

FY12 Secretary of Defense Environmental Award  
Environmental Quality/Industrial Installation  
Tobyhanna Army Depot

## 1. INTRODUCTION

Tobyhanna Army Depot (TYAD) is the largest, full-service electronics maintenance facility in the Department of Defense (DoD). TYAD's mission is total sustainment, including design, manufacture, repair and overhaul of hundreds of electronic systems for command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems for the Warfighter – worldwide.

TYAD is the DoD's recognized leader in the areas of automated test equipment, systems integration and downsizing of electronics systems. The Army has designated TYAD as its center of industrial and technical excellence for communications-electronics, radar and missile guidance and control. The Air Force has designated TYAD as its technical source of repair for command, control, communications and intelligence systems. TYAD utilizes lean principles to efficiently carry out the mission and provide the Warfighter with the highest quality product. TYAD has won Shingo Medals for efficient manufacturing in 2006, 2007, 2008, 2010, 2011 and 2012.

TYAD has a workforce of 5,300 government and contract employees, including engineers, electronics-mechanics, computer specialists and industrial trade workers; who perform 130 unique jobs. TYAD is the largest employer in the region with an annual economic impact of \$4.4 billion.

## 2. BACKGROUND

TYAD is registered and third-party certified to the International Organization for Standardization (ISO) 14001:2004 Environmental Management System as well as ISO 9001, Aerospace Standard 9100 and 18001 Occupational Health and Safety Assessment.

The Environmental Management Division (EMD), Directorate of Industrial Risk Management, at TYAD is responsible for ensuring that the facility is compliant with environmental regulations and works to reduce the footprint of the facility through pollution prevention, energy efficiency and resource conservation initiatives. EMD personnel utilize compliance inspections and ISO 14001 internal and external audits to detect environmental deficiencies and initiate corrective actions. Cross functional environmental Objective and Target teams are established to bring in ideas and contributions from across TYAD to tackle environmental challenges. Over the past two years, these Objective and Target teams have included: wastewater discharge, hazardous material management, energy conservation and contractor environmental compliance. This cross-functional approach ensures that multiple stakeholders have buy-in and contribute to our compliance and mission of continual improvement.



TYAD is home to a diverse population of wildlife species. The North American Black Bear species ranges through much of forested North America from Mexico to Alaska and from Florida to northern Canada. The one pictured here was found in an Eastern Hemlock tree on the northwest corner of TYADs property.

### 3. NATURAL RESOURCES

TYADs Natural Resource Program utilizes an ecosystem-based approach to ensure the sustainment of the military mission, as well as long-term sustainability of our country's natural resources. Located in Monroe County in the Pocono Mountains of Northeastern Pennsylvania, TYAD covers 1,296 acres and is bounded by state parks and game lands. More than half of TYADs property remains predominately undeveloped, wooded, rolling hills and protected wetlands. In an ongoing effort to identify resources and effectively plan for future mission activity in FY12, TYAD completed three phases of planning level surveys for Flora, Fauna, Vegetative Communities and a total delineation of all wetlands on TYAD property. These surveys will allow TYAD to focus on specific conservation efforts going forward that minimize impacts and maximize our planning capacity for the mission. The TYAD property is in the headwaters of the Lehigh River watershed. The upper Lehigh River drains the western portion of the property, while Tobyhanna Creek and its tributaries (Pole Bridge Run and Hummler Run) drain the eastern portion. These creeks are all within the Lehigh River watershed, which is part of the greater Delaware River basin. The Lehigh River basin, from its source to Tobyhanna Creek, is listed as Exceptional Value (EV) waters with migratory fishes. Therefore, those wetlands on the TYAD property that fall within the Lehigh River watershed are considered EV wetlands. Thirty six wetland areas totaling 159 acres are located within the TYAD property. These wetlands provide habitat for fish, waterfowl and various types of wildlife including ducks, geese, beavers, deer and turtles. TYAD remains committed to protecting the natural resources within its borders, as well as being stewards for conservation within the larger Pocono Mountain community.

