United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
333 Bush Street, Suite 500
San Francisco, CA 94104

IN REPLY REFER TO:
L7617 (PWRO-PP)

22 SEP 2011

Memorandum

To: Superintendent, Great Basin National Park

From: Regional Director, Pacific West

Subject: Environmental Compliance for Hydrogeological Research

The *Finding of No Significant Impact* (FONSI) for installing groundwater monitoring wells and appurtenant equipment, and undertaking watershed monitoring investigations, is approved.

To complete this particular environmental compliance effort, at the time when the park announces the decision, a copy of FONSI should be provided to all those who received or commented upon the supporting environmental analysis materials.

Christine S. Lehnertz

Attachment

FINDING OF NO SIGNIFICANT IMPACT
HYDROGEOLOGIC RESEARCH PROJECT
ENVIRONMENTAL ASSESSMENT

National Park Service, U.S. Department of the Interior
Great Basin National Park

INTRODUCTION

This Finding of No Significant Impact (FONSI) has been prepared, in accordance with the National Environmental Protection Act (NEPA), for the Hydrogeologic Research Project Environmental Assessment (EA), White Pine County, Nevada. The FONSI, along with the EA and Errata sheets, comprise the complete record of environmental impact analysis process for the project.

This document describes the Selected Alternative and provides an explanation of why it will have no significant effects on the human environment. The National Park Service (NPS) proposes to conduct a Hydrogeologic Research Project to better understand important water resources and connections in and near Great Basin National Park (the Park). Specifically, the project would help to better understand basin-fill deposits, assess quantitatively the interaction of surface water and groundwater along selected creeks, delineate the source of water to an important spring, and conduct a dye tracing study to improve understanding of cave and surface-water connections.

PURPOSE AND NEED FOR ACTION

The purpose of this project is to enable better understanding of hydrogeologic characteristics in critical areas of the Park where cave features and surface-water features have been identified as "likely susceptible" and "potentially susceptible" to adjacent groundwater withdrawals (Elliott et al. 2006). This project focuses on four main areas: Baker, Lehman, Strawberry, and Snake watersheds near the Park boundary.

Findings resulting from this proposed research could be applied as: (1) evidence presented by the NPS in upcoming water-rights hearings on SNWA's applications in Snake Valley before the State of Nevada regulatory agency (the Nevada Division of Water Resources) for permits to go forward with a proposed groundwater development (for which WRD has filed legal protests on behalf of GRBA); (2) input to a local groundwater flow model, which would be used to make predictive estimates of the timing and magnitude of potential adverse effects to Park water resources resulting from the proposed groundwater development immediately adjacent to the Park; and (3) a basis for long-term monitoring of groundwater within areas of the Park.

Ground-water resources from basin-fill and carbonate-rock aquifers in White Pine County, Nevada have been identified as a potential water-supply source for Las Vegas and surrounding areas of southern Nevada. These aquifers provide water to springs, streams, wetlands, limestone caves, and associated water-dependent ecosystems in and adjacent to the Park. SNWA has applied to the Nevada State Engineer's Office for water rights in Spring Valley for approximately 90,000 acre-feet per year (afy), and up to 50,700 afy in Snake Valley. A hearing on their Spring Valley water-right applications is currently scheduled for fall of 2011. A hearing on Snake Valley water-right applications has been postponed

indefinitely. SNWA has proposed to develop the water rights they may be granted by withdrawing groundwater from the aquifers in Spring and Snake valleys adjacent to the Park and exporting produced water via large pipeline to the Las Vegas area about 250 miles to the south (SNWA 2007).

The NPS is concerned that this proposed large-scale, permanent groundwater pumping from the hydrologic basin outside the Park and immediately adjacent to it may deplete the flow of surface-water features and depress water levels in cave features. This, in turn, will likely adversely affect the water-dependent ecosystems associated with these critical natural resource features. Impacts could include reduced habitat for aquatic organisms, changes in wetland and riparian vegetation, reduction in water availability and forage for wildlife, and altered water quality that might limit functions such as spawning and overwintering.

