

The Army Sustainability Planning Process - The First 7 Years

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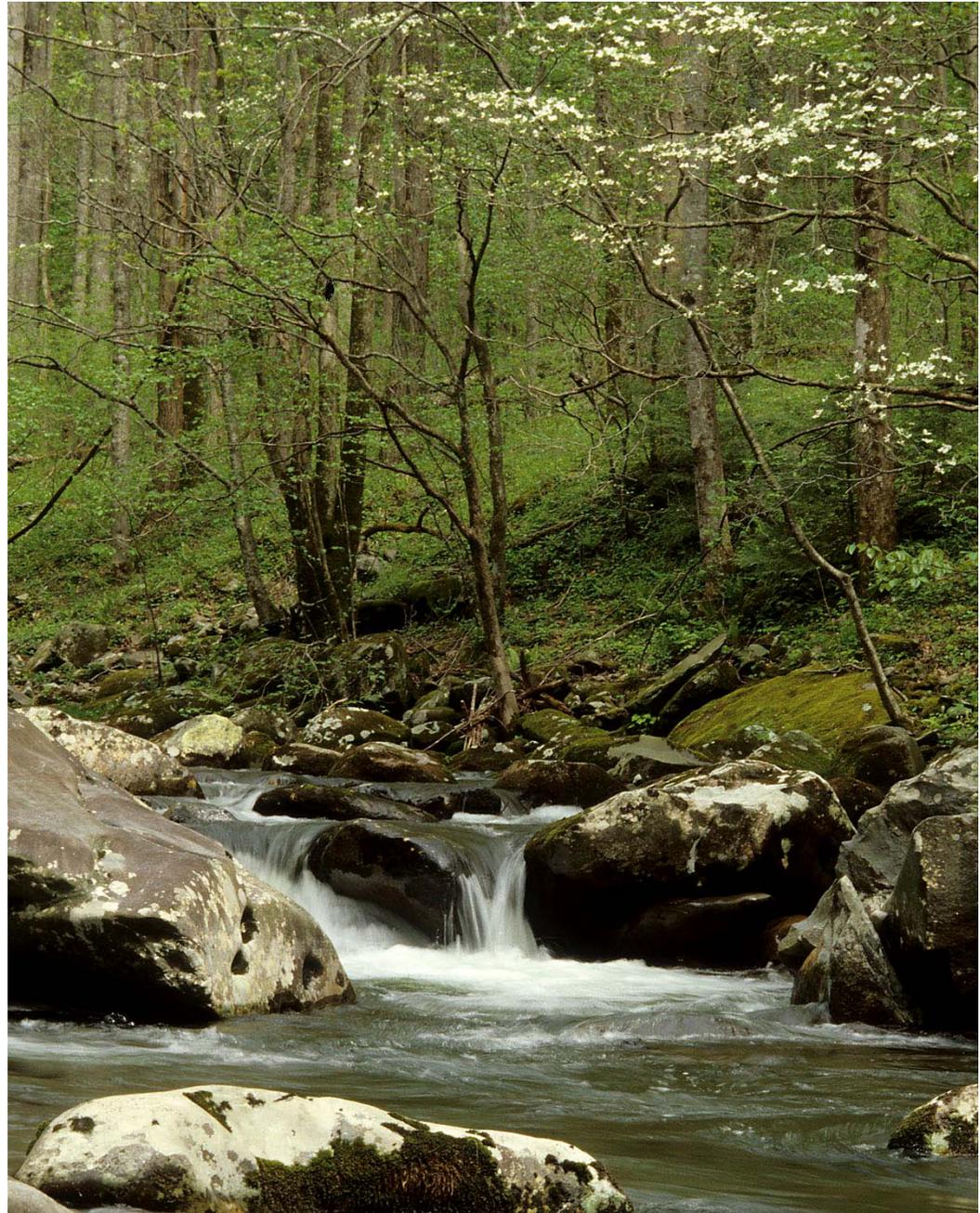
Introductory Quiz