TYADs natural resource projects include implementing migratory bird conservation, such as osprey nesting platforms, the construction of wood duck boxes, mallard platforms and kestrel boxes. TYAD strives to minimize all erosion and sedimentation from construction projects that can affect jurisdictional wetland habitats. TYADs ecosystem approach is used to maintain the balance between forest regeneration and wildlife preservation by managing the size of White-tailed Deer herds. In addition, TYAD maintains a low-cost firewood program for employees by utilizing trees that have no timber value and are storm damaged or deemed necessary for removal for construction projects.

#### 4. WATER SECURITY AND NET ZERO

TYAD has been selected to participate as a Net Zero Water Pilot Facility. Net Zero Water Pilot Facilities are seeking to reduce potable water use by 50% between FY07 and FY20. TYAD has achieved a 38% reduction in water use from the 2003 baseline year with no external funding.

These savings are the result of a proactive water management team focused on water reduction, water recycling and water reuse. During the last two fiscal years, TYAD instituted projects to include acoustic leak detection, water system pressure monitoring, drinking water system leak detection survey, increased water metering, water recycling and reuse in industrial operations, rain water harvesting and public awareness. Public awareness efforts include incorporating water saving information in the annual Consumer Confidence Report, ISO 14001 informational poster and an information pamphlet titled *Water Conservation*. TYAD has also instituted an awards program to recognize employee contributions for water-saving ideas.



One of three water monitoring panels used to track real-time water pressure and water quality parameters.

The use of acoustic leak detection sensors is an innovative approach to determining the source of water distribution system leaks. Acoustic leak detection, when used in



conjunction with metering and real-time water pressure monitoring, forms the foundation of TYADs leak detection efforts. It is through the routine monitoring and maintenance of the system that we ensure continuous improvement and continued success in meeting our Net Zero goals. Water loss in distribution systems is one of the largest consumers of potable water, the leak detection system at TYAD ensures that we are on target to meet our Net Zero water goals by quickly addressing water loss in the distribution system.

Through these efforts, TYAD has saved over 20.4 million gallons of potable water in the last two fiscal years alone. Projects utilized existing commercial off-the-shelf technology and applied these technologies to the military industrial complex. In some cases, existing technologies were retrofitted to add radio telemetry and data storage solutions.

TYAD has shared its efforts and experience with other installations across DoD. Success stories have been posted on the Engineering Knowledge Online web site for Wastewater Reuse, Water Chiller Installation and Water Leak Detection. The developed Scope of Work for leak detection and installation of acoustic sensors was also placed online to share with all participants in the Army Net Zero program. The TYAD acoustic leak sensor project was recently awarded the 2012 Department of Energy, Federal Energy and Water Management Award in the project category. Program successes were also featured in Public Works Digest, Volume XXIII, May/June 2011. In September 2012, TYAD hosted the Army Net Zero water working group with 30 representatives across the Army sharing best management practices on water conservation.

Water savings have helped the overall security posture of TYAD by ensuring long-term water availability and the ability to take on additional mission workload. Water savings help to lower the cost of producing end items for the Warfighter and also trickles down the supply chain, requiring less chemicals for water treatment and fewer vehicles delivering chemicals to TYAD.



EMD personnel install an acoustic leak detection sensor. These sensors are used to monitor water lines for leaks using sound waves. This innovative approach has applicability across DoD and has been shared across the Army as a best management practice.

## 5. ENVIRONMENTAL DESIGN IN INDUSTRIAL APPLICATIONS

Building 30, the new C4ISR facility at TYAD, is a testament to the environmental planning and strong emphasis TYAD places on energy conservation and utilizing new technology to reduce environmental impact. This building is currently under review for Leadership in Energy and Environmental Design certification. It includes a number of innovative environmental controls and technologies with application across military industrial facilities.

This building includes a large paint booth and two blast booths that feature variable frequency drives to conserve electricity of fan motors, air compressors and heat recovery to reduce natural gas consumption by sustaining thermal energy in exhaust air. This technology conserves energy and has widespread applicability across installations that utilize paint and blast booths for the repair, fabrication and overhaul of mission essential equipment. These systems will provide a savings of 10,131 Million British Thermal Units (MMBTU) annually for an estimated cost savings of \$103,000. Similar construction has begun on an additional 10 paint booths that will result in a total savings of 45,000 MMBTU and \$490,000 in annual utility costs.



