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Hawaii Army National Guard Receives Army's Highest Environmental Award

Aberdeen Proving Ground, Md.-- For its efforts to restore Diamond Head Crater to a more pristine natural condition, the Hawaii Army National Guard (HIARNG) at Fort Ruger will receive the Army's highest honor in environmental stewardship – the Secretary of the Army Environmental Award. The award will be conferred at a ceremony at the State Department of Defense on April 17th.

With exceptional planning and management, the HIARNG took only months (January to May) to reclaim the soil and restore a significant portion of Diamond Head Crater.

For decades, Diamond Head Crater has been the first natural feature that seven million visitors per year see on approach to the Hawaiian Islands, via ship or airplane. Located in Honolulu and part of Fort Ruger since 1909, the Diamond Head military complex was used by the U.S. Army and the HIARNG for pistol and rifle training from the 1930s to the mid 1960s. Over the decades this training had resulted in tons of ammunition fragments to be deposited in the soil of the firing ranges. Ft. Ruger was transferred to Hawaii National Guard control in 1950.

In a concerted effort to leave Diamond Head in better condition than when it was given to the U.S. Army, the Hawaii Army National Guard undertook a comprehensive cleanup program for Diamond Head as part of the state monument restoration act of 1979. In a matter of months, and without once closing the park to the public, the Hawaii Army National Guard Diamond Head restoration staff removed and recycled over 14 tons of particulate metal and cleaned 30,000 tons of soil using a soil washing machine powerful enough to thoroughly wash soil after only one pass through the system.

"The soil washing equipment our team used was extremely efficient," said Cpt. Charles J. K. Neumann, Environmental Officer. "Our equipment reduced our need to tap into fresh water resources because it actually recycled the water and reused it over and over again throughout the whole project."

Invasive plant species at Diamond Head were also removed to promote native vegetation growth. Because using prescribed burn techniques to control the invasive plants is forbidden in the area, the Guard restoration staff manually dug up the offensive plants so as not to impose impacts on the environment by using chemical pesticide sprays.

The community surrounding Diamond Head Crater never had to worry about the restoration project impeding on their daily lives because the Guard restoration staff worked directly with Diamond Head neighbors to accomplish the cleanup with minimized traffic, noise, and dust.

This information is provided by USAEC. USAEC is the Army's point organization for supporting the implementation of environmental programs that facilitate sustainable Army training and operations while protecting the environment. We provide environmental program management and technical support products and services in support of Army training operations, acquisition and sound stewardship.

"Sustaining the Environment for a Secure Future"

FY 2007 Secretary of Defense Environmental Awards

Fort Ruger, Hawaii ARNG

Environmental Restoration, Installation



Sustaining the Environment for a Secure Future

Fort Ruger, Hawaii ARNG

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SUMMARY

For decades, Diamond Head has been the first natural feature that nearly seven million visitors and tourists see on approach to the Hawaiian Islands, whether they are traveling to Hawaii via ship or airplane. The State of Hawaii is committed to preserving the natural beauty of this very recognizable feature, and the Army is supporting the state's objective through the Diamond Head environmental restoration project developed by personnel at Fort Ruger. Many challenges had to be overcome: remediation of the site to a level commensurate with public use in an area currently open to the public, safe handling of unexploded ordnance, managing the project with the least impact possible on the local community and keeping the community informed of projects plans and milestones; and coordinating the efforts of approximately 20 state, local, and DoD agencies.

“Hawaii Army National Guard demonstrated that the environment can be cleaned up in a sustainable and cost efficient manner. Their creative approach to soil washing highlights their focus on environmental stewardship.”

