

FY11 Secretary of Defense Environmental Award- Environmental Quality – Non-Industrial Installation – Army Nomination - Fort Hood, Texas

Introduction: Fort Hood is the home of III Corps Headquarters, 1st Cavalry Division, 1st Army Division West, 13 Sustainment Command (Expeditionary), 3rd Armored Cavalry Regiment, and several separate brigades along with a host of brigade and battalion-sized tenant units and organizations.



Background: The installation has 340 square miles of land and supports more than 395,000 Soldiers, Family members, retirees and DoD civilians. Fort Hood's environmental program is executed by the Environmental Division of the Directorate of Public Works (DPW). The environmental staff focus their efforts on air quality, energy management, pollution prevention, recycling and water quality, which the installation's environmental management system (EMS) has determined are the environmental quality aspects that most affect the mission and quality of life of the installation's Soldiers and other inhabitants. Fort Hood's requirement to maintain combat readiness has been achieved through its dedication to high standards for Soldier training and support.

Program Management: The Environmental Division works diligently to sustain a robust EMS that supports the installation's elevated operations tempo and mission priorities. Fort Hood's environmental strategy is to use a systematic approach to identify and manage significant impacts on the environment that can occur as a result of its activities. EMS helps Soldiers, civilians, and contractors identify environmental vulnerabilities, document procedures in place, and examine how to improve processes related to the environment. Fort Hood's EMS Coordinator conducts annual internal audits and annual aspect reviews of civilian, contractor, and military activities. EMS

has positively impacted training and operations and has proven beneficial as a performance driven tool. Each year, approximately 20 activities are interviewed and evaluated on their EMS conformance and awareness of the installation's environmental priorities and actions. The combination of the installation's Environmental Compliance Assessment Team (ECAT) process and internal audits focus on mission accomplishment. The Environmental Division plans and executes its EMS based on the findings of audits, presents them at the quarterly Environmental Quality Control Committee, chaired by the Commanding General, and continually improves. If something isn't working or needs changed based on those reviews, we "just do it."

In April 2011, Fort Hood was selected as a Net Zero Waste installation to reduce its waste and eliminate landfill use by 2020. The EMS objectives were then rewritten to support this initiative. The objectives include 4 phases as part of our long term sustainability goals:

- Phase 1 (2011-2012) Plan & Organize, 44 % Diversion Goal
- Phase 2 (2012-2015) Initial Implementation, 60 % Diversion Goal
- Phase 3 (2015-2018) Assess & Adjust, 75 % Diversion Goal
- Phase 4 (2018-2020) Full Implementation, 90-100 % Diversion Goal

Net Zero Waste teams were established and serve as cross functional teams that focus on reducing, repurposing, recycling, and marketing and outreach.

Fort Hood's goal to balance the environment and mission is represented by a Soldier holding a scale which balances the Earth on one side and a Bradley Fighting Vehicle on the other. The SCALE logo signs are placed throughout the installation.



The letters associated with the acronym SCALE represent key concepts of the environmental policy: Stop pollution, Continue improvement,

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Assure compliance, Leadership commitment, and everyone involved. The logo clearly reminds Soldiers and civilians that everyone is responsible for protecting and preserving the environment. Fort Hood's Environmental Division actively seeks opportunities to improve environmental stewardship and awareness of Fort Hood's environmental policy, programs and services. Fort Hood's environmental staff is involved in external and internal committees and boards, and has a strong relationship with its neighbors. The Project Review Board is an example of the installation's commitment to the environment. Master planners, engineers, environmental specialists, Directorate of Emergency staff, and other entities collaborate weekly on construction, storm water pollution prevention, and energy projects for long term sustainability and developing high performance buildings as part of the installation's design guide. On an installation that supports more than 395,000 people, it takes everyone's involvement to achieve a greener and sustainable future.

Technical Merit

Environmental Corner: Successful pollution prevention (P2) projects are collocated in an area of the installation referred to as the Environmental Corner. A tanker purge facility, mobile kitchen trailer/compact kitchen wash bay, JP-8/oil/anti-freeze recycle center and water pretreatment system are some of the P2 projects in the corner. Having these facilities centralized, helps monitor for pollution prevention and waste reduction. The trained staff provides efficient services by ensuring recyclable fluids are monitored to avoid cross contamination.