Building 30 blast booth media utilizes magnetic wheels to increase the recycling of blast media. This leads to an increase in filter life, reduces maintenance, reduces blast booth downtime, reduces hazardous waste, reduces energy and reduces costs from virgin blast media. Electricity, natural gas and waste reduction are realized by utilizing variable frequency drives.

Utilizing laser stripping technology, employees are able to reduce the electricity costs associated with operating large-scale blast booths, and to also reduce the hazardous waste that is generated in the blast media. Building 30 also features a centralized compressor system featuring variable frequency drives and energy savings equipment controls to serve all applicable industrial operations in the facility.



Laser stripping technologies are being utilized to remove paint from assets. This process saves significantly on electricity by not using the blast booth. It also reduces the hazardous waste associated with blast media.

In 2012, TYAD installed 31 manometer alarms throughout the Industrial Operation Facility. These manometers provide real-time monitoring of paint and blast filters to ensure equipment is monitored for emission controls and to ensure serviceability of equipment. Using real-time monitoring, EMD can alert operators when the efficiency of the equipment is reduced and new filters are required. This project will reduce maintenance downtime and ensure that equipment is up and running in support of the Warfighter.

## 6. RECYCLING

TYAD recycles to conserve natural resources and to protect the environment, as well as to reduce costs. All TYAD organizations and all tenant organizations participate in the recycling program. Information on the recycling program is disseminated to employees via the TYADs newspaper, the *Tobyhanna Reporter*, employee bulletins, Earth Day displays, the TYAD intranet and reports for the Command Staff meetings, which get cascaded to employees. Through the environmental management program, waste and recycling audits are scheduled and conducted on a monthly basis to ensure maximum waste diversion.

Excluding construction and demolition debris, TYAD recycled 5.4 and 4.7 million pounds in FY11 and FY12, respectively. For FY11, this resulted in sales of \$1.3 million and cost avoidance of \$440,000. FY12 sales were \$1 million, with a cost avoidance of \$270,000. TYADs FY11 and FY12 recycling rates were both at 60%, well ahead of the FY15 DoD goal of 50%. The revenue gained through the recycling of materials is used to manage the program, invest in environmental and safety related projects and to support Moral, Welfare and Recreation projects that provide quality of life programs to the workforce and local military families.



TYAD has achieved a recycling rate of 60% for the past two years, far ahead of the DoD goal of a 50% diversion rate by 2015.

In FY12, TYAD diverted 64.96 tons of unusable scrap wood pallets from the wood recycling program to a program that turns them into birdhouses saving \$7,470.23 in disposal costs and benefiting the local community and natural resources.

**7. EDUCATION, OUTREACH AND PARTNERING.**

TYADs EMD has developed a strong relationship with diverse stakeholders in the local community throughout Pennsylvania and the U.S. These partnerships benefit both TYAD and the local community in problem solving and developing sustainable solutions to both everyday and complex environmental issues.

TYAD is a charter member of the Pennsylvania Environmental Partnership of Military Installations, United States Environmental Protection Agency Region III and the Pennsylvania Department of Environmental Protection. It is involved with the local Restoration Advisory Board, the Hazardous Material Management System (HMMS) DoD Program Management Team (PMT), the Northeastern Pennsylvania Pollution Prevention Roundtable and the Pocono Mountains Chamber of Commerce Environmental Committee.

Through TYADs involvement in the HMMS PMT, most of the Army has adopted HMMS as a best practice and, in many sites, also has adopted TYADs web-Material Safety Data Sheet process. It was through the roundtable that TYAD personnel first learned of vegetative roofing (TYAD now has over 100,000 square feet of vegetative roofing). The success of TYADs vegetative roofing has led to implementation at a number of DoD facilities. Through the roundtable, TYAD has also developed a project to install passive solar wall heating on 11 buildings; this project is scheduled for construction in FY13.