

# ENVIRONMENTAL AWARDS

*30th Space Wing, Vandenberg AFB / Cultural Resources Management – Installation*

## **INTRODUCTION**

Vandenberg Air Force Base (VAFB), the third largest US Air Force installation, is home of the 30th Space Wing and the most outstanding cultural resources management program in the US Air Force for FY 2011. Remotely located on California's Central Coast, VAFB provides America's only capability to launch military and commercial satellites into polar orbit and conduct intercontinental ballistic missile testing without over-flying populated areas. The 30th Space Wing operates the Western Range consisting of instrumentation sites along the California coast providing a vast array of space and missile tracking equipment. These critical, national security missions are all accomplished within VAFB's 99,604 acre national park-like setting by a combined military, civilian and contractor workforce of over 11,000 people.

Among the more than 1,500 prehistoric resources at VAFB are 14 rock art sites, five named historic Native American villages, another 12 unnamed village sites, numerous cemeteries, and hundreds of shell midden sites including the oldest dated archaeological deposit on the Central Coast mainland. VAFB also has 26 known paleontological sites across the base. Among the more than 300 historical resources is one National Historic Landmark, one National Historic Trail, 118 historical archaeological sites, and historic buildings and structures ranging from adobes to the site of the Nation's first Inter-Continental Ballistic Missile (ICBM) to be put on active alert.

## **BACKGROUND**

The bedrock for program implementation is VAFB's Integrated Cultural Resources Management Plan (ICRMP). With contributions from nationally recognized historic preservation experts such as Thomas F. King and renowned California archaeologist Michael J. Moratto, this impressive 14-volume set establishes specific practices and procedures for managing all aspects of the cultural resources management program. The ICRMP implements objective 2.5 and associated measures and outcomes of Department of Defense's (DoD's) Defense Installation Support Plan. One of the unique aspects of VAFB's ICRMP is Volume 8, which brings the base into full compliance with the congressional direction to federal agencies in 1990 to inventory, protect, and manage Cold War resources. The accompanying programmatic agreement (PA) for managing exceptionally important Cold War historic properties, developed in consultation with the California State Historic Preservation Officer (SHPO), helps VAFB protect America's military history while supporting today's missile development, testing, and launch operations. The PA and its annual reporting requirement streamlines the Section 106 compliance process, expedites the project approval process, and saves countless hours and accompanying costs for an average of 30 projects each year.

## **PROGRAM SUMMARY**

VAFB protects and preserves its incredible inventory of cultural resources in the course of supporting the installation's mission of space and missile launch objectives. Innovative approaches to site preservation within the context of Section 106 compliance resulted in impressive cost avoidances and accelerated project schedules. Stakeholder involvement is a program cornerstone and marked by positive relations with the SHPO, an outstanding Native American consultation program, and close coordination with project proponents. Local community interest is high and fostered by a robust public outreach program.

## ACCOMPLISHMENTS

FY 2010 and 2011 were witness to many outstanding program accomplishments, including:

- Supporting massive initiatives to replace critical electrical distribution lines to launch complexes; developing avoidance measures and saving more than \$1M.
- Inspecting collections at curation repository to ensure compliance with 36 CFR Part 79
- Enhancing conditions at five rock art sites using low-cost self-help measures and collaborating with stakeholders
- Identifying the oldest known archaeological deposit on Central Coast mainland and carrying out excavations that will provide the first glimpse into the earliest known human occupation on VAFB
- Visiting the Smithsonian Institution and National Anthropological Archives to research collections generated in 1875
- Recovered and restored a rare and remarkably complete 80,000-year-old fossilized cranium of an extinct species of horse that lived during the Pleistocene and was part of a group of animals known as the Rancholabrean megafauna
- Re-established the solar event at Window Cave during Winter solstice and observation of the sun setting parallel to the north slope of Tranquillon Peak, an event regarded by the Chumash as sacred, by removing select invasive eucalyptus trees
- Partnered with Mission La Purisima State Park to manage overgrown tule reed and willow stands at Pine Lakes recreation area and provide materials for volunteer-organized project to construct a Chumash tule hut at no expense to the Air Force or the Park!
- Awarded a DoD Legacy Program grant for National Public Lands Day at the “Boathouse” focusing on stabilizing and rehabilitating an eroding, barren cut-bank by planting more than 350 native pollinator plants – a public awareness event attended by senior leaders and approximately 50 community volunteers