**What do 18th century
Frenchmen, beavers,
bison, and sequoia trees
have in common?**

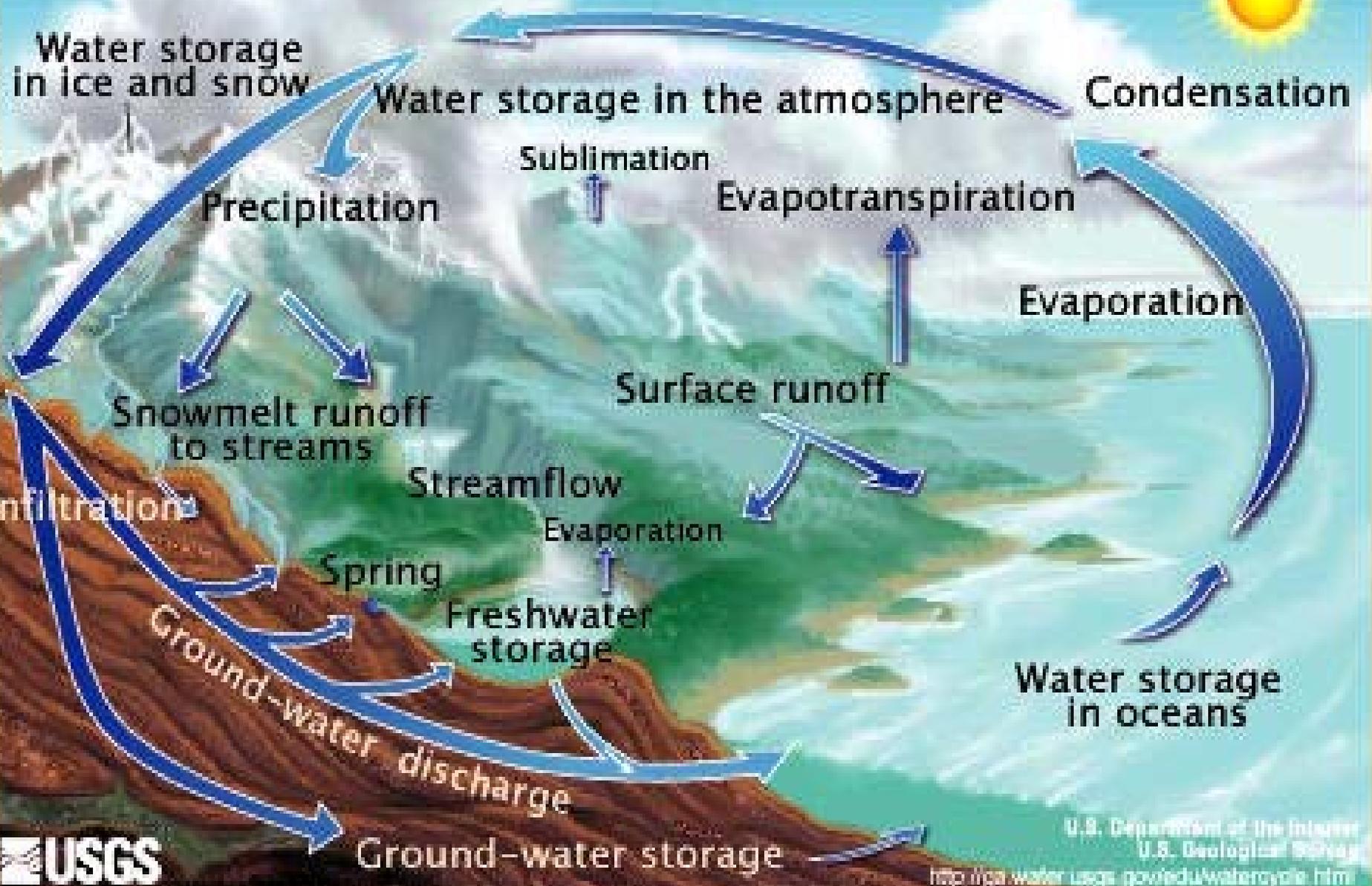
Water, water everywhere

