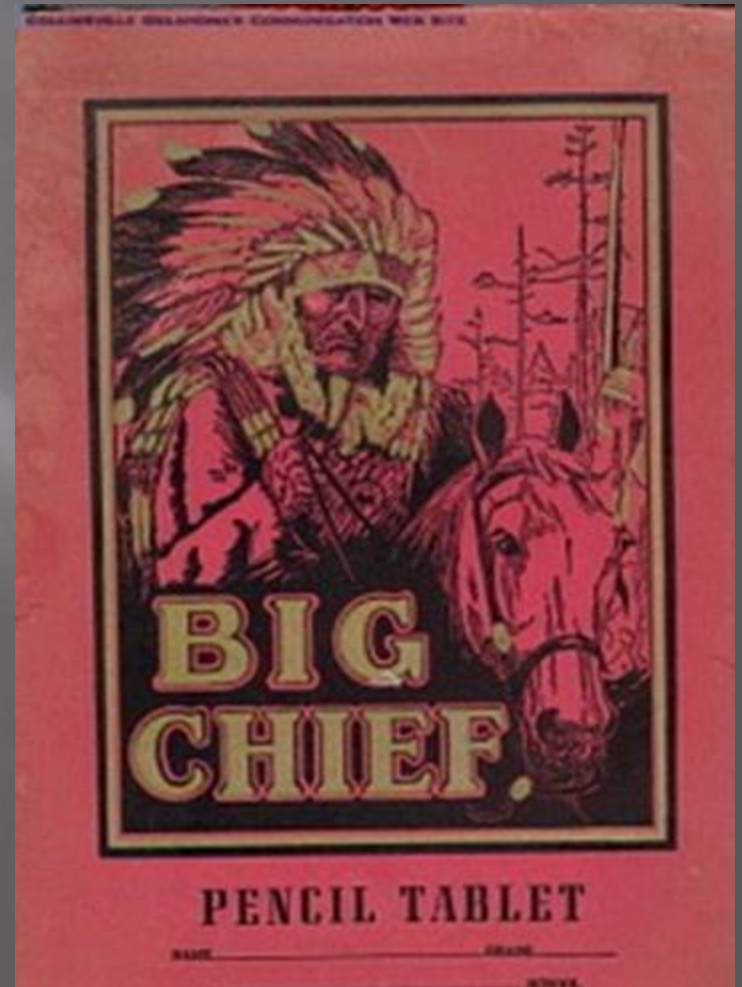


MAXIMIZING TECHNOLOGY TO  
IMPROVE EMERGENCY RESPONSE  
DATA COLLECTION AND UTILIZATION

*Curtis Vaughn*  
*Weston Solutions, Inc.*

# The Range of Possibilities

- ▣ Small Incident
- ▣ One Person Involved
- ▣ Nobody else needs the data
- ▣ Really and truly...



# A small team with the right tools...

Local Database  
Local Front End  
Local GIS  
PDA-based field tools

When does this work?

- No data sharing needed
- Limited field personnel
- Long lead time for results



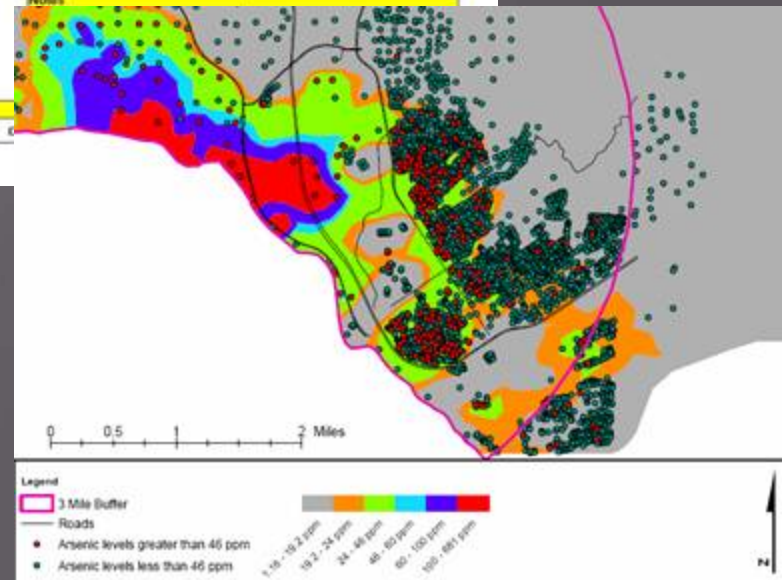
El Paso Metals Excavation 1.0.15 - [El Paso Metals]