*- Kristine Kingery, Chief, Cleanup Branch,
Office of the Assistant Chief of Staff
for Installation Management*

Following is a list of the program's accomplishments in FY 2006-2007:

- Executed the cleanup project timeline without once closing the park to the public at an aggressive pace to accommodate city plans for a benefit concert at Diamond Head.
- Remediated 30,000 tons of soil in four months at a cost of only \$3.8 million, realizing a projected savings of \$8 million to \$10 million.
- Removed and recycled over 14 tons of particulate metal from the Diamond Head Crater.
- Cleared the area of invasive plant species and promoted native vegetation growth.
- Benefited the local community by using local small businesses to achieve the cleanup.
- Worked directly with Diamond Head neighbors to accomplish the cleanup without negative impacts on the community by minimizing traffic noise and dust.

The level of quality outreach and communication, in combination with the program management and technical merit employed in the Diamond Head Crater restoration project, has helped to reinforce the Hawaii Army National Guard's long record as a good steward of the beautiful and sensitive environment of Hawaii, and as a good neighbor to the people who live there.

INTRODUCTION

The Hawaii Army National Guard (HIARNG) at Fort Ruger serves 300 military personnel and supports the surrounding local community of 200 on the slopes of Diamond Head, and over 50,000 people within close proximity. Fort Ruger has supported the Diamond Head facility since 1909. For 30 years its ranges were used for pistol and rifle qualifications. This former practice left the land with a legacy issue of lead ammunition fragments in the range soil. The land mass of the restoration site contains 20 acres, all of which the HIARNG is dedicated to restoring.

The environmental and geographical settings of the site are quite unusual – it is actually inside Diamond Head Crater, which is an extinct volcano. Diamond Head Crater is now a state monument managed by the State Department of Land & Natural Resources. It is located in Honolulu, to the east of Waikiki on the south shores of the island of Oahu. The site is also home to a small wetland. Since active use of the ranges ended in the 1960s, the site has been maintained by the Hawaii Army National Guard Environmental Office, the State Department of Defense and the State Department of Land & Natural Resources (State Parks Division).

For decades, Diamond Head has been the first natural feature that eight million visitors and tourists see, whether they are traveling to Hawaii via ship or airplane. Diamond Head Crater is a symbol of Aloha for the State of Hawaii. As such, the State of Hawaii is committed to preserving the natural beauty of Diamond Head Crater. The Army is supporting the state's goals through the environmental restoration program at Diamond Head, developed by personnel at Fort Ruger.

BACKGROUND

Restoration Team

The Fort Ruger environmental restoration team has developed, and is implementing, a master plan that has been approved by the state of Hawaii. The HIARNG staffing and management approach consists of top level management (an environmental officer and the deputy) and managers for the compliance and conservation environmental pillars, as well as National Environmental Policy Act (NEPA), geographical information systems (GIS), and cultural and natural resources staff. The entire environmental staff performed as a team on this project to address any and all issues. Within the past 12 months, the HIARNG environmental office has accomplished a



A view from the summit of Diamond Head looking east. In the center is the project processing site. Immediately beyond the rim is the district of Waialae Kahala (other wise known as the gold coast). In the far background is where Hanauma Bay (a wildlife preserve) is located.

Fort Ruger, Hawaii ARNG | Environmental Restoration, Installation
tremendous milestone in this effort with a large-scale restoration and remediation project involving two ranges and cleanup of 30,000 tons of soil.

Local Community Agreements

From the start, the community was thoroughly involved with the project. The Fort Ruger environmental restoration team ensured that it briefed not only the scope of the project, but also the actual remediation process and the technology that would be used. The team addressed all concerns that came to their attention in town meetings, discussing issues such as noise, dust, traffic, security, lighting, work hours, project length, health and safety concerns, responsibilities, project manager availability, resource management, pollution prevention, solid waste management, recycling and hazardous materials control.

UXO Removal Initiative

Of particular concern was how the team would handle unexploded ordnance/munitions (UXOs). The Fort Ruger environmental restoration team reviewed and adjusted the plan to ensure that any UXO discovered was handled immediately and safely. Further dedicating themselves to the community, HIARNG staff ensured that everyone knew and understood the UXO plan to include discovery, notification, security, safety, assessment, disposal and communications.