Based on conclusions contained in USGS Scientific Investigations Report 2006-5099 "Characterization of Surface-Water Resources in the Great Basin National Park Area and Their Susceptibility to Ground-Water Withdrawals in Adjacent Valleys, White Pine County, Nevada" (Elliott et al. 2006), NPS hydrologists have established that there are two principal local aquifer types – basin-fill and carbonate-rock – and they have identified places in and adjacent to the Park where surface water resources are connected to these aquifers. Results of that study were based on stream flow characteristics along selected perennial reaches of several streams in and adjacent to the Park. More detailed information is needed on the aquifer connections to the springs, streams, and limestone caves in order to better quantifying potential effects to Park ecosystems caused by large-scale groundwater pumping immediately adjacent to the Park and to provide a baseline for long-term monitoring of groundwater within the Park.

PROJECT GOALS

The proposed investigations have been designed to address three principal research objectives:

- Delineation of the composition, geometry, and hydraulic properties of the basin-fill deposits;
- Quantitative assessment of the interaction of surface water and groundwater along selected creeks; and
- Delineation of the source of water to Rowland Spring (the largest spring in the Park).

Additional goals of the proposed investigation would include employing a dye-tracing experiment to: 1) improve understanding of the interactions between surface water and groundwater where the Baker Creek cave system captures streamflow from Baker and Pole Canyon creeks, 2) identify and delineate areas that contribute water to springs, seeps, and streams in and near the Park downstream and down gradient from this area, and 3) characterize subsurface flow paths in karst limestone and fractured-rock regions.

ALTERNATIVES

Selected Action

The NPS selects Alternative 4, the Lehman Alternate Site for implementation. This alternative incorporates all of the proponent action but uses alternate location for drilling three wells near Lehman Creek in an area that is less culturally sensitive. The actions include:

INVESTIGATION OF THE SOURCE OF WATER TO ROWLAND SPRING:
This involves:
--- Drilling and constructing two groundwater monitoring wells, each about 200-to-300 feet deep, within Great Basin National Park – one near Cave Springs and one near the lined sewage ponds by the Baker Creek Road;
--- Performing two 48-hour continuous pumping tests - one test at each of the two monitoring wells;

--- Installing a precipitation collector near the existing weather station in the Park; and
--- Collecting water samples monthly for laboratory analysis from each of the two wells, from the precipitation collector, from Rowland Spring, and from one location each along Lehman and Baker creeks for one year.

INVESTIGATION OF STREAM-AQUIFER INTERACTIONS ALONG SELECTED REACHES OF LEHMAN, BAKER, SNAKE, AND STRAWBERRY CREEKS WITHIN THE PARK:
This involves:
--- Installing up to 10 shallow well points at selected locations in each of Lehman, Snake, and Strawberry creeks, driven by hand to a depth of about three feet beneath the streambed;
--- Installing temporarily a digital optical temperature-sensing cable in selected reaches of Lehman, Snake, and Strawberry creeks, and its subsequent removal after data collection is completed;
--- Slug testing of selected well points along Lehman and Snake creeks;
--- Manually measuring stream flow in Lehman, Baker, Snake, and Strawberry creeks; and
--- Installing up to five stream gauges in the Baker Creek drainage.

FOCUSED INVESTIGATION OF STREAM-AQUIFER INTERACTIONS AT A SPECIFIC SITE ON LEHMAN CREEK:
This involves:
--- Drilling a cluster of three shallow boreholes within the Park, each less than 60 feet deep, located within 50 feet of Lehman Creek, and construction of a total of five monitoring wells within the three boreholes;
--- Performing a 72-to-96-hour continuous pumping test – by pumping the farthest well from Lehman Creek, and monitoring water levels and water temperature in the other four monitoring wells, the shallow well points, and the stream; and
--- Collecting water samples for laboratory analysis from the pumped well during the pumping test.

A DYE TRACING STUDY:
This involves:
--- The introduction of three fluorescent tracer dyes within the Park, one in Baker Creek, one in a cave in the Baker Creek cave system, and one in Pole Canyon creek; and
--- Water sampling at approximately 22 selected locations - to determine if and/or which dyes can be detected in Baker and Lehman creeks, at selected springs (most notably Rowland Spring), and at cave locations downhill to the east and northeast.