File Edit View Insert Format Records Tools Window Help

Remediation  
Property ID: 25 [Preview Detailed Report](#)

Ref Tables: Remediation | Property Information | Lab Results | Removal Lab Results

Address		Owner	Foc / Mail to	
1000 W Missouri	El Paso TX 79902	Labauxe, Marc 1000 W Missouri El Paso TX 79902	Labauxe, Marc 1000 W Missouri El Paso TX 79902	315-542-0963
Latitude	31.702484186		Mail to Owner?	Yes
Longitude	-106.501301730			
Inspection		Children	Yards	Vegetation
Resident Presence Required	No	Ages 6 to 6	0	Front No None
Status	Sampled	Ages 7 to 12	0	Back No None
Survey Meets Bounds		Ages 13 to 18	0	Left No None
				Right No None
Property Type	Single Family	Notes		
Dog Present	No			
Size	Small			
Structure Type	Rotating w/af			
Access Team	1			
Restriction	None			
Last Saved				
Property	11/16/2002 9:40:11 AM			



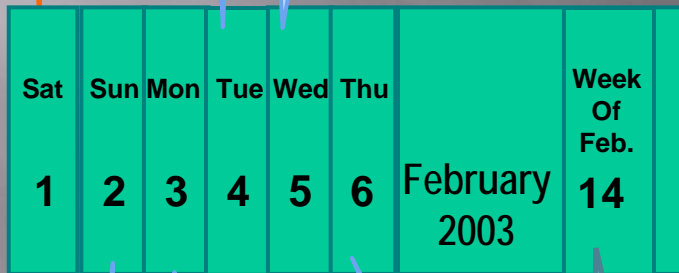
# Shuttle Columbia - What do you need to go BIG?

## Disaster Occurs

Saturday, February 1, 2003  
8 a.m. Central Time

120 Staff in field using 60 PDAs  
digital cameras and GPS units to  
collect field data electronically.

Digital photo and  
data uploading to  
Web applications.



Over 250 Field Personnel Deployed  
250 PDAs Synchronized with central  
webserver/ArcIMS database and uploading  
approx. 2,000 debris points per night.

March-April

April  
30

Field  
Operations  
End.

