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Tom Wildoner, an environmental protection specialist at Tobyhanna Army Depot, Pa., checks a drinking water leak detection sensor, part of the depot's conservation efforts that helped it win a *Secretary of the Army Environment Award*. U.S. Army photo. Page 14

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From the editor

It was reported in our March-April issue that the wind turbine recently installed at Fort Huachuca, Ariz., was the Army's first. In fact, the Army has installed wind turbines at several other installations and sites. Thanks go to Bill Stein of the Engineer Research and Development Center's Construction Engineering Research Laboratory, for the information.

Mary Beth Thompson
Managing editor



Net-zero strategy focuses on end state: Sustainable installations

by Katherine Hammack

Army operations span a diverse range of operating environments and tasks, from base infrastructure under little threat to expeditionary operations and sustained campaigns in hostile zones. Today, the Army faces significant threats to energy, water and other resource requirements both at home and abroad.

In addition to growing operational challenges, our military installations at which Soldiers live and train are almost completely dependent on fragile, vulnerable commercial power grids. Likewise, the infrastructure of military communities and training centers relies upon complex water and wastewater distribution systems. Price volatility and the risk of compliance penalties present further challenges for Army commanders.

To ensure our Soldiers have the energy and resources they need to train, live in a healthy environment and accomplish their mission, the Army is taking significant steps to reinforce sustainable practices and improve energy security.

The cornerstone of our strategy for sustainability and energy security is the Army's *Net-Zero Installation Strategy*, designed to ensure the Army of tomorrow has the same access to energy, water, land and natural resources as the Army of today. Net-zero is a force multiplier guiding the Army to appropriately steward available resources, manage costs and provide Soldiers, Civilians and Families with a sustainable future.

This holistic approach will help us address issues surrounding energy, water and waste to preserve choice for the Army of the future. Net-zero seeks to bring the overall consumption of resources on installations down to an effective rate of zero. To become effectively self-sufficient and insulate the Army from potential disruptions in energy supply, installations must be able to generate, repurpose or recycle power, water and waste.

The net-zero strategy comprises three main building blocks:



Katherine Hammack
U.S. Army photo

- **Net-zero energy** – Net-zero energy installations produce as much energy as they consume over the course of a year. The energy is generated from a variety of means, such as reduction in total consumption, renewable energy projects on posts and the recapture of existing waste energy such as boiler stack exhaust.
- **Net-zero water** – Net-zero water installations limit the consumption of fresh water resources and return water to the originating aquifer. Conservation and reduction strategies — such as harvesting rainwater, recycling gray water, desalination and purification — will reduce the drawdown of major groundwater sources.
- **Net-zero waste** – Net-zero waste installations center on reducing their yearly landfill to zero through a combination of recycling, repurposing and reducing solid waste streams. Additionally, life-cycle waste management strategies are taking the end state of procurement into account to ensure that new products contribute minimal solid waste throughout the life cycle.

The Army is piloting six net-zero energy, six net-zero water and six net-zero waste installations, along with two installations that are working for net-zero in all three areas by 2020. All other installations can learn from the pilots and implement strategies to chart their own progress toward this important goal.

Recent policies from the Army have

highlighted utilizing efficient lighting, incentivizing the installation of energy-efficient designs through the development of a policy that allows contractors installing such measures to take a tax deduction as authorized in Section 179D of the 2005 Energy Policy Act and implementing the American Society of Heating, Refrigerating, and Air Conditioning Engineers Standard 189.1, *Standard for the Design of High-Performance Green Buildings*, as the baseline requirement for all future Army construction. This move sets the Army's building standard as the highest in the federal government.

Technologies that support alternative energy and clean water generation, energy efficiency and waste reduction both at the installation and in the theater of operations hold great promise. The Army has developed systems that run on alternative energy and employ fuel-efficient technologies. Today's alternative energy generation technology is advancing quickly and is already able to provide reliable and secure power in many applications. Continued investment is needed to ensure greater utility under a wider array of circumstances.

We are taking bold steps toward sustainability and energy security. Our goal is clear: to ensure Soldiers have the energy and resources they need to train, live in a healthy environment and accomplish their mission — today and tomorrow.

To address the challenges of sustainability and energy security, the Army believes that innovative solutions are not only operationally necessary, they must also be fiscally prudent. To continue to accomplish our mission in service to the nation, the Army of tomorrow must have the same access to energy, water, land and natural resources as the Army of today.

Katherine Hammack is the assistant secretary of the Army for installations, energy and environment. 🇺🇸



Corps helps installations achieve net-zero goals

by Christine Godfrey

The Army is talking a lot these days about the “net-zero hierarchy” — reduction, re-purpose, recycling and composting, energy recovery and finally disposal.

As the nation’s environmental engineer, the U.S. Army Corps of Engineers is part of that conversation. On April 19, the Army announced the 20 installations that make up its pilot net-zero installations, six in each of the energy, water and waste categories and two integrated installations striving toward net zero by 2020. The Army also identified the Oregon National Guard as a statewide pilot on net-zero energy.

The Corps of Engineers stands committed to helping the Army achieve its net-zero goals by providing enhanced value through several initiatives:

- ensuring new buildings meet U.S. Green Building Council Leadership in Energy and Environmental Design Silver or higher standards;
- encouraging low impact development;
- ensuring a minimum of 50 percent of all Military Construction project waste is recycled;
- employing an enterprise approach to master planning and energy to create energy-effective, sustainable communities;
- developing a climate and site specific net-zero energy, water and waste area development plan design guide at Fort Leonard Wood, Mo., which is the 2030 USACE integration project; and
- sharing approaches and technologies developed by the Center for the Advancement of Sustainability Innovations, a part of the U.S. Army Engineer Research and Development Center.

These are not new initiatives. We have been working in these areas for some time. However, the difference now is the focus. We are trying to be more holistic — to look at installations as a whole, not as a cluster of independent buildings.



Christine Godfrey
Photo by John Hoffman

Just as our *Strategic Sustainability Performance Plan* helps us identify overarching strategies for achieving our long-term sustainability goals, bringing all of our capabilities to bear in a systematic way is the right way to approach doing business

USACE recently joined other federal agencies in sharing our 2010 scorecard on sustainability and energy performance. While we have made some advances, the scorecard, which serves as a benchmark, shows that the Corps still has significant progress to make in reducing waste and increasing efficiency in our operations.

The SSPP and the scorecard have helped us identify those areas that need improvement — facility energy and waste intensity, reducing nontactical vehicle petroleum, focusing more on sustainable acquisition and increasing our use of renewable energy.

Testing biofuel in our motor vessel fleet, increasing hybrid vehicles use, installing solar electricity systems at some of our recreational facilities and unveiling the first Corps-owned LEED Gold building at our ERDC campus in Vicksburg, Miss., and conducting energy audits at several Corps facilities are examples of our progress toward sustainability.

We know that getting to green across the board will be a challenge for USACE, and it’s going to take years. However, Corps leadership is committed to making our agency sustainable, and our personnel are

Acronyms and Abbreviations	
CASI	Center for the Application of Sustainable Innovations
ERDC	Engineer Research and Development Center
LEED	Leadership in Energy and Environmental Design
SSPP	Strategic Sustainability Performance Plan
USACE	U.S. Army Corps of Engineers

prepared to tackle the challenge.

This requires moving aggressively and increasing our focus on making measurable progress. It is not easy, but very few worthwhile things in life come easy.

The same can be said for attaining net-zero capability. It will require commitment, hard work and vision — all areas in which we believe the Corps of Engineers excels.

The Army’s efforts to achieve net-zero goals on military installations will benefit from several CASI studies and ERDC research projects. In 2008, CASI began studying long-term water supplies at Army posts and recently published these studies. Now, CASI is undertaking an analysis of the challenges and opportunities to achieve net-zero water. That report will be posted on the CASI website, <https://casi.erd.usace.army.mil>, in the near future.

Other CASI projects are looking at the three essential approaches or technologies for net-zero energy: energy conservation, renewable energy production and microgrids.

In fiscal year 2010, ERDC began a net-zero energy research project that initially focused on energy solutions at the multiple building level. This effort is being expanded to include water and waste. Although the primary emphasis is a modeling capability to examine net-zero options at an installation, this initiative is also designed to examine regional issues that impact an installation’s ability to become net-zero capable. These issues include the type of fuel providing electricity, optimal locations for renewables, availability of water in a watershed, ➤



Army identifies net-zero pilot installations

by Kristine Kingery

The Army's net-zero installation initiative achieved a major milestone in April with the identification of pilot installations that each will strive toward net-zero capability by 2020. Six installations were identified in each of three categories: energy, water and waste; and two installations that will integrate all three areas were also identified.

The chart lists the net-zero pilot installations.

The identification of the pilot installations initiates the programmatic environmental analysis and planning process for the Army's *Net-Zero Installation Strategy*. Specifics for projects and initiatives will be determined through a programmatic environmental analysis that will include public engagement and stakeholder outreach.

Review panels identified the participants from among the 100 self-nominations received from 60 highly motivated installations. These installations represented Installation Management Command, Army Materiel Command, National Guard, the Reserves, U.S. Army Medical Command and Space and Missile Defense Command facilities.

Striving toward net-zero

The Army's *Net-Zero Installation Strategy* focuses on the end state — sustainable

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regional constraints on water reuse, local markets for waste products and potentials to combine with partners in waste-to-energy projects.

Research projects such as these coupled with our other ongoing initiatives demonstrate that USACE is working hard to keep installations sustainable and focused on attaining net-zero goals.

Christine Godfrey is acting chief, Environmental Community of Practice, U.S. Army Corps of Engineers.



Kristine Kingery
Photo by Lt. Col. William R. Martin

Army installations — through establishing a framework of reduction, repurposing, recycling, composting, energy recovery and disposal to guide installations toward achieving net-zero capability. Assistant Secretary of the Army for Installations, Energy and Environment Katherine Hammack announced the strategy last October.

Pursuit of the net-zero end state guides the Army to improve energy security, fiscal responsibility and mission effectiveness.

A net-zero installation comprises three interrelated components: energy, water and waste. A net-zero energy installation produces as much energy on site as it uses

Acronyms and Abbreviations

ASA-IE&E assistant secretary of the Army for installations, energy and environment

over the course of a year. A net-zero water installation limits the consumption of fresh water resources and returns water to the same watershed so as not to deplete the groundwater and surface water resources of that region in quantity and quality over the course of a year. A net-zero waste installation reduces, reuses and recovers waste streams, converting them to resource values with zero landfill over the course of a year.

Nomination process

The nomination process for the pilot program commenced in January by defining the end state for energy, water and waste. Next, nomination criteria were developed, and installations were asked to self-nominate.

The nomination criteria addressed:

- command support;
- constraints or vulnerability of current natural resources;
- impact on mission critical objectives;
- energy security needs;
- installation expertise;

Installation	State	Command	Energy	Waste	Water
Aberdeen Proving Ground	MD	IMCOM			X
Camp Rilea	OR	ARNG			X
Fort Bliss	TX	IMCOM	X	X	X
Fort Buchanan	PR	IMCOM			X
Fort Carson	CO	IMCOM	X	X	X
Fort Detrick	MD	MEDCOM	X	X	
Fort Hood	TX	IMCOM		X	
Fort Hunter Liggett	CA	USARC	X	X	
Fort Polk	LA	IMCOM		X	
Fort Riley	KS	IMCOM			X
JB Lewis-McChord	WA	IMCOM		X	X
Kwajalein Atoll	RMI	SMDC	X		
OR ARNG (statewide)	OR	ARNG	O		
Parks Reserve Forces TA	CA	USARC	X		
Sierra Army Depot	CA	AMC	X		
Tobyhanna Army Depot	PA	AMC			X
USAG Grafenwoehr	Germany	IMCOM		X	
West Point	NY	IMCOM	X		

O = Separate Guard Initiative

These installations were identified in April for the Army's Net-Zero Installation Initiative. Graphic by Kristine Kingery



Calculating sustainability

by Maj. John M. Evans and Lidia Berger

The Sustainable Return on Investment methodology allows installations to be good stewards of government resources by combining a rigorous process and analytical review to identify, quantify and evaluate a project's economic, environmental and social variables.

In today's economic climate, an overarching goal is to leverage available but limited resources to maximize returns and sustainability. A number of federal mandates challenge government agencies to step up and lead by example. Executive Order 13514, for instance, sets high-level performance goals; it tasks agencies to develop strategic sustainability plans, report progress transparently and ensure full accountability for reaching goals.

As a result, installations seeking funding are now required to articulate their cases using metrics that provide full accounting of all the relevant social, economic and environmental impacts of their projects.

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- installation cost-sharing capability;
- resource costs;
- project development capabilities acquired from past, current or programmed conservation, efficiency, recycling, recovery or generation projects; and
- local regulatory climate.

The bottom-up approach of installation self-nomination proved to be an essential ingredient to identify potential pilot locations and allowed installations to showcase their past, present and future strategies for success.

A two-part review process of the nomination packages leveraged the technical expertise of the Department of Energy, National Renewable Energy Laboratory, Pacific Northwest National Laboratory and senior personnel from Army commands, the U.S. Army Corps of Engineers and the Army staff to develop a slate of installations for consideration.

This task is challenging because traditional life-cycle cost tools look only at direct cash benefits, ignoring social and environmental benefits.

The SROI process, however, monetizes social and environmental impacts related to projects. It also provides the equivalent of traditional life-cycle cost metrics, called Financial Return on Investment, in its analysis. FROI accounts for internal cash costs and benefits only, while SROI accounts for all internal and external costs and benefits of the triple bottom line in dollar terms. For example, greenhouse gas emission impacts or the social cost of water saved are measured.

Other relevant incremental social and environmental impacts include air quality, water quality, waste reduction, human health and labor or productivity costs.

The SROI process documents compliance with federal sustainability mandates. The process follows a transparent methodology that obtains

After the laboratory evaluation, the senior Army panel evaluated the nominations using these guiding principles:

- viable strategy that addressed net-zero hierarchy;
- net-zero definitions compliance;
- demonstrated success;
- multi-faceted approach to funding; and
- diversity in size, mission and geographic location

The ASA-IE&E and the Senior Working Group made the final recommendations in mid-April and announced them April 19 at the Installations Symposium in San Antonio.

Next steps

While the past seven months set the stage for the net zero installation initiative, the hard work is just beginning. The pilot installations will become centers of environmental and energy excellence by showcasing best management practices

Acronyms and Abbreviations	
FROI	financial return on investment
LEED	Leadership in Energy and Environmental Design
MEDCOM	Medical Command
SROI	Sustainable Return on Investment
USACE	U.S. Army Corps of Engineers

data, validates alternatives, assigns risk and probability, and communicates decision rationale. The modeling framework compares the social and financial benefits of the alternatives in relation to their costs for design, capital, replacement, and operating and maintenance.

As an example, the SROI analysis for the 1.1 million-square-foot, Leadership in Energy and Environmental Design-registered Fort Bliss, Texas, replacement hospital created a decision-making tool that evaluated and assessed sustainable design and evidence-based design alternatives during each design phase so that only the most efficient, synergistic combination of initiatives would be

and demonstrating effective resource management.

They will participate in a kickoff meeting in June to receive training and to showcase their net-zero strategies. Each installation will participate in monthly conference calls, provide quarterly status updates, and share experiences and lessons learned in newsletters and at military and industry conferences.

All installations are encouraged to continue to strive toward the net-zero end state, learning from the pilot installations' journeys. In fiscal 2014, another 25 installations in each category will be asked to self-nominate and commit to becoming net-zero installations.

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included in the project.

A number of policies were considered when alternatives were identified, including federal, Department of Defense, Army, Medical Command and Fort Bliss policies, along with third-party goals such as LEED, the Military Health System's Evidence-based Design principles and U.S. Army Corps of Engineers' directives.

Through a collaborative effort, project architect HDR Inc., the Health Facility Planning Agency, USACE, the installation and MEDCOM created a four-part vision for the hospital that guided the approach: world-class health care, evidence-based design, comprehensive sustainability and the triple bottom line.

During the project kickoff, the integrated project team developed a Master Sustainable Strategy Tracking List with 75 sustainable design alternatives across the categories of site, energy, water, indoor environmental quality, materiality, evidence-based design, regionalism and innovation. These design alternatives supported the project's sustainable vision, focusing on long-term goals for 2020 and beyond to meet federal sustainable mandates and LEED, and crossed design phases from concept through construction documents and into construction and operations.

The project team then narrowed the list to those sustainable design alternatives that were necessary to inform the schematic-level design to ensure decisions were made early and would reduce energy consumption, transition to renewable energy, reduce potable water use, divert waste from the landfill and improve health outcomes.

The result produced 15 sustainable design alternatives in seven areas:

- thermal storage and co-generation;
- heat-recovery chillers, energy recovery of ventilation air and ground source heat pumps;

Study Results	8.8% discount rate		4.8% discount rate	
	SROI	LCCA	SROI	LCCA
Thermal Storage	●	●	●	●
Co-Generation Option #1 Full Load	●	●	●	●
Co-Generation Option #2 Peak Shaving	●	●	●	●
Heat Recovery Chiller	●	●	●	●
Energy Recovery Ventilator	●	●	●	●
Ground Source Heat Pump	●	●	●	●
Solar Hot Water	●	●	●	●
Solar Photovoltaics	●	●	●	●
Geothermal Direct Heating	●	●	●	●
Exhaust Energy Recovery Wind Turbines	●	●	●	●
On-Site Greywater and Wastewater Reclamation, Treatment, and Re-Use	●	●	●	●
Dishwasher Water Recovery and Re-Use	●	●	●	●
Recycling Station & In-vessel Composting	●	●	●	●
HEPA Filtration for Patient Care AHUs	●	●	●	●
Hydrogen Peroxide Vapor Cleaning	●	●	●	●

The SROI dashboard summarizes data and recommendations. Graphic by HDR Inc.

- solar hot-water heating, solar photovoltaic systems, geothermal direct heating; and heating, ventilation and air conditioning exhaust energy recovery wind turbines;
- gray water and wastewater reclamation, treatment and reuse, and dishwasher water recovery and reuse;
- recycling station; and
- HEPA filtration and hydrogen peroxide vapor cleaning.

At a two-day visioning workshop, the team focused on measuring the design alternatives from a life-cycle cost perspective rather than the typical first cost perspective. The team then determined data inputs and calculations for the SROI model, such as utility rate pricing structures. Calculations were validated, and a full SROI analysis was performed based on a 44-year period with the base year as 2012 and the opening year as 2016. The benefits were evaluated over 40 years.

