

AEGIS

Advanced Emergency Geographic Information System



LOMA LINDA UNIVERSITY
ADVENTIST HEALTH SCIENCES CENTER



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Situational Awareness

- “The perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future.”
- Knowing what is going on around you

More Data does not equal more Information

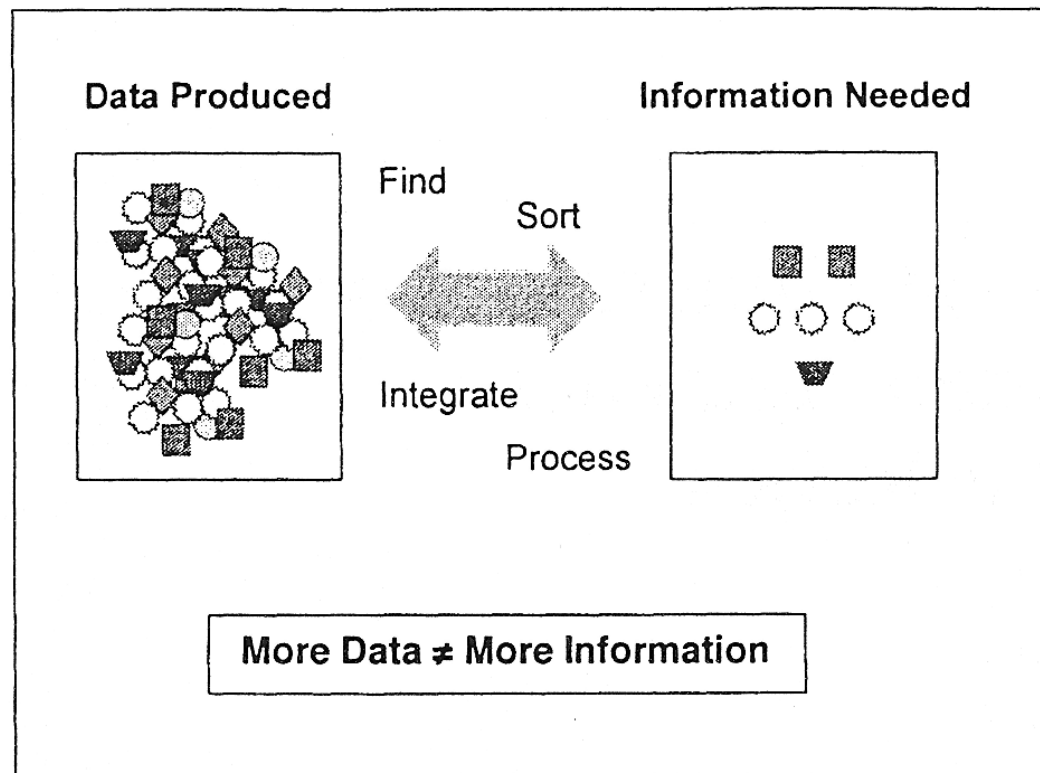
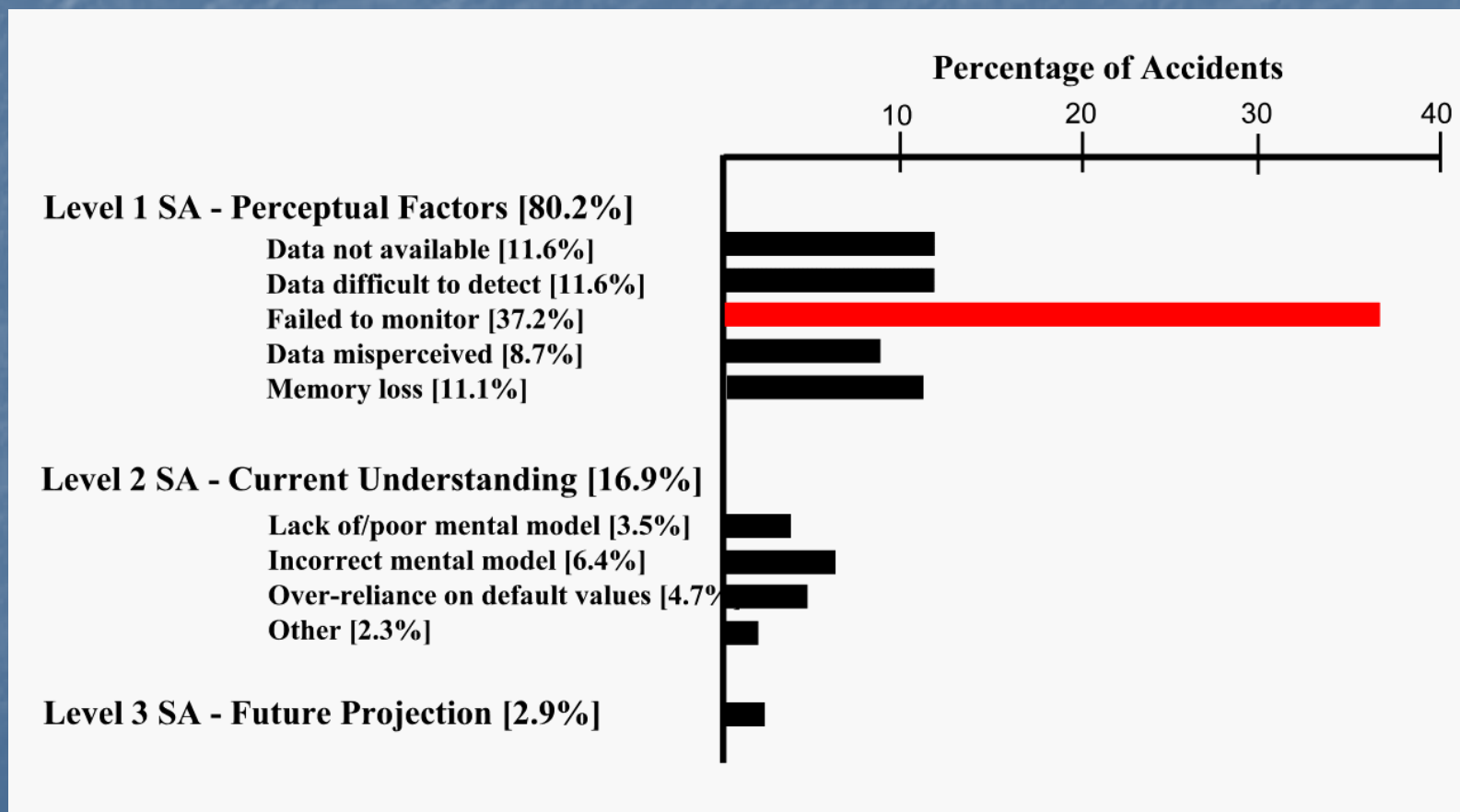
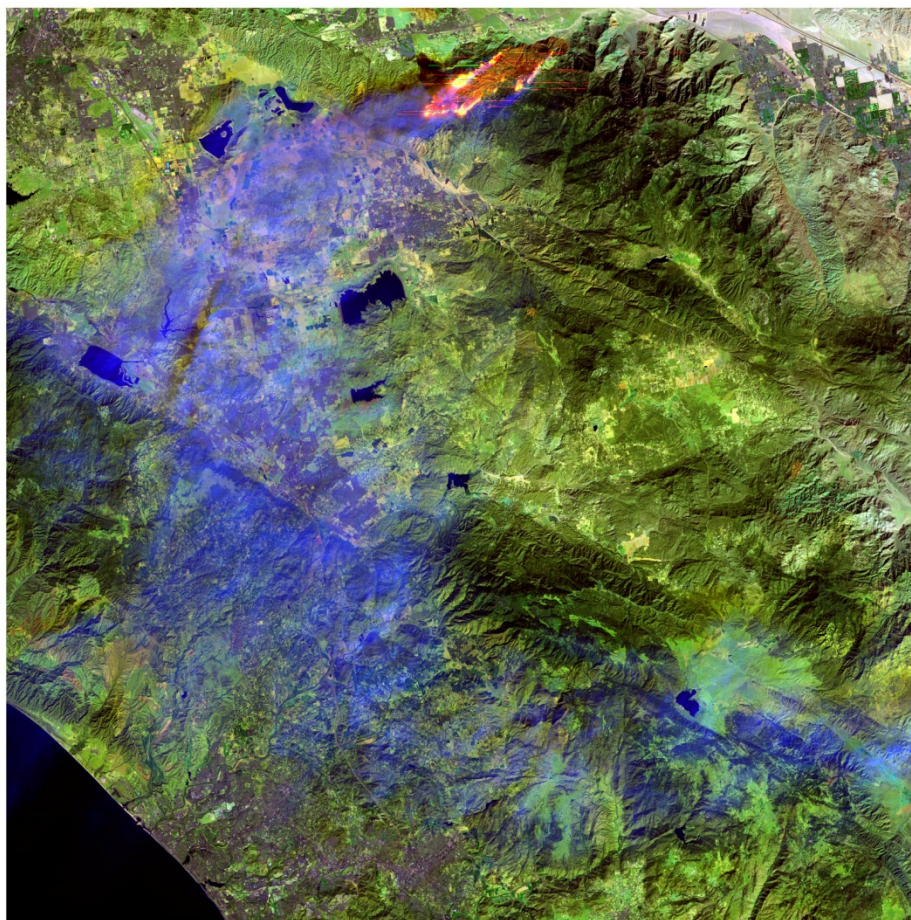


FIG. 1.1. The information gap.