Work  
continues  
under NASA  
Contract



Today

## Data Replication Begins

Replication between EPA and  
Interagency Databases is initiated

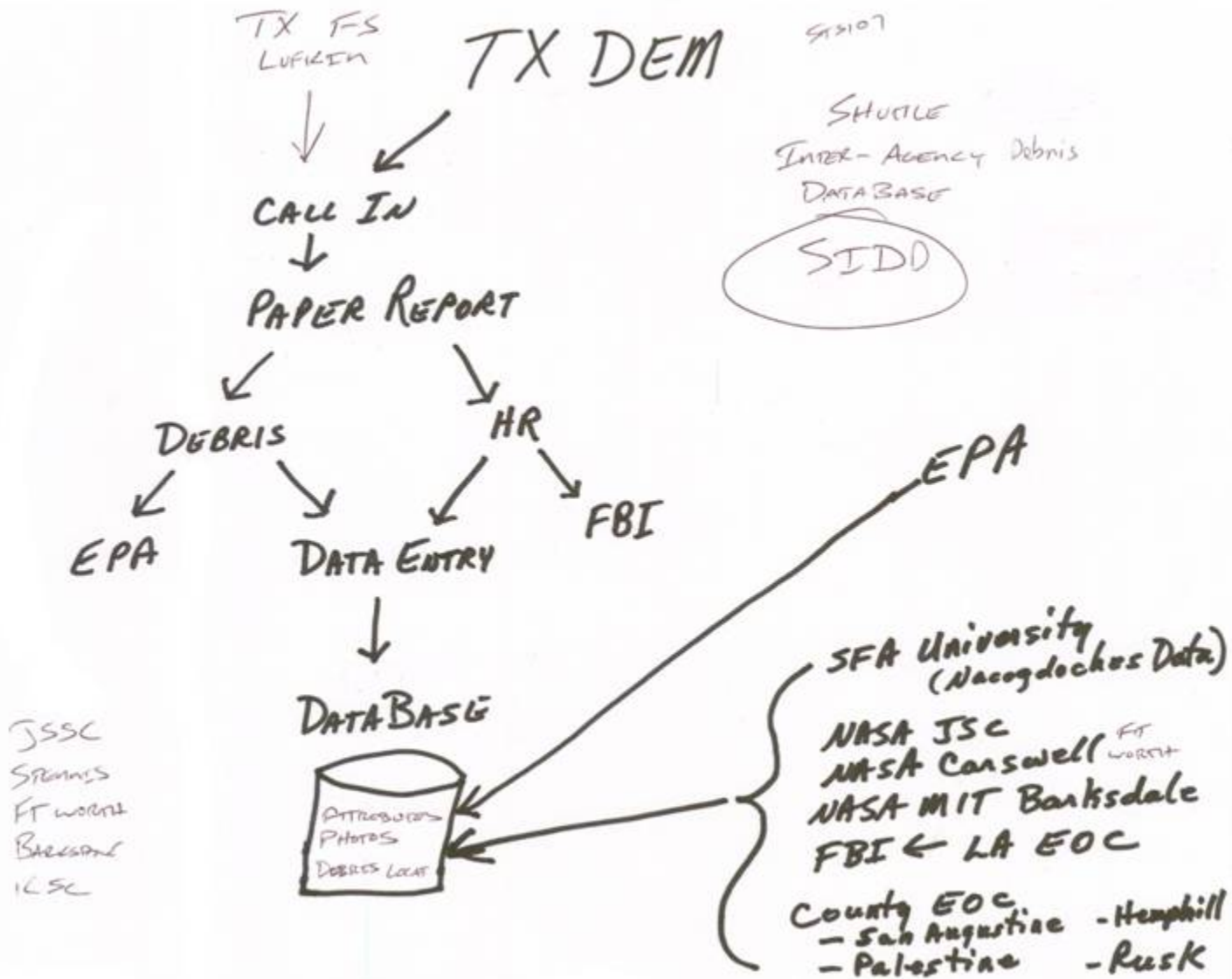
Lufkin Command  
Center Opens.

Action plan developed  
and field office setup.

Custom website in use including  
ArcIMS® mapping system

WESTON mobilized under EPA-START Contract.  
TeamLink<sup>SM</sup> set up by 10 pm Central.

# The Interagency Plan??



# There is Value in Keeping it Simple

- ✓ Interactive Mapping with the ability to perform spatial queries and Key word searches
- ✓ GIS Team doing all the Heavy Lifting

**Columbia Recovery - Address Search - Microsoft Internet Explorer**

Search for Location to Close Out

Please use the following search tool to identify locations that have been visited by EPA. Once you have for potential shuttle material, click the "Close Out" link to indicate that the location has been investigated.

Address:

FEMA ID:  City: All

ZIP: All County: All

Command Post: Nacogdoches ICP

Search Outstanding Locations

Printer-Friendly version of these results

Close Out This Location	FEMA ID	Address	City	ZIP	Name
<a href="#">Close Out</a>	878107_23774		Lufkin		Mike Jones Representing International Paper

**Columbia Recovery Interactive Map - Microsoft Internet Explorer**

Home

Zoom In Zoom Out

Zoom Full Zoom Active

Zoom Previous Zoom Next

Identify Feature Measure Tool

Set Map Units Debris Info

Query Tools

Use the Query Tools to search the debris info by keyword.

