
Sharing Future Space

**Capabilities for Sustaining and Sharing
Resources Across Military Fence Lines**

Sharing Future Space Conference

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11 April 06

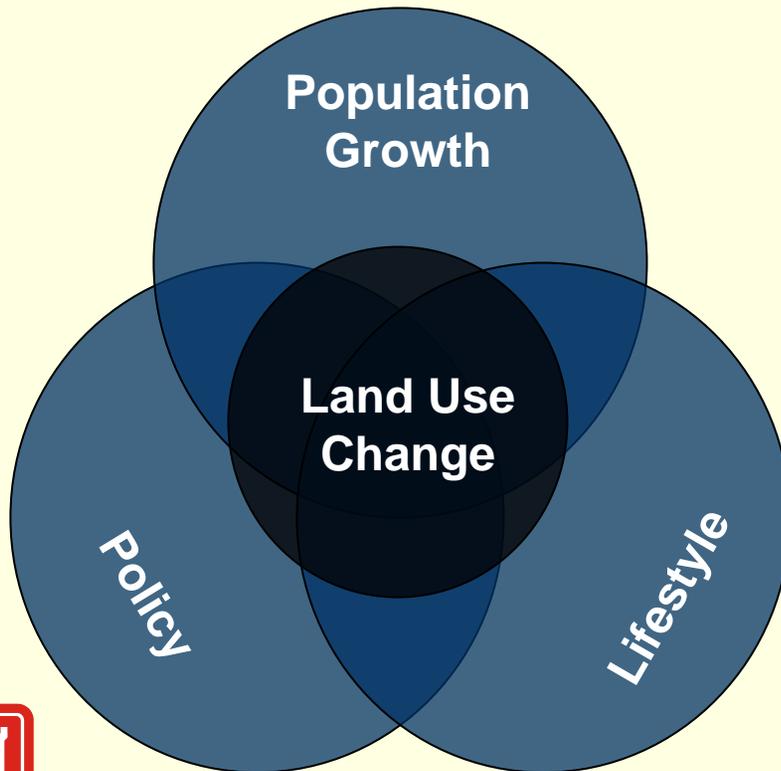


Across the Fenceline Interactions

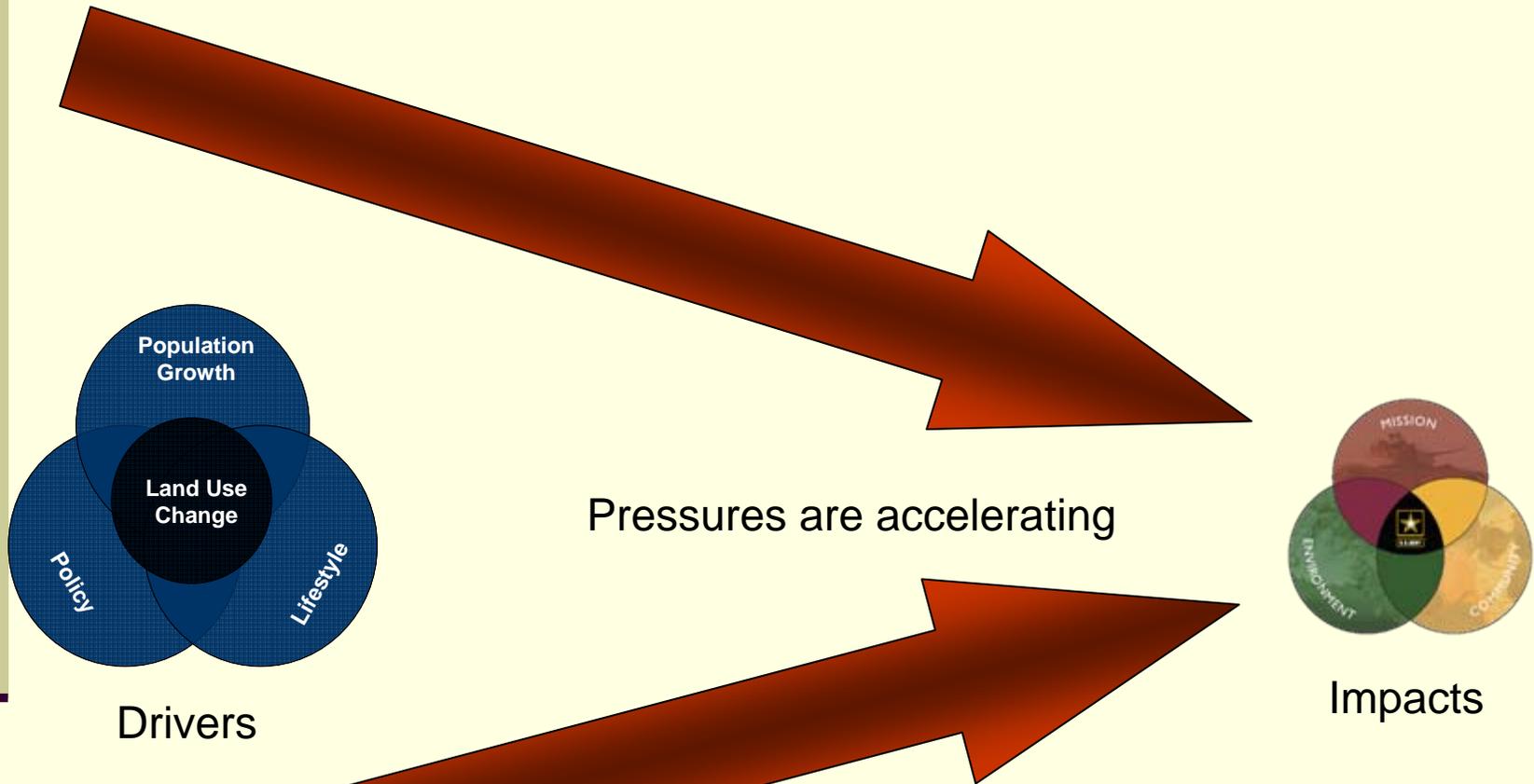
**Community
Dynamics**



**Military
Dynamics**



Identifying Resource Constraints



Addressing Defense Needs

- Recognition of Problems and Constraints
- Responses to Issues
 - Defense Strategies
 - Legislation
 - GAO Reports
- Research Requirements Processes
- Capabilities Developed
- Moving Forward



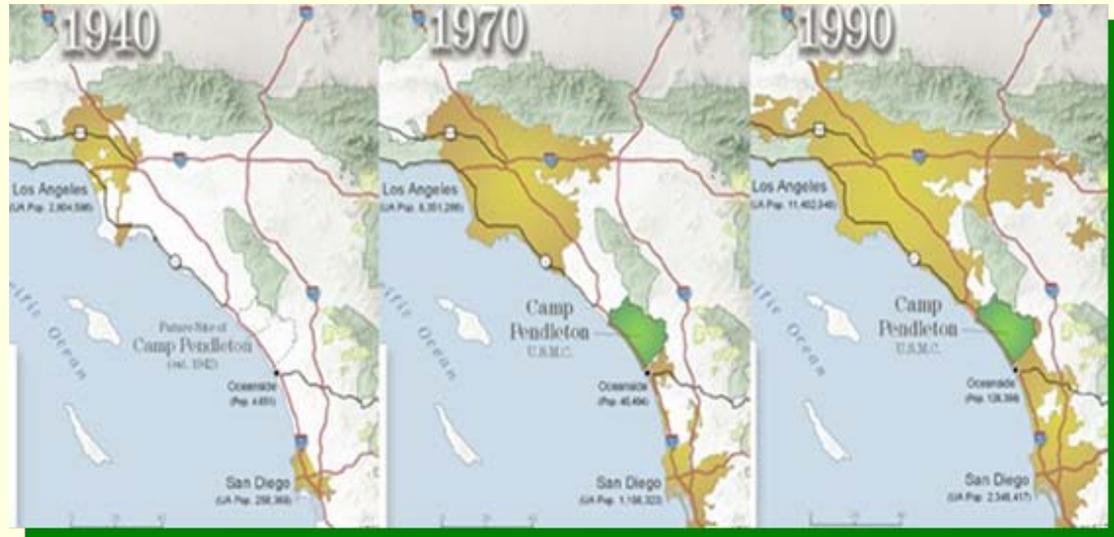
Installations and Ranges Are At Risk

Encroachment: Restrictions that inhibit accomplishment of our live training and testing as required

- Force Readiness is fundamentally linked to the quality and frequency of test and training
- The impact of encroachment is broad -- affecting our ability to execute realistic air, ground, and naval training across the nation, as well as beyond its borders.

Areas of Encroachment

- Air Quality
- Airborne Noise
- Urban Growth
- Frequency Encroachment
- Maritime Sustainability
- National Airspace System
- Endangered Species Act/ Critical Habitat
- UXO & Munitions



Defense Installation Strategic Plan

- Mission – to provide the installations assets and services necessary to support military forces
- Objectives include:
 - 1.1 Reshape the overall structure of installations within US to better match current and future mission needs
 - 1.2 Reshape the structure of installations abroad to better align with emerging threats
 - 1.3 Manage our land, water, and air space resources to preserve range and operational capabilities, preventing encroachment
 - 1.4 Improve land use compatibility to satisfy training and readiness requirements



Legislative Drivers

- Sections 366 and 320 of NDAA require:
 - Assessment of training constraints
 - Adequacy of training resources
 - Assessment of current and future training requirements
 - Impacts of encroachments on operation/readiness
 - Impacts due to environmental laws
- Sections 2811 and 2812 from FY03 NDAA allow DoD to:
 - Cooperate more effectively with private entities and state and local governments to preserve land near military installations for mission protection and conservation



GAO DRIVERS

GAO June 2002

- Lack of documentation of encroachment
- Lack of documentation of impact on training costs

