



OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

NPS CONTRACTOR OVERSIGHT OF VISITOR TENT CABINS AT YOSEMITE NATIONAL PARK INVOLVED IN HANTAVIRUS OUTBREAK



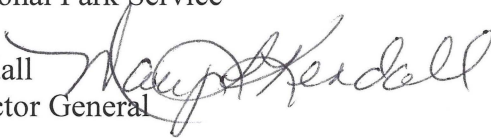


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MAY 15 2013

Memorandum

To: Jon Jarvis
Director, National Park Service

From: Mary L. Kendall 
Deputy Inspector General

Subject: Final Inspection Report – NPS Contractor Oversight of Visitor Tent Cabins at
Yosemite National Park Involved in Hantavirus Outbreak
Report No. WR-IS-NPS-0009-2013

This memorandum transmits the findings of our inspection of the National Park Service's (NPS) concessionaire oversight of visitor tent cabins involved in the 2012 hantavirus outbreak at Yosemite National Park.

We found that NPS provided oversight consistent with current policy. In addition, when the outbreak was identified, NPS mobilized to contain and remediate the outbreak and to prevent further outbreaks. We make four recommendations in this report to assist NPS in its hantavirus prevention activities throughout its national parks specific to guest accommodations.

Please provide us with your written response to this report within 30 days. The response should provide information on actions taken or planned to address the recommendations, as well as target dates and titles(s) official(s) responsible for implementation. Please address your response to:

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The legislation creating the Office of Inspector General requires that we report to Congress semiannually on all audit reports issued, actions taken to implement our recommendations, and recommendations that have not been implemented.

If you have any questions regarding this memorandum or the subject report, please contact me at 202-208-5745.

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Results in Brief

During the summer of 2012, Yosemite National Park experienced a hantavirus outbreak with 10 cases, 9 of which were linked to Curry Village's "Signature" tent cabins. Hantavirus is a potentially severe disease of the lungs that can progress into hantavirus pulmonary syndrome, which can be fatal. In response to the hantavirus outbreak, we conducted an inspection to determine whether the National Park Service (NPS) is providing adequate concessionaire oversight of Yosemite National Park visitor tent cabins.

We found that NPS provided oversight consistent with its current policy. In addition, when the outbreak was identified, NPS mobilized to contain and remediate the outbreak, and to prevent further outbreaks. NPS acted according to its review and approval criteria for the concessionaire's plans and proposals, pest monitoring and management activities, inspections of the concessionaire's visitor accommodations, and information dissemination of hantavirus and other vector-borne diseases. After the outbreak, NPS increased its role in oversight and approval of these planning and monitoring activities.

In our report, we made four recommendations to assist NPS in its hantavirus prevention activities throughout its national parks specific to guest accommodations.

Introduction

Objective

Our objective was to determine whether the U.S. Department of the Interior's (Department) National Park Service (NPS) provides adequate concessionaire oversight of Yosemite National Park (Yosemite) visitor tent cabins involved in the hantavirus outbreak. We initiated this inspection in response to the hantavirus outbreak that occurred at Yosemite during the summer of 2012. For the full scope and methodology we followed to complete our review, see Appendix 1.

Background

Hantavirus, a potentially severe disease of the lungs, was first recognized in 1993 in the Four Corners area of the southwestern United States. Hantavirus is one of several types of vector-borne diseases, which are diseases transmitted to people by insects or other animals. Yosemite's hantavirus outbreak was caused by the Sin Nombre strain of hantavirus, which is carried by wild deer mice and contracted by exposure to their feces, urine, and saliva. A hantavirus infection can progress to hantavirus pulmonary syndrome (HPS), which can be fatal. Prior to 2012, a total of 587 HPS cases had been reported nationwide. Of these cases, 36 percent resulted in death. About 75 percent were residents of rural areas.

During the summer of 2012, Yosemite experienced a hantavirus outbreak of 10 cases. Of these cases, three resulted in fatality. Nine of the 10 cases were linked to individuals who stayed in Curry Village's "Signature" tent cabins, which are guest accommodations unique to Curry Village.

