

# National Park Service Facility Management: International and Interagency Cooperation

*Steve Olig*

DURING A MARCH 20, 2012, SITE VISIT, National Park Service (NPS) employee Tim Harvey, chief of the Park Facility Management Division (PFMD), did something that seemed both familiar and very foreign. Although the weather was cool and misty as Harvey stepped through the site's recently constructed entry station, even a torrential downpour would not have derailed the business portion of the day's schedule. And while the business portion was familiar to him, it was the setting that made the experience unique.

Shortly after entering the site, Harvey was whisked through a brief tour of its support facilities. These facilities are rarely ornate or exciting to tour because, although they are critical to operations, the majority of the support infrastructure consists of maintenance shops, equipment storage areas and offices that are not part of the visiting public's normal experience at a destination. This tour provided a useful on-site perspective for Harvey to build from. After the tour wrapped up, Harvey proceeded to a conference room for a long discussion, and the "business" purpose of the trip.

As conversations go, it probably would not have intrigued many outside of Harvey's realm. Strategic plans, policies, capabilities and visions for maintaining an asset portfolio are topics that are generally of little concern to the casual observer. But for Harvey, asset management has been the driving force behind his more than 40 years of service to the NPS.

When the meetings were done and the "business" had concluded, the day's agenda moved to that which was least familiar to Harvey. Now, he would experience a rare opportunity to visit the treasure that the facilities he had toured and the staff he had spoken with were there to support. Back outside, Harvey found himself looking up at a mountain that momentarily raised memories of his eight years as a chief of maintenance for Mount Rushmore National Memorial. Yet this mountain was strikingly different from Mount Rushmore. Instead of granite, it is sandstone; instead of four faces, it is hundreds of faces; and instead of showcasing the realized vision of an American artist, it hosts the work of many Chinese pilgrims who began chiseling their marks on history nearly 1,500 years ago. The mountain was the Majijshan Grottoes, in the Gansu Province in the People's Republic of China, to which

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Harvey was dispatched by the World Bank to evaluate the site's asset management practices (Figure 1).

### The path

Some 25 years ago, it is unlikely that anyone in Harvey's position would have been tapped with such a responsibility. In 1988, when the NPS was itself only 72 years old, facility managers were more commonly known as maintenance workers. Senior management sometimes considered them grunt labor, and the public—which always had access to interpretive and law enforcement rangers to enhance their visitor experience—would either not notice the

**Figure 1.** Carvings on the cliff side of Maijishan Grottoes. The underside of a visitor walkway, allowing guests to look into individual caves and get an up-close look at the artwork, runs diagonally in the top left of the image. Photo courtesy of NPS/Tim Harvey.



teams of maintenance workers scattered across park units or would only seek them out when pointing to visibly apparent maintenance problems.

As is often the case, this perception of facility managers and maintenance workers did not match reality. Many maintenance workers started their careers at a park, worked their way through the ranks and retired from similar (if more senior) positions. Frequently, over a 25-year career in even a single park unit, employees had learned a substantial amount of historic and practical information about everyday park operations. What few had considered was the value that individual experience represented to the service as a whole.

All that changed sometime around 1988. While the more senior members of the NPS maintenance community recognized the importance of the knowledge they had amassed, time was revealing the worth of that information to the whole NPS. A closer look at the history of the maintenance community revealed that documentation, tracking, and dissemination of that information was critical to ensuring that all facilities in parks were maintained on their own unique schedules and with methods tuned for intricate and specific needs.

Early attempts to address ineffective and anecdotal knowledge retention and transfer began with a basic, yet logical servicewide effort to professionalize NPS facility management. Managers' experience and knowledge were translated to clipboards and files; tips of the trade once dispatched through "this is how we do it" lessons to newcomers were crafted into training programs; and work, both routine and otherwise, was documented and tracked at increasing levels of detail.

Professionalization led to collaboration, and collaboration led to new and perhaps unexpected workloads. On one front, while the national park system grew and became more complex, the NPS facility management community began adapting industry's knowledge to suit its own specialized requirements. On another front, facilities employees more accustomed to working with lightly rusted tools from the back of a somehow constantly rattling work truck were now tapping keyboards—logging the work they accomplished—and indexing vast amounts of critical data. Maintaining these daily logs and merging them with data from previous years yielded informative reports that translated into plans for each day's, week's, month's, and ultimately year's work.

