

Hill Air Force Base

Integrity, Service & Excellence



FY 2008

**Secretary of Defense
Environmental Award**

**Award Category:
Environmental Quality—
Industrial Installation**

Nominee:

75 CEG/CEV

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Summary

The Hill Air Force Base (AFB) Environmental Management Division has efficiently managed its environmental program while concurrently meeting mission objectives and promoting environmental stewardship. Our dedication to excellence is apparent in the following accomplishments:

- Applied Environmental Management System (EMS) to improve hazardous material inventory accuracy from less than 65% to greater than 95%, and increased EMS awareness with three courses
- Earned highest rating during external 2007 ECAMP and was awarded 21 (the most ever) special individual recognitions
- Awarded coveted Shingo Silver Medallion Award; presented to Hill Aircraft Maintenance Squadron for many exceptional process improvements and waste reduction accomplishments
- Performed over 1,900 internal audits, supported sustainability by avoiding compliance-related work stoppages, and earned a commendable compliance record with no FY07 or FY08 enforcement actions
- Diverted over 497 tons of hazardous waste, 57,000 gallons of used oil, and over 3,784 tons of solid waste from landfills and generated close to \$380,000 saving over \$1.26 million in disposal costs
- Instituted numerous pollution prevention projects throughout the Depot improving product quality and reducing targeted hazardous material use by 20%
- Generated \$43,000 in recycled scrap metal revenue, characterized 250 waste water processes, and maintained seven web-based data management tools
- Reduced hazardous waste costs by greater than \$440,000 annually
- Provided more than 30,000 Material Safety Data Sheets to industrial personnel, participated in "Tree City USA", and published/presented 44 scientific papers in technical journals and at conferences
- Managed 487 archeological sites and 594 historic and Cold War era buildings, and coordinated with 19 local American Indian tribes
- Modified base groundwater treatment system to save \$230,000 each year over the next 5 years and significantly reduce energy usage while meeting the discharge limit



Introduction

Located nearly 30 miles north of Salt Lake City, Utah, Hill AFB is a major Air Force aircraft and missile maintenance depot and weapon systems program office with over 28,000 employees focused on the three Air Force core values: integrity first, service before self, and excellence in everything we do. The installation provides worldwide engineering and logistics management for the F-16 Fighting Falcon and A-10 Thunderbolt aircraft, and the Minuteman III and Peacekeeper intercontinental ballistic missiles. Activities at Hill include depot Maintenance, Repair, and Overhaul (MRO) of the F-16, A-10, F-22 Raptor, and C-130 Hercules aircraft. The installation is the Air Force Center of Industrial and Technical Excellence for low observable, “stealth”, aircraft structural composite materials and provides support for the B-2 Spirit multi-role bomber. Supporting 5 wings, approximately 40 tenant units, and nearly a million acres of the Utah Test and Training Range, the Hill Environmental Quality Program is responsible for oversight of all base and range environmental programs.

Background

At Hill AFB, the 75 CEG/CEV serves as the program manager for environmental matters. CEV develops and implements policies and procedures that ensure basewide compliance with environmental requirements, conservation of natural/cultural resources, implementation of pollution prevention investments, and completion of restoration actions. Ensuring environmental compliance while supporting the mission can be challenging, especially with increasing requirements and decreasing budget. The Hill AFB Environmental Quality Program has met these challenges through a special management process; Hill’s uniqueness lies in using our Quality Control Plan (QCP) and a Quality Assurance Surveillance Plan (QASP), which are web-based tools implemented in 2003 when we established an environmental Most Efficient Organization (MEO) under the requirements of OMB Circular A-76. Two years ago, while auditing our MEO, the Air Force Manpower Agency declared our QCP and QASP tools Air Force “best practice benchmarks” that should be shared with Air Force bases worldwide. As an example, one element of our QCP is a web-based semi-annual customer survey. The survey allows 25 key environmental coordinators

assigned to operational units across the base to give the Hill AFB Environmental Quality Program direct feedback on the delivery of our environmental services. The survey results are used to assure continual process improvement across all 13 aspects of our Program. Hill AFB maintains solid working relationships with more than 50 active partners including universities, government agencies, industry, Indian tribes, and local communities. Through this type of coordination and by utilizing good working relationships with industrial organizations, we updated numerous required environmental plans with relative ease.