Before becoming "Signature," the tent cabins were previously used as employee housing before being converted into visitor accommodations. When an October 2008 rock fall in Yosemite Valley closed part of the Curry Village campground, NPS authorized the tent cabins' conversion to visitor accommodations. NPS authorized Delaware North Companies Parks and Resorts (DNC), the concessionaire who owned the Signature tent cabins, to make the conversions in February 2009. As part of the conversion process, DNC "winterized" 91 existing tent cabins that then became known as "Signature." The winterization process included the addition of ceiling rafters and wall studs to the structures, as well as ridged foam insulation that was fitted between the wooden structural components (see Figures 1 and 2).



Figure 1. Signature tent cabins in Curry Village that are in the process of being deconstructed. The canvas has been cut away to show the foam insulation in the walls. Source: OIG team photo.



Figure 2. A close-up of the foam insulation in the walls of the Signature tent cabins. Source: OIG team photo.

The nine individuals who likely contracted the virus in Curry Village stayed in the Signature tent cabins sometime between June and mid-July of 2012. The California Department of Public Health (CDPH) notified NPS of the first confirmed hantavirus case on July 12, 2012. Notifications of confirmed cases continued through October 29, 2012. This lag time between when visitors stayed in the Signature tent cabins and when NPS was notified of the hantavirus cases is attributed to the hantavirus incubation period, the medical protocol of interviews by county and State officials, and the process for reporting confirmed cases.¹

Yosemite led NPS' response to the outbreak, with support provided by the Pacific West Regional Office and headquarters. NPS' Office of Public Health (OPH) provided Yosemite with public health expertise to assist with response efforts. While park superintendents hold regulatory authority, OPH professionals help with disease surveillance and response; onsite evaluation and hazard analysis; policy guidance; and coordination with local, State, and other Federal health jurisdictions. OPH has 10 field staff available to NPS regions, and Yosemite is one of five national parks with a detailed OPH public health officer (health officer). CDPH and the Centers for Disease Control and Prevention (CDC) also provided Yosemite with support during the outbreak. In total, NPS, CDPH, and CDC conducted five inspections of the Signature tent cabins from July 27 to September 14. On September 18, both the CDC and the CDPH recommended the permanent closure of the Signature tent cabins. Yosemite's Superintendent notified DNC of the permanent closure on September 26.

¹ Average hantavirus incubation period is 1 to 6 weeks; average incubation for Yosemite cases was 3 to 7 weeks.

Hantavirus Outbreak Critical Dates	
July 12, 2012	CDPH notified NPS of a confirmed hantavirus case in a California resident who had stayed in Curry Village.
August 8, 2012	CDPH confirmed a second case, which has not yet been definitively linked to Yosemite.
August 23-24, 2012	Yosemite's health officer was notified of rodent nests found in the insulated walls of the Signature tent cabins and advised the Superintendent that all cabins needed to be retrofitted prior to allowing guests into the cabins.
August 24, 2012	Yosemite was notified of three additional hantavirus cases in persons who stayed in Curry Village, prompting Yosemite leadership to initiate an outbreak response plan. The response plan included the requirement to close all Signature tent cabins that were not retrofitted.
August 27-28, 2012	OPH and Yosemite health officer inspected Signature tent cabins and determined that public health risk could not be mitigated based on refitting efforts by DNC. Tents were closed until further notice.
September 18, 2012	CDC and CDPH recommended the permanent closure of the Signature tent cabins.
September 26, 2012	Superintendent notified DNC of the permanent closure.

Findings

We found that NPS provided oversight consistent with current policy. When the hantavirus outbreak was identified, NPS mobilized to contain, remediate, and prevent further outbreaks. Specific to policy, we found that NPS acted according to NPS and Departmental criteria for review and approval of concessionaire plans and proposals, pest monitoring and management activities, inspection of visitor accommodations operated by the concessionaire, as well as information dissemination of hantavirus and other vector-borne diseases.

NPS' Actions Prior to the Outbreak

Inspections of DNC's Proposed Modifications

Because DNC funds the Signature tent cabins and they are considered DNC's personal property,² NPS policy did not require them to undergo an engineering, construction, or pre-occupancy review process. One such process is NPS' Development Advisory Board (DAB), which reviews design and construction work for only those projects using both NPS monies and meeting a minimum dollar threshold.³ While Yosemite does have a contract with DNC requiring an independent inspection for new construction or significant project work, the requirement did not apply to the tent cabins as NPS considered the "winterization" modifications routine annual maintenance. Therefore, Yosemite officials only reviewed the tent designs pertaining to plumbing and fire safety codes, which is in line with the contract specification that NPS review plans and proposals and provide technical advice. The winterization modifications, however, did not just repair the tents but added new features.