**Columbia Recovery**

Legend

- Selected Features
- Shuttle Items
- Command Posts
- Shuttle Flight Path
- Counties

**Item Info**

EPA ID: 48405-p111-00010

Override EPA ID

EPA Team: p111

Sampler: Brad Morgan

Latitude:

Longitude:

Convert DMS to DD

Date/Time: 7/9/03 1:27:35 AM

Select Date/Time

Debris Item is a Drop Off

Save

**Shuttle Items**

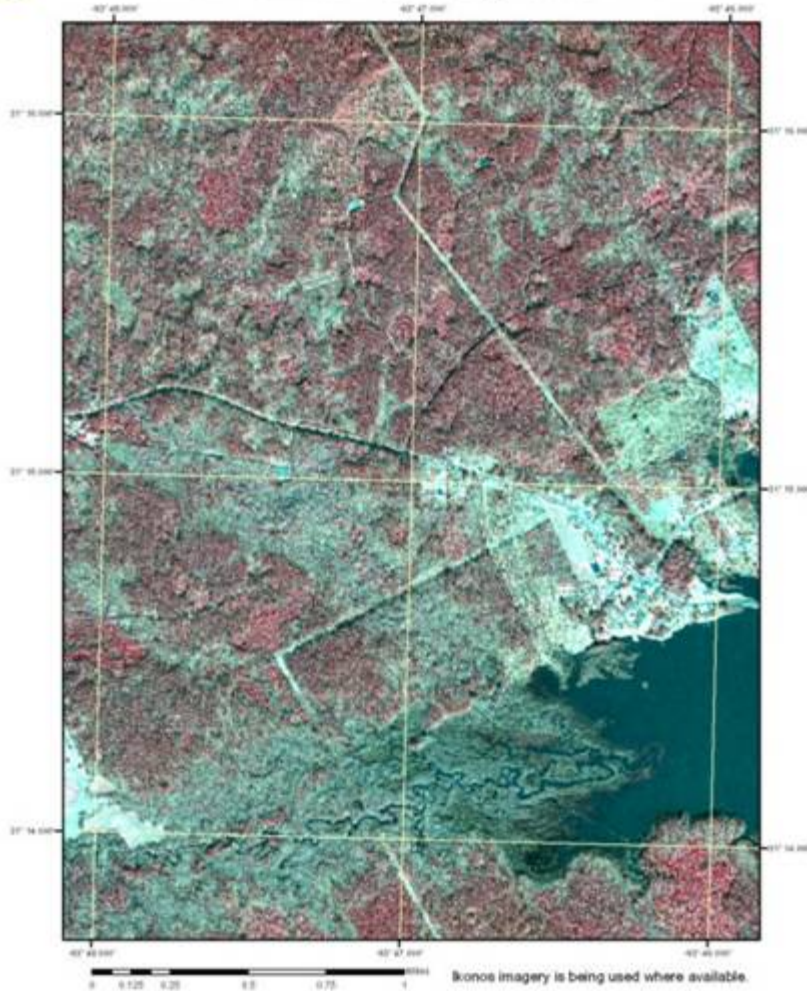
Row	STSR_ITEM	EPA_ID	EPA_TEAM	SAMPLER	WHEN_ITEM	LATITUDE	LONGITUDE
1	08ECL080 08M_1112-0000 LPS 102288016022	48000- 0011		R VAN WAKET	2003-02- 19 10:48:40	31.79485	-95.174219
2	08C108729 7112-0012 0012	48345- 0012	NS	MICHELL HALEE	2003-02- 18 04:44:01	31.80020	-94.79747

- ✓ Leverage Existing Infrastructure
- ✓ Leverage Existing Applications
- ✓ IT/GIS deemed INTRIGAL to the Project

