



2019 Secretary of Defense

# Environmental Awards

Sustainability – Non-Industrial Installation  
86<sup>th</sup> Civil Engineer Squadron, Ramstein Air Base

## Introduction

Ramstein Air Base (AB) is located 6.2 miles west of the city of Kaiserslautern, in the center of the State of Rhineland-Palatinate in southwest Germany. The Installation manages 3,984 acres, including 47 acres of wetlands and 1,006 acres of forested land.

The Installation is the headquarters for United States Air Forces in Europe (USAFE) and Air Forces in Africa; Third Air Force; and is a North Atlantic Treaty Organization, Air Component Headquarters. The Host Unit at Ramstein AB, the 86<sup>th</sup> Airlift Wing, comprises seven groups, 27 squadrons, and three Geographically Separated Units located in Belgium, Spain, and Portugal. The Wing's mission is the operation and maintenance of airlift assets consisting of C-130Js, C-20s, C-21s, C40B, and C-37A Gulfstream aircraft throughout Europe and Africa. Ramstein AB maintains operational units, support organizations, and related

facilities for the 53,000 people in the Kaiserslautern Military Community, the largest population of Americans overseas.

## Background

Ramstein AB uses its Environmental Management System (EMS) to minimize operational environmental impacts across multiple environmental program areas including air quality, solid waste diversion, energy and water efficiency, restoration, hazardous material management, storage tanks, and natural and cultural resources management. The EMS enhances collaboration between environmental staff, process owners, and Host Nation authorities, and provides a comprehensive framework that guides implementation of sustainability practices at the Installation. Those practices effectively support the mission by enhancing compliance with regulatory requirements, increasing resiliency, reducing

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impacts to natural and man-made resources, and avoiding or reducing costs.

## Summary of Accomplishments

### Livable Communities, Master Planning, and Green Buildings

During the accomplishment period, Ramstein AB initiated and coordinated 312,000 square feet of program requests for land acquisition, including a base perimeter fence expansion of 1,640 feet. Subject Matter Experts including real property managers and installation planners provided thorough review and analysis of 43 new space requests, which informed seven professionally-prepared space use working groups. Subject Matter Experts and working groups also validated 165,000 square feet of space requests and identified appropriate vacant and underutilized space to accomplish 25 moves.

Ramstein AB identified improvement opportunities which streamlined and restructured the Facility Board Working Group process ensuring maximum utilization of 18 million square feet of facility space. The Working Group oversaw a \$5 million dormitory renovation project, which retrofitted 96 rooms with new bathrooms, bolstered quality of life, and restored quality quarters while avoiding \$1.2 million in housing allowance costs during the accomplishment period.

Ramstein AB continues to identify energy savings by developing and advocating for top-notch Energy Management Control System building updates, saving energy consumption costs by approximately 2.5% annually.

The Ramstein AB Environmental Team spearheaded efforts to provide indigenous vegetation on the flight line. Mehlinger Heide is the largest dry heather area in southern Germany, part of which resides on Ramstein AB. Material gained from the Mehlinger Heide

has been used to seed and mulch grounds adjacent to the flight line. Efforts have avoided \$1.5 million in annual ground maintenance costs and reduced Bird/Wildlife Aircraft Strike Hazard efforts while keeping the airfield and its 31,000 sorties per year safe.



#### Mehlinger Heide

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Ramstein AB Civil Engineering conducted an Installation-wide asbestos and artificial mineral fiber study of 587 industrial and administration facilities at Ramstein AB and one Geographically Separated Unit. The Environmental Team engaged with the Installation housing flight who helped to address potential environmental and health risks to the entire population.

The Environmental Team's spirit of stewardship led to the development of a demolition and disposal concept which provided complete cleanup of a burned down building. The cleanup operation was complete in less than 20 weeks and consisted of special/hazardous waste disposal in accordance with rigid safety regulations. Team efforts ensured that all United States and host nation environmental and health

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protection requirements were adhered to during building demolition.