GAO April 2003 – Managing Encroachment

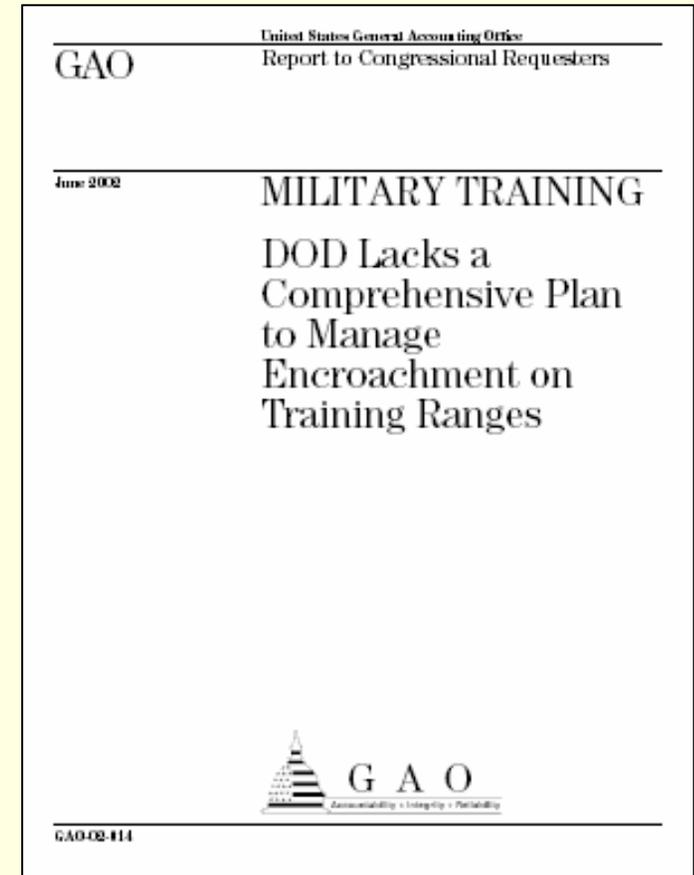
- Lack of information about encroachment
- Need for baseline of training range capabilities and requirements

GAO December 2003 – Approach for cleaning up Military Munitions Sites

- Lack of data re: military munitions sites
- Establish cleanup goals based on relative risk

GAO June 2004

- 366 Report does not assess:
 - Training requirements
 - Adequacy of DoD resources
- No complete identification of limits on training
- Lack of integrated training range database for joint us
- Needs readiness reporting system



Requirement Development for Sustainability/Encroachment Capabilities

- Room to Maneuver Working Group (ERDC/SERDP –2000)
- Sustainable Range Research Needs (SERDP/Sustainable Ranges Program, 2002)
- Army Encroachment Technology Workshop (Army/ERDC/AEC - 2003)
- Encroachment/Sustainability Technologies Workshop (SERDP/Sustainable Ranges Program - 2004)



Sustainable Planning, Design and Operations Capabilities Developed through Defense Investments

- Planning
 - Sustainable Installations Regional Resources Assessment (SIRRA)*
 - Land Use Change Assessment (LUCA)
 - Regional Simulation Model (Rsim)*
 - Land Evolution and Assessment Model (LEAM)*
 - LEAM Training Opportunities Model (LEAMtom)*
 - Proactive Options with Neighbors of Defense installations for Sustainability (PONDS)*
 - Sustainable Range Planning Tools (RMTK)*
 - Noise Models – SARNUM, BNOISE
 - Sustainable Range Analysis
 - Army Training and Testing Carrying Capacity (ATTACC)
 - Economic Impact Forecast System (EIFS)
- Design
 - Facility Composer
 - Range Design Guidelines (Sustainability, Security)
 - Facility Life Cycle Analysis Tools (e.g.SPiRiT – LEED, LEED-ND)
 - Sustainable Energy Analysis (REEP, BLAST)

*Capabilities to be demonstrated at Sharing Future Space Conference



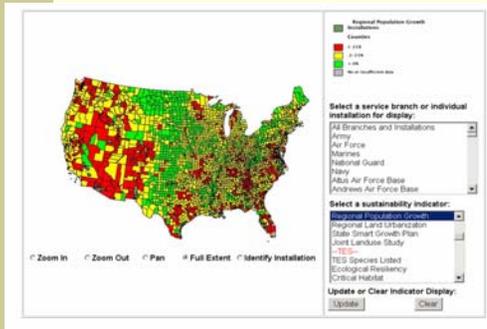
Program Investments in New Capabilities

- SERDP (2002-2006)
 - LEAM & SIRRA
 - Rsim
- Air Force/Army/OSD –(2003-2006)
 - Natural Infrastructure Capability Analysis Army
- Ft. Future Army Research Project (2002-2006)
 - LEAM, SIRRA
- Total Army Basing Study, Marine Corps, Ft. Knox (2002-2005)
 - LUCA, SIRRA and LEAM Analysis
- Army Environmental Policy Institute (2004-2006)
 - Strategic Sustainability Assessment (SSA)
- Legacy Program (2005)
 - PONDS
- Sustainable Ranges Program
 - SIRRA Analysis

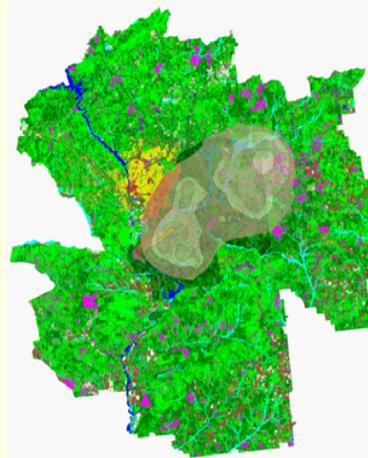


Fort Future: Integrated Planning, Simulation, and Analysis

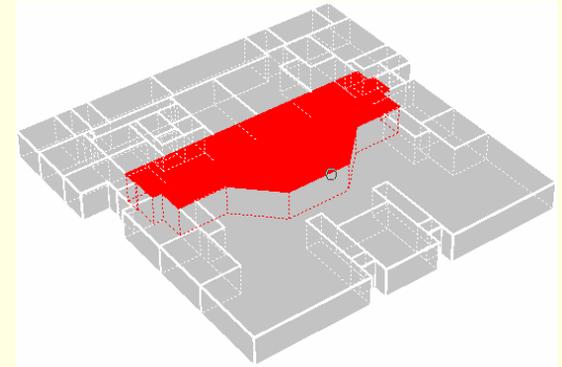
National/Regional
Scale



Installation
Scale



Facility Scale



SIRRA
Sustainable Installation
Regional Resource
Assessment

LEAM
30 Year
Encroachment
Simulation

Facility Composer:
Accelerating MILCON
Transformation
SPiRiT & LEED
Sustainability Rating
AT Standards

