

## LANDFIRE Product Application Summary

**Title:** Texas Army National Guard Integrated Training Area Management Program (ITAM) use of LANDFIRE for Land Condition Assessment and Land Sustainability Management

**Citation:** This work is unpublished.

**Author:** Tim A. Christiansen, Land Rehabilitation and Management Coordinator/Range Training Land Assessment Coordinator

### Application Location

Camp Swift, Bastrop TX	LAT 30°14'27" N LONG 97°19'00"W
Camp Bowie, Brownwood TX	LAT 31°40'56"N LONG 98°57'33"W
Fort Wolters, Mineral Wells TX	LAT 32°50'38"N LONG 98°03'59"W
Camp Maxey, Powderly TX	LAT 33°47'55"N LONG 95°31'04"W

Main Headquarters where ITAM is Located, Camp Mabry, Austin TX.  
LAT 30°24'29"N LONG 97°33'46"W

### Objectives

ITAM has the responsibility to sustain good land condition on troop training areas. LANDFIRE data and maps are being integrated with regional data for climate change, hydrology, vegetation conditions, erosion conditions, fire issues, past land conditions, condition monitoring analysis from yearly ITAM monitoring and soil maps to plan and implement sustainability of four widely separated central Texas training sites of a total 35,000 acres. Habitats includes forests, savannahs, shrublands, grasslands and wetlands on terrain ranging from flat lands with deep gulleys, hilly vegetated areas to very rocky terrain. Land condition is affected by both natural processes and military use of the land.

### LANDFIRE products used

LANDFIRE regional and more local data are used to assist in analyzing what and how outside environmental factors may influence ecosystem functions inside a training site which in turn can affect land sustainability. LANDFIRE products which we use are Fire Regime Condition Class Departure Index (FRCC), Environmental Site Potential (ESP), Vegetation Departure (VDEP), Succession Classes (SCLASS), Biophysical Settings Models, Existing Vegetation Types (EVT), Biophysical Settings (BPS) and Vegetation Condition Class (VCC). LANDFIRE provides ITAM with continuous and consistent maps for multiple variables which are not found in one source but usually in multiple sources. This saves time and money for ecological assessments, planning and implementation of projects.

### Project description

- ITAM uses LANDFIRE data and maps on scales of habitat, ecosystem, watersheds and landscape for sustainable management planning of both vegetation and soil issues such as fragmentation, distribution, land condition, distribution and rehabilitation.
- ITAM is planning for possible issues from changes in both climate and weather patterns on vegetation condition, erosion condition and land management. VDEP, FRCC, ESP, BPS, SCLASS and BpS models are used as starting points for vegetation analysis and possible soil management issues from potential climate change influences on training sites' habitats.

- ITAM uses LANDFIRE information which may not be available to a site about forest and other vegetation characterization. Biophysical settings (BPS) data includes early succession classes, middle succession classes, late succession classes and canopy characterization which we used for planning sustainability from both climate and military activities. This type of available information saves both time and money to plan for sustaining vegetation conditions. LANDFIRE data is valuable because it is an existing database of BpS models that already exists for almost every vegetation type in many landscapes.
- LANDFIRE products are used to better understand the surrounding ecoregion conditions which ITAM does not have data and maps to determine how changes in these conditions may affect training site land use. Some of the products used for this type of analysis include sample data, vegetation type, fuel model, fire regime maps and BpS vegetation dynamics models.

### **ITAM site-monitoring information that is used in correlation with LANDFIRE products**

- Vegetation studies by ITAM (land condition monitoring program for forest, grassland, shrubland habitats) data, universities and the Natural Resources Section are used along with all LANDFIRE products to produce better land condition analysis which provides more informed land management decisions and actions.
- Soil erosion studies, hydrological maps and soil maps are used to plan and implement land management practices on our training sites. Soil condition includes erosion amount, stability and type of erosion. LANDFIRE products used in tandem with soil data are VDEP, ESP and BPS.
- LANDFIRE information and maps (BPS, SCLASS, and VCC) are used to assist with ground-truthing aerial photos and other remote imagery information.
- LANDFIRE products (BPS, SCASS, VCC, ESP, VDEP, and FRCC) are used with remote sensing to be part of land condition assessments and habitat health assessments.
- Climate predictions (Reports from both Federal and Nature Conservancy) for possible land condition changes are very important in planning and managing for land condition sustainability. Used LANDFIRE information (BPS, SCASS, VCC, ESP, VDEP, and FRCC) and on-site ITAM data (ecological monitoring along with watershed assessments and climate vulnerability analysis) for baseline conditions. Used 50 years of weather data from each of four training sites to detect any changes/trends in either or both climate/weather patterns. Results are being used with 11 years within 1938 – 2013 aerial photos of vegetation changes.
- LANDFIRE products from available years and land history are being compared with vegetation/land conditions from 1939, 1943, 1944, 1946, 1956, 1964, 1973, 1989, 2003, 2008 and 2013 aerial site photos for land recovery rates to be used to determine training activity to plan sustainability management of training sites. This involves vegetation changes and habitat recovery from various land use. Presently ITAM is utilizing these data for proactive management planning and methods for changes in vegetation and soil issues from possible climate change scenarios over the next 20 years.

## **Products derived from ITAM and LANDFIRE data analysis and GIS maps**

- Land condition analysis of the four training sites resulted in 775 acres of forests mechanically thinned and mulched as well as 500 acres of prescribed fire on forest land and shrubland during FY15. FY16 management plans include 800 acres of mechanically treated forest lands and 400 acres of both forest and shrubland prescribed fires.
- Preliminary report on climate/weather pattern changes and possible changes to training site land condition management. This involves changes in health issues, training constraints and costs of management due to changes in weather patterns and climate.
- LANDFIRE products along with other sources were used to develop ITAM monitoring program objectives, procedures and methods.
- LANDFIRE products were incorporated with other on site information to write 15 Statements of Work (SOW) for contracts and 20 Record of Environmental Concerns (REC) to implement management projects.
- LANDFIRE products were part of analysis of past and present land condition and changes within each site with possible effects on current training activities.
- Used LANDFIRE products for both vegetation and erosion ecological assessments.

## **Value of the work to the natural resource management/conservation community**

This application helps to sustain good land condition on troop training areas.



Photo Credit: Tim A. Christiansen