

Fort Bragg Integrated Strategic Sustainability Plan



**Resource Requirements
2004-2011**

May 2003

Fort Bragg Integrated Strategic Sustainability Plan

Resource Requirements FY04-FY11

Plan elements were coordinated with Fort Bragg Team Members during facilitated workshops in December 2002 and January 2003. Information collected during those workshops and prepared in previous meetings by team members was incorporated into Goal Summary and Objective Summary sheets. This information is presented in this document.



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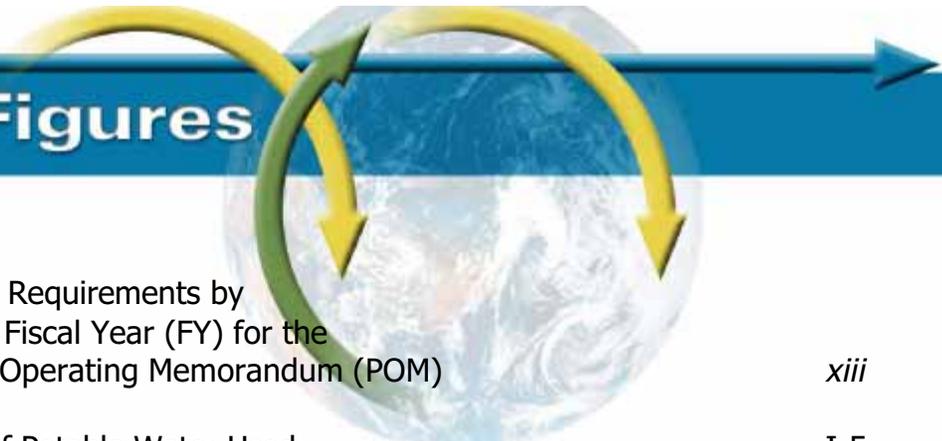


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Introduction

Home of the Army's Airborne and Special Operations Forces, Fort Bragg is one of the largest military installations in the world, with a population exceeding 100,000 people. Its mission is to deploy fully trained and equipped troops to fight and win anywhere in the world in 18 hours or less. To support these efforts, Fort Bragg has developed a vast infrastructure of roads, facilities, training lands, and open spaces.

Like a city, effective resource management is critical to the long-term ability to support the mission and to provide a high quality of life for troops and their families. The successful operation of Fort Bragg requires clean air and water, reliable power, and extensive training lands to train effectively. Competition for scarce resources requires Fort Bragg to cooperate with the surrounding communities at an unprecedented level.

To provide the resources and high quality of life to support the mission, now and into the future, Fort Bragg has been addressing the long-term use and sustainability of Fort Bragg as a power projection platform.

To create a *Sustainable Fort Bragg*, community stakeholders have identified the following challenges, the goals to address these challenges, and the critical first steps. Each is summarized below with additional details provided in the remainder of this resource plan.

Vision

In order to maintain the Fort Bragg legacy and to continue to train troops to standard, it is necessary to integrate long-term sustainable planning into the day-to-day operations of the installation. Fort Bragg's vision for a *Sustainable Fort Bragg* is an installation that will:

- Provide soldiers the necessary training to ensure mission success without compromising local or regional environmental quality;
- Be recognized as a world leader in practicing global citizenship and promoting sustainability values;
- Actively seek new technologies, share lessons learned, and promote the exchange of ideas within the region and communities;
- Restore and protect valuable assets for future generations, as nationally recognized stewards of significant cultural and natural resources; and
- Be an integral part of a healthy, thriving region, where all enjoy a high quality of life and access to vital resources.

Water Resources

Challenge

Potential sources for Fort Bragg's water consumption have been steadily declining (both in quantity and quality) due to overuse. How can Fort Bragg reduce its dependence on these sources and provide premium quality drinking water as well as the "right" quality water for other uses, without aggravating future regional water quality and supply issues?

Goal

Reduce amount of water taken from the Little River by 70 percent by 2025; and all water discharged from Fort Bragg will meet or exceed North Carolina State High Quality Water (HQW) standard by 2025.

First Steps

- Initiate water education program.
- Develop and implement an integrated water resources management plan supported by GIS data layers.
- Initiate efforts to take advantage of water use reduction equipment in planned renovations.

Waste Reduction

Challenge

In fiscal year 2002 (FY02), Fort Bragg threw away over 600,000 tons at a total cost well over \$3 million. How can Fort Bragg reduce the amount of landfill waste it creates each year while minimizing costs and environmental impact?

Goal

Landfill waste will be aggressively reduced toward zero by 2025.

First Steps

- Collaborate with RCI and transition Family Housing waste reduction/recycling programs to better coordinate an overall reduction.
- Establish a demolition salvage program that includes reusing/finding markets for concrete, soil, and green waste currently disposed of in landfills.

Sustainable Design

Challenge

Facilities construction, operation, maintenance, and demolition are costly; can cause numerous environmental impacts; and use a substantial amount of energy and water. How can Fort Bragg provide the excellent facilities while minimizing associated pollution, resource depletion, and costs?

Goal

Meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020, using SPiRiT (Sustainable Project Rating Tool) standards.

First Steps

- Update the Installation Design Guide (IDG) to include sustainable design/construction concepts.
- Begin testing new technologies and low-impact development approaches to site design in upcoming projects.
- Train every project manager, quality assurance inspector, and engineer on the SPiRiT standards for green design.
- Hold program-level charrette for the FY06 Military Construction (MILCON) Program.

Sustainable Training Lands

Challenge

Fort Bragg maintains 161,597 acres of land for training. Of this, only 72,236 acres are unrestricted for use. How can Fort Bragg provide enough usable land for military training—and ensure that training is not further constrained by concerns over potential environmental contamination and negative impacts on endangered species? How can Fort Bragg use its land requirements to address the effects of urban sprawl and regional needs for open space and biodiversity?

Goal

Adopt compatible land use laws/regulations with local communities by 2005.

First Steps

- Implement community relations program to address joint-land use and regional growth issues.
- Provide input and support to state and regional planning initiatives especially those that will advocate innovative/sustainable land use and transportation concepts.

Energy Conservation

Challenge

Reliable and affordable energy is essential to Fort Bragg's continued operation. Use of energy at Fort Bragg, whether it is on- or off-post generation, contributes to the high levels of ozone in the air. Further, current events raise serious concerns about the security, cost, and the availability of energy. How can Fort Bragg protect and secure the energy it needs to operate, while improving regional air quality and controlling costs?

Goal

Reduce energy use in accordance with Executive Order 13123. Specifically, reduce energy use by 30 percent by 2005 and by 35 percent by 2010.

First Steps

- Implement load management strategy for electrical and natural gas.
- Support development of green power production infrastructure by participating in green power programs available from current power suppliers.

Sustainable Transportation

Challenge

The state of North Carolina is increasingly concerned about ozone and other air pollutants. How can Fort Bragg minimize future costs and operational restrictions while improving regional air quality?

Goal

Develop and implement an effective regional commuting program by 2015; and reduce the use of both gasoline and diesel in the non-tactical fleet by 70 percent by 2015 and by 99 percent by 2025.

First Steps

- Integrate transportation planning into the installation master plan.
- Construct infrastructure to support alternative fuels in all non-tactical vehicles.
- Demonstrate the utility of AFVs and hybrids through use of vehicles in tactical (hybrid HMMWV when available) and non-tactical vehicles.

Environmental Training Program

Challenge

Sustainable Fort Bragg is a community of sustainable activities and people. To have a sustainable mission, Fort Bragg must educate its workforce on how they contribute to a sustainable Fort Bragg. How can Fort Bragg develop the appropriate understanding of sustainability within its community?

Goal

Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties.

First Steps

- Conduct a training needs assessment to support all other goals.
- Customize existing sustainability training toolkits for use in meeting training needs.

Materials Procurement

Challenge

Fort Bragg buys \$176 million worth of products and materials every year. How can Fort Bragg promote use of sustainable products while minimizing costs and environmental impacts? How can Fort Bragg stimulate local and national markets for environmentally preferable products?

Goal

Work towards 100 percent Environmentally Preferable Products (EPPs) by 2025 for all purchases, including government Purchase Cards, contracts, and military requisitions.

First Steps

- Identify products used by Fort Bragg for which there are EPPs. Train personnel on the need to use EPPs.
- Establish partnerships with and provide training to local suppliers on EPPs. Increase the dollar amount of products purchased on the local economy.
- Establish protocols to encourage purchase of EPPs from local vendors.

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Figure xiii – Resource Requirements by Goal and Fiscal Year

Goals	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	TOTAL
Water Resources Goals (1 and 2): Reduce amount of water taken from the Little River by 70 percent by 2025; and all water discharged from Fort Bragg will meet or exceed North Carolina State High Quality Water (HQW) Standard by 2025.	\$1,935,000	\$3,210,000	\$3,375,000	\$2,925,000	\$3,040,250	\$2,815,000	\$2,650,000	\$2,615,000	\$22,565,250
Waste Reduction Goal (3): Landfill waste will be aggressively reduced toward zero by 2025.	\$1,135,000	\$1,281,000	\$1,113,750	\$1,145,027	\$1,106,636	\$1,334,909	\$1,245,064	\$1,361,472	\$9,722,858
Sustainable Building Goal (4): Meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPIRIT standards).	\$905,000	\$1,280,250	\$823,388	\$885,808	\$1,217,217	\$868,670	\$812,353	\$852,972	\$7,645,658
Sustainable Training Lands Goal (5): Adopt compatible land use laws/regulations with local communities by 2005.	\$645,000	\$5,742,500	\$5,485,875	\$5,510,169	\$5,535,677	\$5,562,461	\$5,905,584	\$5,620,113	\$40,007,379
Energy (6): Reduce energy use in accordance with Executive Order 13123.	\$520,000	\$641,000	\$463,050	\$486,203	\$510,513	\$536,038	\$562,840	\$590,082	\$4,309,726
Sustainable Transportation (7 and 8): Develop and implement an effective regional commuting program by 2015; and reduce the use of both gasoline and diesel in the non-tactical fleet by 70 percent by 2015 and 99 percent by 2025.	\$847,500	\$558,875	\$420,444	\$602,335	\$325,726	\$278,199	\$409,113	\$308,212	\$3,750,404
Sustainable Training Goal (9): Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties.	\$226,500	\$233,500	\$123,000	\$127,500	\$133,000	\$150,000	\$145,300	\$161,915	\$1,300,715
Materials Procurement Goal (10): Work towards 100 percent Environmentally Preferable Purchases by 2025 for all purchases, including government Purchase Cards, contracts, and military requisitions.	\$100,000	\$155,000	\$237,625	\$190,506	\$248,400	\$251,445	\$183,319	\$87,719	\$1,454,014
TOTALS	\$6,314,000	\$13,102,125	\$12,042,132	\$11,872,548	\$12,117,419	\$11,796,722	\$11,913,573	\$11,597,485	\$90,756,004

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

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Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025; and
Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina State High Quality Water (HQW) standard by 2025.

Challenge

Potential sources for Fort Bragg's water consumption have been steadily declining (both in quantity and quality) due to overuse. Contamination of regional water resources, particularly by sediments, is a critical concern to North Carolina because of the economic impacts associated with destruction of fish habitats, treatment of water to drinking quality, and the decrease of drinking water reservoir holding capacity. How can Fort Bragg reduce its dependence on these vulnerable sources and provide premium quality drinking water, as well as the "right" quality of water for other uses, without aggravating future regional water supply issues? How can Fort Bragg minimize the future costs and potential operational restrictions associated with water pollution, while improving regional water quality?

Where is Fort Bragg today?

- Fort Bragg's primary drinking water source is the Little River, part of the Cape Fear River Basin.
- All water currently used in the cantonment area (except one of the two golf courses) is potable water drawn from the Little River.
- Fort Bragg's water consumption has increased 39 percent without an increase in population.
- Fort Bragg does not have a formal water conservation program to monitor real-time demand, to optimize distribution systems, to educate the public, and to control peak consumption.
- Fort Bragg does not have all the data needed to quantify our water sources.
- A severe regional drought in 2002 caused a significant decrease in the Little River, and as a result, the Installation purchased water from city of Fayetteville to meet mission and quality of life requirements.
- The water treatment plant (WTP), which was built in 1918 and upgraded in 2000, has a plant capacity of 16 million gallons/day.
- Fort Bragg's drinking water distribution system contains two million linear feet of pipeline.
- Fort Bragg's wastewater treatment plant (WWTP) was built in the 1940s and rebuilt in 1991. It currently operates at a maximum daily flow of 8 million gallons/day and discharges approximately 5.3 million gallons/day to the Little River, which is one mile downstream of the drinking water treatment plant.
- The WWTP has a history of non-compliance with its National Pollutant Discharge Elimination System (NPDES) Permit

- The WWTP serves a population of 68,000, and it collects and treats sewage from the cantonment area (11,670 acres), Simmons Army Airfield, and Pope Air Force Base.
 - The wastewater collection system contains over 2 million linear feet of pipeline and 10 major lift stations.
 - The capture and treatment of storm water was not part of the design of the WWTP.
 - The amount of storm water generated by the Installation and its impacts on the environment are currently unknown.
 - Unless intercepted, all storm waters ultimately enter surface waters that lead to the Little River (a major drinking water source), drinking water storage lakes, and eventually the Cape Fear River.
 - Sedimentation caused by the erosion of soils, the overuse of land due to military training, and construction activities is a significant pollutant. Soil erosion causes significant damage and incurs repair costs in various areas throughout the installation.
 - Fort Bragg operated under an administrative order issued by North Carolina Department of Environment and Natural Resources (NCDENR) from February 1994 to September 2002, which required the Installation to remediate highly eroded areas (drop zones) and to submit erosion control plans for construction sites.
- Upper Cape Fear River Basin to Neuse River Basin in support of enormous urban growth.
 - Loss of capacity from Little River may necessitate the development of ground water sources for drinking water; however, the Upper Middendorf Aquifer is considered to be polluted beyond drinking water limits.
 - Privatization of Fort Bragg water systems may cause an increase in price of water as rates are commercialized.
 - Flushing the filter creates 460,000 gallons per day of backwash that are currently sent to the wastewater treatment plant.
 - New barracks design includes individual bathrooms, which will increase water consumption.
 - If the Total Maximum Daily Load (TMDL) requirements or discharge limits change with respect to the Little River, the WWTP will need to meet the more stringent limits.
 - The WWTP currently operates at 68 percent capacity and is estimated to reach 77 percent capacity in 3 years. At 80 percent capacity, Fort Bragg may be required to conduct an engineering study and submit the study to the NCDENR.

What are Fort Bragg's future challenges?

- An adequate supply of clean water is becoming an increasing concern in the state and a priority area for the NCDENR. As a result, Fort Bragg will see increased regulatory and public scrutiny placed on water protection programs throughout the state.
- North Carolina has proposed a project for inter-basin transfer to divert water from

How will Fort Bragg achieve its strategic goal?

Specific objectives to protect and enhance our water resources are:

Objective 1: Develop and implement a comprehensive water resources management program (quality and quantity).

1. **Target:** Complete an integrated water resources management plan by 2005.
2. **Target:** Characterize watershed in urban areas and ranges by 2007.
3. **Target:** Develop a balanced water inventory to identify available water sources; its intended uses; quality and quantity needed; and its cost by 2008.

4. **Target:** Develop and implement a long-term monitoring program to track water quality and supply by 2004.
5. **Target:** Develop and update Geographic Information Systems (GIS) data layers to support the Water Resources Management Program and to aid in long-term decision-making beginning in 2004.
6. **Target:** Develop and implement an installation rainfall/runoff management program by 2006.
7. **Target:** Expand participation in regional water planning partnerships.

Objective 2: Design/upgrade facilities to protect and enhance water quality and quantity.

1. **Target:** Update Installation Design Guide (IDG) with water conservation specifications and NC HQW design and construction standards by 2009.
2. **Target:** Evaluate all designs to determine compliance with the NC HQW standard beginning in 2005.
3. **Target:** Update the water, wastewater, and storm water infrastructure to permit standards in a phased program beginning in 2004.

Objective 3: Develop and implement a water education program.

1. **Target:** Develop, distribute, and deliver comprehensive water education materials beginning in 2004.
2. **Target:** Develop an Environmental Risk Assessment Guide for protection of water sources by 2005.
3. **Target:** Develop incentives to conserve water beginning in 2005.

Objective 4: Reduce potable water use/waste.

1. **Target:** Correct overpressure problems in water distribution systems to reduce water waste by 2007.
2. **Target:** Perform Leak Detection Survey every two years beginning in 2005.
3. **Target:** Retrofit water-using equipment with efficient low-flow technology beginning in 2005.
4. **Target:** Implement recommended alternatives identified by Western Environmental Technology Office (WETO) beginning in 2004.

Objective 5: Perform Opportunity Assessments to identify projects that conserve water resources (quality and quantity) through conservation, reuse, and reclamation.

1. **Target:** Perform opportunity assessment on filter backwash process at WTP by 2005.
2. **Target:** Analyze water usage in two barracks complexes to compare traditional design to sustainable design by 2006.
3. **Target:** Identify all potential water reclamation opportunities in 2006 and 2009.
4. **Target:** Benchmark and pilot test new technologies that have the potential to assist Fort Bragg in reaching HQW goal and potable water use reduction.

What are the benefits?

- Eliminating system losses will conserve an estimated 10-40 percent of current usage with savings up to \$3,400,000 per year.¹ Initial investments to quantify losses and develop an approach are part of the Comprehensive Water Resources Management Plan and are supported with \$75,000 every two years.

¹ Estimated annual savings of \$850,000 to \$3,400,000 are based upon conversations with experts at the American Water Works Association. The loss rate depends on maintenance, systems investments, and operation.

- Water-efficient facilities will reduce demand by 17 percent per year at a cost avoidance of \$500,000 per year, and will decrease water treatment and disposal costs. Total initial investment is \$1,800,000. Payback is 3.5 years.
- Fort Bragg estimates that at least 30 percent of its consumption is non-industrial. Targeted education and incentives for water conservation will reduce demand up to 50 percent at a cost avoidance of \$180,000 (purchasing and sewage treatment). Total initial investment is \$200,000 over 8 years. Payback is under two years once users accomplish reduction.
- Designing facilities that hold and slowly release storm water through natural areas can eliminate the need for separate storm water collection and treatment systems, reducing the overall cost of the facility and treatment system by up to 10 percent. This could save Fort Bragg \$212,795 per year in operations and maintenance (O&M) costs.
- Repairing the water and wastewater collection system is required by the installation's permit and is anticipated to cost \$9.5 million from FY04-FY11. It will increase the amount of water available for reclamation/reuse by 10-40 percent, resulting in a cost avoidance for water treatment and distribution of \$600,000 per year.
- Water quality education programs will require an investment of \$25,000/year. They will result in fewer accidents/spills and a knowledgeable workforce who can protect water resources in their specific operations.

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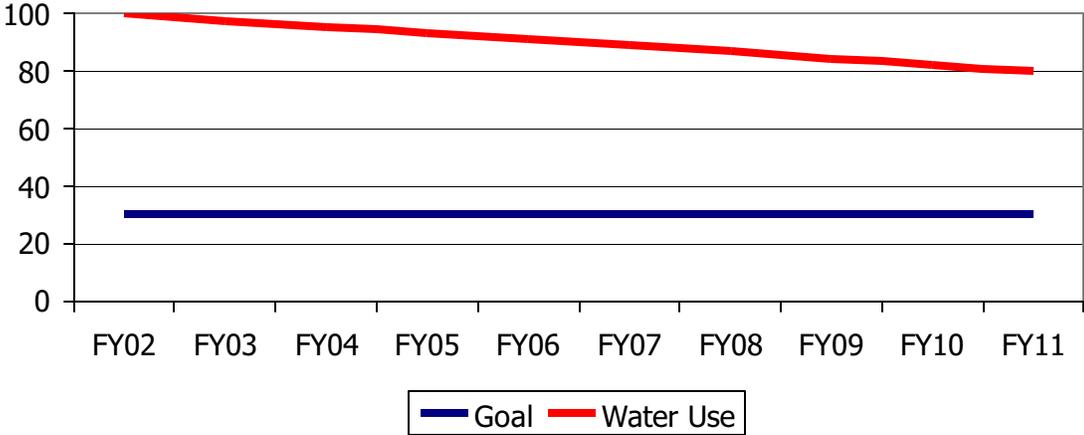
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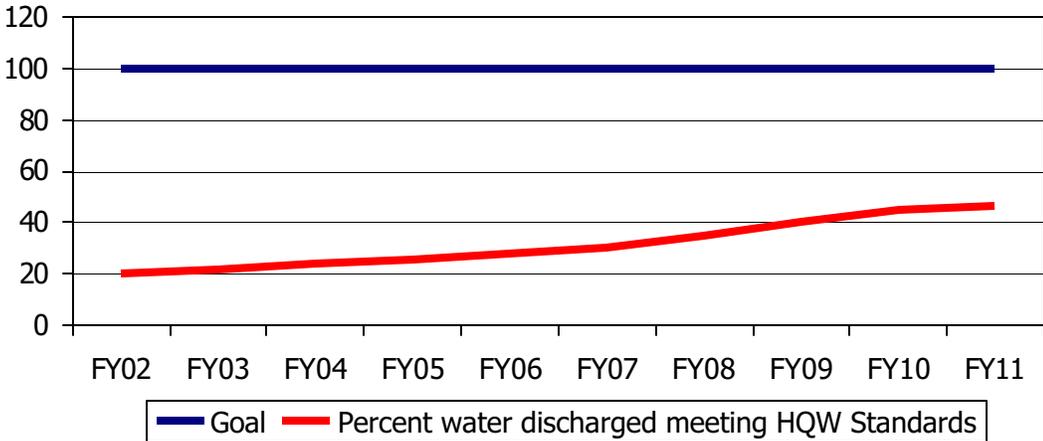
<http://www.bragg.army.mil/sustainability/>

How much progress does Fort Bragg expect to make during the current POM Cycle?

**Figure I-1
Percent of Potable Water Used**



**Figure I-2
Percent of Water Discharged Meeting HQW Standard**



This section will be refined once procedures are developed for collecting data.

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What resources does Fort Bragg need to implement its objectives?

Figure I-3. Estimated Cost over POM (FY04-FY11)

Estimated Cost over POM (FY04-FY11)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$775,000	\$1,145,000	\$1,275,000	\$880,000	\$1,065,250	\$745,000	\$715,000	\$715,000	\$ 7,315,250
2	\$1,100,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,210,000	\$1,200,000	\$1,200,000	\$ 9,510,000
3	\$25,000	\$125,000	\$85,000	\$85,000	\$125,000	\$85,000	\$85,000	\$125,000	\$ 740,000
4	\$35,000	\$610,000	\$535,000	\$610,000	\$500,000	\$575,000	\$500,000	\$575,000	\$ 3,940,000
5	\$0	\$130,000	\$280,000	\$150,000	\$150,000	\$200,000	\$150,000	\$0	\$ 1,060,000
TOTAL	\$1,935,000	\$3,210,000	\$3,375,000	\$2,925,000	\$3,040,250	\$2,815,000	\$2,650,000	\$2,615,000	\$22,565,250

This funding will provide two full-time equivalent contract positions in FY04 and four full-time equivalent contract positions from FY05-FY11 to support various programs, projects, monitoring, and other tasks under this goal. \$300K per year will be used to develop and update various plans, perform studies, and develop models that will support overall management of solid waste. \$130K per year will be used to perform pollution prevention opportunity assessments, beginning with the filter backwash process at the WTP. \$550K per year is required for project implementation, including: infrastructure upgrades, equipment purchases and installation, and implementation of water conservation technologies and service contracts. \$25K per year will support education, awareness, and partnership development.

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure I-4. Project Descriptions

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Develop and implement a comprehensive water resources management program (quality and quantity).											
1	Complete an integrated water resources management plan by 2005.	Contract in FY05 for model development, data collection to populate model, and annual updates. Corrective actions beginning in FY08.	\$0	\$250,000	\$350,000	\$255,000	\$710,250	\$600,000	\$600,000	\$600,000	ENV/TBD
2	Characterize watershed in urban areas and ranges by 2007.	ORISE Intern in FY04. Contracts in FY03– FY07 for watershed characterization. Installation of SCADA water gauge in FY04. Contract for corrective actions FY05–FY08.	\$340,000	\$480,000	\$480,000	\$480,000	\$180,000	\$30,000	\$30,000	\$30,000	ENV/TBD

Water Resources

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
3	Develop a balanced water inventory to identify available water sources, its intended uses, quality and quantity needed, and its cost by 2008.	Contracts in FY05-FY09.	\$0	\$30,000	\$60,000	\$60,000	\$90,000	\$30,000	\$0	\$0	ENV
4	Develop and implement a long-term monitoring program to track water quality and supply by 2004.	ORISE Intern in FY04 for monitoring in-house assets to develop sampling plans, points, protocols, and regimes, and to develop soil erosion control projects.	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	ENV
5	Develop and update GIS data layers to support the Water Resources Management Program and to aid in long-term decision-making beginning in 2004.	Contract in FY04 to develop GIS layers from existing data. ORISE intern to update layers annually beginning in FY04.	\$80,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	ENV

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Water Resources

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
6	Develop and implement an installation rainfall/runoff management program by 2006.	Contract from FY04-FY06 to develop rainfall/runoff model. 1 FTE for erosion prevention program TBD.	\$300,000	\$300,000	\$300,000	\$0	\$0	\$0	\$0	\$0	ENV
7	Expand participation in regional water planning partnerships.	Dues to partnerships and travel costs. Recurring; began in FY01.	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	ENV
Objective 2: Design / upgrade facilities to protect and enhance water quality and quantity.											
1	Update the IDG with water conservation specifications and NC HQW design and construction standards by 2009.	Contract in FY09.	\$0	\$0	\$0	\$0	\$0	\$10,000	\$0	\$0	SRM

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Water Resources

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Evaluate all designs to determine compliance with the NC HQW standard beginning in 2005.	Contract for 1FTE beginning in FY05.	\$0	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	SRM
3	Update water, wastewater, and storm water infrastructure to permit standards beginning in 2004.	Purchase SCADA monitoring equipment. Started in FY02. Ongoing requirement. Contracts to upgrade infrastructure beginning in FY04.	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	SRM
Objective 3: Develop and implement a water education program.											
1	Develop, distribute, and deliver comprehensive water education materials beginning in 2004.	Purchase water education materials in FY04; recurring cost.	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	ENW

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Water Resources

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Develop an Environmental Risk Assessment Guide for protection of water sources by 2005.	Contract in FY05. Update every 3 years.	\$0	\$40,000	\$0	\$0	\$40,000	\$0	\$0	\$40,000	ENV
3	Develop incentives to conserve water, beginning in 2005.	2 ORISE Interns beginning in FY05.	\$0	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	TBD
Objective 4: Reduce potable water use/waste.											
1	Correct overpressure problems within water distribution system to reduce water waste by 2007.	Contract to install pressure regulators and/or monitors beginning in FY04 for 4 years.	\$35,000	\$35,000	\$35,000	\$35,000	\$0	\$0	\$0	\$0	SRM
2	Perform Leak Detection Survey every 2 years beginning in 2005.	Contract for leak detection survey every 2 years beginning in FY05.	\$0	\$75,000	\$0	\$75,000	\$0	\$75,000	\$0	\$75,000	TBD

Water Resources

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
3	Retrofit water-using equipment with efficient low flow technology beginning in 2005.	Contract for annual retrofits beginning in FY05 until completed.	\$0	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	SRM
4	Implement WETO alternatives beginning in 2004.	Contract to implement WETO study results. TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Objective 5: Perform Opportunity Assessments to identify projects to conserve water resources (quality and quantity) through conservation, reuse, and reclamation.