Based on Water: A Natural
History by Alice Outwater

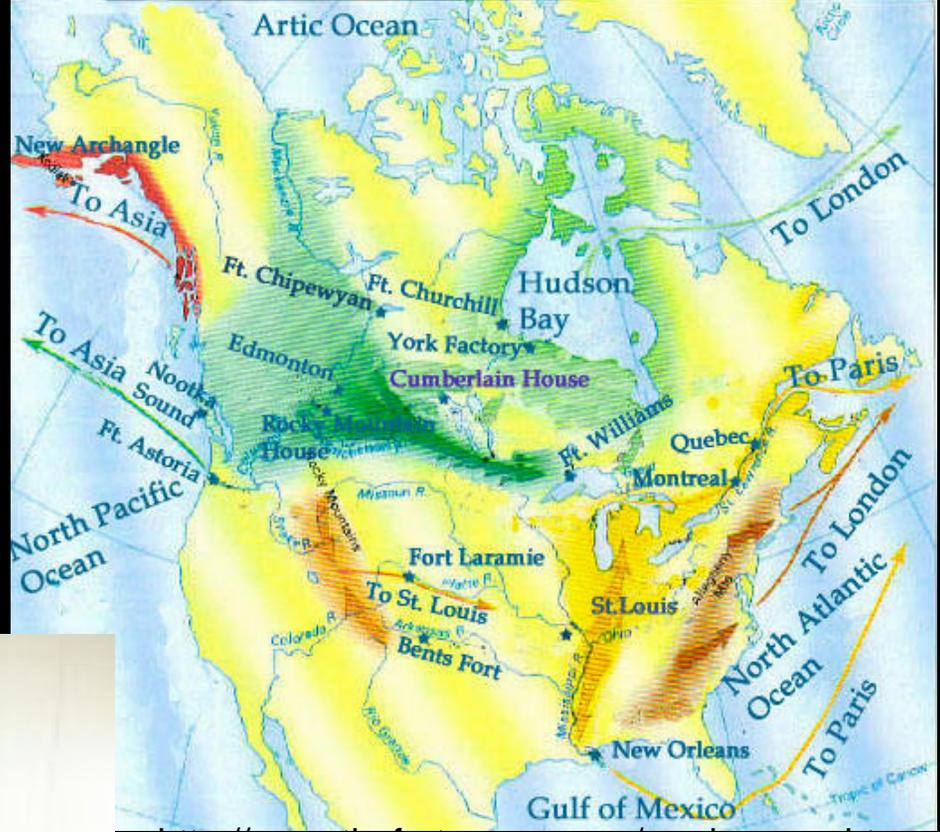
Photography by Robert
OConnell



The Water Cycle