Where do errors in Situational Awareness occur?



Landsat 5 - Esperanza Fire



Landsat 5 image
Path 40 Row 37 acquired 10/26/2006, Bands 7,4,3

The Esperanza Fire in Riverside County, California began early on October 26, 2006. Landsat 5 captured this image later that day when the fire, fed by Santa Ana winds that gusted to 45 mph, had already grown to several hundred acres in size.

Five firefighters lost their lives battling the Esperanza fire. Authorities have stated that arson was the cause of this wildfire, which also destroyed 34 homes and 24 other buildings before it was contained four days later. Over 2,700 personnel were brought in to fight the fire.



The area shown by the red box indicates the coverage of the Landsat 5 image.



Exhibit 1. Fire looking south from Cabazon area at approximately 4:00 a.m. PDT



“unnamed
creek
drainage”

©2006 Europa Technology
Image © 2006 DigitalGlobe
Image © 2006 TerraMetrics
© 2006 Navteq

Google

Pointer: 33°53'28.01" N, 116°41'58.22" W, elev: 2450 ft

Streaming 100%

Eye alt: 618 ft



Figure 2. Unified Incident Command System Organization Chart at the time of the accident

Esperanza Accident Vicinity Engine Locations

October 26, 2006

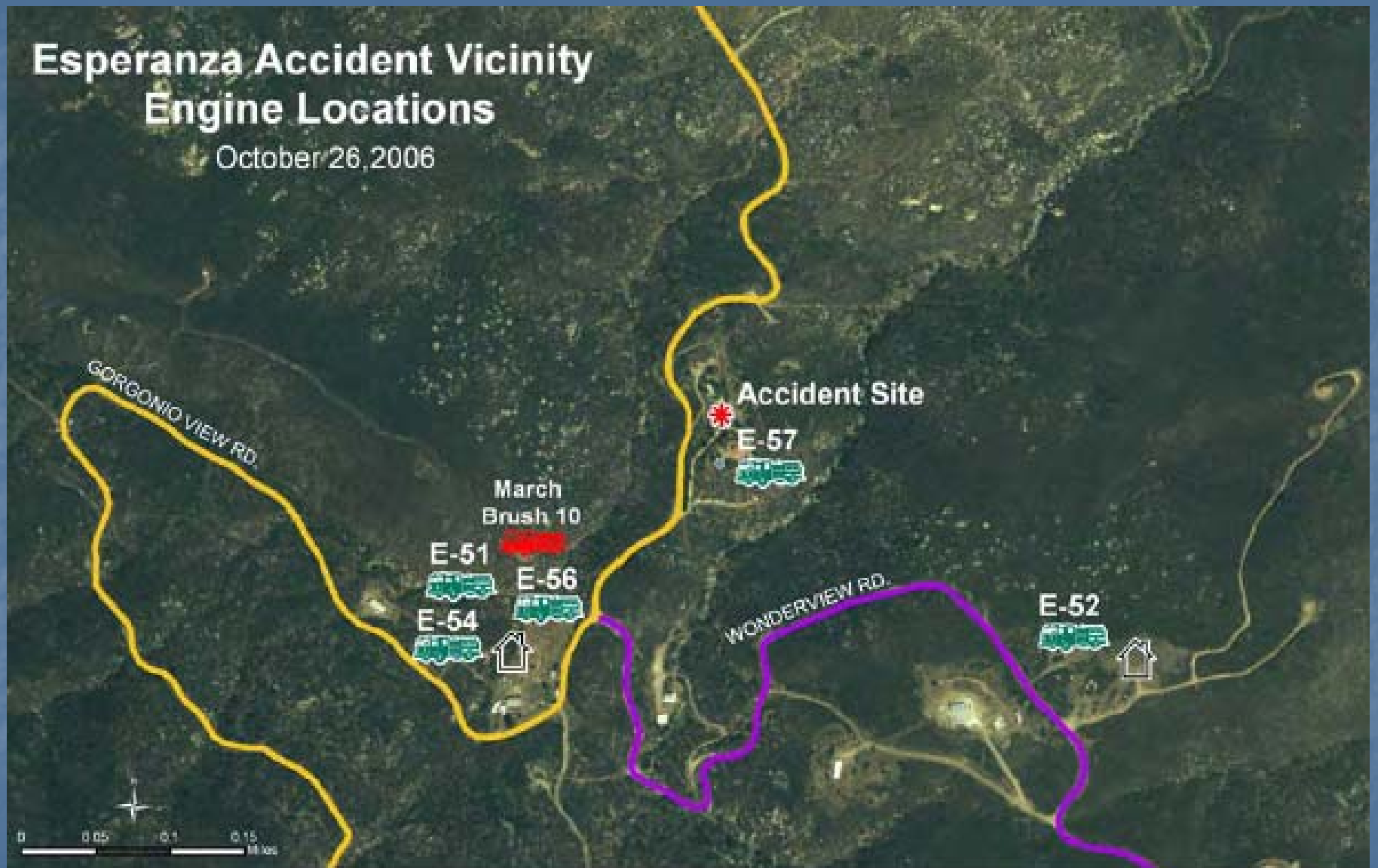




Exhibit 4. Aerial view of the fire run at approximately 7:14 a.m. PDT



Exhibit 12. Fire run looking towards the Accident Site from the Tile House.



Exhibit 13. Fire run looking just above the Accident Site from the Tile House.

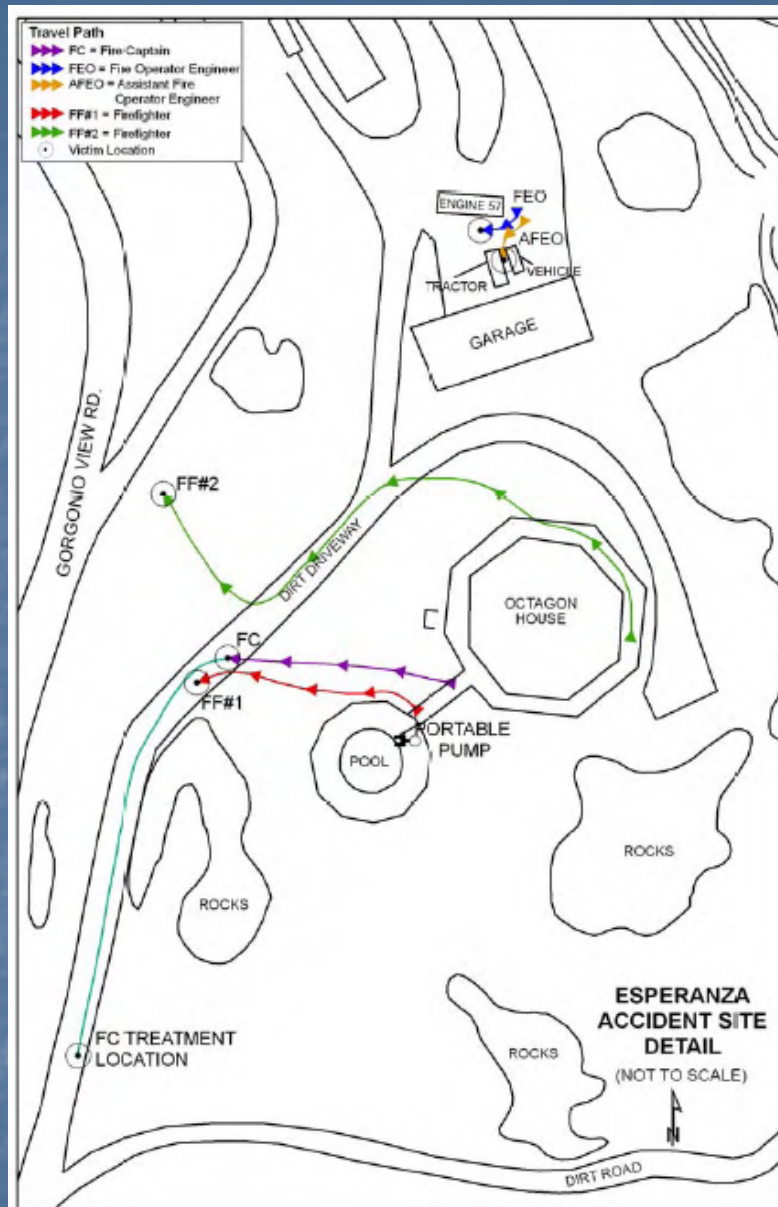


Figure 7. Fire Engine 57 personnel travel paths.