And through all this, a new goal began to emerge. Rather than working to keep things going day to day, methods and high-quality data could be combined, sifted, broken apart, and reformed into a science of facility management for NPS. Instead of rebuilding a roof when it failed, it was now possible to create a plan to prevent the roof from failing. And, because money was always in short supply, that roof maintenance could be balanced against the need to paint the building, which in turn could be balanced against foundation repair. Reacting to needs as they arose was systematically becoming an obsolete practice as maintenance chiefs learned that assets could be managed to ensure that all their needs were met before failure as well as—in an ideal environment—actually extending their life cycles.

By 2006, the Facility Management Software System (FMSS), a customized version of IBM's Maximo work-order tracking software, had amassed a wealth of asset information. Most of all, it helped park superintendents and chiefs of maintenance plan work for each upcoming year, and then bundle their work into projects to compete for funding on a servicewide level.

## **International interest**

The NPS approach to asset management was so successful, in fact, that a delegation from Parks Canada traveled to the Washington, D.C., area to learn more about it. Over five days, the delegation met with Harvey and the PFMD staff to discuss procedures, processes, strategies, hardware, and software for tracking and reducing deferred maintenance. At the end of the visit, the Parks Canada delegation had observed the “nuts and bolts” of the NPS system and its capabilities at the park, regional, and national levels. Although Canadian park management is driven by a very different model from that employed in the United States, the delegation found immense value in the transferability of many elements of the NPS system. Throughout the following year, Parks Canada maintained contact with Harvey and his PFMD program managers as they navigated the complex task of implementing some similar and other hybrid systems and practices.

While talk of technology made up the bulk of the discussion with Parks Canada, most of the participants had worked as maintenance managers in the field. So, tours of the local NPS park units were a natural part of their visit. At the time, much of the system that Parks Canada managed was rural; yet most of the locations they toured in the metro area were urban. Seeing the infrastructure and human effort required to maintain locations that, to visitors, appear to be simple memorials, gave the visiting delegation some perspective into the demands that would be required of their own workforce should Parks Canada start accepting more urban locations into its family of sites.

Parks Canada’s visit to the United States was part of a growing trend of foreign, state, and local agencies turning to NPS for tips in enhancing their own management strategies. More than anything else, this trend underscored the success evident even in the early results of NPS’s applied facility management science.

Much of that success came from dialogue across park, regional, and industry boundaries. While the opportunity to advise a foreign delegation about facility management was an honor for all those involved in the experience, many others in the NPS facility management community questioned, “What can we learn from our colleagues in other countries?” If NPS could learn this much after a few decades’ worth of internal conversations, the potential for astonishing innovation might be just a plane ride away.

It was in that spirit that Bill Thompson, at the time the chief of maintenance for Rocky Mountain National Park and currently the maintenance chief for the entire NPS Intermountain Region, traveled to New Zealand.

## **Rockies and islands exchange**

Thompson’s New Zealand experience involved an international exchange. Jim Herdman, a program manager for cultural/historic and visitor assets in the New Zealand Department of Conservation (DOC), had an idea to set up an employee exchange to share knowledge. With the American agency closest to his own being NPS, he started the search there. Fortunately, Herdman had a contact in the Intermountain Regional Office, Frosty Bennett, whom he had met at a conference; through Bennett, he was forwarded to Thompson, who made arrangements through the NPS Office of International Affairs in Washington, D.C. With agreements signed and filed, Herdman arrived in Colorado in summer 2011 to begin his three-month exchange at Rocky Mountain National Park.

To expose Herdman to a wide variety of facility management activities, he was embedded in projects spanning facilities, wilderness, resource management, historic structures, trails, and even the FMSS. During his time in the United States, Herdman learned new techniques and standards and shared some of the best practices from his own experience. Doing so face to face with his foreign counterparts while in the middle of a task meant that both he and his hosts could test ideas, share feedback, and learn together.

After Herdman returned to New Zealand, Thompson made plans for his own four-week trip across the Pacific. During that brief visit, he got a crash course in the DOC's methods, and he presented on NPS practices to several public audiences, including some of the DOC's senior leadership (Figure 2).

When asked to sum up his trip, Thompson was quick to respond: "At each area that I visited, I was impressed to see that every Department of Conservation employee comes to work with the same dedication and passion that is displayed by National Park Service employees.