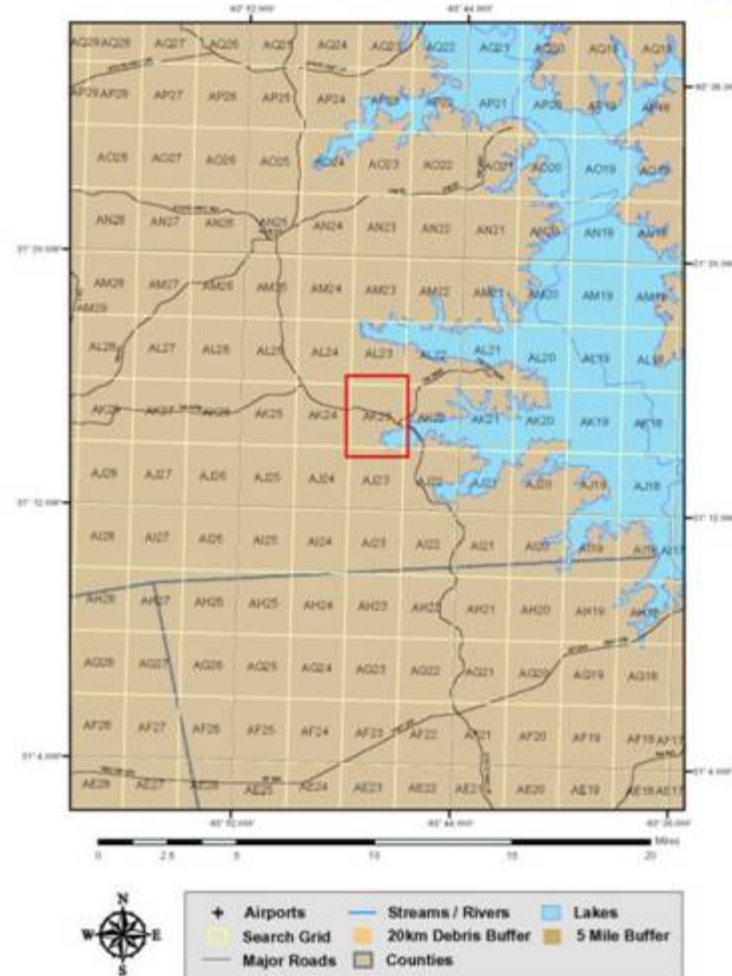
# AirOPS



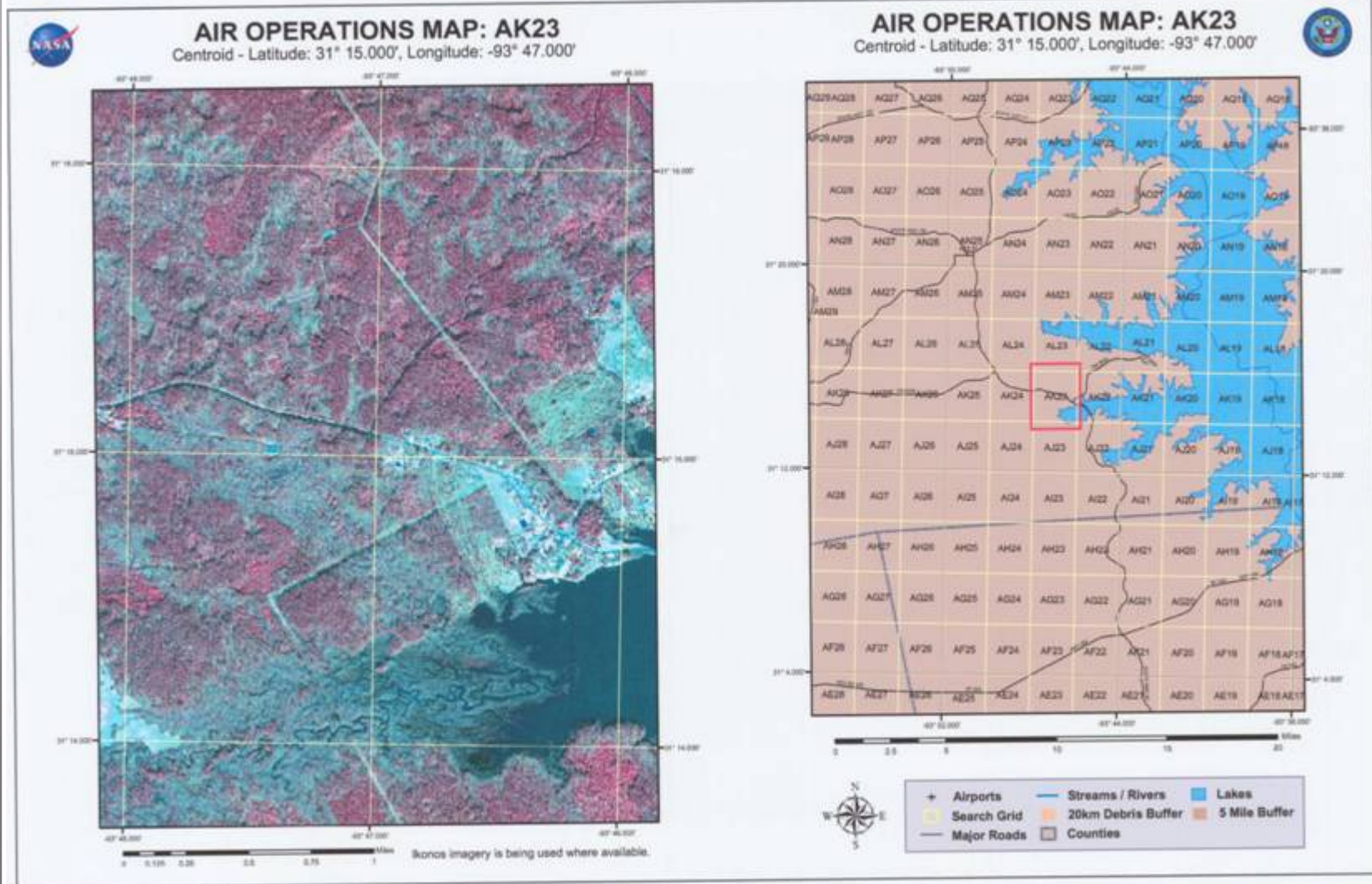
**AIR OPERATIONS MAP: AK23**  
Centroid - Latitude: 31° 15.000', Longitude: -93° 47.000'



