

Automated Site Evaluation Tool

**built for
U.S. Air Force
Special Operations Command
(AFSOC)**



Presenters: Vince Sclafani, Lynn Walton

The need ...

- Eglin & Hurlburt annually do 10-15 Environmental Assessments (EAs) per year for military activities on the reservation.
- The process:
 - took too long to complete (often up to a year)
 - was subjective
 - results could vary per Subject Matter Expert's bias
 - each one was started from scratch
- AF saw a need to automate the process of developing EA's to facilitate Hurlburt's training mission.



The Solution - ASET

- Automated Site Evaluation Tool (ASET)
 - Tool Prepares Environmental Assessment (EA) to 70% level
 - Expert rules query databases and maps to determine environmental impacts of proposed actions
 - Expert rules are maintained by environmental scientists and NEPA subject matter experts via web-based graphical interface
 - Project proponent inserts Project Description
 - ASET writes preliminary EA for Environmental staff review and Completion
 - Uses reports and maps for description of environment and effects

The Solution - continued

Now:

- Initial feedback within minutes
- Significant reduction in time to completion for final EA
- Results less subjective since analysis model is predefined by NEPA Subject Matter Expert (initially) and reused

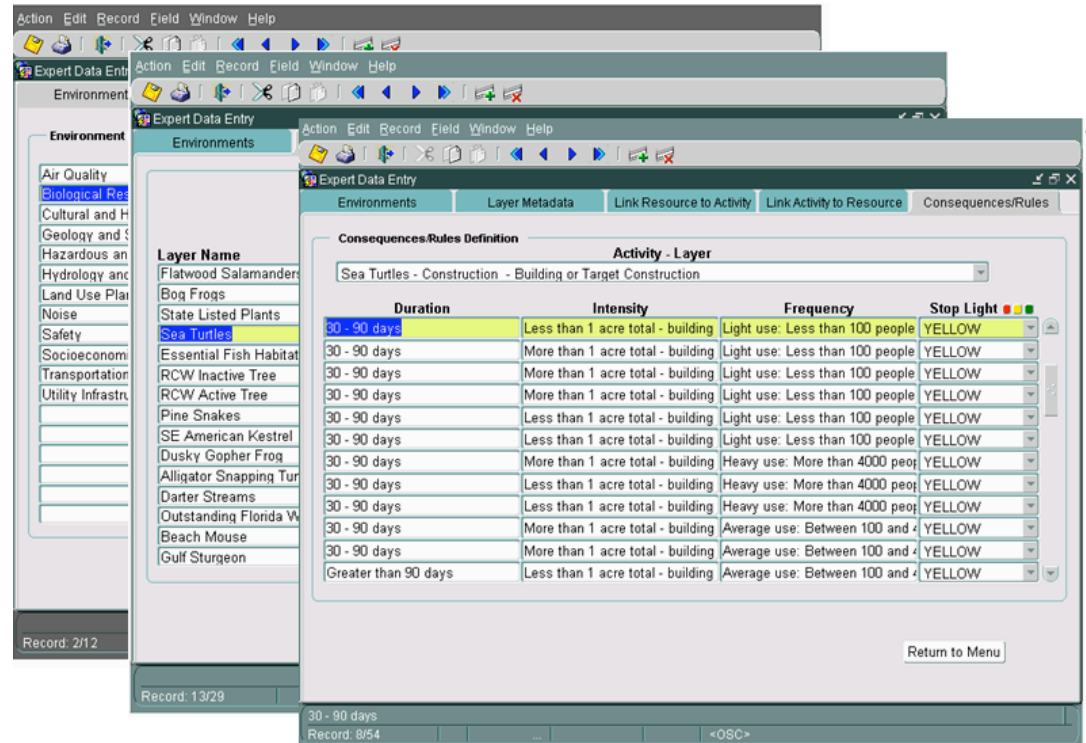
The screenshot displays the 'ASET Quick Look at Interactions' web application. The main content area shows a table of resources with the following data:

Interaction	Resource	Resource Area	Unit of measure
✓	Low-Income Populations	0.171	acres
✓	Black Bear	0.171	acres
✓	Highly erodible sands/sediments	0.171	acres
✓	Indigo Snake	0.171	acres
✓	IRP Sites	0.136	acres
✓	Minority Populations	0.171	acres
✓	Restricted Areas	0.171	acres
✓	Slope Less than 15	0.171	acres
	303d Listed waters	0	acres
	Airfields	0	acres
	pam	0	acres
	Airports and Runways	0	features
	AOC Sites	0	acres
	Aquatic Preserves	0	acres
	Bald Eagle	0	acres
	Bays	0	acres
	Beach Mouse	0	acres
	Bog Frogs	0	features
	Burrowing Owl	0	features
	Darter Streams	0	acres
	Daycares	0	features
	Ecological Condition Model Tier 1 Habitat	0	acres
	Essential Fish Habitat	0	acres
	Water Lines	0	features

The interface also includes a legend on the left with a tree view of environmental features, and a map on the right showing a yellow highlighted area of interest. The top of the application window displays the ASET logo and the title 'Quick Look at Interactions'.