"My impression was that DOC employees are excited to be in positions that allow them to care for and to tell the story of New Zealand's natural and cultural resources. They are also happy to show how they approach their work and their challenges, and [are] eager to hear about the way that we manage our work and challenges. There were a lot of rewards that came

**Figure 2.** Bill Thompson, at the time chief of facility management at Rocky Mountain National Park, looking at a swing bridge over the Wairau River along the Rainbow Road in New Zealand's South Marlborough Area during a four-week international job exchange. Photo courtesy of New Zealand Department of Conservation/Jim Herdman.



along with the exchange, but the highlight of the trip was to sit down with area managers, regional conservancy offices and the national office director.”

Before returning to Colorado, Thompson spent time in South Marlborough, Golden Bay, and the Sounds area. He even delivered a presentation to DOC’s Deputy Director-General Kevin O’Connor and DOC Director-General Al Morrison.

Ultimately, Thompson saw credible value in the exchange. Not only did he and Herdman experience new and startlingly beautiful places, but also they had an opportunity to learn from each other. New Zealand was particularly interested in NPS’s use of volunteer support, especially for facilities. In New Zealand, volunteers are primarily associated with biodiversity groups. DOC also wanted to learn more about the broader NPS focus on youth engagement and about passing the torch of stewardship to future generations.

Thompson also saw and experienced things in New Zealand that could profoundly influence operations in the United States. New Zealand’s wayside exhibits and trails were particularly impressive—and so were a series of low-cost but beneficial solar power stations that DOC has been setting up in its units. He returned to NPS eager to push for more power-saving light-emitting diode (LED) light fixtures and power-generating solar systems. He hopes to spread their implementation across the Intermountain Region and the service as a whole and to establish a standing exchange program with DOC so that other employees and trades have the opportunity to learn from international counterparts.

### **Seeing what most do not**

The business portion of Harvey’s trip to China was built on the foundation of the NPS facility management community’s professionalized existence. He was invited there primarily to evaluate and to teach, to share his community’s expertise with a group of individuals just beginning to professionalize their own service.

The Majjishan Grottoes Harvey visited were originally a stop on the Silk Road—one of the last stops before travelers set out across the Gobi Desert. Pilgrims began carving statues and representations of Buddha into the sandstone cliff and caves 1,500 years ago, and preservation efforts have been ongoing for many decades. The grottoes themselves have withstood fires, earthquakes, and political transitions—and pilgrims kept adding to them through 12 dynasties. When China submitted a description of the site to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) for possible future consideration as a World Heritage site, it noted that 194 remaining caves contained over 7,200 pieces of sculpture.

From the ground, the walkway on the cliff face seems to defy gravity. Bolted directly into the cliff side, it appears to float, on the same haphazard orientation as the sandstone caves, like a veiny appendage on the front of the mountain. Walking along it, a visitor can look into many of the surviving caves and observe the subtle differences in art and style throughout the monument’s history (Figure 3).

However, during his tour, Harvey, as a facility manager, observed other aspects. While he was marveling at the colors and shades in the paints and the detail in the carvings, he was also comparing the current state of the cultural resources with the maintenance levels dedicated to the support facilities. What he realized was startling.



**Figure 3.** The cliff face and visitor walkway on Maijishan Grottoes. Carvings pictured in the first image of this article are visible just to the left of center. Photo courtesy of NPS/Tim Harvey.

Many of the support facilities had been constructed fairly recently with World Bank funds. Therefore, part of the bank's incentive to sponsor this trip rested in its desire to confirm that its investment was well maintained. In contrast to the ancient paints still vibrant on the cave walls, paint along the roofline of far newer structures was already beginning to fleck and chip away, exposing the wood underneath to the elements and opening the door to rapid deterioration (Figure 4). Similar signs of deterioration were evident on the underside of the entry station roof. Stone staircases leading up to the mountain were missing mortar, opening gaps for water to seep in and cause uneven settling.



**Figure 4.** Maintenance contrast: Paints in the grotto caves (left) are still vibrant centuries after they were applied; meanwhile, paint near the roof of a much newer support building (right) is already giving way to the elements. Photo courtesy of NPS/Tim Harvey.

The contrast was peculiar. How can the ancient cultural assets be so well maintained while the new support structure was already showing signs of decay? The answer was two-fold: on one hand, the facility managers at Majijshan needed a comprehensive asset management plan and business practices—which is what Harvey encouraged them to develop. On the other hand, the management structure of the facility was partially responsible.

