

33rd Annual Secretary of the Army Energy and Water Management Award
Installation: Fort Stewart/Hunter Army Airfield
Category: Water Conservation
Award Type: Installation

FY10 Accomplishments

SECTION 1. Project Description.

“Purple Pipe” Initiative. Since the early 1980’s with the construction and use of a centralized vehicle wash facility, FS/HAAF has been actively implementing water conservation measures in operation and planning. Additionally, in an effort to comply with Georgia’s Water Stewardship Act, Executive Orders and meet the demands and requirements to support our Troops and our mission, Fort Stewart has strategically implemented the use of alternative water sources and water conservation measures to include partnerships with the nearby City of Hinesville. More recent initiatives for water conservation have included low flow/no flow plumbing fixtures in new and retrofitted construction, leak detection surveys, infrastructure system upgrades, replacement of leaking water and steam lines, restrictions on outdoor water use, added emphasis on water conservation in our Strategic Plan, and public awareness which have all contributed to a 24% reduction in potable water intensity from a baseline of FY07 through FY10. This result positions the Installation to exceed the potable water reduction goal of 26% well in advance of FY20 as required by Executive Order 13514, “Federal Leadership in Environmental, Energy and Economic Performance.”

In an effort to further conserve potable water, Fort Stewart partnered with the City of Hinesville at no cost to the Installation to install and use “Purple Pipe.” The Purple Pipe Initiative began with the City constructing an off-post wastewater treatment facility which had limited discharge capabilities with a need to develop a reuse water customer base. FS became the City’s major reuse customer when purple pipe was installed and began distributing reuse water in FY10 to Fort Stewart’s central energy plant cooling towers and golf course eliminating use of potable water for irrigation and industrial purposes at these two locations.

Prior to using reclaimed water, the golf course annually averaged about 121,000 gallons of potable water per day for irrigation and the central energy plant consumed approximately 742,000 gallons of potable water per day for operation of 4 chillers. By using reuse water treated to a very high standard, the Installation will save a considerable amount of potable water – approximately 315 million gallons per year. Since the “purple pipe” system became operational in May 2010, the partnership has averaged saving Fort Stewart approximately 200,000 gallons of potable water per day using just one of the four chillers. The project yielded a total of 33.2 million gallons over a 6 month period (5.4 million gallons for the central energy plant and 27.8 million gallons for the golf course). With all four chillers operational at the central energy plant and a full years operation at both the energy plant and golf course, the projected potable water savings is 315 million gallons per year.

By taking advantage of the full water cycle, this purple pipe partnership is a win-win for both Fort Stewart and the City of Hinesville, providing the Installation with an alternate water supply for two of our major water users and the City with

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a viable effluent discharge alternative enabling the environmental permitting of its newest wastewater treatment plant. By producing reuse water, the City will obtain some much needed wastewater capacity, which in turn allows for growth in the community. Meanwhile, the Installation is reducing its impact on the region's major potable water supply source by using this alternative water, is reducing our energy requirements, and has established a mechanism for expanding this resource to support additional irrigation and industrial water needs throughout Fort Stewart (e.g., parade fields, motorpools, etc) which will result in even greater potable water and energy reductions in the future.

SECTION 2. Actions Taken.

Fort Stewart/Hunter Army Airfield is dedicated to timely and focused support to our Soldiers, Army Families, Army Civilians, and surrounding communities. The "Purple Pipe" project is one illustration of how good neighboring collaboration and partnerships have delivered good service for all parties. Being proactive and thinking with a vision by working closely with our neighbors and State regulators will help to preserve water and the environment for generations. Actions taken include collaboration on design, and permitting, development of a memorandum of agreement, and implementation of a service contract. Through our Strategic Planning process and challenging our local communities to work together towards a common goal to reduce potable water consumption and collaboratively seeking to identify alternative water sources this project took shape and was executed. Continuing in this manner, this project was briefed as a success story during the FY11 Executive Session of the Strategic Planning Workshop. FS/HAAF again invited others to participate in similar projects in our regional efforts to reduce potable water demand.