1	Perform opportunity assessment on filter backwash process at WTP.	Contract in FY05.	\$0	\$130,000	\$0	\$0	\$0	\$0	\$0	\$0	ENV
2	Analyze water usage in two barracks complexes to compare traditional design to sustainable design.	Contract for study in FY06.	\$0	\$0	\$230,000	\$0	\$0	\$0	\$0	\$0	TBD

Water Resources

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
3	Identify all potential water reclamation opportunities in 2006 and 2009.	Contract for PPOA every 3 years.	\$0	\$0	\$50,000	\$0	\$0	\$50,000	\$0	\$0	ENV
4	Benchmark and pilot test new technologies that have the potential to assist Fort Bragg in reaching the HQW goal and potable water reduction goal.	Contract for demonstration projects in FY07-FY10.	\$0	\$0	\$0	\$150,000	\$150,000	\$150,000	\$150,000	\$0	RTDE

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11



Goal 3: Landfill wastes will be aggressively reduced toward zero by 2025.

Challenge

In FY02, Fort Bragg threw away over 600,000 tons of waste at a total cost well over \$3 million. How can Fort Bragg promote the sustainable use and disposal of materials and products, while minimizing costs and environmental impact?

Where is Fort Bragg today?

- Fort Bragg generated 691,000 tons of solid waste in 2002 and recycled 410,000 tons (59 percent). In 2000, the Installation generated over 200,000 tons of solid waste and recycled 12 percent. See Figure II-1 below for Fort Bragg's waste stream in 2001.

Figure II-1. Fort Bragg's Waste Stream in 2001

	Percentage	Disposal Site
C&D ¹	52 percent	Onsite C&D landfill
LCID ²	39 percent	Onsite LCID landfill
MSW ³	9 percent	Uwharrie landfill ⁴
HW, etc. ⁵	Less than 1 percent	Treatment offsite

¹ C&D – Construction and Debris waste.

² LCID – Land Clearing and Inert Debris waste

³ MSW – Municipal Solid Waste.

⁴ Uwharrie Landfill is in Troy, NC, over 60 miles away from Fort Bragg.

⁵ HW, etc. – Hazardous Waste, non-regulated waste, and universal waste.

- Total costs for operating the Installation's on-site landfills and the cost for disposing of C&D and LCID wastes are unknown.
- MSW annual costs are \$1.4 million for pick up and disposal.
- HW/universal/non-regulated waste disposal, program management, inspections, and reporting cost exceed \$1 million annually.
- The Defense Reutilization and Marketing Office (DRMO) screens products and materials no longer needed by an installation for reuse within Department of Defense (DoD) followed by resale to the general public. A large amount of materials is kept out of the solid waste stream through this process.
- There is currently only a limited mulching program on-post for green waste.
- A demonstration project to grind concrete rubble and reuse it for road pack and erosion control started in 2001. Costs to grind the rubble are \$4/ton, equaling a cost avoidance of \$12/ton for buying new rock.

What are Fort Bragg's future challenges?

- The cost of solid waste disposal is rising as landfill capacity is consumed.
- Garbage must be transported greater distances.
- Fort Bragg's C&D landfill has a remaining life of six years at the current rate of fill.
- Fort Bragg's LCID landfill has a remaining life of three years.
- The Installation currently has a 70,000-acre training shortfall. Creating a new landfill site

without affecting training would be extremely difficult.

- Regional landfills face the same challenges that Fort Bragg does, making it unlikely that they would provide an endless source of disposal for the Installation.
- The costs for hazardous waste disposal will continue to rise as regulations become more stringent concerning the type and quantities of material requiring regulated disposal.

How will Fort Bragg achieve its strategic goal?

Specific objectives to eliminate land filling of wastes during this Program Operating Memorandum (POM) cycle are:

Objective 1: Improve Waste Management and Diversion.

1. **Target:** Update the Installation Design Guide (IDG) to reflect waste minimization practices during construction and demolition projects and to translate to contract specifications by 2009.
2. **Target:** Develop, implement, and update every other year an Integrated Solid Waste Management Plan by 2006.
3. **Target:** Investigate partnerships for waste management, reduction, and recycling with Pope Air Force Base (AFB), Fayetteville, and surrounding counties and communities.
4. **Target:** Increase publicity and/or awareness of the installation's waste reduction and recycling program.
5. **Target:** Merge the C&D landfills to maximize currently available space by 2006.
6. **Target:** Partner with Residential Communities Initiative (RCI) and Transition waste reduction and recycling programs for Army Family Housing.

Objective 2: Implement soil reuse and recycling program.

1. **Target:** Develop a program to reuse soil for other installation projects (construction and erosion control).

Objective 3: Implement construction and demolition debris reuse and/or recycling technologies.

1. **Target:** Develop and implement a concrete reuse program by 2003.
2. **Target:** Develop and implement a building salvage program by 2004.
3. **Target:** Consolidate and streamline scrap metal management by 2006.

Objective 4: Implement wood and yard waste reuse/recycling technologies.

1. **Target:** Identify alternatives for disposal of pallets and ammunition boxes by 2004.
2. **Target:** Design and implement a mulching and composting program by 2004.

Objective 5: Implement municipal solid waste reuse/recycling technologies.

1. **Target:** Develop and implement a recycling program for cardboard, paper, aluminum, and other commodities by 2009.
2. **Target:** Perform an opportunity assessment to identify alternatives for a material recovery facility by 2005.
3. **Target:** Pursue projects for beneficial re-use options for food waste by 2007.
4. **Target:** Perform opportunity assessments to identify alternatives to re-use equipment or materials by 2009.

Objective 6: Implement hazardous waste reuse and recycling technologies.

1. **Target:** Perform opportunity assessments and implement hazardous waste reduction alternatives by 2007.
2. **Target:** Implement hazardous waste reduction alternatives annually for targeted waste streams.
3. **Target:** Update the hazardous waste management and minimization plan every two years beginning in 2005.

What are the benefits?

Integrating solid waste planning and management will provide Fort Bragg the opportunity to determine the most effective way to recover value from materials that it currently disposes of. At present, the Installation has several wastes, which are costing Fort Bragg millions of dollars annually for disposal, which can be processed to replace virgin material used to support the mission. In doing so, Fort Bragg will reduce the disposal of materials, protect landfill capacity, reduce disposal costs, and reduce purchase costs for materials used in large quantities. Several examples follow:

- *Construction Debris/Concrete* - Reusing/recycling demolition rubble will result in diversion of up to 30,000 tons per year from the landfill. In addition, use of ground rubble on base, reduces the cost for new rock by \$12/ton. Fort Bragg estimates that it can use all of the rubble it generates at Range Control. The resulting cost savings is \$360,000/year with no capital investment. In addition, by grinding demolition concrete instead of land filling, the Installation will extend the life of its on-site landfill. Estimated savings are \$2.9 million for FY04-FY11.
- *Dirt* - At present, Fort Bragg landfills dirt accumulated during construction activities and maintenance of ranges. The cost for

on-site disposal is 300,000 tons at \$5/ton or \$1.5 million per year. The Installation also purchases large quantities of dirt for range repair. Fort Bragg currently purchases more than 300,000 tons per year, averaging \$5/ton. As such, if Fort Bragg uses its own soil instead of purchasing new soil, it would save an additional \$1.5 million. Estimated savings are \$3 million/year or \$21 million for FY04-FY11.

- *Green Waste* - Fort Bragg disposes of 75,000 tons/year at a total cost of \$500,000. Fort Bragg could replace \$262,500 worth of mulch purchased from the local economy. (It is estimated that Fort Bragg uses more mulch than it could generate.) Estimated savings are \$5.6 million for FY04-FY11, after subtracting the \$500,000 equipment purchase.
- *Others* - Fort Bragg needs to develop additional management approaches for paper waste (10,000 tons/year), cardboard (unknown generation), scarp metal (30,000 tons/year), wood, white goods, and tires.

Whom to contact for more information:

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Chief, Environmental Compliance Branch
Waste Reduction Team Leader

Fort Bragg, NC
910-396-3341

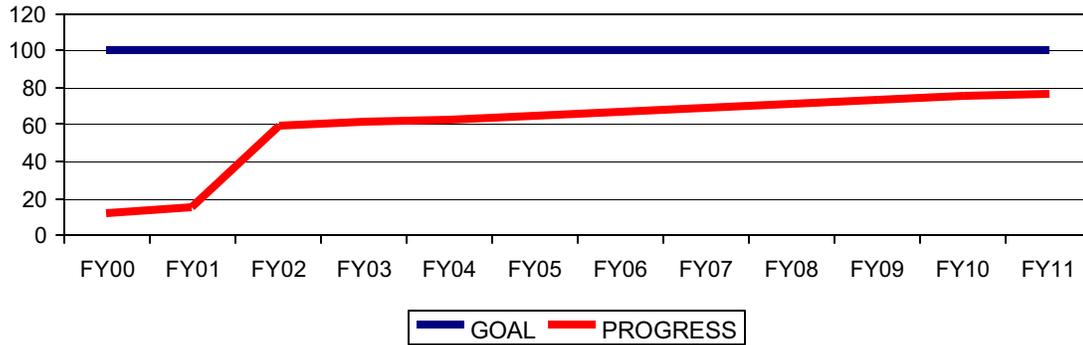
<mailto:wirtp@bragg.army.mil>

Check out Fort Bragg's web site at:

<http://www.bragg.army.mil/sustainability/>

How much progress does Fort Bragg expect to make during the current POM Cycle?

**Figure II-2.
Percent of Waste Diverted From Landfill**



This section will be refined once procedures are developed for collecting data.

What resources does Fort Bragg need to implement its objectives?

Figure II-3. Estimated Cost over POM (FY04-FY11)

Estimated Cost over POM (FY04-FY11)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$100,000	\$230,000	\$215,250	\$148,513	\$127,063	\$263,816	\$140,087	\$180,591	\$1,405,320
2	\$0	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$814,202
3	\$460,000	\$461,000	\$420,750	\$431,288	\$452,852	\$475,494	\$499,270	\$524,233	\$3,724,887
4	\$50,000	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$1,271,301
5	\$400,000	\$200,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$1,314,202
6	\$125,000	\$140,000	\$110,250	\$179,351	\$121,551	\$170,171	\$159,010	\$187,614	\$1,192,946
TOTAL	\$1,135,000	\$1,281,000	\$1,113,750	\$1,145,027	\$1,106,636	\$1,334,909	\$1,245,065	\$1,361,472	\$9,722,858

This funding will be used to provide two full-time equivalent contract positions in FY04 and four full-time equivalent contract positions from FY05-FY11 to support various programs, projects, monitoring, and other tasks under this goal. \$100K/year will be used to develop and update various plans, perform studies, and develop models that will support the overall management of solid waste. \$150K/year will be used for pollution prevention opportunity assessments, benchmarking, and pilot testing of technologies to identify alternatives to current methods of generating and handling solid waste. \$550K/year is required for project implementation, including: infrastructure upgrades, equipment purchases and installation, implementation of hazardous waste reduction technologies, and service contracts. \$5K/year is required to support education, awareness, and partnership development.

Waste Reduction

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure II-4. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Improve waste management and diversion.											
1	Update the IDG to reflect waste minimization practices during construction and demolition projects and translate to contract specifications by 2009.	Contract by FY09	\$0	\$0	\$0	\$0	\$0	\$100,000	\$0	\$0	SRM
2	Develop, implement, and update every other year an Integrated Solid Waste Reduction Plan by 2006.	Contract by FY03	\$0	\$25,000	\$0	\$27,500	\$0	\$30,400	\$0	\$33,500	ENV
3	Investigate partnerships for waste management, reduction, and recycling with Pope AFB, Fayetteville, and surrounding counties and communities.	In House Staff by FY03	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENV/EMS
4	Increase publicity and/or awareness of the installation's waste reduction and recycling program.	Supply Purchase by FY05	\$0	\$0	\$5,000	\$5,250	\$5,512	\$5,788	\$6,077	\$6,381	ENV

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Waste Reduction

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
5	Merge C&D landfills to maximize currently available space by 2006.	A&E Contract support by FY05.	\$0	\$100,000	\$100,000	\$0	\$0	\$0	\$0	\$0	SRM
6	Partner with RCI and transition waste reduction and recycling programs for Army Family Housing.	Contract for 1 FTE by FY04.	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	AFH
Objective 2: Implement soil reuse/recycling program.											
1	Develop program to reuse soil for other installation projects (construction and erosion control)	Contract for 1 FTE by FY05.	\$0	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	SRM
Objective 3: Implement construction/demolition debris reuse/recycling technologies.											
1	Develop and implement a concrete reuse program by 2003.	Service Contract by FY04-FY11.	\$300,000	\$315,000	\$330,750	\$347,288	\$364,652	\$382,884	\$402,029	\$422,130	SRM
2	Develop a building salvage program in conjunction with the COE, QRP, or CASBC.	Contract for 1 FTE for program development, FY04-FY05; Contract for 1 FTE for program implementation, FY06 and beyond.	\$120,000	\$126,000	\$80,000	\$84,000	\$88,200	\$92,610	\$97,241	\$102,103	SRM
3	Consolidate and streamline scrap metal management.	Equipment Purchases, FY04-FY06.	\$40,000	\$20,000	\$10,000	\$0	\$0	\$0	\$0	\$0	ENW

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Waste Reduction

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 4: Implement wood and yard waste reuse/recycling technologies.											
1	Identify alternatives for disposal of pallets and ammunition boxes by 2004.	In House Staff by FY04.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENV
2	Design and implement a mulching and composting program by 2004.	Contract for FTE to develop program by FY04. Service contract by FY05, ongoing.	\$50,000	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	SRM
Objective 5: Implement municipal solid waste reuse/recycling technologies.											
1	Develop and implement a recycling program for cardboard, paper, aluminum and other commodities throughout the installation.	Contract for equipment and other start up costs in FY04; Contract for 1 FTE beginning in FY05.	\$350,000	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	SRM
2	Perform opportunity assessment for utilizing a material to identify alternatives for a material recovery facility by 2005.	Contract by FY05.	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	ENV
3	Pursue projects for beneficial re-use options for food waste by 2007.	In House Assets by FY03.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENV

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Waste Reduction

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
4	Perform opportunity assessments to identify alternatives to reuse equipment or materials by 2009.	Contract by FY05.	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENV
Objective 6: Implement hazardous waste reuse/recycling technologies.											
1	Perform opportunity assessments to identify hazardous waste reduction alternatives.	In House Assets. Contract in FY04 and then every 3 years.	\$25,000	\$0	\$0	\$25,000	\$0	\$0	\$25,000	\$0	ENV
2	Implement Hazardous Waste Reduction Alternatives.	Contract by FY04. Ongoing.	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	ENV
3	Update Hazardous Waste Management and Minimization Plan.	Contract every 2 years beginning in FY05.	\$0	\$35,000	\$0	\$38,588	\$0	\$42,543	\$0	\$46,904	ENV

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Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Challenge

Facilities construction, operation, maintenance, and demolition are costly; can cause numerous environmental impacts; and use a substantial amount of energy and water. How can Fort Bragg provide excellent facilities while minimizing associated pollution, resource depletion, and costs?

Where is Fort Bragg today?

- Fort Bragg's infrastructure is large, diverse, and continually changing to meet current and future requirements.
- Fort Bragg operates and maintains 28 million feet of real property at an estimated acquisition value of \$1.79 billion.
- In FY02, Fort Bragg spent \$422.9 million in major construction and \$27.9 million in maintenance and repair contracts.
- Fort Bragg has problems with excessive storm water runoff and sedimentation from the disturbance of easily eroded soils. The current standard for construction sites is zero net increase in storm water runoff.
- The Installation reuses very few materials from deconstruction of facilities.
- The current military budgeting process rewards reduced up front costs while sacrificing life-cycle costs.
- The Sustainable Project Rating Tool (SPiRiT) and Leadership in Energy and Environmental Design (LEED) both provide a means to score sustainable designs.

What are Fort Bragg's future challenges?

- Military Construction (MILCON) budgets are already set. Projects currently entering the MILCON process will not be constructed until FY07. How does Fort Bragg get sustainable standards into existing projects that will result in no-cost modifications to the FY04, FY05, and FY06 MILCON Projects?
- Fort Bragg is participating in the Residential Communities Initiative (RCI), a program designed to enhance housing for soldiers by transferring ownership, maintenance, and operations of military family housing to large housing contractors through 50-year lifetime contracts. The Installation needs to ensure that renovated housing meets the bronze standard and all new construction meets the platinum standard.
- A barracks renovation program through FY08 will generate 1.2 million tons of material consisting of concrete, asphalt, rebar, piping, and fixtures. During the life of this program, more than 2.242 million square feet of barracks and administrative buildings will be demolished and rebuilt.
- Limited acreage in the cantonment constrains Fort Bragg's ability to grow and results in continuous redevelopment of previously used sites by demolition and remediation.
- If Fort Bragg and surrounding regions do not effectively control and reduce emission of ozone precursors from building fuel, future

development could become more restricted as well as more expensive.

How will Fort Bragg achieve its strategic goal?

Specific objectives to meet the sustainable design goal during this Program Operating Memorandum (POM) cycle are:

Objective 1: Develop a strong organizational management system that institutionalizes sustainable design concepts.

1. **Target:** Update the Installation Design Guide (IDG) to reflect SPiRiT/LEED Standards every 5 years.
2. **Target:** Develop, use, and document a SPiRiT/LEED rating for all building designs by 2005.
3. **Target:** Provide sustainable design training to Fort Bragg staff, program managers, quality assurance, inspectors, and engineers beginning in 2004.
4. **Target:** Identify and implement procedures to incorporate sustainable design into the existing MILCON Program during the programming phase (FY07).
5. **Target:** Review shelved Operations and Maintenance – Army (OMA) project awards for inclusion of “low hanging fruit” sustainability concepts by 2004.
6. **Target:** Conduct first cost and life-cycle cost analysis and study traditional versus sustainable design for vehicle maintenance facilities by 2004.

Objective 2: Improve the process for site selection and development for MILCON and OMA construction projects.

1. **Target:** Update the Fort Bragg Master Plan, incorporating sustainable site criteria by 2004.
2. **Target:** Perform site selection and site reviews for street trees, urban forestry,

and the conservation of green space beginning in 2004.

3. **Target:** Purchase and plant trees beginning in 2004.

Objective 3: Optimize water efficiency.

1. **Target:** Test pilot sustainable landscaping and parking technologies by 2007.
2. **Target:** Test pilot rainwater catchments and reuse by 2006.
3. **Target:** Manage remote areas’ wastewater using constructed wetlands by 2008.

Objective 4: Optimize energy and reduce atmospheric impacts.

1. **Target:** Install meters in new and existing buildings and master meters in complexes beginning in 2005.
2. **Target:** Develop Fort Bragg specific strategies, by facility types, to optimize energy performance (compared to standard energy baseline) by 2007.
3. **Target:** Test pilot sustainable lighting technologies by 2005.

Objective 5: Optimize materials and resources.

1. **Target:** Identify and utilize existing technologies for deconstruction by 2004.
2. **Target:** Use C&D recovery facility to encourage salvage, storage, and reuse of deconstruction materials beginning in 2005 (in coordination with Fort Bragg Goal 3).

Objective 6: Optimize indoor environmental quality.

1. **Target:** Develop a baseline for indoor air quality and emissions from products used in construction of various facility types by 2008.
2. **Target:** Assess indoor air quality (IAQ) issues of existing facilities by 2011.
3. **Target:** Perform periodic building commissioning training by 2011.

What are the benefits?

- *Lower life cycle facility costs* – As a working estimate, a platinum-rated buildings under the SPiRiT rating system will consume 75 percent less energy than a non-green building, 50 percent less than a gold-rated building, and 25 percent less than a bronze-rated building. As such, if all facilities were designed or retrofitted to meet the platinum ratings of the SPiRiT standard, Fort Bragg could be saving between \$8.75 million and \$26.26 million per year. Water use would also be lower.
- Integration of sustainable design concepts into all facets of the design and construction program will improve the quality of the facility while reducing environmental impacts.
- High-performance buildings increase worker satisfaction and productivity.

Whom to contact for more information:

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Check out Fort Bragg's web site at:

<http://www.bragg.army.mil/sustainability/>

How much progress does Fort Bragg expect to make during the current POM Cycle?

Figure III-1.
Percent of Square Feet "Platinum" Designed

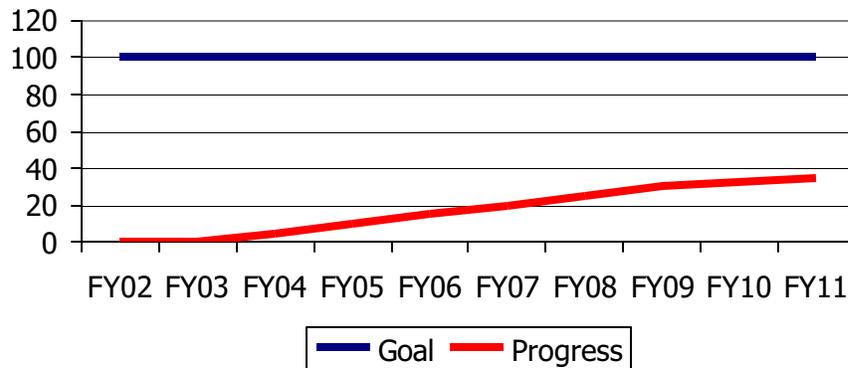
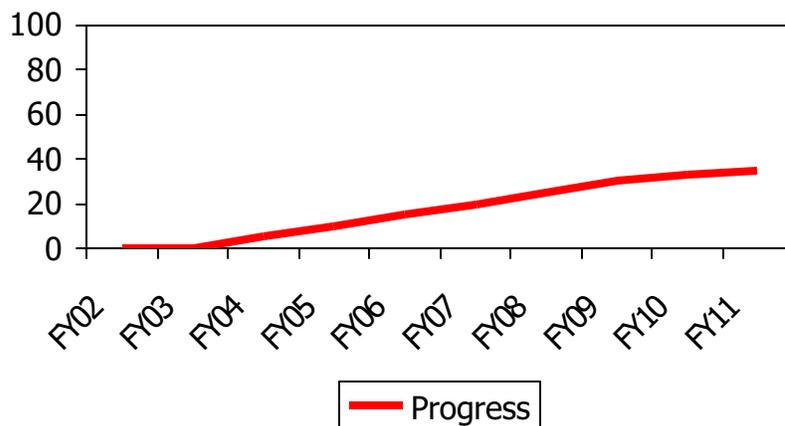


Figure III-2.
**Projected Cost Savings of Green Designs
Over Life of Buildings**



Actual metrics to measure progress will be determined at a later date.

What resources does Fort Bragg need to implement its objectives?

Figure III-3. Estimated Cost over POM (FY04-FY11).

Estimated Cost over POM (FY04-FY11)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$145,000	\$21,000	\$22,050	\$23,153	\$374,310	\$120,526	\$26,802	\$28,142	\$760,983
2	\$360,000	\$115,500	\$121,276	\$127,339	\$133,706	\$140,391	\$147,410	\$154,782	\$1,300,404
3	\$0	\$50,000	\$127,500	\$155,125	\$100,000	\$0	\$0	\$0	\$432,625
4	\$350,000	\$1,067,500	\$525,000	\$551,250	\$578,813	\$607,753	\$638,141	\$670,048	\$4,988,505
5	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
6	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$0	\$0	\$0	\$138,142
TOTAL	\$905,000	\$1,280,250	\$823,389	\$885,808	\$1,217,217	\$868,670	\$812,353	\$852,972	\$7,645,659

This funding will be used to provide one full-time equivalent urban forester to support various programs, projects, monitoring, and other tasks under this goal. \$350K per year will be used to develop and update various plans, perform studies, and develop models that will support overall management of sustainable design. \$150K per year will be used for pollution prevention opportunity assessments, benchmarking, and pilot testing of alternative technologies to identify projects that will be implemented to help meet the sustainable design strategic goal. \$525K per year is required for project implementation, which includes infrastructure upgrades, equipment purchases and installation, and service contracts. \$20K per year is required to support education, awareness, and partnership development.

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure III-4. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Develop strong organizational management system that institutionalizes sustainable design concepts.											
1	Update the IDG to reflect SPIRiT/LEED standards beginning in 2003.	Contract to update IDG every 5 years beginning in FY03.	\$0	\$0	\$0	\$0	\$350,000	\$0	\$0	\$0	SRM
2	Develop, use, and document a SPIRiT/LEED rating for all building designs by 2005.	Existing contract in FY03. No funding required.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	SRM/MCA
3	Provide sustainable design training to Fort Bragg staff, Project Managers, Quality Assurance, Inspectors, and Engineers by 2004.	Contract to update training program with existing and new technologies for sustainable design beginning in FY04. Ongoing.	\$20,000	\$21,000	\$22,050	\$23,153	\$24,310	\$25,526	\$26,802	\$28,142	SRM
4	Identify and implement procedures to incorporate sustainable design into the existing MILCON Program during the programming phase (FY07).	Contract for running a programming charrette to incorporate sustainable design in existing MILCON program beginning in FY04 and recurring every 5 years.	\$50,000	\$0	\$0	\$0	\$0	\$95,000	\$0	\$0	SRM

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Design

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
5	Review shelved OMA project awards for inclusion of "low hanging fruit" sustainability concepts by 2004.	Contract to develop list to update shelved OMA projects with sustainability concepts in FY04.	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	SRM
6	Conduct first cost and life-cycle cost analysis and study of traditional versus sustainable design for vehicle maintenance facilities by 2004.	Contract to perform sustainability comparison and cost analysis for standard vehicle maintenance facility in FY04.	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	SRM
Objective 2: Improve process for site selection and development for MILCON and OMA construction projects.											
1	Update Fort Bragg Master Plan incorporating sustainable site criteria by 2004. (Update every 10 years.)	Contract to prepare various sub plans to support Master Plan in FY04.	\$250,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	SRM
2	Perform site selection and site reviews for street trees, urban forestry, and the conservation of green space beginning in 2004.	Contract for 1 FTE urban forester in FY04 (ongoing).	\$85,000	\$89,250	\$93,713	\$98,398	\$103,318	\$108,484	\$113,908	\$119,604	SRM

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Design

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
3	Purchase and plant trees beginning in 2004.	Service Contract beginning in FY04.	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$33,502	\$35,178	TBD
Objective 3: Optimize water efficiency.											
1	Test pilot sustainable landscaping and parking technologies by 2007.	Contract to pilot test water efficient landscaping in uplands and lowlands beginning in FY05 for 3 years.	\$0	\$50,000	\$52,500	\$55,125	\$0	\$0	\$0	\$0	SRM/ENV
2	Test pilot rainwater catchments and reuse by 2006.	Contract to pilot test rainwater catchments and reuse in FY06.	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	SRM/ENV
3	Manage remote areas' wastewater using constructed wetlands by 2008.	Contract to pilot test constructed wetlands application in remote areas in FY07 and FY08.	\$0	\$0	\$0	\$100,000	\$100,000	\$0	\$0	\$0	SRM

Sustainable Design

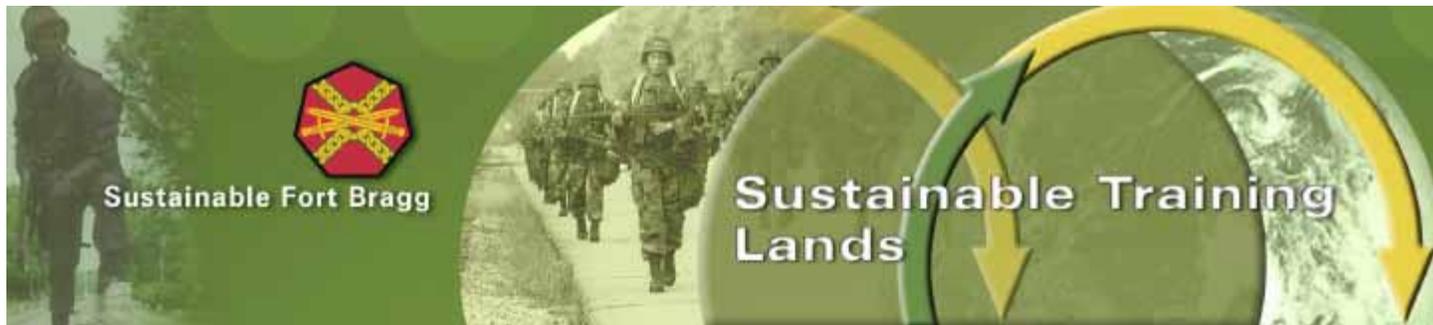
Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 4: Optimize energy and reduce atmospheric impacts.											
1	Install meters in new and existing buildings and master meters in complexes beginning 2008.	No funding required for new buildings since it is part of MILCON. Contract for master meters in complexes, TBD. Contract to install meters in existing and OMA buildings beginning in FY04 until completed.	\$0	\$500,000	\$525,000	\$551,250	\$578,813	\$607,753	\$638,141	\$670,048	SRM/MCA
2	Develop Fort Bragg-specific strategies, by facility types, to optimize energy performance (compared to standard energy baseline) by 2007.	Contract in FY05 and FY06 to develop strategies by facility type.	\$350,000	\$367,500	\$0	\$0	\$0	\$0	\$0	\$0	SRM
3	Test pilot sustainable lighting technologies by 2005.	Contract for pilot testing solar power applications in FY05.	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	SRM
Objective 5: Optimize materials and resources.											
1	Identify and utilize existing technologies for deconstruction by 2004.	Contract to identify applicable existing technologies in FY04.	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	SRM/IRP

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Design

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Use C&D recovery facility to encourage salvage, storage, and reuse of deconstruction materials beginning in 2005.	No funding required. Use existing manpower in Goal #3 beginning in FY05.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	SRM
Objective 6: Optimize indoor environmental quality.											
1	Develop a baseline for IAQ and emission from products used in the construction of various facility types by 2008.	Pilot test by CHPPM beginning in FY04 for 5 years.	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$0	\$0	\$0	ENV
2	Assess IAQ issues of existing facilities by 2011.	Contract to test facilities. TBD.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENV
3	Perform periodic building commissioning training.	No funding required; Part of training program developed in Goal #9; FY11.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENV

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11



Goal 5: Adopt compatible land use laws/regulations with local communities by 2005.