Pest Monitoring in Curry Village

Pest monitoring in Curry Village, a Department and NPS policy requirement for pest management, is DNC's responsibility. The NPS Rodent Exclusion Manual defines monitoring as a continuing written evaluation that identifies and evaluates changing conditions over time, including re-infestation and new sources of rodent access. The Department Manual on Integrated Pest Management Policy states the monitoring should be done before, during, and after a pest management activity such as trapping. Prior to the hantavirus outbreak in June 2012, DNC trapped pests inside the Signature tent cabins only when visitors or housekeeping staff complained.

² Personal property is property that is not classified as real estate and that is movable without damage to itself or the real estate. The real estate (land) on which the Signature tent cabins were located is owned by the United States and administered by NPS.

³ The Servicewide DAB reviews projects over \$1 million and the Pacific West Region DAB reviews projects between \$500,000 and \$1 million. The DABs are made up of executive-level NPS employees and external advisors who review design and construction projects for cost effectiveness and the responsible use of NPS construction monies.

Additional monitoring in Yosemite was also provided through a cooperative agreement between OPH and CDPH. This monitoring, however, did not include Curry Village, as the location was not considered a high-risk area for hantavirus.

Routine Tent Inspections

During routine inspections of DNC's Signature tent cabins, Yosemite's Business and Revenue Management (BRM) did not detect the presence of rodent nests because the nests were hidden in the walls and it was not customary to dismantle the tents as they are DNC's personal property. BRM conducts two evaluations (inspections) of randomly selected Curry Village tent cabins per year based on NPS Concessions Management Program requirements. Inspections focused on issues such as holes or tears in floors, walls, and ceilings. BRM's inspections supplied target dates to correct the issues and recorded the actual dates for when the issue was corrected.

Visitor Education

Prior to the outbreak, Yosemite made hantavirus information available to visitors, its employees, and DNC staff in line with NPS and Department policies. Both NPS and the Department's policies are consistent with a 2007-2010 CDPH study recommending that prevention information be available at staff lodging and visitor centers. Visitor education was geared, however, to Yosemite's backcountry where hantavirus is more common. For Curry Village and its Signature tent cabins, visitors would have had to obtain hantavirus information by accessing CDC or CDPH Web sites on their own volition.

Policies also require that training specific to hantavirus and other vector borne disease protocols be provided specifically to employees. CDPH led seminars for both NPS and DNC staff, who also received training from Yosemite's Safety, Health and Environmental Office and its health officer.

NPS' Response to the Outbreak

When the hantavirus outbreak was identified, we found that NPS worked to contain and remediate the infection and prevent further outbreaks. NPS contacted those visitors whom DNC was unable to reach during its initial visitor outreach and established a hantavirus call center.⁴ NPS also issued press releases, held employee and community meetings, and sent health alert notifications to health care community/organizations. NPS also invited CDPH health officials to review DNC's "winterization" plans for the new tent cabins, as well as increased its participation in monitoring, tent inspections, and information dissemination to park visitors.

Inspections of DNC's Proposed Modifications

After the Signature tent cabins were closed, DNC proposed new plans for tent winterization. In addition to a review by Yosemite and OPH, CDPH reviewed DNC designs for new winterized tents for hantavirus vulnerabilities at NPS'

⁴ DNC made initial contact with Signature tent cabin visitors registered from June 10 to late August 2012.

request. The new designs reflect the traditional single layer tents but use a thicker canvas material. CDPH comments focused on rodent exclusion efforts and were incorporated into the new designs. The Pacific West Region gave its approval of the new designs in February 2013. Currently, DNC is in the process of deconstructing the original Signature tent cabins, with the nine “case” tents removed and housed offsite pending possible litigation.

Pest Monitoring in Curry Village

Monitoring within Curry Village continues to be DNC’s responsibility with Yosemite providing additional monitoring for the park. During September through January 2013, DNC set more than 17,600 traps and trapped more than 1,300 mice, a 7.5 percent success rate. DNC now conducts lethal trappings both inside and outside of tent cabins to reduce local mouse population and decrease hantavirus risk. Traps are placed within the tent cabins when visitors check out to ensure that rodent exclusion measures are successful before the next visitor checks in. A number of bear boxes—that is, metal boxes that are typically used by visitors to store food and are located outside of guest accommodations—are now filled with snap traps in an effort to further reduce the deer mouse population in Curry Village (see Figure 3). DNC records the number of mouse trappings and shares it with Yosemite.