Tanker Purge Facility: Fort Hood's purge facility which began operation in 2002 has saved more than nine million gallons of water from being discharged into the sewer systems. In the past, cleaning the trucks included filling up the fuel tank with water, pouring in a cleaning solution and manually agitating the tank by driving the truck around. The water was then drained into a wash rack. The process was repeated four to five times before the tank was clean enough for use. Each cleaning used more than 15,000 gallons of potable water. Fort Hood's current purge facility completely cleans the fuel in 1.5 hours. The system recycles all the water in a closed loop system and the water is reused many times

before flushed and filtered into another holding tank. There, the fuel residue is skimmed off and recycled so the water and fuel can both be reused. During FY10 and FY11, the purge facility was used 299 times and saved approximately 1,944 Soldier man hours and 4,485,000 gallons of water from being discharged into the sanitary sewer.



Mobile Kitchen Trailer/Compact Kitchen Wash Bay: The mobile kitchen trailer (MKT)/ compact kitchen (CK) cleaning facility facilitates easier cleaning of the tactical kitchen trailers compared to the previous process. Before this facility was created, MKT/CK cleaning took place at the motor pools in a process that exceeded the capacity of the oil/water separators, allowing discharges of unknown detergents that were emulsifying in the separators and ruining any recoverable POL for collection. In addition, storm water quality was diminished due to the discharges. This wash bay provides approved detergents, high pressure hot water, and a closed loop pretreatment system with no water entering the sanitary sewer or storm water systems. During FY10 and FY11, the MKT/CK was used 227 times and prevented 1,719,356 gallons of polluted water from entering the sanitary sewer.

JP-8/oil/antifreeze Recycle Center: Fort Hood facilities have collection tanks, ranging from 280 to 2,000 gallons, for used oil, antifreeze and off-specification JP8 fuel. These products are collected on a regular basis by the P2 services truck drivers and are cleaned and stored at the Environmental Corner to be sold for recycling. These collection programs prevent petroleum, oil and lubricant products from entering into the environment and allow for the reclamation of potable water by centrifuging these products at the Environmental Corner. During FY10 and FY11, the JP-8/oil/antifreeze recycle center collected 207,291 gallons of JP-8 fuel and 231,132 gallons of used oil, generating \$302,598,

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which avoided disposal costs while recycling valuable resources. Fort Hood also sent 42,148 gallons of antifreeze for recycling instead of disposal as a hazardous waste.

Water Pretreatment System: The remaining water from the JP8/oil/antifreeze recycle center, purge facility and the MKT all enter a large containment vault. This water is cycled through the on-site pretreatment center before entering the closed loop tactical vehicle wash facility. The pretreatment center has a series of 3 carbon filters that remove pollutants from the water. To date this system has cleaned more than 1,000,000 gallons of water. The water is placed in a lined holding pond located in the tactical vehicle wash facility so it can be reused in the closed loop system.

Human Health Considerations: Fort Hood's EMS is used to communicate opportunities and solicit input for projects and procedures that can be improved. The EMS audit and ECAT assessments are tools that help identify where there may be increased risk to human health or the environment.

Utility Management and Control System: Fort Hood has implemented innovative technology to manage the installation's direct digital control (DDC) systems through a web-based system called the Utility Management and Control System (UMCS). The Local Operating Network (LON) is the single platform that enables consolidation of different DDC systems into one UMCS, which gives Fort Hood the flexibility to develop a comprehensive energy management plan for the installation. The energy management plan includes Energy Conservation Measures (ECMs), as an extension of the UMCS, to reduce energy consumption, increase energy efficiency in new and existing facilities, and reduce the overall carbon footprint and impact on the environment. The ECMs integrate Heating Ventilating and Air-Conditioning (HVAC) control systems in facilities and the UMCS, allowing monitoring and control from a central location. The UMCS schedules the runtime of HVAC equipment based on actual facility operating hours and implements additional control strategies, such as unoccupied temperature setback, supply air temperature reset, hot water reset and airside economizer control, where appropriate. UMCS optimizes the operation of the

building HVAC systems for energy savings and conservation. UMCS not only reduces energy waste and saves dollars, but it also provides a standard platform for the Army, which helps reduce the Army's dependency on proprietary control systems that cost the Army millions. Eliminating these proprietary supervisory control devices allowed Fort Hood to have a flat peer-to-peer architecture with an interoperable and open system. As a result, the UMCS has generated over \$1.06 million in annual energy cost savings, which increases savings as more facilities are added to the system.