The design alternatives were presented in a detailed financial analysis to guide the team in its decision making. Derived from the financial analysis, a "dashboard" was

created to summarize the data and provide a snapshot of decisions that needed to be made. The tool, modeled after financial and investment dashboards, demonstrated the economic costs and benefits, architecture and engineering analysis, and recommendations in a straightforward manner with green for "go" and red for "stop."

The Fort Bliss hospital results demonstrate that SROI ensures greater rigor in the decision-making process and creates a defensible position for the project. As with any model, individual inputs and values can change. Paybacks and rates of return are simply outputs that assist the team in making difficult decisions.

By involving all stakeholders in the SROI process, each team member is an integral part of the process, resulting in improved collaboration, increased transparency and a greater level of consensus achieved earlier in the project. Above all, SROI results in a better final product.

One of the tertiary benefits is the





Implementing the Army Sustainability Campaign Plan

by Wanda Johnsen

The *Army Sustainability Campaign Plan* was signed by Under Secretary of the Army Joseph Westphal and Vice Chief of Staff of the Army Gen. Peter Chiarelli one year ago, and organizations across the Army have made significant progress in implementing the plan.

Westphal and Chiarelli co-chair the Senior Energy and Sustainability Council and monitor the Army's progress. The previous senior energy council was rechartered as the SESC in February to bring senior leader focus to meeting federal and Department of Defense sustainability goals.

Strategic tasks

The strategic tasks in the ASCP's synchronization matrix are designed to integrate sustainability into the Army's plans, policies and programs and across the Army's core enterprises of human capital, training and readiness, materiel,



Katherine Hammack, assistant secretary of the Army for installations, energy and environment, speaks at the Installations Symposium in San Antonio, where she spent the week talking about Army sustainability efforts. Photo by Luke Elliott, Headquarters, Installation Management Command

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level of thought that goes into the SROI model. The model inputs require a thorough level of thought that can expose the "ripple effects" of decisions, positive and negative. For example, SROI could identify the social benefits of decreased carbon emissions for a solar array. Or, as in the case at Fort Bliss, it could identify the benefits as well as the potential risks related to a deep geothermal initiative.

and services and infrastructure. Those tasks include:

- incorporating sustainability language into appropriate Army regulations and field manuals, and appropriate professional military and civilian training;
- revising acquisition policy to make sustainability and energy key performance parameters in acquisition decisions;
- updating and fully implementing green procurement policies that enable the purchase of sustainable products and services; and
- incorporating sustainability into installation plan updates.

Other ASCP strategic tasks focus on reducing the Army's energy use, improving water conservation and reducing toxic and hazardous chemicals use.

Direction

The ASCP was signed in May 2010, before DoD's *Strategic Sustainability Performance Plan* was issued in June. The SSPP is the DoD's plan for implementing Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, which established new goals for reducing greenhouse gases, increasing use of renewable energy sources and including transportation and sustainability in future facility planning.

To ensure the ASCP incorporates any new federal or DoD sustainability goals, Westphal and Chiarelli issued an ASCP implementation memo in March directing

As a steward of government resources, the Army has a responsibility to make decisions in a deliberate and thoughtful manner. All project elements — sustainable design features and capabilities — should be subjected to the same level of attention.

The SROI process monetizes cash and noncash benefits alike, allowing for a more holistic view of the sustainable elements being considered and replacing

Acronyms and Abbreviations	
AMC	Army Materiel Command
ASCP	Army Sustainability Campaign Plan
DoD	Department of Defense
SESC	Senior Energy and Sustainability Council
SSPP	Strategic Sustainability Performance Plan

annual updates of the strategic tasks in its synchronization matrix. Strategic task tracking and reporting requirements were included in the memo. The office of primary responsibility for each strategic task must develop an action plan with associated goals, objectives and metrics for its tasks. Those action plans are entered into the Army's strategic management system to enable the office of primary responsibility to measure performance. This system also enables the SESC and core enterprise boards to measure Armywide performance.

Progress

One of the most visible achievements to date is the integration of sustainability and energy security into the *2011 Army Posture Statement* and the *Army Campaign Plan* updates. Now, the Army's core enterprise leads are quantifying sustainability and energy security resourcing requirements for the fiscal years 2013 to 2017 Program Objective Memorandum.

Within the materiel enterprise, the assistant secretary of the Army for acquisition, logistics and technology issued updated green procurement guidance, and the Army Materiel Command is

emotional discussions with an **objective** and structured process that is **quantifiable** and **transparent**.

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Army issues tax deduction policy for energy-efficient building design

by John W. Wehmanen

Since the inception of the Energy Efficient Commercial Buildings Deduction, 26 U.S. Code Section 179D, persons who own or lease a commercial building in the United States have been able to claim a tax deduction for part or all of the cost of energy-efficient commercial building property. The property must be placed in service after Dec. 31, 2005, and before Jan. 1, 2014, and it must meet the energy savings requirements under Section 179D.

The tax deduction has proven to be a valuable business incentive. However, it is not well known that for government buildings, the government may allocate the tax deduction to the designers of qualifying projects, providing incentive to include the latest techniques in the designs.

The Army became the first in the Department of Defense to have officially encouraged energy savings and have a process for getting allowable deductions allocated to designers who qualify.



John W. Wehmanen
Photo by Philip Columbus


(The General Services Administration had earlier published guidance, setting precedence for public-private sector relationships for the tax deduction.)

The Assistant Secretary of the Army for Installations, Energy and Environment Katherine Hammack took the first step and published her policy Dec. 17. Following a short trial period, the Assistant Chief of Staff for Installation Management Lt. Gen. Rick Lynch issued detailed implementing instructions in his letter

dated April 5. Distribution of the policy and the letter is under way, and training is being developed by the U.S. Army Corps of Engineers in conjunction with the Installation Management Command.

The *Policy for Allocation of Tax Deductions for Design of Energy Efficient Buildings* and the letter give responsibilities to persons named as “authorized government representatives” and “project managers.” It is expected that there soon will be an increase in the number of applications for allotment of this tax deduction. Officials who have been or are currently working on projects in the United States with energy-efficient designs are encouraged to review the information on the web site, <http://army-energy.hqda.pentagon.mil/>.

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reducing trichloroethylene and methylene chloride use. AMC and the Army National Guard are on track to meet the target reduction for hexavalent chromium-containing epoxy primers.

The human capital enterprise is incorporating sustainability into Army War College curricula. In addition, the Installation Management Command integrated sustainability into its spring Installation Management Symposium, and the Army National Guard included sustainability in its chief facilities management officer training and national environmental symposium.

The Services and Infrastructure Core Enterprise is incorporating sustainability into its policies and operations as well as its monthly board meetings. In October, an updated sustainable design and development policy was issued that set the highest energy-efficiency standard for new

construction in DoD. An energy-efficient lighting policy was also issued in October.

More visible to Army installations is the inclusion of sustainability throughout the *Installation Management Campaign Plan*. Most installations are incorporating sustainability into their installation strategic plans. Many installations are also updating their master plans to include sustainability considerations per Army Regulation 210-20, *Real Property Master Planning for Army Installations*.


In the training and readiness enterprise, the *Tactical Fuel and Energy Implementation Plan* was issued, and a sustainable base camps policy is in development. Energy-efficient contingency operations use less fuel, which reduces the Army’s logistics tail. The base camp policy will also focus on solid and hazardous waste minimization and management to prevent adverse health effects on Soldiers or long-term liabilities

as base camps are closed.

Next steps

The Army is developing an ASCP strategic communications plan, which will include Armywide and enterprise-specific messages and identify key events at which sustainability and energy security should be highlighted. The first update of the ASCP synchronization matrix is also in progress. The update will incorporate the SSPP’s goals for greenhouse gas reductions and Council on Environmental Quality guidance for climate change adaptation and mitigation planning. Future ASCP updates will follow the annual updates of the SSPP.

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Army energy-efficiency tax deduction policy

by Alan D. King

On Dec. 17, the Army issued the *Building Energy Efficiency Tax Deduction Policy*, which assists Army contractors in obtaining tax deductions for the costs of installing certain energy-efficient systems in Army buildings. This policy extends the tax credit to the contracting community, encouraging installations and industry partners to implement cutting-edge technologies and novel approaches to save energy.

The tax deductions were authorized in the 2005 Energy Policy Act and enacted as Internal Revenue Code Section 179D for qualified energy-efficient building investments made by a building owner. The deduction may be taken in the year that qualified energy-efficient improvements are placed in service.

Policy

For government-owned buildings — federal, state or local — the government may allocate the tax deduction to the person or persons responsible for creating the technical specifications of the qualified improvements, i.e., the “designer,” who may include architects, engineers, contractors, environmental consultants or energy service providers. The Army does not consider a person who installs, repairs or maintains the property to be a designer.

Army policy states that only the prime contractor may request tax deduction allocation, on behalf of one or more designers, from the authorized government representative. The maximum deduction for the cost of energy-efficient commercial building property installed on or in a building cannot exceed \$1.80 per square foot.

Three categories of improvements may each qualify for one-third of the deduction or 60 cents per square foot:

- building envelope;
- heating, ventilation, air conditioning and hot water systems; and
- lighting.

If two or more building contractors



Alan D. King
U.S. Army photo

install energy-efficient commercial building property on or in the same building, the total amount of the deductions allowed to all shall not exceed \$1.80 per square foot.

Implementation

The Army needs energy saving opportunities for existing buildings. With the average age of Army facilities at 42 years, the current inventory necessitates energy improvements focused on restoration and modernization projects.

The tax deduction applies to property placed in service between Jan. 1, 2006, and Dec. 31, 2013. The Army is also encouraging the contracting community to look for energy enhancement opportunities in existing projects, even those currently under construction. Enhancements that save energy and money are easily implemented. The U.S. Army Corps of Engineers has processes to review energy enhancements that may require additional funding. In advance of fiscal 2012 budget development, USACE is examining the Army’s standard design specifications to expand square footage to allow space for energy enhancements. In FY 2013 and beyond, the Army is evaluating design and construction options and is committed to increasing Military Construction projects’ energy efficiency.

The Army will provide verification of the designer’s activity on the project and that the project was completed. Certification required by the IRS, including that the

Acronyms and Abbreviations	
FY	fiscal year
HVAC	heating, ventilation and air conditioning
IMCOM	Installation Management Command
USACE	U.S. Army Corps of Engineers

improvements were successful in achieving the required energy and power savings, must be completed by the designer and does not require Army approval.

Verification

The Army is developing an efficient process in which the contractor is responsible for preparing the certification package to claim the deduction. The Army project manager certifies the package and forwards it to the Installation Management Command for approval.

The verification process follows several main steps.

Step 1 – The contractor lets the Army project manager know it is interested in obtaining the deduction for a building and provides a certification from an independent third party, which states that the project qualifies for the deduction. This certification must contain:

- A statement that a site inspection, by a qualified individual, was made confirming that the energy-efficient property has been installed. The statement must include the inspector’s qualifying credentials, including appropriate licensing in the jurisdiction in which the property is located and that the inspector is not related to the taxpayer claiming the deduction. The statement must be accompanied by a certificate of compliance using the standard format developed by the National Electrical Manufacturers Association; it can be found at <http://www.lightingtaxdeduction.org/certification-letters.html>.
- A statement describing the methodology used in determining the deduction, i.e., whole building or space-by-space. Section 179D requires that when the deduction is being claimed for HVAC or building envelope property placed in



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service or in conjunction with more than one system, certain software programs must be used to identify energy savings for the purposes of the deduction. The Department of Energy published a list of the software at http://www1.eere.energy.gov/buildings/qualified_software.html. When the deduction is being claimed solely for interior lighting systems, efficiency savings can be demonstrated via a spreadsheet.

- A statement and description of eligible energy-efficient property — system counts, descriptions, energy use — for interior lighting systems, HVAC and hot water systems, or building envelope.
- A statement of whom the contractor is designating as the designer and why.
- A statement of the system cost. This statement must prove that the deduction does not exceed the cost of the property placed in service. Cost can include labor, demolition of the previous system and project management in addition to materials.
- A statement of applicable square footage

accompanied by drawings showing the building and square footage.

- A statement and calculation of projected annual energy costs for the energy-efficient property placed in service.
- A statement and calculation of the amount of deduction requested and the entity or entities to which the assignment is to be made and the distribution among entities.
- A draft assignment letter in the form and format provided in the policy template.

Step 2 – The Army’s project manager reviews the certification and validates the data. The garrison commander reviews the certification and concurs.

Step 3 – The IMCOM region designee signs off on the tax deduction and notifies the Army contract officer representative.

Step 4 – A certification letter and assignment letter are provided to the submitter, and copies are kept at the garrison.

Assistance

USACE is developing guidance and training to support the tax deduction

initiative.

Contractors may be able to earn deductions, but the Army is not anticipating lower bid prices due to this policy. More complicated energy enhancements, like updates to HVAC systems and the building envelope, may require increased cost. The Army plans to contract for the best value, not necessarily the least cost, to improve the energy efficiency of its facility inventory.

The Army does intend to pursue energy improvements to existing contracts through a collaborative process that negotiates changes with the contractor. Generally, the contracts that can provide the most significant energy savings to the Army are “design-build,” rather than “design-bid-build,” and provide the contractor the opportunity to negotiate any significant new energy-saving requirements.

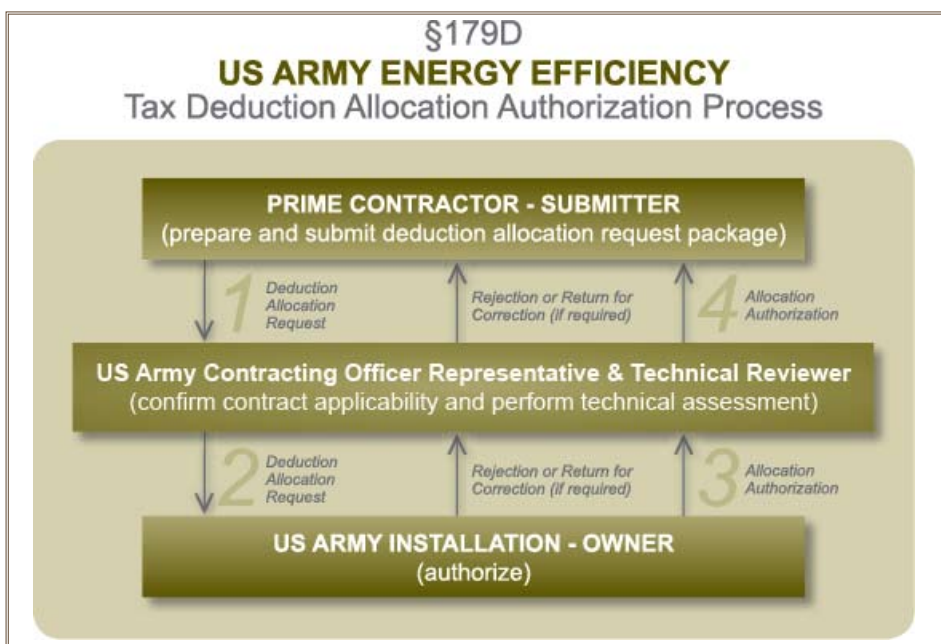
While retroactive tax deductions may be difficult for the contractor or Army to certify, the IRS does allow a three-year window to apply for the deduction.

Creating energy security, sustainability culture

The Army seeks to derive greatest value from energy-efficient systems developed and implemented by its contractors. Army construction programs are committed to assigning the deduction to qualified contractors who are supporting the Army’s energy-efficiency goals. Army contractors are encouraged to pursue the tax deduction and work with their respective contract officer representatives.

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Graphic by Ned Shepherd, USACE, and Cari Weakland, Concurrent Technologies Corp.



Geothermal heat pump and Pathfinder well protocol advantages

by Donald P. Brown Sr., Vincent A. Ravgiala, Gregory T. Buteau and Tracy H. Dorgan

The 99th U.S. Army Reserve Command has embarked on an aggressive implementation of alternative renewable energy projects that includes geothermal heat pump heating and cooling systems.

Why use ground-source heat pumps?

Geothermal energy from low-temperature ground-source heat pumps is nature's most renewable and reliable energy source for several reasons.

It is the most flexible. Unlike solar, wind or biomass, geothermal energy is not restricted to "ideal" locations; it is found everywhere in the world.

It is the most reliable. Ground-source heating and cooling does not vary with time, day, season or changes in nature.

It is the ultimate renewable fuel. Underground cooling and heat from the Earth's core will last as long as the Earth lasts.

It is the most secure. Geothermal power can be emplaced on any military installation, no matter how large or small, and situated entirely below ground with little or no equipment exposed to natural or manmade hazards — a truly secure alternative to easy-to-target infrastructure such as gas pipelines, wind turbines, solar panels, transformers and power transmission lines.

It is a proven technology. Commercially available ground-source heat pumps are in an advanced and mature design evolution. Advances in design capitalize on more than 30 years of development and improvement.

It is a scalable technology. Geothermal plants can be built to support single buildings or large installations.

It produces multiple energy types. The process produces cooling, heating and hot water. Thermal energy applications such as electrical production can now be produced from 175 degrees Fahrenheit energy wells.

It is available today. Older, less-efficient

ground-source heat pump systems are in operation today on several installations; new systems can be sited, permitted, designed, built and operating in 12 months.

It has the longest life span. Geothermal well fields have useful lives in excess of 50 years, compared to eight to 12 years for typical conventional heating, ventilation and air conditioning outside equipment.

It produces no carbon emissions. Geothermal energy requires no fossil fuel. Using heating and cooling from the Earth's interior instead of burning fossil fuels significantly reduces the release of carbon into the atmosphere.

It involves no noise pollution or disruptive visuals. Below-ground wells eliminate power plant equipment noisiness and unsightly boiler plants, enclosures and vulnerable fuel storage tanks.

It reduces costs. Replacing conventional HVAC equipment eliminates the need for costly chillers, boilers, cooling towers and their emissions, and significantly reduces operations, maintenance and life-cycle cost issues. It also reduces electricity costs by eliminating the need for power for heating and cooling. The only electricity required operates the well pump and heat pump system, reducing the load on the boiler and chiller systems about 40 percent.

What is Pathfinder?

Considering the paucity of guidance, the 99th USARC, in collaboration with the New England District of the Corps of Engineers, established a geothermal well-testing protocol called Pathfinder. The protocol provides site-specific hydrogeologic, regulatory and geothermal data at specific sites that result in a preliminary concept plan for future geothermal conversion or use at that site.

