis. The Park will be completing such an analysis of a planned long-term monitoring effort in the near future.

VE4000 - Visitor Experience: Impact Of Proposal And Alternatives

WQ2000 - Water Resources: Methodology And Assumptions

Concern ID: 21797

CONCERN STATEMENT: 9. Section 4.1 (Methodology) includes a discussion of the cumulative impact scenario.

Comment: The discussion of water related projects is stale and needs to be updated in the final EA. The Nevada State Engineer has ruled on the subject change applications and issued an Order that will preclude the issuance of any new water rights in the basins and also prescribes restrictions on future changes in points of diversion. The EA should be updated accordingly. The draft EA states that "The Park Service has the right to challenge any award of water rights that it can demonstrate would threaten the federal reserved water right for Devils Hole". The EA should be revised to also state that the Park Service reserves the right to challenge any request for water rights or change in water rights even though it cannot demonstrate what the impact of that water right or change might be.

Response: The subject text has been updated.

WQ5000 - Water Resources: Cumulative Impacts

Concern ID: 21771

CONCERN STATEMENT: Besides the SNWA GW development, the EA should quantify all proposed projects (some of which were listed in the EA) and include energy development projects in Amargosa Valley which, if developed using pumped groundwater for cooling, could quickly and seriously impact Devils Hole.

Response: Numerical groundwater modeling suggests that the current rates groundwater pumping in the Death Valley regional flow system will lower the water level in Devils Hole, and possibly impact the sensitive water resources protected by this water right. Naturally, additional withdrawals of ground water from this system are expected to accelerate water level declines in Devils Hole. Because of the complexity of such a large flow system, and the variables other than ground water pumping (e.g. climate change and weather), it is not possible to accurately predict the timing and magnitude of impacts resulting from incremental increases in groundwater withdrawal. The NPS is currently working with other federal agencies to improve the predictive capabilities of the existing model (DVRFM) to evaluate impacts from both existing and proposed pumping.

The NPS is working to evaluate the Plans of Development for solar energy projects as they become available. The NPS is also working as a cooperator with other

Federal agencies with the hope of adopting a programmatic policy which allows consumptive use of fresh water only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound. At the time of this EA, no proposals or applications for new or existing water rights to be used for energy projects have been submitted to the Nevada State Engineer.

Concern ID:

**CONCERN
STATEMENT:**

21786

In addition to the man-made changes to the immediate, physical environment of the Devils Hole which the EA proposes to correct, there remains the threat of diminished groundwater levels and lows within the Ash Meadows low system. The EA references the SNWA groundwater project for "approximately 8,000 acre-feet of groundwater per year" in the basins up gradient to Devils Hole. Our research indicates that the NV State Engineer awarded SNWA 10,805 AFA from Three Lakes and Tikapoo Valleys. Where does the 8,000 AFA amount the NPS references come from? Does the NPS have a groundwater low model which is can use to project the impacts from ongoing and all the proposed pumping projects including that proposed by the SNWA?

Response:

Page 59 of the EA refers to Water Related Projects and specifically states that the Southern Nevada Water Authority (SNWA) "has proposed to develop approximately 8,000 acre-ft of groundwater per year from an area north and northwest of Las Vegas (Tikapoo and Three Lakes Valleys...)". This statement refers to the 8,018 acre-ft combined duty for Three Lakes South (2,618 acre-ft/yr), Three Lakes North (3,700 acre-ft/yr), and Tikapoo South (1,500 acre-ft/yr) of groundwater water rights granted by the Nevada State Engineer to SNWA in Rulings 5465 in January 2005 and Ruling 5533 in September 2005. An additional 2,587 acre-ft was granted by the State Engineer to SNWA in Tikapoo North under Ruling 5465, however, SNWA subsequently removed it's proposal to develop groundwater from Tikapoo Valley North from the Groundwater Development Plan, and eliminated the lateral pipeline that would connect to Tikapoo Valley North, concluding that the length of pipeline required for the volume of groundwater granted in this valley was not cost effective. Therefore, this EA does not include water that was allocated in Tikapoo North but where there is no current plan for development.

The NPS has used the Death Valley Regional Groundwater Flow Model (DVRFM) (Belcher, 2004) to evaluate some of the water right applications that have been filed within the regional flow system, including applications filed by SNWA in Three Lakes South, applications filed by Nye County in the Amargosa Valley, and change applications filed in the Amargosa Valley by several individual parties. These evaluations were presented to the Nevada State Engineer at administrative hearings in 2005, and 2006. In addition, an evaluation of the effects of existing pumping using the existing model was presented at the 2008 Devils Hole Workshop. The NPS is currently working with other federal agencies to improve the predictive capabilities of the existing model (DVRFM) to evaluate impacts from both existing and proposed pumping.