Solar thermal systems: Fort Hood is working toward higher energy efficiency and independence while reducing energy intensity by 3 percent annually. The installation is using solar thermal water heating systems and is increasing solar technology in new construction to meet Leadership in Energy and Environmental Design standards for green building certification. Five dining halls and the Abrams Physical Fitness Center are the first to use solar thermal technology, which will reduce use of fossil fuels for dining hall domestic hot water heating systems for kitchen areas and for fitness center pool heating by 30 percent of the actual load. The savings of the six solar systems is equivalent to the energy used to heat the pool year round.

Fort Hood Recycle Center and Programs: The Fort Hood Recycle Program boasts the largest recycle facility in the Army. Through education and outreach, the Recycle Program staff increase the amount of materials recycled. When the recycle program was initiated in 1992, Fort Hood sold 600 tons of recyclable material. It has continually surpassed its goals ever since. During FY10 and FY11, the recycle center sold 17,521 tons of recyclable material.



To help Soldiers in their recycling efforts, the Recycle Program issued each company-level unit

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our 35-gallon recycle containers and 10 small desk-side containers. During FY10 and FY11, the Recycle Program provided Fort Hood military units with more than 5,000 35-gallon recycle containers, desk -side containers and wire containers at no cost, which in turn saved Fort Hood approximately \$150,000. During FY10 and FY11, the installation Recycle Program generated approximately \$4.12 million with Defense Reutilization & Marketing Service sales assistance. Money generated from recycling pays for the program costs, capital improvements and funds other community outreach activities, such as Freedom Fest fireworks, Welcome Home celebrations, carnivals, and the annual Earth Fest. During FY10 and FY11, approximately \$428,000 was returned to support installation pollution prevention projects and \$164,000 for family and morale, welfare and recreation events. The Recycle Program developed a recycling incentive program called the Commanding General's Recycle Challenge including quarterly awards for troop units. The company-sized unit that delivers the most cardboard between January and March receives \$1,500; second place receives \$1,000; and third place receives \$500. From April through June, the focus is on paper products; from July through September the focus switches to plastic; and from October through December the focus is on aluminum cans. In 2010, the Recycle Program collected an additional 172,987 pounds of recyclable materials.

National Environmental Policy Act: The NEPA Program at Fort Hood is the foundation under which sustainable principles are introduced, explained, and agreed upon by Proponents and Decision Makers alike. The NEPA Process itself is one of reviewing the past, present, and foreseeable future impacts to the human and natural environments enabling any decision maker and the public to look at comprehensive and reasonable alternatives to actions the Army make take. These actions not only include the construction of facilities, but the movement of troops, and the overall impacts before, during and after a decision has been made. Fort Hood's NEPA program doesn't stop at construction of a facility, it considers the use of the facility and the total lifecycle cost. The NEPA program examines comprehensively the socio-economic impacts on

human health and the natural environment; ensuring that a broad spectrum sustainable approach is taken. Whether it's the way a building is built or analysis of its location and impacts on resources afterward, or how many troops can train at an Installation and how that will affect the local community. Fort Hood's NEPA process always assists in guiding decision makers by showing them all the options for their projects.

Cen-Tex Sustainable Communities

Partnership: The Cen-Tex Sustainable Communities Partnership was launched at Fort Hood's 2009 Earth Fest event by a memorandum of understanding signed by Fort Hood and the surrounding communities. This partnership includes Fort Hood and the communities of Killeen, Copperas Cove, Harker Heights and Gatesville, establishing planning goals that have long-term environmental, economic and social benefits for the region. City managers, planners, the Fort Hood Garrison Commander and environmental professionals met together in September 2009 for a two-day pre-planning meeting to develop an approach to promote sustainable development, growth and living in Central Texas. Each of the communities shared their goals and green initiatives. In January 2010, a Cen-Tex Sustainable Communities Conference was hosted. Central Texas citizens joined their City Mayors, Garrison Commander, and other local, state, and federal stakeholders to learn more about sustainability. City Mayors and the Garrison Commander reviewed the objectives and goals and established the following priorities: curbside regional recycling for Central Texas; regional smart growth comprehensive plan; regional hike and bike trail network; education workshops for elected officials and leadership; sustainable education policies/courses and chemical cleanout; regional sustainability community council; green taxi program; Habitat for Humanity sustainable homes showcase; regional ordinances for sustainability; and establish a transportation authority. Throughout the conference the community leaders expressed a shared vision and worked toward developing a path forward to improve the region for the future. In June 2010, Fort Hood hosted a meeting to report on the progress of each of the goals. Quarterly and monthly meetings continue to allow

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community leaders to collaborate in their work groups to identify milestones for their ongoing sustainability efforts.