Estimated Esperanza Fire Perimeters with Destroyed Structure Locations

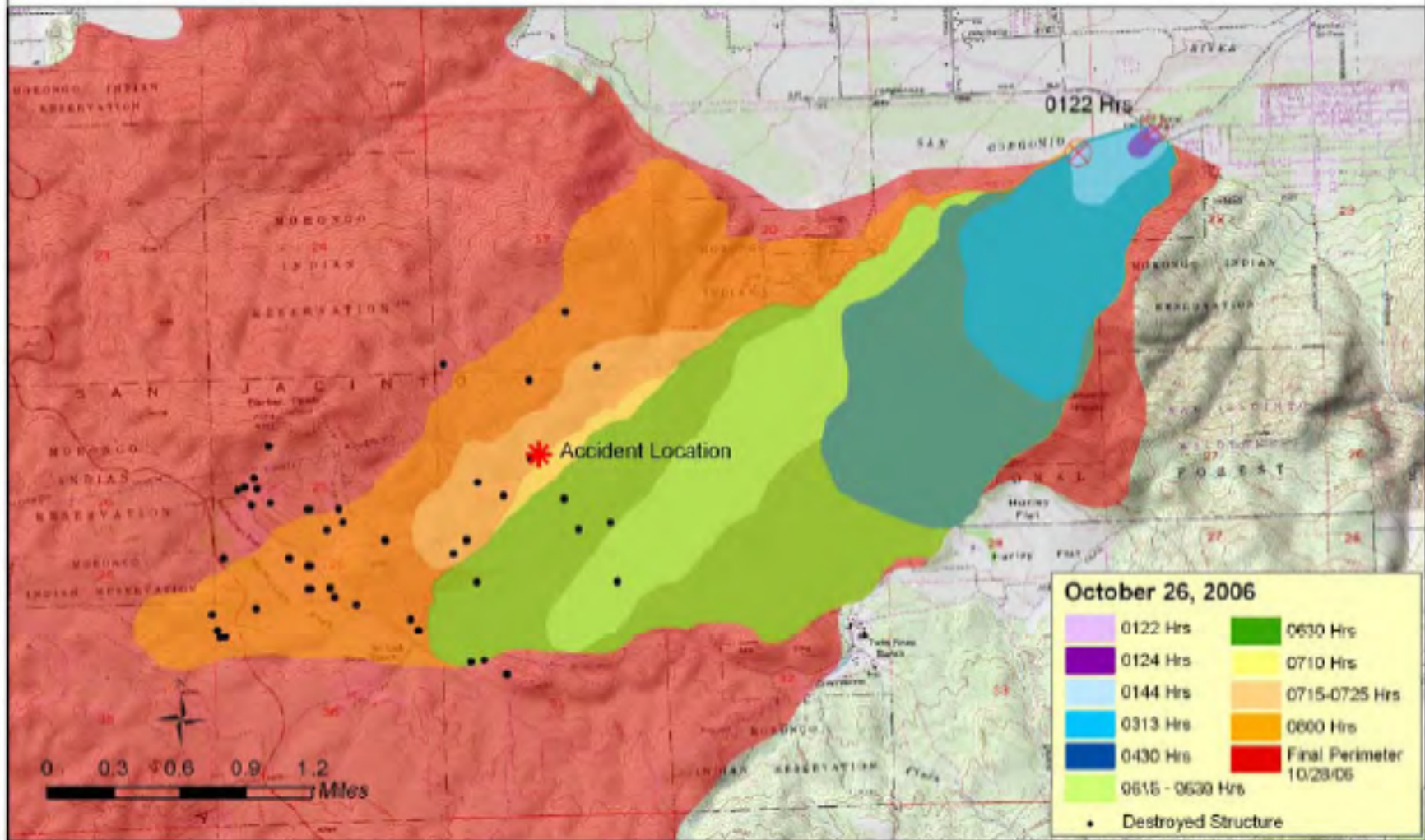


Figure 8. Esperanza Fire Progression Map

Esperanza Fire Jurisdiction Map

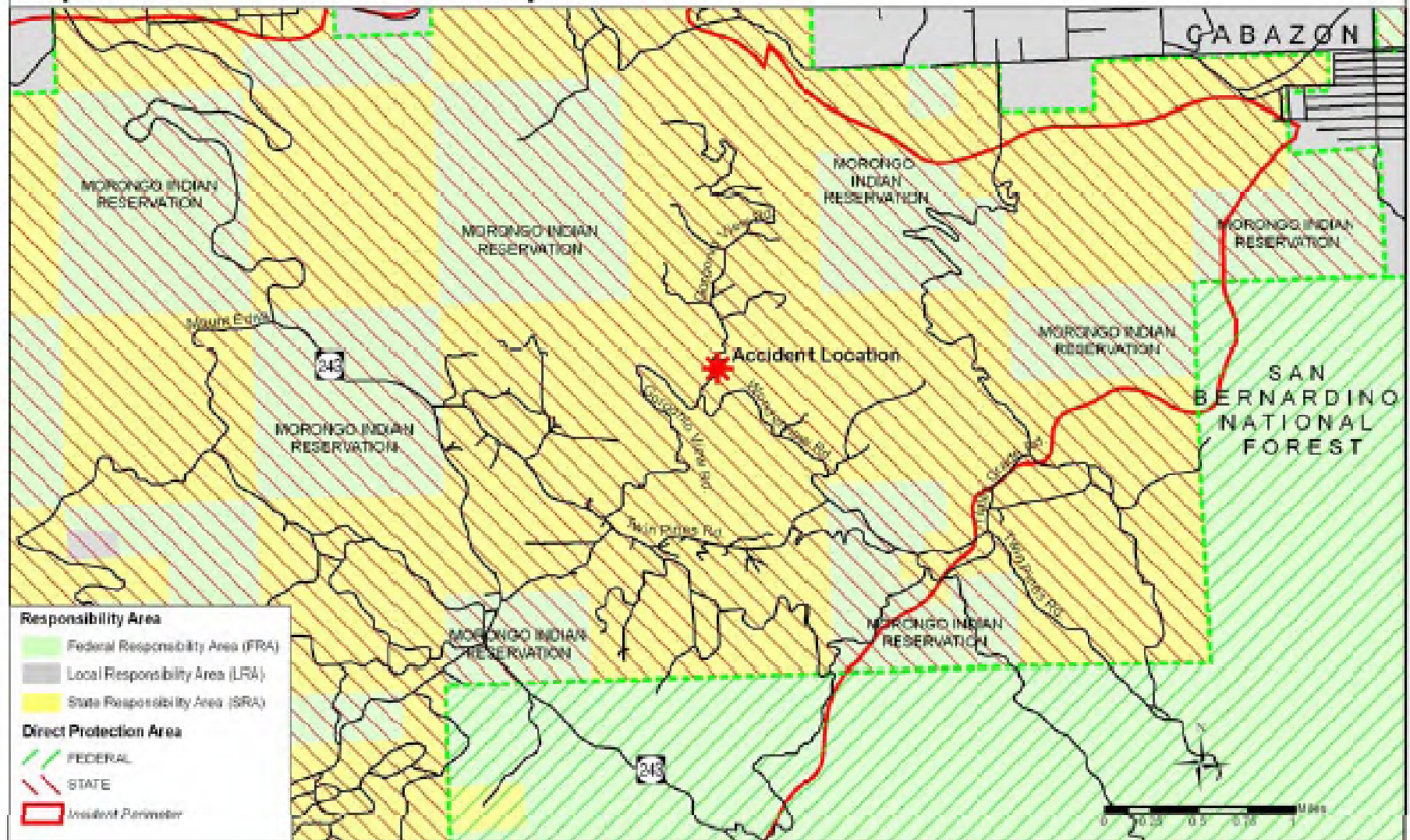


Figure 9. USFS and CAL FIRE Direct Protection Area Map.

TIMES BURNED 1950 - 2005

The number of times any piece of land has burned.