Challenge

Fort Bragg maintains 161,597 acres of land for training. Of this, only 72,236 acres have no restrictions for use. How can Fort Bragg provide enough usable land for military training—and ensure that training is not further constrained by potential environmental contamination and negative impacts on endangered species? How can Fort Bragg use its land requirements to address the effects of urban sprawl and regional needs for open space and biodiversity?

Where is Fort Bragg today?

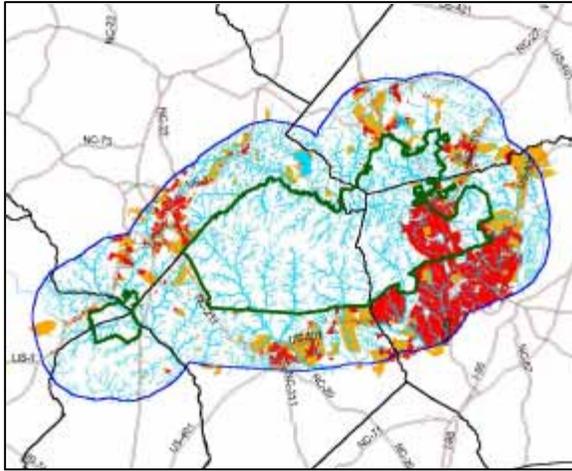
- The Land-Use Requirements Study conducted in 1995 concluded that Fort Bragg has a total training area shortfall of approximately 125,000 acres (combining both the shortfalls for maneuver and impact areas).¹
- As a federal facility, Fort Bragg has no jurisdiction to direct the land use plans or ordinances for municipal and county property adjacent to the installation.

¹ The shortfall is based on minimum requirements for contiguous acreage needed to support the single-largest training event conducted at the home station by the 229th Aviation Regiment. The 30th Infantry Brigade also has the same acreage requirement, which is 148,260 acres. The shortfall is obtained when all restricted and buffered areas are subtracted from the total training area acreage. [Land-Use Requirements Study, Fort Bragg, NC.](#) Nakata Planning Group, June 1995, page E-3.

- Fort Bragg's training areas are managed for two primary purposes: to support military training and to recover the population of the endangered Red-cockaded Woodpecker (RCW).
- Fort Bragg's training areas consist of ranges, impact areas, major drop zones, tank trails, and 487 miles of firebreaks covering 154,505 acres.
- Fort Bragg's training areas are used 330 days/year by 256 active duty, National Guard, and Reserve units.
- Fort Bragg's training areas are the most heavily used in the continental United States and among the most heavily used in the world.
- Rehabilitation and maintenance of this land is an on-going expensive requirement; an estimated \$70 million are required to remediate all training areas on Fort Bragg. Less than half of the requirement has been funded in the past.
- Five listed endangered species reside on the installation and restrict the types of training that can be conducted in those areas.
- Encroachment by surrounding communities in Hoke, Cumberland, Harnett, and Moore counties lead to conflicts when combined with the type and intensity of daily training activities at Fort Bragg (see Figure IV-1 on the next page). The area of land between the blue and green lines shows the population densities along the boundary. The bright red indicates urban development.
- Sustained training on highly erosive soils has led to situations where land has become so

damaged that it is unusable for training purposes.

Figure IV-1. Encroachment at Fort Bragg



- The installation has a successful partnership with the North Carolina Department of Commerce for the development and execution of the Joint Land-Use Study (JLUS). It is a win-win endeavor to identify and protect critical lands adjacent to Fort Bragg.

What are Fort Bragg's future challenges?

- Realistic training requires large amounts of undisturbed and undeveloped land. It is unlikely that Fort Bragg will be able to purchase parcels of undeveloped land contiguous to existing training areas.
- In the near future, training areas will have to be designed and managed to prevent chemical contamination of surface and ground waters from munitions residues.
- Land rehabilitation cannot be postponed indefinitely or minimized. Once an area is seriously degraded, rehabilitation takes a very long time.
- Encroachment occurs outside of the installation boundaries and outside of Fort Bragg's jurisdiction.

- Ongoing growth and development are coupled with the constant need to educate community planners and the public about encroachment issues.

How will Fort Bragg achieve its strategic goal?

Specific objectives to achieve sustainable training lands during this Program Operating Memorandum (POM) cycle are:

Objective 1: Implement and maintain up-to-date Joint Land Use Study/Plan.

1. **Target:** Update, maintain, and implement Joint Land Use Plan beginning in 2005.
2. **Target:** Update and maintain regional GIS database beginning in 2006.

Objective 2: Initiate and lead state and regional planning forums.

1. **Target:** Develop a strategic plan to provide initiatives to support long-term viability of the military by 2004 and ongoing thereafter.
2. **Target:** Develop and participate in the Sustainable Sandhills Initiative.

Objective 3: Develop state and community relations/education program.

1. **Target:** Implement a community relations program that includes Regional Land Use Advisory Commission (RLUAC) goals and JLUS issues beginning in 2004 and continuing thereafter.

Objective 4: Determine potential long-term encroachment issues and develop criteria for prioritizing planning efforts.

1. **Target:** Define areas of compatible land use adjacent to the installation by 2004 and ongoing thereafter.

Sustainable Training Lands

Objective 5: Sustain the installation to ensure units can train to doctrinal standards.

1. **Target:** Develop and implement a policy to expedite/streamline land acquisitions beginning in 2004.
2. **Target:** Develop and implement an installation strategy (acquisition, easements, lease, Private Land Initiative (PLI), etc.) to meet training land requirements, both contiguous and non-contiguous beginning in 2004.
3. **Target:** Identify and address issues of lost tax revenues for local counties because of conservation easements/land acquisition.
4. **Target:** Develop criteria/plan for dealing with off-installation impacts of smoke.
5. **Target:** Identify critical impacts from urban lighting and criteria to minimize impacts on training.
6. **Target:** Develop criteria/plan to protect low-level flight paths.
7. **Target:** Assess impact of frequency/cell phone tower encroachment.
8. **Target:** Identify erosion and run-off issues that degrade training lands/running trails.

What are the benefits?

This goal is directly tied to **Readiness**, one of the Installation's key processes.

- Planned acquisition of adjacent lands through purchase and donation create buffers and additional training areas. Planned expansion can improve Fort Bragg's ability to field future longer-ranged systems.
- Additional training land increases the ability of the Installation to train more soldiers and provide additional training scenarios.
- Jointly developed compatible land use definitions in areas adjacent to the Installation ("critical land") will reduce the number of complaints and provide a buffer that reduces encroachment issues.

Whom to contact for more information:

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Check out Fort Bragg's web site at:

<http://www.bragg.army.mil/sustainability/>

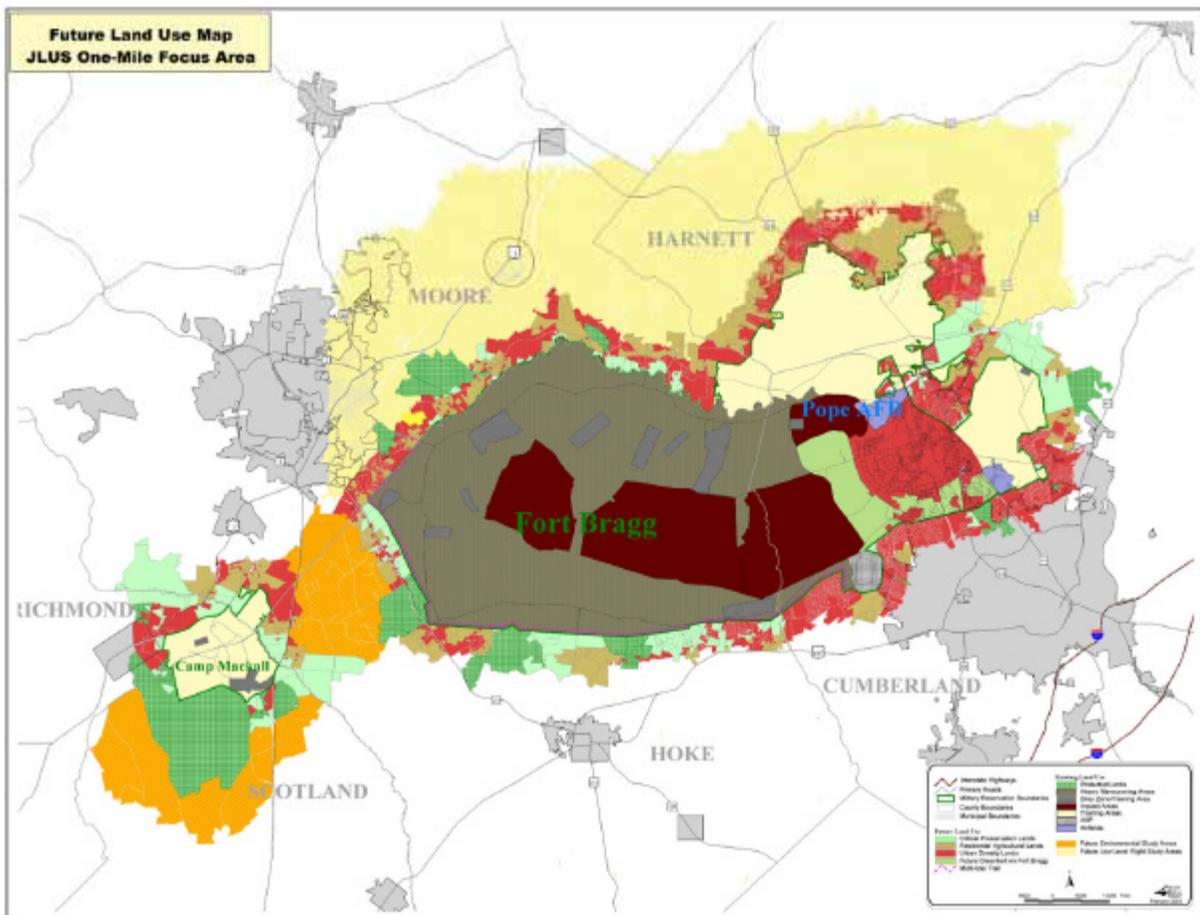
Sustainable Training Lands

How much progress does Fort Bragg expect to make during the current POM Cycle?

The Joint Land Use Study includes both general and specific recommendations for the protection of "critical land." The map below displays the proposed future land use for the One-Mile Buffer Area. The following color classification was used.

- Red = Urban Density (Less than 10 acres – Multiple Range of Land Uses)
- Light Green = Critical Preservation Lands (Greater than 10 acres – Limited Land Development)
- Brown = Residential Agricultural (Greater than 10 acres – Low Density Land Uses)
- Orange = Future Environmental Study Areas
- Yellow = Future Low Level Flight Study Areas
- Dark Green = Protected Land

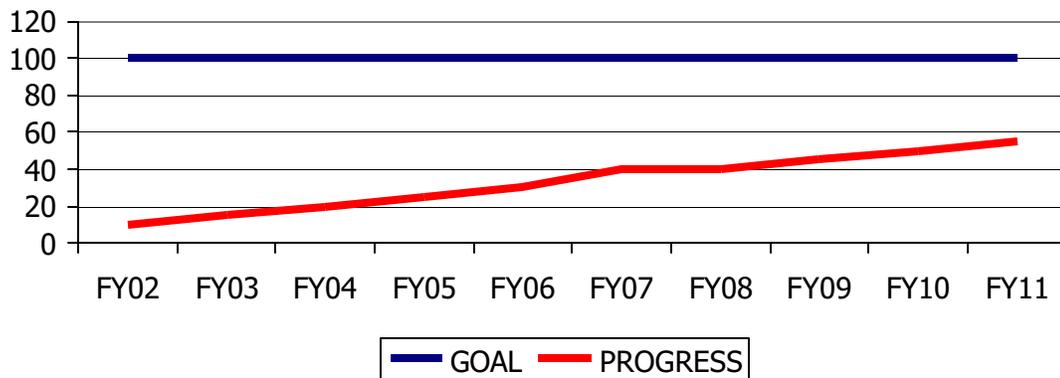
Figure IV-2. Future Land Use Map



Sustainable Training Lands

Progress will be measured based on the percentage of recommendations adopted by the local communities and subsequent protection of that "critical land."

**Figure IV-3.
Percentage of Recommendations Adopted by Local
Communities**



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Sustainable Training Lands

What resources does Fort Bragg need to implement its objectives?

Figure IV-4. Estimated Cost over POM (FY04-FY11)

Estimated Cost over POM (FY04-FY11)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$300,000	\$100,000	\$105,000	\$110,250	\$115,763	\$436,551	\$127,628	\$1,295,191
2	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$211,065	\$1,432,366
3	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,911
4	\$295,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$295,000
5	\$100,000	\$5,180,000	\$5,110,250	\$5,115,763	\$5,121,551	\$5,127,628	\$5,134,010	\$5,140,710	\$36,029,911
TOTAL	\$645,000	\$5,742,500	\$5,485,875	\$5,510,169	\$5,535,677	\$5,562,461	\$5,905,584	\$5,620,113	\$40,007,379

This funding will be used to provide three full-time equivalent contract employees beginning in FY04 with an additional requirement for an FTE contract employee beginning in FY06. These contract positions will support various programs, projects, and other tasks identified under this goals. \$670K during the POM cycle will be used to develop, update, and maintain various plans; perform studies; and develop predictive models to support the overall management of training lands. \$5M/year will be used for project implementation to ensure units can train to doctrinal standards.

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure IV-5. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Implement and maintain up-to-date Joint Land Use Study/Plan.											
1	Update, maintain, and implement Joint Land Use Plan beginning 2005.	Contract to update plan every 5 years beginning in FY05.	\$0	\$300,000	\$0	\$0	\$0	\$0	\$315,000	\$0	DOD Office of Economic Adjustment
2	Update and maintain regional GIS database beginning 2006.	Contract for 1 FTE GIS/Planner GS 11 equivalent beginning in FY06-FY11.	\$0	\$0	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	DOD Office of Economic Adjustment
Objective 2: Initiate and lead state/regional planning forums.											
1	Develop a strategic plan to provide initiatives to support the long-term viability of the military by 2004 and ongoing.	Contract for 1 FTE (GS-13 equivalent) to support NC Dept. of Commerce for all projects listed under this objective beginning FY04.	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$211,065	DOD Office of Economic Adjustment
2	Develop and participate in Sustainable Sandhills Initiative.										

Sustainable Training Lands

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 3: Develop state and community relations/education program.											
1	Implement a community relations program that includes RLJAC goals and JLUS issues beginning in 2004 and continuing thereafter.	Contract for 1 FTE (GS-11 equivalent) beginning in FY04 through FY11.	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	DOD Office of Economic Adjust-ment
Objective 4: Determine potential long-term encroachment issues and develop criteria for prioritizing planning efforts.											
1	Define areas of compatible land use adjacent to the installation by 2004 and ongoing thereafter.	CERL Study in FY04.	\$295,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
Objective 5: Sustain the installation to ensure units can train to doctrinal standards.											
1	Policy required to expedite/streamline land acquisitions.	DA execution required for policy. Funding to execute land acquisitions.	\$0	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Training Lands

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Develop and implement an installation strategy (acquisition, easements, lease, PLI, etc.) to meet training land requirements, both contiguous and non-contiguous.	Contract for 1 FTE GS 11 equivalent in FY04-FY11.	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	TBD
3	Identify and address issues of lost tax revenues for local counties because of conservation easements/land acquisition.	DA/DOD execution required	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
4	Develop criteria/plan for dealing with off-installation impacts of smoke.	Contract for plan; Preparation completed by end of FY05; Contract for permit and easement preparations in FY05.	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	TBD
5	Identify critical impacts from urban lighting and criteria to minimize impacts on training.	Use Internal resources to develop deliverables. FY03.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Training Lands

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
6	Develop criteria/plan to protect low-level flight paths.	FY03 Internal resources/Pope AFB. Resources TBD for out years.	TBD								
7	Assess impact of frequency/cell phone tower encroachment.	FY03 Internal resources.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
8	Identify erosion and run-off issues that degrade training lands/running trails.	Addressed in Water Resources Goals #1 and 2. No funding required here.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11



Goal 6: Reduce energy use in accordance with Executive Order 13123. Specifically, to reduce energy use by 30 percent by 2005 and 35 percent by 2010.

Challenge

Reliable and affordable energy is essential to Fort Bragg's continued operation. Use of energy at Fort Bragg, whether it is on-post generation or off, contributes to the high levels of ozone in the air. Further, current events raise serious concerns about the security, cost, and availability of energy. How can Fort Bragg protect and secure the energy it needs to operate, while improving regional air quality and controlling costs?

Where is Fort Bragg today?

- 20 percent of the annual installation-operating budget covers energy costs of \$29 million.
- The bulk of Fort Bragg's energy use is for lighting, heating, and cooling buildings.
- While energy costs are decreasing, overall consumption is increasing.
- Carolina Power and Light Company (CP&L) provides electrical power directly to the cantonment area and Camp McCall.
- There are four substations on Fort Bragg and five main meters measure electric consumption, resulting in one total installation bill.
- Fort Bragg has one delivery point for natural gas and currently uses open market purchasing for natural gas with a fallout contract in place with the North Carolina Natural Gas Company (NCNG).

- In 1997, Fort Bragg began a partnership with Honeywell under an Energy Savings Performance Contract (ESPC), a 25-year contract that guarantees energy efficiency and cost savings based on Honeywell's performance.
- Fort Bragg has installed 350 meters across the installation for real time monitoring of energy use.
- Fort Bragg is in a non-attainment area for ozone.

What are Fort Bragg's future challenges?

- Energy use may be a future issue as the surrounding populations grow and consumption increases.
- Deregulation within the energy industry may take place in North Carolina, which could result in service variance and high cost.
- Processes used to obtain the resources that generate electricity have direct impacts on the water, air, and land and generate waste. Benefits of alternatives are hard to justify when the impacts occur outside the Installation fence line.
- If Fort Bragg and the surrounding regions do not effectively control and reduce emission of ozone precursors from building fuel, future development could become more restricted as well as more expensive.

How will Fort Bragg achieve its strategic goal?

Specific objectives to reduce energy use are:

Objective 1: Reduce energy consumption.

1. **Target:** Develop a Shared Energy Savings Program and retrofits to manage natural gas and electrical loads.
2. **Target:** Implement a load management strategy for natural gas.
3. **Target:** Implement a load management strategy for electrical loads (to enable Fort Bragg to buy green power).
4. **Target:** Identify and implement natural gas initiatives for distributive generation.

Objective 2: Increase the percentage of renewable energy use.

1. **Target:** Perform a feasibility study for the conversion of existing central energy plants to cogeneration by 2005.
2. **Target:** Implement cogeneration projects.
3. **Target:** Perform solar power study for individual buildings.
4. **Target:** Implement solar power projects.

Objective 3: Provide incentives for energy users to conserve.

1. **Target:** Develop and integrate incentive program with installation training program.
2. **Target:** Develop and implement energy conservation incentives for all Fort Bragg activities.

What are the benefits?

- In the long-term, energy conservation will make Fort Bragg less dependent on commercial power where deregulation has made power costs fluctuate. In addition, investments that reduce energy costs will

continue to provide cost avoidance indefinitely after the initial investments are repaid. Energy conservation also reduces the emission of greenhouse gasses and regional environmental impacts associated with energy production.

- The US Army Construction Engineering Research Lab (CERL) has evaluated Fort Bragg to determine its opportunities for energy reduction. Using data from Fort Bragg and their models for projected savings based upon technology performance, CERL projects that off-the-shelf technology could reduce energy consumption by 25 percent (757,000 MBtu of a total 3,000,000 MBtu average consumption). This would reduce energy costs by \$7.3 million/yr. The investment, if Fort Bragg were to pay for the upgrade would be approximately \$38 million (payback of 5 years). However, using the ESPC partnership reduces Fort Bragg's investment to \$4.9 million between FY04-FY011. This investment will be recovered in one year at the point when the ESPC recovers its costs from Fort Bragg energy savings.
- In addition to simple payback, there are other "hidden" savings associated with the use of water- and energy-saving technologies. The value of the money saved will increase at a greater rate than inflation. While this does not benefit Fort Bragg directly, it does benefit the United States.
- Emerging technologies may offer additional energy reductions in the short-term. Ultimately, energy independence will rely upon the use of renewable energy sources. Solar power (and other renewable energy projects) will reduce energy costs, decrease environmental impact through more efficient use of resources, and improve energy security and independence.
- Cogeneration and solar power renewable energy projects will reduce energy costs, decrease environmental impact through more efficient use of resources, and improve energy security and independence.

- Purchasing regional renewable energy sources results in reduced regional air pollution emissions and supports the development of regional renewable energy production infrastructure.

Whom to contact for more information:

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Check out Fort Bragg's web site at:

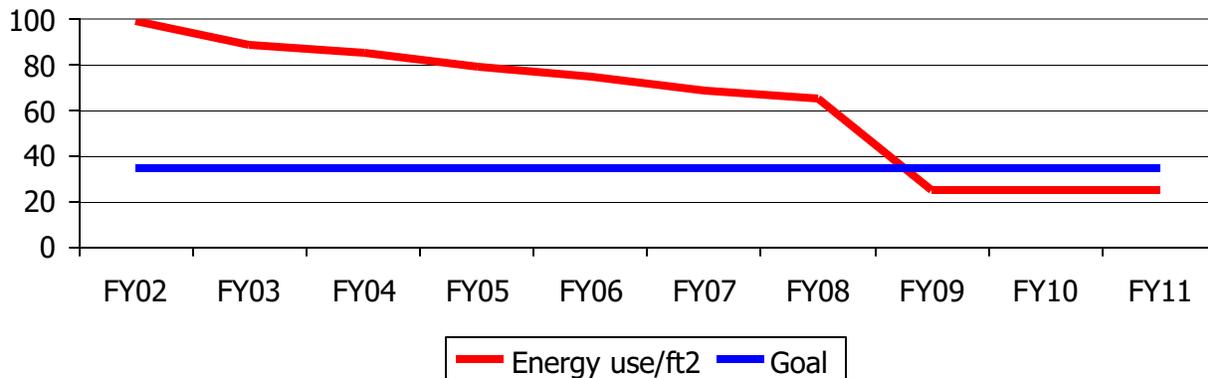
<http://www.bragg.army.mil/sustainability/>

Energy Conservation

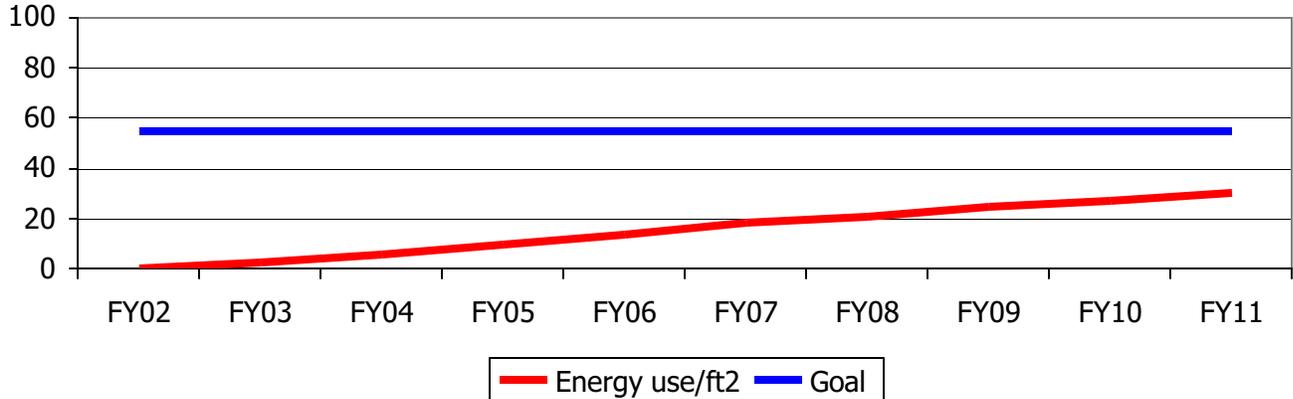
How much progress does Fort Bragg expect to make during the current POM Cycle?

Metrics to measure progress will be determined at a later date. Potential metrics are listed below.

**Figure V-1.
Energy Use Per Square Foot Over Time**



**Figure V-2.
Percent of Renewable Energy Use Per Square Foot Over Time**



What resources does Fort Bragg need to implement its objectives?

Figure V-3. Estimated Cost over POM (FY04-FY11)

Estimated Cost over POM (FY04-FY11)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$520,000	\$441,000	\$463,050	\$486,202	\$510,512	\$536,038	\$562,840	\$590,982	\$4,110,624
2	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$520,000	\$641,000	\$463,050	\$486,202	\$510,512	\$536,038	\$562,840	\$590,982	\$4,310,624

This funding will be used to develop, update, and maintain various plans; perform studies; and develop predictive models that will support the energy conservation strategic goal. \$400K per year is required for project implementation, which includes infrastructure upgrades, equipment purchases and installation, and implementation of energy consumption reduction technologies and service contracts.