Prior to drilling a test well, a preliminary assessment report is prepared using existing data and preliminary heating and cooling requirements to recommend whether the Pathfinder test well should be an open well system based on a standing column well

Acronyms and Abbreviations	
HVAC	heating, ventilation and air conditioning
USACE	U.S. Army Corps of Engineers
USARC	U.S. Army Reserve Command

design or a closed loop geothermal well design. Standing column well systems are used in geographic areas where shallow bedrock has negated the use of closed-loop geothermal heat pump systems, such as in the Northeastern United States. These open geothermal heat pump systems use groundwater as the heat transfer media. They are also typically more efficient than closed-loop systems and may be used at sites with limited available property. The usual purpose of the standing column geothermal test well is to provide site-specific data on the depth and composition of overburden soils, the depth to bedrock and bedrock characteristics, and hydrogeologic conditions that affect critical geothermal heat pump design criteria.

The major tasks for the test well are:

- drill and log geologic conditions at a 1,500 foot deep standing column well;
- conduct drawdown and discharge tests to evaluate hydraulic performance of the well;
- collect and chemically test groundwater samples to establish the groundwater quality;
- conduct a thermal evaluation of the test well to determine the thermal conductivity and diffusivity of the geologic formations present;
- perform a geophysical assessment of the well to provide data on bedrock fracture spacing, orientation and transmissivity, groundwater flow, groundwater chemistry including temperature and physical properties that affect long-term scaling and fouling potential, borehole deviation and bedrock physical properties affecting borehole stability as well as thermal properties; and
- prepare a final report.

The final report analyzes, evaluates and integrates all the data obtained from the ►



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Pathfinder well and presents a preliminary design recommendation for geothermal conversion for the specific site.

Why use Pathfinder?

The Pathfinder protocol is critical to adequately evaluate the technical feasibility of geothermal heat pump conversion or use at a site. The geology specific to the site becomes the substitute “oil tank or gas line” for the heating and cooling needs. Without characterization of the geology from the Pathfinder protocol, the site may not be technically appropriate for open type geothermal heat pump systems, which are dependent on local groundwater as the heat transfer fluid, due to:

- poor or unstable rock quality leading to well integrity problems,
- highly aggressive water quality that requires special operational needs that impact initial and long-term operations and maintenance costs,
- contaminated groundwater, and
- insufficient energy budget obtained from the thermal value of the rock and the water yield.

This geothermal predesign data collection protocol is the first of three phases for successful geothermal conversion at these sites. The other two phases are the preparation of plans and specifications, and the request for proposals from qualified contractors based on the completed

plans and specifications. The request for proposals, versus unrestricted bidding, is preferred to ensure qualified geothermal contractors submit cost proposals.

USARC example

A current project at the 99th Regional Support Command’s Area Maintenance Support Activity in Londonderry, N.H., provides an example of the benefits of ground-source heat pumps and the Pathfinder protocol. The project, supported by USACE’s New England District, was permitted in about two weeks.

Unlike other geothermal project protocols, one Pathfinder test well was drilled, rigged and tested to garner all necessary engineering data. The same bore became one of the wells supplying the selected ground-source heat pump design.

At Londonderry, one ground-source heat pump system will replace four heating, cooling or hot water systems. When fully implemented, the new low temperature system will eliminate more than 1 million pounds of carbon dioxide emissions from fossil fuel combustion.

What are the costs?

The setup costs for ground-source heat pumps are slightly higher than for conventional systems, but the difference is usually returned in energy savings in three to 10 years. System life is estimated at 25 years for inside components and 50-plus years for the ground loop. As of 2004, there

are over a million units installed worldwide providing 12 gigawatts of thermal capacity.

Ground-source heat pumps are characterized by marginally higher capital costs and lower operational costs compared to other HVAC systems based on recent prices. Their overall economic benefit depends primarily on the relative costs of electricity and fuels, which are variable over time and across the world.


Capital costs are known to benefit from economies of scale; they are more cost-effective for larger commercial buildings and harsher climates.

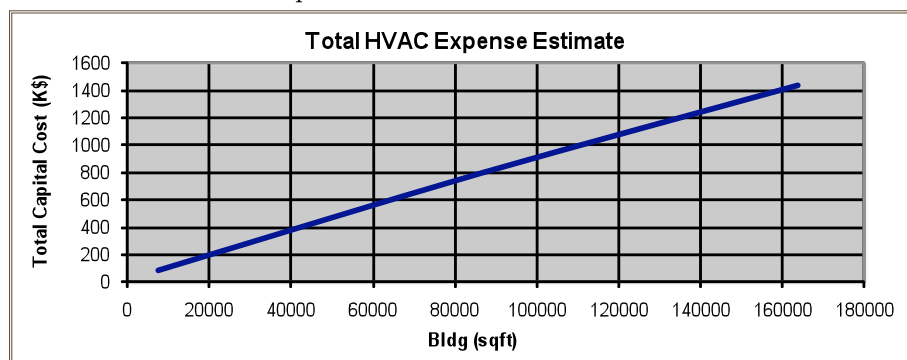
Forty-six case studies of commercial ground-source heat pump systems varied in capacity from 30 to 4,700 tons. The average annual energy savings ranged from 40 to 72 percent, and savings ranged from 31 to 56 percent. Drilling is about 50 to 60 percent of the cost, so the overall installation expense and return on investment are very sensitive to site drilling expenses.

The use of rules of thumb for design length, a common practice, often leads to oversized, expensive systems or undersized failures. In reality, there are no generally applicable rules of thumb that cover the diverse range of buildings and ground-heat exchanger scenarios.

Procedures based on building and ground heat exchanger simulation, accompanied by measurement of ground thermal properties, will lead to successful designs. Though these procedures are more time-consuming in the design phase, they are a necessary prerequisite to successful, efficient systems.

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Through the geothermal well test program, the 99th USARC expects to show that boilers, chillers and smokestacks are no longer cost-effective or desirable methods of energy production and no longer provide an assured energy posture for the Army Reserve. Graphic courtesy of Donald P. Brown Sr.



Environment and Sustainability Awards

Tobyhanna Army Depot excels at recycling, reuse

by Cathy Kropp

Tobyhanna Army Depot, Pa., isn't content to rest on its laurels. In fact, if depot leadership and tenants can find a way, they will repurpose, recycle or recover to help achieve their installation's sustainability goals.

A robust recycling program, sustainable building initiatives and energy recovery equipment have enabled the depot to conserve dollars as it meets environmental management system objectives. These initiatives have also garnered recognition for the Department of Defense's largest full-service electronics maintenance facility.

Because of Tobyhanna Army Depot's dedication to maintaining or exceeding environmental objectives, the installation received the 2010 *Secretary of the Army Environmental Award* in the Industrial Installation category.

"Tobyhanna Army Depot has an unparalleled record of success and service," said Col. Charles C. Gibson, depot commander. "We do not rest on that record; rather, we constantly adapt, innovate and modernize, looking for continuous improvements in our programs with a careful eye trained on how what we do impacts our environment."

All Tobyhanna tenants do their part to make the depot more sustainable by participating in the installation's recycling program, which incorporates everyday practices to conserve natural resources, protect the environment and reduce costs. Through these efforts, the depot conserved more than 100,000 cubic yards of landfill space in fiscal year 2009.

That year, the depot recycled 5.8 million pounds of material, resulting in \$1.4 million in sales and a cost avoidance of \$440,000. Similar efforts in FY 2010 yielded \$1.2 million in sales and a

\$450,000 cost avoidance for 5.6 million pounds of recycled material.

With a recycle rate of 52 percent in FY 2009 and 58 percent in FY 2010, Tobyhanna Army Depot already exceeds DoD recycling-rate goals for FY 2015. Plus, the increased recycle-rate percentage, despite a lower volume, shows tenants are also reducing the overall amount of waste being generated at the facility. Still, the depot continues to improve its recycling process and increase the list of recyclable materials.

Along with its recycling successes, Tobyhanna Army Depot is reducing environmental impacts and enhancing employee quality of life through environmentally-friendly construction projects. The depot has four construction projects that incorporate sustainable features and practices.

In FY 2010, depot employees endured a record-breaking summer with many days exceeding 90 degrees Fahrenheit. However, thanks to installation of 61,288 square feet of green roof in the fall of 2009, inhabitants of non-air-conditioned buildings were shielded from much of the heat-related discomfort.

Other depot construction projects include improved water efficiency, lower energy consumption, use of recycled materials, use of regional materials and reduced construction waste. Buildings are certified according to U.S. Green Building Council standards for Leadership in Energy and Environmental Design.

In addition to LEED certification, the depot has set objectives through its International Organization for Standardization 14001 environmental management system to reduce the release of toxic substances, hazardous waste generation and energy use as well as to achieve other sustainability goals.

A Tobyhanna team conducted a lean-value-stream analysis on the depot's hazardous materials turn-in processes.



Ed VanCamp, painter helper, scans a can of paint into the Hazardous Material Management System at Tobyhanna Army Depot. U.S. Army photo

To help ensure hazardous materials are disposed of properly, the depot policy calls for turn in of all hazardous material containers after use, whether empty, unusable or no longer needed for frequent use. The depot's turn-in rate for hazardous material increased from 24 to 77 percent.

"Our new Depot 'Maintenance of the Future Facility' is our test bed for advanced maintenance processes and techniques, accomplished in an employee-friendly and environmentally advanced work environment," said Gibson. "We understand the need to balance our 'taking care of employees' with 'taking care of the environment' and do both very well," he said.

All these efforts have secured the Tobyhanna Army Depot not only the Army environmental award but also a strong reputation for industrial environmental quality excellence that matches its already stellar reputation as the center for industrial and technical excellence in electronics.

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Acronyms and Abbreviations	
DoD	Department of Defense
FY	fiscal year
LEED	Leadership in Energy and Environmental Design



Fort Bliss preserves culture so Soldiers can train as they fight

by Jean Skillman

Selfless service, a qualified, passionate team and committed partnerships across state borders was the winning combination that landed the Fort Bliss Cultural Resources Management Team the 2010 *Secretary of the Army Environmental Award* in the Installation category.

“This means a lot to us. But it also means that we are doing our job right,” said Brian Knight, acting Conservation Branch chief, Fort Bliss. “Our leaders put a great deal of faith in us. They gave us the tools and freedom that we needed in order to come up with unique solutions to protect our cultural sites while working to maximize the land available for training.”

Knight led a team of seven archeologists and one historical architect to finalize the survey and inventory of about 85 percent of the installation’s 1.2 million acres to meet federal and state standards. The dedicated team manages more than 19,000 archeological sites with more than 550 historic buildings, structures and landscapes ranging from Paleo-Indian campsites dating back to about 10,000 B.C.E. to modern day consultations with five Native American tribes.

“Fort Bliss has the challenge of conducting an intense training mission in an area rich in historic properties, particularly prehistoric archeology,” said Katharine Kerr, program analyst, Advisory Council on Historic Preservation.



Archeological workers excavate at the Madera Quemada prehistoric pueblo site on Fort Bliss. Photo courtesy of Fort Bliss

When training requirements are identified, trainers and environmental managers must work together to identify new training ground. CR managers are experts in the historical nature of Fort Bliss lands, an area long identified by regional experts as having huge cultural and historical potential.

Environmental managers and trainers can sometimes be seen as having opposing missions, but Knight explained that his team focuses on enabling the Army to complete its mission while preserving the installation’s unique and rich heritage. The CR team accomplishes this by thinking outside the box and developing meaningful relationships based on trust.

“We owe much of our success to the cooperative nature of our federal and state regulators,” said Knight. “We consult with the Texas and New Mexico state historic preservation officers on many significant projects. It’s important for state agencies and military installations to understand each other and partner together.”

One example is the “Red Zone” concept of mitigation. Negotiations with state representatives led to the identification of potentially significant areas that have been set aside for future research. These sites serve as mitigation areas that are off limits to military training. They make up less than 1 percent of the available training land and serve as examples of the types of sites found on Fort Bliss. In exchange, units are allowed free maneuver in the areas outside of the Red Zones even though they may hold some cultural significance.

The installation annually trains thousands of active and reserve military personnel from all the armed services.

“One of the most important things we can do at Fort Bliss is to allow our Soldiers to train as they fight,” said Command Sgt.

Acronyms and Abbreviations

CR	cultural resources
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Maj. William A. Green IV, Fort Bliss garrison command sergeant major. “This allows Soldiers real ‘boots on the ground’ capabilities and realistic training. We also have the capability to fire any weapons system in the military arsenal, which makes Fort Bliss unlike any other post in the world.”


Fort Bliss also has one of the largest and most extensive CR programs in the Army, reaching across Texas and New Mexico borders. The restricted nature of the military installation helps ensure historical property is protected and preserved for future generations and research opportunities.

“With these capabilities also comes the responsibility for our environment,” explained Green. “Fort Bliss is at the leading edge of taking care of our land, water and air. Our environmental teams work continuously with leaders not only on post but with city, state and federal leaders. This ensures that we not only train our Soldiers to guard our nation’s freedom but that we preserve our environment for future generations.”

The installation opens its doors to the public and to local schools when possible to tour excavation projects. Soldiers and Family members have hands-on learning opportunities, and officers go through specialized CR awareness training.

This approach has been known to have real-life meaning when Soldiers are deployed overseas, because they have been taught to respect other cultures and protect historically significant properties and structures.

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Cleanup of remote Alaska site recognized for efficiencies

by Kristina Curley

They planned for polar bears, but bears turned out to be a nonissue. Finding more than three times the number of old fuel and oil drums than were expected proved to be the real challenge faced by the U.S. Army Corps of Engineers as it cleaned up the Manning Point Formerly Used Defense Site in the remote Alaskan tundra.

Despite the surprise, the Corps' Alaska District FUDS Team successfully completed the removal action during a 28-day window, battling foggy conditions and some daunting logistics — a feat recognized with the fiscal year 2010 *Secretary of the Army Environmental Award* in the Environmental Restoration, Installation category.

The Manning Point distant early warning line radar station, located in northern Alaska on the Jago River delta near the native village of Kaktovik, was operational during the Cold War. The drums, which once contained petroleum, oil and lubricant products, were scattered across the river delta during storms over the past 50 years. The cleanup, which eliminated potential future releases of petroleum product into the Arctic Ocean, included removing 1,400 drums, collecting soil samples and, if necessary, excavating and disposing of contaminated soil.

The project faced many challenges, Ron Pflum, Manning Point cleanup project manager, said. The site is located in the Arctic National Wildlife Refuge, so a permit from the U.S. Fish and Wildlife Service was needed to access the site, and the permit required the Corps to develop a *Polar Bear Awareness and Interaction Plan*.

In addition, the area is reachable only by helicopter or barge. Equipment was transported more than 800 miles and delivered in large steel storage containers by barge. Workers were flown to and from the site daily. Slings containing eight to 10 recovered drums were removed using helicopters. The additional drums discovered meant planning at least 100

more helicopter trips.

“The contractor and crews really stepped up,” said Ron Broyles, Alaska District environmental engineer. “As soon as the three-fold increase in drum quantity was realized, the contractor mobilized a second helicopter. For a solid week, two helicopters were used to sling loads of drums retrieved from the sand bars.”

The crews, mostly hired locally, worked 12-hour days, often starting after 10 a.m. due to persistent fog preventing earlier flights for most of the month. The helicopter pilots also helped mitigate several days of standby time by making runs in the evening when there were breaks in the fog.

The weather was a huge factor because of the schedule. The project was started Aug. 3, 2010, and had to be completed prior to the start of whaling season Sept. 1.

Although only 15 to 20 percent of the drums were buried in the river delta silt, the buried drums presented another hurdle, according to Aaron Shewman, FUDS project engineer. Because use of heavy equipment was restricted on the refuge, each buried drum had to be dug out by hand. The drums also had to be removed from their locations and staged for the helicopter transport by hand.

As the drums were removed, the soil beneath was visually evaluated and field screened with a photoionization detector. If readings were detected, an analytical sample was collected for screening at an off-site laboratory.

None of the soil samples showed contaminant levels above regulatory levels, so no soil removal was necessary, Shewman said.

After removal, the drums were opened, cleaned, crushed and placed in containers for transport to Fairbanks. Any POLs discovered in the drums were transferred

Acronyms and Abbreviations

FUDS	Formerly Used Defense Site
POL	petroleum, oil and lubricant (products)



Sam Widmer (left), Weston Solutions, works with Eric Jenks (center) and Mike Flisk (right) of Marsh Creek LLC to retrieve a buried drum from a sand bar in the Jago River delta in Alaska. Photo courtesy of Alaska District

into new drums for transportation to a POL recycling facility in Palmer, Alaska.

“The project removed both an eyesore and an exposure concern for the subsistence hunters and fishers in the Jago River area,” Shewman said. “The residents of Kaktovik have been concerned about oil products getting into the water and into the fish they eat, so that will no longer be a concern.”

Another benefit of the project was a savings of nearly \$500,000 for the FUDS program, Pflum said. The Manning Point removal action, originally scheduled for 2011, was conducted concurrently with another nearby FUDS project at Brownlow Point on the North Slope of Alaska. Joint execution resulted in savings from minimized mobilization and demobilization requirements, shared logistics planning, comprehensive work planning documents and combined lodging arrangements.

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Texas National Guard historian's love of cultural resources shows

by Barry Napp

Old houses were always special to Chantal McKenzie. Now, in her career as an architectural historian and cultural resource specialist with the Texas National Guard, old structures have taken on an even more important role.

McKenzie's love of balancing historic building preservation with sustainability and mission readiness led to recognition as the winner of the 2010 *Secretary of the Army Environmental Award* in the Cultural Management Team or Individual category. These environmental awards represent the highest honors and toughest standards in environmental and sustainability program achievements in the U.S. Army. McKenzie, along with winners in eight other categories, also competed against winners from the other military services in the Department of Defense Environmental Awards.

"Words cannot express how honored I am to have won this award," said McKenzie. "I am so thankful for having a great manager and working for an organization that recognizes how important it is to find a balance between historic and cultural preservation, and mission operational sensitivity.

"Winning this award was a team effort and is a tangible indication our organization really cares about

sustainability, natural resources and compliance, while preserving our heritage and training our Soldiers."

McKenzie takes a rigorous, hands-on approach to program management that blends project oversight with inter-office coordination, cross-training, communications and attention to cost savings, according to her supervisor, Kristen MtJoy, cultural resource manager, Texas Army National Guard.