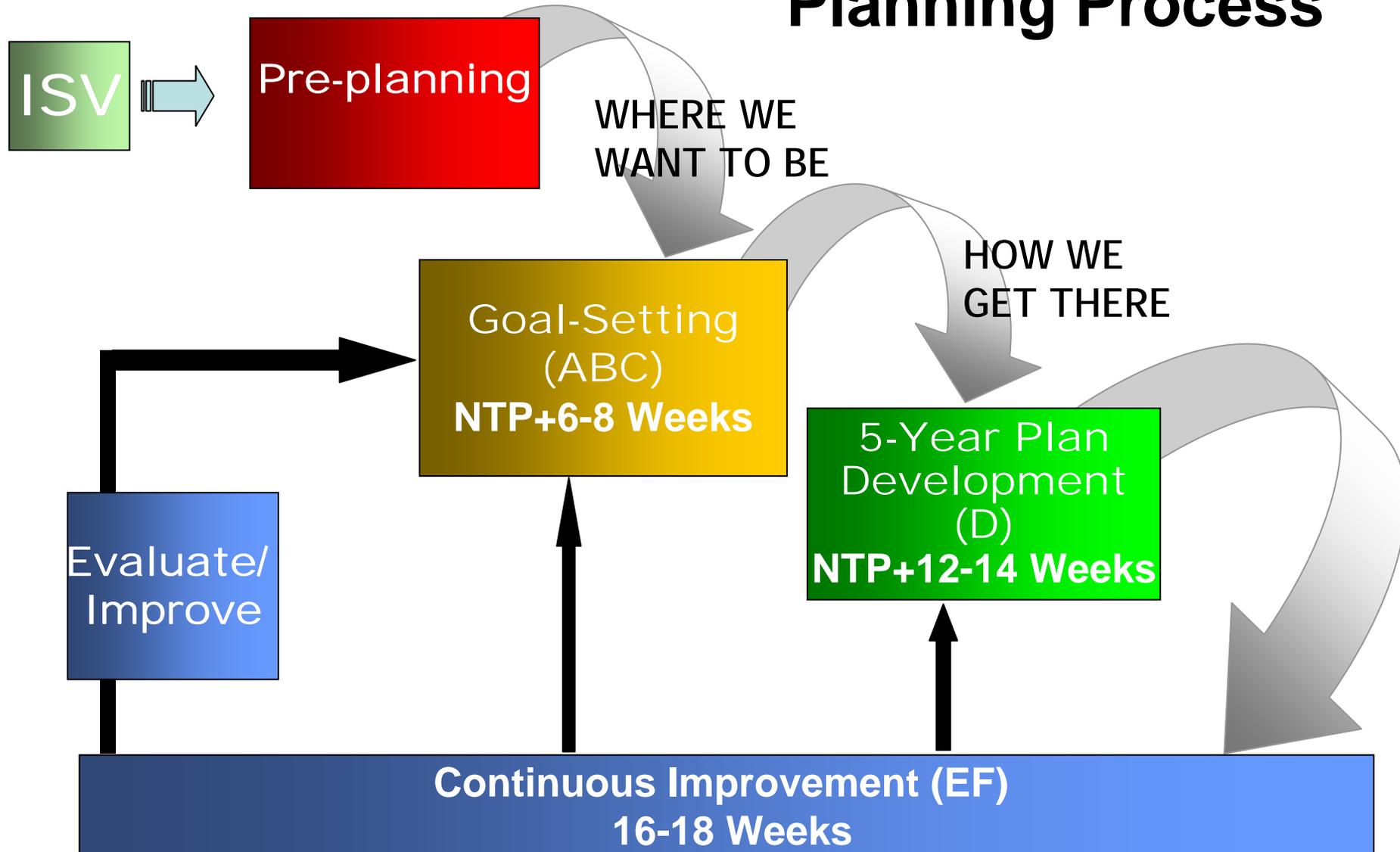
U.S. Department of the Interior
U.S. Geological Survey
<http://ga.water.usgs.gov/edu/watercycle.html>