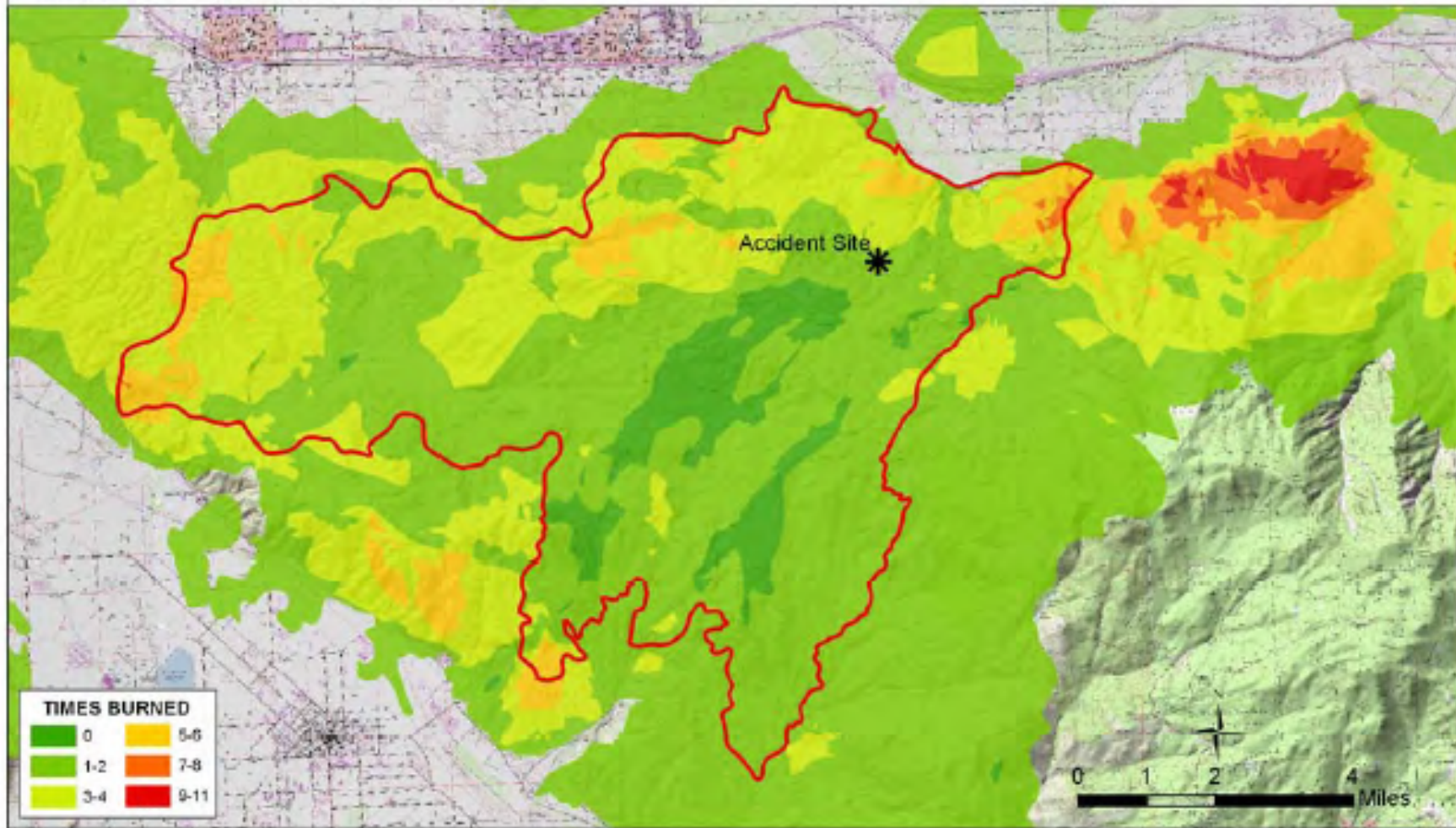
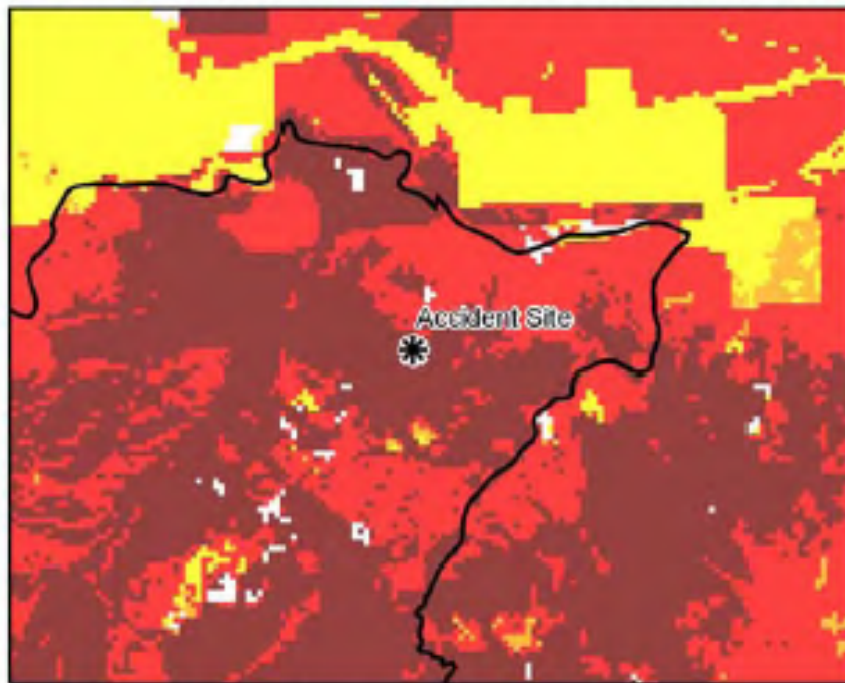


Figure 10. Fire Frequency Map.

FIRE THREAT AND FUEL RANK Esperanza Accident



Fire Threat Fire Threat - Combined fire frequency (likelihood of a given area burning) and potential fire behavior (hazard).
 Fire threat can be used to estimate the potential for impacts on various assets and values susceptible to fire.

Non Fuel
 Moderate
 High
 Very High
 Extreme

0 0.5 1 2 3 Miles

Fuel Rank - Ranks based on expected fire behavior for unique combinations of topography and fuels under a given severe weather condition (wind speed, humidity and temperature).

This dataset was developed by CDF and is used to identify and prioritize pre-fire projects to reduce costs and losses from large fire events.

Source: California Department of Forestry and Fire Protection, Fire Resource Assessment Program, 2006. <http://frap.cdf.ca.gov>.

Fuel Rank

Non-Fuel
 Moderate
 High
 Very High

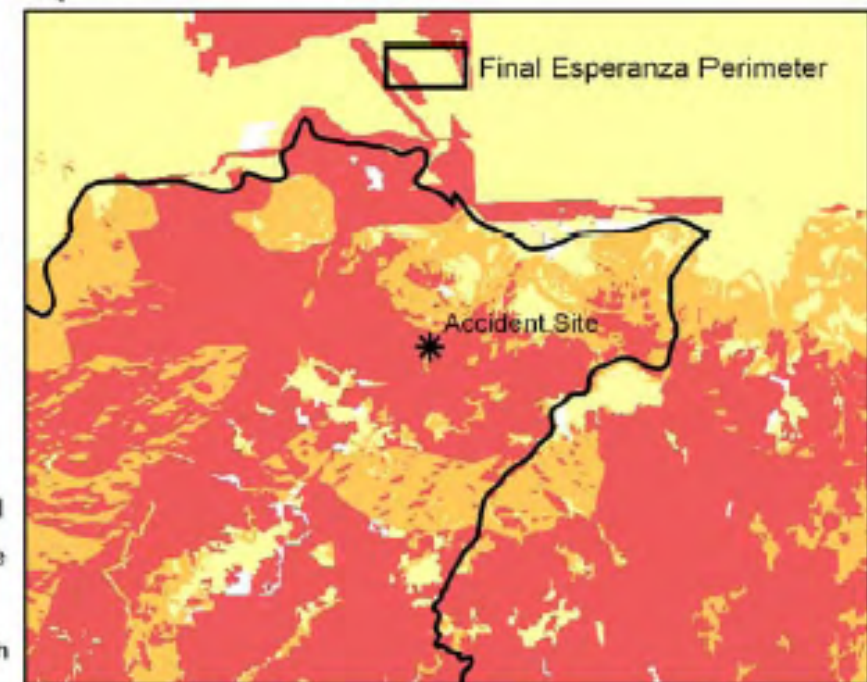


Figure 12. Fire Threat and Fuel Rank Map for the Twin Pines Area.



Figure 13. 10/2/2002 Poppet Flats, Pine Cove, and Idyllwild Contingency Study

● Structures Inspected

● Structures were Non-Defensible



Exhibit 11. Overview from Accident Site looking north to Cabazon.



Esperanza Fire Accident Investigation Factual Report

Causal Factors are any behavior, omission, or deficiency that if corrected, eliminated, or avoided probably would have prevented the fatality.

Causal Factor 1.

There was a loss of situational awareness concerning the dangers associated with potential fire behavior and fire environment while in a complex wildland urban interface situation.

(Findings #12, #16, #18, #19, #20, #21, #22, #23, #25, #26, #32, and #33)

Contributing Factors are any behavior, omission, or deficiency that sets the stage for an accident, or increases the severity of injuries.