### **Demolition and Disposal**

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The Ramstein AB Project Management Team executed and sponsored five high performance buildings and sustainable construction projects providing efficient energy utilization spanning 325,000 square feet. All projects adhere to German industry and United States Federal standards. Ramstein AB Energy Managers also developed a ramp lighting project, which upgraded 422 lights from inefficient metal halide lighting to LED. The new ramp lighting will cut mega-watt usage by 50% equating to an annual operational and maintenance savings of \$439,000.

The Installation implemented water showerhead efficiencies via a low investment cost of \$4,500. Upgrades consisted of installing 6,000 water reducers in Installation showerheads. The new showerheads realized a savings of \$1.5 million in annual electric and water usage which paid for themselves in two days. Showerhead water rates were reduced from 3.7 gal/min to 1.85 gal/min.

No labor costs were associated since work was performed by residents and users.

Ramstein AB continues to execute an Energy Savings Performance Contract which analyzes Installation and Geographically Separated Units while focusing on lighting, heating and air conditioning, and Energy Management Control System building upgrades. The objective of the contract is 12.5% energy savings and increasing base resilience.

During the accomplishment period, the Defense Red Switch Network's heating and air conditioning system was upgraded. The Network supports Ramstein AB communication management. Upgrades resulted in an energy consumption reduction of 30% and protected \$48 million of equipment from overheating.

Ramstein AB developed a project to remodel USAFE's only indoor aquatic center, providing a complete solar thermal hot water system which supplements the pool district's hot water system and increases the percentage of renewable energy used. The system will provide 21% of the total pool heat demand annually.

Ramstein AB partnered with a local German heating company to develop a formula used to renegotiate heating rates. Improvements are projected to generate a cost avoidance of \$1.2 million annually over 10 years. Ramstein AB is also executing one of 12 Air Force Energy Resilience Conservation and Investment Program projects. The \$2.14 million project includes a centralized master control system for 79 buildings totaling 22 million square feet. Projected savings from investments include a 25% energy reduction from those buildings, equating to \$826,000 per year.

Ramstein AB executed a base-wide traffic study to identify additional energy savings and reduce the Installation's carbon footprint. The

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Installation implemented study recommendations, including removal of multiple traffic lights, and construction of traffic circles. Traffic circles eliminate electric usage from traffic lights, improve traffic flow by 50%, reduce idle time, and reduce Carbon Dioxide emissions.

### **Procurement of Sustainable Goods and Services**

As of last year, no Ozone depleting substances have been approved Installation-wide. Substitutes have been procured in products such as construction foam. The Environmental Team partnered with Contracting squadrons to ensure the Installation environmental commitment to reduce and replace hazardous materials is included in all Installation contract packages. The Environmental Team replaced and eliminated Aqueous Film Forming Foam (AFFF) from 17 hangar systems and 15 fire trucks. Replacement efforts were driven by increased national and international interest in legacy AFFF due to presence of Perfluorooctane Sulfonate and Perfluorooctanoic Acid (PFOS/PFOA). This in turn led to the Air Force policy to transition to an alternative military specified-approved AFFF formulation that is PFOS-free, contains only trace quantities of PFOA, and is more environmentally responsible than the legacy AFFF it is replacing. Ramstein AB has also supported Air Force policy by instituting process changes for day-to-day and emergency response actions involving firefighter AFFF operations. The Installation no longer allows uncontrolled AFFF releases from system testing, is retrofitting vehicles with no-foam ecologic carts to allow foam-free vehicle system tests, and in the event of emergency response, the site/location is treated as a hazardous spill.

### **Material Management**

Ramstein AB is committed to reducing hazardous material usage on base. During the accomplishment period, the Environmental

Team provided hazardous material training to 290 users. The Installation maintains 100% compliance and has reduced expired shelf-life waste disposal by 35%. A hazardous materials process improvement contract identified several product replacement opportunities and reduced impacts to Installation organizations. Ramstein AB's efforts to improve coordination with contracting offices and provide frequent training are a direct result of process improvement contract recommendations. Over 100 hazardous material audits occurred during the accomplishment period. Each audit promotes awareness and helps to ensure full compliance.