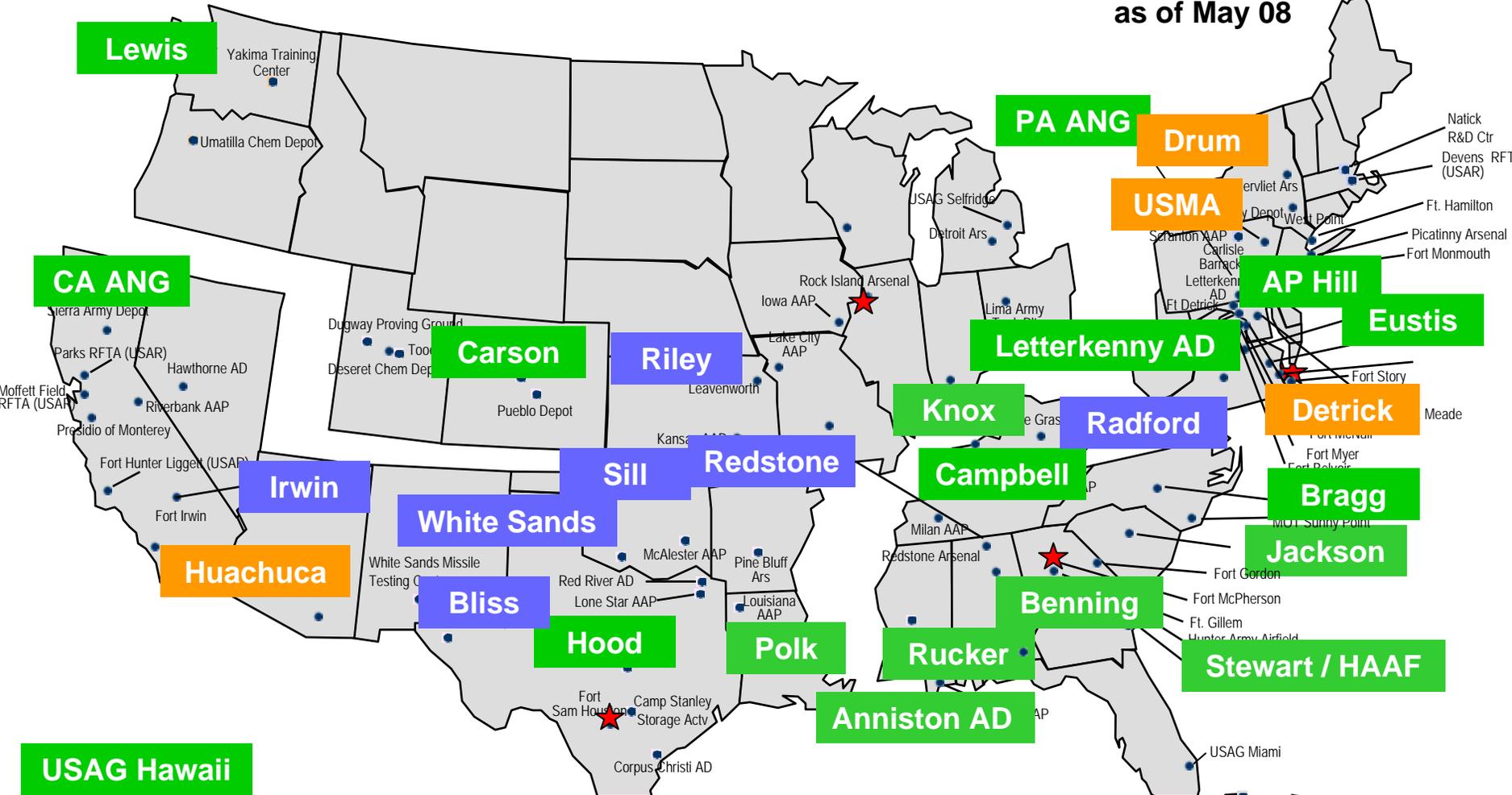
Integrating Sustainability into the System

Army Sustainability Planning Process



Army Installation Sustainability Planning

as of May 08



USAG Hawaii

Wainwright

USAG Japan

Installations with completed Sustainability Plans

Installations in sustainability planning process

Potential Installations for FY09 planning

USAG Wiesbaden

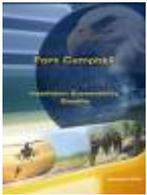
USAG Baumholder

Types of Goals

- Military mission
- Deployment and transportation systems
- Infrastructure
- Land use and regional development
- Community interaction
- Purchasing and procurement
- Energy sources and use
- Staff development and retention

Fort Bragg – from Challenge to Result

Goal-Setting



Challenge: Potential water sources for Fort Bragg have been steadily declining. How can Fort Bragg reduce its dependence on these 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?

Reduce the amount of water taken from the Little River by 70% by 2025.



5-Year Planning and Continuous Improvement

- *determine water use/consumption patterns*
- *implement irrigation controls FY02 on*
- *install waterless urinals in all new buildings FY02 on*
- *recycle washrack water FY03 project*
- *find cheap technology to fix leaking pipes/mains*

Implementation support, funding opportunities, and information sharing



Result:

Water Use Reduced by 40% against 2002 baseline.