In 2013, NPS programmed \$20,000 funding for monitoring at Yosemite for the next three years. The monitoring will involve nonlethal trappings to gather data on area deer mouse populations. Yosemite is also looking to take over the cooperative agreement OPH held with CDPH, which expired in September 2012.



Figure 3. This bear box in Curry Village is being used to trap deer mice. The small hole at the bottom, center of the box provides an entrance point for the mice. Source: OIG team photo.

Routine Tent Inspections

BRM is continuing the tent inspections and is now accompanied by Yosemite's health officer, conducting inspections in tandem. Previously, the health officer focused more on elements that visitors share, such as food and beverage areas and recreation water. Now, the health officer reviews selected tent cabins and facilities, DNC hantavirus public education efforts, and DNC hantavirus record keeping efforts during inspections of visitor lodging.

The health officer also reviews DNC's recordkeeping efforts because the majority of visitor complaints go straight to the concessionaire. DNC documents its response through its Computerized History and Maintenance Planning System (CHAMPS), which was modified after the outbreak from function based (such as repairs) to asset based (tents) to identify the asset's present condition and status of repair. The health officer issues his report to BRM, who incorporates the comments in its inspection reports as remarks or deficiencies.

Visitor Education

During the outbreak, both Yosemite and DNC provided visitors with hantavirus education. Currently, both are working to determine the appropriate level of visitor information needed for the various areas of the park. As mentioned earlier in this report, NPS responded to the outbreak by providing information to visitors who stayed in the park between early June and late August. NPS contacted these visitors, set up a call center, and held community meetings. Hantavirus education

is provided on Yosemite's Web site, in brochures provided to visitors at the park entrance, in emailed DNC reservation confirmations, and at lodging check-ins. In Curry Village, hantavirus plaques are located in the tent cabins, as shown in Figure 4, and visitors sign acknowledgements that they received hantavirus information upon check-in.



Figure 4. This hantavirus warning sign is located in all of the non-Signature tent cabins that are still being used by visitors. Source: OIG team photo.

Conclusion and Recommendations

Conclusion

During Yosemite's 2012 hantavirus outbreak, NPS provided oversight consistent with current NPS and Departmental policy and acted to contain, remediate, and prevent future outbreaks. Using its experiences from the outbreak in Yosemite, NPS now has the opportunity to identify lessons learned and position itself to improve its prevention efforts and reduce risks of future occurrences of hantavirus outbreak in its parks.

Recommendations

Specific to NPS oversight of concessions involving visitor accommodations, we recommend that the NPS Director, using a risk-based approach:

1. Require NPS health, safety, and building officials to review proposals of new visitor accommodations and modifications to their structures for vector-borne disease vulnerabilities and document the outcome of the reviews before NPS authorizes work on structures;
2. Require NPS health, safety, and building officials to inspect visitor accommodations on a cyclical basis to assess vector-borne disease vulnerabilities.

Specific to NPS oversight of concessions of Yosemite tent cabins, we recommend that the NPS Director:

3. Require DNC to report the results of its monitoring of concession areas to Yosemite health and safety officials; and
4. Require that education material is made available to all overnight park visitors regardless of where they stay.

Appendix I: Scope and Methodology

We conducted our inspection in accordance with Quality Standards for Inspection and Evaluation as put forth by the Council of the Inspectors General on Integrity and Efficiency. We believe that the work performed provides a reasonable basis for our conclusions and recommendations.

The inspection focused on the National Park Service's (NPS) oversight it provided for the concessionaire's visitor tent cabins involved in the 2012 hantavirus outbreak. We conducted our inspection work in February 2013.

As part of our inspection, we—

- reviewed legislation, executive orders and NPS and Departmental policies and procedures related to integrated pest management;
- reviewed prior reports issued by our Office and the U.S. Government Accountability Office;
- reviewed prior inspections completed by the NPS Office of Public Health, as well as the California Department of Public Health and the Centers for Disease Control and Prevention;
- visited Yosemite to observe the current status of Curry Village.

We visited or contacted —

- NPS' Director's Office, Office of Public Health, Pacific West Region, Yosemite National Park; and
- Delaware North Companies Parks and Resorts' President's Office at Yosemite National Park.

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