- Santa Ana winds came into alignment with the “un-named creek drainage”.
- High fuel loads in rugged terrain with low moisture content.
- Span of control was not adequate.
- Communication failures occurred.
- The 2002 contingency map was not used.



EMS Tool



Disaster Management Tool





Interactive



Map Editing
AVL Text Messages
GPS/ Cellular Text
GPS/ Cellular Images



Command and Control



Incident Command Structure
Security/ Views
Expanded use of Cell/ AVL
Multiple Casualty Triage Tool



Alerts



Syndromic Surveillance
Disaster Personnel
Community Notification



Simulations



Wilderness Urban Interface Fires
Pandemic Influenza
Earthquake

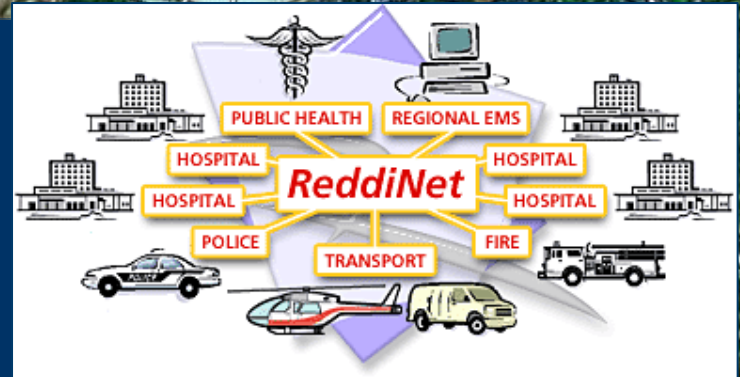




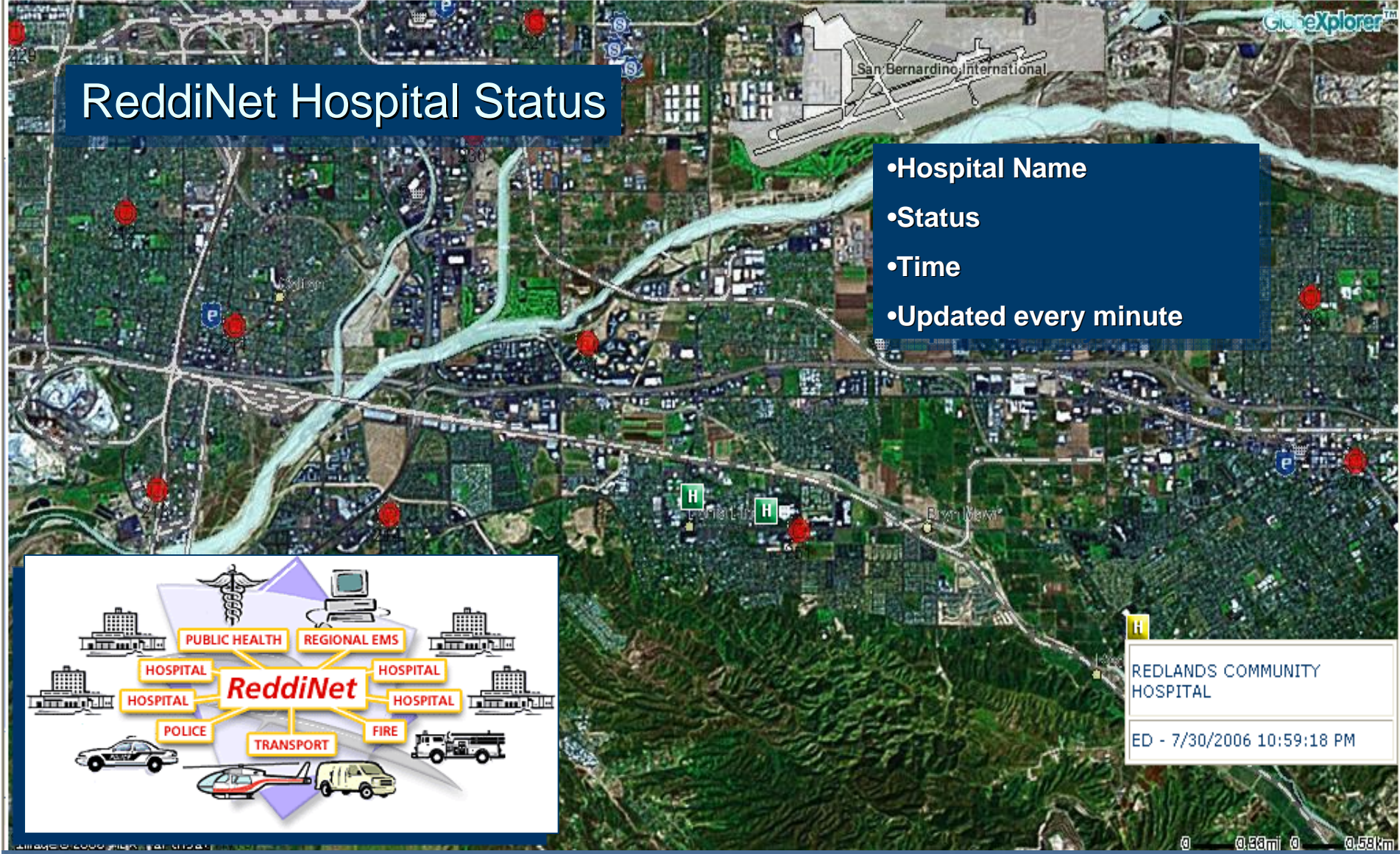
Map navigation tools: zoom in, zoom out, pan, home, layers, map sizes, station ID input field, and other utility icons.