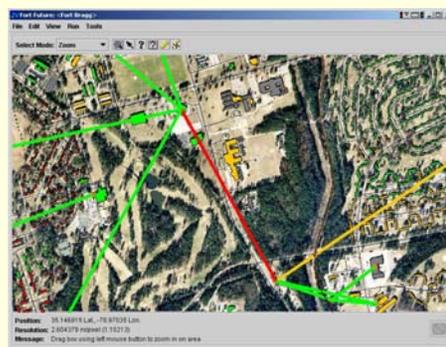


Fort Future: Integrated Planning, Simulation, and Analysis

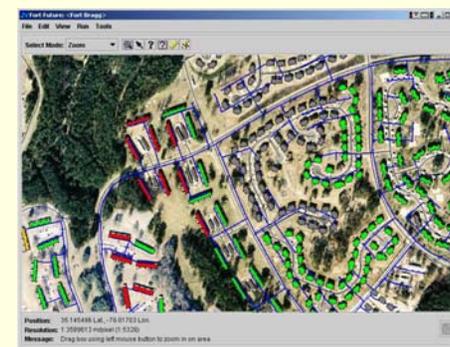
Virtual Installation Simulation Environment
Simulations Interact to find interdependencies



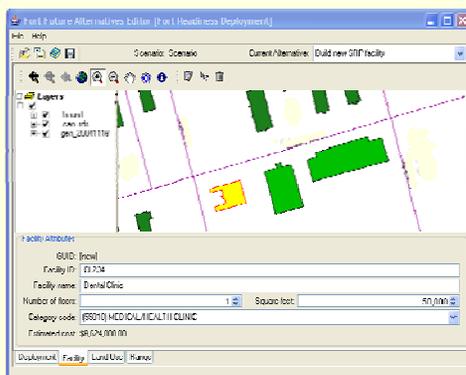
Deployment



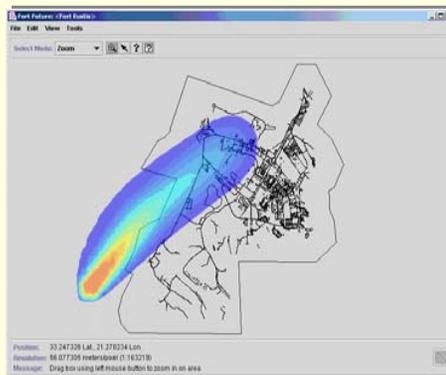
Electrical Infrastructure
(capacity & interruption)



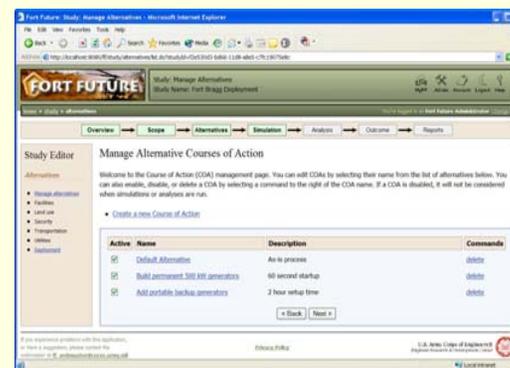
Water Infrastructure
(flow & CBR)