Actionable and Measurable objectives

ARMY Results

ENERGY GOALS – RENEWABLE, SECURE ENERGY

- USAG Hawaii – Solar-powered family housing
- Fort Carson – Wind partnership initiative, solar farm
- Fort Polk – Geothermal heating

FACILITY GOALS – BUILD TO LEED STANDARDS

- Tobyhanna Army Depot – Green roof
- Fort Carson – “Silver” training facility
- Fort Bragg – “Gold” facility for Golden Knights

COMMUNITY GOALS – QUALITY OF LIFE

- Forts Belvoir and Carson and USAG Baumholder – Mixed use development
- Fort Campbell – Zero energy family units
- Fort Bragg – Sand Hills initiative

WATER GOALS – REDUCE USE, IMPROVE QUALITY

- Fort Bragg – 30% reduction in potable water use
- Fort Lewis – Wastewater reuse for irrigation
- Aberdeen Proving Ground – aggressive storm water management training program



Renewable Energy Options

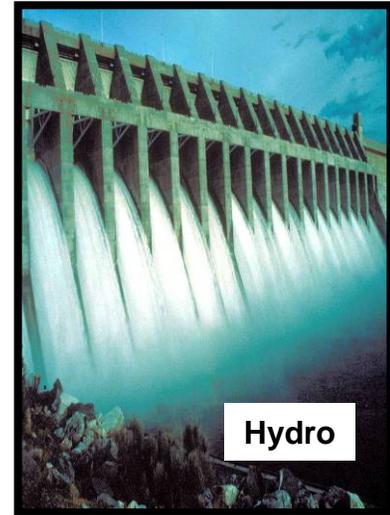
Wind Turbines



Solar Voltaic



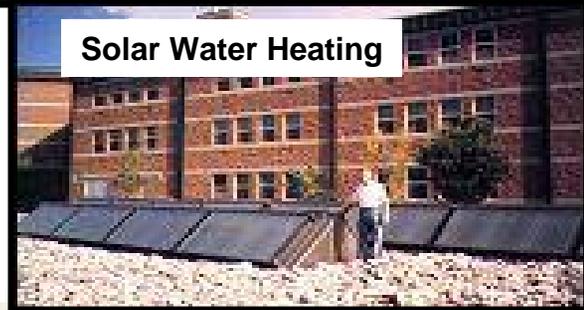
Hydro



Solar Walls



Solar Water Heating

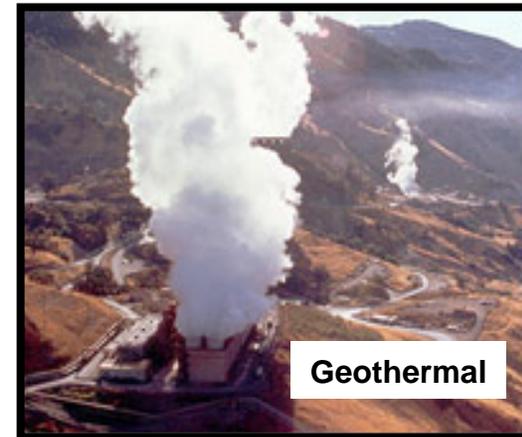


Biomass



Ground Source Heat Pumps

Geothermal



Really Cool Fort Carson

- Solar farm on landfill
2MW power
- Partnership with local investment, power companies, Army
- Built on 12 acres that could not be used for much of anything
- Will power 540 homes at Fort Carson



Fort Bragg



Working a demonstration on waste fiber to bio-fuel:

- 15 dry tons per day capacity (systems get more efficient with larger amounts)
- Will process fiber, timber, ground wood (wet or dry), paper, plastic
- Generate bio-oil for use in boiler