**AIR OPERATIONS MAP: AK23**  
Centroid - Latitude: 31° 15.000', Longitude: -93° 47.000'



# AirOPS





# AirOPS

## Aircrew Search Summary

Date: 4/5 Feb

Aircraft Callsign:

KSC Aircrew name: ~~XXXXXXXXXX~~

Contact Number:

Grid: AK23

Qualitative description<sup>1</sup>:

Terrain Description:

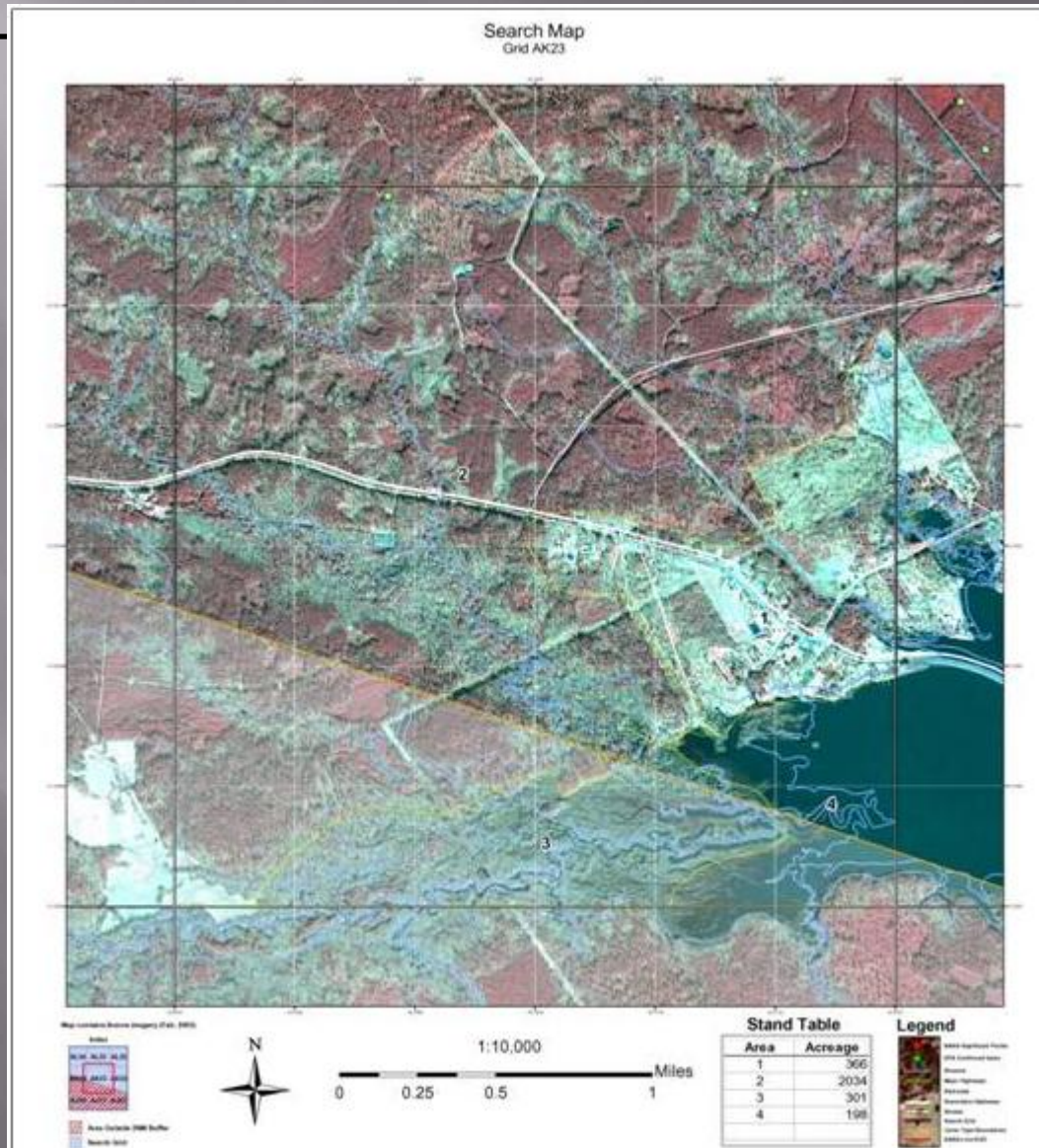
- Not cleared
- Partially cleared
- Cleared