### **Compliance with Executive Order 13834**

Ramstein AB's efforts ensure routine monitoring of over 870 groundwater monitoring wells. The Installation has led the way across USAFE, impressing Host Nation regulators through a drinking water initiative where a fully-owned operation from the well to the faucet secures water for those working and living on Ramstein AB. The Environmental Team also utilized their persuasive dexterity in negotiations with Host Nation water regulators. The Team enabled \$6,000 in net savings during the accomplishment period. These preventive efforts enhanced communications between the Installation and Host Nation authorities to ensure the authoritative agency was fully aware of the Ramstein AB program and any concerns before they became a problem. Ultimately efforts avoided expensive fees and possible enforcement actions.

Ramstein AB continued to innovate by intensifying their exceptional groundwater model. Over 900 hydro-geological studies with data from approximately 1,000 wells were incorporated in the model. The three-dimensional model is an excellent tool to understand groundwater influences, including contaminant flows. Consequently, the profound

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geo-hydraulic knowledge resulted in a significantly reduced effort to secure the permit for drinking water production on Ramstein AB.

During the accomplishment period, an effective on-call spill response team contained and abated 100 spills, with 97% of spills having no environmental impact and releasing no off-base contamination. The team ensured all partners were accurately informed of spills within 10 minutes of incident, a reduction of 90% from previously reported delayed communication. This action strengthened the Host Nation community trust in Air Force programs and mitigated clean-up and sampling to the minimum necessary.

Ramstein AB invested more than 450 man-hours to meetings with Host Nation regulators, providing 100% compliance and averting enforcement actions. Partnerships with Host Nation water authority leadership continues to support the success of USAFE's clean-up program.

The Installation also meticulously manages the Storage Tanks Maintenance Program, ensuring compliance with all regulations. The Program includes inspection of over 400 tanks, removal of 20 underground storage tanks, and elimination of multiple sources with high potential for contamination. The Installation initiated an in-house tank maintenance team available for small repairs. During the last year, this initiative saved \$33,800 and 520 man-hours while supporting the mission.

Ramstein AB provides an ecosystem for a variety of organisms managed through the Natural Resources Program. Program efforts have cleared over 100 acres of non-native and invasive species and introduced and fostered a natural forest mix to promote active and natural reforestation. As a result, Program staff have observed high densities of Skylarks, a bird species declining over the past 20 years.

The Installation supported bat species conservation by providing artificial nests and conducting two bat surveys that led to the identification of five species new to Ramstein AB. Another species benefiting from Ramstein AB's conservation efforts is the critically endangered Praying Mantis, which had their habitat saved thanks to the Natural Resource Program's efforts to restore 215,000 square feet of overgrown grassland.



### **Species Management**

Ramstein AB sustainability efforts identified threatened and endangered species on the Installation. An Environmental Scientist holds a Water Frog, of the *Pelophylax* genus, found near the Ramstein AB runway during an environmental survey.

In Fiscal Years 2017 and 2018, Ramstein AB has executed approximately \$850,000 and planned/programmed \$20 million supporting 70 valid projects during the clean-up process to close 90 sites, equating to a 78.4% closure rate. Success supports 4,000 acres of unrestricted future land use and provides unfettered execution and flexibility for a multitude of Ramstein AB mission-essential tasks.

### **Recycling and Waste Diversion Program**

Ramstein AB continues to improve waste diversion rates with an overall 630 tons of hazardous waste accurately monitored. The Installation trained 150 new hazardous waste managers during the accomplishment period to

ensure all accumulation points remain in compliance. They also successfully trained over 1,000 newcomers on the importance of recycling and energy efficiency during weekly newcomer briefings. More than 1,000 disposals occurred during the accomplishment period, resulting in hazardous waste being successfully diverted and handled as recyclable material. This exceeds the Air Force metric for diversion. Household hazardous waste collection and disposal occurred at two recycling centers. This zero-cost addition to hazardous waste management efforts avoided \$40,000.