"Recent program successes and milestones include assistance with a successful grant project to install solar panels, supervision of a historic landscape study and evaluation report, and completion of extensive permitting and clearance documentation for both historic building rehabilitations and new constructions," said MtJoy.

McKenzie is working on all of these projects while striving to become a cultural resources manager.

"I have always loved old houses, so I began to look at how I could translate my love of old houses into a career," said McKenzie. "I discovered the field of historic preservation and thought, 'This is what I want to do with my life.' In 2006, I earned my masters of science in historic preservation from the University of Texas, Austin, and I continue to learn new things on the job every day. That keeps me inspired and motivated."

In addition to numerous other duties, McKenzie helped a Texas Army National Guard sustainability manager develop a Department of Defense-wide recruiting video produced by high school and college students interested in filmmaking. The video focused on history, sustainability and ways of bringing the interests of historic preservation together



Chantal McKenzie assesses exterior mortar removal techniques performed by a masonry subcontractor to ensure protection of historic bricks. "Photos courtesy of Texas National Guard"

with the need to minimize energy costs and maximize sustainability of precious resources.

"Ms. McKenzie is a highly valued, multi-talented member of our staff and continually demonstrates positive achievement in every aspect of cultural resources management for the Texas National Guard," said Lt. Col. Richard Jordan, director of Facilities, Texas National Guard. "As our architectural historian and cultural resources specialist, Ms. McKenzie works very hard to develop an innovative program including several major projects critical to our training mission."

McKenzie is excited by the current recognition and about being a part of the Texas National Guard team.

"I love the diversity and ever-evolving nature of my job," said McKenzie. "No two days are the same."

"I work for a great manager who is allowing me to continue my educational opportunities within cultural resources, along with providing opportunities to learn more about related environmental fields such as sustainability, natural resources and compliance."

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Chantal McKenzie determines if crawlspace clearance meets applicable building codes in a historic building undergoing major rehabilitation at Camp Mabry, Texas.



Exchange employs and markets sustainability practices

by Cathy Kropp

It's not just about implementing Earth-friendly practices at the Exchange; it's also about promoting those practices at its 3,100 retail and fast-food facilities and among its 12.2 million customers.

Actions toward fulfilling that goal have earned the Army and Air Force Exchange Service, known as the Exchange, the 2010 *Secretary of the Army Environmental Award* in the Sustainability Team category.

Similar to the Army's triple bottom line strategy for the environment, the Exchange identified "People – Planet – Benefit" as its focus. Reducing energy by requiring energy-efficient equipment, reducing waste through a corporatewide "Trash-4-Cash" recycling program, requiring all new construction to be Silver certifiable by U.S. Green Building Council standards for Leadership in Energy and Environmental Design, and modifying its logistics fleet to be more eco-friendly and, in turn, decreasing petroleum-based product use are a few of the actions the Exchange has taken.

The Exchange leadership emphasizes its sustainability vision and goals through worldwide distribution of information products that publicize how the company, its associates and its customers impact the environment.

"To encourage Earth-friendly initiatives, the Exchange established a sustainability awards program to recognize superior sustainability performance," said Maj. Gen. Bruce Casella, commander, Army and Air Force Exchange Service. "Reducing energy, water consumption and waste generation is a win-win situation for all, making partnerships between the Exchange and installations crucial."

However, what truly impressed the environmental awards judges was how the Exchange shares the actions and successes

that demonstrate their commitment with franchisees, customers and others.

By collaborating with their franchise partners, the Exchange is able to have a major influence on the food industry worldwide. Batch broilers at Burger King, dry lines at Taco Bell to prepare food without electrically heated steam, energy-efficient ovens at Anthony's Pizza and menu boards that use LED lights at Charley's Grilled Subs have a huge impact. The Exchange also makes energy-efficient equipment standard at its facilities and promotes the same with food service equipment.

These standards were part of the reason the Exchange won the 2010 *Federal Energy and Water Management Award*, in addition to the Army award.

The Exchange uses print advertisements and brochures, coupon books, catalogs and signage to remind its shoppers to use Earth-friendly products and practice recycling. Exchange facilities also provide cash incentives for the use of recycled and reusable canvas shopping bags.

The Army award recognizes the Exchange leadership's willingness to participate in numerous pilot projects testing new technologies. One pilot, which began with replacing high-intensity discharge lighting on gas pump canopies with LED technology, resulted in 46 gas canopy LED retrofits at Army installations. The lights are 75 percent more efficient, last up to 10 times longer, pay back in three to five years and, as an unexpected benefit, have improved product marketing and security while reducing nighttime sky pollution. As a follow-on program, the Exchange is replacing fluorescent lights in reach-in coolers with LED technology and installing occupancy sensors.

Exchange leadership has tasked its subordinates to surpass sustainability goals by incorporating sustainability actions and objectives into normal business practices.

"Just as the Exchange is committed to



The landscaping and irrigation systems at the Exchange at Fort Bliss are designed to reduce potable water consumption by using native plants that require less water. Photo courtesy of the Exchange

providing the best shopping experience for our military customers, we are determined to set the standard for exceptional environmental stewardship in the military retail community," said Michael Howard, the Exchange's chief operating officer.

The Exchange continues to participate in pilot projects such as the USGBC's LEED for Retail program, an energy management and control system for a convenience store at Fort Hood, and offices and restaurant trial of energy-efficient equipment.

Even simple changes made by the Exchange have a big impact when implemented across a large corporation. Installing 154 automatic faucets in restrooms reduces water use by 70 percent compared to traditional fixtures. Selling used cooking oil and grease from 290 Army installation food facilities removes two million pounds of vegetable oil from the waste stream and recycles it into valuable resources such as animal feed. Changing to automatic paper towel dispensers and compact toilet tissue with no core, wrapper or corrugated case reduces manufacturing and shipping fuels and decreases landfill waste by an estimated 363,000 pounds per year. ➤

Acronyms and Abbreviations

LEED	Leadership in Energy and Environmental Design
USGBC	United States Green Building Council



Army Research Lab scientists reduce air pollutants from coatings

by T'Jae Gibson

A team of U.S. Army Research Laboratory scientists from the Weapons and Materials Research Directorate won the *Secretary of the Army Environmental Award* in the Weapon Acquisition, Small Program category. The ARL team was part of the Research, Development and Engineering Command's Sustainable Painting Operations for the Total Army program.

The Sustainable Painting Operations for the Total Army program was established to eliminate hazardous air pollutants




An ARL investigator formulates the next generation of chemical agent resistant coating materials for improved performance and environmental sustainability.

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The Exchange's across-the-board commitment to sustainability and implementation of innovative techniques and technologies has made them a winner.

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generated by Army coatings operations. Technical researchers and engineers worked to develop and provide alternative paints and strippers, solvents, thinners and cleaners, coatings and rubber-to-metal bonding adhesives without sacrificing combat readiness.

WMRD's Materials and Manufacturing Division had leading technical and leadership roles in the area of coatings, sealants and adhesives, solvents and alternative paint removal, said John Escarsega, Department of Defense chemical agent resistant coatings commodity manager, Coatings, Camouflage and Corrosion Team, who served as a principal investigator on this effort.

The division also had significant roles in reformulating coatings for ammunitions working with Picatinny Arsenal, N.J., and pretreatments working with the Army Aviation and Missile Life Cycle Management Command, Redstone Arsenal, Ala., Escarsega said.

"ARL is and continues to be a leader in technology development and implementation," he said. "This effort cultivated those strengths and led to numerous enhancements for many products [for which] ARL has direct responsibility. These include our coatings and solvents, which DoD uses in most of our depots and facilities."

The recognition is significant because it is product-oriented, Escarsega said. Products are now available to DoD and its contractors that greatly reduce environmental emissions.

"While ARL is research-based, we can and continue to guide particular market areas with our in-house capabilities and expertise," he said. "For research to be successful, we must be creative and provide new and novel solutions. This effort required ARL to be creative and redefine the current technology."

Each year, the Army recognizes

Acronyms and Abbreviations

ARL	Army Research Laboratory
DoD	Department of Defense
WMRD	Weapons and Materials Research Directorate




A handheld laser is used to remove the topcoat from a helicopter component at Fort Rucker, Ala. Photos courtesy of ARL

excellence for the development, management and transferability of environmental programs that increase environmental quality, enhance the mission and help make the Army sustainable through the *Secretary of the Army Environmental Awards*, the highest environmental science and sustainability honors conferred by the Army.

The award-winning team included ARL principal investigators Fred Lafferman, Wayne Ziegler, John La Scala and Jack Kelley; WMRD employees Kes Chesonis, Dawn Crawford, Bernard Hart, William Lum, Pauline Smith and Chris Miller; and contractors F. Raven Toulan, Alicia Farrell, Nichols Nesteruk, Dan Pope, Stacey Thomas and Thomas Considine.

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Fort Drum's natural resources conservation efforts shine

by Kristina Curley

Fort Drum, N.Y., known as the Army's premier installation in the Northeast, can also lay claim to being the premier Army installation for natural resources conservation based on its selection for a 2010 *Secretary of the Army Environmental Award*.

Fort Drum's 107,265 acres support Reserve and active duty forces, Civilians and Family members, as well as National Guard units from 11 states. Sustaining Fort Drum's lakes, ponds, rivers, streams, forests, grasslands and developed areas falls to the 18-person Natural Resources Conservation Branch.

"With the ever-increasing demand for new facilities and Soldier housing, and changing training mission requirements, the natural resources staff has creatively and effectively met the challenges of timelines, changing footprints and federal and state legal requirements while protecting the environment and ensuring mission sustainability," said Col. Noel T. Nicolle, Fort Drum garrison commander.

Fort Drum's *Integrated Natural Resources Management Plan* is fully incorporated into its environmental management system and used as a source document for all natural resources and National Environmental Policy Act activities.

The natural resources team cites its integrated team approach, cooperative working relationships with internal and external stakeholders, and partnerships for its success. Interactions with regulators regarding endangered species, fish and wildlife management, construction permitting for stream and wetland impacts, and forest management are conducted with understanding and respect for each organization's mission and requirements. Regular coordination meetings facilitate training and construction-related projects and activities, and address the complex array of environmental regulations, natural

resources conservation issues, construction activities and mission requirements.

This team approach also increases efficiency through shared resources, as seen in the Geographic Information System Office, run by one staff member funded by the Directorate of Public Works and another funded by the Directorate of Plans, Training, Mobilization and Security. This shared operation produced a 107,265-acre mapping project with 93 different land-cover types and unmatched accuracy and resolution.

Coordination with eight state, local and tribal government agencies and other stakeholders also resulted in the 10th Mountain Division's first major off-post training mission. The 10th Combat Aviation Brigade was able to conduct high-altitude helicopter flight training critical to its Afghanistan deployment at one of New York's highest mountains. NEPA coordination involved establishing training locations, dates and times to avoid a geographically unique migratory bird species and conducting long-term migratory bird monitoring during training.

The Natural Resources staff created the Electronic Environmental Review and Coordination System, which, in most cases, reduces approval time for post projects and military training missions from 14 days to two days. Other team efforts included selecting native seed mixes for construction projects' revegetation, planting 1,400 trees in wetland mitigation bank sites and storing willow cuttings for future plantings using refrigerators slated for disposal. These actions saved more than \$150,000 an acre in project construction costs.

Fort Drum also boasts the only established maple syrup processor within the Department of Defense. Maple syrup processing allows sustainable management of an alternative forest product without tree removal.

During the past two years, much of Fort Drum's Fish and Wildlife Management Program's resources has been devoted to



Wildlife biologist Chris Dobony inspects a little brown bat, captured during a mist net survey at Fort Drum, for white-nose syndrome. Photo courtesy of Fort Drum

endangered species management of the federally listed Indiana bat, *Myotis sodalis*. The installation is an important focal area for bat community research, including efforts involving white-nose syndrome. The Fish and Wildlife Management Program is an integral partner in ongoing research on this unprecedented wildlife health crisis responsible for killing more than one million hibernating bats in the Northeast.

"Research by Fort Drum's natural resources staff, done in conjunction with other state and federal agencies, has clearly demonstrated the enormous impact white-nose syndrome has on bat communities and subsequently on the ecological integrity of military installations," said Jason E. Wagner, Fort Drum Natural Resources Branch chief.

Creation of a 2,200-acre Bat Conservation Area preserved known habitat and minimized the amount of land restricted for development, military training and recreation. Forest stands in the area were inventoried, concentrating on known Indiana bat maternity colonies, to develop predictive models for potential bat habitat use in the Northeast.

These and its many other activities ➤

Acronyms and Abbreviations	
NEPA	National Environmental Policy Act



What is daunting for some is doable at Grafenwoehr

by Cathy Kropp

Some might consider supporting the stationing of six additional battalions, a population increase of 8,000 and construction of 50 new facilities daunting, but for the Environmental Management Division staff of U.S. Army Garrison Grafenwoehr, Germany, these tasks were just part of its ongoing commitment to environmental stewardship.

The staff's ability to successfully meet the garrison's expansion-related challenges as well as other environmental goals has earned them the 2010 *Secretary of the Army Environmental Award* in the Environmental Quality, Overseas Installation category.

"Grafenwoehr Training Area demonstrated outstanding stewardship commitment in managing hundreds of endangered flora and fauna species, protecting soil, surface and groundwater, while supporting a world-class training area," said Brig. Gen. Steven L. Salazar, commanding general, Joint Multinational Training Command.

Cooperation and collaboration with stakeholders, a lot of hard work from a dedicated team of professionals, including the German Federal Forest Service, and a well-balanced and comprehensive environmental program is what led to

success, said Manfred Rieck, Grafenwoehr's environmental chief.

The garrison's environmental program is fully incorporated into its strategic sustainability plan with 25-year milestones, which were established by a joint U.S. and German working group. The plan's goals include optimizing sustainability, partnering with German authorities to provide state-of-the-art training facilities, preserving natural resources and meeting the U.S. Green Building Council's Leadership in Energy and Environmental Design Platinum standards.

Achieving those goals takes more than the work of one division. A cross-functional team annually evaluates more than 200 garrison activities, their environmental aspects and impacts.

Two noteworthy actions contributed to USAG Grafenwoehr's ability to meet environmental goals while supporting military training mission. A comprehensive erosion control program developed by the garrison's Environmental Management Division, the Integrated Training Area Management team and the German Forest Service reduced training land affected by erosion from 5,000 acres to almost zero. Another initiative removed more than 500 pounds of ozone-depleting substances from 78 facilities. Under this program, an interactive database tracked asbestos, lead-based paint and other toxic substances within facilities to make working and living environments safer. Additional remediation projects are ongoing for seven buildings identified by this system as having high risk ratings.

The results of the garrison's waste reduction efforts were also noted. In spite of the increasing population, the waste stream diversion rate improved from 29 percent to 65 percent, and a comprehensive program reduced hazardous material procurement and thus hazardous waste disposal.

The garrison enjoys a reputation for environmental success among German



A white-tailed eagle nestling, one of the rarest species in Bavaria, is banded at Grafenwoehr Training Area. Photo courtesy of USAG Grafenwoehr

authorities, a situation affirmed when it won the 2010 *Environmental County Award*.

About 90 percent of the training area has been designated a European Natura 2000 sanctuary, which requires additional maintenance and special approvals for construction projects. The training area provides habitats for more than 3,000 plant and animal species, among which 1,272 are threatened, endangered or legally protected. Grafenwoehr boasts one of the largest populations of red deer in Germany. Red deer are managed through a cooperative partnership with the German Forest Service.

Grafenwoehr's environmental staff coordinates all actions with the German Forest Service and Nature Conservation Board.

To learn from Grafenwoehr's ability to partner and collaborate is one reason organizations request visits. The Tanzania People's Defense Force and African Wildlife Fund visited Grafenwoehr Training Area to adapt the U.S. Army's approach for a coexistence of dense wildlife populations in a high-use military training area. Environmental Management Division staff have also provided presentations and environmental tours for German, Bulgarian, Albanian and Georgian

Acronyms and Abbreviations

USAG	U.S. Army Garrison
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have made the Fort Drum staff leaders in natural resources conservation. The team continually demonstrates the importance of sustaining Fort Drum's current training land capacity and capability along with its commitment to sustaining those training lands through management, monitoring and research.

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Joint Base Lewis-McChord has 20-20 vision

by Miriam Villacian

What do you call a community of walkable neighborhoods with identifiable town centers connected by great streets on an Army installation? At Joint Base Lewis-McChord, Wash., it's called "sustainability."

Lewis-McChord's vision of a sustainable community results from Fort Lewis's initial sustainability workshop in 2002, at which leaders committed to ensuring a better tomorrow by changing the way they do business. That workshop led to the creation of five planning goals that remain the framework for the installation's vision.

Significant progress has been made since then. Many sustainable concepts are now ingrained in Joint Base Lewis-McChord business practices, which is why the installation was selected to receive the *Secretary of the Army Environmental Award* in the Nonindustrial Installation Sustainability category.

At the center of Lewis-McChord's progress is its Environmental Regulation, which incorporates sustainability and requires an Installation Sustainability Board. In addition, the sustainability program is infused into the lines of operation of the Health and Resiliency Promotion Board, demonstrating how sustainability can directly affect Soldier well-being.

The sustainability program is staffed by cross-functional teams and overseen by a cross-section of senior leadership, which keeps military and Civilian leadership informed and provides a venue for active

sustainability planning and decision making.

With this foundation, anchored and supported from many angles, Lewis-McChord has stayed true to its commitment despite the challenges of increased training needs, additional maneuver units and rapidly increasing development inside and outside the installation's fence.

The shared planning vision developed by the Sustainable Community Team called for walkable neighborhoods with identifiable town centers connected by great streets. This concept breaks with the usual urban sprawl planning model. It uses less land, less infrastructure and fewer natural resources, and it encourages Families to become active members of their community.

To develop this vision, the team organized focus groups and surveys that included planning and engineering firms and nearly 700 installation stakeholders. Building on the vision, the *Joint Base Lewis-McChord Master Plan* incorporates specific design principles, including enhanced mission capabilities.

The plan helps create a sustainable community by focusing development along proposed transit corridors, ensuring that pedestrians and bicyclists are given the same attention as automobile movement and creating neighborhood centers. The master plan employs regulating plans for



Teens brave their way through a trash audit to learn about waste reduction at the Teen Zone as a sustainability outreach coordinator looks on. Photo by Ingrid Barrentine

individual parcels, rather than land-use zoning, which tends to encourage sprawl.