Modifications to the Selected Alterative

No changes to the preferred alternative were made after the public comment period.

Other Alternatives Considered

Other alternatives considered were: 1) the No Action Alternative, which would not allow the Hydrogeologic Research project to be undertaken; the Park would have to rely on incomplete information to assess effects of other cumulative actions, such as the Southern Nevada Water Authority Groundwater Project; 2) the Proponent Action-All Sites, which would include all the proponent proposed actions in original locations; and 3) No Lehman Creek Drilling, which would include all the proponent actions except for drilling three wells near Lehman Creek within a culturally-sensitive area.

Options Considered and Dismissed

Options considered but dismissed included different locations for the Lehman Creek well sites. A site near Lehman Creek by the Park entrance was dismissed as being a potential safety hazard and having a

large impact to cultural resources. Building a new road into Lehman Creek to access drilling sites was considered too cost prohibitive and would cause too much damage to restored sagebrush habitat and was thus dismissed.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The National Park Service (NPS) has determined that the environmentally preferred alternative for this project is Alternative 4, the Lehman Alternate Site and the Preferred Alternative. The environmentally preferred alternative is the alternative that will promote the national environmental policy expressed in NEPA (sec. 101 (b)). This includes alternatives that:

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

The Council on Environmental Quality (CEQ) regulations implementing NEPA and the NPS NEPA guidelines require that "the alternative or alternatives which were considered to be environmentally preferable" be identified (Council on Environmental Quality Regulations, Section 1505.2). Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.

The National Park Service has determined that the environmentally preferred alternative for this project is Alternative 4- Lehman Creek Alternate Site. Alternative 4- Lehman Creek Alternate Site meets all the research objectives as well as minimizes the cultural resource concerns found in Alternative 2- Proponent Action-All Sites. Alternative 3- No Lehman would not provide information about the interaction of surface waters with the aquifer, which is important to the Park. Thus Alternative 3 is not environmentally preferred because it could result in a lack of information that could help protect park surface waters. Alternative 1- No Action is not the environmentally preferred alternative, because even though there would not be short-term disturbances, it could set the stage for significant water table draw downs within the park boundaries (BLM 2011) by not providing sufficient information for NPS response.

MITIGATION

Mitigation measures are presented as part of the selected action. These measures have been developed to lessen the adverse effects of the selected action. Mitigation measures would be funded through the project budget unless specifically noted in the table below.

Resources Area	Mitigation	Responsible Party
General Considerations	Prior to beginning the project, all equipment and vehicles will be thoroughly pressure washed to remove foreign soil and vegetative matter; this will minimize potential that nonnative plants are introduced to the project area.	Weed Program Manager
General Considerations	A resource advisor from NPS will be on site to monitor the transport of equipment into and out of the project area. This will ensure that the equipment follows the designated route to the project site and that there is no undue impact to resources on the ground.	NPS Hydrologist
General Considerations	Equipment will be inspected daily to ensure there are no leaks of petroleum products or other hazardous materials.	NPS Hydrologist
General Considerations	Heavy equipment will be parked in previously disturbed areas designated by NPS; no new staging areas will be created.	Archeologist
General Considerations	Following the completion of the project, all portions of the route used to transport equipment that are not part of a public road system will be sufficiently restored to prevent unauthorized use.	Chief of Natural Resources
General Considerations	All equipment, boots, and waders entering streams should be properly decontaminated to prevent introduction of whirling disease and other diseases, parasites, and nonnative species into the stream. Only clean, disinfected boots, waders and other equipment will be allowed into the streams. All mud and debris will be rinsed from boots and equipment, which should be sprayed with a 10% chlorine solution and allowed to dry prior to entry into creeks. Cleaning and disinfectant procedures should be followed before entering a different watershed.	NPS Hydrologist
Cultural Resources	All necessary steps will be taken to avoid cultural resources. The contractor will provide orange safety fence and cultural resource staff will mark avoidance areas and install fence in well sites 1 & 2. The Park will provide a cultural resource steward to monitor project activities.	Archeologist
Geologic Resources	If a void is encountered in the Pole Canyon limestone during drilling, casing will be extended further into the hole sufficiently to bypass the void. No drilling mud or foam are to be used, only compressed air.	NPS Hydrologist
Soundscapes	The drill rig will only operate between the hours of 7 a.m. and 8 p.m.	NPS Hydrologist
Water quality/quantity	At least 7 days prior, notices providing the dye introduction schedule will be posted at the Park visitor centers, the Baker post office, and on the Snake Valley Connection listserve.	Chief of Interpretation
Visitor Experience	Notices about the project will be posted at the Park visitor centers, the Baker post office, and on the Snake Valley Connection listserve. Interpreters will be provided information sheets so as to advise the public. The contractor will update the Park daily of progress.	Chief of Interpretation