ASET Overview

- Automates the production of certain parts of an Environmental Assessment (EA).
- Provides “expert” tools for initial ASET setup.
 - Expert setup necessary before proponents can begin using ASET
- NEPA Experts
 - Enter textual information about environment
 - Set up rules for determining impact of each activity



ASET Overview

- Mission Experts:
 - Enter textual information about activities typically performed
 - Enter the possible durations, intensities, frequencies, and applicable time constraints for each activity.
- GIS Experts/System Administrators:
 - load spatial datasets
 - administer the system's users, roles etc.

Expert Data Entry

Categories Activities Intensities Durations Frequencies

Activity Definition

Activity Category: Air Ops

Activity Name	Short Description
Action Name Needed	This activity involves increased arrivals, departures, and closed p...
Operations at Airfield During Exercise	This activity involves increased arrivals, departures, and closed p...
Subsonic Aircraft Operations in Military Training	This activity involves increased use of military training airspace (f...
Subsonic Aircraft Operations in Military Training	This activity involves increased use of military training airspace (f...
Supersonic Aircraft Operations in Military Traini	This activity involves increased levels of supersonic flight in milita
Supersonic Aircraft Operations in Military Traini	This activity involves increased levels of supersonic flight in milita

Activity Attributes

Attribute	Start Date	End Date	Order By	Req?
Fixed wing or rotary wing?				<input checked="" type="checkbox"/>
List types and quantity of aircraft.				<input checked="" type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

Return to Menu

Record: 2/6 | ... | <OSC>

ASET Overview

- Provides EA proponents tool to:
 - enter textual and geographic data pertaining to an EA
 - generate a partially complete EA from data entered
 - save the partial EA for Environment staff review and Completion

The screenshot displays the ASET software interface for an Environmental Assessment (EA) entry. The window title is 'EA# 131939'. The 'Proposed Actions' tab is selected, showing the following fields:

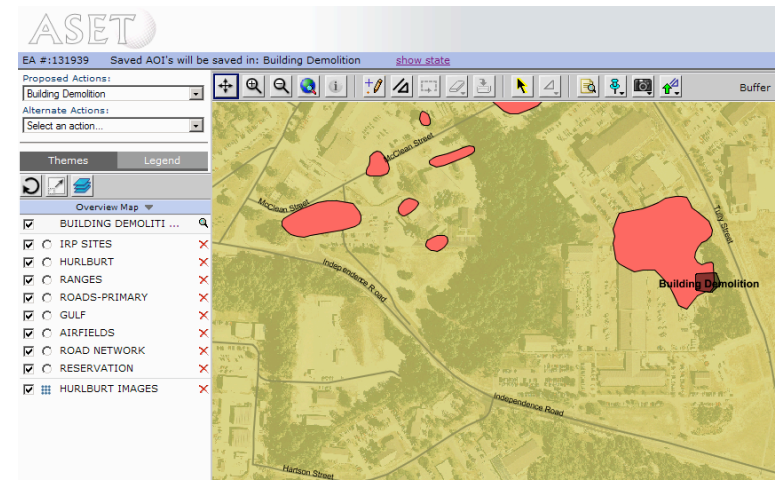
- Proponent Information:**
 - Primary Proponent: Pamela S Yates
 - Alternate Proponent: Lynn Walton
- EA Dates:**
 - Start Date: 01-NOV-2005
 - End Date: 30-NOV-2005
- Title to be printed on Environmental Assessment:** Shalimar Outreach Shelter Construction Program
- Description of Environmental Assessment:** Description
- Scope of Environmental Assessment:** Scope
- Reference Number:** (Empty)
- Completed Date:** (Empty)

The status bar at the bottom indicates 'Record: 1/1' and '<OSC>'.

Proponents are typically base planners, civil engineers, training officers.

ASET Overview

- Provides mapping tool component to:
 - define the geographic areas of interest (AOIs) in the EA
 - visualize the AOIs and resources (spatial data)
 - obtain a "quick look" at the interactions that occur between a given AOI and the resources defined in the system.



ASET Overview

- Principle of repeatable results - a NEPA expert only needs to evaluate a given activity once. (assign rules)
- Designed to analyze activities that can be precisely defined
 - that is, activities whose impact can be represented sufficiently by assigning intensity, duration and frequency
- When AOI spatially interacts with a given resource, rules are consulted to determine impact.
 - Rules are defined for each resource/activity type/intensity/duration/frequency combination

ASET Demonstration

- First, typical “Proponent” use
- Then, how expert information and rules are entered

ASET Architecture

- Oracle 10 Enterprise DB with Spatial
- Oracle 10 IAS with Forms/Reports
- Oracle MapViewer and it's Java MapViewer client API
- MVC with POJO's, Servlet Controllers and JSP pages with Javascript
- Uses JDBC and Oracle's OracleConnectionCacheManager

Other technical info

HttpSession oriented – 8 key java beans that represent important objects in user's state such as their collection of current themes, legend, overview map, digitized points, selected geometries, user role, currently selected actions.

Map engine – our own library (jar) that separates out the generic mapping components that can be used in different business applications

- Example: GSAT - different business objects and rules

Database driven design –

- User has ability to create new map layers in the system based on queries that are stored in a database structure via a wizard like web interface
- Highly flexible ... allows NEPA expert to expand and modify impact rules through easy to use web interface.

Questions

- Scott Gooding
 - goodingw@saic.com
 - 850 283-6654
- Lynn Walton
 - lynn.a.walton@saic.com
 - 850 609-3427
- Vince Sclafani
 - Sclafaniv@saic.com
 - 850 803-4222