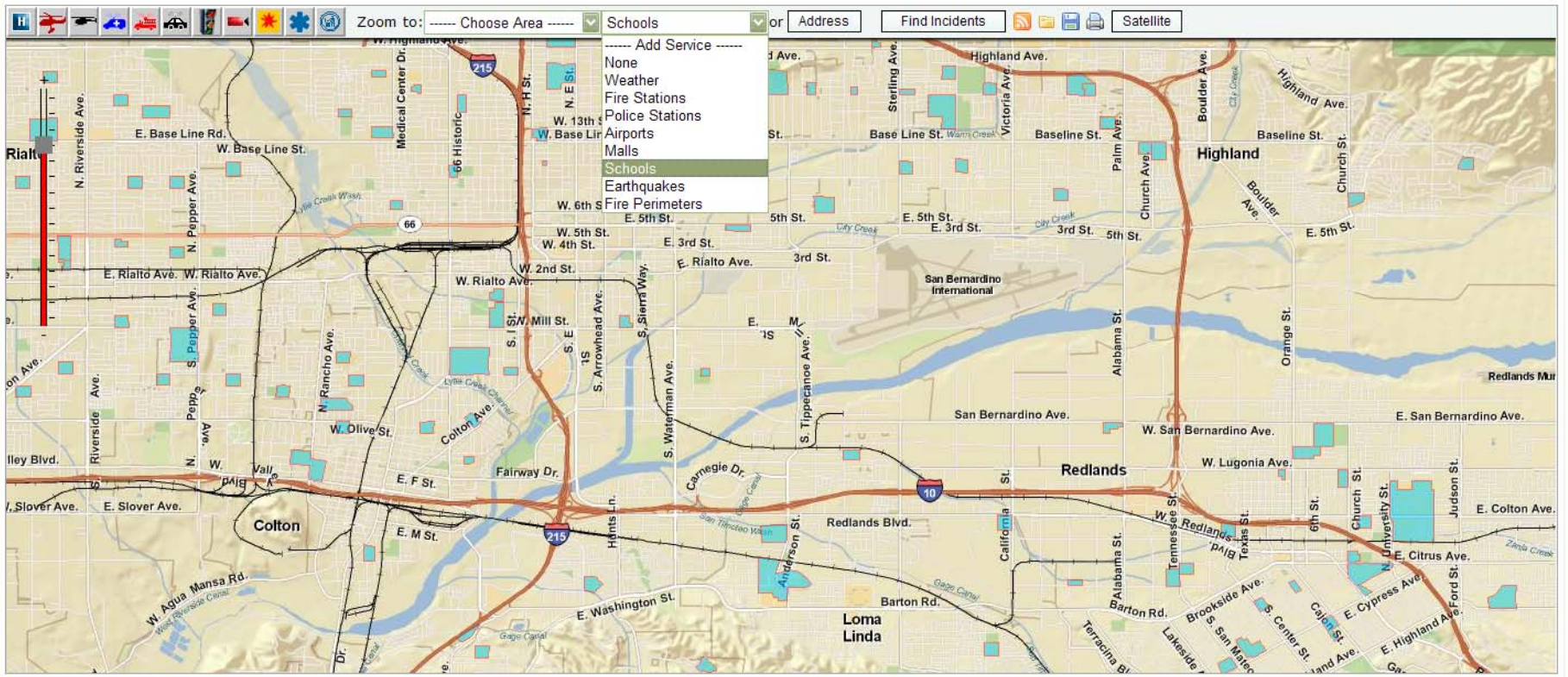
ReddiNet Hospital Status

- Hospital Name
- Status
- Time
- Updated every minute



REDLANDS COMMUNITY HOSPITAL
 ED - 7/30/2006 10:59:18 PM







Caltrans Traffic



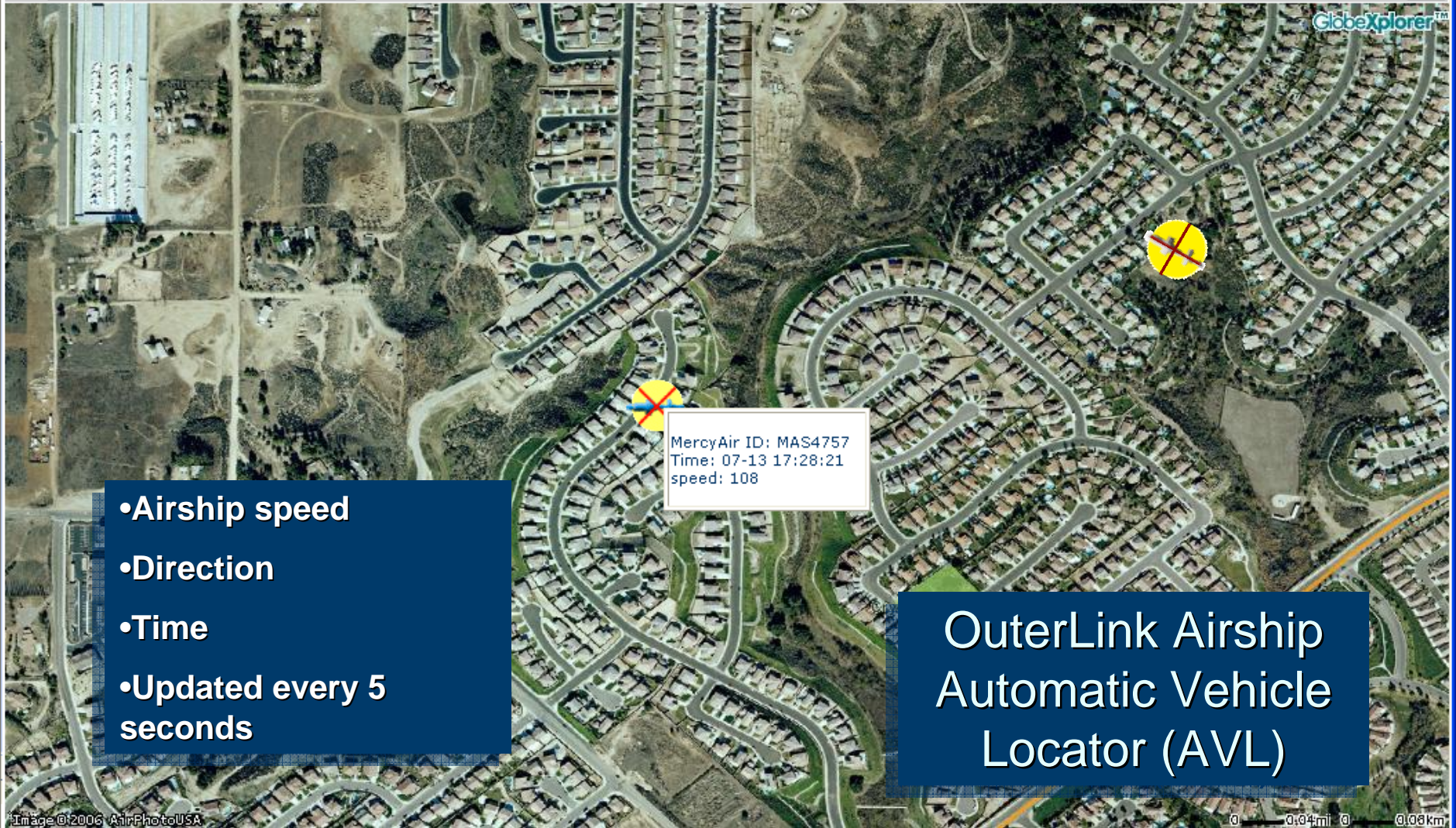
- Speed sensors
- Traffic volume
- Web cams
- Updated every 2 minutes

Map navigation toolbar including zoom, pan, and map size controls. Station ID:

CA Highway Patrol Incidents

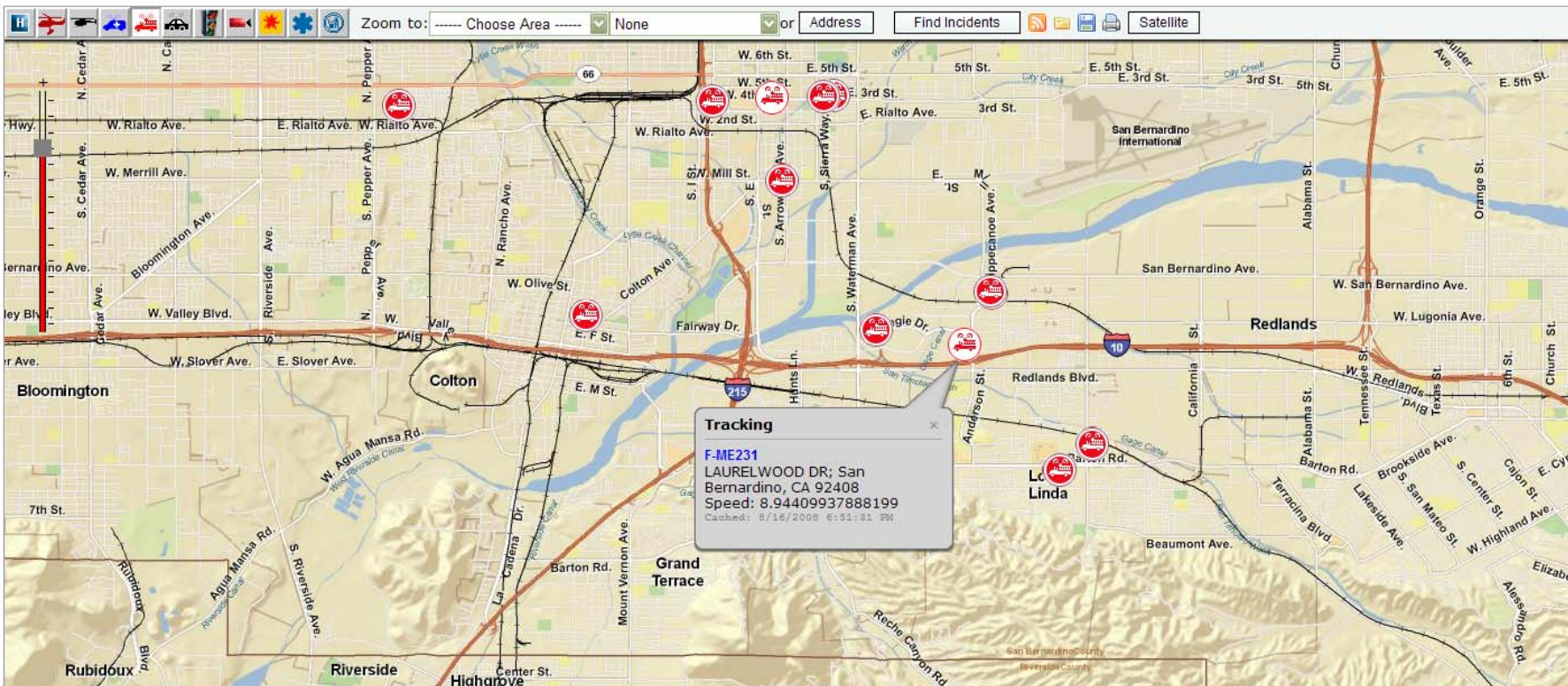
- Location
- Type
- Time
- Updated every minute

Time:	8:13:03 AM
Type:	Traffic Collision - Ambulance Responding
Loc:	WB I10 JWO E CYPRESS AV