| Required Environmental Protection Plan | Revision Date |
|--|----------------|
| Asbestos Management Plan | July 2008 |
| Asbestos Operating Plan | May 2008 |
| Lead-Based Paint Management Plan | October 2007 |
| Hazardous Materials Spill Plan | May 2008 |
| Air Quality Emergency Episode Plan | September 2007 |
| Sound Mitigation Plan | January 2008 |

Program Summary

Our installation does more than meet EMS requirements. We manage operations, risks, and personnel embracing the EMS framework. Our decisions engage stakeholders including unit environmental coordinators, production workers, maintenance supervisors and engineers, supply warehouse workers and clerks, bioenvironmental engineering managers, and data system programmers and implementers.

Hill’s significant environmental aspects include 1,589 air emission processes; 74 hazardous material distribution centers (Hazmarts); 224 hazardous waste collection sites; 300 regulated storage tanks; 15 miles of industrial wastewater lines and associated treatment plant; 24 remedial treatment systems; 112 restoration sites of which 76 are response complete; and over 400 archeological sites.

Hill offers three EMS-oriented courses via a readily-available, easy-to-use online training system: an “EMS Awareness” course designed to meet the initial familiarization requirement for all base personnel, and an “EMS Practitioners” course intended for individuals with a stated interest in applying EMS principles (over 1,026 practitioners have participated in the training).

Accomplishments

Environmental Management System (EMS)

Our installation has implemented numerous EMS tools such as Environmental Management Plans (EMPs) to further enhance our EMS and accomplish mission goals by directly working with the base staff to resolve many environmental issues that impacted sustained regulatory compliance. This coordination style and group input led to the integration of Hill's first EMS EMP.

Furthermore, we applied EMS to optimize its Hazardous Materials Management Process (HMMP). An EMS approach has allowed the HMMP team to identify and improve major activities; specifically tracking material usage, and performing training and auditing. The HMMP is now better able to ensure compliance with air quality and other regulations in part by maintaining accurate records and restricting material issues to compliant uses. Additionally, the HMMP better supports production by facilitating on-time and compliant hazardous material availability. Furthermore, the risk-based audit program has increased the visibility of day-to-day operations of each materials distribution center (i.e. Hazmart) while improving communication and fostering good working relationships among the HMMP team and Hazmart operators. Resulting achievements include:

1. Eliminated manual usage logs saving over 250 hours per month;
2. Improved hazardous material inventory accuracy from less than 65% to greater than 95%;
3. No recent deviations from federal or state agency rules and permit conditions;
4. Reduced hazardous waste analytical costs by \$380K per year; and
5. Increased "green" material substitutions via better usage visibility.



CEV was a major contributor to the newly developed Environmental Safety and Occupational Health (ESOH) Supervisor's Handbook, a web-based document used at Hill to educate first line supervisors of the Environmental, Safety, and Occupational Health requirements at Hill, and to inform them of available resources. We provided applicable data including information regarding each compliance area—EMS, Air, Materials, Waste, Pollution Prevention, NEPA, Toxics, and Cultural and Natural Resources.

Pollution Prevention (P2) and Waste Reduction Efforts

Our installation made impressive progress to avoid negatively impacting natural resources and human health. Hill AFB has reduced machining coolant waste disposal volume and costs by more than 90 percent through a series of innovations that included optimizing coolant change outs, changing to more efficient coolant, and using more efficient, localized filtration methods that reduced the annual waste generation by half. Waste stream disposal contracting changes reduced per pound disposal costs by half.

Hill AFB expanded the use of High Velocity Oxygenated Fuel (HVOF) technology at the production level to apply high strength metal alloy coatings to landing gear wear surfaces. The HVOF coating is a harder, longer wearing surface which allows the landing gear assets to stay in the field longer requiring less maintenance. Rework rates and process times were reduced from over 24 hours to one hour. The same group also implemented a cutting fluid recycling program.

In coordination with the Navy and the University of Utah, CEV is developing pollutant emission factors and researching infrasound and seismic waves related to our open detonation operation at the Utah Test and Training Range (UTTR). Beyond this, we

helped transform more than one million pounds of spent abrasive blast media into construction blocks, generated \$43,000 in recycled scrap metal revenue, and produced 24.8 million pounds of scrap metal from bombs and targets, the latter of which avoided \$5.84 million in disposal costs.

CEV directed drastic facility and operational improvements by re-routing open surface drainage systems to reduce storm water influx to the industrial waste water treatment plant by 95%, thus reducing the potential for unintentional discharge into the local sanitary sewer and decreasing treatment costs by \$250,000. These surface waters now drain to ponds on base, which add to the diversity of environmental ecosystems within the base and supports wildlife habitat. Moreover, we meticulously characterized 250 waste water processes to improve treatment efforts.

Hill's P2 program directly supports our operational MRO mission. For example, in 2007 our 574th Aircraft Maintenance Squadron won the coveted Shingo Silver Medallion Award. The Shingo Prize is regarded as the premier operational excellence recognition program for North America. The squadron is responsible for sheet metal manufacturing, egress systems, canopies, plastics, fuel cells, transportation and paint. Lean manufacturing principles were implemented in the shops to reduce flow days by 40% and boost productivity through waste reduction, saving more than \$1.6 million. Among many process improvements, the squadron implemented a blasting system that uses dry ice instead of costly and hazardous chemicals to remove paint and corrosion from aircraft wings.



We have made tremendous strides in identifying and obtaining alternative chemicals. Our pollution prevention projects have included the study of methods to extend the lives of chrome and nickel plating solutions, the evaluation of electro-coagulation

to remove toxic metals from industrial waste water, and high pressure-washing to remove paint which saved \$500,000 in bead blasting material and reduced methylene chloride use by 50%.

Environmental Compliance Assessment and Management Program (ECAMP)

Hill's meticulous 2008 internal self-assessment resulted in 14 positive environmental findings while our admirable environmental compliance record earned the highest rating during an external 2007 ECAMP; receiving four positive and zero significant negative findings. Our Program's follow-up shows an impressive closure rate with 98% of findings closed within the first four months for 2008! The 2007 ECAMP Visiting Program awarded 21 special individual recognitions for Hill's outstanding contributions to the Air Force.



CEV closely interacts with State regulators and inspectors to improve our relationship and compliance standing. We modified our self inspection and audit procedures to emphasize greater efficiency and customer focus. For air quality alone, this new inspection philosophy reduced inspection management time by more than 70% and reduced air operating permit deviation by 80%. Our installation has performed over 1,900 internal audits, supported sustainability by avoiding compliance-related work stoppages, and earned a commendable compliance record with no FY07 or FY08 enforcement actions.

“Utah is cleaner because of Hill Air Force Base's outstanding work to set and achieve worthy environmental goals. Their innovative action and professionalism has improved the quality of life for many Utahns living, working, and recreating near the Base. Their commitment to protecting human health and the environment is impressive and serves as a model for others to follow. As one of their partners, DEQ is pleased with their work and supports their continued efforts.”

Rick Sprott, Executive Director
Utah Department of Environmental Quality

Effective Use of Funds

CEV made significant strides in reducing costs associated with waste sources by establishing new base hazardous waste management methods, and creating a system that manages hazardous waste data.



This system has reduced weapon system maintenance costs by greater than \$440,000 each year. More than \$64,000 annually was also saved by adopting a hazardous waste bulking system that consolidated disposal and drum costs. Furthermore, we have used yet another automated tool, a reimbursement tracking system, saving more than

\$138,000 a year. Most recently, we

have invested in a machine for triple-rinsing waste barrels without the additional costs of outsourcing the operation. We are now able to decontaminate and recycle such barrels.

Fiscal Year 2008 was the year the fledgling Qualified Recycling Program (QRP) at Hill AFB took flight and soared into new heights. Ongoing lines of communication between QRP and various base operations were established. The QRP team put forth concerted efforts to bring in the cooperation of many organizations base-wide. In a very short time, the QRP at Hill AFB has successfully consolidated numerous recycling efforts and established base-wide recycling of industrial scrap metals, brass casings, lead-acid batteries, plastic media blast, and used oil. The program has diverted over 497 tons of hazardous waste, 57,000 gallons of used oil and over 3,784 tons of solid waste from landfills, saving over \$1.26 million in disposal costs. The program also generated close to \$380,000 for the QRP fund through the sale of recyclable commodities and provided a total cost savings of over \$1.64 million to the USAF during 2008 alone.

CEV put forth extraordinary effort to apply impressive strategies and technologies to remediate sites including:

- Process modifications to a groundwater treatment system saving \$230,000 each year over the next 5 years and significantly reducing energy usage

while meeting the discharge limit;

- Upgrades to another groundwater treatment system whose increased efficiency saves \$228,000 and a projected savings of \$5.1 million over the next 5 years;
- Development of a “purging while surging” rehabilitation technique at extraction wells to save over \$80,000;
- Identification and removal of PCB contamination in privatized housing soil in 17 months with minimal impact to residents; and
- Implementation of bioaugmentation project to “polish” residual contamination site and reduced overall clean-up time by 20 years.

“Hill Air Force Base has an excellent record working with both EPA and the State of Utah to quickly deal with environmental problems and to prevent their recurrence. As one of the largest and most complex industrial activities in the State, its environmental record is clearly superior.”

Robbie Roberts, Administrator
EPA Region 8

Enhanced Performance

Hill AFB has efficiently reduced fuel emissions and employee commuter transportation costs. The Vanpool Program reduces 21,442 tons carbon dioxide; 1,214 tons carbon monoxide; 157 tons hydrocarbons; and 81 tons nitrogen oxides per year! It also offers an enticing reimbursement policy saving commuters an average of \$4,523 per year. Furthermore, the Program is proactively applying alternative fuel technologies. Hill AFB is in compliance eight years ahead of schedule with Executive Order 13423 to increase alternative fuel usage. We have increased biodiesel fuel throughput through 2007 by 178%.

The installation initiated one of the most impressive and the largest renewable energy efforts not only in Utah but in the entire Western region, by purchasing 750,000 kilowatt-hours of wind powered electricity which will avoid 9,000 tons of carbon dioxide emissions, creating annual environmental benefits equivalent to driving 19.2 million fewer miles or planting 3,535 acres of trees.

Increased Productivity/Innovation

With increasing requirements and decreasing funds, our installation partnered with Ameresco Federal Solutions to do more with less. We installed and

are operating three innovative landfill gas to energy generators — a first for the DoD! The generators convert local landfill methane gas into electrical energy. By displacing the utility-supplied electricity and diverting the landfill gas from a flare station, net emissions were reduced by 5,000 tons of carbon dioxide, 19 tons of sulfur oxides, 5.5 tons of nitrogen oxides, and 4.8 tons of carbon monoxide annually. This project was so impressive that findings were presented at a GovEnergy Conference in September of 2007. It continues to support Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management by capturing and applying renewable energy.



Many data systems have originated at Hill AFB which are transferable to other installations. One such web-based system, the Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOH-MIS) carefully tracked hazardous materials data, and enabled personnel to consider health risks through its material authorization procedures. This system will become the Air Force-wide system for managing such data. Hill continues to serve as the lead organization for this system's advancement. Hill is also the primary advisor for the maintenance of the Air Program Information Management System (APIMS)—an Air Force-wide air quality data system.



Community Relations

We go the extra mile to involve community stakeholders in base happenings. We embrace the 30-day public commenting period for permit negotiations because it allows our installation to gain public opinion about operations affecting the local community. We have been an active participant in the public-based program "Tree City USA", for 15 consecutive years. We nurture 11,290 trees, an urban forest resource valued at \$15 million. Our Restoration Program has organized and conducted seven public meetings referred to as "InfoFairs"; nine city council briefings; eight quarterly Restoration Advisory Board meetings, training sessions, and tours; and has developed and distributed 14 newsletters to Base and community residents. Working with local residents, we collected 2,074 air samples from homes surrounding Hill AFB to monitor and control air emissions from contaminated groundwater.

Beyond community relations, CEV actively worked with other regulatory agencies, and is currently working with EPA, DoD, and NASA to develop the new Defense Land Systems and Miscellaneous Equipment rule. CEV published and presented 44 scientific papers in the environmental technical community of journals and conferences.

Hill AFB takes emergency planning and Community-Right-to-Know seriously. Through careful preparation of toxic release inventories and Tier II forms, and by interacting closely with the fire department, our Program takes a preemptive approach by striving to address potential issues as early as possible. Furthering our consideration of health and safety hazards, we have also developed what is called the MSDS Search Engine, a web-based tool that provides more than 30,000 Material Safety Data Sheets to industrial base personnel.

Proven Partnering Approach

Our installation demonstrated substantive involvement with the appropriate internal offices and exemplified

working through proper channels. We coordinated with other DoD facilities and served as an integral part of new workload acquisitions and bed-downs. We have coordinated with the Bureau of Land Management, and state officials among others, to protect native animals and species on Hill land. We manage 487 identified archaeological sites of which 227 are eligible, or potentially eligible, for the National Register of Historic Places (NRHP). We have 594 historic and Cold War Era buildings of which 158 have been determined eligible for the NRHP. Construction activities performed on historic buildings was closely monitored and mitigation was strongly encouraged.

Proactive Community Outreach

Our QRP team welcomed Hill Field Elementary 4th, 5th, and 6th grade classes to participate in a contest to develop a new logo. Each submission was so well thought out and each followed the same basic principles for successful recycling. We congratulated all contestants by throwing an ice cream social and supplying each class with six flying discs that displayed the new QRP logo.

Beyond that, our installation consulted with public stakeholders including 19 local Indian tribes and the National Park Service to conduct an ethnographic study of Air Force land. CEV went out of its way to inform tribes such as the Northwestern Band of Shoshone and Skull Valley Goshutes of projects potentially affecting shared lands, and encouraged tribal involvement and input. We even conceived, organized, and hosted a Nation-to-Nation consultation among local tribes resulting in improved understanding of needs and harmony with our neighbors.

National Environmental Policy Act (NEPA) Planning, Analysis, and Implementation

Our installation's outstanding NEPA operations completed nine Environmental Assessments (EAs), over 58 environmental baseline waivers, and eight environmental baseline surveys. All FY08 military construction EAs were completed early, and a new programmatic baseline waiver reduced response time from days to hours. A new automated web-based system for processing EAs has improved efficiency by better tracking comments, making notification easier, and increasing visibility and access. These automated tools and other beneficial devices helped streamline and sustain NEPA-related tasks.

Our installation is in a transition period as Hill AFB acquires a record number of new workloads with the most ever new requests for new buildings. We have worked directly with the West Side Development (WSD)/Enhanced Use Lease (EUL) Team to maximize the value of Hill AFB assets. We have successfully negotiated an agreement with the state of Utah to mitigate adverse effect to historic buildings for transfer to private Lessee. New workloads including F-35 bed-down, and new hangars to accommodate the F-22 depot management have also been accomplished.



The WSD/EUL Program, is particularly interesting due to its inventiveness. The project will replace 1.5 million square feet of antiquated Air Force buildings with retail, hotel, office, and restaurant space through in-kind lease payments. Falcon Hill, as the area is called, is among the most strategically located aerospace research parks in the nation. This 550-acre private development will feature nearly two million square feet of commercial and supporting retail space in its first phase alone. Plans are already underway for this large endeavor which will require moving two AF entrance gates to accommodate the re-invented space. Ground breaking took place in the fall of 2008.

Conclusion

The success achieved at Hill has been recognized within the Air Force. In addition, many ideas conceived and implemented at Hill are adopted throughout the DoD. Our Environmental Quality Program at Hill has a proven strategy for prioritizing, implementing, and sustaining our program. These efforts include stakeholder involvement, early action, innovation, effective data management, and performance monitoring and verification. Our EMS, pollution prevention, waste reduction, ECAMP, cost reduction, community relations and NEPA accomplishments help Hill AFB support the three core Air Force values: *integrity first, service before self, and excellence in all we do.*