Facility Siting



CBR Plume
Modeling



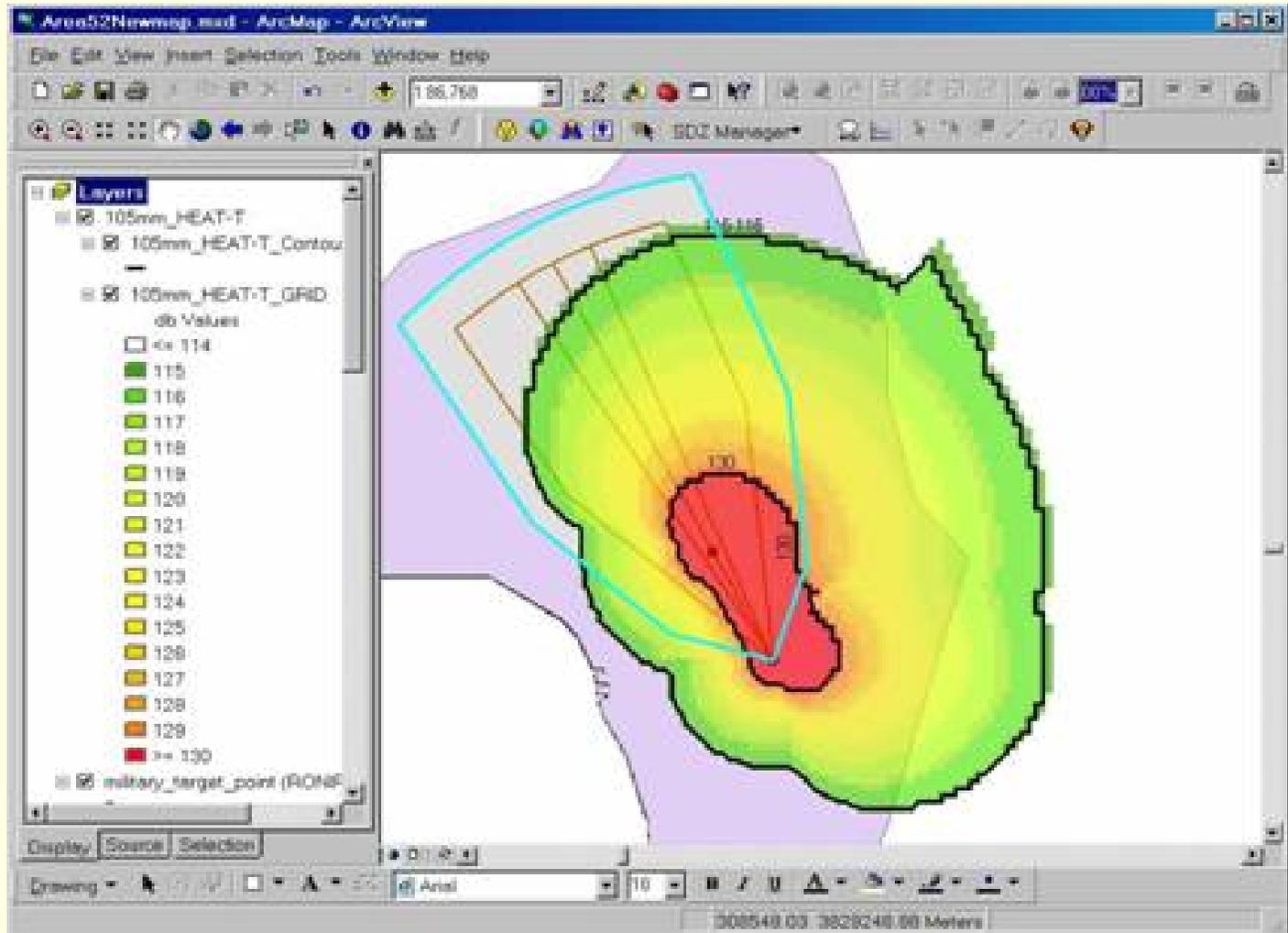
Collaborative Web-based
Decision Support