PROGRAM SUMMARY

The mission of the Diamond Head Crater restoration project is threefold:

- Conservation: Continue endangered species recovery, noxious weed eradication and awareness training and education for Hawaii's youth; safeguard project team members and the public.
- Compliance: Continue to monitor for regulatory compliance and implement pollution prevention initiatives and affirmative procurement actions, and increase waste stream diversion.
- Land Management: Continue to implement restoration, GIS, and integrated training area management projects to protect and enhance the natural resources of Hawaii's Army National Guard



A view from the summit of Diamond Head looking down at the processing site and its equipment.

training lands. Attain sustainability in training lands. Improve design, management and use of lands to ensure long-term sustainability.

The first challenge the Fort Ruger environmental restoration team tackled with this restoration project was figuring out what technology would be the best solution, considering all the aspects and impacts. The installation's environmental management system (EMS) (ISO 14001) was used to inform all aspects of the restoration project. The next challenge was to facilitate communications among the many project team organizations, and serve as a communications contact for the community. One person was chosen for these responsibilities, which included resolving project and contractor issues, managing any extraneous issues among partner agencies and informing the public of project plans and progress. The purpose of choosing a single, dedicated contact for these responsibilities was to ensure complete and accurate communications.

There were three main challenges to overcome once the project was approved and funded. The first was communication and information sharing with the community and involved agencies. As a

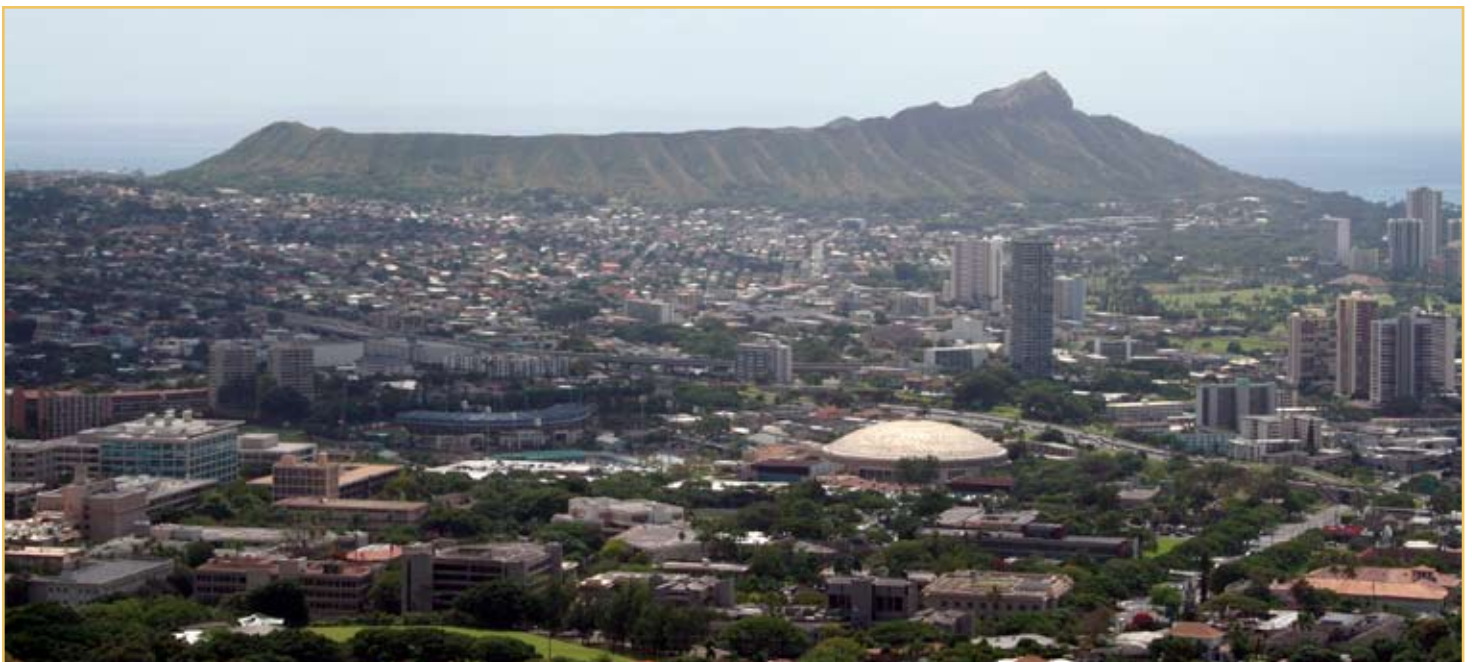
Fort Ruger, Hawaii ARNG | Environmental Restoration, Installation local landmark with historical importance, it was imperative that the community and all involved stakeholders were kept apprised of project milestones. The HIARNG environmental restoration team provided information to the public through community meetings, neighborhood boards and advisory council meetings, all held throughout the project lifecycle. The restoration team also maintained contact with all affected state and Army agencies.