HEAVY WOODED. LOW CONFIDENCE

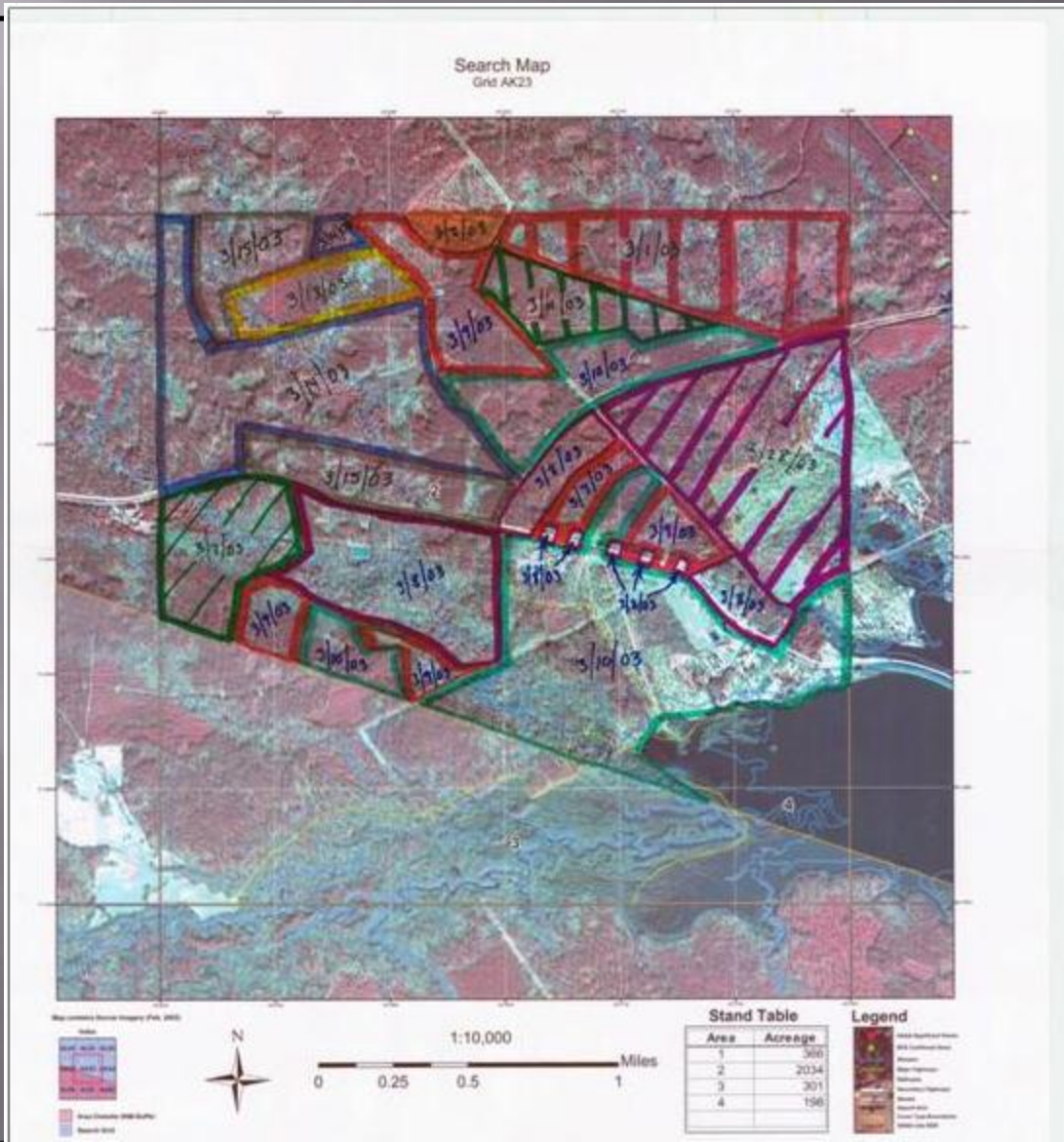
Coordinates	Items Found/Identified	Items Detected/Not retrieved	Comments
-	NONE		
	SEARCH ENTIRE GRID		
	CAVEAT: NORTH PORTION SEARCHED		
	<del>XXXXXXXXXX</del>		
		W 2/29	