Energy Conservation

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure V-4. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Reduce Energy Consumption.											
1	Develop Shared Energy Savings Program and retrofits to manage natural gas and electrical loads.	TBD									TBD
2	Implement load management strategy for natural gas.	Contract, FY04, ongoing	\$210,000	\$220,500	\$231,525	\$243,101	\$255,256	\$268,019	\$281,420	\$295,491	TBD
3	Implement load management strategy for electrical loads (enable Fort Bragg to buy green power).	Contract, FY04 ongoing	\$210,000	\$220,500	\$231,525	\$243,101	\$255,256	\$268,019	\$281,420	\$295,491	TBD
4	Identify and implement natural gas initiatives for distributive generation.	Contract, FY04, ongoing	\$100,000								TBD
Objective 2: Increase percentage of renewable energy use.											
1	Perform a feasibility study for the conversion of existing central energy plants to cogeneration.	Contract for feasibility study, FY05		\$200,000							TBD

Energy Conservation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Implement cogeneration projects.	TBD									TBD
3	Perform solar power study for individual buildings.	Covered under Goal 4									TBD
4	Implement solar power projects.	TBD									TBD
Objective 3: Provide incentives for energy users to conserve.											
1	Develop and implement an Energy Awareness Program for Fort Bragg.	Covered under training goal 9									TBD
2	Develop and implement energy conservation incentives for all Fort Bragg activities.	Covered under training goal 9									TBD

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Goal 7: Develop and implement an effective regional commuting system; and
Goal 8: Reduce the use of gasoline and diesel by 70 percent by 2015 and 99 percent by 2025.

Challenge

The state of North Carolina is increasingly concerned about air quality, especially about rising concentrations of ozone and other air pollutants. Fort Bragg is also concerned with air quality and its dependence on external sources of fuel. Such dependence for gasoline and diesel can be detrimental to force protection. How can Fort Bragg minimize future costs and operational restrictions while decreasing use of petroleum-based products and improving regional air quality?

Where is Fort Bragg today?

- Fort Bragg received its first Operating Permit in 1983 for 17 significant sources.
- By 2000, the permit included 58 significant and 810 insignificant sources.
- In 2002, the permit included 72 significant and 810 insignificant sources.
- There are over one million commuter miles traveled at Fort Bragg each day.
- Estimates of emissions resulting from the daily commute of 49,785 military and civilian personnel exceed the emissions associated with on-site heat generation activities.
- Fort Bragg spent over a quarter of a million dollars in FY02 on air quality related activities.

What are Fort Bragg's future challenges?

- Fort Bragg's dependence on external sources of oil poses a threat to force protection and mission readiness.
- As both industry and population grow in North Carolina, air quality becomes an increasingly important issue for all communities, including Fort Bragg.
- Concern over air quality translates into additional and more stringent requirements, community concern, and ultimately, increased cost for Fort Bragg.

How will Fort Bragg achieve its strategic goal?

Specific objectives to reduce transportation impacts on regional air quality and reduce Installation dependency on external sources of oil are:

Objective 1: Develop and implement an effective regional commuting system.

1. **Target:** Develop a comprehensive transportation plan to support the master plan by 2004.
2. **Target:** Develop a comprehensive transportation survey by 2004.
3. **Target:** Develop and execute an on- and off-post commuting program that will meet force

protection requirements and will provide an efficient means for workplace commuting for Fort Bragg soldiers, civilians, and family members.

4. **Target:** Develop recommendations for regional transportation alternatives starting in 2004.
5. **Target:** Incorporate smart growth design standards into Fort Bragg Master Plan and IDG.
6. **Target:** Develop a high occupancy vehicle (HOV) lane for the new Outer Loop.
7. **Target:** Study and implement livable communities and smart growth concepts to reduce transportation requirements by 2007.

Objective 2: Develop and implement compatible land-use and transportation strategies to decrease automobile dependency.

1. **Target:** Evaluate how decreased automobile dependency improves the quality of life for soldiers, their families, and civilians working at Fort Bragg.
2. **Target:** Plan and build a complete bicycle network—bike trails and bike lanes—throughout Fort Bragg.
3. **Target:** Develop a pedestrian plan and build a complete pedestrian network of sidewalks, crosswalks, running trails, etc.
4. **Target:** Establish a "green" bike program that provides community bikes for civilians and soldiers on post beginning in 2004.
5. **Target:** Maximize Fort Bragg's existing inter- and intra-post transportation incentive programs to promote alternatives to driving single-occupancy vehicles beginning in 2005.

Objective 3: Develop and implement strategies to decrease regional air emissions.

1. **Target:** Conduct a feasibility study to identify transportation control measures (e.g., carpools, park and ride) and

strategy development to reduce total air emissions by 2005.

2. **Target:** Develop and implement an active Fort Bragg Carpooling Program and Guaranteed Ride Home for soldiers and civilians working on post.
3. **Target:** Collect baseline data to perform opportunity assessments. Collect and analyze data to determine the amount of each fuel used in non-tactical equipment, segregate types of vehicle and vehicle usage (i.e., on- and off-road use, on- and off-post use).
4. **Target:** Develop incentives for General Services Administration (GSA) customers to reduce petroleum-based product consumption.
5. **Target:** Perform opportunity assessment to identify alternative fuels for practical use on Fort Bragg.
6. **Target:** Develop and implement a comprehensive plan for converting non-tactical vehicles into Alternative Fuel Vehicles (AFV) by 2010. Alternative fuels being evaluated include bio-diesel B20 (20 percent oil and 80 percent diesel), ethanol E85 (85 percent ethanol and 15 percent gasoline), propane, and compressed natural gas.
7. **Target:** Develop and implement a comprehensive contractual language and policy/regulation changes to require the use of alternative fuels in vehicles operation on the Installation and in support of Fort Bragg.
8. **Target:** Install infrastructure and convert non-tactical vehicles and equipment to alternative fuels.
9. **Target:** Develop a program to collect and maintain air-quality offset data for alternative fuels such as bio-diesel and ethanol.
10. **Target:** Assess feasibility and implement non-traditional modes of transportation (e.g., electric golf carts, bicycles, etc.) within the compounds, such as Public

Works Business Center (PWBC) and Materiel Maintenance Branch (MMB), for localized transportation.

Objective 4: Develop and implement strategies as alternatives to car travel.

1. **Target:** Conduct a feasibility study and cost identification of implementing an intra-installation transportation bus or shuttle system or military taxi by 2005.
2. **Target:** Identify non-driving options such as telecommuting, use of flex times by 2006.

Objective 5: Develop a community outreach and awareness partnership to support regional air-quality initiatives and increase use of regional multi-modal systems.

1. **Target:** Participate in local planning with councils of government, area metropolitan planning organizations, and the North Carolina Department of Transportation (NCDOT).
2. **Target:** Pursue federal, state, and private grants for transportation and commuting options.
3. **Target:** Develop and implement an education and awareness strategy.
4. **Target:** Develop a communication mechanism to identify and remove barriers.

What are the benefits?

- Reducing traffic congestion will improve the lives of all workers who commute or drive on the Installation. Fort Bragg employees commute 1 million miles/day to the Installation or 20 minutes/person/day. If we reduce the commute time by one minute/day, the value in human capital is 830 hours/day, which translates into 215,000 hours/yr, or roughly \$3.6 million/yr.

- Implementing a regional commuting system will reduce Fort Bragg's impact on the regional air quality by reducing CO₂, NO_x, and CO emissions.
- Converting Fort Bragg non-tactical vehicles and equipment to alternative fuels will reduce the Installation's dependency on external sources of oil and improve regional air quality.
- The air quality offset, the reduced emissions, and the lowest achievable emission rate will be evaluated in the future to determine benefit to Fort Bragg.

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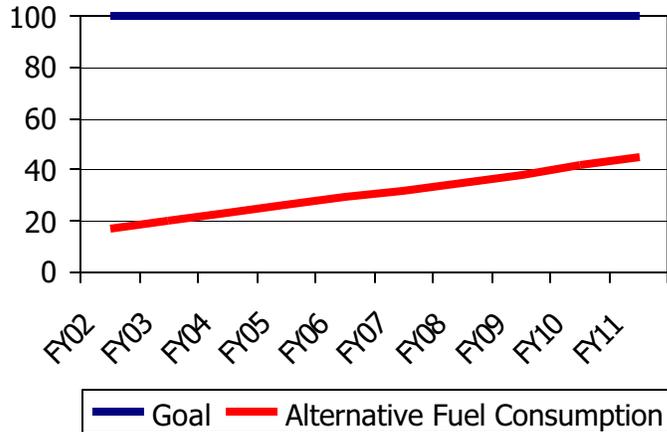
Check out Fort Bragg's web site at:

<http://www.bragg.army.mil/sustainability/>

How much progress does Fort Bragg expect to make during the current POM Cycle?

Indicators to measure progress will be developed on a later date. Fort Bragg will look at petroleum-product (i.e., gas and diesel) consumption trends by non-tactical vehicles as an indication of progress.

Figure VI-1. Percent Alternative Fuel Consumption



Sustainable Transportation

What resources does Fort Bragg need to implement its objectives?

Figure VI-2. Estimated Cost over POM (FY04-FY11)

Estimated Cost over POM (FY04-FY011)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$630,000	\$105,000	\$110,250	\$465,763	\$121,551	\$127,628	\$134,010	\$140,710	\$1,834,911
2	\$72,500	\$133,125	\$87,281	\$91,645	\$96,228	\$101,039	\$156,091	\$111,395	\$849,304
3	\$110,000	\$195,750	\$171,663	\$17,364	\$79,008	\$19,144	\$87,105	\$21,107	\$701,141
4	\$0	\$100,000	\$25,000	\$0	\$0	\$0	\$0	\$0	\$125,000
5	\$35,000	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$35,000	\$240,048
TOTAL	\$847,500	\$558,875	\$420,444	\$602,335	\$325,726	\$278,199	\$409,113	\$308,212	\$3,750,404

This funding will be used to provide two full-time ORISE Intern positions during FY04-FY11 to support various programs, projects, monitoring, and other tasks under this goal. Over the POM, \$900K will be used to develop and update various plans, perform studies, and develop models for alternative transportation requirements for the reduction of total air emissions. \$100K per year will be used for pollution prevention opportunity assessments; benchmarking; and pilot testing of technologies to identify alternatives and solutions to current methods of transportation, fuel consumption, and regional air-quality issues. Another \$100K per year is required for project implementation including infrastructure upgrades, equipment purchases and installation, implementation of trip reduction technologies, and service contracts. Additional funding for implementation will be required once studies are completed. \$35K per year is required to support education, awareness, and partnership development.

Sustainable Transportation

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure VI-3. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Develop and implement a comprehensive transportation program.											
1	Comprehensive transportation plan to support the master plan.	Contract, FY04	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
2	Develop a comprehensive transportation survey.	Contract, FY04	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
3	Develop and execute an on- and off-post commuting program that will meet force protection requirements and will provide an efficient means of workplace commuting for Fort Bragg soldiers, civilians, and family members.	TBD	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
4	Develop recommendations for regional commuting alternatives.	Contract, FY04, recurring requirement	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Transportation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
5	Incorporate smart growth design standards into Fort Bragg Master Plan and IDG.	Contract, FY04	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
6	Develop a high occupancy vehicle (HOV) lane for the new Outer Loop.	TBD	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
7	Study and implement livable communities and smart growth concepts to reduce transportation requirements.	Part of master plan update, FY07	\$0	\$0	\$0	\$350,000	\$0	\$0	\$0	\$0	TBD

Objective 2: Develop and implement compatible land use and transportation strategies to decrease automobile dependency.

1	Evaluate how decreased automobile dependency improves quality of life of soldiers, their family members, and civilians working on Fort Bragg.	Contract, FY05, recurring every five years	\$0	\$50,000	\$0	\$0	\$0	\$0	\$50,000	\$0	TBD
2	Plan and build a complete bicycle network—bike trails and bike lanes—throughout Fort Bragg.	Contract study FY04, implement projects FY05-FY11	\$30,000	\$30,000	\$31,500	\$33,075	\$34,729	\$36,465	\$38,288	\$40,203	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Transportation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
3	Develop a pedestrian plan and build a complete pedestrian network of sidewalks, crosswalks, running trails, etc.	Contract study FY04, implement projects FY05-FY11	\$30,000	\$30,000	\$31,500	\$33,075	\$34,729	\$36,465	\$38,288	\$40,203	TBD
4	Establish a "green" bike program that provides community bikes for civilians and soldiers on post.	Equipment purchase, FY04	\$12,500	\$13,125	\$13,781	\$14,470	\$15,194	\$15,954	\$16,751	\$17,589	TBD
5	Maximize Fort Bragg inter- and intra-post transportation incentive programs to promote alternatives to driving single-occupancy vehicles.	Contract, FY05, ongoing requirement	\$0	\$10,000	\$10,500	\$11,025	\$11,576	\$12,155	\$12,763	\$13,401	TBD
Objective 3: Develop and implement strategies to decrease regional air emissions.											
1	Conduct a feasibility study to identify transportation control measures (e.g., carpools, park and ride) and strategy development to reduce total air emissions.	Contract, FY05	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Transportation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Develop and implement an active Fort Bragg Carpooling Program and Guaranteed Ride Home for soldiers and civilians working on post.	Contract, FY04, ORISE Intern support	\$65,000	\$15,750	\$71,663	\$17,364	\$79,008	\$19,144	\$87,105	\$21,107	TBD
3	Collect baseline data to perform opportunity assessments. Collect and analyze data to determine the amount of each fuel used in non-tactical equipment, segregate types of vehicle and vehicle usage (i.e., on- and off-road use, on- and off-post use).	ORISE Intern support	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
4	Develop incentives for GSA customers to reduce petroleum-based product consumption.	Incentive program, FY05, use existing resources	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
5	Perform opportunity assessment to identify alternative fuels for practical on Fort Bragg.	Contract, FY04	\$15,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Transportation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
6	Develop and implement a comprehensive plan for converting non-tactical vehicles into AFVs.	Use existing resources, FY03	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
7	Develop and implement contractual language and policy/regulation changes to require the use of alternative fuels in vehicles operating on the Installation and in support of Fort Bragg.	Use existing resources, FY03	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
8	Install infrastructure and convert non-tactical vehicles and equipment to alternative fuels.	Contract FY04 and FY06. Equipment purchase FY05	\$30,000	\$100,000	\$100,000	\$0	\$0	\$0	\$0	\$0	TBD
9	Develop program to collect and maintain air-quality offset data for alternative fuels such as bio-diesel and ethanol.	TBD	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENW

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

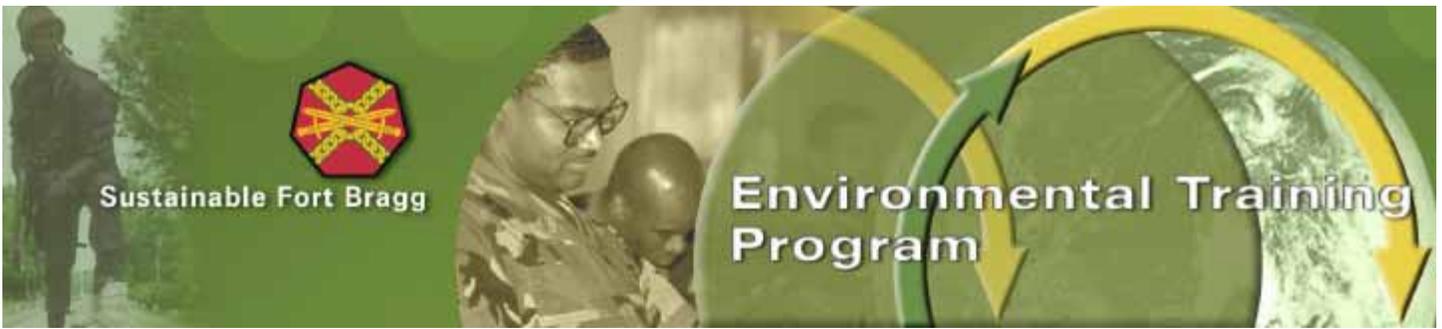
Sustainable Transportation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
10	Assess feasibility and implement non-traditional modes of transportation (e.g., electric golf-carts, bicycles, etc.) within compounds, such as PWBC and MMB, for localized transportation.	ORISE Intern support, FY05	\$0	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	TBD
Objective 4: Develop and implement strategies as alternatives to car travel.											
1	Conduct a feasibility study and cost identification of implementing an intra-installation transportation bus or shuttle system or military taxi.	Contract, FY05	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	TBD
2	Identify and implement non-driving options such as telecommuting, use of flex times.	Contract option identification, FY06	\$0	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	TBD
Objective 5: Develop a community outreach and awareness partnership to support regional air-quality initiatives and increase use of regional multi-modal systems.											
1	Participate in local planning with the councils of government, area metropolitan planning organizations, and the NCDOT.	Cost covered in Objective 1, project 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Sustainable Transportation

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Pursue federal, state, and private grants for transportation and commuting options.	Cost covered in Objective 1, project 4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
3	Develop and implement an education and awareness strategy.	Contract, FY04, recurring	\$35,000	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$35,000	TBD
4	Develop a communication mechanism to identify and remove barriers.	Use existing resources	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD



Goal 9: Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties

Challenge

Fort Bragg recognizes the need to integrate sustainability concepts into numerous installation programs and activities. Current environmental training is generally compliance oriented and occupation specific. Insufficient environmental awareness at all levels hinders the incorporation of environmental stewardship into mission planning and execution. How can Fort Bragg integrate current training subject matter and broaden the focus to encompass sustainability concepts?

Where is Fort Bragg today?

- Fort Bragg provides a variety of training classes to meet regulatory requirements that effect occupation-related activity.
- Fort Bragg maintains several robust training programs that focus on narrow requirements but are not coordinated nor integrated.
- Fort Bragg has an environmental outreach program that provides needed information to target audiences.

What are Fort Bragg's future challenges?

- Fort Bragg needs integrated training that supports the Installation's development of an Environmental Management System

(EMS required under EO 13148) and the established installation sustainability goals.

- Fort Bragg needs to develop an education program that integrates sustainability concepts into current training programs. In addition, the program needs to meet the training requirements of the EMS.
- Education must extend beyond Fort Bragg's perimeter to include all surrounding communities, because many sustainability issues require regional solutions.

How will Fort Bragg achieve its strategic goal?

Specific objectives to develop and implement an integrated-training program are:

Objective 1: Develop a training-needs assessment.

1. **Target:** Perform training-needs assessment.
2. **Target:** Identify curricula-development needs from 2003 to 2007.

Objective 2: Implement training program for Fort Bragg community.

1. **Target:** Develop and implement policy and training. Include policy for installation environmental training in Fort Bragg Regulation 350-1 by 2004.
2. **Target:** Build an integrated "tool chest" of environmental and sustainability educational

Environmental Training Program

materials and resources from 2003 and ongoing.

Objective 3: Periodically evaluate training-program effectiveness and develop recommendations for improvement.

1. **Target:** Develop environmental training checklists for Inspector General (IG) and organizational readiness assessment (ORA) inspections by 2005.

Objective 4: Develop and implement a public outreach/information program for the Sandhills Region.

1. **Target:** Develop outreach materials and activities for and distribute them in the surrounding community from 2003 to 2007.

What are the benefits?

Without training, investments in new approaches and technologies are less effective. For example, even energy-efficient lighting is less effective if staff always leave lights burning. To become sustainable, Fort Bragg staff and community must be educated on the importance of sustainability until the concepts become accepted. Specific benefits include:

- Cultural change that supports success of other sustainability goals guarantees long-term ability of the Installation to maintain its missions.
- Standardizing and integrating Fort Bragg's training programs will reduce duplication in training material and will maintain a consistent message.
- Educating personnel on how their actions affect the environment will help reduce future enforcement actions and degradation of installation capabilities.

Whom to contact for more information:

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Check out Fort Bragg's web site at:

<http://www.bragg.army.mil/sustainability/>

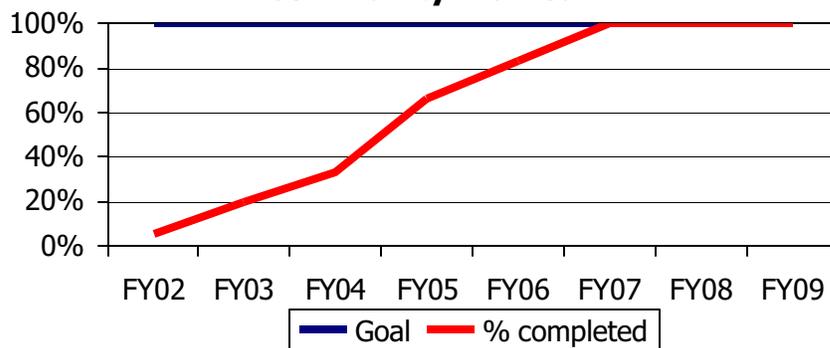
Environmental Training Program

How much progress does Fort Bragg expect to make during the current POM Cycle?

Actual metrics to measure progress will be determined at a later date. Results of training can be measured in two ways: quantity and quality.

- Quantity – Class attendance and training records from results of IG/ORA inspections (is training being executed?), number of hits on web site, number of brochures distributed, event participation, number of events, number of identified training programs required/number implemented.
- Quality – Pre and post testing, surveys

Figure VII-1 - Percent of Fort Bragg Community Trained



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Environmental Training Program

What resources does Fort Bragg need to implement its objectives?

Figure VII-2. Estimated Cost Over POM.

Estimated Cost over POM (FY04-FY11)										
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total	
1	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179	
2	\$76,500	\$75,000	\$40,000	\$40,375	\$42,500	\$55,000	\$45,575	\$57,229	\$432,179	
3	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179	
4	\$50,000	\$53,500	\$28,000	\$29,375	\$30,500	\$32,000	\$33,575	\$35,229	\$292,179	
TOTAL	\$226,500	\$233,500	\$123,000	\$127,500	\$133,000	\$150,000	\$145,300	\$161,915	\$1,300,715	

This funding will be used to provide two full-time equivalent contractors to support various programs, projects, monitoring, and other tasks under this goal. \$14K every five years is required for project implementation including: infrastructure upgrades, equipment purchases and installation, and service contracts. \$15K is required in FY05 for website development to support web-based training. \$11.5K per year is required to support education, awareness, and partnership development.

Environmental Training Program

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure VII-3. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Develop training/needs assessment.											
1	Perform training-needs assessment.	1 FTE currently resourced; additional FTE required FY03 ongoing spread through all four objectives. Cost reflects 1/4 of funding required.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD
2	Identify curricula-development needs.		\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	
Objective 2: Implement Training Program.											
1	Develop and implement policy and training.	1 FTE currently resourced; additional FTE required FY03 ongoing spread through all four objectives. Cost reflects 1/4 of funding required.	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	TBD
2	Build an integrated "tool chest" of environmental and sustainability educational materials and resources.		FY03	\$26,500	\$22,500	\$12,500	\$11,500	\$12,500	\$23,500	\$12,500	\$22,500

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Environmental Training Program

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 3: Periodically evaluate training-program effectiveness and develop recommendations for improvement.											
1	Develop environmental training checklists for IG and ORA inspections by FY05.	1 FTE currently resourced; additional FTE required FY03 ongoing spread through all four objectives. Cost reflects 1/4 of funding required.	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	TBD
Objective 4: Develop and implement a public outreach/information program.											
1	Develop outreach materials and activities for and distribute them in the surrounding community.	1 FTE currently resourced; additional FTE required FY03 ongoing spread through all four objectives. Cost reflects 1/4 of funding required. FY03 and ongoing.	\$50,000	\$53,500	\$28,000	\$29,375	\$30,500	\$32,000	\$33,575	\$35,229	TBD

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Goal 10: Work toward 100 percent environmentally preferable products (EPPs) by 2025 for all purchases, including government purchase cards, contract, and military requisitions.

Challenge

Fort Bragg buys \$176 million worth of products and materials every year—and throws away over 200,000 tons at a total cost well over \$3 million. How can Fort Bragg promote the sustainable manufacture, use, and disposal of materials and products, while minimizing costs and environmental impact? How can Fort Bragg stimulate local and national markets for environmentally preferred products?

Where is Fort Bragg today?

- Fort Bragg purchases \$176 million worth of products and materials every year.
- The current purchasing system generates significant disposal costs and negatively influences the environment.
- Current success of purchasing EPPs is unknown because Fort Bragg does not track purchases of products classified as EPPs.
- The Hazardous Material Control Center purchases, stores, and distributes all hazardous materials.
- The Self Service Supply Center (SSSC) stocks recycled content materials (e.g., printer, paper, notepads, toner cartridges, envelopes, bond paper cleaning supplies, and safety equipment).
- Government Impact Purchase Cards account for an increasing amount of day-

to-day purchases (e.g., approximately \$50 million in FY02).

What are Fort Bragg's future challenges?

- Executive Order 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition (1998), requires federal agencies to minimize negative environmental impacts caused by the whole life cycle of products, rather than focusing only on better waste management through recycling and reuse programs.
- EPA began inspecting compliance with the Executive Order in 2002.
- Decentralization of small purchases using Government Impact Purchase Cards continues to be a challenge.
- Centralization of contracting offices off the Installation will require clearly articulated installation requirements for EPP implementation.
- EPP and APP conflict with other purchasing requirements (e.g., NIBNISH).

How will Fort Bragg achieve its strategic goal?

Specific objectives to increase the purchase of EPPs are:

Objective 1: Perform opportunity assessments to identify EPP candidates.

1. **Target:** Identify EPPs and sources of supply for use on Fort Bragg by 2005.
2. **Target:** Develop criteria for Fort Bragg's EPPs.
3. **Target:** Develop, update, and maintain a comprehensive listing of EPPs and sources of supply.

Objective 2: Develop policies, training, and awareness.

1. **Target:** Insert EPP requirements into installation policies, regulations, and contract procedures by 2005.
2. **Target:** Train ordering officials, procurement personnel, credit-card holders, and approving officials on affirmative procurement and EPP procurement requirements by 2006.

Objective 3: Encourage the local market to produce, stock, and promote EPPs.

1. **Target:** Develop partnerships with local companies to provide EPPs by 2005.
2. **Target:** Identify target EPP products for local procurement by 2006.

Objective 4: Develop tools to measure and increase program success.

1. **Target:** Develop and implement a reporting and tracking database to ensure compliance with and to monitor progress of the EPP Program by 2010 or beginning in 2007.
2. **Target:** Develop positive and negative incentives for compliance with the EPP Program by 2007.

What are the benefits?

- Local purchase is important to the surrounding community. At present, Fort Bragg contributes roughly \$43 million of \$175 million to the local economy, paying the local community for consumable products. Every million dollars of purchase shifted to the local community creates an additional 30 full-time jobs.
- The development of local markets for EPPs supports waste, transportation, and air quality goals.
- Purchase/lease of EPPs will reduce amount of waste generated by encouraging recycling.
- Purchase of EPPs will positively affect quality of life for Fort Bragg workers and residents.
- Purchase of EPPs will help drive national markets for these products.

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Check out Fort Bragg's web site at:

<http://www.bragg.army.mil/sustainability/>

How much progress does Fort Bragg expect to make during the current POM Cycle?