The team then developed a measuring tool, based on the 39 design principles from the master plan, to objectively track progress toward those goals. The neighborhood design checklist assesses whether the sustainable design principles are being used. The checklist ties into the planning goals, encourages Leadership in Energy and Environmental Design standards, and measures the installation's progress toward the Army's *Strategy for the Environment*.

The neighborhood checklist describes each design principle with its intent and criteria, and uses metrics that allow the user to assign a numeric score for the design principles under each goal.

Progress toward the planning goals is monitored, measured and communicated. Snapshot charts measure success in ▶

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forces; a local mayor and the county commissioners; the Westphalian Natural Science Society; and the German Forest Service.


The University of Bayreuth and the Colorado State University conducted a study at Grafenwoehr to determine the effects of military disturbance on biodiversity. Comparison to similar off-

post studies provided scientific proof that military training significantly enhances biodiversity. As a result of the study, previously restricted training areas were reopened.

"USAG Grafenwoehr is a model organization for a systematic and exemplary environmental program and for smooth cooperation on various levels, such as the comprehensive network of environmental facilities, the

methodical investigation and remediation of contaminated sites, as well as the monitoring for ground and surface water," said Emilia Mueller, State of Bavaria Minister for European Affairs.

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Army takes 4 in Defense environmental competition

by Cathy Kropp

The Army won four of the nine *Secretary of Defense Environmental Awards*.

Joint Base Lewis-McChord, Wash., won the *Sustainability, Nonindustrial Installation* award. Lewis-McChord was recognized for its efforts in green procurement, waste diversion, recycling, composting, and asphalt crushing and reuse. The award acknowledged its sustainable master plan's holistic design approach and town center project, alternative fuels and transportation use, commuter trip reduction, \$14 million in energy-efficiency improvement projects, habitat restoration, storm-water filtration system, wetlands education center, increased habitat for wildlife species and training area for Soldiers.

The **Army and Air Force Exchange Service** won the *Sustainability, Team* award. Using innovative techniques and new technologies; purchasing energy-efficient equipment; developing sustainable, energy-efficient buildings; reducing waste; and using eco-friendly fuels in its fleet are some of the ways the Exchange is demonstrating sustainability. Its dedication to sustainability goals, training, performance metrics, partnerships and

education contributed to its win.

The **Army Research Laboratory** won the *Environmental Excellence in Weapon System Acquisition, Small Program* award for its Sustainable Painting Operations for the Total Army program. The program's evolutionary acquisition approach spun out alternative materials to the field as soon as they were approved. Such changes will result in roughly \$1 billion in cost avoidance over 15 years and will eliminate more than 4,000 tons of organic hazardous air pollutants and other pollutant emissions from surface coating operations.

U.S. Army Garrison Grafenwoehr, Germany, won the *Environmental Quality, Overseas Installation* award. Studies conducted on Grafenwoehr Training Area prove military training has a positive effect on biodiversity. With more than 1,200 threatened, endangered or legally protected species, about 90 percent of Grafenwoehr Training Area has earned the status of European Natura 2000 sanctuary. A garrisonwide recycling system, hazardous materials management program and creative activities in environmental education and awareness contributed to winning this award.

Acronyms and Abbreviations

USAG	U.S. Army Garrison
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Elementary school children from USAG Grafenwoehr, Germany, listen to a nature talk at the grand opening of a nature trail. Photo courtesy of USAG Grafenwoehr

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achieving environmental management system goals and the overall vision. The charts are then used to communicate this progress to the community and key leadership.

The master plan's hub is a new downtown consisting of mixed-use facilities of commercial, residential and recreational areas. Two companies are collaborating on its construction. The Army and Air Force Exchange Service will build the 600,000-square-foot downtown core, and Equity Residential is constructing the 256-unit town center.

Based on assumptions from the Environmental Protection Agency and the Washington Department of

Transportation, the team estimates the town center alone will result in annual transportation cost savings of \$1,500 per household and an 18-million-pound reduction in carbon dioxide emissions.

Sustainability is about benefits, both short- and long-term, from cultivating and maintaining community goodwill to identifying better logistical practices for Soldiers and Airmen to take into operational contingencies.

"The preservation of resources, the protection of our environment and the creation of a world-class quality of life for our community are all part of the core mission of a garrison," said Col. Thomas Brittain, Lewis-McChord garrison commander. "We take sustainability

seriously because we care about our environment and our community, but more importantly, because it's our job. I'm proud of the way our garrison has embraced that concept here."

Joint Base Lewis-McChord has been leading the way in sustainability since 2002. The goals already achieved and the goals yet to be reached promise a more sustainable, livable and mission-capable installation in the future.

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Fort Bragg celebrates 10 years of sustainability

by Jonelle Thompson

In 2001, the Department of the Army proposed a vision of sustainability for the military. The goal was to map out a holistic approach to managing and sustaining installations in the 21st century while simultaneously fostering transformation.

In response to this decree, Fort Bragg, N.C., was one of the first Army posts to publicly and actively set goals toward that end.

Why? Sustainability is not only beneficial for Fort Bragg, it is imperative. The installation's international contributions, military mission and the success of its Soldiers are dependent upon the responsible use of its natural and fiscal resources.

Over the years, Fort Bragg integrated sustainability into daily operations and comprehensive strategic planning. The program, known as Sustainable Fort Bragg, addresses concerns and implements initiatives regarding land use, facilities, materials, energy, water and transportation. Fort Bragg Garrison Goal One — a sustainable community meeting the needs of the Soldier today, tomorrow and forever — reflects the installation's commitment to the Army Triple Bottom Line of mission, environment and community.

Today, Fort Bragg sets the standard for Army sustainability values and has emerged as a leading advocate for the environment in the Department of Defense, the state of North Carolina and the United States. To illustrate a decade of environmental stewardship, the post created a report, *Fort Bragg: Ten Years of Sustainability*.

"After hosting the United States Army Sustainability In-Progress Review in January 2010, we realized that there was no compilation of Fort Bragg's sustainability program success stories," said Dave Heins, chief, Environmental Division. "The 10-year review gives recently assigned personnel a snapshot of where the sustainability program began and what we have accomplished in the past 10 years."

- The major achievements are:
- recovery of the endangered red cockaded woodpecker and its role in training land reclamation;
 - creation of the Fort Bragg Arbor Board;
 - integration of the Leadership in Energy and Environmental Design standards in construction, renovation and maintenance of post facilities;
 - construction of the first LEED Platinum standard structure on the installation;
 - development of the Qualified Recycling Program;
 - implementation of the Army's first Green Lodging Program;
 - development of the Green Directorate Program;
 - expansion of green procurement practices;
 - establishment of utility meters, thermal energy storage and renewable energy technologies;
 - use of low impact designs for storm-water management;
 - development of the hybrid-electric shuttle system, the alternative fueling station and the *Alternative Transportation Plan*; and
 - growth of sustainability education programs for the Fort Bragg community.

The report also details future endeavors to meet individual Installation Management Command Lines of Effort and impending federal environmental goals. By chronicling past triumphs as well as looming challenges, the report is designed to educate individuals about sustainability's role in the military and to inspire further efforts to preserve the environment.

"The accomplishments and associated positive impacts of the sustainability program at Fort Bragg over the past 10 years have been quite remarkable," said Paul Humphrey, chief, Environmental Management Branch and Sustainable Fort

Acronyms and Abbreviations

LEED	Leadership in Energy and Environmental Design
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Low-impact development such as these detention ponds are the preferred method of storm-water management on Fort Bragg. Photo by Jonelle Thompson



Naturalization techniques such as no-mow zones are an integral component of land reclamation initiatives on Fort Bragg. Photo by Julia Love

Bragg goal team leader. "However, we believe that the best is still to come as we continually strive to integrate sustainability into meeting mission requirements while protecting our natural resources and providing a high quality of life for Soldiers and their Families."

Indeed, the Sustainable Fort Bragg program has come full circle from ambitious goals set in the infancy of an innovative program to the integration of these concepts into installation operations. Environmental preservation has become the daily responsibility of every individual on the installation. Now, with the adoption of Fort Bragg initiatives throughout the Department of Defense, Fort Bragg has become and will continue to be the template for operational sustainability. ➤



Schofield's School Age Center exceeds standard with LEED Gold

by Vanessa Lynch

Soon after the School Age Center at Schofield Barracks, Hawaii, opened last year, the U.S. Army Corps of Engineers' Honolulu District received word the project had been awarded Leadership in Energy and Environmental Design Gold certification. The \$12.3-million center for children ages 6-10, named *Napua Koa*, or Children of the Warrior, is another example of U.S. Army Garrison Hawaii's ongoing efforts to support the *Army Family Covenant* by ensuring excellence in schools, youth services and child care.

The School Age Center has all the things one would expect to find in a place of learning, such as classrooms, study areas, a computer lab and a multipurpose room. Also, five separate program rooms, including a performing arts room, an outdoor soccer field and a basketball court, complement the learning environment.

Honolulu District's design-build contractor for the project, Nan Inc., received an outstanding performance award and a safety excellence award, and the district's project team was named the 2010 USACE Project Delivery Team of the Year. But what makes the building truly special is its ranking as LEED Gold. This certification is the recognized standard for measuring building sustainability.

The LEED green building certification program encourages and accelerates global

adoption of sustainable green building and development practices, according to project architect John Fullmer of Mason Architects in Honolulu.

LEED promotes a whole-building approach to sustainability, recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. The LEED rating system — developed and administered by the U.S. Green Building Council — offers four certification levels for new construction: Certified, Silver, Gold and Platinum. The level achieved corresponds to the number of credits accrued in the five key areas.

This project earned 42 points on the LEED scale.

"We used products and materials with very little volatile organic compounds and took extra steps during the installation of the air conditioning units to ensure that construction dust did not enter the new ducts," Fullmer said.


"We also harnessed the heat given off from the air conditioners by putting it back into the system to heat the water for the entire building," he said, "and 28 percent of our total building materials were recycled content and from local manufacturers."

Although the project was based on a standard Army design, Fullmer was able to adjust the building's appearance, including adding skylights to take advantage of Hawaii's natural light.

The School Age Center is proving

also go forward to secure the viability of the installation for future generations.

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The main atrium of the School Age Center at Schofield Barracks features skylights that take advantage of Hawaii's abundant sunlight. Photos by Vanessa Lynch



Schofield Barracks School Age Center's LEED Gold certification plaque is displayed prominently.

popular with Hawaii's military Families.

"The last time a building was built here for this particular age group was the Bennett Youth Center in 1988," said Mark Maddox, transition specialist, Directorate of Family and Morale, Welfare and Recreation's Child, Youth and School Services. "We went from an enrollment of 90 children and a no-wait list, to an enrollment of 200 children and a wait list in this new building."

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Acronyms and Abbreviations

LEED	Leadership in Energy and Environmental Design
USACE	U.S. Army Corps of Engineers
USAG	U.S. Army Garrison

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"A government must not waiver once it has chosen its course. It must not look to the left or right, but go forward," Otto von Bismarck once remarked.

For Fort Bragg, that course is sustainability. As the military mission evolves, the sustainability program will



Building strong, building green on America's military installations

by Tracy Robillard and Rashida Banks

Sustainable design has long been a part of the Corps of Engineers' Military Construction program, but in recent years, the Corps' efforts to build green have made significant advances across the nation.

"We've come a long way as far as conforming to LEED [Leadership in Energy and Environmental Design] standards by the U.S. Green Building Council," said Judy Milton, architect and LEED expert with the Corps' Savannah District. "And we're bringing all of our construction contractors and designers along with us. It's part of how we do business now."

A project using the LEED rating tool must meet all prerequisites and earn a specified number of credits awarded in five areas: sustainable sites, water, energy, materials selection and indoor environmental quality. A project can satisfy one of four levels of LEED achievement — Certified, Silver, Gold or Platinum — based on the number of points earned. In 2006, the Army mandated that all new construction and major renovation projects satisfy LEED Silver criteria.

One of Savannah District's most prized sustainable projects is a Community Emergency Service Station at Fort Bragg, N.C., designed to achieve LEED Platinum. Once certified, the fire station will become one of the elite few LEED Platinum-certified facilities in the federal government.

The \$2.6 million, 8,300-square-foot fire station was completed in March by R.A. Connelly Inc. of Bradenton, Fla. The design by Hayes, Seay, Mattern and Mattern Inc. of Charlotte, N.C., incorporated mechanisms that save 35 percent more energy than a similar fire station built to code. The fire station will receive operational monitoring during occupancy to ensure that it performs

as designed.

"One of the credits for LEED Platinum certification for this facility requires follow-on testing and monitoring during the first year of occupation to ensure that the facility is operating effectively as it was designed," said Greg Beers, a Corps resident engineer at Fort Bragg. "The conditions of the facility have to be measured under use to see if it's going to actually produce better conditions and meet energy savings and other requirements for LEED credits points."

Another green project is the \$15.6 million dormitory built by the Savannah District at Moody Air Force Base, Ga. Completed in March by I.L. Fleming Inc. of Midway, Ga., the project was awarded Gold certification by the Green Building Certification Institute.

At 46,791 square-feet, the 120-person facility serves unaccompanied enlisted Airmen. The dormitory gives each Airman his or her own room, which has a walk-in closet and a private bathroom. Four suitemates share a common area furnished with couches, a TV and a dining area.

The designs of both projects include a geothermal groundwater heating and air conditioning system and incorporate recycled building materials, such as wood doors, carpet and wall tiles, recycled structural steel and metal roofing. Local suppliers provided most of the materials, reducing the amount of energy required to transport them and adding a boost to the local economy.

LEED features on other Savannah District Military Construction projects range from solar collection panels and geothermal heat pumps to high-efficiency fixtures and advanced indoor air ventilation systems. Other common LEED features



This Community Emergency Service Station at Fort Bragg will satisfy LEED Platinum criteria and save 35 percent more energy than a similar fire station built to code. Photo courtesy of Gary Poling, Savannah District



A dormitory project at Moody Air Force Base earned a Gold rating for energy efficiency and environmental sustainment from the U.S. Green Building Council. Photo courtesy of Savannah District

include recycled building materials, natural landscaping, rainwater storage tanks, reflective roofs, low-odor paints and carpets, and eco-friendly lighting and mechanical systems.

"We have a significant volume of construction coming out of the Army, and the vast majority of it carries LEED Silver requirements," Milton said. "The Army's commitment is important to our nation, because we're helping to transform the industry just by virtue of our demand for sustainable design and construction."

POC is Judy Milton, 912-652-5441, Judith.f.milton@usace.army.mil.

Tracy Robillard and Rashida Banks are public affairs specialists, Savannah District, U.S. Army Corps of Engineers. 

Acronyms and Abbreviations

LEED	Leadership in Energy and Environmental Design
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Fort Jackson's starship barracks get LEED makeover

by Joshua Mitchell

The “repurposing” of facilities is a great way for the Army to maximize limited construction dollars to gain quality-of-life improvements for our Soldiers, according to Lt. Col. Jason Kirk, U.S. Army Corps of Engineers’ Charleston District commander and district engineer.

In March, Charleston District completed the renovation of the first of six Army barracks at Fort Jackson, S.C., known as “starships.” The 230,000-square-foot Starship 11000 structure previously contained dining facilities. The project converted them into classrooms, barracks and additional offices for headquarters.

The Fort Jackson starship projects meet energy and sustainable design standards by using state-of-the-art technologies to retrofit existing facilities. The Energy Policy Act of 2005 set benchmarks for the federal government to reduce energy use by as much as 40 percent against an established baseline, and the 2009 Executive Order 13514, *Federal Leadership in Environmental, Energy and Economic Performance*, set goals for federal agencies to increase energy efficiency; conserve and protect water resources; eliminate waste by recycling and preventing pollution; foster markets for sustainable technologies and environmentally preferable materials, products, services and designs; and construct, maintain and operate high-performance sustainable buildings in sustainable locations.

In July 2010, the Army established a policy to use Leadership in Energy and Environmental Design for New Construction and Major Renovations Silver as a standard. Starship 11000 was LEED Silver certifiable but was not required by the Army to pursue actual certification due to the additional cost of the certification process.

To achieve LEED Silver, a project must be awarded at least 33 points based on six sets of performance standards that include sustainable designs for site selection, water and energy use, space utilization, the reuse of existing building materials, use of recycled products and the use of local products to reduce transportation costs.

Renovating an existing building on a military base can be challenging, especially if the structure is in use like Starship 11000 was. The first challenge was to provide swing space on post. Due to the project size, the installation was unable to offer facilities for this need, so 200,000 square feet of modular buildings were commissioned to provide temporary accommodations for 1,200 Soldiers and space to support everyday operations and training activities.

After the Starship 11000 facility was vacated, demolition began. In a renovation, the demolition time required is increased so that care can be taken to leave reusable structures and equipment undamaged. When demolition was completed in June 2009, mobilization began. Construction started in September.

Complete repair was made to walls, ceilings, flooring, doors, windows, HVAC, plumbing, domestic water, sanitary sewer, electrical and lighting distribution systems, fire alarms and energy management and control systems.

LEED Silver practices included the reuse of the existing building and certain materials, such as the existing structural members and exterior bricks. The exterior walls were removed down to the concrete masonry structure, and a special sealant and sheet insulation were applied to decrease air exchange between the interior and exterior, reducing energy requirements. A majority of the construction waste materials was diverted from the landfill. New materials were chosen based on recycled content or availability from a regional source. Wood materials were



Fort Jackson Soldiers stand in formation in front of Starship 11000 during the renovation. Photo by Max Carroll, Charleston District

certified by the Forest Stewardship Council as originating from sustainably managed forests. The indoor environment systems reduced energy, water and lighting requirements as compared to the building’s previous systems.

The project design reduced energy costs by 20 percent. The other five starship facilities, which are under construction, are designed for an energy cost savings of up to 40 percent.

“Charleston District’s project and construction management teams are able to ensure that Fort Jackson gets their money’s worth in these complex starship renovations,” Kirk said.

Fort Jackson expects to close out fiscal 2011 with awards of four LEED Silver certifiable buildings, and project managers are preparing for the redesign and upgrade of energy systems in other buildings to make them more sustainable and reduce energy needs by as much as 40 percent. Besides the anticipated cost savings, other sustainable design benefits include the potential to increase productivity, reduce liability and improve indoor air quality.

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Joshua Mitchell, LEED AP BD+C, is a Regulatory project manager, Charleston District, USACE.