PUBLIC INVOLVEMENT AND AGENCY CONSULTATION

Scoping

Internal scoping was held from November 16, 2010 to December 15, 2010. It defined the purpose and need, identified potential actions to address the need, determined what the likely issues and impact topics would be, and identified the relationship of the proposed research actions to other planning efforts at the Park.

Public scoping was conducted by posting information on the NPS Planning, Environment, and Public Comment (PEPC) website and mailing out letters to individuals and groups on the Park's NEPA mailing list on November 18, 2010. A press release was issued on November 18, 2010, and *The Ely Times* published it on November 19, 2010. Public meetings were held in Ely, NV on December 8, 2010 and in Baker, NV on December 9, 2010. Nineteen people attended the Ely meeting and about 50 people attended the Baker meeting. One mailed letter and one response via the PEPC website were received, both from individuals. One author asked that Material Safety Data Sheets for the proposed dyes as part of the dye tracing test be brought to the public meetings, which was done. The second comment asked if the proposed research actions were in wilderness areas and was concerned about the potential of drilling into caves. There are no wilderness areas in the project area and this comment was not followed up. The potential of drilling into caves is considered in the proposed research actions and is addressed in a mitigation measure.

A scoping notice in November 2010 and a draft EA availability notice in July 2011 were sent to all consulting Tribes. This includes the Ely Shoshone Tribe, Kanosh Band of Southern Paiute Tribe, Confederated Tribes of the Goshute Reservation, Kaibab Paiute Tribe, and the Southern Paiute Tribe of Utah. The scoping letter informed the tribes of the proposed Hydrogeologic Research Project in GRBA. No responses from Tribes were received.

EA Review

The EA was available for public review and comment from July 10 to August 12, 2011 on the PEPC website. Letters announcing availability were sent to the Park's NEPA mailing list, and a press release was sent to area newspapers, the local listserve, and was posted on the park's website. Hard copies of the EA were sent to the White Pine County Library, EskDale Center, and were placed in both park visitor centers. Four individuals requested CD copies of the EA.

A total of three responses were received, from the Sierra Club, Southern Nevada Water Authority, and the Great Basin Chapter of Trout Unlimited. All three organizations supported the project and/or gathering of hydrogeologic data in the area. The majority of comments related to clarifications of the project scope and purpose, concerns about drilling into caves, impacts of a separate project, and data collection methods.

To address the comments regarding clarifications of the project scope and purpose, language was added to those sections (an Errata was prepared as a technical attachment to the EA).

Concerns expressed in a comment about possible impacts caused by drilling into caves or voids are addressed in the mitigations. In the very unlikely event that a void or large fracture is encountered, casing would be placed into the hole and the hole deepened past the void by advancing casing while drilling. This will, in effect, seal the void from additional impacts caused by the drilling and subsequent testing activities. The amount of disturbance in the void would be limited to 2 or 3 feet in diameter and would have much less impact than do visitors to Lehman Caves, for instance.

One comment questioned the water rights for conducting pump tests in the Park. For similar work in the recent past, the researchers have obtained a "Temporary Discharge Permit" from the Nevada Division of Water Resources and a "Water Quality Permit" from the Nevada Department of Environmental Protection, for the purposes of doing the pumping tests. These permits would be obtained again prior to doing this work. The Nevada Division of Water Resources does not require a permanent water right to conduct a pumping test.

Comments about specific data collection have been incorporated into the text and mitigations.