Figure VIII-1. Percent of Purchases that are EPPs

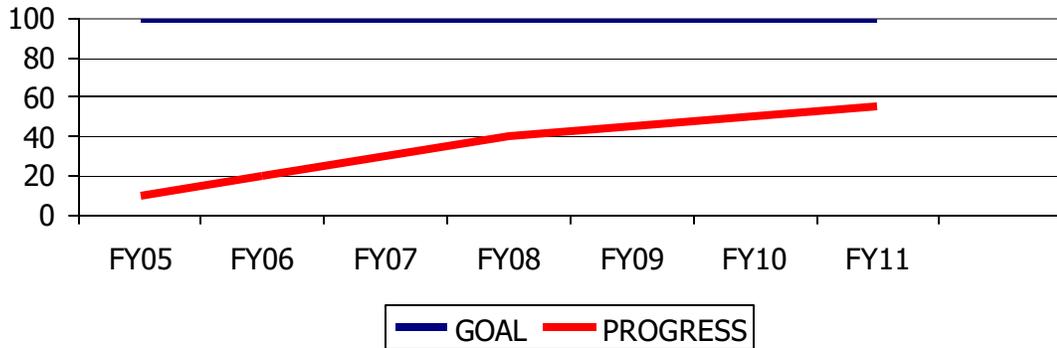
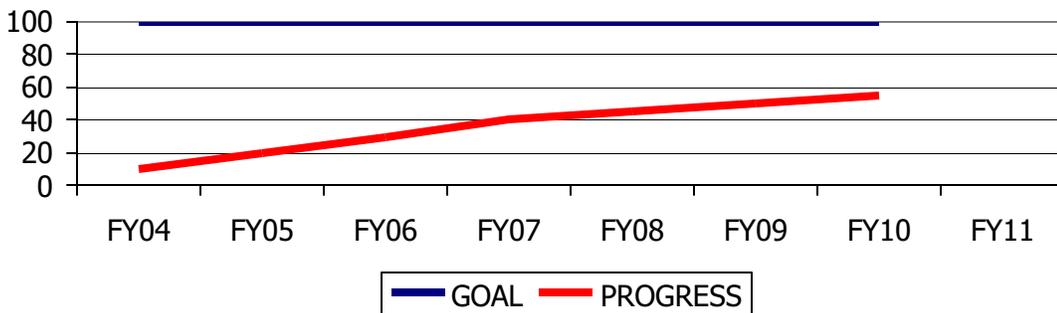


Figure VIII-2. Number of Product Lines That Meet Fort Bragg's EPP Criteria and Money Spent



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What resources does Fort Bragg need to implement its objectives?

Figure VIII-3. Estimated Cost Over POM (FY04-FY11)

Estimated Cost over POM (FY04-FY11) (in thousands of \$)									
Objective	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$100,000	\$155,000	\$157,625	\$175,506	\$195,900	\$205,695	\$166,781	\$70,355	\$1,226,863
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	\$0	\$0	\$30,000	\$0	\$0	\$30,000	\$0	\$0	\$60,000
4	\$0	\$0	\$50,000	\$15,000	\$52,500	\$15,750	\$16,538	\$17,364	\$167,152
TOTAL	\$100,000	\$155,000	\$237,625	\$190,506	\$248,400	\$251,445	\$183,319	\$87,719	\$1,454,015

These costs reflect one FTE of effort annually from FY04-11, with additional service contracts of \$167,151 for database and computer support.

Materials Procurement

What projects will Fort Bragg do to meet its objectives and how much is it going to cost?

Figure VIII-4. Project Descriptions.

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
Objective 1: Perform opportunity assessment to identify EPP candidates.											
1	For small purchases (\$2.5K-\$100K): Identify EPP and sources of supply for use on Fort Bragg.	Contract for one FTE equivalent to support projects 1,2,3, and 5 under this objective. FY03.	\$50,000	\$52,500	\$0	\$0	\$0	\$0	\$0	\$0	TBD
2	For large purchases (>\$100K): Identify EPP and sources of supply for use on Fort Bragg.	Contract for one FTE equivalent to support projects 1,2,3 and 5 under this objective. FY05.	\$0	\$50,000	\$52,500	\$55,125	\$0	\$0	\$0	\$0	TBD
3	For Government Impact Purchase Cards (<\$2.5K): Identify EPPs and sources of supply for use on Fort Bragg.	Contract for one FTE equivalent to support projects 1,2,3 and 5 under this objective. FY06. Service Contract to support database development. FY08	\$0	\$0	\$50,000	\$52,500	\$135,125	\$141,881	\$88,200	\$0	TBD
4	Develop criteria for Fort Bragg's EPPs.	Contract. FY03. Funding required every two years.	\$0	\$0	\$0	\$10,000	\$0	\$0	\$11,576	\$0	ENW

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Materials Procurement

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
5	Develop, update, and maintain a comprehensive listing of EPPs and sources of supply.	Contract. FY05	\$50,000	\$52,500	\$55,125	\$57,881	\$60,775	\$63,814	\$67,005	\$70,355	ENW
Objective 2: Develop policies, training, and awareness.											
1	Insert EPP requirements into installation policies, regulations, and contract procedures.	Funded in Goal 9 (training). FY03	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENW
2	Develop and implement training for ordering officials and procurement personnel.	Funded in Goal 9 (training). FY03	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENW
3	Develop and implement an affirmative procurement and EPP training program for credit-card holders and approving officials.	Funded in Goal 9 (training). FY03	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENW
4	Implement and update training.	Funded in Goal 9 (training). FY05	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	ENW
Objective 3: Encourage the local market to produce, stock, and promote EPPs.											
1	Develop partnerships with local companies to provide EPPs.	Funding identified in Objective 1 above. FY05	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

Materials Procurement

Objective	Project	Execution Method and Start Year	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Program Element
2	Identify target EPP products for local procurement.	Contract. FY03. Updates every two years.	\$0	\$0	\$30,000	\$0	\$0	\$30,000	\$0	\$0	ENV
Objective 4: Develop tools to measure and increase program success.											
1	Develop and implement a reporting and tracking database to ensure compliance with and to monitor progress of the EPP Program.	Contract. FY06. Updates annually.	\$0	\$0	\$50,000	\$15,000	\$52,500	\$15,750	\$16,538	\$17,364	TBD
2	Develop positive and negative incentives for compliance with the EPP Program.	Funded through Objective 1 and Training Goal #9. FY05	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	TBD

Objective Details

Water Resources

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025.

Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina state high quality water (HQW) standard by 2025.

Team Leader: Craig Lantz, Water Quality
Dave Heins, Water Supply

1.0 Objective 1: Develop and implement a comprehensive water resources management program (quality and quantity).

1.1 Objective POC: TBD

1.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)

Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$250,000	\$350,000	\$255,000	\$710,250	\$600,000	\$600,000	\$600,000	\$3,365,250
2	\$340,000	\$480,000	\$480,000	\$480,000	\$180,000	\$30,000	\$30,000	\$30,000	\$2,050,000
3	\$0	\$30,000	\$60,000	\$60,000	\$90,000	\$30,000	\$0	\$0	\$270,000
4	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$240,000
5	\$80,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$290,000
6	\$300,000	\$300,000	\$300,000	\$0	\$0	\$0	\$0	\$0	\$900,000
7	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$200,000
TOTAL	\$775,000	\$1,145,000	\$1,275,000	\$880,000	\$1,065,250	\$745,000	\$715,000	\$715,000	\$7,315,250

Funding will be used to procure the following:

- 1 FTE to support development and implementation of preventative erosion sediment program.
- 2 ORISE Interns to provide monitoring, to support characterization of the water resources, to maintain GIS data layers, and to support the objective generally.

- \$130K/yr to update the integrated water resources management plan and GIS data layers to support decision-making.
- \$300K in FY04-FY06 to develop a rainfall/runoff model; \$150K in FY05-06; \$50K in FY07 to develop a groundwater model; and \$100K in FY06-FY08 to develop surface water model.
- \$300K/yr in FY04-FY07 to characterize phase 2 of the urban and range areas' watersheds.
- \$30K to determine water use by function, area, and personnel in FY06-FY08.
- \$150K in FY05-FY08 for corrective actions identified in WETO study.
- \$500K in FY08-FY11 for corrective actions identified in the integrated water resources management plan.
- \$10K in FY04 to install the SCADA gauge on the Little River and \$30K/yr for installation of water meters from FY05-FY09.
- \$25K/yr to pay for dues, fees, and travel to expand participation in regional partnerships.

1.3 Projects and Deliverables:

Project 1: Develop and implement a comprehensive water resources management Plan.

- **Deliverables**
 - Collect data and develop surface water model (SWIM2) at \$100K/yr starting FY06 (on-going work); Program Element: ENV
 - Data collection \$100K for 2 years and develop groundwater model, \$50K each year for 3 years starting FY05; Program Element: ENV
 - Plan development in FY05 and updates annually to capture model information starting FY05, \$100K/yr; Program Element: ENV
 - Corrective actions beginning in FY08, \$500K; Program Element: TBD

Project 2: Characterize water in urban areas and ranges by FY07.

- **Deliverables**
 - In FY04, 1 ORISE intern working on surface water quality and watershed delineation; \$30K. (On-going work); Program Element: ENV
 - WETO Study, FY03 start, needs additional funding to prioritize sites for corrective action. \$150K in FY05-08; Program Element: ENV
 - Watershed characterization, start FY01 (SEP), Phase 2 urban and ranges FY03-FY07, \$300/yr; Program Element: ENV
 - Install SCADA water gauge on the Little River to develop water supply baseline, \$10K in FY04; Program Element: TBD

Project 3: Develop a balanced water inventory to identify available water sources; its intended uses; quality and quantity needed; and its cost by FY08.

- **Deliverables**

- Collect data to support the development of a balanced water inventory. Study duration is 3 years with data collected for intervals of 3 months in year 1 (\$30K), 3 months in year 2 (\$30K), and 6 months in year 3 (\$60K). Start year FY06; Program Element: ENV
- Install water meters and tie into SCADA beginning FY05 for \$30K/yr; Program Element: TBD

Project 4: Develop a balanced water inventory to identify available water sources, its intended use, and its supply by FY04.

- **Deliverables**

- Hire 1 ORISE Intern to monitor at \$30K/yr; Program Element: ENV
- Develop predictive data for upstream soil stability. Sandhills study for erosion. TBD; Program Element: ENV
- Establish sampling points, protocols, and regimes. TBD; Program Element: ENV
- Execute sampling plan, evaluate data, and develop soil erosion projects. TBD; Program Element: ENV

Project 5: Develop and update GIS data layers to support the Water Resources Management Program and to aid in long-term decision-making.

- **Deliverables**

- Contract to develop layers from old data starting in FY04. \$50K; Program Element: ENV
- Update layers by ORISE Intern, \$30K, and on-going project; Program Element: ENV

Project 6: Develop and implement an installation rainfall/runoff management program.

- **Deliverables**

- Collect data in representative watershed and develop rainfall/runoff model starting in FY04-FY06. \$300K/yr; Program Element: ENV
- Develop a preventative erosion sediment program. Will have ROI from MCA and SRM Construction. Contract for 1 FTE. TBD; Program Element: ENV

Project 7: Expand participation in regional water planning partnerships.

- **Deliverables**

- Dues to partnerships and travel. Start FY01. \$25K; Program Element: ENV

1.4 Level of Risk/Impact if not funded:

1.5 Progress towards Goal:

1.6 Benefits:

- 1.6.1 Readiness
- 1.6.2 Infrastructure and Environment
- 1.6.3 Quality of life
- 1.6.4 Cost

1.7 External Assistance Needed:

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

1.10 Additional Comments:

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025.

Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina state high quality water (HQW) standard by 2025.

Team Leader: Craig Lantz, Water Quality
Dave Heins, Water Supply

2.0 Objective 2: Design/upgrade facilities to protect and enhance water quality and quantity

2.1 Objective POC: TBD

2.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$10,000	\$0	\$0	\$10,000
2	\$0	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$700,000
3	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000	\$8,800,000
TOTAL	\$1,100,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,210,000	\$1,200,000	\$1,200,000	\$9,510,000

Funding will be used to procure the following:

- 1 FTE to support the objective and to evaluate all designs to determine compliance with the NC HQW standard beginning in FY05.
- \$10K to update the Installation Design Guide with water conservation specifications and North Carolina HQW design and construction standards in FY09.
- \$200K/yr (FY04-FY11) to purchase and install SCADA monitoring equipment and system.
- \$1200K/yr to update water, wastewater, and storm water infrastructure to permit standards.

2.3 Projects and Deliverables:

Project 1: Update the Installation Design Guide with water conservation specifications and North Carolina HQW design and construction standards by FY09.

- **Deliverables**
 - Fund update in FY09. \$10K; Program Element: SRM

Project 2: Evaluate all designs to determine compliance with the NC HQW standard beginning FY05.

- **Deliverables**

- FY05, Hire 1 person to evaluate designs. \$100K/yr; Program Element: SRM

Project 3: Update water, wastewater, and storm water infrastructure to permit standards.

- **Deliverables**

- Purchase SCADA monitoring equipment and system. Started FY02. \$200K/yr; Program Element: SRM
- Bring storm water system infrastructure up to permit standards. Beginning FY04 @\$400K/yr; Program Element: SRM
- Bring waste water system infrastructure up to permit standards. Beginning FY04 @\$250K/yr; Program Element: SRM
- Bring drinking water system infrastructure up to permit standards. Beginning FY04 @\$250K/yr; Program Element: SRM

2.4 Level of Risk/Impact if not funded:

2.5 Progress towards Goal:

2.6 Cost Benefits:

- 2.6.1 Readiness
- 2.6.2 Infrastructure and Environment
- 2.6.3 Quality of Life
- 2.6.4 Cost

2.7 External Assistance Needed:

2.8 Technology Needed:

- 2.8.1 Applications Technology
- 2.8.2 Measurement and Metrics
- 2.8.3 Process Improvement
- 2.8.4 Characterization Technologies
- 2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

2.10 Additional Comments:

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025.

Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina state high quality water (HQW) standard by 2025.

Team Leader: Craig Lantz, Water Quality
Dave Heins, Water Supply

3.0 Objective 3: Develop and implement a water education program.

3.1 Objective POC: TBD

3.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$200,000
2	\$0	\$40,000	\$0	\$0	\$40,000	\$0	\$0	\$40,000	\$120,000
3	\$0	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$420,000
TOTAL	\$25,000	\$125,000	\$85,000	\$85,000	\$125,000	\$85,000	\$85,000	\$125,000	\$740,000

Funding will be used to procure the following:

- 2 ORISE interns at \$60K/yr to develop and implement a conservation incentive program.
- \$40K to develop and update (in FY05, FY08, and FY11) an Environmental Risk Assessment Guide for protection of water sources.
- \$25K/yr to develop, distribute, and deliver comprehensive water education materials beginning in F04.

3.3 Projects and Deliverables:

Project 1: Develop, distribute, and deliver comprehensive water education materials beginning FY04.

- **Deliverables**

- Purchase water education materials beginning in FY04. \$25K/yr;
Program Element: ENV

Project 2: Develop an Environmental Risk Assessment Guide for protection of water sources by FY05.

- **Deliverables**
 - Develop and update every 3 years the Environmental Risk Assessment Guide beginning in FY05; Program Element: ENV

Project 3: Develop incentives to conserve water beginning FY05.

- **Deliverables**
 - Develop and implement Conservation Incentive Program. Hire 2 ORISE interns to support the program. Start in FY05, \$30K/person/yr; Program Element: TBD

3.4 Level of Risk/Impact if not funded:

3.5 Progress towards Goal:

3.6 Benefits:

- 3.6.1 Readiness
- 3.6.2 Infrastructure and Environment
- 3.6.3 Quality of Life
- 3.6.4 Cost

3.7 External Assistance Needed:

3.8 Technology Needed:

- 3.8.1 Applications Technology
- 3.8.2 Measurement and Metrics
- 3.8.3 Process Improvement
- 3.8.4 Characterization Technologies
- 3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

3.10 Additional Comments:

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025.

Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina state high quality water (HQW) standard by 2025.

Team Leader: Craig Lantz, Water Quality
Dave Heins, Water Supply

4.0 Objective 4: Reduce Potable Water Use/Waste

4.1 Objective POC: TBD

4.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$35,000	\$35,000	\$35,000	\$35,000	\$0	\$0	\$0	\$0	\$140,000
2	\$0	\$75,000	\$0	\$75,000	\$0	\$75,000	\$0	\$75,000	\$300,000
3	\$0	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$3,500,000
4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$35,000	\$610,000	\$535,000	\$610,000	\$500,000	\$575,000	\$500,000	\$575,000	\$3,940,000

Funding will be used to procure the following:

- \$75K every other year for leak detection surveys beginning in FY05.
- Install pressure regulators and/or monitors @ \$35K/yr for 4 years beginning in FY04.
- \$500K/yr to retrofit water-using equipment in existing buildings with efficient low flow technology.

4.3 Projects and Deliverables:

Project 1: Correct pressure problems within water distribution system.

- **Deliverables**
 - Contract to install pressure regulators and/or monitors @ \$35K over 4 years beginning in FY04; Program Element: SRM

Project 2: Eliminate leaks in water distribution system.

- **Deliverables**
 - Perform Leak Detection Survey every other year beginning in FY05 @ \$75K/yr; Program Element: TBD

Project 3: Retrofit water-using equipment with efficient low-flow technology.

- **Deliverables**

- Contract to retrofit water-using equipment in existing buildings with efficient low-flow technology. \$500K/yr beginning in FY05; Program Element: SRM

Project 4: Benchmark and pilot test new technologies that have the potential to assist Fort Bragg in reaching HQW goal and potable water reduction goal.

- **Deliverables**

- TBD

4.4 Level of Risk/Impact if not funded:

4.5 Progress towards Goal:

4.6 Benefits:

- 4.6.1 Readiness
- 4.6.2 Infrastructure and Environment
- 4.6.3 Quality of Life
- 4.6.4 Cost

4.7 External Assistance Needed:

4.8 Technology Needed:

- 4.8.1 Applications Technology
- 4.8.2 Measurement and Metrics
- 4.8.3 Process Improvement
- 4.8.4 Characterization Technologies
- 4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

4.10 Additional Comments:

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025.

Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina state high quality water (HQW) standard by 2025.

Team Leader: Craig Lantz, Water Quality
Dave Heins, Water Supply

5.0 Objective 5: Perform opportunity assessments to identify projects that conserve water resources (quality and quantity) through conservation, reuse, and reclamation.

5.1 Objective POC: TBD

5.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$130,000	\$0	\$0	\$0	\$0	\$0	\$0	\$130,000
2	\$0	\$0	\$230,000	\$0	\$0	\$0	\$0	\$0	\$230,000
3	\$0	\$0	\$50,000	\$0	\$0	\$50,000	\$0	\$0	\$100,000
4	\$0	\$0	\$0	\$150,000	\$150,000	\$150,000	\$150,000	\$0	\$600,000
TOTAL	\$0	\$130,000	\$280,000	\$150,000	\$150,000	\$200,000	\$150,000	\$0	\$1,060,000

Funding will be used to procure the following:

- \$130K to perform opportunity assessment on filter backwash process at WTP in FY05.
- \$50K in FY06 and FY09 to perform opportunity assessments to identify all potential water reclamation opportunities.
- \$150K for 4 years (FY07-FY10) to benchmark and pilot test new technologies that have the potential to assist Fort Bragg in reaching water resources goals.

5.3 Projects and Deliverables:

Project 1: Perform opportunity assessment on filter backwash process at the WTP.

- **Deliverables**
 - PPOA in FY05. \$130K; Program Element: ENV

Project 2: Analyze water usage in two barracks complexes to compare traditional design to sustainable design.

- **Deliverables**

- Study in FY06. \$230K; Program Element: TBD

Project 3: Identify all potential water reclamation opportunities starting with on going water reclamation study (FY01).

- **Deliverables**

- Contract for PPOA. FY06, recurring every 3 years. \$50K; Program Element: ENV

Project 4: Benchmark and pilot test new technologies that have the potential to assist Fort Bragg in reaching HQW goal and potable water use reduction goal.

- **Deliverables**

- Demonstration project for living machine for storm water collection and treatment in FY07. \$150K; Program Element: RTDE
- Demonstration project for living machine effluent for non-potable uses in FY08. \$150K; Program Element: RTDE
- Demonstration project for on-site reuse or recycling of greywater in FY09. \$150K; Program Element: RTDE
- Demonstration project for on-site reuse or recycling of storm water in FY10. \$150K; Program Element: RTDE

5.4 Level of Risk/Impact if not funded:

5.5 Progress towards Goal:

5.6 Benefits:

- 5.6.1 Readiness
- 5.6.2 Infrastructure and Environment
- 5.6.3 Quality of Life
- 5.6.4 Cost

5.7 External Assistance Needed:

5.8 Technology Needed:

- 5.8.1 Applications Technology
- 5.8.2 Measurement and Metrics
- 5.8.3 Process Improvement
- 5.8.4 Characterization Technologies
- 5.8.5 Commercial Off-the-shelf Technologies

5.9 Regulatory Drivers:

5.10 Additional Comments:

Objective Details

Waste Reduction

Goal 3: Landfill wastes will be aggressively reduced toward zero by the year 2025.

Team Leader: Paul Wirt

1.0 Objective 1: Improve waste management and diversion.

1.1 Objective POC: PWBC, Environmental Compliance Branch, Solid Waste Program Manager.

1.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$100,000	\$0	\$0	\$100,000
2	\$0	\$25,000	\$0	\$27,500	\$0	\$30,400	\$0	\$33,500	\$116,400
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$0	\$0	\$5,000	\$5,250	\$5,512	\$5,788	\$6,077	\$6,381	\$34,008
5	\$0	\$100,00	\$100,000	\$0	\$0	\$0	\$0	\$0	\$200,000
6	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,912
TOTAL	\$100,000	\$230,000	\$215,250	\$148,513	\$127,063	\$263,816	\$140,087	\$180,591	\$1,400,320

- Funding is required for 1 FTE of effort annually.
- \$100K to update the Installation Design Guide in FY09.
- \$25K to update the Integrated Solid Waste Management Plan (ISWMP) every 2 years.
- \$5K to use for education and publicity to support the wide variety of initiatives implemented in Objectives 2-6.

1.3 Projects and Deliverables:

Project 1: Update the Installation Design Guide to reflect waste minimization practices during construction and demolition projects and translate into contract specifications.

- **Deliverables**

- Update Installation Design Guide to incorporate waste minimization practices during construction and demolition projects in FY09. Update every 6 years in FY03, FY09, FY15, and FY21; \$100K, Program Element: SRM

Project 2: Develop, implement, and update every other year the Integrated Solid Waste Reduction Plan.

- **Deliverables**

- Updated integrated solid waste reduction plan. Project started in FY03. Update every 2 years in FY05, FY07, FY09, and FY11; \$25K every 2 years, Program Element: ENV

Project 3: Investigate partnerships for waste management, reduction, and recycling with Pope AFB, Fayetteville, surrounding counties, and communities.

- **Deliverables**

- Partnership development. Project started in FY03. Ongoing effort with existing staffing levels. No funding required; to be included in level of effort estimation for Project 6; Program Element: ENV/EMS

Project 4: Increase publicity and/or awareness of the installation's waste reduction and recycling program.

- **Deliverables**

- Publicity and increased awareness. Project started in FY03. Ongoing effort with existing staffing levels. No funding required in FY04 or FY05. Beginning in FY06, approximately \$5K is necessary to publicize the initiatives implemented in Objectives 2-6; Program Element: ENV

Project 5: Merge the LCID and C&D landfills to maximize currently available space.

- **Deliverables**

- Merged landfill in FY03. \$100K/yr is required in FY05 and FY06 to fund A&E support, to update permit, to obtain state approval, and for cell preparation; Program Element: SRM

Project 6: Partner with RCI and Transition waste reduction and recycling programs for Army Family Housing.

- **Deliverables**

- Fund 1 FTE contractor position @ \$100K/yr. Project starts in FY04 and is a recurring requirement; Program Element: AFH

1.4 Level of Risk/Impact if not funded:

This objective includes modification and updates for documents that can affect the generation of waste. By funding this project, Fort Bragg is able to develop a proactive stance and address future issues early in the lifecycle of projects, thus reducing future impacts and costly modifications.

1.5 Progress towards Goal:

We will measure progress toward the goal by tracking the tons of waste generated in each of the follow-on objectives (included in each section below).

1.6 Benefits:

- 1.6.1 Readiness
- 1.6.2 Infrastructure and Environment
- 1.6.3 Quality of life
- 1.6.4 Cost

Cost benefits associated with this objective are difficult to articulate. Fort Bragg currently has a training land short fall of over 70,000 acres. Options for future landfills are extremely limited and cannot be accomplished with negatively affecting training. In addition, the Fort Bragg cantonment has been heavily built over the last 60 years. With one of the largest construction budgets in the Department of Defense, Fort Bragg faces current and ongoing challenges associated with the removal of existing facilities.

1.7 External Assistance Needed:

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

1.10 Additional Comments:

Goal 3: Landfill wastes will be aggressively reduced toward zero by the year 2025.

Team Leader: Paul Wirt

2.0 Objective 2: Implement soil reuse and recycling program.

2.1 Objective POC: PWBC, Environmental Compliance Branch, Solid Waste Program Manager

2.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$814,202
TOTAL	\$0	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$814,202

- Funding required for 1 FTE of effort annually.

2.3 Projects and Deliverables:

Project 1: Develop program to reuse soil for other installation projects (construction and erosion control).

- **Deliverables**
 - Fund 1 contractor position. Project starts in FY05 and is a recurring requirement; Program Element: SRM

2.4 Level of Risk/Impact if not funded:

2.5 Progress towards Goal:

2.6 Benefits:

- 2.6.1 Readiness
- 2.6.2 Infrastructure and Environment
- 2.6.3 Quality of Life
- 2.6.4 Cost

2.7 External Assistance Needed:

2.8 Technological Opportunities:

- 2.8.1 Applications Technology
- 2.8.2 Measurement and Metrics
- 2.8.3 Process Improvement
- 2.8.4 Characterization Technologies
- 2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

2.10 Additional Comments:

Goal 3: Landfill wastes will be aggressively reduced toward zero by the year 2025.

Team Leader: Paul Wirt

3.0 Objective 3: Implement construction/demolition debris reuse/recycling technologies.

3.1 Objective POC: PWBC, Environmental Compliance Branch, Solid Waste Program Manager.

3.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$300,000	\$315,000	\$330,750	\$347,288	\$364,652	\$382,884	\$402,029	\$422,130	\$2,864,733
2	\$120,000	\$126,000	\$80,000	\$84,000	\$88,200	\$92,610	\$97,241	\$102,103	\$790,154
3	\$40,000	\$20,000	\$10,000	\$0	\$0	\$0	\$0	\$0	\$70,000
TOTAL	\$460,000	\$461,000	\$420,750	\$431,288	\$452,852	\$475,494	\$499,270	\$422,130	\$3,724,887

- Funding is required for 1 FTE of effort in FY04 and FY05.
- \$300K annually for service contracts to support concrete reuse program.
- \$40K in FY04 to purchase equipment to support the scrap metal program.

3.3 Projects and Deliverables:

Project 1: Develop and implement a program to reuse concrete by FY03.

- **Deliverables**

- Service Contract. Project started in FY02 and is a recurring requirement; Program Element: SRM

Project 2: Develop a building salvage program in conjunction with the COE, QRP, or CASBC.

- **Deliverables**

- Fund 1 contractor position in FY04-05 to establish program. Project starts in FY04; Program Element: SRM

Project 3: Consolidate and streamline scrap metal management.

- **Deliverables**

- Equipment purchase and startup costs, \$40K. Project starts in FY04. Program Element: ENV
- Program management with existing labor. Project starts in FY04. Program Element: ENV

3.4 Level of Risk/Impact if not funded:

Meeting this objective is critical. Given the current MCA budget, construction and demolition debris will overwhelm the Fort Bragg landfill in the next few years. Siting a new landfill will be difficult, if not impossible. Off-site disposal of the waste will be covered by individual construction projects, thereby either reducing the overall facility size or quality, or increasing the MCA budget.

3.5 Progress towards Goal:

Fort Bragg will measure progress toward the goal by tracking the amount of C&D waste disposed of on- and off-post from construction projects.

3.6 Benefits:

- 3.6.1 Readiness
- 3.6.2 Infrastructure and Environment
- 3.6.3 Quality of life
- 3.6.4 Cost

Cost benefits from this objective will be realized in the MCA program (cost avoidance for off-post disposal) and OMA facility maintenance funding (cost avoidance for siting new landfill).

3.7 External Assistance Needed:

Fort Bragg anticipates needing assistance from CERL to find and demonstrate new technologies (such as the High Solids Anaerobic Digestion – HSAD). The Installation also will need assistance from CERL and the COE to identify the costs associated with various deconstruction options.

3.8 Technological Opportunities:

- 3.8.1 Applications Technology
- 3.8.2 Measurement and Metrics
- 3.8.3 Process Improvement
- 3.8.4 Characterization Technologies
- 3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

3.10 Additional Comments:

Goal 3: Landfill wastes will be aggressively reduced toward zero by the year 2025.