### **Ramstein AB Recycling Facility**

Trash collection facilities processed a massive 15,000 tons of material diverted from the waste stream. Materials destined for recycling include paper, plastic, glass, scrap metal, wood, electronic waste, and tires, making it the largest recycling program in USAFE.



### **Newcomer Training**

Ramstein AB successfully trained over 1,000 Installation newcomers during weekly newcomer briefings. Training focuses on recycling and the efficient use of energy and water.

Trash collection facilities processed a massive 15,000 tons of material diverted from the waste stream. The materials destined for recycling include 1,800 tons of paper, 1,000 tons of plastic, 319 tons of glass, 382 tons of scrap metal, 1,800 tons of wood, 96 tons of electronic waste, and 1,000 tons of tires, making it the largest recycling program in USAFE. During the accomplishment period, the Installation's diversion rate included 68% integrated solid waste, encompassing over 100 different recycled items.

### **Compliance with Sustainable Landscaping**

In pursuit of low landscape maintenance and in accordance with sustainable principles, Ramstein AB allows only native plant species, adapted to local climate, to be used in landscaping projects. This policy decreases the need for supplemental water and fertilizers substantially, thereby eliminating high cost landscape maintenance. Ramstein AB promotes the use of rare indigenous bushes for base landscaping, creating an excellent habitat and food source for threatened and endangered species including birds and bees.

Ramstein AB continues to identify opportunities to reduce landscape maintenance costs. The Installation installed a 300-foot deep well to water the golf course, eliminating the need for potable irrigation. This action will result in over 264 million gallons in water savings equating to approximately \$200,000 in costs avoided during the project pay period. The innovative well installation provided for a 90% annual decrease of potable water consumption for golf course irrigation, even during peak summer watering months.

During the accomplishment period, Ramstein AB produced 500 tons of composted material,

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generating free landscaping resources for grounds maintenance and military family housing residents. The community benefited from the composting facility, which delivered 46 million square feet of twigs and clippings. The compost also eliminated procurement of mulch and soil for the golf course, saving \$40,000 per year and reducing maintenance costs by 15%.

### **Education, Outreach, and Partnering**

Ramstein AB is a proud member of local organizations such as the Mehlinger Heide Foundation, which conducts regular high-level meetings with local forest directors regarding this important region. The Installation has an established combined noise abatement committee chaired by the Wing Commander, a local mayors' forum chaired by a three-star General, and a joint Energy forum with the city of Kaiserslautern. Collaborative groups not only protect and enhance German natural resources but also strengthen Ramstein AB partnerships with surrounding communities.

Ramstein AB is committed to providing outreach on Science, Technology, Engineering and Math to local community members. During the accomplishment period, the Team presented to over 300 science students on Career Day. They also engaged over 150 students during Earth Day events, furthering educational opportunities to future generations.

Ramstein AB communicates with the community through newspaper articles, school events, flyers, and displays at outreach events. During the accomplishment period, the Ramstein AB Environmental Team spearheaded development of a reduce/reuse/recycle booklet which details local recycling procedures for both on-base and popular off-base German towns and villages. The booklet includes descriptions and

disposal recommendations for over 100 types of waste, pick-up schedules, and points of contact.



### **Outreach and Education**

A Ramstein AB Falconer presents to middle school students during Earth Day festivities. This was one of many presentations provided to over 300 local science students during the accomplishment period.

The Installation also provides ongoing in-house training on a variety of topics including hazardous material management and waste disposal. During the accomplishment period, the Installation trained more than 600 facility managers on ways to promote pollution prevention, recycling, and energy management conservation efforts as part of their duties.

Ramstein AB, the hotbed for USAFE operations, is a committed installation to adhering to host-nation statutory and regulatory standards, and United States policy to meet and exceed energy and environmental performance requirements. Ramstein AB had and proactively continues to emphasize measures that increase efficiency, optimize performance, and reduce environmental impacts while pragmatically cutting costs in support of ever evolving Wing and higher headquarter missions.