The Cen-Tex Sustainable Communities Partnership also resulted in a feasibility study for a regional recycling facility. A regional recycling forum with Central Texas community members will occur in November 2011 to discuss pay as you throw, single stream collection, and new ways to collect and process recyclables.

Non-Potable Water for Golf Course: DPW and Directorate of Family and Morale, Welfare Recreation (DFMWR) worked together on an alternative for the installation's golf course irrigation system that pumps non-potable water from a small lake near the golf complex into the golf course's irrigation pond. In FY09, the water consumption was metered in accordance with Army guidance, and the bill increased from \$100,000 to \$340,000 annually. Executive Order 13423-Strengthening Federal Environmental, Energy, and Transportation Management mandated 2 percent per year reduction in potable water use as an Army installation sustainability initiative. In 2011, DPW and DFMWR completed the first two of a four-phased project to transport water from one of the cantonment storm water retention ponds for the motor pools on the east side of the installation. The first two phases included construction of a pipeline and increase of pump capacity. The next phase, funded by Installation Management Command, will include an assessment to determine if the dam at the lake can be raised 10 feet to allow the inflow of up to 40 million gallons of water. The final phase will integrate the non-potable system into the installation's Utility Management Control System. This green pump project is expected to show a return on investment within four years.

Orientation to Mission

Environmental Compliance Assessment

Team: ECAT is charged with distribution

information about environmental stewardship and the EMS to all personnel throughout the installation. Fort Hood's ECAT helps Soldiers and civilians find solutions and achieve environmental success by ensuring their customers are informed of Fort Hood's environmental regulations and policies and receive required training. During FY10 and FY11, ECAT conducted 359 formal assessments, 239 courtesy assessments, 1,159 assistance visits, and 109 facility closeouts for Fort Hood units and organizations. The ECAT also conducted 152 environmental briefs and trained 4,835 Soldiers, civilians and contractors.



ECAT looks upon every contact as an opportunity to inform, assist, and train individuals, units, contractors, tenants and others how their actions effect the environment. With this positive communication, individuals get a better understanding of how they can help Fort Hood sustain its mission for future generations. ECAT goes through steps to help the organization identify deficiencies, help correct them, and then formalize procedures and policies to prevent further occurrences. ECAT combined EMS and compliance audits into their formalized process and assessments. Semiannually, ECAT audits each organization's EMS based on environmental significance. The internal audits give Fort Hood the opportunity to educate, inform and provide innovative solutions to minimize environmental vulnerabilities and impacts on the installation. These audits are published and any non-conformance or deficiency requires a reply by memorandum from senior leadership. The Garrison Commander and III Corps Chief of Staff received the results and conduct a management review. This internal audit process has been instrumental in Fort Hood's continuous improvement process.

Environmental Trainer: Fort Hood's Environmental Trainer has developed several effective environmental courses to train Soldiers,

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contractors, and civilians on the environmental aspects of their activities. During FY10 and FY11, the Environmental Trainer trained 556 Soldiers, contractors, and civilians as Environmental Compliance Officers (ECOs) and 950 personnel during quarterly environmental training. The week-long training helps ECOs recognize compliance requirements, and understand the intent and reasoning behind the requirements for Fort Hood's environmental programs. This comprehensive course includes classroom training, and visits to significant areas such as the recycle center, the HazMart, a unit motor pool, and the DPW Classification unit. It prepares ECOs to understand the environmental aspects and impacts of their unit's daily activities so they can train their co-workers how to comply with applicable environmental regulations and laws.

Transferability

Environmental Quality Control Committee:

The III Corps Chief of Staff and Garrison Commander quarterly chair an Environmental Quality Control Committee (EQCC) meeting. The EQCC coordinates the installation's environmental programs to preserve and enhance the environment, and ensure compliance with environmental laws, regulations and policies. Military and civilians leaders work together to plan and execute decisions related to environmental protection, installation sustainability, military land stewardship, natural resource conservation, energy efficiency and security, and the EMS. During each meeting, the installation's environmental challenges and successes for the quarter are discussed to identify the root cause and how military and civilian activities can improve. The meeting provides a forum for open lines of communication to increase environmental performance and help integrate sustainability principles.

Texas Environmental Partnership: The State of Texas and Department of Defense elements recognize the value of cooperative efforts in pollution prevention and recycling. To transfer knowledge and information between different federal organizations in the state, Fort Hood and other environmental leaders joined together to create the Texas Environmental Partnership. Federal stakeholders attend quarterly meetings to learn more about new sustainable technologies

and share lessons learned that enhance mission readiness and promote environmental stewardship.