- United States Army Corps of Engineers
- United States Army Explosive Ordnance Disposal (EOD) Team
- United States Department of Homeland Security
- Hawaii Department of Defense
- Hawaii State Civil Defense
- Hawaii Department of Land and Natural Resources
- Hawaii State Parks
- Hawaii Department of Health
- Hawaii Sheriff Department
- Hawaii Department of Business, Economic Development & Tourism
- Hawaii State Historic Preservation Division
- Honolulu Police Department
- Honolulu Fire Department
- HIARNG Engineering Office

- HIARNG Joint Director of Military Support (JDOMS)
- HIARNG Plans, Operations & Military Support Officer (POMSO)
- Diamond Head Citizens Advisory Committee
- Diamond Head Public Affairs Office
- City and County of Honolulu
- Picatinny Arsenal

Another challenge was with time and scheduling. As a state monument and park, impact to the visitors at the monument had to be minimized. The Fort Ruger environmental restoration team was able to plan the cleanup project timeline so that the park never had to be closed to the public. The timeline also accommodated the park by ensuring completion of the project on a very tight deadline so that plans to use the park for an outdoor benefit concert would not have to be delayed.

The third challenge was the mobilization and demobilization of the heavy equipment and machinery that would be utilized during this project. Significant coordination was needed to ensure that during this process, the public and surrounding communities would not be impacted by impeding traffic and noise. During the project, the



View of Diamond Head and the surrounding community.



The contractors working on the processing equipment. Notice the cleaned and processed soil falling from the conveyor belt. Also notice the pillbox located on the rim of the crater.

environmental restoration team constantly monitored the cleanup activity to ensure that noise, dust and accessibility were minimized as much as possible. At the end of the project, the team point of contact once again met with the local community's Diamond Head Association to provide a final report on the project.

ACCOMPLISHMENTS

Working in Congruence with DoD and Non-DoD Entities

The Fort Ruger environmental restoration team worked in coordination with many state, local and DoD agencies to ensure that the project at Diamond Head Crater was cleaned-up on schedule and without adversely impacting the community and other missions. For example, the firing range lands at Diamond Head are jointly administered by the Hawaii Department of Land & Natural Resources' Division of State Parks, the State of Hawaii, DoD, and the HIARNG. Additionally, HIARNG environmental staff worked with the Hawaiian Department of Health, the State Historic Preservation Office and the City and County of Honolulu emergency services departments and water branches. This extensive interagency coordination enabled HIARNG to complete the

restoration in full compliance – preventing any completion delays. Additionally, this allowed for a thorough and up-to-date implementation of all associated management plans for the site.

Fast Track Soil Cleanup

The soil cleaning endeavor was the most extensive and impressive aspect of the Diamond Head Crater restoration project. It took only four months to remediate the 30,000 tons of soil coming in at a cost of \$3.8 million. The state cost analysis estimates predicted this project would come in at a cost of \$12-\$14 million, indicating a cost savings of between \$8 and \$10 million. The Fort Ruger environmental restoration team began the process by excavating contaminated soil from the firing ranges. The depth of excavation ranged from a little more than one foot to as much as 12 feet deep. In total, approximately 30,000 tons of soil were collected from the range for cleaning.