SECTION 3. Transferability and Innovation.

Water conservation and stewardship Sustainability Management System (SMS) projects are seen on a daily basis on Fort Stewart/Hunter Army Airfield. The Transformation of Water Conservation and Stewardship using the SMS process is a strategy for change, in which synergistic effects are gained when a garrison functions more organically as a whole rather than as stove-piped organizations with competing interests.

The "Purple Pipe" project is an adaptable technique of conservation that is readily transferrable and adaptable IMCOM-wide and provides a methodology under which other garrisons may design goals and metrics specific to their mission, needs, and environment.

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SECTION 4. Effectiveness of Investment.

Savings to Investment ratios: The following is a water balance analysis of the potable water reduction project that was funded by the City of Hinesville resulting at no cost to the Installation.

Project Title: Purple Pipe
Energy Conservation Project Type: Water
Economic Life: 40 + Years

WATER BALANCE ANALYSIS

POTABLE WATER SAVINGS SUMMARY:

- 1) Investment costs were calculated using: The “Purple Pipe” project was funded by the City of Hinesville and resulted at no cost to the Installation.

- 2) Water savings were calculated using: The yearly savings is calculated as a cost avoidance for the reclaimed water instead of potable water using the total six month usage for the golf course and the central energy plant since the project has only been operational for six months. The 33.2 million gallons of reclaimed water used over the six month period was divided by 1000 and then multiplied by \$0.53 (\$0.63 production cost/k gallon of groundwater - \$0.10 service contract cost/k gallon of reuse water). The projected annual savings was calculated based on the potable water used by the golf course and operation of the central energy plant’s four chillers prior to the project, approximately 315 million gallons per year of reclaimed water can be used rather than potable water with the same \$0.53 cost avoidance/k gallon of water. However, projected annual savings for the future expansion of this system to support other industrial water and irrigation points throughout Fort Stewart were not included in the cost analysis.

- 3) Calculation of Yearly Savings:
Actual (FY10) \$17,596 (six month usage with only one chiller in operation).
Projected Annual (FY11 & beyond) - \$166,950 (Only accounts for golf course irrigation and 4 central energy plant chillers. Future expansion of the system to support other irrigation and industrial water use is not included which are currently in the planning stages but would otherwise increase this number substantially).

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SECTION 5. Outreach, Education, and User Behavior.

Fort Stewart and Hunter Army Airfield have a robust and comprehensive public stewardship/outreach program that reaches its Army community and its neighboring off-post local and surrounding communities. FS/HAAF participates on the Liberty [County] Regional Water Resources Council, and works with other counties and the region in water resource planning efforts such as the Chatham County Metropolitan Planning Commission and the Coastal Regional Commission. Outreach/awareness efforts include regular submittal and publication of articles to local newspapers, Army publications, and professional journals as well as participation in community events throughout the year. Golfers are specifically advised of the use of reclaimed water through signage and a disclaimer on the golfers score sheet promoting its positive aspects. Water conservation tips are published weekly in newsletters and Installation social media outlets such as Facebook, Twitter and Marine TV, as well as directorate and housing newsletters. Fort Stewart/Hunter Army Airfield assists other installations and local surrounding counties and communities with education awareness and development of programs. Incorporation of water conservation into the Strategic Plan has further supported the outreach and education process with the introduction of metrics that are discussed and tracked through several levels of command.

SECTION 6. Environmental Benefits.

By being proactive and incorporating local, State, and Federal entities in the planning process ensures sound sustainable management and environmental quality, ultimately resolving environmental problems and reducing risks.

The "Purple Pipe" project is one such good example of environmental benefits. It will provide the Installation with an alternate water supply for two major water users, assist the Installation to meet its requirement to use reclaimed water, and reduce Fort Stewart's impact on the region's main water supply source. Also, the Project provides the City of Hinesville with a viable effluent discharge alternative enabling the environmental permitting of its newest wastewater treatment plant. The City will obtain some much needed wastewater capacity which in turn allows for growth in the community.