Acronyms and Abbreviations	
HVAC	heating, ventilation and air conditioning
LEED	Leadership in Energy and Environmental Design
USACE	U.S. Army Corps of Engineers



Fort McCoy's telemetry monitoring provides data to manage wolves

by Rob Schuette

The trapping of a 65-pound, yearling female gray wolf on South Post at Fort McCoy, Wisc., should yield more information about her wolf pack and help installation management of the species, said Tim Wilder. Wilder is the endangered species program manager for the installation's Natural Resources Branch.

"Although wolves have resided in North Post since 1999, a pack only recently is thought to have formed on South Post in January 2010," Wilder said.

The trapped wolf was found to be in good health and was named Grace. A telemetry collar was attached to Grace before she was released at a remote South Post site.

"Because the female is part of the pack and will travel with the pack, the telemetry collar will provide information on home-range size, approximate den location, wolf movement [and] behavior in relationship to military training activities, and mortality information when this wolf dies," Wilder said.

"The Wisconsin Department of Natural Resources funded the trapping effort and, along with installation biologists, will assist in monitoring activities," he explained.

The WDNR contracted with the U.S. Department of Agriculture, which used a snare to capture the wolf.

Wilder was impressed with the thoroughness of the steps taken to ensure the wolf wasn't injured and was released no worse for wear to her home environment. Without the cooperative effort among the three agencies, Fort McCoy would not have been able to have the telemetry collar placed on the wolf, he said.

"This female wolf is only the second one captured and collared at Fort McCoy in the 11 years the mammals have resided on the installation," he said. Another

female wolf was caught inadvertently in a coyote trap in December 2002. The WDNR placed a telemetry collar on that wolf and monitored her until her death in November 2004.

"Telemetry monitoring provides excellent information to help manage this species," Wilder said.

Data collected on this collared wolf will help the installation augment data it collects during winter track surveys and summer howling surveys.

"Wolves are viewed as a controversial species, so having information on if or how far off the installation the pack's territory goes will help provide answers to questions that will likely be asked by surrounding landowners," he said.

Data collected on Grace by installation natural resource personnel will be shared with the WDNR.

Wolves currently are listed as a federally endangered species. Several efforts have been made to remove them from that category, but, on each occasion, they have subsequently been relisted as endangered.

The telemetry information helps Fort McCoy manage wolves by ensuring the new facilities it builds and the training it conducts are compatible with the wolves' land needs.

"To date, the wolves have been able to co-exist very well with the wide variety of activities occurring on the installation," Wilder said. "There are many remote areas on the installation where, on any given day, humans rarely venture. Wolves in the North Post pack spend an inordinate



Tim Wilder (left), Fort McCoy endangered species biologist, and DeWayne Snobl (right), U.S. Department of Agriculture, examine a wolf after she was captured on Fort McCoy and before she was fitted with a telemetry collar and released. Photo courtesy of Fort McCoy Natural Resources Branch

amount of time within the impact area, because few people enter this area making it attractive to wolves.

"One controversial aspect of wolves is the fact that they prey on white-tailed deer, the most popular big game animal in Wisconsin," Wilder said. "Prior to 2010, only one pack of wolves resided on Fort McCoy, and wolf numbers were low enough that they did not have a major impact on overall deer numbers," he said.

That could now be changing because at least two packs reside on Fort McCoy, and wolf numbers are increasing, he said.

If the WDNR decides to enact policies to control the wolf population in the future, Fort McCoy will be involved in their on-post implementation, he said.

The original Fort McCoy wolf management plan was approved in 2005. A new five-year management plan is out for public and agency review and is expected to be finalized in the next couple months.

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Rob Schuette is a public affairs specialist, Fort McCoy.

Acronyms and Abbreviations

USDA	U.S. Department of Agriculture
WDNR	Wisconsin Department of Natural Resources



Fort Irwin tries feral burros as potential aquatic habitat solution

by Liana Aker

Since the idea dawned in the mind of man, humans have experimented with methods of landscape manipulation in attempts to make the land yield what was desired — food production, recreational opportunities, attraction of wildlife or pure aesthetics. One such method involves the application of livestock grazing to alter the landscape, a concept that has been in the human toolbox since before Europeans settled North America. Managed grazing has again gained popularity among natural resource managers for manipulating wetlands and other aquatic habitats.

Since the settling of the West, grazing has received an often-times deserved bad rap for its negative effects on the environment, particularly aquatic habitats. Through hoof action and foraging activity, livestock can drastically alter the landscape if grazing pressure is too heavy in any one area for too long. However, the application of carefully-managed livestock grazing has been shown to benefit plant and animal diversity, improve wildlife nesting and foraging opportunities, and serve as a useful tool in vegetation management.

At Fort Irwin in southern California's Mojave Desert, the idea of putting the installation's feral burro population to work is an attractive one on several fronts. The burros are fairly predictable in their habits, industrious, plentiful, and they work cheap.

Many of the fragile desert spring habitats at Fort Irwin have been fenced to exclude burros. Without fencing, the springs are vulnerable to being "loved to death" by the burros, which, understandably, park themselves in the relatively cool, moist conditions of these oases during the hot Mojave summers.

When springs are fenced off, they rebound dramatically, recovering vegetative cover and hydrologic functions within a few seasons. This situation can also present other challenges to the resource manager including the overgrowth of opportunistic and even invasive plants, as is the case at Fort Irwin's Garlic Springs.

Garlic Springs, located just outside the National Training Center garrison at Fort Irwin, is a perennial desert spring fed by a series of groundwater seeps. Burros and cattle were fenced out of the springs in the early 1990s. Following this elimination of disturbance, plants of both desirable and undesirable species populated every damp niche until no area of open surface water remained.

Fort Irwin's natural resource management objectives include maximizing wildlife habitat diversity in the springs to benefit migratory songbirds, bats and native plants. To help achieve this goal, resource managers opted to combine hand pruning and grazing by burros to experimentally thin a decadent stand of southern cattail, *Typha domingensis*, in one portion of the spring. The expectation is that thinning the above-ground plants and interrupting the growth cycle by damaging below-ground rhizomes of the cattails will help restore key aquatic habitat components by increasing the area of open water and restoring water depth and flow rates.

To facilitate management of burro grazing within the cattail treatment area, Directorate of Public Works and Integrated Training Area Management crews installed temporary cross fencing and access gates in the exclusionary fencing already in place.

After an unsuccessful week of watching and waiting for burros to take advantage of the newly available cattail buffet, alfalfa hay was distributed as bait along existing trails leading to the spring to tempt the burros into military service. About 10 days later, some burro sign was finally observed within the treatment area. However, relatively wet, cool seasonal weather continued to keep staff in suspense as to whether managed burro grazing can be a viable restoration technique for desert southwest springs.



Crew members thin a dense, matted stand of southern cattail at Fort Irwin's Garlic Springs, the site of a hand thinning and grazing treatment experiment. Photo by Liana Aker

The low cost of initiating this experiment means little is lost except time in taking the wait-and-see approach. As other sources of green vegetation and available water dry up with the onset of summer, it is expected that the burros will show more interest in the food and water resources of the cattail stand.

However, considering the old adage, one must be cautious not to assume too much about a burro.

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Hawaii confronts invasive superweed on Kahuku Training Area

by Jane R. Beachy

Like stamps in a passport, *Chromolaena* collects names as it moves from place to place invading new ecosystems. In Australia and the United States, it is called bitter bush, devil weed and Siam weed. In Guam, it's called *masigsig*; in Chuuk, *otuot*; in Kosrae, *mahsrihsribk*; in Palau, *kesengesil*; in the Philippines, *agonoi*; in Honduras, *rey del todo*; and the list continues.

Native to Central America, *Chromolaena odorata*, a member of the aster family, has become a highly invasive pest across much of the world. Management agencies struggle to control its spread in Africa, and conservationists in Australia strategize on effective control measures.

Chromolaena spans Southeast Asia, from Indonesia to Japan. It has skipped across the Pacific, infesting every island it comes into contact with. This year, *Chromolaena* reached Hawaii.

Oahu Army Natural Resources Program staff members discovered an infestation during routine road surveys Jan. 11 in the Kahuku Training Area on Oahu's North Shore. The crew collected a specimen. A quick check in a reference book suggested the plant was *Chromolaena* and tipped off the group that the plant was not known in Hawaii.

The specimen was submitted to the Bishop Museum's Oahu Early Detection program. Museum botanists verified that the specimen was *Chromolaena odorata*, considered one of the 100 worst weeds in the world.

How did it get there?

Hawaii is separated by hundreds of miles of ocean from anywhere. How does a new pest reach it?

Most such pests are carried unintentionally by people. Human activity has dramatically increased the rate of species introduction to Hawaii,

and Hawaiian ecosystems are critically endangered by these invasive threats.

It is hard to discern the exact path *Chromolaena* took to KTA, but a few plausible scenarios exist. Perhaps contaminated seed was planted in the agricultural area below KTA, or the seed rode in on a dirt bike, since part of KTA is used as a public motocross track on weekends. However, the infestation lies in a part of KTA that is heavily used for military training, the most likely cause for its introduction. Occasionally, units from Guam train in Hawaii, so perhaps, tiny *Chromolaena* seeds, hidden in packs or boots, hitched a ride with one of these units.

Why worry about *Chromolaena*?

Chromolaena is toxic to humans, livestock and even other plants. It forms dense, monotypic tangles. Each shrubby plant grows up to 12-foot tall and can produce 800,000 seeds in a year.

The small, narrow seeds, topped with a tuft of fibers, are easily dispersed via the wind. The small seeds also burrow into clothing, gear and fur, and they move quickly along trails and roads. As if all this dispersal isn't enough, cut branches root and grow into new, healthy plants.

Chromolaena doesn't thrive in deep shade, but it thrives just about everywhere else. In

parts of Asia, fields have been abandoned to *Chromolaena*, as crops and farmers couldn't compete with the super weed.

OANRP staff, with help from the Oahu Invasive Species Committee, Bishop Museum and the Hawaii Department of Agriculture, is developing a detailed map of the *Chromolaena* infestation in KTA. This map will be the first step in creating a comprehensive plan for addressing the species.

Just one day of surveys revealed the weed is much more widespread than expected. Further surveys are needed to define its boundaries, but it's expected the infestation may encompass as much as 150 acres.

What are the next steps?

Is *Chromolaena* already too widespread in Hawaii to eradicate? Can the island's imperiled ecosystems handle yet another threat? Can Hawaii's natural resource managers afford not to control *Chromolaena*?

As surveys are concluded, OANRP and its partner agencies will think critically about these questions and others, and work to develop a realistic management strategy. The odds are stacked in *Chromolaena*'s favor, but managers won't give up. Effective control methods exist, and new labor-saving techniques are being developed. The infestation is easy to reach, and the



The highly invasive weed *Chromolaena odorata*, discovered for the first time in Hawaii in January, grows along a road in Kahuku Training Area. Photos courtesy of OANRP



A member of the sunflower family, the *Chromolaena odorata* plant produces tiny — 4 to 5 millimeter — white to pinkish flowers that can produce up to 800,000 seeds per plant.

Acronyms and Abbreviations	
KTA	Kahuku Training Area
OANRP	Oahu Army Natural Resources Program



San Antonio Military Medical Center nearly complete in only 4 years

by Maj. Edwin H. Rodriguez

The existing Brooke Army Medical Center at Fort Sam Houston, Texas, took 10 years to design and construct. The new San Antonio Military Medical Center, a huge facility that will join with and replace Brooke, will be completed in just four years. Despite the project's fast pace, SAMMC will offer world-class medical facilities to the San Antonio military community.

The SAMMC project accomplished this feat by using the integrated design-bid-build project delivery method, which allowed compression of the design and construction schedule. Architectural plans for the hospital were developed in accordance with evidence-based design, which creates an environment that results in improved patient outcomes, privacy, comfort, stress reduction and safety for patients and staff.

The 2005 Base Realignment and

Acronyms and Abbreviations	
BAMC	Brook Army Medical Center
BRAC	Base Realignment and Closure
SAMMC	San Antonio Military Medical Center

Closure law authorized the construction. Under BRAC, the inpatient mission is being relocated from BAMC's Wilford Hall Medical Center to SAMMC.

The new construction includes the 750,000-square-foot Consolidated Tower complete with a rooftop helipad, the only one in the Department of Defense. Other aspects of the project include construction of a 1.6 million-square-foot parking structure with 5,000 parking spaces and a central energy plant, and the renovation of 314,000 square feet of the existing BAMC— nearly 25 percent of the hospital. The project cost is \$802.3 million.

When completed, the Consolidated Tower will offer 106 inpatient beds; 15 operating rooms for inpatient and ambulatory surgery; a Level 1 trauma and emergency room; medical, pediatric and surgical subspecialty clinics; primary care; labor, delivery and recovery rooms; a neonatal intensive care unit; a pediatric intensive care unit; a bone marrow unit; a burn center; and centers of excellence for cardiovascular, maternal-child, and



New SAMMC facilities are under construction at Fort Sam Houston. Photo courtesy of U.S. Army Health Facilities Office

battlefield health and trauma.

Construction started Dec. 9, 2008, and is 80 percent complete. BRAC-related transition actions are scheduled to be completed by July 15.

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Maj. Edwin H. Rodriguez is a project officer, Joint Medical Facilities Office, U.S. Army Health Facilities Office.

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terrain, while challenging, is not extreme.

Chromolaena seeds persist about a year in soil. With careful planning, innovative strategy and hard work, managers may be able to contain the infestation, manage it and perhaps even eradicate it entirely.

However, the best defense against invasive species is simply to stop them from arriving in the first place. The cost of preventing a pest from entering Hawaii is many times smaller than the cost of controlling an established pest. Hawaii Department of Agriculture inspectors monitor shipments into Hawaii as well as those between islands. Each Christmas, they inspect containers of Christmas trees and turn back any harboring nonnative insects, slugs or bats.

The OANRP surveys roads and landing zones on Oahu's training ranges once a

year. These surveys are critical in detecting new pests early and enabling staff to respond rapidly to new threats. On some roads, these monitoring efforts began more than 10 years ago. The road where *Chromolaena* was first spotted had been surveyed only once before.

The Army has a commitment to mitigate any negative impacts of training, including invasive weed spread. The discovery of *Chromolaena* in KTA highlights the importance of maintaining strict sanitation on Army training ranges.

OANRP will invest a significant amount of Department of Defense time and money in managing *Chromolaena*. In the meantime, everyone — hikers and range workers alike — is being asked to inspect boots, clothes, packs and other field gear before entering natural areas. Hikers are also asked to clean mud and

debris off their gear at the end of the day, and to wash and vacuum vehicles at least once a week. Many training ranges operate wash racks that troops and contractors are being asked to take advantage of to clean wheel wells and undercarriages on tactical and other vehicles.

These efforts and those of the OANRP staff and its partners will help prevent other species like *Chromolaena* from invading Hawaii.

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Study weighs options for recycling tactical fuel at Fort Bragg

by Gary Gerdes

The U.S. Army Engineer Research and Development Center investigated the feasibility of recycling jet propellant 8 fuel that no longer meets specifications at Fort Bragg, N.C. Results and recommendations are published in a Corps of Engineers Public Works Technical Bulletin, PWTB 200-1-83, *Feasibility of JP-8 Recycling at Fort Bragg, N.C.*, which can be found at: http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215.

JP-8 is used to fuel both aircraft and ground vehicles at all Army installations. Often, this fuel becomes “off-spec,” as it is called, because of contamination by water and solid particulate matter. This fouling can occur during vehicle maintenance at motor pools and other activities, such as standing down after emergency response preparations. Off-spec JP-8 fuel generated at Fort Bragg — some 60,000 gallons per year — was being disposed as hazardous waste.

In 1984, the Resource Conservation and Recovery Act was augmented by the Hazardous and Solid Waste Amendments that include provisions to encourage recycling and reuse of hazardous wastes. The environmental personnel at Fort Bragg believed that the off-spec JP-8 waste stream could be minimized by reusing that fuel on post.

A study was proposed to the Waste Minimization and Pollution Prevention program. The purpose of that program, which ended in 2005, was to demonstrate promising environmental technologies at Army installations.

ERDC’s Construction Engineering Research Laboratory directed MSE Inc., the prime contractor for the Waste Minimization and Pollution Prevention program, to study methods to reuse off-spec JP-8, decrease the volume of wastes disposed and reduce the amount of new fuels purchased. It was believed that effective reuse methods would yield cost avoidance and eliminate the compliance

burden of removing contaminated fuel from the site.

Two commercial, off-the-shelf systems for reclaiming JP-8 were evaluated for possible application at Fort Bragg. Those systems were in operation at Fort Lewis, Wash., and Fort Hood, Texas. The study evaluated the projected use of these fuel recycling management-in-place systems in several site-specific scenarios at Fort Bragg and then developed recommendations based on the results.

According to those findings, Fort Bragg would obtain the best return-on-investment with low capital investment by continuing its existing process of settling out water and impurities, and then burning the JP-8 directly in a boiler to replace the diesel #2 now used.

Acronyms and Abbreviations	
CERL	Construction Engineering Research Laboratory
ERDC	Engineer Research and Development Center
JP-8	jet propellant 8 fuel

Information in the PWTB may be helpful to any installation considering this type of recycling, however, it should be noted that the individual requirements at each installation dictate a site-specific study to identify the best options.

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Gary Gerdes, now retired, was a senior project manager, ERDC-CERL.

Cost-effectiveness of JP-8 fuel recycling options

Inputs	Value ¹		
Volume of off-spec JP-8	60,000 gal/yr		
Cost of JP-8	\$1.00/gal		
Cost of new diesel #2	\$.85/gal		
Average natural gas consumption	472,039 therms/month		
Project life	10 yr		
Outputs	Net Present Value (NPV) (\$)	Return on Investment (ROI) (%)	Payback Period (years)
Baseline – Give away to local universities	–	N/A	N/A
Option 1A – Burn directly in boiler, replacing natural gas	284,885	1,641	0.1 yr
Option 1B – Burn directly in boiler, replacing diesel #2	413,455	2,377	0.04
Option 2A – Burn after COMM-1, replacing natural gas	174,865	89	1.1 yr
Option 2B – Burn after COMM-2, replacing natural gas	160,178	29	3.5 yr
Option 3A – Burn after COMM-1, replacing diesel #2	303,436	146	0.7
Option 3B – Burn after COMM-2, replacing diesel #2	288,748	42	2.4
Option 4A – Use in ground vehicles, after Clarus	399,190	204	0.5
Option 4B – Use in ground vehicles, after Pall	384,503	53	1.9
Option 5 – Sell off-spec JP-8 ¹	76,382	N/A	N/A

¹ Costs are in 2002 dollars and reflect fuel prices at that time.