- Airship speed
- Direction
- Time
- Updated every 5 seconds

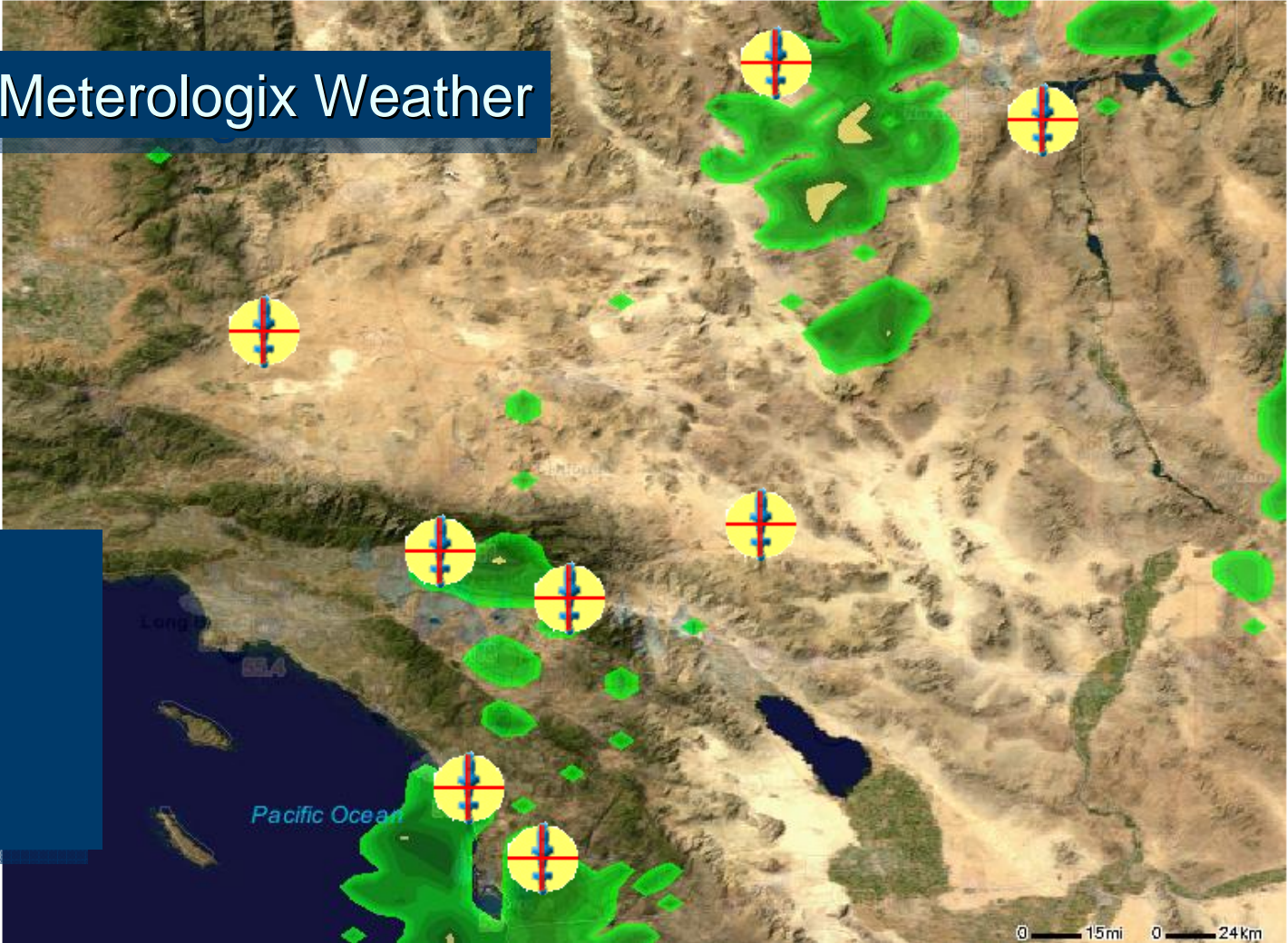
OuterLink Airship Automatic Vehicle Locator (AVL)





- Zoom to
- Ref
- Zoom to
- Riverside
- Riverside County
- San Bernardino
- San Bernardino County
- Region
- Southern California
- LLOMIC_LocalData
- MX_Precipitation
- MX_Weather_Current
- TC_Traffic
- GlobeXplorer_Premium_US

Meteorologix Weather



- Precipitation
- Current Weather
- Forecasts
- Updated every 15 minutes

GeoRSS Feeds

Advanced Emergency Geographic Information System - Windows Internet Explorer

http://ozone.esri.com/curemapviewer/Default.aspx

Advanced Emergency Geographic Information System

LOMA LINDA UNIVERSITY MEDICAL CENTER
Advanced Emergency Geographic Information System

Welcome, scorbett (logout)