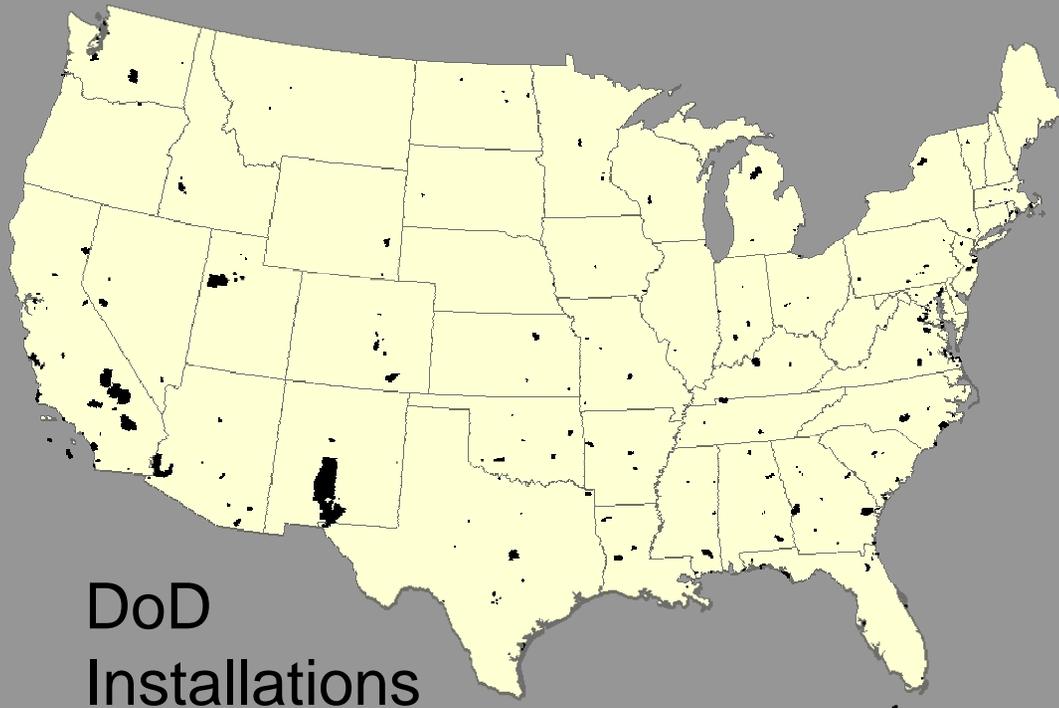
Sustainable Range Planning



Stryker Weapons – Blast Noise Contours



SIRRA

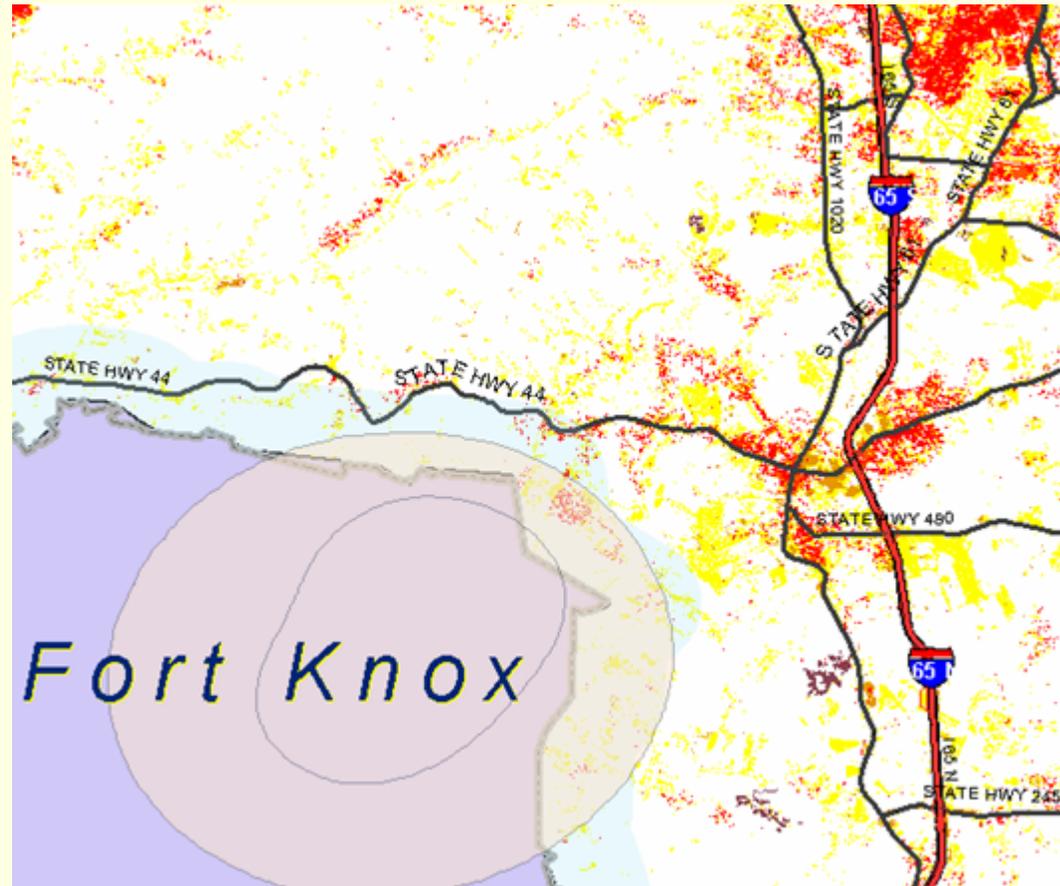


Compare & Assess
Sustainability

Relate
Installations
to Regions

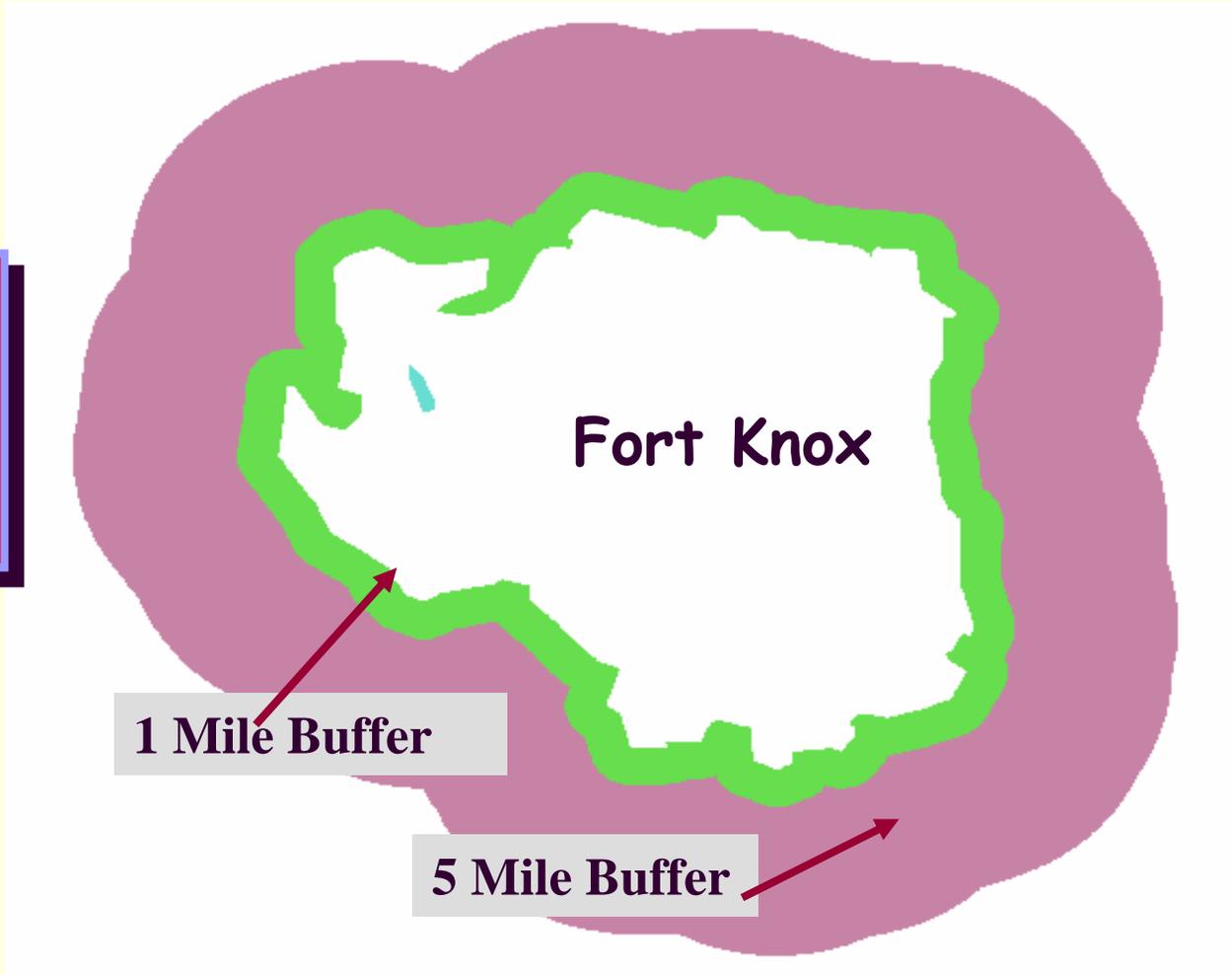
Land Use Change Assessment

Here we have overlain the blast noise contours from a new range. High decibel levels go beyond the boundary and include many of the newly developed areas (yellow). Range usage will likely be limited to minimize disruptive impact to the public.