Comments about mischaracterizing the SNWA project NEPA process and impacts have been addressed by adding clarifying language and references.

Agency Consultation

Consultations with the Nevada State Historic Preservation Office (SHPO) were initiated March 2011. The report of findings for compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, was submitted for SHPO review June 8, 2011. On June 30, 2011 SHPO concurred with GRBA finding that two previously unrecorded sites are not eligible for the National Register of Historic Places, therefore no historic properties will be adversely affected by this project.

No state or federally listed or candidate species are found in the project area, thus no consultation was needed with the USFWS.

No construction was planned in any wetlands or floodplains, thus no consultation was needed with the Army Corps of Engineers.

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

The NPS used the following NEPA criteria and factors defined in 40 CFR §1508.27 to evaluate whether the Selected Alternative would 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.
No significant impacts were identified as part of the analysis for this project. The preferred alternative would have negligible, minor, or moderate impacts to cultural resources, geologic resources, soundscape, water quality/quantity, and visitor experience. Long-term benefits derived from the information gathered in this research project outweigh short-term adverse impacts. Mitigation measures proposed will alleviate these short- and long-term impacts.

Degree of effect on Public Health or Safety.
Public health and safety was analyzed in the EA under the impact topic Visitor Experience. A small number of visitors may hear noise from the drill equipment, but noise levels would be detrimental only for very short durations.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
The drilling areas were inventoried for cultural resources in 2010-2011 and, based on those inventories, the preferred alternative was developed to minimize impacts to cultural resources. The effect of the project on cultural resources is expected to be negligible with a no effect determination under Section 106 of the National Historic Preservation Act.

No project areas are located within prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Degree to which effects on the quality of the human environment are likely to be highly controversial.

There are no highly controversial impacts anticipated to the quality of the human environment. Public scoping and comment on the proposal did not indicate any contentious issues and the EA did not identify significant impacts associated with the preferred alternative.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.

No highly uncertain effects or unique or unknown risks are anticipated to occur under the preferred alternative. Actions proposed under the preferred alternative will utilize standard construction and operation techniques, best management practices, and other mitigations to reduce risk.

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 preferred alternative is not expected to set a precedent for future actions with significant effects, nor does it represent a decision in principal about any future consideration elsewhere in the National Park System.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

Cumulative impacts were analyzed in the EA and no significant cumulative impacts were identified.

Degree to which the action may adversely affect 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.

The project area was inventoried for cultural resources in 2010-2011 and limited archaeological sites, artifacts, or features were identified. Two previously unrecorded sites were determined not eligible for the National Register of Historic Places, therefore the NPS determined that no historic properties will be adversely affected. The anticipated impact to cultural resources is negliglible. Compliance with §106 of the National Historic Preservation Act was completed with concurrence of this determination by the Nevada SHPO on June 30, 2011.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat.

No endangered or threatened species are found in the project area.

Whether the action threatens a violation of Federal, state, or local environmental protection law

This action violates no federal, state, or local laws or environmental protection laws.

IMPAIRMENT

In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the Selected Alternative and mitigation measures will not constitute impairment to Great Basin 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 identified 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 environmental impacts described in the Hydrogeologic Research Project Environmental Assessment, the mitigation measures,

agency consultations, considerations of the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in NPS Management Policies.

CONCLUSION

Implementation of the Selected Alternative for the Hydrogeologic Research Project will not have significant impacts on the human environment. The determination is sustained by the analysis in the EA, agency consultations, the inclusion and consideration of public review, and the capability of mitigations to reduce or avoid impacts. Adverse environmental impacts that could occur are negligible to moderate in intensity, of short duration, limited in context, and less-than-significant. As described in the EA, there are no highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence. There are no previous, planned, or implemented actions, which in combination with the selected alternative would have significant effects on the human environment. Requirements of the National Environmental Policy Act have been satisfied and preparation of an Environmental Impact Statement is not required. The park will implement the Selected Alternative as soon as practical.

Recommended: _____ 9/9/11

Andrew J. Ferguson, Superintendent — Date
Great Basin National Park

Approved: _____ 09/22/11

Chris Lehnertz, Regional Director — Date
Pacific West Region, National Park Service