Sat Aug 16 2008 13:50:59

Zoom to: Choose Area None or Address Find Incidents Satellite

M 2.6, Greater Los Angeles area, California
August 15, 2008 03:51:36 GMT

© 2008 ESRI | Privacy | Copyright

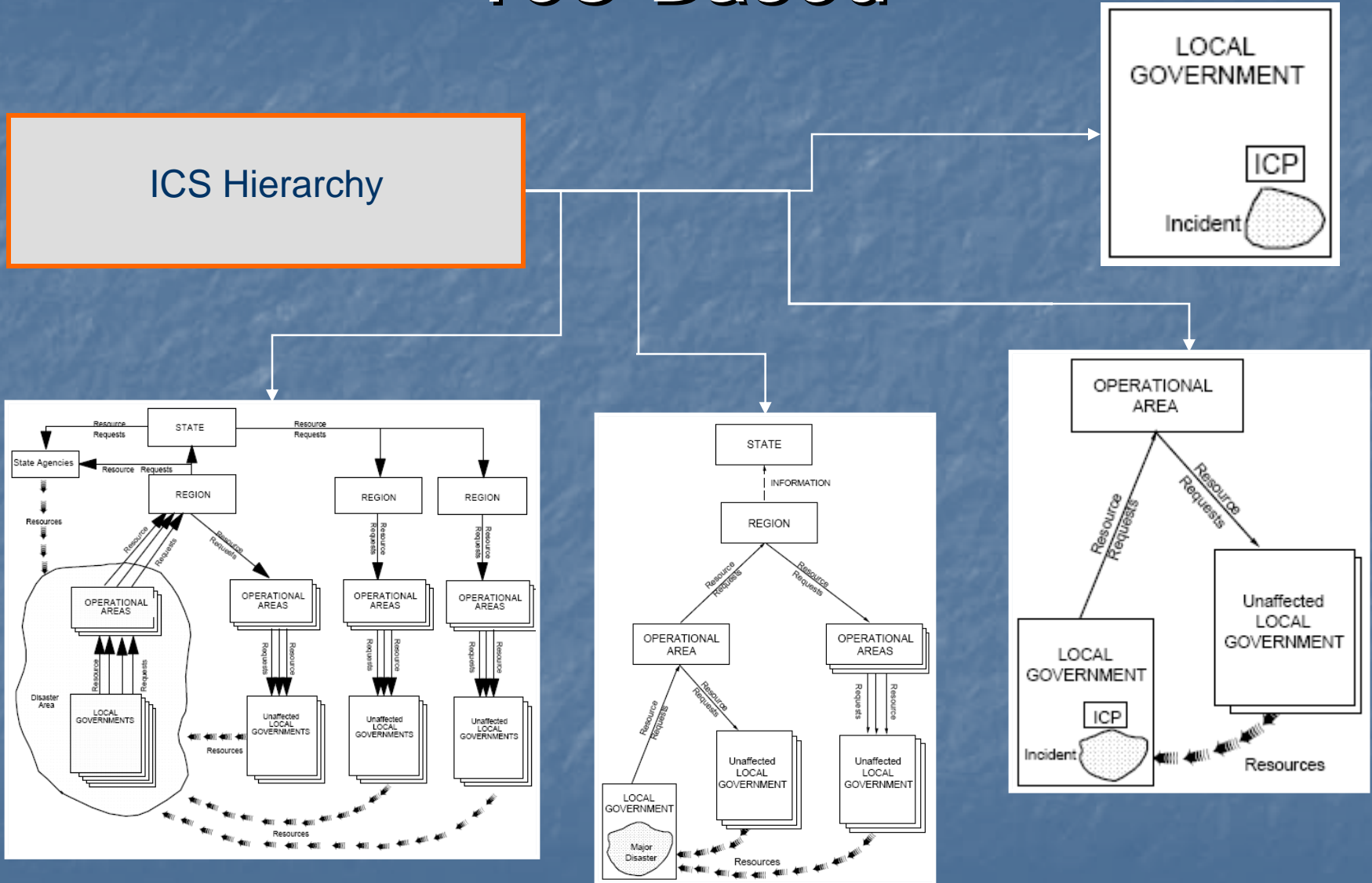
About | Help | Feedback

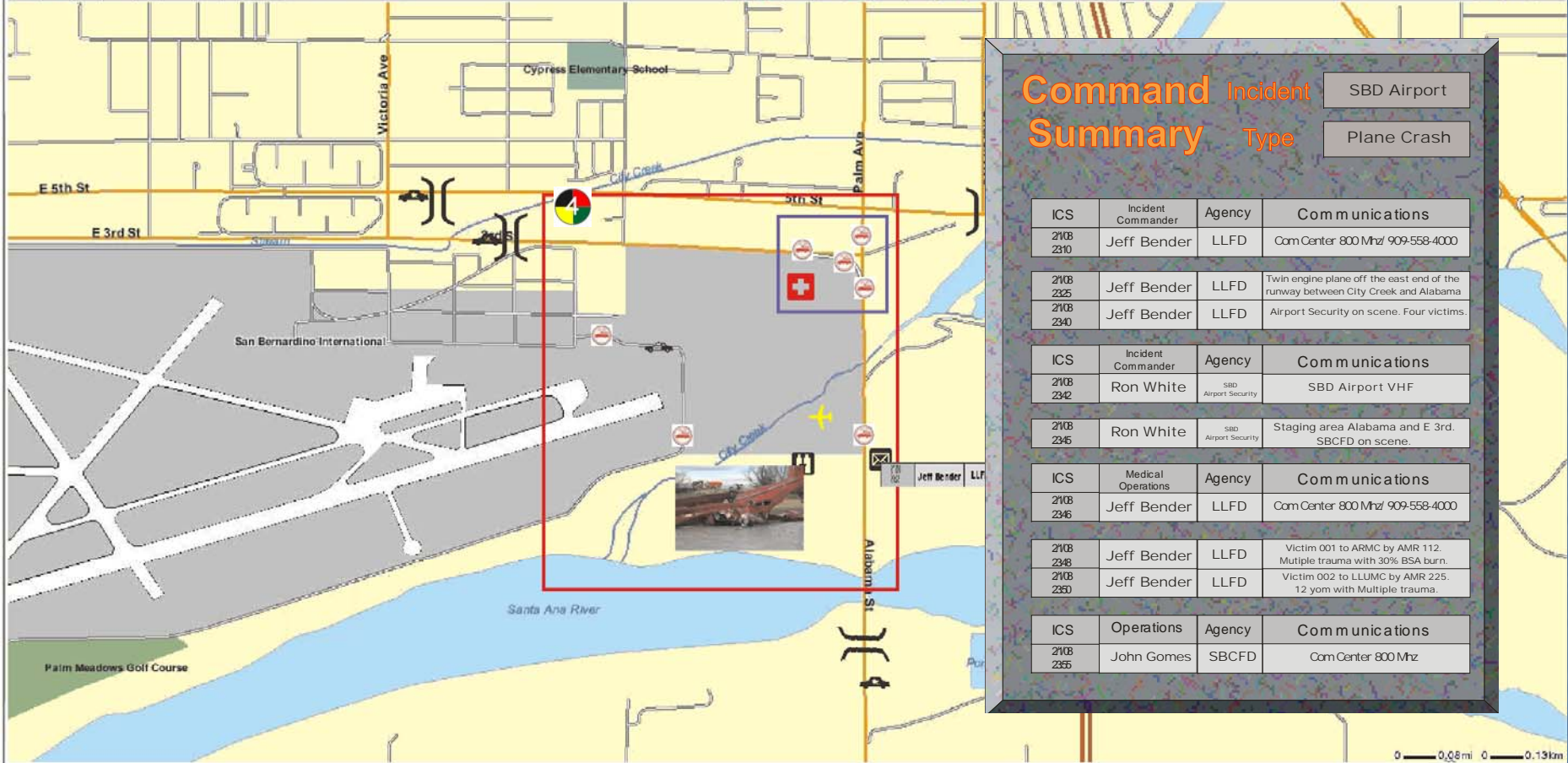
Internet 100%



ICS Based

ICS Hierarchy





Command Incident Summary Type

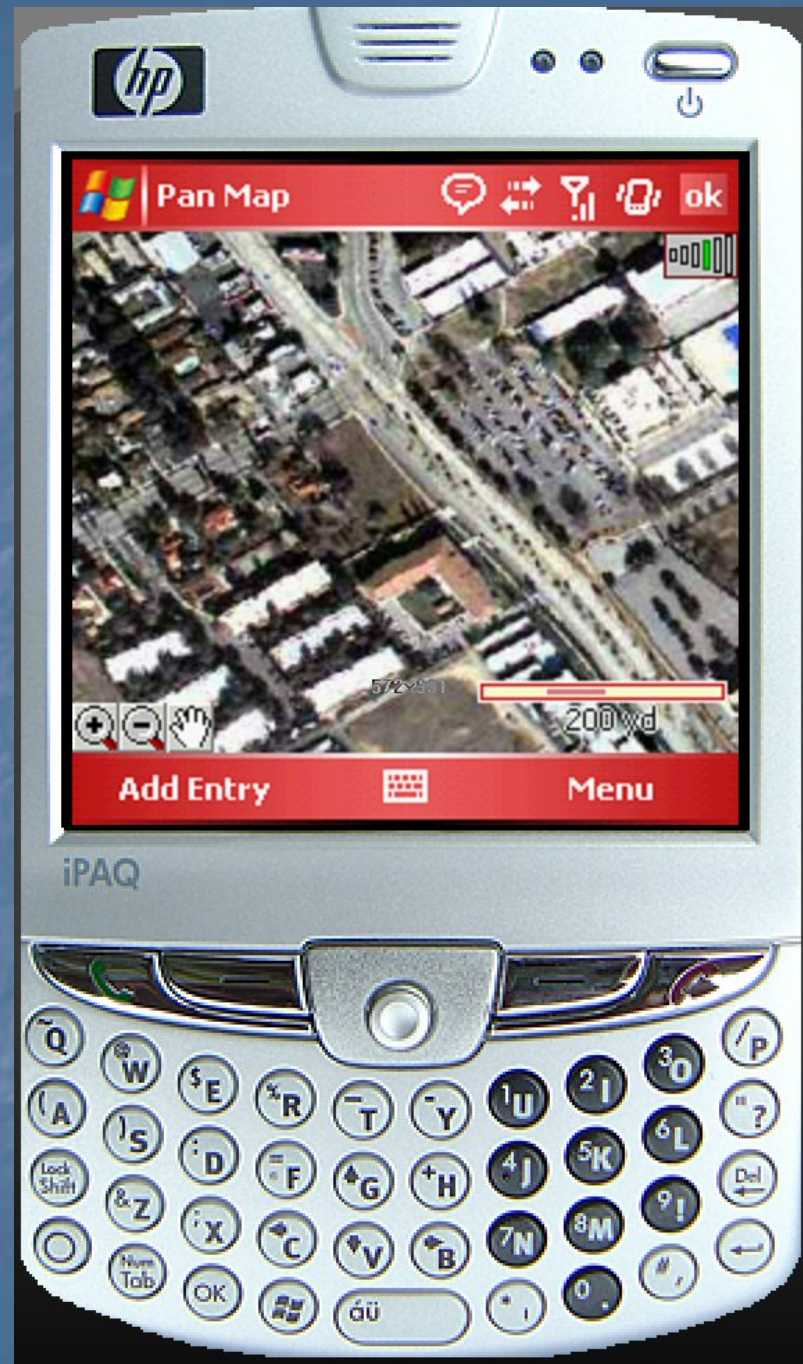
SBD Airport
Plane Crash

ICS	Incident Commander	Agency	Com m unications
2108 2310	Jeff Bender	LLFD	Com Center 800 Mhz/ 909-558-4000
2108 2325	Jeff Bender	LLFD	Twin engine plane off the east end of the runway between City Creek and Alabama
2108 2340	Jeff Bender	LLFD	Airport Security on scene. Four victims.

ICS	Incident Commander	Agency	Com m unications
2108 2342	Ron White	SBD Airport Security	SBD Airport VHF
2108 2345	Ron White	SBD Airport Security	Staging area Alabama and E 3rd. SBCFD on scene.

ICS	Medical Operations	Agency	Com m unications
2108 2346	Jeff Bender	LLFD	Com Center 800 Mhz/ 909-558-4000
2108 2348	Jeff Bender	LLFD	Victim 001 to ARMC by AMR 112. Multiple trauma with 30% BSA burn.
2108 2350	Jeff Bender	LLFD	Victim 002 to LLUMC by AMR 225. 12 yom with Multiple trauma.

ICS	Operations	Agency	Com m unications
2108 2355	John Gomes	SBCFD	Com Center 800 Mhz

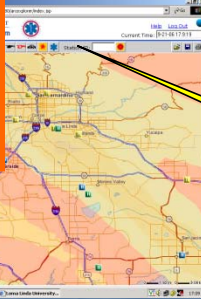




Station ID:



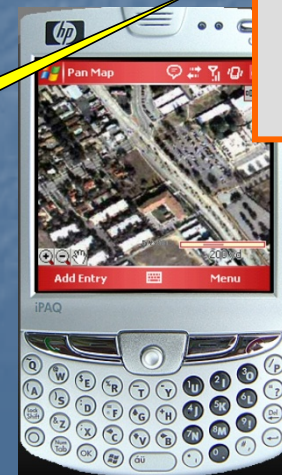
EOC



Incident



Hospital



California Department of Forestry Engine 57 after a burn over that killed the crew of five during the Esperanza Fire in 2006.