Team Leader: Paul Wirt

4.0 Objective 4: Implement wood and yard waste reuse/recycling technologies.

4.1 Objective POC: PWBC, Environmental Compliance Branch, Solid Waste Program Manager.

4.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Projects	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$50,000	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$1,271,301
TOTAL	\$50,000	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$1,271,301

Funding is required for the following:

- \$50K in FY04 for a PPOA.
- \$150K annually in FY05 for service contract for mulching program.

4.3 Projects and Deliverables:

Project 1: Implement a program for reuse/recycling of pallets and ammunition boxes.

- **Deliverables**
 - Program implementation. Project starts in FY04. Ongoing effort with existing staffing levels. No funding required; Program Element: TBD

Project 2: Design and implement a mulching program by FY04.

- **Deliverables**
 - Pollution Prevention Opportunity Assessment (PPOA). \$50K. Project starts in FY04. Program Element: ENV
 - Service contract for mulching program. \$150K/yr. Project starts FY04 and is an ongoing requirement; Program Element: SRM

4.4 Level of Risk/Impact if not funded:

4.5 Progress towards Goal:

4.6 Benefits:

- 4.6.1 Readiness
- 4.6.2 Infrastructure and Environment
- 4.6.3 Quality of Life
- 4.6.4 Cost

4.7 External Assistance Needed:

4.8 Technological Opportunities:

- 4.8.1 Applications Technology
- 4.8.2 Measurement and Metrics
- 4.8.3 Process Improvement
- 4.8.4 Characterization Technologies
- 4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

4.10 Additional Comments:

Goal 3: Landfill wastes will be aggressively reduced toward zero by the year 2025.

Team Leader: Paul Wirt

5.0 Objective 5: Implement municipal solid waste reuse/recycling technologies.

5.1 Objective POC: PWBC, Environmental Compliance Branch, Solid Waste Program Manager.

5.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Projects	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$350,000	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$1,164,202
2	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000
TOTAL	\$400,000	\$200,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$1,314,202

- Funding required for 1 FTE of effort annually beginning in FY05.
- \$350K in FY04 to purchase equipment and start up costs for recycling program.
- \$100K in FY05 for PPOA and pilot test for a Materials Recovery Facility (MRF).

5.3 Projects and Deliverables:

Project 1: Develop and implement a recycling program for cardboard, paper, aluminum, and other commodities throughout the Installation.

- **Deliverables**
 - Purchase equipment and start up costs. \$350K. Project starts in FY04; Program Element: SRM
 - Contract personnel for program implementation. Project starts in FY05 and is a recurring cost; \$100K/yr. Program Element: SRM

Project 2: Perform opportunity assessment for utilizing a Material Recovery Facility (MRF) (regional facility vs. Fort Bragg facility).

- **Deliverables**
 - Pollution Prevention Opportunity Assessment and pilot test. Project starts in FY05. \$100K; Program Element: ENV

Project 3: Pursue projects for beneficial reuse options for food waste.

- **Deliverables**

- Program implementation. Project started in FY03. Ongoing effort with existing staffing levels. No funding required; Program Element: ENV

Project 4: Perform opportunity assessment to identify alternatives to reuse equipment or materials by FY09.

- **Deliverables**

- Pollution Prevention Opportunity Assessment and Pilot Test. Project starts in FY04. \$50K; Program Element: ENV

5.4 Level of Risk/Impact if not funded:

5.5 Progress towards Goal:

5.6 Benefits:

- 5.6.1 Readiness
- 5.6.2 Infrastructure and Environment
- 5.6.3 Quality of Life
- 5.6.4 Cost

5.7 External Assistance Needed:

5.8 Technological Opportunities:

- 5.8.1 Applications Technology
- 5.8.2 Measurement and Metrics
- 5.8.3 Process Improvement
- 5.8.4 Characterization Technologies
- 5.8.5 Commercial Off-the-shelf Technologies

5.9 Regulatory Drivers:

5.10 Additional Comments:

Goal 3: Landfill wastes will be aggressively reduced toward zero by the year 2025.

Team Leader: Paul Wirt

6.0 Objective 6: Implement hazardous waste reuse/recycling technologies.

6.1 Objective POC: PWBC, Environmental Compliance Branch, Hazardous Waste Program Manager and Pollution Prevention Program Manager.

6.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Projects	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$25,000	\$0	\$0	\$25,000	\$0	\$0	\$25,000	\$0	75,000
2	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,911
3	\$0	\$35,000	\$0	\$38,588	\$0	\$42,543	\$0	\$46,904	\$163,035
TOTAL	\$125,000	\$140,000	\$110,250	\$179,351	\$121,551	\$170,171	\$159,010	\$187,614	\$1,192,946

- Funding required for PPOA and pilot test of \$25K in FY04 and every third year.
- \$100K/yr to implement pollution prevention alternatives beginning in FY04.

6.3 Projects and Deliverables:

Project 1: Perform opportunity assessments to identify hazardous waste reduction alternatives.

- **Deliverables**
 - Pollution Prevention Opportunity Assessment and Pilot Test. Project starts in FY04 with PPOAs every 3 years. \$25K; Program Element: ENV
 - Policy letter. Project starts in FY04. No additional funding required; Program Element: ENV

Project 2: Implement hazardous waste reduction alternatives.

- **Deliverables**
 - Implementation of process changes and waste reduction technologies. Project starts in FY04 and is recurring. \$100K/yr; Program Element: ENV

Project 3: Update hazardous waste management and minimization plan.

- **Deliverables**
 - Hazardous Waste Management and Minimization Plan Update. Project started in FY03. Updates every other year. \$35K; Program Element: ENV

6.4 Level of Risk/Impact if not funded:

6.5 Progress towards Goal:

6.6 Benefits:

- 6.6.1 Readiness
- 6.6.2 Infrastructure and Environment
- 6.6.3 Quality of Life
- 6.6.4 Cost

6.7 External Assistance Needed:

6.8 Technological Opportunities:

- 6.8.1 Applications Technology
- 6.8.2 Measurement and Metrics
- 6.8.3 Process Improvement
- 6.8.4 Characterization Technologies
- 6.8.5 Commercial Off-the-shelf Technologies

6.9 Regulatory Drivers:

6.10 Additional Comments:

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Objective Details

Sustainable Design

Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Team Leader: Rob Harris

1.0 Objective 1: Develop a strong organizational management system that institutionalizes sustainable design concepts.

1.1 Objective POC: Rob Harris, Chief – Construction Management Division

1.2 Resources Required:

Estimated Cost over POM (FY04-FY11)

Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$350,000	\$0	\$0	\$0	\$350,000
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	\$20,000	\$21,000	\$22,050	\$23,153	\$24,310	\$25,526	\$26,802	\$28,142	\$190,983
4	\$50,000	\$0	\$0	\$0	\$0	\$95,000	\$0	\$0	\$145,000
5	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
6	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000
TOTAL	\$145,000	\$21,000	\$22,050	\$23,153	\$374,310	\$120,526	\$26,802	\$28,142	\$760,983

These costs reflect the following:

- \$350K to update the Installation Design Guide in FY08.
- \$50K for running a programming charrette to incorporate sustainable design in existing MILCON program beginning in FY04 and recurring every 5 years.
- \$25K to develop a list to update shelved OMA projects with sustainability concepts in FY04.
- \$50K to perform sustainability comparison and cost analysis for standard vehicle maintenance facility in FY04.
- \$20K/yr to update training program with existing and new technologies for sustainable design beginning in FY04.

1.3 Projects and Deliverables:

Project 1: Update the Installation Design Guide to reflect SPiRiT/LEED standards by FY03.

- **Deliverables**

- Updated Installation Design Guide in FY08. Updated every 5 years. \$350K; Program element: SRM

Project 2: Develop, use, and document a SPiRiT/LEED rating for all building designs by FY05.

- **Deliverables**

- SPiRiT project and/or building design rating. No funding required; Program element: SRM and MCA

Project 3: Provide sustainable design training to Fort Bragg staff, Project Managers, Quality Assurance, Inspectors, and Engineers by FY04.

- **Deliverables**

- Contract to update training program with existing and new technologies for sustainable design beginning in FY04. \$20K/yr. Ongoing requirement; Program element: SRM

Project 4: Identify and implement procedures to incorporate sustainable design into the existing MILCON program during programming phase by FY07.

- **Deliverables**

- Contract for running a programming charrette resulting in a defined SOW with defensible justifications and costs associated with sustainable design. Incorporate sustainable design in existing MILCON program beginning in FY04 and recurring every 5 years. \$50K; Program element: SRM

Project 5: Review shelved OMA project awards for inclusion of “low hanging” sustainability concepts.

- **Deliverables**

- Contract to develop list to update shelved OMA projects with sustainability concepts in FY04. \$25K, one-time cost; Program element: SRM

Project 6: Conduct first cost and life cycle cost analysis and study traditional versus sustainable design for vehicle maintenance facilities.

- **Deliverables**

- Contract to perform sustainability comparison and cost analysis for standard vehicle maintenance facility (VMF) in FY04. \$50K. Program element: SRM

1.4 Level of Risk/Impact if not funded:

(P-1) The Installation Design Guide (IDG) is the key document, the single most important aspect of the Fort Bragg Sustainable Design program effort. It sets the tone for all future programming, planning, design, and construction. Without an IDG change, we will be left to rely on the buy-in, zeal, and interest in sustainable design of the individual designers and project managers without the overarching vision and clearly stated goals of the IDG. (P-3) Similarly, without a well-coordinated sustainable design (SD) training effort for all project managers, designers, and QA staff, we are left to again rely on individual SD champions. Buy-in and understanding will be limited and the opportunity for synergy and the enthusiasm it generates will be lost. (P-4) Without a facilitated programming charrette, there will be no coordinated and consistent programming documents, in terms of SD. Defendable scopes of work, accurate cost estimates, realistic SPiRiT rating targets, and clearly understandable discussions of sustainable concepts within programming packages will be the exception instead of the norm. (P-5) Without assistance in reviewing and updating shelved projects whose designs were completed without adequate consideration of SD concepts, they will very likely be advertised and awarded at year end as-designed. (P-6) Without assistance in contrasting DA's standard VMF design with sustainability concepts in general and specifically with SPiRiT rating targets, we will continue to look at each VMF project individually. The study would provide supporting information that could be used in DD1391 preparation and cost estimate data relating to the various SPiRiT rating levels. Without this, each project will reflect only the extent of sustainable design consideration that its programmed amount will support.

1.5 Progress towards Goal:

The Installation Design Guide is currently under revision and is approximately 60 percent complete. Fort Bragg now requires all project managers and designers to assure that the expected SPiRiT rating is determined and displayed on each new project at every design stage submittal (30%, 60%, 90%, etc). Design and Project Management Branch supervisors have received basic sustainable design/construction training and have attended various workshops and seminars in the region.

1.6 Benefits:

- 1.6.1 Readiness
- 1.6.2 Infrastructure and Environment
- 1.6.3 Quality of Life
- 1.6.4 Cost

1.7 External Assistance Needed:

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

1.10 Additional Comments:

Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Team Leader: Rob Harris

2.0 Objective 2: Improve process for site selection and development for MILCON and OMA construction projects.

2.1 Objective POC: Glen Prillaman – Chief, Real Property & Planning Branch

2.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$250,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$250,000
2	\$85,000	\$89,250	\$93,713	\$98,398	\$103,318	\$108,484	\$113,908	\$119,604	\$811,674
3	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$33,502	\$35,178	\$238,728
TOTAL	\$360,000	\$115,500	\$121,276	\$127,339	\$133,706	\$140,391	\$147,410	\$154,782	\$1,300,404

These costs reflect the following:

- \$85K/yr for 1 FTE urban forester beginning in FY04. (Street tree inventory; street tree placement and implementation; heat island plan; tree management plan).
- \$250K in FY04 to prepare sub plans to support the Fort Bragg Master Plan.
- \$25K/yr to purchase and plant trees beginning in FY04.

2.3 Projects and Deliverables:

Project 1: Update Fort Bragg Master Plan incorporating sustainable site criteria (Update every 10 years).

- **Deliverables**

- All of the following tasks will be completed to support the master plan. FY04; \$250K; Program element: SRM
 - Transportation plan (vehicular and pedestrian)
 - Storm water management plan (included in water resources goal)
 - Environmental constraints map
 - Light pollution reduction plan
 - Grey water reuse plan (included in water resources goal, no cost).
 - Consolidated storage and collection plan for recyclables (included in waste goal, no cost)
 - Heat island reduction plan

Project 2: Perform site selection and site reviews for street trees, urban forestry, and the conservation of green space by FY04.

- **Deliverables**

- Contract for 1 FTE urban forester beginning in FY04. (Street tree inventory; street tree placement and implementation; heat island plan; tree management plan), \$85K/yr; Program element: SRM

Project 3: Purchase and plant trees by FY04.

- **Deliverables**

- Service contract to purchase and plant trees beginning in FY04. \$25K; Program element: SRM

2.4 Level of Risk/Impact if not funded:

(P-1) The Bragg Master Plan is currently under revision with its completion expected in early FY04. If funding to include the sustainable siting studies and plans above are not included, it will cost more later for the same effort and the plans will not be incorporated as efficiently or as seamlessly. Without the individual plans, the sustainable design concepts will have to be addressed project-by-project, which will essentially eliminate many of them by their nature (region/neighborhood transportation, grey water reuse, etc). (P-2) Similarly, without the vision and leadership of a professional urban forester, tree conservation and management will fall to whatever can be included in individual construction projects and thus lose continuity, efficiency, green-space creation or linkage opportunities, etc.

2.5 Progress towards Goal:

None.

2.6 Benefits:

- 2.6.1 Readiness
- 2.6.2 Infrastructure and Environment
- 2.6.3 Quality of Life
- 2.6.4 Cost

2.7 External Assistance Needed:

2.8 Technology Needed:

- 2.8.1 Applications Technology
- 2.8.2 Measurement and Metrics
- 2.8.3 Process Improvement
- 2.8.4 Characterization Technologies

2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

2.10 Additional Comments:

Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Team Leader: Rob Harris

3.0 Objective 3: Optimize water efficiency.

3.1 Objective POC: John Rose – Senior Architect

3.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$50,000	\$52,500	\$55,125	\$0	\$0	\$0	\$0	\$157,625
2	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000
3	\$0	\$0	\$0	\$100,000	\$100,000	\$0	\$0	\$0	\$200,000
TOTAL	\$0	\$50,000	\$127,500	\$155,125	\$100,000	\$0	\$0	\$0	\$432,625

These costs reflect the following:

- \$50K/yr to pilot test water efficient landscaping in the uplands and lowlands beginning in FY05 for 3 years.
- \$75K to pilot test rainwater catchments and reuse in FY06.
- \$100K/yr to pilot test constructed wetland application in remote areas in FY07 and FY08. (Site selection, feasibility study, and pilot test constructed wetlands @ \$25K/acre.)

3.3 Projects and Deliverables:

Project 1: Test pilot landscaping and parking sustainable technologies by FY07.

- **Deliverables**
 - Contract to pilot test water efficient landscaping in uplands and lowlands beginning in FY05 for 3 years. \$50K/yr; Program element: SRM

Project 2: Test pilot rainwater catchments and reuse by FY06.

- **Deliverables**
 - Contract to pilot test rainwater catchments and reuse in FY06. \$75K; Program element: SRM

Project 3: Manage remote areas' wastewater using constructed wetlands by FY08.

- **Deliverables**

- Contract to pilot test constructed wetland application in remote areas in FY07 and FY08. (Site selection, feasibility study and pilot test constructed wetlands @ \$25K/acre); \$100K/yr. Program element: SRM

3.4 Level of Risk/Impact if not funded:

In the case of all three projects above, without specific “technology test” projects it will be much harder to determine which techniques have promise at Fort Bragg and potentially elsewhere. The vast majority of the types of projects where technologies such as rainwater catchments/reuse and constructed wetlands are applicable are unit-funded and thus are projects where scope trade-offs or cost increases necessary to include such sustainable design concepts will be harder, or impossible, to “sell”. The cost to a project in time and money to research, compare, and then propose specific potential technologies is also something that most discrete unit-funded projects cannot support.

3.5 Progress towards Goal:

None.

3.6 Benefits:

- 3.6.1 Readiness
- 3.6.2 Infrastructure and Environment
- 3.6.3 Quality of Life
- 3.6.4 Cost

3.7 External Assistance Needed:

3.8 Technology Needed:

- 3.8.1 Applications Technology
- 3.8.2 Measurement and Metrics
- 3.8.3 Process Improvement
- 3.8.4 Characterization Technologies
- 3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

3.10 Additional Comments:

Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Team Leader: Rob Harris

4.0 Objective 4: Optimize energy and reduce atmosphere impacts.

4.1 Objective POC: Georges Dib – Electrical Engineer

4.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$500,000	\$525,000	\$551,250	\$578,813	\$607,753	\$638,141	\$670,048	\$4,071,005
2	\$350,000	\$367,500	\$0	\$0	\$0	\$0	\$0	\$0	\$717,500
3	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000
TOTAL	\$350,000	\$1,067,500	\$525,000	\$551,250	\$578,813	\$607,753	\$638,141	\$670,048	\$4,988,505

These costs reflect the following:

- \$500K/yr to install meters in existing buildings FY04 until completed.
- \$350K/yr to develop design and construction strategies to reduce energy usage in FY05 and FY06.
- \$200K in FY05 to pilot test for solar power applications.

4.3 Projects and Deliverables:

Project 1: Install meters in new and existing buildings and master meters in complexes beginning FY08.

• **Deliverables**

- Meters in new buildings. No funding required as included in MILCON; Program Element: MCA
- Master meters in 20 complexes through a contract. Funding and execution year TBD; Program Element: MCA
- Meters in existing and OMA-constructed/renovated buildings; \$500K/yr, ongoing until completed; Program Element: MCA and SRM

Project 2: Develop Fort Bragg-specific strategies, by facility types, to optimize energy performance by FY07 (compared to standard energy baseline).

- **Deliverables**

- \$350K/yr to contract in FY05 and FY06 to develop strategies. Determine usage/square feet by facility type and recommend design and construction strategies; 8-10 facility types; study to include seasonal variations; \$350K/yr, (high priority); Program element: SRM

Project 3: Test pilot lighting sustainable technologies.

- **Deliverables**

- Pilot test for solar power applications; \$200K, FY05 (parking lot lighting, range lighting, fence lighting, building lighting, pumps, emergency phones, lift station pumps, irrigation pumps); Program element: SRM

4.4 Level of Risk/Impact if not funded:

(P-2) Without a by-facility-type energy usage per square foot study, Fort Bragg will continue to assess energy-related sustainable design (SD) issues on a project-by-project basis. (P-3) Without specific "lighting technology test" projects, it will be much harder to determine which techniques have promise at Fort Bragg and potentially elsewhere. Many of the types of projects where these technologies may be applicable are unit-funded and thus are projects where scope trade-offs or cost increases necessary to include such sustainable design concepts will be harder, or impossible, to "sell". The cost to a project in time and money to research, compare, and then propose specific potential technologies is also something that most discrete unit-funded projects cannot support.

4.5 Progress towards Goal:

Fort Bragg has already adopted the "required metering" standard for all new MCA/OMA facilities and OMA renovations.

4.6 Benefits:

- 4.6.1 Readiness
- 4.6.2 Infrastructure and Environment
- 4.6.3 Quality of Life
- 4.6.4 Cost

4.7 External Assistance Needed:

4.8 Technology Needed:

- 4.8.1 Applications Technology
- 4.8.2 Measurement and Metrics
- 4.8.3 Process Improvement
- 4.8.4 Characterization Technologies

4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

4.10 Additional Comments:

Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Team Leader: Rob Harris

5.0 Objective 5: Optimize materials and resources.

5.1 Objective POC: Glen Prillaman – Chief, Real Property & Planning Branch

5.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$25,000	\$0	\$25,000						

These costs reflect the following:

- \$25K in FY04 to identify applicable deconstruction technologies applicable for use at Fort Bragg.

5.3 Projects and Deliverables:

Project 1: Identify and utilize existing technologies for deconstruction by FY04.

- **Deliverables**
 - Contract to identify applicable existing technologies for deconstruction in FY04. \$25K; Program Element: SRM

Project 2: Use C&D recovery facility to encourage salvage, storage, and reuse of deconstruction materials by FY05.

- **Deliverables**
 - Use existing human capital in goal #3 beginning in FY05; Program Element: SRM

5.4 Level of Risk/Impact if not funded:

Without specific “deconstruction technology test projects,” it will be much harder to determine which techniques have promise at Fort Bragg and potentially elsewhere. Many of the types of projects where these technologies may be

applicable are unit-funded and thus are projects where scope trade-offs or cost increases necessary to include such SD concepts will be harder, or impossible, to “sell”. The cost to a project in time and money to research, compare, and then propose specific potential technologies is also something that most discrete unit-funded projects cannot support.

5.5 Progress towards Goal:

The Fort Bragg Facility Reduction Program manager will be applying deconstruction techniques that have been successfully applied at Fort Campbell in the removal of WWII wood facilities.

5.6 Benefits:

- 5.6.1 Readiness
- 5.6.2 Infrastructure and Environment
- 5.6.3 Quality of Life
- 5.6.4 Cost

5.7 External Assistance Needed:

5.8 Technological Opportunities:

- 5.8.1 Applications Technology
- 5.8.2 Measurement and Metrics
- 5.8.3 Process Improvement
- 5.8.4 Characterization Technologies
- 5.8.5 Commercial Off-the-shelf Technologies

5.9 Regulatory Drivers:

5.10 Additional Comments:

Goal 4: To meet minimum platinum standard for all construction by 2020, and renovate 25 percent of all existing structures to at least a bronze standard by 2020 (using SPiRiT).

Team Leader: Rob Harris

6.0 Objective 6: Optimize indoor environmental quality.

6.1 Objective POC: John Rose – Senior Architect

6.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$0	\$0	\$0	\$138,142
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$0	\$0	\$0	\$138,142

These costs reflect the following:

- \$25K/yr for 5 years to develop baseline indoor air quality and emissions from products used in construction of selected facility types.

6.3 Projects and Deliverables:

Project 1: Develop a baseline for indoor air quality and emissions from products used in construction of selected facility types (examine material recently used or material that Fort Bragg plans to use) to establish a baseline.

- **Deliverables**
 - Pilot test by CHPPM beginning in FY04 for 5 years. \$25K/yr; Program Element: ENV

Project 2: Assess indoor air quality issues of existing facilities by FY11.

- **Deliverables**
 - Contract to test X facilities/year. TBD; Program Element: ENV

Project 3: Perform periodic building commissioning training.

- **Deliverables**
 - Part of training program developed in Goal #9; FY05; Program element: ENV

6.4 Level of Risk/Impact if not funded:

Without a pilot study to establish an emissions baseline and funding to perform indoor air quality testing, it will be much harder to determine which historically-used products are most harmful and which techniques or substitutions have promise at Fort Bragg and potentially elsewhere. Many of the types of projects where these substitutions may be applicable are unit-funded and thus are projects where scope trade-offs or cost increases necessary to include such SD concepts may be harder to "sell." The cost to a project in time and money to research, compare, and then propose potential alternatives is also something that most discrete unit-funded projects cannot support.

6.5 Progress towards Goal:

None.

6.6 Benefits:

- 6.6.1 Readiness
- 6.6.2 Infrastructure and Environment
- 6.6.3 Quality of Life
- 6.6.4 Cost

6.7 External Assistance Needed:

6.8 Technological Opportunities:

- 6.8.1 Applications Technology
- 6.8.2 Measurement and Metrics
- 6.8.3 Process Improvement
- 6.8.4 Characterization Technologies
- 6.8.5 Commercial Off-the-shelf Technologies

6.9 Regulatory Drivers:

6.10 Additional Comments:

Objective Details

Sustainable Training Lands

Goal 5: Adopt compatible land use laws/regulations with local communities by 2005.

Team Leader: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

1.0 Objective 1: Implement and maintain up-to-date Joint Land Use Study/Plan.

1.1 Objective POC: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

1.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$300,000	\$0	\$0	\$0	\$0	\$315,000	\$0	\$615,000
2	\$0	\$0	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$680,191
TOTAL	\$0	\$300,000	\$100,000	\$105,000	\$110,250	\$115,763	\$436,551	\$127,628	\$1,295,191

These costs reflect the following:

- \$100K/yr for 1 contract FTE GIS/Planner GS-11 equivalent to update and maintain a regional GIS database. FY06-FY11.
- \$300K to update Joint Land Use Plan every 5 years beginning in FY05.

1.3 Projects and Deliverables:

Project 1: Update, maintain, and implement the Joint Land Use Plan beginning FY05.

- **Deliverables**
 - Update plan every 5 years covering the following tasks listed below. Contract to update plan every 5 years beginning in FY05. \$300K. Program

Element: The funding usually comes from the DOD Office of Economic Adjustment

- Update and maintain data elements of the Joint Land Use Study, such as noise contours, impact areas, firing points, artillery contours, Camp McCall information, and drop zones.
- Define areas of compatible land use adjacent to the Installation.
- Assess impacts of access control point locations and the effects on regional transportation systems and regional development on- and off-post.
- Coordinate public participation. Additional staff hours funded under Objective 3.
- Implement Plan.

Project 2: Update and maintain regional GIS database beginning FY06.

- **Deliverables**

- Contract for 1 FTE GIS/Planner GS-11 equivalent beginning in FY06-FY11. \$100K/yr. Collect and analyze background information, and update and maintain regional GIS database. Program Element: DOD Office of Economic Adjustment

1.4 Level of Risk/Impact if not funded:

Failure to update the JLUS or to implement the recommendations will result in increased encroachment issues and increased training restrictions due to incompatible land uses on our boundaries. An updated JLUS is just the first step to achieving compatible land use and reducing encroachment. The most important piece of this objective is the implementation of the JLUS recommendations by the adjoining municipalities and counties. Since Fort Bragg has no jurisdiction, the NC Department of Commerce, through the Installation's existing partnership, best executes this critical step.

1.5 Progress towards Goal:

1.6 Benefits:

1.6.1 Readiness

This objective is tied directly to **Readiness**, one of the Installation's key processes. Jointly developed compatible land use definitions in areas adjacent to the Installation ("critical land") will reduce the number of complaints and provide a buffer that reduces encroachment issues.

1.6.2 Infrastructure and Environment

1.6.3 Quality of life

1.6.4 Cost

1.7 External Assistance Needed:

NC Department of Commerce – execution agency; DoD Office of Economic Adjustment

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

None

1.10 Additional Comments:

Goal 5: Adopt compatible land use laws/regulations with local communities by 2005.

Team Leader: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

2.0 Objective 2: Initiate and lead state/regional-planning forums.

2.1 Objective POC: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

2.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$211,065	\$1,432,366
TOTAL	\$150,000	\$157,500	\$165,375	\$173,644	\$182,326	\$191,442	\$201,014	\$211,065	\$1,432,366

These costs reflect the following:

- Contract for 1 FTE (GS-13 equivalent) to support NC Department of Commerce for all projects listed under Objective 2 beginning in FY04. \$150K/yr.

2.3 Projects and Deliverables:

Project 1: Develop a strategic plan to provide initiatives to support the long-term viability of the military by FY04 and ongoing.

- **Deliverables**
 - Strategic Plan. Project supported by contract personnel under this objective. FY04. Program Element: DOD Office of Economic Adjustment

Project 2: Develop and participate in the Sustainable Sandhills Initiative.