For the first time in 15 years light streams through a hole in the roof of Window Cave, marking Winter solstice.

Though not discernable in the photo, just beyond the left edge of the beam of light, in shadow, is a sun-sign petroglyph shaped roughly like a wagon wheel. At the other end, the event that corresponds with this one is the setting sun, sliding down the northern slope of Tranquillon Peak.

## OVERALL CULTURAL RESOURCES MANAGEMENT

The VAFB Cultural Resources management team successfully programmed, planned, and budgeted to support the diverse range of cultural projects in terms of Section 106 compliance. The team coordinated with installation Programming and Project Management offices, attended Facilities Utilization Board meetings, and monitored dynamic project prioritizations on the Sustainment and repair and maintenance lists. VAFB programmed annual recurring cultural resource requirements based on ICRMP goals and hope to have these efforts placed in the President's budget after obtaining headquarters program validation through FY 2015 and out-year requirements projections built through FY 2019.

In 2011, the team increased utilization of self-help projects to attain cost savings, developed camaraderie, and forged strong working relationships with other offices on-base. The team enhanced cultural resources by focusing on a specific category of resource and developing low-cost and executable enhancement measures in-house, as well as in collaboration with other base departments, Tribal members, CRM contractors, and/or volunteers.

Of particular focus in 2010-2011 were the rock art sites. The team improved trails, constructed natural stairs, reduced fuel loads around sites, and removed invasive eucalyptus trees to restore line-of-sight between Window Cave and Tranquillon Peak to permit observation of the winter solstice event at the cave for the first time in 15 years. These cost-effective improvements made five important rock art sites safer to visit, less susceptible to fire damage, and restored the Tribe's ability to experience a sacred event and resume practicing their traditional ceremony at Window Cave. This innovative yet simple tactic will ensure VAFB continues to enhance cultural resources into the future even if confronted with an environment of fiscal austerity.

## HISTORIC BUILDINGS & STRUCTURES

The VAFB team managed the challenging Sudden Ranch historic district, which includes buildings from the 1890s. The team developed a GIS layer and attribute table listing each element and data field. The team produced a brochure on the ranch to inform the public of the historical relevance of this area of the Central Coast. They performed a Section 110 condition assessment that determined roof repairs were 100% effective in preventing rain from causing interior damage; and recommended simple, cost-effective self-help measures to stop birds from damaging the eaves. The team reviewed options to permit cattle grazing within the district by the Bureau of Prisons, to include use of fields, corrals, holding pens, and roads; to allow for additional use options for historic buildings.

The extent of the use of the 1940s Port Petrol as a marine transport oil terminal on north VAFB was poorly understood until 2010 when VAFB evaluated the site. The team used Light Detection and Ranging (LiDAR) ground images to identify features previously masked by vegetation, field surveys to record feature details, and archival research to provide images and historical data. The study identified areas likely contaminated with petroleum by products, determined early site ownership, as well as fiscal responsibilities for site cleanup.

VAFB participated in the Air Force initiative to scan and curate engineering drawings of Air Force structures and transfer them to the Air Force Historical Research Agency (AFHRA) at Maxwell AFB in Alabama. Among the 50+ installations contributing plans, VAFB's contribution was the largest—with 3,600+ rare Cold War era design plans! The digital conversion and curation of these original plans preserves technical information and allows broad access to engineers, historians, and researchers now and into the future.