Mattress Life-Cycles

Problem

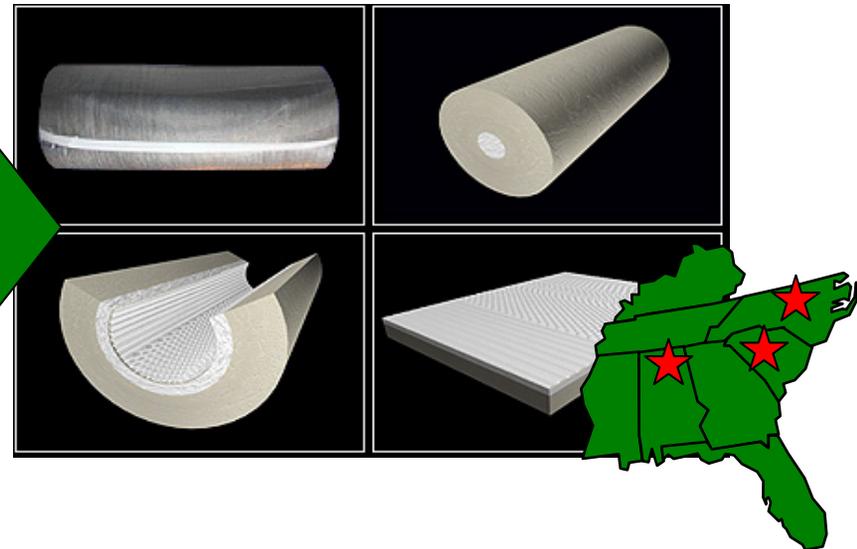
- Landfills starting to ban mattresses (not profitable: high volume/low weight)
- Recycling options very limited
- Procurement alternatives few

Solutions

- Ft Bragg refurbishes, saving 50%
- Ft Jackson buys 100% foam units; maker takes back and recycles
- Ft Gordon donates, buys foam
- Redstone Arsenal recycles coil units for credit toward new foam



Solution



Zero Energy Homes (ZEH)

Problem

- 300,000 DoD homes are energy intensive - 11 trillion BTUs of electricity costing \$254M in FY06.
- Southeast Region energy costs increased from \$163M to \$209M FY04-FY06 – a 28% unprogrammed increase



Solution

- Fort Campbell Family Housing LLC is building 10 Zero Energy Homes
- DoD funds granted to assist with design and validate energy savings and return on investment (\$874k)
- Fort Knox and Campbell to receive additional support in develop ZEH



Sustainable Interiors Showcase

Problem

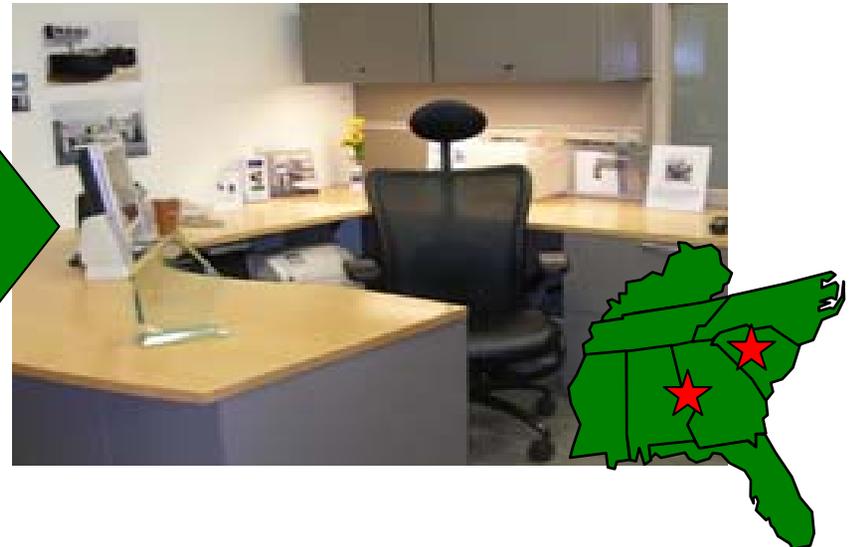
- Army 5-year furniture forecast: \$2.3 billion
- Furniture disposal costs rising, but not considered at time of purchase
- Furniture can contribute LEED credits

Solution

- Sustainable Interiors Showcase (SIS)
 - Ft Lewis – 2005
 - Ft Jackson – Jun 2007
 - Ft Benning – Dec 2007
- Others following our lead
 - Navy SW Region
 - State of GA