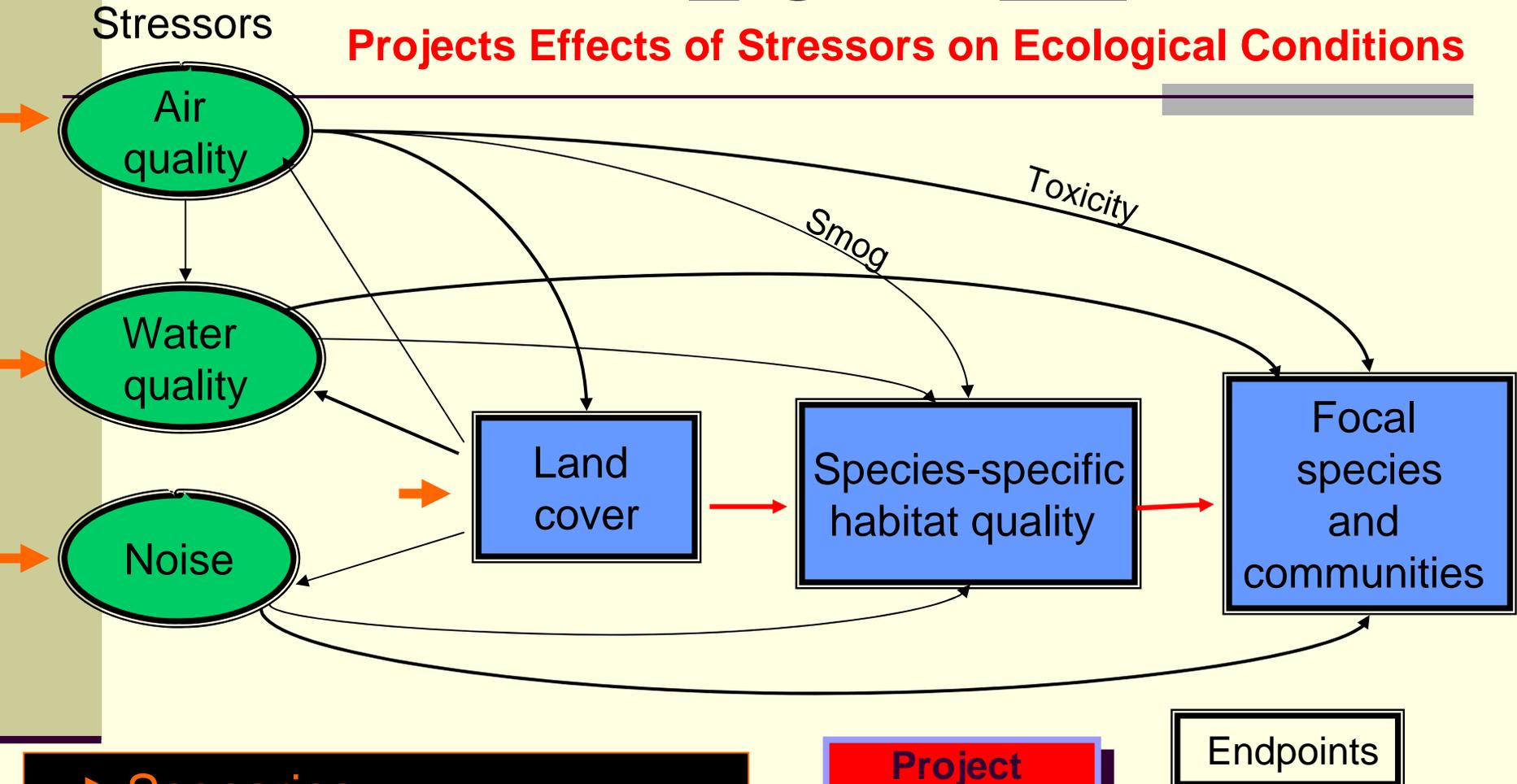
Historic Land Use Change

Conduct
Trend
Analysis



RSim Regional Simulator

Projects Effects of Stressors on Ecological Conditions



- Scenarios
 - * Urban growth
 - * Road improvements
 - * New military training

Project Future Changes

Endpoints



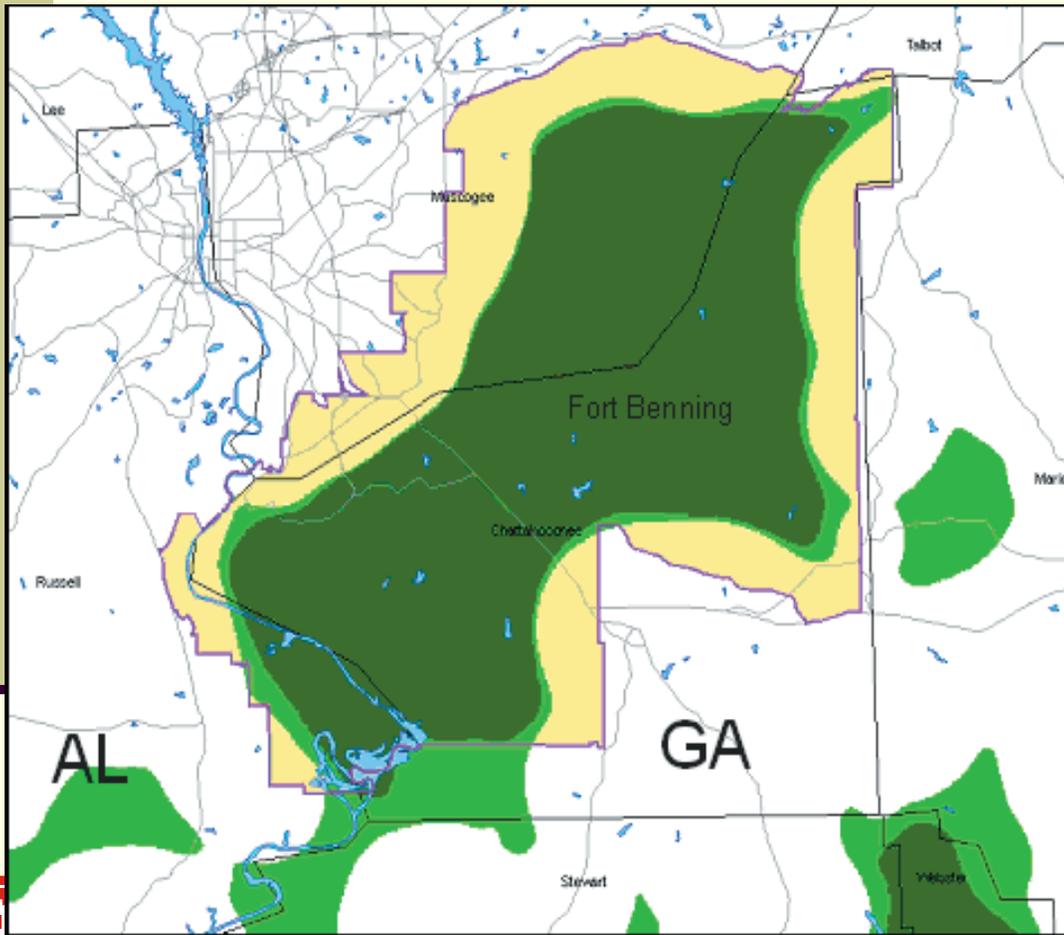
SERDP
Strategic Environmental Research and Development Program



Improving Mission Readiness Through Environmental Research

Resource Availability vs. Need

Potential Loss of Training Land Use, 2030



- **1990-** Benning supported 10,000 soldier training events/days
- **2000-** Benning supported 13,000 soldier training events/days
- **2010-** Benning is predicted to support 18,200 soldier training events/days

Source: LEAM tom

PONDS

Proactive Options with Neighbors for Defense
installation Sustainability

Collaborate on Solutions



- **Legislative authorities & actions**
- **Relevant national, regional and local data sources**
- **Case studies, lessons learned from partnering actions**
- **Expert resources**
- **Mitigation guidance**
- **Programs (JLUS, etc)**

<http://ff.cecer.army.mil/ponds/home.htm>



Military Operations Research

Special Journal Issue (Summer 2006)

1. W. D. Goran, W. Tarantino, B. Boesdorfer, "Evaluating Increases in Developed Areas Around the Perimeter of Military Bases"
2. J. Westervelt, B. Deal, "Rapid Analysis of the Attractiveness of Land to Residential Development"
3. J. Westervelt, M. White, "Identifying future military land use opportunities".
4. M. Kemme, J. Westervelt, "Military Unique Particulate Matter Emissions and Urban Encroachment."
5. C. J. Eastgate, D. A. Morrison, "Exploring impact indicators for military and urban land use incompatibilities"
6. M. D. Ginsberg, "Frequency encroachment on military installations"
7. M. D. Ginsberg, "Light pollution encroachment on military installations"





Questions?



Defining the Region: “Fall Line”