## ARCHAEOLOGICAL RESOURCES

VAFB operationalized the newly-redesigned Section 110 condition assessment program, which resulted in the identification of deep culvert erosion through a prehistoric site (CA-SBA-1547). Prior to implementing site-specific stabilization measures, the archaeological deposit was characterized and samples from the deposit were submitted for carbon-14 radiometric dating. The yielded dates tightly clustered around 10,600 calibrated years before present – the oldest dated archaeological site on the Central Coast mainland! This VAFB collection – currently under analysis – will provide the first glimpse into the earliest known human occupation on the Central Coast of California.

In 1875, the Smithsonian Institution (SI) sponsored Paul Schumacher's excavation of three sites on VAFB, which amassed an impressive collection of tools, ornaments, and contact-period trade items. A VAFB archaeologist contacted the SI and National Anthropological Archives (NAA) to research Schumacher's collection. The artifacts were found at the SI Museum Support Center in Suitland, Maryland, with Schumacher's signed labels still attached! Results of the research were presented at a symposium for the Society for California Archaeology in March 2010, as well as 11 other papers about recent archaeological studies on VAFB.

VAFB archaeologists responded to a fossil discovery half-way up the 40-foot-tall sea cliff, and discovered an elongated fossilized skull. Geologists dated this marine terrace to approximately 80,000 years old, so VAFB archaeologists presumed the fossil to be a species within the group of animals referred to as the Rancholabrean megafauna. Partnering with Santa Barbara City College (SBCC), VAFB archaeologists excavated around the fossil, removed it, and transported it to SBCC for cleaning, re-assembly, stabilization, and curation – all at no cost to the Air Force. The fossil was determined to be a long extinct species within the genus *Equus* (ancestor to the horse).



In 1875 the Smithsonian Institution sent Paul Schumacher to the present-day lands of VAFB to collect artifacts to display during America's centennial celebration in Philadelphia. Research indicates these seven exquisite bifaces derive from the historic Native American village Lospe near Minuteman Beach on north base. These artifacts are just a few of the hundreds of jaw-dropping artifacts collected from three sites on VAFB and presently curated at the Smithsonian.



Located half-way up a 40-foot-tall sea cliff within the sediments of an 80,000 year old marine terrace, VAFB archaeologists excavate a fossilized skull. Following cleaning and reassembly, paleontologists identified the skull as belonging to an extinct species of horse that lived during the Pleistocene – a member of a group of animals known as the Rancholabrean megafauna. Remarkably complete with almost all of its upper teeth intact, the skull will be curated at Santa Barbara City College and be available for research.

## NATIVE AMERICAN PROGRAM

As the Wing Commander's Native American Liaison, the cultural resources team at VAFB fosters a long-standing partnership with the Santa Ynez Band of Chumash Indians as joint stewards of Native American resources. The team coordinates meetings between the Commander and the Tribal Chairman, sets up Commander's visits to various sites, and provides Tribal member base passes for fishing, hunting, collecting plant materials, visiting sacred sites, site monitoring, and other activities.

Recognizing that each of the 14 rock art sites on VAFB are one-of-a-kind and, in some cases, sacred sites, VAFB elevated its focus on these sites in terms of condition assessments, enhancements, and Section 110 and ARPA management. The Honda Ridge rock art panel is available for public visitation, which carries a degree of risk. VAFB commissioned rock art specialists to document all intrusive elements on the panel. At the Swordfish Cave rock art site, VAFB archaeologists and Tribal members collaborated to improve access and safety for Tribal elders by converting an earthen path into a staircase. They chose a design frequently used in State Parks for aesthetic appeal, use of natural materials, durability, and low cost. A VAFB team of archaeologists, natural resources personnel, and Hot Shot Fire Crew members, along with rock art experts, worked together to restore the Chumash Tribe's ability to observe a sacred solar event at Window Cave during the Winter solstice which has long been obscured by trees. The team carefully cut down selected trees to restore line-of-sight between Window Cave and Tranquillon Peak, which also served as a preventative measure against wildfire.