Solution



High-Performance Buildings

Problem

- DoD FY08-13 construction budget: \$13 billion/yr
- Services can't afford O&M tail of conventional buildings
- Cost/benefit of high-performance buildings are poorly documented



Solution

- Apply whole building design techniques to a new fire station at Ft Bragg; compare to FY02 station
- Set aggressive performance goals:
 - 25% decrease in O&M costs
 - 50% decrease in energy, water, waste
 - Payback in 10 years or less
 - Good occupant comfort
- DoD funds granted for validation



Sustainability Successes-

Fort Lewis

- Reused 9100+ tons of waste concrete/asphalt (\$340K / year savings)
- ACUB & ITAM are restoring habitat, growing native species, etc.
- Sustainable Interiors Showroom (\$180K of recyclable furniture)
- Alternate fuel/dual fuel vehicle use increased to 40%
- Increased post's Ride Share program



Sustainability Successes – Fort Bragg

- *Sustainable Sandhills* partnership formed
- \$1.5M 15DT/day waste-fiber-to-energy system generating bio-fuel for boiler
- Urban training village built from recycled containers (saved \$220K)
- LEED standards implemented in new construction & 45 renovations
- Sustainability principles incorporated into Master Plan & Installation Design Guide
- \$1.2M generated in FY07 from Qualified Recycling Program



Sustainability Successes – Fort Carson

- Citizens Soldier Connection Program
- Solar collector wall saves \$25-35K/year in natural gas
- Partnering with Western Area Power Assoc.
- Improving on-post transportation flow, including bike traffic
- Diverting over 80% of construction debris from barracks renovations
- Solid waste reduction initiatives saved \$500K in FY06
- ACUB placed 12,000 acres in conservation



Sustainability Successes – Fort Hood

- \$1.739M generated in FY06 from solid waste recycling
- Agri-board construction reduced construction labor by 20%
- Almost 90% reclaimed product from used oil
- Recycled tires used in tank firing range platform to reduce dust
- LED lights & reflectors at airfield saves over \$60K/year (reduced energy consumption by 63%)



More Sustainability Successes

- USAG Hawaii's solar-powered Army Family Housing
 - 30% of community's electricity from PV-generated power
 - Solar hot water heaters reduce energy demand by 40%
- Ft Leonard Wood – 71% of vehicles use alternate fuels
 - 112 vehicles use biodiesel & 209 vehicles use E85
 - 460 tactical vehicles use B20
- Ft Polk – Energy Savings Performance Contract (ESPC) installed heat pumps in 4,000 housing units
 - Contract also included low-flow shower heads, compact fluorescent lights, & attic insulation



Sustainable Future Combat Systems Hybrid-Electric Tactical Vehicles



The Mounted Combat System is 1 of 8 new Manned Ground Vehicle types -- all hybrid-electric powered vehicles

"...every Manned Ground Vehicle, is going to be hybrid electric," said FCS Program Manager Maj. Gen. Charles Cartwright, during a session at AUSA's Institute of Land Warfare Winter Symposium and Exposition. "Coming off the engine is about 420 kilowatts of power, which means now, for the first time, you are looking at all-electric vehicles. We'll have fiber optics inside vehicles, and the capability of bringing sensor commutations – which all use electrical power -- inside these platforms for the very first time."

Where there's a will – there's a way

- Installation community meets to set goals that are about sustainability
- Integrated into strategic and action planning
- Creativity and inventiveness emerge because people are engaged
- Progress

**However – there's still more
to it...**

Remember the Beaver, the Bison, and the Tree?

- Need system solutions that address multiple issues
- Need to “pull threads” of multiple issues back to the root cause – fix that and many parts fall into place
- Seek elegant solutions that address multiple, maybe even unrelated problems
- Most of all – need committed people to work to save us all...

Unless...

“Someone like you
cares a whole awful lot
Nothing is going to get better
It’s not...”

The Lorax
by Dr. Seuss