Graphic by Gary Gerdes



Bulletin discusses regional agreements to manage species at risk

by Harold Balbach

The Army Corps of Engineers released a Public Works Technical Bulletin to chronicle development of an agreement that brings together regional stakeholders to help protect the gopher tortoise, a declining species. PWTB 200-1-79, *Benefits of a Candidate Conservation Agreement for the Gopher Tortoise and Lessons Learned*, is available at http://www.wbdg.org/cdb/browse_cat.php?o=31&c=215.

Everyone involved in Army land management knows that threatened and endangered species may impact critical military activities. In general, the Army does a great job of managing and protecting those species. But what about rare species that are not yet listed as threatened or endangered? The concern is that they may become legally threatened under the Endangered Species Act. Then, still another animal must be taken into account in every plan by every directorate. Clearly, it would be good to be able to avoid this situation.

The Army reports there are about 20 candidate species for listing on its lands or on immediately adjacent land. In addition to these official candidates, there are another 200-plus species at risk on Army-managed lands, 50 of which are “priority” species. That label means the land managers at those installations believe an ESA listing would adversely affect Army mission activities.

Gopher tortoise example

The gopher tortoise, *Gopherus polyphemus*, is a land-dwelling turtle historically found in parts of six Southeastern states. Recent estimates are that in the last 100 years, gopher tortoise populations have declined by 80 percent. This significant decline contributed to the

species being listed by the U.S. Fish and Wildlife Service as threatened in the western portion of that range.

Declines in populations are occurring throughout the Southeast because of habitat conversion and lack of regular prescribed fire. Forts Benning and Stewart in Georgia are examples of major Army land training installations where large populations of the gopher tortoise survive.

The FWS reviewed a petition requesting a threatened listing under the ESA and found that it may be warranted. That listing would represent another regulatory challenge to all military mission uses, including training, forestry, construction and range improvement throughout this region.

What can landowners do?

With few exceptions — tiny populations of cave insects or of fishes in a small pool, for example — wildlife uses the available habitat without respect for land ownership boundaries. No single landowner, even the Department of Defense, is able to provide for all the needs of a species, especially one that ranges across multiple states.

There are several formal and informal ways to create an agreement or partnership between a land owner and the FWS to manage a species. The ESA and FWS procedures include the most popular one, the Habitat Conservation Plan, which has been used hundreds of times to conserve habitat for many species. However, federal landowners cannot use this plan.

To look for better regionwide management for the gopher tortoise, stakeholders developed a CCA. This type of agreement may have as many partners as are necessary to perform required actions and may include federal, state or local agencies, nongovernmental



Gopher tortoise is the subject of a PWTB about managing threatened species. Photo by Hugh Westbury, Fort Benning, Ga.

organizations, private associations and individual landowners. It has been used relatively infrequently, only twice before by the Army.

Gopher tortoise CCA

The gopher tortoise CCA was created between 2006 and 2008 by a working group comprising representatives from the Defense services, U.S. Army Engineer Research and Development Center, several state Departments of Conservation and Natural Resources, FWS, the Florida Fish and Wildlife Commission and the U.S. Forest Service. Partners who later signed the CCA include the Poarch Band of Creek Indians, the American Forests Foundation and the Longleaf Alliance.

The CCA called for improvement in the way the partners managed tortoises on their lands and gave guidance for recommended best practices. The CCA also provided for the creation of monitoring programs to track tortoise populations, record management and annual reporting on progress in all actions developed to improve tortoise habitat.

The first annual report, for 2009, was prepared in January 2010, and the second in January of this year. This information will aid the development of better regional plans for tortoise management across

Acronyms and Abbreviations	
CCA	candidate conservation agreement
ERDC	Engineer Research and Development Center
ESA	Endangered Species Act
FWS	U.S. Fish and Wildlife Service



Monitoring systems help Fort Hood meet Clean Air Act mandates

by Gary Gerdes

Systems to monitor fuel usage and air emissions on equipment at Fort Hood, Texas, proved successful in providing real-time data that indicates compliance status. The systems were designed and installed as part of the Facility Modernization and Sustainability Program, which the U.S. Army Engineer Research and Development Center managed. Project details are reported in a new Corps of Engineers Public Works Technical Bulletin, PWTB 200-1-84, *Air Emissions Source Monitoring Systems*.

All PWTBs are available on the Whole Building Design Guide website, http://www.wbdg.org/cdb/browse_cat.php?o=31&c=215.

Army Regulation 200-1 requires that all installations comply with federal environmental regulations, including standards for the management of air pollution as established by the U.S. Environmental Protection Agency under the authority of the Clean Air Act and Amendments of 1990. In Texas, additional monitoring and reporting are required under the Texas Clean Air Act. Among

these requirements are monitoring fuel usage and air emissions from combustion sources, such as boilers and generators.

In 2006, Fort Hood needed to improve its monitoring of fuel usage and air emissions at various boilers and emergency generators. The goal was to install systems that could: obtain instant data to demonstrate compliance, meet recordkeeping requirements, reduce combustible emissions, increase boiler efficiency, and avoid the time and cost of performing a stack test.

Under the FMSP project, the contractor designed monitoring systems that use commercially available programmable logic controllers, flowmeters and human-machine interface panels. Part of the design was the programming necessary to operate the systems and to record needed data so that the operators could easily manipulate the data into report form. The systems measure boiler and generator fuel usage and generator runtimes.

Monitoring systems were installed on boilers that burn natural gas and fuel oil, generators and a thermal oxidizer at three Fort Hood buildings:

- Darnall Army Community Hospital – Three large boilers were fitted with systems to monitor the use of both natural gas and fuel oil. The three emergency boilers at Darnall were fitted with runtime monitoring systems.
- III Corps Headquarters Building – Three generators were fitted with runtime monitoring systems.
- Building 88027 – The catalytic recuperative thermal oxidizer that treats volatile organic emissions from painting operations was fitted with a natural gas monitoring system.



An oil meter measures fuel usage for boilers at Fort Hood. Photo courtesy of ERDC

The monitoring systems provided Fort Hood with an effective method to calculate air emissions from each of the sources. Similar equipment could be installed on other buildings that affect compliance with the Clean Air Act, and all of the systems could be integrated into a central monitoring station.

Funding for the FMSP project came from the Office of the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health within the Office of the Assistant Secretary of the Army for Installations, Energy and Environment.

POC is Deborah Curtin, chief, Environmental Processes Branch, ERDC's Construction Engineering Research Laboratory, 217-398-5567, deborah.r.curtin@usace.army.mil.

Gary Gerdes, now retired, was a senior project manager, ERDC-CERL.

Acronyms and Abbreviations

CERL	Construction Engineering Research Laboratory
ERDC	Engineer Research and Development Center
FMSP	Facilities Modernization and Sustainability Program
PWTB	Public Works Technical Bulletin

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the many places where the species lives. Lessons reported in the PWTB would be useful to other installations that may want to take a proactive, regional approach to candidate species management.

POC is Harold Balbach, ERDC, 217-373-6785.

Harold Balbach, Ph.D., is a senior research project manager, ERDC's Construction Engineering Research Laboratory, Champaign, Ill.

Look us up on the WEB

<http://www.imcom.army.mil/sites/pw/digest.asp>



IMCOM names Directorate of Public Works awardees

by Gregg Chislett

The Installation Management Command announced the 2010 Army Directorate of Public Works Awards April 5 and recognized the winners April 21 at the Installation Management Symposium in San Antonio. The awards honor seven individuals and one organization who demonstrate excellence in the management and execution of installation Public Works and real property missions.

The 2010 award winners are:

Willimore M. Mack, U.S. Army Garrison Kaiserslautern, Germany

William C. Gribble Jr., DPW Executive of the Year

Mack, the director of Public Works, created an atmosphere of innovation and creativity within the DPW. His staff of 80 in-house and 290 contractor personnel provides engineering, unaccompanied personnel housing, operation, maintenance and environmental management for the largest garrison in U.S. Army, Europe.

In fiscal 2010, the DPW executed more than 14,000 service orders and 350 works orders with the best average execution time in Europe. Mack developed a customer survey system that resulted in steady improvement in customer service. He leveraged the total maintenance contractor with the Corps of Engineers, the U.S. Air Force Europe Contracting Office and others, which allowed major renovations

that could not have been done without cooperation among activities.

Under Mack's leadership, the DPW designed 60 construction and repair projects totaling \$40 million in FY 2010. He supervised more than 110 projects valued at \$70 million. He successfully developed, justified and secured funding for multiple sustainment, restoration and modernization projects.

Mack is "the go-to guy" for IMCOM, Europe Region, stationing personnel. His advice and expertise are sought by other garrison DPWs and the IMCOM staff, and his personal involvement in the last days of the fiscal year maximized funding by having projects ready to obligate.

(Editor's note: A photo of Mack was unavailable.)

Ted A. Reece, Fort Campbell, Ky.

DPW Engineering and Planning Executive of the Year

Reece, chief of the Engineering Division and deputy DPW, and his team executed an American Recovery and Reinvestment Act program in FY 2010 of more than \$66 million to improve Fort Campbell's infrastructure. During this time, the team worked with the Mission and Installation Contracting Command and U.S. Army Corps of Engineers' Contracting to award four times the normal annual workload.

Since 2007, Reece has worked with in-house information technology personnel

to develop the Work Management Database. This cradle-to-grave project management software interfaces with the General Funds Enterprise Business System and is considered one of Fort Campbell's best practices. The system provides much of the functionality

Acronyms and Abbreviations	
ARRA	American Recovery and Reinvestment Act
DPW	director or Directorate of Public Works
FSBP	First Sergeants' Barracks Program FY – fiscal year
FY	fiscal year
IMCOM	Installation Management Command
SRM	Sustainment, Restoration and Modernization
USAG	U.S. Army Garrison

of custom systems developed by outside contractors at a fraction of the cost — less than \$20,000 annually. The local contracting command agreed to use the software to track contract actions, which will enable DPW personnel to track awards, notices to proceed, performance periods and contractor performance.

Reece, working with other key personnel, reduced the post's water and wastewater privatization operation and maintenance costs by \$1.1 million — 27 percent — annually.

Reece is recognized throughout the garrison as having the largest budget to manage and as one who performs his duties with exceptional attention to detail.

Kent Anderson, USAG Hawaii

DPW Business Management Executive of the Year

Anderson was named acting chief of the DPW Business Operations Division. Under his leadership, the division overcame significant obstacles in FY 2010.

The wildly fluctuating funding levels and the robust SRM program due to ARRA together would have made a difficult year for Business Operations. The addition of multiple brigade-level deployments and redeployments, integration of two major branches in the division and severe personnel cuts made 2010 very complicated. Despite limited business operations experience, Anderson met these challenges and excelled.

A combination of Flagship, ARRA and storm damage repairs resulted in workloads 300 percent higher than normal. Anderson's storm damage



Ted A. Reece
Courtesy photo



Kent Anderson
Courtesy photo



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submission was praised by the region as a model report. He developed a \$76 million ARRA program that ensured the garrison's sustainment and restoration needs were met.

Substantial personnel losses dealt a blow to the Systems Branch. Anderson immediately reprioritized the workload, reallocated resources and instituted efficiencies that kept DPW systems operational despite the reduced staffing. For example, Anderson improved data gathering and automated the system to enter, capture and list labor data through the web resulting in time and workload savings.

Anderson also managed a unique Facility Manager Unit that was instrumental in improving DPW customer relations and coordination.

Hermelinda Sandifer, Fort Hood, Texas
DPW Housing Executive of the Year

Sandifer, chief of the Barracks Management Branch, orchestrated initiatives at all customer levels to promote understanding of the First Sergeants' Barracks Program. Examples include quarterly leadership briefings, speaker slots at courses and integration of the Better Opportunities for Single Soldiers Program.

Sandifer successfully managed a growing FSBP workload, serving 15,978 barracks spaces in 98 permanent and 62 relocatable buildings. Barracks room availability increased and overdue work orders decreased despite room turnover in excess of 10,000 for a 12-month period.

She developed a team that provided the highest level of service. Under her leadership, redeploying single Soldiers were assigned a room and received its key within one hour of landing at Fort Hood, allowing these Soldiers to celebrate their return with friends and family without going to the barracks for room assignment as in the past.

Sandifer used the Lean Six Sigma process to review FSBP functions. She is a subject matter expert on HOMES 4, the housing management system, and Common Levels of Support, using these programs to maximize the productivity and quality of FSBP products. She has developed internal metrics that continuously focus on improvement and feed other measurement systems.

Sandifer clearly demonstrated that she understands the big picture and can combine reality with the higher mission.

Daniel Golden, Fort Carson, Colo.

DPW Operations and Maintenance Executive of the Year

Golden, the DPW Operations and Maintenance Division chief, focused on setting proper staffing and resource levels within both the government oversight staff and the large base-operations contract. Because of his forward-thinking planning and execution, high quality support continued to be provided to all customers even as Fort Carson experienced growth.

Under Golden's leadership, funding was tracked and new missions were analyzed to ensure that funds were being spent wisely. In a year of reduced funding, Golden was able to cut his budget significantly while continuing to provide strong performance to his customers. The base-operations contract cost was reduced by \$3 million in FY 2010.

Some of the cut was achieved through reductions in services, but significant savings came from innovative approaches, including the use of borrowed military manpower for grounds maintenance. Preventive maintenance schedules were changed to reduce costs, and efficiencies were gained in snow plowing. The utility budget was reduced by \$1 million by aggressively collecting reimbursements, reducing energy use and finding the lowest costs available in the energy market for certain commodities.

Among several other environmental initiatives, the Fort Carson Recycle Program that Golden leads diverted roughly 4,300 tons of waste from the landfill in 2010, saving \$465,000.

Manfred Rieck, USAG Grafenwoehr, Germany

DPW Garrison Support Executive of the Year

Rieck, chief of the DPW Environmental Division, reduced costs and improved business processes and the overall efficiency of the garrison's environmental programs. Rieck's well-balanced and comprehensive environmental efforts supported the DPW and the military mission, Soldiers and Families, and Military Construction as well as effective use of funds and environmental outreach.

Rieck built a professional environmental team at Grafenwoehr. He developed ➤



Hermelinda Sandifer
Courtesy photo



Daniel Golden
Courtesy photo



Manfred Rieck
Courtesy photo



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his workforce by enabling high-quality professional training, networking and cross-training and through an incentive awards programs.

His many environmental efforts include a study he initiated to compare the environmental impact of tracked and wheeled vehicles that helps to optimize training land sustainment efforts. In close cooperation with German authorities, Rieck improved the surface and groundwater monitoring program. Using multiple award remediation contracts for soil disposal, he reduced costs from \$1.06 million to \$373,000. He also met environmental requirements while reducing design and construction costs and accelerating the approval process for 50 new facilities valued at \$1.1 billion that will help to accommodate a population increase of 8,000.

Kwang Nam Kim, IMCOM, Korea Region

DPW Headquarters Support Executive of the Year

Kim, a real property master planner, also served as the coordinator for the Facilities and Area Subcommittee. His responsibilities included formal negotiations of real estate issues with the Republic of Korea. His expertise in the complexities of the Status of Forces Agreement and his diligence enabled the effective



*Kwang Nam Kim
Courtesy photo*

execution and coordination of all subcommittee tasks.

As the region POC for the Headquarters Installation Information System, Kim monitored and coordinated data updates. His superb efforts and technical abilities resulted in the resolution of 26 sites and bases that had been returned to the Republic of Korea years ago but remained in the system. His work resulted in the deletion of these locations from the system, greatly increasing the database's accuracy.

Kim planned, coordinated and flawlessly executed the Installation Status Report-Infrastructure training for Korea Region personnel. His experience and insight helped several new employees quickly learn the techniques and reasons behind the report. His follow-on mentoring ensured the region and garrisons executed their report duties effectively.

His knowledge of DPW and military operations, skill at using Army software and his ability to synergize with garrison personnel to improve DPW operations enabled him to execute process improvements few venture to take on.

Chugach Industries Inc., nominated by USAG Picatinny Arsenal, N.J.

DPW Support Contractor of the Year

Chugach Industries Inc. furnished a team of 235 employees who provided outstanding service and exceptional products to Picatinny Arsenal while displaying professionalism and a



Graphic courtesy of Chugach Industries Inc.

commitment to excellence. In six years of a fixed-price incentive contract, Chugach received the maximum option award at every evaluation board.

The company's experience and its ability to accept problems as challenges and

opportunities made it an invaluable resource. Chugach performed on budget and on time with all contract deliverables, and it consistently proposed affordable alternative solutions when budgets didn't allow for first choice solutions. Chugach saved or avoided more than \$326,000 in 2010. The government chose to award projects valued at \$10.8 million above baseline requirements to Chugach based on its innovative solutions.

For example, during the worst winter in 63 years, Chugach cleared the arsenal's 88 miles of roads and 73 acres of parking lots well ahead of neighboring municipalities. Its expert management of competing requirements resulted in saving more than \$153,000 in direct snow removal costs by redirecting lower priority assets.

Chugach also led two Lean Six Sigma studies. One effort reduced waste and improved the Self-Help program, and the other reduced energy consumption. The company's performance consistently generated great trust and confidence with the command.

POC is Jeff Michaels, 210-424-8230, jeffrey.michels@us.army.mil.

Gregg Chislett is the chief, Public Works, Headquarters, IMCOM.

Call for **ARTICLES**

The July/August 2011 issue of the Public Works Digest will feature

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Public Works professionals gather in San Antonio

by Mary Beth Thompson

During the April Installations Symposium in San Antonio, hosted by the Association of the U.S. Army, the Army Public Works community met in an Installation Management Command-sponsored breakout session to hear from its leaders. Gregg Chislett, chief of Public Works, IMCOM, and members of his staff spoke to a group of about 250.

Public Works challenges

Chislett listed the challenges, as they are seen at Headquarters, IMCOM, that Directorates of Public Works face: underfunding of municipal services, the unpredictability of Restoration and Modernization funding, the uncertain government financial situation, refocusing on life-cycle facility management, the emphasis on energy security and on water and waste reduction, and dealing with aging facilities.

“We are working to try to get a defendable R&M program, so that we don’t have to take that 15 percent off your Sustainment,” he said. “That is something we are working very closely with DA [Department of the Army].”

Chislett discussed the importance of preventive maintenance.

“It’s going back to basics — doing the O&M [operations and maintenance] part of Public Works,” he said. Life-cycle maintenance takes care of facilities so that they function better, use less energy and last longer.