Unlike in the United States, where almost all assets within national park boundaries are under the jurisdiction and care of NPS, at Majijshan two agencies share oversight. One manages and maintains the support infrastructure; the other coordinates preservation efforts on the cultural asset. Such a split jurisdiction challenges comprehensive asset management. While one agency may compete for funding to complete its work on priceless cultural gems, the other agency may simultaneously compete for funds to repaint maintenance shop walls. Until the two sides unify under a single mission and strategic plan, the care of these assets may remain unbalanced.

### **National parks rely on partnerships and interagency agreements**

Unifying missions across agencies has been an issue in the United States as well. While the NPS has a unique ability to oversee nearly all aspects of the facilities within its boundaries, there are frequently instances where cross-agency relationships are an absolute necessity. From combating wildfires to maintaining dams to managing public health issues, relationships with entities throughout the US government have been an ingredient in NPS's nearly 100 years of success.

Wildfires have presented significant challenges in federal land management throughout the history of these agencies. Jurisdictional issues, however, become immediate problems during a fire, as fires do not obey government-defined boundaries. To combat fires, NPS enters into partnerships and agreements with agencies such as the Bureau of Land Management



(BLM) and the US Department of Agriculture–Forest Service (USFS) to share access routes, resources and human assistance where it is most needed.

Frequently, these partnerships become stronger after major fires. The Greater Yellowstone Coordinating Committee (GYCC), founded in 1986, acted as a foundation for communication and cooperation during the fires of 1988. In response to them, the GYCC helped establish an interagency fire management group that included NPS, USFS, BLM, and the US Fish and Wildlife Service.

The GYCC also worked well as a team, despite the trial by fire, and continues to leverage its interagency status. It still produces valuable joint reports on sustainability and wildlife management—two initiatives shared by the missions of all agencies involved.

Dams and levees are among the more complex managed assets within NPS. Some parks own dams within their jurisdiction, and other parks simply host a dam that is owned by another entity. While a casual observer may think of dams as basic infrastructure without the need for constant attention, the NPS Dam Safety Program (DSP) understands that during a single rainstorm, a poorly managed and maintained dam can go from a landscape fixture to a source of significant flooding and damage.

To properly assess and manage the safety concerns of a dam or levee, the DSP has continually sought and provided expertise across industry and agency boundaries. This exchange is partially by design. Within the Department of the Interior, the Bureau of Reclamation (BOR) acts as the lead agency for dams, providing over \$1 million in support of NPS dams alone. DSP also relies on BOR for technical expertise across engineering disciplines. Simply having a lead agency for such critical assets streamlines management and funding, and it allows NPS to focus on the unique properties of the dams within its boundaries, while knowing it has a designated contact to cover specialized needs.

Perhaps among the most enduring partnerships in the US government is the pairing of the NPS and the US Public Health Service (PHS). For over 90 years, PHS has helped test and manage water quality, provide safety assistance, and even lend its staff to NPS initiatives through service-level agreements. In just a single year, PHS can test as many as 800 drinking water systems and 1,000 wastewater systems—ensuring that what flows out of those treatment facilities meets or exceeds safety standards.

### **Cooperation as the foundation for a more effective future**

Harvey's trip to Gansu Province was a wonderful example of international cooperation: he had the opportunity to learn how China manages its historic treasures, and the facility managers he met drew from his strategic experiences across NPS. China's own park service is just beginning to form, and it is certain to undergo significant changes and evolutions as it molds itself to its purpose. Harvey may have helped set it on a course that will make life-cycle asset management a cornerstone of its future endeavors, or he may have provided the perspective needed to create customized methodologies.

NPS, in turn, will likely benefit from Harvey's contacts, ultimately gaining insights to more diverse methods of managing and maintaining cultural relics and locations. Perhaps further examination of this relationship will also stimulate interest in more frequent or expanded cooperative initiatives that extend not only across agency boundaries, but beyond US borders.

Clearly, in the case of Harvey's involvement with the People's Republic of China, an internationally recognized authority in smart investments—the World Bank—acknowledged NPS as an authority in professional facility management. Furthermore, through its willingness to fund this initiative, the World Bank has expressed an appreciation for the value in capitalizing on NPS intellectual resources to aid emerging resource protection agencies on a global scale.

What started with collaboration within NPS and gradually branched out to the exchange of ideas between industry leaders and other agencies is now being elevated to international dialogue.

With a little luck and a lot of dedication, that dialogue will be the foundation on which cultural and natural resources in all corners of the world, along with their less iconic support infrastructure, are protected, preserved, and kept open for public engagement for generations to come.

*[Ed. note: The author would like to acknowledge the contributions of Tim Harvey and Bill Thompson.]*

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