The restoration team tested a variety of soil washing equipment and techniques, ultimately finding a new soil washing machine powerful enough to thoroughly wash soil after only one pass through the system. By using a closed loop soil washing process, the water itself was recycled and used throughout the



Soil removed during the restoration project was returned clean to this former rifle range. The range was hydroseeded with native grass, which was irrigated to promote growth.

entire project, significantly reducing the need to draw on fresh water resources. At each step in the process, the restoration team found ways to reuse and conserve resources for maximum environmental benefit. At each step in the process, the restoration team found ways to reuse and reduce resources for maximum environmental benefit. All the cleaned soil was then placed back into the former ranges after its cleaning to support the native plant development.

With so many benefits resulting from the soil cleanup process, the Fort Ruger environmental restoration team received final concurrence from the Hawaii Department of Health that no further or additional action was required. With the formal project closure, the land was formally conveyed to the Hawaii Department of Land & Natural Resources and the state was able to reopen the former range, now a state park, for public access and recreation.

Metal Removal

In the process of cleaning up the Diamond Head Crater, the Fort Ruger restoration team collected all lead bullet fragments and other metals, including copper, from the former pistol range. All told, this particulate metal amounted to a much cleaner environment voided of over 14 tons of waste. When it was recycled, the restoration team realized a \$5,000 profit for Fort Ruger's Qualitative Recycling Program.

Plant Species Management

The cleanup project also presented an opportunity to rid Diamond Head Crater of invasive plant species and promote native plant propagation. The challenge was to accomplish the first task without using prescribed burns, which are forbidden in the area.

The Fort Ruger environmental restoration team set to the task of digging up the offensive plants manually so as not to impose impacts on the environment by using chemical pesticide sprays. Once the soil in the area was washed and redistributed, the restoration team worked with a nursery to provide a variety of native seeds, and the entire area was hydroseeded with native grass species and irrigated until the grasses took root and recovered the natural state of the land.

Community Consideration

Hawaiians as a community are generally very concerned about and involved in preserving the beautiful natural environment in which they live. The Fort Ruger environmental restoration team could never have accomplished such an extensive cleanup of a treasured public area in so short a period of time without consideration for the local community. Aspects of the cleanup project were developed specifically to benefit local businesses, accommodate local residents and include local agencies.

Though special equipment like the soil washing machine had to be imported from the mainland United States, the restoration team made a concerted effort to purchase or lease bulldozers and other vehicles from local small businesses and hire local labor crews. As a result, the restoration project directly impacted the local economy, with much of the \$3.8 million project expenditure going directly back into the state economy.

The Fort Ruger environmental team also worked directly with Diamond Head neighbors to accomplish the cleanup without negative impacts on the community, specifically in the areas of noise and dust control. This was accomplished by meeting with the neighbors to understand their primary concerns, and engaging them throughout the restoration planning and implementation process to ensure the community's concerns were being addressed. Noise test results demonstrated that noise levels remained under 86 decibels, and 13-foot-high dust and silt traps were installed to capture any dust kicked up into the air. Water trucks also sprayed dry soil before disturbance to keep dust levels to a minimum.

The staff also met regularly with the Diamond Head Advisory Board, a group established to oversee the development of the state park, in order to share updates and information sheets. The board helped to further disseminate this project information to Diamond Head neighbors and tourists, allowing the Fort Ruger restoration team to reach out to a larger segment of the community.

This restoration project was fast tracked for cleanup completion in just four months to expand Diamond Head's public recreation resources by 42 acres. The former ranges will be used for outdoor concerts and festivals, allowing even more visitors to enjoy the area's exceptional natural beauty.

CONCLUSION

The level of quality outreach and communication, in combination with the program management and technical merit employed in the Diamond Head Crater restoration project, has helped to reinforce the Hawaii Army National Guard's long record as a good steward of the beautiful and sensitive environment of Hawaii, and as a good neighbor to the people who live there.



The irrigation lines have been removed and placed along the silt fence.