- **Deliverables**
 - Contract for 1 FTE (GS-13 equivalent) to support NC Department of Commerce for all projects listed under this objective beginning in FY04. \$150K/yr; Program Element: TBD
 - Develop and participate in Sustainable Sandhills Initiative land use goals

- Provide information to state and local governments on the impacts of land use decisions on the Installation's missions and the health/safety of civilian populations
- Support State Advisory Commission on Military Affairs
- Continue to participate and encourage an active Regional Land Use Advisory Commission (RLUAC)

2.4 Level of Risk/Impact if not funded:

Encroachment will not be primary issue for local planners and the effects of encroachment will affect training. It is particularly important to continue interfacing with local planners and to have an ongoing process that will provide education for replacements as turn over occurs.

2.5 Progress towards Goal:

2.6 Benefits:

2.6.1 Readiness

This objective is tied directly to **Readiness**, one of the installation's key processes. Jointly developed compatible land use definitions in areas adjacent to the installation ("critical land") will reduce the number of complaints and provide a buffer that reduces encroachment issues.

2.6.2 Infrastructure and Environment

2.6.3 Quality of Life

2.6.4 Cost

2.7 External Assistance Needed:

NC Department of Commerce – execution agency; DoD Office of Economic Adjustment

2.8 Technology Needed:

2.8.1 Applications Technology

2.8.2 Measurement and Metrics

2.8.3 Process Improvement

2.8.4 Characterization Technologies

2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

None

2.10 Additional Comments:

Goal 5: Adopt compatible land use laws/regulations with local communities by 2005.

Team Leader: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

3.0 Objective 3: Develop state and community relations/education program.

3.1 Objective POC: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

3.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,911
TOTAL	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,911

These costs reflect the following:

- \$100K/yr for 1 Contract FTE (GS-11 equivalent) to implement a Community Relations Program. FY04-FY11.

3.3 Projects and Deliverables:

Project 1: Implement a community relations program that includes RLUAC goals and JLUS issues beginning in FY04 and continuing thereafter.

- **Deliverables**
 - Contract for 1 FTE (GS-11 equivalent) to implement a Community Relations Program. FY04-FY11. \$100K/yr. Program Element: DOD Office of Economic Adjustment

3.4 Level of Risk/Impact if not funded:

Encroachment will not be a primary issue for the communities and the effects of encroachment will affect training. It is particularly important to continue interfacing with the public, discussing issues such as noise impacts, reasons for land protection, safety concerns, etc.

3.5 Progress towards Goal:

3.6 Benefits:

3.6.1 Readiness

This objective is tied directly to **Readiness**, one of the Installation's key processes. Jointly developed compatible land use definitions in areas adjacent to the Installation ("critical land") will reduce the number of complaints and provide a buffer that reduces encroachment issues.

3.6.2 Infrastructure and Environment

3.6.3 Quality of Life

3.6.4 Cost

3.7 External Assistance Needed:

NC Department of Commerce – execution agency; DoD Office of Economic Adjustment

3.8 Technology Needed:

3.8.1 Applications Technology

3.8.2 Measurement and Metrics

3.8.3 Process Improvement

3.8.4 Characterization Technologies

3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

None

3.10 Additional Comments:

Goal 5: Adopt compatible land use laws/regulations with local communities by 2005.

Team Leader: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

4.0 Objective 4: Determine potential long-term encroachment issues and develop criteria for prioritizing planning efforts.

4.1 Objective POC: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

4.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$295,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$295,000
TOTAL	\$295,000	\$0	\$295,000						

These costs reflect the following:

- \$295K in FY04 for a predictive model study to identify long-term encroachment issues for property and communities adjacent to Fort Bragg.

4.3 Projects and Deliverables:

Project 1: Define areas of compatible land use adjacent to the installation by FY04 and ongoing thereafter.

- **Deliverables**

- Predictive model study to identify long-term encroachment issues for property and communities adjacent to Fort Bragg. FY04. \$295K. Program Element: TBD

4.4 Level of Risk/Impact if not funded:

Fort Bragg will lose the ability to be proactive regarding encroachment issues. Increased development in and around the Installation must be coupled with good predictive planning to allow planners to initiate discussions or land purchases to prevent incompatible land uses or development that could impact training.

4.5 Progress towards Goal:

4.6 Benefits:

4.6.1 Readiness

This objective is tied directly to **Readiness**, one of the Installation's key processes. Jointly developed compatible land use definitions in areas adjacent to the Installation ("critical land") will reduce the number of complaints and provide a buffer that reduces encroachment issues.

4.6.2 Infrastructure and Environment

4.6.3 Quality of Life

4.6.4 Cost

4.7 External Assistance Needed:

External assistance needed to model land-uses at parcel-size scale to predict future land uses for critical land around the Installation.

4.8 Technology Needed:

4.8.1 Applications Technology

4.8.2 Measurement and Metrics

4.8.3 Process Improvement

4.8.4 Characterization Technologies

4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

None

4.10 Additional Comments:

Goal 5: Adopt compatible land use laws/regulations with local communities by 2005.

Team Leader: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

5.0 Objective 5: Sustain the installation to ensure units can train to doctrinal standards.

5.1 Objective POC: Glen Prillaman, Master Planner, Fort Bragg, PWBC, Construction Management Division

5.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$5,000,000	\$35,000,000
2	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,911
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$75,000
5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$100,000	\$5,180,000	\$5,110,250	\$5,115,763	\$5,121,551	\$5,127,628	\$5,134,010	\$5,140,710	\$36,029,911

These costs reflect the following:

- \$100K/yr for 1 contract GS-11 equivalent to develop and implement an installation strategy (acquisition, easements, lease, PLI, etc.) to meet training land requirements, both contiguous and non-contiguous. FY04-FY11.
- \$75K in FY05 to develop criteria and plan for mitigating smoke generation impacts, and for permit and easement preparations.

5.3 Projects and Deliverables:

Project 1: Develop and implement a policy required to expedite/streamline land acquisitions.

- **Deliverables**
 - DA execution required for policy. Program Element: TBD
 - \$5M per year for land purchases. This would be our leveraging piece to be able to take advantage of parcels in a timely manner. Program Element: TBD

Project 2: Develop and implement an installation strategy (acquisition, easements, lease, PLI, etc.) to meet training land requirements, both contiguous and non-contiguous.

- **Deliverables**

- Contract for 1 FTE GS-11 equivalent beginning in FY04. \$100K. Program element: TBD
- Develop an installation strategy (acquisition, easements, lease, PLI, etc.) to meet training land requirements, both contiguous and non-contiguous.
- Implement installation strategy to meet training land requirements. FY04-FY10 costs: TBD

Project 3: Identify and address issues of lost tax revenues for local counties because of conservation easements/land acquisition.

- **Deliverables**

- Issue identification because of lost tax revenues. DA/DoD execution required. TBD. Program Element: TBD

Project 4: Develop criteria/plan for dealing with off-installation impacts of smoke.

- **Deliverables**

- Contract for criteria/plan for smoke generation impacts. Before the end of FY05 (ref. PM 2.5 regs, non-attainment designation). \$50K. Program Element: TBD
- Contract for permit and easement preparations in FY05. \$25K. Program Element: TBD

Project 5: Identify critical impacts from urban lighting and criteria to minimize impacts on training.

- **Deliverables**

- Determine impacts from urban lighting. FY03. Use internal resources. Program Element: TBD
- Criteria to minimize impacts of urban lighting on training. FY03. Use internal resources. Program Element: TBD

Project 6: Develop criteria/plan to protect low-level flight paths.

- **Deliverables**

- Plan to protect low-level flights. Use internal resources/Pope AFB resources in FY03. TBD for out years. Program Element: TBD

Project 7: Assess impact of frequency/cell phone tower encroachment.

- **Deliverables**

- Impact of frequency cell phone tower encroachment. FY03. Use internal resources. Program Element: TBD

Project 8: Identify erosion and run-off issues that degrade training lands/running trails.

- **Deliverables**

- Addressed in Water Resources Goals 1 and 2. No funding required.

5.4 Level of Risk/Impact if not funded:

Failure to fund this project will result in the inability of Fort Bragg to maximize PLI due to limited staffing and will eventually result in training impacts.

5.5 Progress towards Goal:

5.6 Benefits:

5.6.1 Readiness

This objective is tied directly to **Readiness**, one of the installation's key processes. Jointly developed compatible land use definitions in areas adjacent to the Installation ("critical land") will reduce the number of complaints and provide a buffer that reduces encroachment issues.

5.6.2 Infrastructure and Environment

5.6.3 Quality of Life

5.6.4 Cost

5.7 External Assistance Needed:

DA funding for land acquisition; DA policy development to expedite/streamline land acquisitions

5.8 Technology Needed:

5.8.1 Applications Technology

5.8.2 Measurement and Metrics

5.8.3 Process Improvement

5.8.4 Characterization Technologies

5.8.5 Commercial Off-the-shelf Technologies

5.9 Regulatory Drivers:

5.10 Additional Comments:

Objective Details

Energy Conservation

Goal 6: Reduce energy use in accordance with Executive Order 13123. Specifically, to reduce energy use by 30 percent by 2005 and 35 percent by 2010.

Team Leader: TBD

1.0 Objective 1: Reduce Energy Consumption.

1.1 Objective POC: TBD

1.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$210,000	\$220,500	\$231,525	\$243,101	\$255,256	\$268,019	\$281,420	\$295,491	\$2,005,312
3	\$210,000	\$220,500	\$231,525	\$243,101	\$255,256	\$268,019	\$281,420	\$295,491	\$2,005,312
4	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
TOTAL	\$520,000	\$441,000	\$463,050	\$486,202	\$510,512	\$536,038	\$562,840	\$590,982	\$4,110,624

These costs reflect the following:

- \$200K/yr for service contract to transport Natural Gas from wellhead to burning tip at Fort Bragg; FY04. Ongoing.
- \$200K/yr for service contract for wholesale electrical access; FY04. Ongoing.
- \$100K for feasibility study to identify and implement natural gas initiatives for distributive generation; FY04.

1.3 Projects and Deliverables:

Project 1: Develop a Shared Energy Savings Program and retrofits to manage natural gas and electrical loads.

- **Deliverables**
 - TBD; Program element: TBD

Project 2: Implement a load management strategy for natural gas.

- **Deliverables**

- Contract to transport natural gas from wellhead to burning tip at Fort Bragg; FY04; (30 percent saving from NCNG, invested in infrastructure to make more efficient); ongoing. \$200K/yr; Program element: TBD

Project 3: Implement load management strategy for electrical loads (enable Fort Bragg to buy green power).

- **Deliverables**

- Contract for wholesale electrical access; FY04; Annual cost (28 percent savings in purchased electrical cost); ongoing. \$200K/yr; Program element: TBD

Project 4: Identify and implement natural gas initiatives for distributive generation.

- **Deliverables**

- Contract for feasibility study; FY04. \$100K/yr; Program element: TBD
- Implement initiatives. TBD; Program element: TBD

1.4 Level of Risk/Impact if not Funded:

1.5 Progress Towards Goal:

1.6 Benefits:

- 1.6.1 Readiness
- 1.6.2 Infrastructure and Environment
- 1.6.3 Quality of Life
- 1.6.4 Cost

1.7 External Assistance Needed:

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

1.10 Additional Comments:

Goal 6: To reduce energy use in accordance with Executive Order 13123. Specifically, to reduce energy use by 30 percent by FY05 and 35 percent by FY10.

Team Leader: TBD

2.0 Objective 2: Increase the percentage of renewable energy use.

2.1 Objective POC: TBD

2.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000

These costs reflect the following:

- \$200K in FY05 to contract for feasibility study for the conversion of existing central energy plants to COGEN.

2.3 Projects and Deliverables:

Project 1: Perform a feasibility study for the conversion of existing central energy plants to COGEN by 2005.

- **Deliverables**
 - Contract for feasibility study for the conversion of existing central energy plants to COGEN; FY05. \$200K; Program element: TBD

Project 2: Implement COGEN projects.

- **Deliverables**
 - TBD; Program element: TBD

Project 3: Perform solar power study for individual buildings.

- **Deliverables**
 - Covered under Goal 4. Program element: TBD

Project 4: Implement solar power projects.

- **Deliverables**

- TBD; Program element: TBD

2.4 Level of Risk/Impact if not Funded:

2.5 Progress Towards Goal:

2.6 Benefits:

2.6.1 Readiness

2.6.2 Infrastructure and Environment

2.6.3 Quality of Life

2.6.4 Cost

2.7 External Assistance Needed:

2.8 Technology Needed:

2.8.1 Applications Technology

2.8.2 Measurement and Metrics

2.8.3 Process Improvement

2.8.4 Characterization Technologies

2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

2.10 Additional Comments:

Goal 6: To reduce energy use in accordance with Executive Order 13123. Specifically, to reduce energy use by 30 percent by 2005 and 35 percent by 2010.

Team Leader: TBD

3.0 Objective 3: Provide incentives for energy users to conserve.

3.1 Objective POC: TBD

3.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$0								

These costs reflect the following:

- Projects covered under training goal 9.

3.3 Projects and Deliverables:

Project 1: Develop and implement an Energy Awareness Program for Fort Bragg.

- **Deliverables**
 - Covered under training goal 9. Program element: TBD

Project 2: Develop and implement energy conservation incentives for all Fort Bragg activities.

- **Deliverables**
 - TBD. Program element: TBD

3.4 Level of Risk/Impact if not funded:

3.5 Progress towards Goal:

3.6 Benefits:

3.6.1 Readiness

3.6.2 Infrastructure and Environment

3.6.3 Quality of Life

3.6.4 Cost

3.7 External Assistance Needed:

3.8 Technology Needed:

3.8.1 Applications Technology

3.8.2 Measurement and Metrics

3.8.3 Process Improvement

3.8.4 Characterization Technologies

3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

3.10 Additional Comments:

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Objective Details

Sustainable Transportation

Goal 7: Develop and implement an effective regional commuting system; and

Goal 8: Reduce the use of gasoline and diesel by 70 percent by 2015 and 99 percent by 2025.

Team Leader: Doug Flowers, Transportation Officer, Fort Bragg, RBC

1.0 Objective 1: Develop and implement a comprehensive transportation program.

1.1 Objective POC: Irina Johnson, Transportation Planner, Fort Bragg, PWBC

1.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000
2	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$30,000
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551	\$127,628	\$134,010	\$140,710	\$954,911
5	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	\$0	\$0	\$0	\$350,000	\$0	\$0	\$0	\$0	\$350,000
TOTAL	\$630,000	\$105,000	\$110,250	\$465,763	\$121,551	\$127,628	\$134,010	\$140,710	\$1,834,911

These costs reflect the following:

- \$500K in FY04 to develop a comprehensive transportation plan to support the master plan; FY04.
- \$30K in FY04 to conduct a comprehensive transportation survey (e.g., origin-destination data, gaps in existing transportation systems, etc).
- \$100K/yr to develop recommendations for regional transportation alternatives and their implications for Fort Bragg starting FY04.
- \$350K in FY07 to study and implement livable communities and smart growth concepts to reduce transportation requirements.

1.3 Projects and Deliverables:

Project 1: Develop, maintain, implement, and update a comprehensive transportation plan to support the master plan.

- **Deliverables**
 - \$500K to develop a comprehensive transportation plan to support the master plan; FY04. Contract; Program element: TBD

Project 2: Develop a comprehensive transportation survey.

- **Deliverables**
 - \$30K in FY04 to contract for comprehensive transportation survey to include tasks below; Program element: TBD
 - Survey drivers about their commuting patterns. Identify gaps in existing local and regional transportation systems that can impair the drivers ability to get to work.
 - Use comparative studies of commuting alternatives from major universities, many of whom face the same challenges as Army installations.
 - Conduct a driver survey to obtain "origin/destination" data.

Project 3: Develop and execute an on- and off-post commuting program that will meet force protection requirements and will provide an efficient means of workplace commuting for Fort Bragg soldiers, civilians, and family members.

- **Deliverables**
 - Develop an on- and off-post commuting program to provide installation soldiers, their families, and civilians working with alternatives to commuting in single-occupancy vehicles. TBD; Program element: TBD

Project 4: Develop recommendations for regional commuting alternatives.

- **Deliverables**
 - Develop recommendations for detailed studies/projects. \$100K; starting FY04; annual reoccurring. Incorporate findings into the transportation plan and IDG. Contract; Program element: TBD

Project 5: Incorporate smart growth design standards into Fort Bragg Master Plan and IDG.

- **Deliverables**
 - Incorporate smart growth design standards into the IDG and master plan. Existing contract; FY04. No costs; Program element: TBD

Project 6: Develop a high occupancy vehicle (HOV) lane for the new Outer Loop.

- **Deliverables**

- Develop an HOV lane for the new Outer Loop. Project start date TBD; Program element: TBD

Project 7: Study and implement livable communities and smart growth concepts to reduce transportation requirements. Study centralized vs. decentralized services.

- **Deliverables**

- Study livable communities and smart growth concepts to reduce transportation requirements. Incorporate concepts into Fort Bragg Master Plan and IDG. Determine advantages and disadvantages to having centralized motor pools in large units and agencies versus individually-assigned government vehicles. FY07. \$350K; Program element: TBD

1.4 Level of Risk/Impact if not Funded:

Failure to implement these projects and recommended policy changes will result in increased levels of air emissions; increased financial burden on military families because of their dependency on privately-owned vehicles; and declining levels of accessibility of different facilities on-post.

1.5 Progress Towards Goal:

In addition to decreasing air emissions and enhancing the quality of life for military families, developing and implementing a comprehensive transportation program will improve accessibility of different facilities on the Installation. With improved accessibility automobile dependency will decrease. One of the indicators for tracking progress toward improved accessibility is the number of privately owned vehicles (POVs) per military family.

1.6 Benefits:

1.6.1 Readiness

1.6.2 Infrastructure and Environment: Reduced parking infrastructure requirements.

1.6.3 Quality of Life: Decreased financial burden on military families, as they will not need to buy additional POVs to get around the Installation.

1.6.4 Cost

1.7 External Assistance Needed:

A transportation planning and engineering company will need to provide assistance.

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

None

1.10 Additional Comments:

Goal 7: Develop and implement an effective regional commuting system; and

Goal 8: Reduce the use of gasoline and diesel by 70 percent by 2015 and 99 percent by 2025.

Team Leader: Doug Flowers, Transportation Officer, Fort Bragg, RBC

2.0 Objective 2: Develop and implement compatible land use and transportation strategies to decrease automobile dependency.

2.1 Objective POC: Irina Johnson, Transportation Planner, Fort Bragg, PWBC

2.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$50,000	\$0	\$0	\$0	\$0	\$50,000	\$0	\$100,000
2	\$30,000	\$30,000	\$31,500	\$33,075	\$34,729	\$36,465	\$38,288	\$40,203	\$274,260
3	\$30,000	\$30,000	\$31,500	\$33,075	\$34,729	\$36,465	\$38,288	\$40,203	\$274,260
4	\$12,500	\$13,125	\$13,781	\$14,470	\$15,194	\$15,954	\$16,751	\$17,589	\$119,364
5	\$0	\$10,000	\$10,500	\$11,025	\$11,576	\$12,155	\$12,763	\$13,401	\$81,420
TOTAL	\$72,500	\$133,125	\$87,281	\$91,645	\$96,228	\$101,039	\$156,091	\$111,395	\$849,304

These costs reflect the following:

- \$30K in FY04 to develop a bicycle plan and build a complete network of bike trails and lanes.
- \$30K/yr to develop a pedestrian plan and build a complete network of sidewalks, crosswalks, and running trails.
- \$10K/yr to research existing inter- and intra-post transportation incentive programs, leverage existing incentive programs, and implement new incentive programs beginning in FY05.
- \$12.5K/yr to support a "green" bike program that provides community bikes for civilian and soldiers on post beginning in FY04.
- \$50K every five years beginning in FY05 to validate sustainability implications from decreasing automobile dependency.

2.3 Projects and Deliverables:

Project 1: Evaluate how decreased automobile dependency improves quality of life for soldiers, their family members, and civilians working on Fort Bragg.

- **Deliverables**
 - \$50K every five years beginning in FY05 to validate sustainability implications from decreasing automobile dependency. Benefits to the

Installation, the military families, and civilians working on Fort Bragg;
Program element: TBD

Project 2: Plan and build a complete bike network—bike trails and bike lanes—throughout Fort Bragg.

- **Deliverables**

- \$30K in FY04 to contract for a bicycle plan and project identification to support bike trails and bike lanes; Program element: TBD
- Project to link with regional bike system. TBD; Program element: TBD
- \$30K/yr to implement bike plan and build a complete bicycle system starting in FY05; Program element: TBD

Project 3: Develop a pedestrian plan and build a complete pedestrian network of sidewalks, crosswalks, running trails, etc.

- **Deliverables**

- \$30K in FY04 to contract for pedestrian plan and project identification to support a pedestrian network of sidewalks, crosswalks, and running trails; Program element: TBD
- Project to link with regional pedestrian network. TBD; Program element: TBD
- \$30K/yr to implement a pedestrian plan and build a complete pedestrian system starting in FY05; Program element: TBD

Project 4: Establish a "green" bike program that provides community bikes for civilians and soldiers on post.

- **Deliverables**

- Purchase bicycles (100 bicycles/yr at \$100/bicycle), implement a bike maintenance program, and purchase bike racks beginning in FY04. \$12.5K/yr; Program element: TBD

Project 5: Maximize Fort Bragg inter- and intra-post transportation incentive programs to promote alternatives to driving single-occupancy vehicles.

- **Deliverables**

- Contract to research existing programs, leverage existing incentive programs, and implement new incentive programs. \$10K/yr beginning in FY05. Recurring; Program element: TBD

2.4 Level of Risk/Impact if not Funded:

Failure to build a complete pedestrian and bicycle network on post and implement a "green bike" program will result in increased levels of air emissions from POVs,

increased financial burden on military families due to their increased dependency on automobiles, and declining levels of accessibility of different facilities on post.

2.5 Progress Towards Goal:

In addition to decreasing air emissions and enhancing the quality of life for soldiers and their families, building pedestrian and bicycle links throughout the Installation will improve accessibility and provide families of soldiers, in particular lower-rank soldiers, with an option of having one private vehicle per family instead of two or more vehicles. Better accessibility results in less automobile dependency. Several indicators will be used: the number of POVs per household, number of trips to work made by walking and biking, and number of trips throughout the day made by walking and biking.

2.6 Benefits:

2.6.1 Readiness

2.6.2 Infrastructure and Environment: Reduced parking infrastructure requirements.

2.6.3 Quality of Life: Decreased financial burden on military families, as they will not need to buy additional POVs to get around the Installation.

2.6.4 Cost

2.7 External Assistance Needed:

A transportation planning and engineering company will need to provide assistance.

2.8 Technology Needed:

2.8.1 Applications Technology

2.8.2 Measurement and Metrics

2.8.3 Process Improvement

2.8.4 Characterization Technologies

2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

None

2.10 Additional Comments:

Goal 7: Develop and implement an effective regional commuting system; and

Goal 8: Reduce the use of gasoline and diesel by 70 percent by 2015 and 99 percent by 2025.

Team Leader: Doug Flowers, Transportation Officer, Fort Bragg, RBC

3.0 Objective 3: Develop and implement strategies to decrease regional air emissions.

3.1 Objective POC: Irina Johnson, Transportation Planner, Fort Bragg, PWBC

3.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000
2	\$65,000	\$15,750	\$71,663	\$17,364	\$79,008	\$19,144	\$87,105	\$21,107	\$376,141
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	\$15,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000
6	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	\$30,000	\$100,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$230,000
9	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	\$0	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$30,000
TOTAL	\$110,000	\$195,750	\$171,663	\$17,364	\$79,008	\$19,144	\$87,105	\$21,107	\$711,141

These costs reflect the following:

- \$15K/yr for an ORISE Intern (part-time) to monitor the vehicle occupancy rate (VOR) beginning in FY04.
- \$30K/yr, beginning in FY05, for ORISE Intern to perform PPOA on non-traditional modes of transportation for very localized travel. Provides support in implementation of projects under this objective (3).
- \$50K in FY05 for a feasibility study to identify transportation control measures and strategy development to reduce total air emissions.
- \$50K every two years, beginning in FY04, to survey and analyze data to identify where people are, working hours, compressed schedules, and how many people currently carpool.
- \$15K in FY04 to assess emissions reductions associated with use of alternative fuels.
- \$30K in FY04 to identify appropriate location for biodiesel or ethanol fueling stations and prepare required permits.
- \$100K in FY05 and \$100K in FY06 to purchase biodiesel and ethanol storage and dispensing equipment and convert non-tactical vehicles to alternative fuel vehicles. In addition, in FY06 complete a pilot project comparison of

operation, maintenance, and emission impacts from use of bio-diesel B20, ethanol E85, and other alternative fuels compared to existing gasoline- and diesel-powered equipment.

3.3 Projects and Deliverables

Project 1: Conduct a feasibility study to identify transportation control measures (e.g., such as carpools, park and ride, etc.) and strategy development to reduce total air emissions.

- **Deliverables**

- Feasibility study to identify transportation control measures and strategy development to reduce total air emissions. FY05; professional services contract. \$ 50K; Program element: TBD
- Implement strategies identified in the feasibility study. TBD; Program element: TBD

Project 2: Develop and implement an active Fort Bragg Carpooling Program and Guaranteed Ride Home for soldiers and civilians working on post.

- **Deliverables**

- \$50K every two years to survey and analyze data to identify where people are, working hours, compressed schedules, and how many people currently carpool. Beginning in FY04; Program element: TBD
- ORISE Intern (part-time) to monitor the VOR. Ongoing; FY04; SAMPO currently working (.5 ORISE Intern). \$15K/yr; Program element: TBD

Project 3: Collect baseline data to perform opportunity assessments. Collect and analyze data to determine the amount of each fuel used in non-tactical equipment, segregate types of vehicle and vehicle usage (i.e., on- and off-road use, on- and off-post use).

- **Deliverables**

- Ongoing data collection, using sustainability staff. Recurring requirement for ongoing data collection. FY02; Program element: TBD

Project 4: Develop incentives for GSA customers to reduce petroleum-based product consumption.

- **Deliverables**

- Incentive program; FY05. Use existing sustainability staff. Recurring requirement for program oversight. Program element: TBD

Project 5: Perform opportunity assessment to identify alternative fuels practical for use on Fort Bragg.

- **Deliverables**

- Prepare cost analysis for fuels practical for use. No additional resources required, work in progress done by sustainability staff; Program element: TBD
- \$15K in FY04 to assess emissions reductions associated with use of alternative fuels; Program element: TBD

Project 6: Develop and implement a comprehensive plan for converting non-tactical vehicles into Alternative Fuel Vehicles (AFV).

- **Deliverables**

- Develop a list of installation-wide policies for conversion to alternative fuels and optimization of government vehicle use. FY03. No cost, use existing sustainability staff; Program element: TBD
- Develop a plan of converting non-tactical vehicles into AFVs. FY03. No cost, use existing sustainability staff; Program element: TBD

Project 7: Develop and implement contractual language and policy/regulation changes to require the use of alternative fuels in vehicles operating on the Installation and in support of Fort Bragg.

- **Deliverables**

- Modify contract language. Use in-house resources to modify contract language—no additional cost anticipated. FY03; Program element: TBD
 - Develop and implement contractual language for construction equipment.
 - Develop and implement contractual language for service contracts such as garbage collection, street cleaning, and buses.
 - Develop and implement policy or regulation changes for tenants (e.g., DOD schools, AAFES, and commissary) with vehicles that operate primarily on the Installation.

Project 8: Install infrastructure and convert non-tactical vehicles and equipment to alternative fuels (e.g., propane, hybrid electric, biodiesel B20, or ethanol E85).