A major portion of energy use is for facilities, Chislett said. The average age of Army facilities is about 40 years, and about 80 percent of all Army facilities are legacy structures.

“We need to take a look at those,” he said. “The new ones are really cool — LEED [Leadership in Energy and Environmental Design] Silver — having all the efficiencies built into them, but what the DPW is left with is having to maintain all those facilities, and that gets into training, to make sure we have the right training program in place to do that.”

Chislett noted that energy security was a hot topic at the symposium, that it is a concern for DPWs and that there has been no discussion of how it would be paid for.

“We recognize there is a cost to do some of that, but it’s something we have to do,” he said.



Gregg Chislett, chief of Public Works for IMCOM, talks to the gathering in San Antonio about the challenges facing the Public Works community. Photos by Mary Beth Thompson

Chislett pointed out that the infrastructure below ground is part of the aging facilities on garrisons.

“We’re looking at ‘worst first’ and trying to get the aging infrastructure repaired,” he said.

Excess facilities are another concern.

Acronyms and Abbreviations	
BAH	Basic Allowance for Housing
CEM	certified energy manager
DPW	Directorates of Public Works
eMH	Enterprise Military Housing (operating system)
GFEBS	General Fund Enterprise Business System
IMCOM	Installation Management Command
R&M	Restoration and Modernization
RPLANS	Real Property Planning and Analysis System
SRM	Sustainment, Restoration and Modernization
TDA	Table of Distribution and Allowances

Aggressive reduction of excess facilities is needed, Chislett said. They consume energy and resources. The Army has been doing a good job of removing excess facilities, but the number continues to grow.

Chislett ended his portion of the program with the Army Facilities Investment Strategy: Providing sufficient facilities to meet mission requirements at the least cost with acceptable quality and quantity. The objectives are to sustain required facilities, demolish or divest excess facilities, improve existing facility quality and build-out critical facility shortfalls.

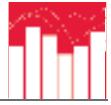
Business Operations

Miriam Ray, chief of the Business Operations Branch, talked about resources, manpower and the General Fund Enterprise Business System.

In 2011, DPWs are funded at 75 percent of their Facilities Sustainment Model requirements. DPWs should continue funding sustainment with minimal migration to R&M, she advised.

DPWs should develop their 2012 work plans with the expectation of receiving funding for 75 percent of Facilities Sustainment Model requirements, Ray said. There is a possibility that funding could be reduced further; the potential impact of that has not yet been assessed.

“What we do know it means is that it’d definitely reduce our capacity to



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execute centrally managed R&M, because there will be less,” she said.

Now is the time for DPWs to posture themselves for next year, Ray said. Scrutinize contracts and, if the contract has grown, look for ways to reduce scope.

“That’s setting yourself up for success next year,” she said. “Difficult decisions have to be made; we all understand that. There’s going to be tradeoffs. If you have growth in a contract, you need to be prepared to say what else is going to come off the table.”

Ray discussed manpower reductions. She counseled DPWs to continue to document positions on their Tables of Distribution and Allowances and ensure they conform to the required Standard Garrison Organization structure.

“And then, work with your resource managers to correctly identify your over-hires,” she said. “A lot of those aren’t documented anywhere, and the numbers



Miriam Ray, chief of the Business Operations Branch, talks about resources, manpower and GFEBS.

don’t match.”

Ray advised garrison commanders to be cognizant that DPWs account for the majority of garrison funding, and they do their whole business in GFEBS, a system that has been very challenging to learn and incorporate into daily use.

“It’s really turned their world upside down,” she said. “The message here is, ‘Be patient as we work through this.’ It’s absolutely the right thing to do; it will provide us with visibility, transparency, consistency across the Army, but it’s going to take us years to get there.”

Facilities Management

Gus DeJesus, chief of the Facilities Management Branch, announced a big change in Sustainment, Restoration and Modernization project approvals. SRM projects that increase the footprint of a building must be sanctioned by Headquarters, IMCOM.

“If you’re going to add square footage to a building using SRM dollars, you need to come to Headquarters for approval,” he said.

DeJesus responded to questions about the process and the turnaround time for these approvals. He said that IMCOM, without exception, will be using the Real Property Planning and Analysis System and the real property inventory to make its determination, so the approval or disapproval should be quick. The bottomline, he said, is that garrisons must correct their RPLANS prior to submitting a request for a square footage increase on that particular category code and ensure there is no potential in similar category codes to repurpose the facility to accommodate the new requirement.

An audience member asked whether this



Gus DeJesus, chief of the Facilities Management Branch, listens to an audience question during his presentation on SRM project approvals, Career Program 18 and the DPW Academy.

policy applies to customers who provide their own funding to build facilities on post. The answer was that it does. The concerns are the trend toward square footage growth on installations and the possible use of excess facilities rather than building new.

DeJesus serves as the Career Program 18 coordinator for IMCOM, too. He has 22 intern allocations this year and is looking for locations that could use one or more of the allocations. If IMCOM cannot fill these intern positions, they will have to be returned to the career program. He appealed to DPWs to let him know if they have the capability to take on interns.

One attendee suggested using intern positions in locations where it is known there will be retirements in the near future. Some over-hire adjustments would have to be made to accommodate such an effort, and Chislett said that that suggestion would be examined.

DeJesus also spearheads the DPW Academy, which added five courses this year.

“Next year, I’m looking to establish about eight more courses,” he said. He mentioned housing and inspection of infrastructure such as dams and bridges as curricula that may be included under the DPW Academy umbrella next year. Possible future





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 topic areas include master planning and real property.

Energy and Utilities

Qaiser Toor, chief of the Energy and Utilities Branch, said that energy is one of the Army's top priorities.

"The stars are all aligned, and we don't get these opportunities very often," Toor said. "Please take advantage of this."

Many garrisons have good energy teams, but some have only one part-time energy manager. Installations that have only a part-time energy manager do not have strong programs, he said, and a robust energy program is essential in the current environment.

"We have identified positions on the TDA for energy managers — 5 million square feet, and you get one energy manager," Toor said. "It's not one size fits all. It doesn't mean you have one energy manager for a post. You're going to have



Qaiser Toor, chief of the Energy and Utilities Branch, speaks about one of the Army's top priorities — energy.

four, five, six people depending on your square footage."

The Army's net-zero goals had been presented at the symposium's plenary and breakout sessions. Toor said working toward net-zero installations will be a learning experience across the Army. He advised those posts that were not selected as pilot programs but have net-zero initiatives to continue them.

Toor said that metering will be funded, so DPWs will be able to meet the 2012 deadline. Connectivity, on the other hand, is a challenge. Headquarters, IMCOM, is working on a solution to allow the systems to be on the net at the garrisons.

Certified energy manager training is scheduled for June 22-24. DPWs with energy managers who have not been to the course should nominate them for this training, he said.

"Depending on the demand, we might give another course," Toor said. "My goal is to get all the energy managers at least CEM trained."

Another of his goals is to have Energy Awareness and Conservation Assessments conducted once every four years on each garrison. For an assessment, a contractor spends a week at the installation and develops no-cost and low-cost project suggestions.

"These are well worth the money," he said. "They are only about \$20,000 to \$25,000."

Toor talked about the importance of accurate information in the Army Energy and Water Reporting System saying that it can't be overemphasized. This data is used extensively for reporting upward and decision making.

Rate setting is another key effort, Toor said.

"At a lot of garrisons, we are not getting all the money we are owed from reimbursable customers, because we are not updating our utility rates," he said.



Al Carroll, chief of the Master Planning, Military Construction and Real Property Branch, provides an overview of his three areas of responsibility.

They should be updated at least annually. One garrison lost \$5 million through use of old utility rates.

Master Planning, Military Construction and Real Property

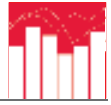
Al Carroll, chief of the Master Planning, Military Construction and Real Property Branch, provided an overview of the three areas for which he is responsible.

Updates to the Unified Facility Criteria, the Master Planning regulation and the *Master Planning Technical Manual* will be published soon, he said.

Carroll also touched on the importance of energy issues as evidenced by the many discussions at the symposium. Area development plan is a place that installations can incorporate energy into their master planning.

"We need to think of energy beyond the building envelope," he said.

Carroll also provided an overview of Military Construction funding. The fiscal 2012 budget is in the works, and the fiscal 2013-14 budget request is at the senior commander level for comments. He noted that projects requested for 2013-17



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that did not include a funding source were routinely moved to 2017.

RPLANS will be used to determine requirements for future SRM funding, Carroll said. A multi-year effort has been under way involving IMCOM garrisons, regions and headquarters, along with the Office of the Assistant Chief of Staff for Installation Management to perfect reporting in the system so that funding levels reflect actual requirements.

A Real Property Operations Order will be issued soon on relocatable buildings, he said. That's a high-profile issue that needs to be dealt with.

An audience member asked whether it is necessary to enter structures that will be demolished into the installation's real property inventory

"You can demo a building that you own with your own money at any time," Carroll said. "If you want to seek additional funding, [the structure's] got to be reflected in the real property inventory."

Carroll introduced three subject matter experts who spoke about energy and sustainability.

Jennifer Ramieriz, a Corps of Engineers' Seattle District architect, talked about an innovative process for making a building footprint as energy-efficient as it can be. Hal Alguire, the Fort Carson energy manager, spoke on what can be done at the area development plan level different from the building level. Lyndsey Pruitt, an architect with Corps of Engineers' Headquarters, discussed what can be done fence-line-to-fence-line to achieve net-zero capability.

Housing

Ron Whited, chief of the Housing Branch, talked about areas of confusion his staff sees concerning the Basic Allowance for Housing rate, certificates of nonavailability and the number of Soldiers per room. He also touched on training and

the Enterprise Military Housing operating system.

The BAH represents the fair market value of rent that would be paid in the community plus utilities and insurance, Whited said. The rate is derived largely from data provided by the installation's Housing Services Office, so if the BAH is thought to be inaccurate, consult the Housing Services Office. Ensure that the housing surveyed is adjusted to reflect the type of housing appropriate for Soldiers and their Families.

"We're not just looking for vacant housing," he said. "We're looking for quality housing."

Misinterpretation of the use of certificates of nonavailability leads to more Soldiers housed off post at greater cost, he said. The problem occurs when a unit reaches 95 percent occupancy on its own footprint and then houses Soldiers off post rather than looking on post for vacant barracks that could be used.

The number of certificates of nonavailability has been significantly reduced, but this scenario still costs the Army about \$68 million annually.

"This is money that's really low-hanging fruit," Whited said. "It would be easy for us to capture."

Another area of confusion is the "One-Soldier-One-Room" standard. Some garrisons try to apply this to renovation projects. The standard is for new construction only, he said.

Whited talked about the IMCOM-developed exportable training model that allows in-house training of personnel on housing policy, operations and issues. The tuition, travel and per diem costs are centrally funded. The goal is to fill knowledge gaps among housing personnel.

"We're going to take the show on the road," Whited said.

The eMH, which the Army obtained from the Navy, is superior to the Army's



Ron Whited, chief of the Housing Branch, talks about areas of confusion his staff sees concerning the BAH rate, certificates of nonavailability and the number of Soldiers per room.


old HOMES system, according to Whited. IMCOM has deployed eMH to 32 garrisons, and it will be operational at 81 garrisons by the end of 2012.

Virtual networking

Chislett wrapped up the session with encouragement to visit garrisoncommand.com and register for the Public Works section.

"There's a lot of good discussion going on out there," Chislett said. "You can register for the Public Works part of that, and you'll get notification in your e-mail when there are things added."

POCs are Gregg Chislett, 210-424-8626, gregg.chislett@us.army.mil; Miriam Ray, 210-424-8229, miriam.o.ray@us.army.mil; Gus DeJesus, 210-424-8238, gustavo.dejesus@us.army.mil; Qaiser Toor, 210-424-8274, qaiser.toor@us.army.mil; Al Carroll, 210-424-8240, allan.b.carroll@us.army.mil; and Ron Whited, 210-424-8252, ronald.whited@us.army.mil.

Mary Beth Thompson is the managing editor of the Public Works Digest. 



Career Program 18 presents 2011 awards

by Julie Krebs

One of the most valuable lessons of childhood is that people are more important than things. It is easy to lose sight of that truth as deadlines approach and the hustle of the modern office keeps people ever-focused on the tasks at hand. It's worthwhile to take a moment out of busy schedules to recognize those who have risen above the call of duty to enrich the lives and programs for which they labor.

An opportunity to honor several valued civilian team members occurred April 13 at this year's Career Program 18 Annual Training Workshop in Orlando, Fla. Four CP-18 awards were presented: *Journeyman of the Year*, *Senior Journeyman of the Year*, *Activity Career Program Manager of the Year* and *Lifetime Achievement*.

Nominations for these awards came from across the Army, including Installation Management Command regions and U.S. Army Corps of Engineers divisions. Each region and division solicited nominations and paneled the applicants to select its finalist. The finalists were reviewed by another panel and ranked according to their personal contributions to the CP-18 mission and goals, their advocacy of CP-18 programs and their demonstrated mentoring.

Chad Rhynard, Walla Walla District, USACE, received the *Journeyman of the Year* award. Rhynard, chief of the

Electrical Design Section, demonstrated a passion and commitment to recruiting and developing new talent that led him to volunteer as the district's CP-18 Intern Program Coordinator. He established quarterly intern meetings, mentored interns in public speaking and professional licensing, and engendered a positive working relationship among interns and supervisors.

Rhynard actively worked with local universities and attended career fairs to recruit and educate new employees. He also worked with the personnel office to refine the district's New Employee Orientation program. His tireless efforts and exceptional performance resulted in a successful intern program that continues to develop future leaders.

Jeffery Ide, San Francisco District, USACE, was named the *Senior Journeyman of the Year*. Ide, chief of the Civil Design Section, is a past graduate of the Tier 3 Leadership Development Program and recently participated in providing exceptional LDP utilization assignments for new participants. He provided valuable guidance while serving as a member of the district's LDP Steering Committee and greatly assisted its Tier 2 program by mentoring participants, developing curriculum and teaching leadership courses.

Ide's tireless efforts helped to educate and encourage students to pursue

Acronyms and Abbreviations	
CP-18	Career Program 18, Engineers and Scientists – Resources and Construction
IMCOM	Installation Management Command
LDP	Leadership Development Program
USACE	U.S. Army Corps of Engineers

engineering as a career and served as a recruitment tool to attract future engineers to the Corps of Engineers. He also volunteered as co-chair of a community math program and competition for public and private elementary and high school students.

Joey Skinner, Redstone Arsenal, Ala., IMCOM, received the *Activity Career Program Manager of the Year* award. Recognizing the current demographics of the directorate workforce in combination with the harvesting of personnel by incoming organizations, Skinner, the deputy director of Public Works, energized a robust workforce revitalization initiative. This initiative consisted of a four-prong approach: creating close relationships with local high schools, community colleges and universities; employing highly recommended students as temporary employees; converting those with the best attitudes, work ethics and skill sets to cooperative education positions; and transitioning those who would provide the greatest value to the directorate in the future to intern positions upon graduation.

Skinner's intern program gained a ➤



Chad Rhynard
Courtesy photo



Jeffery Ide
Courtesy photo



Joey Skinner
Courtesy photo



Mohan Singh
Photo by F.T. Eyre



Career development: Breaking your own glass ceiling

by Jim Hearn

So you want to be a member of the Senior Executive Service? Or you have other — pick a grade or position — aspirations. Do you have a plan to get there? If you don't, you are like many of your colleagues who react to opportunities rather than target their development to better their chances of success.

My thesis, from personal experience and 25 years of selecting staff, is that most people don't plan their careers; their careers just happen to them. Some are lucky, and some are not. While I will not debate the existence of "glass ceilings," I will say that many glass ceilings are of our own making.

Before we examine the external tools required to market our talents, introspection is required to ensure we have the right fit for the targeted position and organization. "Know thyself," is a quote often attributed to Socrates or one of the other ancient Greek sages. While true then, it is also true now. Understanding the strength and direction of your personality traits is critical to assessing a potential position for a right fit.

There are many professional tools available on the market to assess your personality traits. One that is often used in government courses is the Myers-Briggs



Jim Hearn
Photo by Harry Weddington,
Omaha District

Type Indicator. Myers-Briggs targets four personality traits and looks at the continuum of their intensity: introvert-extravert, intuitor-sensor, thinker-feeler and perceiver-judge. While this is not an article on the Myers-Briggs, I will use the introvert-extravert continuum to illustrate my point.

If you are a strong introvert, choosing a position that requires you to constantly interact with the public will be a challenge. In the same way, if you are a strong extravert, choosing a position whose characteristics involve predominantly solitary activities will also be a challenge. Doing research on the position requirements is important because these

characteristics may not be clearly stated in the published job announcement.

An important point is that, even if you have an intense personality trait, you can still function in a job that may be the opposite of your desired state. Over time, though, the effort required to perform outside your comfortable personality trait will take its toll.

What is your passion? That is an important question to understand as you look at potential positions. If you can marry your passion with the requirements of the job, you will relish going to work every day. It could be leading people, solving complex problems, protecting the environment or constructing sustainable facilities. Doing what we are passionate about is a powerful motivator for success and advancement.

As we journey through our career, our priorities change. It is very difficult to have multiple priorities in one's life. Something has to slip. My point is that if you have outside priorities, your career progression might not advance as quickly as anticipated.

Be realistic on how fast you can progress if you have competing priorities. For example, raising young children, getting a master's degree at night, training for an Ironman Triathlon all require Herculean effort. It would be rare to find someone who could master the first priority and still give 110 percent to his or her career advancement.

In summary, knowing yourself is a categorical imperative in planning your career. Put in the effort to explore your inner workings to ensure the best fit with potential positions.

Jim Hearn, Ph.D., is the director, Regional Business, Northwestern Division, U.S. Army Corps of Engineers, and a CP-18 Career Program Planning Board member.

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reputation for excellence and inspired other agencies to look at ways of revitalizing their workforces.

Mohan Singh, Headquarters, USACE, was presented a *Lifetime Achievement* award. In any given year, the functional chief representative may choose to offer an award in a special category of service. These discretionary awards are not competed and are based on involvement in the career program goals and objectives, impact on the workforce and enduring contributions.

Singh, who was triple-hatted as the chief of Interagency and International Support, chief of the North Atlantic

Division Regional Integration Team and chief of the TransAtlantic Division Regional Integration Team, retired in April after dedicating 33 years of service to USACE as one of its most respected civilians. His legacy includes design and construction of some of USACE's most complex and unique projects, leadership and management of major programs, and promulgation of master planning, design and construction policy.

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