## CURATION

VAFB recently carried out an inventory, inspection, and condition assessment of the VAFB collections housed at University of California at Santa Barbara (UCSB) to ensure they met the federal standards outlined in 36 CFR Part 79. Many of the earliest collections were improperly bagged/labeled, some had unreadable handwritten artifact catalogs with minimal information, and others contained large volumes of unanalyzed remains and unprocessed samples. In short, these collections were useless to researchers. VAFB has paved the way to ensure all its collections at the repository meet federal standards. To date, approximately 25,000 artifacts have been re-inventoried, placed in archival quality containers, and properly labeled. Ancient catalogs have been laboriously translated into the current coding system and entered into a searchable database format. These efforts have converted previously useless collections into a rich pool of data relating to some of the earliest organized excavation projects on VAFB.

## CULTURAL RESOURCES EDUCATION

The cultural resources team maintains four exhibits staged at high-visibility locations across the base featuring a 12 million year old fossilized whale vertebrae recovered on VAFB and an exhibit of 5,000 year old Native American artifacts. VAFB produced two public outreach brochures in 2011—one to depict the sensitivity of the Swordfish Cave rock art site and the other regarding the 140 year evolution of the Sudden Ranch historic district.

For the past five years, VAFB cultural resources personnel have visited Vandenberg Middle School to give presentations about archaeology, environmental science, and local prehistory to the students. Not only a wonderful way to teach students about these topics, it is also an opportunity to show students how to be good stewards of cultural and natural resources.



An exhibit displaying historical artifacts was installed in the Visitor Control Center for four months before being rotated into the Pacific Coast Club. If just 10 people per day view and read the exhibit, by the end of its display period more than 2,400 people will learn something about VAFB history and cultural resources management. Next: a diorama of the 1923 Naval disaster at Honda Point accompanied by historical photographs.



Several invitations were extended to and accepted by the 30 SW/CC and his supporting senior staff to visit cultural resources sites and excavation projects. Here, after visiting excavations at the historic Native American village of Estep, Colonel Richard Boltz and Chief Master Sergeant Angelica Johnson spend an hour learning about and practicing flint knapping. Other sites visited include Swordfish Cave and coastal shell midden sites.

Each year at the VAFB Earth Day Fair the cultural resources team operates the most popular booth where they exhibit artifacts, distribute pamphlets, and talk about site stewardship. The kids adore the mock archaeological site with plastic beach trowels, plastic doubloons, and miniature plastic dinosaurs; and the adults enjoy the flint-knapping demonstrations.

The cultural resources team was instrumental in fostering cultural resources awareness amongst VAFB senior leadership. The 30 SW/CC and his staff were escorted to Swordfish Cave and several coastal sites, participated in excavations at the historic Native American village of Estep, and even sat down for an hour's worth of flint knapping lessons!

## COMMUNITY RELATIONS

Public outreach and fostering good community relations go hand-in-hand for the VAFB cultural resources staff. A partnership between VAFB and the Mission La Purisima State Park led to the construction of a Chumash tule hut – 14 feet tall and 20 feet in diameter – using all traditional materials and methods. The collaboration improved fish habitat and fishing for base personnel and added an impressive new feature to the park – all at no expense to the Air Force or the State of California! The team has long-standing relationships with local civic organizations. Two members serve on the board of directors for the Lompoc Museum, and two others serve on the board of directors for the San Luis Obispo County Archaeological Society. The team provides tours of VAFB cultural resource sites for museum and society members.

The team maintains connections with the professional and academic community through membership in the Society for California Archaeology (SCA), the Society for Historical Archaeology, and the Society for American Archaeology. During the SCA annual meeting in March 2010, VAFB presented 12 papers on various archaeological investigations which promoted VAFB's cultural resources management achievements and research contributions.