- **Deliverables**

- Data collection on bio-diesel B20 and B100, propane, hybrid electric, compressed natural gas, and ethanol storage and equipment dispensing requirements to support the PPOA. Work in progress and covered under existing sustainability staff contract. No additional funding required. Program element: TBD
- \$30K in FY04 to identify appropriate location for alternative fueling stations and prepare required permits; Program element: TBD

- \$100K in FY05 to purchase chosen alternative fuels (e.g., bio-diesel B20 and B100, propane, hybrid electric, compressed natural gas, or ethanol); Program element: TBD
- \$100K in FY06 for a pilot project comparison of operation, maintenance, and emission affects from use of alternative-fuel equipment compared to existing gasoline- and diesel-powered equipment; Program element: TBD

Project 9: Develop a program to collect and maintain air-quality offset data for alternative fuels such as bio-diesel B20 and B100, propane, hybrid electric, compressed natural gas, and ethanol.

- **Deliverables**

- Air-Quality Offset Program. TBD; Program element: ENV

Project 10: Assess feasibility and implement non-traditional modes of transportation (e.g., electric golf-carts, bicycles, etc.) within compounds, such as PWBC and MMB, for very localized transportation.

- **Deliverables**

- \$30K/yr for ORISE Intern to perform PPOA on non-traditional modes of transportation for very localized travel. Provides support in implementation of projects. FY05. Supports other projects under this objective; Program element: TBD
- Purchase vehicles (assume \$2K per electric cart, and \$100 per bicycle). TBD; Program element: TBD

3.4 Level of Risk/Impact if not Funded:

Failure to reduce the use of gasoline and diesel in non-tactical vehicles will increase Installation dependency on external sources of fuel. In addition to the potential force protection and mission-readiness concern, current amounts of gasoline and diesel fuel used by non-tactical vehicles are detrimental to regional air quality. Cumberland County already exceeds the ozone standard set by EPA. If the area is designated non-attainment, the region and Fort Bragg will be negatively affected.

3.5 Progress Towards Goal:

Progress will be measured by the amount of gasoline and diesel consumed by non-tactical vehicles and the amount of alternative fuels consumed by non-tactical vehicles. Another indicator of progress will be the decrease in concentrations of NO_x, CO, and VOC in the air.

3.6 Benefits:

3.6.1 Readiness

3.6.2 Infrastructure and Environment: No air quality restrictions and penalties. Decreased dependence on external sources of fuel (i.e., gasoline and diesel) will

also guarantee a steady inexpensive supply of other locally produced fuels (e.g., bio-diesel, propane, ethanol, and compressed natural gas).

3.6.3 Quality of Life

3.6.4 Cost

3.7 External Assistance Needed:

3.8 Technology Needed:

3.8.1 Applications Technology

3.8.2 Measurement and Metrics

3.8.3 Process Improvement

3.8.4 Characterization Technologies

3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

EO 13149, "Greening the Government through Federal Fleet and Transportation Efficiency."

3.10 Additional Comments:

Goal 7: Develop and implement an effective regional commuting system; and

Goal 8: Reduce the use of gasoline and diesel by 70 percent by 2015 and 99 percent by 2025.

Team Leader: Doug Flowers, Transportation Officer, Fort Bragg, RBC

4.0 Objective 4: Develop and implement strategies as alternatives to car travel.

4.1 Objective POC: Irina Johnson, Transportation Planner, Fort Bragg, PWBC

4.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
2	\$0	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$25,000
TOTAL	\$0	\$100,000	\$25,000	\$0	\$0	\$0	\$0	\$0	\$125,000

These costs reflect the following:

- \$100K in FY05 for a feasibility study and cost identification of implementing an intra-installation transportation bus or shuttle system or military taxi.
- \$25K in FY06 to identify non-driving options such as telecommuting.

4.3 Projects and Deliverables:

Project 1: Conduct a feasibility study and cost identification of implementing an intra-installation transportation bus or shuttle system or military taxi.

- **Deliverables**
 - \$100K in FY05 for a feasibility study and cost identification of implementing an intra-installation transportation bus or shuttle system or military taxi; Program element: TBD
 - Intra-installation transportation bus or shuttle system or military taxi will be determined based on study outcome.
 - Link intra-installation system to external transit system, TDB based on study outcome.
 - Develop "Park-N-Ride" system for Fort Bragg, TDB based on study outcome.

Project 2: Identify and implement non-driving options such as telecommuting, use of flex times.

- **Deliverables**

- \$25K in FY06 to identify non-driving options such as telecommuting.
Program element: TBD

4.4 Level of Risk/Impact if not Funded:

Failure to develop and implement an intra-installation bus or shuttle system will result in increased security measures at the Access Control Gates, increased dependency of military families on individual transportation (POVs), and declining levels of accessibility of different facilities on post. It will also increase the number of on- and off-post trips made by POVs and government vehicles during the day, consequently creating traffic concerns and increasing air emissions.

4.5 Progress Towards Goal:

Number of trips made by public transportation or military taxi. Decrease in concentrations of NO_x, CO, and VOC in the air.

4.6 Benefits:

3.10.1 Readiness

3.10.2 Infrastructure and Environment: Less parking requirements.

3.10.3 Quality of Life: Cost benefits to soldiers and their families due to decreased dependency on POVs.

3.10.4 Cost

4.7 External Assistance Needed:

A transportation planning and engineering company will need to provide assistance.

4.8 Technology Needed:

4.8.1 Applications Technology

4.8.2 Measurement and Metrics

4.8.3 Process Improvement

4.8.4 Characterization Technologies

4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

None

4.10 Additional Comments:

Goal 7: Develop and implement an effective regional commuting system; and

Goal 8: Reduce the use of gasoline and diesel by 70 percent by 2015 and 99 percent by 2025.

Team Leader: Doug Flowers, Transportation Officer, Fort Bragg, RBC

5.0 Objective 5: Develop a community outreach and awareness partnership to support regional air-quality initiatives and increase use of regional multi-modal systems.

5.1 Objective POC: Irina Johnson, Transportation Planner, Fort Bragg, PWBC

5.2 Resources Required:

Estimated Cost over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	\$35,000	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$35,000	\$240,048
4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$35,000	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$35,000	\$240,048

These costs reflect the following:

- \$35K in FY04 for Fort Bragg's participation and support in a regional strategic plan.
- \$25K in FY05-FY11 to develop and implement an education and awareness strategy supporting regional air-quality goals.

5.3 Projects and Deliverables:

Project 1: Participate in local planning with the councils of government, area metropolitan planning organizations, and the NCDOT.

- **Deliverables**

- Semi-annual report to EQCC/GC. Cost covered in Objective 1, Project 4. FY04 and ongoing; Program element: TBD

Project 2: Pursue federal, state, and private grants for local and regional transportation and commuting options.

- **Deliverables**

- Partnership grant & proposal applications. Cost covered in Objective 1, Project 4. FY04 and ongoing; Program element: TBD

Project 3: Develop and implement an education and awareness strategy.

- **Deliverables**

- \$35K in FY04 for Fort Bragg participation and support in a regional strategic plan. 15K to support update every two years (FY06, FY08, FY10). Annual review with no cost; Program element: TBD
- Fort Bragg participation and support in a regional educational program (training package). No cost. Covered under Goal 9.
- Fort Bragg participation and support in a regional educational program (people provide training). No cost.
 - Brochures, flyers, public service announcements, etc.
 - Web-page development and maintenance
 - Community group participation

Project 4: Develop a communication mechanism to identify and remove barriers.

- **Deliverables**

- Transportation Task Force. Use existing staff. FY04, no funding required; Program element: TBD

5.4 Level of Risk/Impact if not Funded:

Progress successes may not be fully realized if potential participants of the program are unaware of the programs in place.

5.5 Progress Towards Goal:

Number of partnerships with local, regional, and state transportation and air-quality agencies. Memberships in local and regional transportation/air-quality committees.

5.6 Benefits:

5.6.1 Readiness

Infrastructure and Environment: Implementing these projects will maximize the potential for success of this objective and the two goals. The more people are aware of available services and opportunities, the more participation programs will have, and the more successful the programs will become. Moreover, the cost per user decreases as user participation increases.

5.6.2 Quality of Life

5.6.3 Cost

5.7 External Assistance Needed:

PAO

5.8 Technology Needed:

5.8.1 Applications Technology

5.8.2 Measurement and Metrics

- 5.8.3 Process Improvement
- 5.8.4 Characterization Technologies
- 5.8.5 Commercial Off-the-shelf Technologies

5.9 Regulatory Drivers:

EO 13101 "Greening the environment through management"

5.10 Additional Comments:

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Objective Details

Environmental Training Program

Goal 9: Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties.

Team Leader: George Frank

1.0 Objective 1: Develop training/needs assessment.

1.1 Objective POC: TBD

1.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179
TOTAL	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179

These costs reflect the following:

- \$50K/yr for .25 FTE to support both projects under this objective in FY04-FY05.
\$25K/yr from FY07-FY11.

1.3 Projects and Deliverables:

Project 1: Perform a training needs assessment.

- **Deliverables**

- Fund .25 FTE to support both projects under this objective. \$50K/yr beginning in FY04; Program element: TBD
 - Identify staff organizations and staff that require training to support their goals by FY03.
 - Review, evaluate, and document the function of all training relevant to the sustainability goals by FY04.

Project 2: Identify curricula-development needs.

- **Deliverables**

- Identify sections of current curricula where sustainability concepts can be included from FY04 to FY07.
- Develop curricula.

1.4 Level of Risk/Impact if not Funded:

1.5 Progress Towards Goal:

1.6 Benefits:

- 1.6.1 Readiness
- 1.6.2 Infrastructure and Environment
- 1.6.3 Quality of Life
- 1.6.4 Cost

1.7 External Assistance Needed:

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

1.10 Additional Comments:

Environmental Training Program

Goal 9: Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties.

Team Leader: George Frank

2.0 Objective 2: Implement training program.

2.1 Objective POC: TBD

2.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179
2	\$26,500	\$22,500	\$12,500	\$11,500	\$12,500	\$23,500	\$12,500	\$22,500	\$144,000
TOTAL	\$76,500	\$75,000	\$40,000	\$40,375	\$42,500	\$55,000	\$45,575	\$57,229	\$432,179

These costs reflect the following:

- \$50K/yr for .25 FTE to support both projects under this objective in FY04-FY05.
\$25K/yr from FY07-FY11.
- \$11.5K/yr for educational materials.
- \$15K in FY05 for website development.
- \$14K for equipment beginning in FY04 and every five years.

2.3 Projects and Deliverables:

Project 1: Develop and implement policy and training.

- **Deliverables**

- Fund .25 FTE to support this objective. \$50K/yr beginning in FY04;
Program element: TBD
 - Include wording for all staff and soldier environmental training requirements in performance counseling by FY03.
 - Include policy for installation environmental training in Fort Bragg Reg. 351-1 by FY04.
 - Develop new or modify existing curricula to provide the required sustainability concepts from FY03 to FY07.
 - Develop in-processing training on sustainable Fort Bragg by FY03.
 - Conduct training and train-the-trainer sessions from FY03 and ongoing.

Project 2: Build an integrated “tool chest” of environmental and sustainability educational materials and resources.

- **Deliverables**

- Educational materials: brochures/pamphlets printing (\$5K/yr); displays \$2K every five years; book/video library (\$1K/yr); Program element: TBD
- Equipment to prepare and support project purchases in FY04 and every fifth year: printer (\$8K every five years); digital camera and software (\$1K every five years); projector and laptop (\$5K every five years); Program element: TBD
- Services to support: produce videos (\$5K every other year beginning in FY04); web-site development (\$15K in FY05); CD-ROM development (\$1K/yr beginning in FY06); Program element: TBD
- Other: field trips (\$0.5K/yr); conferences and seminars (TBD); web-based training (\$1K in FY05 and FY07); awards (TBD); Program element: TBD

2.4 Level of Risk/Impact if not Funded:

2.5 Progress Towards Goal:

2.6 Cost Benefits:

- 2.6.1 Readiness
- 2.6.2 Infrastructure and Environment
- 2.6.3 Quality of Life
- 2.6.4 Cost

2.7 External Assistance Needed:

2.8 Technology Needed:

- 2.8.1 Applications Technology
- 2.8.2 Measurement and Metrics
- 2.8.3 Process Improvement
- 2.8.4 Characterization Technologies
- 2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

2.10 Additional Comments:

Environmental Training Program

Goal 9: Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties.

Team Leader: George Frank

3.0 Objective 3: Periodically evaluate training-program effectiveness and develop recommendations for improvement.

3.1 Objective POC: TBD

3.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179
TOTAL	\$50,000	\$52,500	\$27,500	\$28,875	\$30,000	\$31,500	\$33,075	\$34,729	\$288,179

These costs reflect the following:

- \$50K/yr for .25 FTE to support both projects under this objective in FY04-FY05.
\$25K/yr from FY07-FY11.

3.3 Projects and Deliverables:

Project 1: Develop environmental training checklists for Inspector General (IG) and organizational readiness assessment (ORA) inspections by FY05.

• **Deliverables**

- Fund .25 FTE to support this objective. \$50K/yr beginning in FY04;
Program element: TBD
- Develop training checklist.

3.4 Level of Risk/Impact if not Funded:

3.5 Progress Towards Goal:

3.6 Benefits:

- 3.6.1 Readiness
- 3.6.2 Infrastructure and Environment
- 3.6.3 Quality of Life
- 3.6.4 Cost

3.7 External Assistance Needed:

3.8 Technology Needed:

- 3.8.1 Applications Technology
- 3.8.2 Measurement and Metrics
- 3.8.3 Process Improvement
- 3.8.4 Characterization Technologies
- 3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

3.10 Additional Comments:

Environmental Training Program

Goal 9: Develop an integrated environmental education program for Fort Bragg, its surrounding communities, and interested parties.

Team Leader: George Frank

4.0 Objective 4: Develop and implement a public outreach/information program.

4.1 Objective POC: TBD

4.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$50,000	\$53,500	\$28,000	\$29,375	\$30,500	\$32,000	\$33,575	\$35,229	\$292,179
TOTAL	\$50,000	\$53,500	\$28,000	\$29,375	\$30,500	\$32,000	\$33,575	\$35,229	\$292,179

These costs reflect the following:

- \$50K/yr for .25 FTE to support both projects under this objective in FY04-FY05.
\$25K/yr from FY07-FY11.

4.3 Projects and Deliverables:

Project 1: Develop outreach materials and activities for and distribute them in the surrounding communities by FY03 and on going.

- **Deliverables**

- Fund .25 FTE to support this objective. \$50K/yr beginning in FY04;
Program element: TBD
- CD-Rom based training packages.

4.4 Level of Risk/Impact if not Funded:

4.5 Progress Towards Goal:

4.6 Benefits:

- 4.6.1 Readiness
- 4.6.2 Infrastructure and Environment
- 4.6.3 Quality of Life
- 4.6.4 Cost

4.7 External Assistance Needed:

4.8 Technology Needed:

- 4.8.1 Applications Technology
- 4.8.2 Measurement and Metrics
- 4.8.3 Process Improvement
- 4.8.4 Characterization Technologies
- 4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

4.10 Additional Comments:

Objective Details

Materials Procurement

Goal 10: Work toward 100 percent environmentally preferable products (EPPs) by 2025 for all purchases, including government purchase cards, contract, and military requisitions.

Team Leader: Jeanette Davis and Rob Dozier

1.0 Objective 1: Perform opportunity assessments to identify EPP candidates.

1.1 Objective POC: TBD

1.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$50,000	\$52,500	\$0	\$0	\$0	\$0	\$0	\$0	\$102,500
2	\$0	\$50,000	\$52,500	\$55,125	\$0	\$0	\$0	\$0	\$157,625
3	\$0	\$0	\$50,000	\$52,500	\$135,125	\$141,881	\$88,200	\$0	\$467,706
4	\$0	\$0	\$0	\$10,000	\$0	\$0	\$11,576	\$0	\$21,576
5	\$50,000	\$52,500	\$55,125	\$57,881	\$60,775	\$63,814	\$67,005	\$70,355	\$477,455
TOTAL	\$100,000	\$155,000	\$157,625	\$175,506	\$195,900	\$205,695	\$166,781	\$70,355	\$1,226,863

These costs reflect the following:

- \$50K/yr in FY03-FY05 for .50 FTE support to research small purchases (\$2.5K-\$100K) to identify EPPs and sources of supply.
- \$50K/yr in FY05-FY07 for .50 FTE support to research large purchases (>\$100K) to identify EPPs and sources of supply.
- \$50K/yr in FY05-FY07 for .50 FTE support to research government purchase card purchases (<\$2.5K) to identify EPPs and sources of supply.
- \$80K/yr in FY08 to develop and implement a database to track government credit-card purchases.
- \$10K in FY03 to develop criteria and ranking standards based on LEED/SPIrIT.
- \$50K/yr to develop and maintain list of EPP products Fort Bragg will purchase and sources of supply (ongoing).

1.3 Projects and Deliverables:

Project 1: For small purchases (\$2.5K - \$100K): Identify EPPs and sources of supply for use on Fort Bragg.

- **Deliverables**

- \$50K/yr in FY03-FY05 for .50 FTE support to produce the following deliverables. Program element: TBD
 - List of top purchases in \$2.5K-\$100K range. List produced annually.
 - List of purchases subject to RCRA 6002 APP. Project starts in FY03. List produced annually.
 - List of other products researched for EPP alternatives. Project starts in FY03. List produced annually.
 - List of EPP products Fort Bragg will purchase and sources of supply by FY05.

Project 2: For large purchases (>\$100K): Identify EPPs and sources of supply for use on Fort Bragg.

- **Deliverables**

- \$50K/yr in FY05-FY07 for .50 FTE support to produce the following deliverables. Program element: TBD
 - List of top purchases >\$100K range. List produced annually.
 - List of purchases subject to RCRA 6002 APP. List produced annually.
 - List of other products researched for EPP alternatives. List produced annually.
 - List of EPP products Fort Bragg will purchase and sources of supply by FY05.

Project 3: For Government Impact Purchase Cards (<\$2.5K): Identify EPPs and sources of supply for use on Fort Bragg.

- **Deliverables**

- \$50K/yr in FY06-FY09 for .50 FTE support to produce the following deliverables. Program element: TBD
 - List of top purchases <\$2.5K. List produced annually.
 - List of purchases subject to RCRA 6002 APP. List produced annually.
 - List of other products researched for EPP alternatives. List produced annually.
 - List of EPP products Fort Bragg will purchase and sources of supply by FY05.

- \$80K/yr in FY08 to develop and implement a database to track government credit-card purchases. Program element: TBD

Project 4: Develop criteria for Fort Bragg's EPPs.

- **Deliverables**

- \$10K in FY03 to develop criteria and ranking standards based on LEED/SPIRiT standards. Update every two years. Program element: ENV

Project 5: Develop, update, and maintain a comprehensive listing of EPPs and sources of supply.

- **Deliverables**

- \$50K/yr to develop and maintain list of EPP products Fort Bragg will purchase and sources of supply (on-going). Program element: ENV

1.4 Level of Risk/Impact if not Funded:

1.5 Progress Towards Goal:

1.6 Benefits:

- 1.6.1 Readiness
- 1.6.2 Infrastructure and Environment
- 1.6.3 Quality of Life
- 1.6.4 Cost

1.7 External Assistance Needed:

1.8 Technological Opportunities:

- 1.8.1 Applications Technology
- 1.8.2 Measurement and Metrics
- 1.8.3 Process Improvement
- 1.8.4 Characterization Technologies
- 1.8.5 Commercial Off-the-shelf Technologies

1.9 Regulatory Drivers:

1.10 Additional Comments:

Goal 10: Work toward 100 percent environmentally preferable products (EPPs) by 2025 for all purchases, including government purchase cards, contract, and military requisitions.

Team Leader: Jeanette Davis and Rob Dozier

2.0 Objective 2: Develop policies, training, and awareness.

2.1 Objective POC: TBD

2.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$0								

These projects are funded under Goal 9 (training).

2.3 Projects and Deliverables:

Project 1: Insert EPP requirements into installation policies, regulations, and contract procedures.

- **Deliverables**
 - Revise policies, regulations, and contract procedures (on-going funding reflected in Goal 9). Program element: ENV

Project 2: Develop and implement training for ordering officials and procurement personnel.

- **Deliverables**
 - Revise existing training with EPP requirements; FY04 (on-going funding reflected in Goal 9). Program element: ENV

Project 3: Develop and implement an affirmative procurement and EPP training program for credit-card holders and approving officials.

- **Deliverables**
 - Revise existing training with EPP requirements; FY04 (on-going funding reflected in Goal 9). Program element: ENV

Project 4: Implement and update training.

- **Deliverables**

- Update and provide training (on-going funding reflected in Goal 9).
Program element: ENVR

2.4 Level of Risk/Impact if not Funded:

2.5 Progress Towards Goal:

2.6 Benefits:

- 2.6.1 Readiness
- 2.6.2 Infrastructure and Environment
- 2.6.3 Quality of Life
- 2.6.4 Cost

2.7 External Assistance Needed:

2.8 Technological Opportunities:

- 2.8.1 Applications Technology
- 2.8.2 Measurement and Metrics
- 2.8.3 Process Improvement
- 2.8.4 Characterization Technologies
- 2.8.5 Commercial Off-the-shelf Technologies

2.9 Regulatory Drivers:

2.10 Additional Comments:

Goal 10: Work toward 100 percent environmentally preferable products (EPPs) by 2025 for all purchases, including government purchase cards, contract, and military requisitions.

Team Leader: Jeanette Davis and Rob Dozier

3.0 Objective 3: Encourage the local market to produce, stock, and promote EPPs.

3.1 Objective POC: TBD

3.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	\$0	\$0	\$30,000	\$0	\$0	\$30,000	\$0	\$0	\$60,000
TOTAL	\$0	\$0	\$30,000	\$0	\$0	\$30,000	\$0	\$0	\$60,000

These costs reflect the following:

- \$10K/yr every two years to produce and update a list of manufacturers in six surrounding county areas. Updates in FY06 and FY09.
- \$10K/yr every two years to produce and update a list of distributors in six surrounding county areas. Updates in FY06 and FY09.
- \$10K/yr every two years to produce and update a list of environmentally preferable products available from local sources.

3.3 Projects and Deliverables:

Project 1: Develop partnerships with local companies to provide EPPs.

- **Deliverables**

- The following deliverables will be accomplished with funding already identified in objective 1 above. Program element: TBD
 - List of trade show opportunities.
 - Presentations to manufacturers and distributors on becoming suppliers of EPP for Fort Bragg.
 - Reporting mechanism for suppliers and distributors (annual report in a standard format with information to support tracking database).

Project 2: Identify target EPP products for local procurement.

- **Deliverables**

- \$10K/yr every two years to produce and update a list of manufacturers in six surrounding county areas. Updates in FY06 and FY09. Project started in FY02 (Fayetteville State University). Program element: ENV
- \$10K/yr every two years to produce and update a list of distributors in six surrounding county areas. Updates in FY06 and FY09. Project started in FY02 (Fayetteville State University). Program element: ENV
- \$10K/yr every two years to produce and update a list of environmentally preferable products available from local sources. Updates in FY06 and FY09. Project started in FY02 (Fayetteville State University). Program element: ENV

3.4 Level of Risk/Impact if not Funded:

3.5 Progress Towards Goal:

3.6 Benefits:

- 3.6.1 Readiness
- 3.6.2 Infrastructure and Environment
- 3.6.3 Quality of Life
- 3.6.4 Cost

3.7 External Assistance Needed:

3.8 Technological Opportunities:

- 3.8.1 Applications Technology
- 3.8.2 Measurement and Metrics
- 3.8.3 Process Improvement
- 3.8.4 Characterization Technologies
- 3.8.5 Commercial Off-the-shelf Technologies

3.9 Regulatory Drivers:

3.10 Additional Comments:

Goal 10: Work toward 100 percent environmentally preferable products (EPPs) by 2025 for all purchases, including government purchase cards, contract, and military requisitions.

Team Leader: Jeanette Davis and Rob Dozier

4.0 Objective 4: Develop tools to measure and increase program success.

4.1 Objective POC: TBD

4.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	\$0	\$0	\$50,000	\$15,000	\$52,500	\$15,750	\$16,538	\$17,364	\$167,152
2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$0	\$0	\$50,000	\$15,000	\$52,500	\$15,750	\$16,538	\$17,364	\$167,152

These costs reflect the following:

- \$50K to develop and maintain database every other year with \$15K in alternate years for minor updates. Project start in FY06.

4.3 Projects and Deliverables:

Project 1: Develop and implement a reporting and tracking database to ensure compliance with and to monitor progress of the EPP Program.

- **Deliverables**
 - \$50K to develop and maintain database every other year with \$15K in alternate years for minor updates. Project start in FY06.
 - List of fields to be tracked in database.
 - Develop database. Project starts in FY06.
 - Update and maintain database.

Project 2: Develop positive and negative incentives for compliance with the EPP Program.

- **Deliverables**
 - Incentive program. Funded through Objective 1 and Training Goal #9. Program element: TBD

4.4 Level of Risk/Impact if not Funded:

4.5 Progress Towards Goal:

4.6 Benefits:

- 4.6.1 Readiness
- 4.6.2 Infrastructure and Environment
- 4.6.3 Quality of Life
- 4.6.4 Cost

4.7 External Assistance Needed:

4.8 Technological Opportunities:

- 4.8.1 Applications Technology
- 4.8.2 Measurement and Metrics
- 4.8.3 Process Improvement
- 4.8.4 Characterization Technologies
- 4.8.5 Commercial Off-the-shelf Technologies

4.9 Regulatory Drivers:

4.10 Additional Comments:

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Appendix I

Acronyms and Abbreviations

AFB	Air Force Base
AFH	Army Family Housing
AFVs	Alternative Fuel Vehicles
APP	Affirmative Procurement Policy
B20	Bio-diesel (80 percent diesel, 20 percent oil)
BTU	British Thermal Unit
C&D	Construction and demolition
CASBC	Community Activities and Services Business Center
CERL	U.S. Army Construction Engineering Research Laboratory
CHPPM	US Army Center for Health Promotion and Preventive Medicine
CO	Carbon monoxide
CO ₂	Carbon dioxide
COE	U.S. Army Corps of Engineers
CP&L	Carolina Power and Light
DA	Department of the Army
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
E85	Ethanol (85 percent ethanol, 15 percent gasoline)
EMS	Environmental Management System
ENV	Environmental
EO	Executive Order
EPPs	Environmentally Preferable Products
ESPC	Energy Savings Performance Contract
FTE	Full-time equivalent
FY	Fiscal year
GIS	Geographic Information Systems
GSA	General Services Administration
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HOV	High Occupancy Vehicle
HQW	High Quality Water
IDG	Installation Design Guide
IG	Inspector General
JLUS	Joint Land Use Study
LCID	Land Clearing and Inert Debris
LEED	Leadership in Energy and Environmental Design
M	Million
MBTUs	Million British Thermal Units
MCA	Military Construction, Army
MILCON	Military Construction
MMB	Materiel Maintenance Branch, Readiness Business Center
MSW	Municipal Solid Waste
NC DENR	North Carolina Department of Environment and Natural Resources
NC DOT	North Carolina Department of Transportation
NC HQW	North Carolina High Quality Water
NCNG	North Carolina Natural Gas Company

NIBNISH	National Institute for the Blind/National Institute for the Severely Handicapped
NO _x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OMA	Operations and Maintenance – Army
ORA	Organization Readiness Assessment
ORISE	Oak Ridge Institute of Science and Engineering
PLI	Private Land Initiative
POM	Program Objective Memorandum
PPOA	Pollution Prevention Opportunity Assessment
PWBC	Public Works Business Center
QRP	Qualified Recycling Program
RCI	Residential Communities Initiative
RCW	Red Cockaded Woodpecker
Reg.	Regulation
RLUAC	Regional Land Use Advisory Commission
SCADA	Supervisory Control and Data Acquisition
SPiRiT	Sustainable Project Rating Tool (military adaptation of USGBC's LEED)
SRM	Sustainment, Restoration and Modernization
SSSC	Self-Service Supply Center
TMDL	Total Maximum Daily Load
WETO	Western Environmental Technology Office
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant