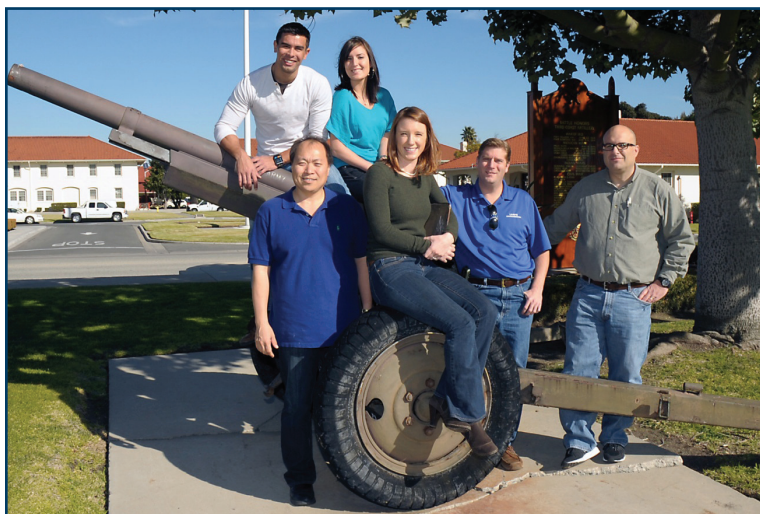


ENVIRONMENTAL AWARDS

*SUSTAINABILITY INDIVIDUAL/TEAM AWARD:
LOS ANGELES AIR FORCE BASE*



The Los Angeles Air Force Base Environmental Sustainability Team photographed in the historic district of Fort MacArthur. The team manages Los Angeles Air Force Base's environmental programs. Pictured from left to right are Ben Smalley, Yong Park, Erin Sawyer, Beth Farm, Chris Turley and Jon Lutz.

BACKGROUND

- Capt Benjamin Smalley
Title: Chief, Asset Management Flight
Employer: United States Air Force
- Elizabeth Farm
Title: Natural Resources Section Chief
Employer: Parsons
- Yong Park
Title: Senior Environmental Specialist
Employer: Parsons
- Jon Lutz
Title: Senior Environmental Specialist
Employer: GeoMarine Inc.
- Erin Sawyer
Title: Hazardous Materials Technician
Employer: GeoMarine Inc.
- Christopher Turley
Title: Rideshare Coordinator
Employer: Parsons

POSITION DESCRIPTION

The 61st Civil Engineer and Logistics Squadron (61 CELS) at Los Angeles Air Force Base (LA AFB) is host to the best Environmental Sustainability team in the U.S. Air Force. The Environmental Sustainability team manages the installation's environmental compliance, pollution

prevention, environmental restoration, and conservation programs. Specifically, the team maintains compliance with regulations pertaining to air quality, water quality, stormwater management, lead and asbestos abatement, storage tank management, hazardous materials and waste, and adherence to National Environmental Protection Act requirements. The team manages LA AFB's restoration projects, solid waste, natural and cultural resources, recycling, and Rideshare programs, and pursues reductions in installation energy and water consumption demands. Finally, the team is the installation's focal point for the Environmental Management System (EMS) and promotes sustainability, green procurement, and progress toward Executive Order goals through installation-wide education, training, and process improvement.

MATERIAL SUBSTITUTION

As part of the 2011 renovation of LA AFB's pool, the Environmental Sustainability team pushed to substitute traditional concrete for a 100% permeable paving product called EcoCrete. Following the principles of the Energy Independence and Security Act, section 438, use of this product secured a rainwater drainage rate of up to 4 inches per minute, well above average rainfall rates for Los Angeles. Through this material substitution the team installed 162 square yards of EcoCrete, eliminating rainwater runoff and enabling infiltration back to the groundwater, thereby ensuring conservation of valuable water resources.

To reduce LA AFB's water consumption, the Environmental Sustainability team pushed the replacement of 38,000 cubic feet of grass and subsoil with the 89×195-foot artificial turf athletic field now used as LA AFB's primary recreation area. The synthetic "Tiger Turf" system is constructed using a secondary backing made of renewable resources, and provides a pristine athletic area for physical training. This action reduced water consumption by 117,000 gallons annually, eliminated the associated use of pesticides and fertilizer and saves the base \$47,000 in annual utility and maintenance fees.



The synthetic LA AFB Athletic Field replaced 38,000 cubic feet of grass and subsoil. The artificial turf provides a pristine 17,355 square foot recreation area for physical training while saving 117,000 gallons of water. The field also reduces reliance on pesticides and fertilizers and saves \$47,000 each year in maintenance and utility costs.

The team subscribes to the principle that outreach and education win compliance. In order to meet the greatest customer base, they purchased \$79,000 in 100% post-consumer recycled plastic tables, chairs and waste receptacles that are utilized in the outdoor dining areas and break rooms on the installation. Educational signs placed adjacent to the dining area explain the durability and advantages of post-consumer recycled products. This small investment provides tacit education to an estimated 500 lunchtime diners and installation visitors every day, and reinforces LA AFB's commitment to preferential purchasing of sustainable materials. The waste receptacles have been instrumental to the success of LA AFB's new composting program.

GREEN PROCUREMENT AND PROCESS MODIFICATION AND IMPROVEMENT

The Environmental Sustainability team identified the Work Request Review Board as an opportunity to increase sustainability considerations within the Civil Engineer organization. By adding a coordination block for the Environmental Sustainability team lead on the AF Form 332, Base Civil Engineer Work Request, the team codified a process to ensure sustainability opportunities are considered in all construction and maintenance activities. In fiscal years 2011 and 2012, over 650 work orders were evaluated for sustainability requirements, resulting in a life-cycle management-minded approach to over \$6.4 million in base infrastructure work.

The team capitalized on the opportunity to enhance green procurement in LA AFB's construction program by authoring a Green Product Identification Form, educating 21 project managers on the use of the form, and requiring use of the form in the installation's indefinite-delivery, indefinite-quantity construction contract. Adoption of this process ensured green procurement requirements were observed in the execution of \$4.2 million in construction.

Additionally, the team maintains primary responsibility for LA AFB's Environmental, Safety and Occupational Health (ESOH) compliance. The team evaluated the internal Tier 1 ESOH compliance checklists to identify installation-specific vulnerabilities not captured in Headquarters Air Force's boilerplate templates. This review identified 65 compliance vulnerabilities -- among them, the installation's swimming pool and gas station -- and developed new checklists. Through the team's vigilant management, LA AFB continues to self-monitor high-risk activities, safeguarding against \$100,000 fines for a worst-case non-compliance event. Additionally, the team single-handedly closed seven ESOH Compliance Assessment Management Program findings in our air, storage tank, and wastewater programs by developing and training 30 technicians on a central digital records collection and management system.

The Environmental Sustainability team targeted installation paper use and printing with the development of the LA AFB duplex printing policy. Piloted first within the 61st Air Base Group (61 ABG), this program is being expanded across the Space and Missile System Center's \$10 billion acquisitions program. The printing policy reduces base paper use by 40% and saved 61 ABG \$50,000 during its first year of implementation. Furthermore, the team worked with base contracting to formalize language in all contracts to require that document deliverables be duplex printed, expanding the Air Force's commitment to sustainability to our business partners.

IMPROVED MATERIAL MANAGEMENT

LA AFB's most notable material management success is the Secretary of the Air Force endorsed Electric Vehicle (EV) Initiative. LA AFB is the Federal government's test-bed to pilot a plug-in hybrid/electric vehicle fleet using "vehicle-to-grid" (V2G) technology. The V2G technology uses the vehicles' batteries as storage, moving power back and forth between parked vehicles and the local utility

company. This initiative is expected to reduce overall fleet expenses while meeting mission capabilities and achieving energy and environmental objectives, and will serve as a model for future efforts to integrate EVs into Federal vehicle fleets.

The Environmental Sustainability team coordinates with 10 different agencies to trail-blaze implementation of this zero-emission initiative. Unlike commercial EV fleets, LA AFB's 43 EVs will charge during off-peak hours and collectively contribute up to 500 kilowatts back to the grid during peak demand hours, while retaining the capability to serve the base's official government business needs.

Beyond high-visibility efforts like the EV Initiative, the Environmental Sustainability team leaves no stone unturned in their material management efforts. California has the most stringent requirements to restrict products containing high amounts of volatile organic compounds (VOCs). The Environmental Sustainability team bears responsibility for environmental compliance in the work processes of 29 shops, and has made a concerted effort to eliminate all high-VOC products from the installation. Capitalizing on his in-depth knowledge, the LA AFB Air Quality Manager conducts one-on-one training with shop foremen to identify environmentally acceptable alternatives to high-VOC products. This effort has resulted in LA AFB's 10,000 lbs quarterly HazMat inventory remaining high-VOC free.

COMPLIANCE WITH EXECUTIVE ORDER 13514

The Environmental Sustainability team has spent the past two years cultivating the installation's EMS, which provides the backbone of the base's EO 13423 compliance efforts. After piloting the EMS within 61 ABG, the team expanded the EMS across the 4,500 personnel on the installation with 39 additional Unit Environmental Coordinator appointments, and authored the LA AFB EMS Manual.

The team advanced the base's commitment to solar energy with the installation of a 320 kilowatt solar array across the rooftops of LA AFB's three major facilities. Expanding on the previously installed 380-kilowatt array on our parking canopies, this \$1.5 million project generates enough power to offset the energy consumption of the base fitness center, reducing the total energy usage of LA AFB by 1%. Furthermore, the project saves the installation \$100,000 in annual utility costs.



The recently energized 320 kilowatt solar array spans the rooftops of the three major facilities on base. The addition of these arrays increased LA AFB's solar production to over 800 kilowatts. These panels provide power equal to the demand of the base fitness center, saving \$100,000 in annual utility costs.

Although LA AFB is the smallest energy user in Air Force Space Command, the Environmental Sustainability team continues to aggressively pursue energy reductions. In 2012, the team awarded two projects to replace over 11,000 32-watt fluorescent light bulbs with 28 watt fluorescent light bulbs containing 80% less mercury. This project reduced LA AFB's energy consumption by 178,500 kilowatt-hours per year, which equates to a \$47,000 annual savings. The team also enabled the connection of three additional facilities to the base's Energy Management Control System, thereby right-sizing the heating and/or cooling demand of those buildings against their occupant loads. This effort saves \$39,000 per year, and reduces the base's energy use by 3.34 million British Thermal Units.

To reduce water consumption, the Environmental Sustainability team championed a project to install irrigation controls across LA AFB's 148-acre Fort MacArthur annex, which includes the base's family housing and historic parade field. The system regulates irrigation based on data received from ambient weather sensors, ensuring water is only expended on irrigation when necessary. This effort achieved an annual savings of 28 million gallons of water, and enabled LA AFB to meet its EO 13514 reduction goal seven years ahead of schedule!

When a mid-year study revealed that coastal humidity was degrading the efficiency and reliability of LA AFB's air handlers, the Environmental Sustainability team

capitalized on fiscal year-end funding to replace 15 of the installation's heating, ventilation and air conditioning units and five air-cooled chillers. With more efficient technology and advanced controls, this project eliminated a critical climate control vulnerability and is estimated to yield an annual savings of \$225,000 and 2 million kilowatt-hours -- more than 10% of the base's total energy consumption.

Finally, the Environmental Sustainability team provides dedicated commuter assistance to the 910 personnel enrolled in the installation's Rideshare Program. The Rideshare Office coordinates carpool partnerships, places personnel in one of 225 area vanpools, identifies accessible public transit options across the 1,433 square-mile Los Angeles area, and provides participants with vouchers from the Department of Transportation to subsidize the use of public transit. The LA AFB Rideshare Coordinator partners with six surrounding corporations including Northrop Grumman, Raytheon and Aerospace to increase community co-ridership. These efforts resulted in the distribution of \$1.8 million in transit vouchers in 2011 and 2022, the elimination of 33% of the vehicles being driven onto the installation every day, and secured compliance with strict California air quality management regulations.

RECYCLING SUCCESSES

The greatest recent recycling success for LA AFB is the implementation of a basewide composting program. Identified as a "best practice" in our 2012 Environmental, Occupational Health and Safety Inspection, the composting program partners with the Army and Air Force Exchange Service, Defense Commissary Agency and the Force Support Squadron to collect food scraps from the Base Exchange, Commissary, Club, and all dining and food prep areas. Since its 2012 inception, the program has diverted 26.5 tons -- 46.4% of the installation's waste stream. Unique to LA AFB's composting program is its participation in the United States' first reclaimable anaerobic digester, a pilot technology that captures approximately 55% biofuel from organic waste. The Environmental Sustainability team is proud that contracting with this program supports technologies that will further develop a sustainable future.

To prevent electronic waste during computer technology upgrades, the team partnered with the installation logistics element to donate replaced computers to local schools rather than excessing them through the Defense Reutilization Marketing Office. In 2011 and 2022, LA

AFB donated 578 computer items valued at over \$33,000 to 6 local schools, providing the optimal re-use of the installation's e-waste and providing learning tools for America's youth.



100% post consumer recycled plastic waste receptacles have been instrumental in the success of LA AFB's composting program. Staged in every dining area, they offer compartments for waste, recycling, and compost. Partnering with the Club, Commissary and Base Exchange Food Court, LA AFB has diverted 26.5 tons of organic matter from the base wastestream.

In addition to the implementation of the composting program and reductions achieved toward EO 13514, the team also diverted 407 tons of green waste and recycled 261 tons of wooden pallets. These efforts eliminated 61.6% of LA AFB's non-hazardous solid waste stream in 2011 and 2012. Additionally, LA AFB also profits from used toner and scrap metal sales. In the past two years, the Environmental Sustainability team has sold 31 tons of high-value waste, resulting in a profit of \$5,900 and eliminating 3% of the base waste stream.

Finally, the Environmental Sustainability team took advantage of the local economy by implementing battery and kitchen grease recycling programs at LA AFB. Previously, both waste streams were disposed of as Hazardous Waste. Since the inception of the program in 2011, LA AFB has recycled 12,100 lbs of batteries and 2.2 tons of kitchen grease; converting an expense into a \$4,800 profit for the installation's Qualified Recycling Program (QRP).



LA AFB's solid waste program takes advantage of the Los Angeles market by selling or diverting nearly all waste. In addition to composting organics, the installation sells recycled cardboard (above), kitchen grease, used batteries, scrap metal, and pallets. In 2011 and 2012, the installation diverted 668 tons of pallets and green waste.

The greatest partnering success for LA AFB's sustainable future brought solar arrays to the installation's privatized housing areas. Working with our housing privatization partner, the Environmental Sustainability team identified key factors to coordinate the installation of a combined 800 kilowatt photovoltaic array across 207 homes. This effort will lock the LA AFB resident utility rate for the next twenty years at a competitive \$0.14 per kilowatt-hour and increases the security and predictability of our privatized housing partner's financial health, in turn providing better service to our residents.

Historically, LA AFB has struggled with its reliance on contracted employees because of the resultant higher-than-average employee turnover rate. To combat lapses in compliance education, the Environmental Sustainability team developed an online training video library to provide interim education for employees hired between annual offerings.

EDUCATION, OUTREACH AND PARTNERING

In addition to the dining furnishings previously discussed, the LA AFB Environmental Sustainability team strives to find additional opportunities to win compliance through education. Partnering with 29 local vendors and non-profit organizations, the team hosts events such as Bike to Work Day, Earth Day, Composting Day, and America Recycles Day, and keeps our 4,500 personnel mindful of the Air Force's commitment to sustainability.



Quarterly outreach events, such as America Recycles Day, provide education to LA AFB's 4,500 personnel. Partnering with over 29 local organizations, LA AFB showcases sustainable practices and technologies, like the blankets and bags made from recycled materials shown above. These events also provide e-waste recycling and Rideshare assistance to base personnel.

MASTER PLANNING AND GREEN BUILDINGS

The Environmental Sustainability team won a major victory in championing a project to remove the car wash facility and convert the site to open space recreation area. The car wash presented an ongoing challenge in managing compliance with its sanitary sewer discharge permits. After socializing the project with base leadership, the facility was removed in 2012. This project not only redeveloped an aging area, it also eliminated a \$1.6 million liability risk.

To safeguard the entire LA AFB campus from unauthorized stormwater discharges, the team negotiated and managed a project to install 48 storm drain inserts across the installation. These inserts close-off the storm drains to provide a safety net in the event of an accidental discharge. With light rainfall and predictable weather in Los Angeles, the team is able to open the storm drains only during inclement weather, safeguarding the base against regulatory fines of up to \$24,000 per unauthorized discharge. This practice was identified as a "best practice" during a 2011 ESOH inspection.

Despite its small size, LA AFB continues to capitalize on opportunities to reduce our footprint and associated environmental impact. By partnering with the base logistics and optimizing the warehouse shelving systems, two supply warehouses were consolidated into one, enabling our Environmental Sustainability team to eliminate 6,600 square feet of excess space, or roughly 0.5% of LA AFB's

facility footprint. This open space will now be utilized to park and charge the EV fleet.

One advantage unique to LA AFB is that 80% of base personnel are located in three primary facilities. The team capitalized on this high population density by executing a project to install 196 low-flow, dual-flush plumbing fixtures in the restrooms of these facilities. Not only do these fixtures educate users about water conservation by requiring a choice between a full-flush or half-flush, but the project saves 1.2 million gallons of water annually.

The Environmental Sustainability team took aggressive strides in implementing xeriscaping across LA AFB. In 2011 and 2012, over 138,000 square feet of the base grounds were xeriscaped, reducing landscaping labor requirements, reliance on pesticides and fertilizers, and installation water consumption by 15%.



LA AFB has xeriscaped over 138,000 square feet of its grounds in the last two years. Using native vegetation, areas like the Base Exchange (above) remain visually appealing while reducing reliance on irrigation, pesticides, fertilizers and grounds maintenance. These efforts have reduced base water consumption by 15%.