## ENVIRONMENTAL ENHANCEMENT

The VAFB cultural resources team was awarded another DoD Legacy Program grant for National Public Lands Day. The event combined that year's theme of 'native pollinators' with a goal of stabilizing a barren, eroding cutbank in front of VAFB's historic 'Boathouse'. After benching the slope and installing straw wattles across the slope, more than 350 native pollinator plants were planted. Additionally, the Boathouse was opened to allow attendees to take a self-guided tour and natural resources staff hosted an exhibit about pollinator plants and the key roles played by pollinator insects and birds. The event was attended by approximately 50 volunteers, including several senior leaders.

VAFB archaeologist Kelli Brasket, who also happens to be a red-card licensed firefighter, was a key team member in the FY2010 and FY2011 complete overhaul of the Wildland Fire and Fuels Management Plan (WFFMP) - the fundamental strategic document that guides the full range of fire and fuel management related activities on VAFB. It provides a framework for the management of wildland fire, prescribed fire, and hazardous fuel reduction as tools to safely accomplish the resource protection and management objectives of VAFB as described in the Integrated Natural Resources Management Plan.

## MISSION ENHANCEMENT

VAFB embarked on a massive effort to replace all mission critical overhead electrical distribution lines to launch complexes and to facilitate maintenance. The combined area of potential effects amounted to a 49-mile-long corridor containing 64 known archaeological sites. The team conducted field investigations at 27 sites to assess eligibility and/or potential project effects. The team saved \$50K as an eligibility determination was possible at two sites without any additional fieldwork. The team worked with project engineers to develop avoidance measures for sites containing significant archaeological deposits to achieve three no adverse effect determinations, which resulted in National Register eligibility, \$2M in savings, and two years shaved off of the project schedule.



Volunteers working at the Mission La Purisima State Park built a Chumash tule hut using willow poles and tule reeds obtained from the Pine Lakes recreation area on VAFB. Several months of tule reed harvesting cleared and re-opened multiple access points along the shoreline. Providing the park with an impressive new feature and the base with improved fish habitat and fishing access is a perfect example of a win-win situation.

The team serves as architectural and historical data experts in support of the Air Force “20/20 by 2020” initiative. As key members of the interdisciplinary planning team, the cultural resources staff has briefed VAFB commanders on demolition and historic facilities protection issues, and articulated concerns with the base historian and Museum offices.

#### **CULTURAL RESOURCES COMPLIANCE**

Archaeological and Native American monitoring during construction of the San Antonio Creek Restoration project – a requirement deriving from Section 106 consultation with the SHPO and the Tribe – recovered isolated artifacts, prevented a subsurface feature from being obliterated, and resulted in the discovery of a Late Period subsurface deposit during construction. VAFB’s well-crafted Memorandum of Understanding (MOA) provided the flexibility to notify the SHPO and Tribe of the discovery, mitigate adverse effects to the new site, and prevent work stoppage. Results were an estimated \$40K in savings of demobilization and remobilization expenses. Additionally, VAFB’s NAGPRA Written Plan of Action clearly identified two isolated artifacts as NAGPRA objects that will be repatriated to the Tribe following analysis.

The team also assists the Military Munitions Response Program (MMRP)—a large, complex project with access restrictions resulting from the presence of unexploded ordnance (UXO). In consultation with the SHPO, VAFB permitted MMRP work to move forward without knowing precise project details by employing a phased approach to the identification of historic properties and assessment of effects. This approach enabled the MMRP to quickly respond to surface UXO discoveries. There have been 100+ “blow-in-place” operations with no historic properties suffering adverse effects. The team also supports MMRP efforts by embedding a qualified archaeologist into each field crew and providing training to each UXO technician. A great example of force multiplication as after a few days of working together, the UXO technicians were just as quick to identify prehistoric and historical artifacts on the ground surface as were the embedded archaeologists. For example, this team model facilitated the discovery and recovery of two Spanish-era cannon balls.