Environmental Protection Agency Region 6:

EPA Region 6 shared successes from their partnership in the Dallas area and establishing the Sustainable Skylines Initiative. This became the basis and foundation of the Cen-Tex Sustainable Communities Partnership and initiative to long-term environmental, economic and social goals for the region. Fort Hood continues to collaborate with EPA Region 6 and partner with the federal agency on environmental events and initiatives like the National Partnership for Environmental Priorities and Schools Chemical Cleanout Campaign.

Community Services Council Meeting:

The Community Services Council is a monthly community-wide forum that brings awareness of Fort Hood and area community events to key representatives of military and civilian activities on the installation. DPW Environmental participates regularly to promote America Recycles Day, Earth Fest, Pollution Prevention Week, Household Hazardous and Bulk Recycle Turn-In, recycle challenges, and other environmental outreach efforts involving the Fort Hood community.

Stakeholder Interaction

Fort Hood has established and maintained strong relationships and partnerships with local school districts and academic institutions like Killeen, Copperas Cove, Lampasas, Florence, and Salado Independent School Districts and Central Texas College and Texas A&M University-Central Texas; Central Texas municipalities like Killeen, Copperas Cove, Harker Heights, and Temple; federal and environmental agencies like the Environmental Protection Agency Region 6, Central Texas Council of Governments, Keep Texas Beautiful, and Texas Commission on Environmental Quality. The Environmental Division reaches out to low income and minority communities by participating in every school event the division is invited to; setting up programs, tours and events to invite schools to Fort Hood; and partnering with the local Boys and Girls Club to conduct environmental projects.

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Pollution Prevention Week: During the third week of September, Fort Hood celebrates National Pollution Prevention Week. In 2010 and 2011, Fort Hood organized a training event for more than 260 Soldiers, civilians and contractors that included presentations about storm water pollution prevention, the payback of recycling, energy conservation, and natural resources conservation. The same week, Fort Hood hosted a school event at the Recycle Center for more than 190 4th graders. Each student brought an item to recycle and filled out a pledge card committing to prevent pollution at home and at school. The students participated in a series of environmental presentations and took a tour of the Recycle Center.

America Recycles Day: Each November, Fort Hood celebrates America Recycles Day to increase awareness of the economic and environmental benefits of recycling. In 2009 and 2010, an open house was conducted at the Recycle Center. During the 2009 and 2010 open house, the Center paid \$.50 a pound for more than 3,100 pounds of aluminum cans from the first 50 individuals. Each visitor received free giveaways to help them in their recycling efforts. The Center also hosted a school event for more than 480 4th graders who toured the Center and rotated through presentations from Keep Copperas Cove Beautiful, Central Texas College, and DPW Environmental.

Earth Fest: Each April, Fort Hood hosts an Earth Day event to bring awareness that environmental stewardship is important to all Family members, Soldiers, civilians, and leaders of the installation's many divisions and Directorates. The event is hosted and supported by the DPW Environmental Division and the Fort Hood Recycle Program. The 2010 Earth Fest event attracted more than 13,000 people including 1,100 students from five different Central Texas communities. Students rotated from one exhibit to another inside a huge 300 foot by 100 foot circus-style tent. More than 35 different exhibits taught students about recycling, renewable energy resources, endangered species, natural resources, water conservation, and other environmental topics. The 2011 Earth Fest event was combined with DFMWR's annual Month of the Military Child Fest, increasing attendance.

Almost 20,000 people including 1,700 students Central Texas school districts attended the environmental educational event. In the early afternoon and evening, the free event was opened to the public.



Features of the event included environmental displays from ONCOR, Coca-Cola, Home Depot, USO, Keep Texas Beautiful Affiliates, Green Mountain Energy and other environmental organizations, along with free food and drinks, and live entertainment.

Partnering with Local Youth: In September 2010, more than 150 students from the Central Texas Keystone and Torch clubs participated in a leadership conference that included a community service project to paint environmental murals on 30-foot-long roll-off recycle containers.



The community service project was a partnership between the Boys and Girls Club, Fort Hood's Environmental Division, Recycle Center, and Child, Youth and School Services. The recycle containers are used at recycle drop-off points at the Clear Creek and Warrior Way Commissaries and are reminders to the Fort Hood community to recycle. DPW Environmental partnered with the Boys and Girls Club to establish a summer recycling program in June 2010, which included green tips that were created and recorded by youth from the local Boys and Girls Club. The public service announcements run regularly on Fort Hood Radio and streams online 24/7 at www.forthoodradio.com