- 1) Not cleared: Heavy canopy; requires ground clearance  
 Partially cleared: Terrain includes open and wooded areas  
 Open areas cleared to 75% probability of detection  
 Other areas require ground clearance  
 Cleared: Entire grid cleared to 75% probability of detection

# GroundOPS



# GroundOPS



# GroundOP

## COLUMBIA SHUTTLE RECOVERY

### GRID CLOSING REPORT

(To Be Completed Upon Final Completion of an Assigned Grid)

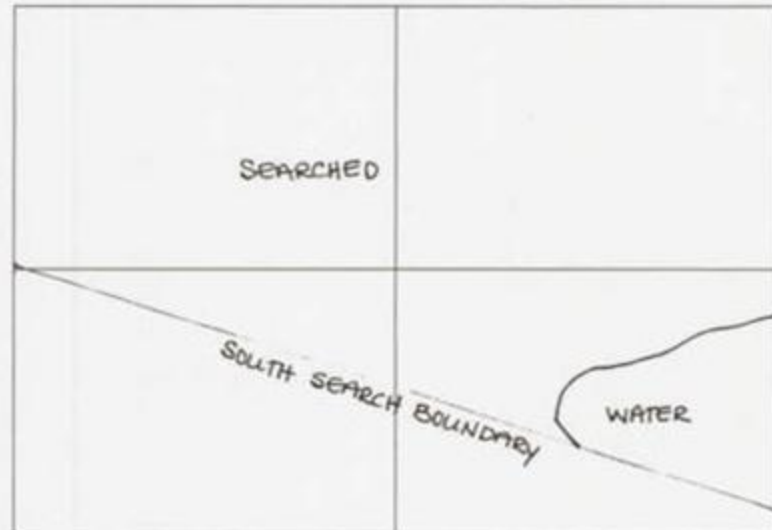
By

Grid Number: AK23 County: Sabine Branch: Hemphill

Date(s) Searched: 3/1, 3/7, 3/8, 3/9, 3/10, 3/11, 3/13, 3/14, 3/15 Total Person Hours: 4592

Total Material: Information not collected by individual grid.

North



(Instructions: Draw the debris path centerline location if applicable. Sketch and label the area searched. Sketch and label the area not searchable. Describe in the space below the acreage searched and the acreage not searchable. Describe why an area was not searchable and if in your opinion it might be searchable at a later date. You may write on the back of this form if necessary.)

Acreage Searched: Approximately 2061

Acreage Not Searchable: Approximately 128

Why Not Searchable/Other Remarks: Areas with water not searchable. Searched acre numbers above differ from nightly figures submitted on 3/15. GIS data shows errors in acres reported occurred on 2/28, 3/1, 3/2, and 3/9. Total above is correct figure.

Incident Management Team Name: Southwest Area Incident Management Team - Jeff Whitney IC

Reported By: [Signature]

Reported By: [Signature]

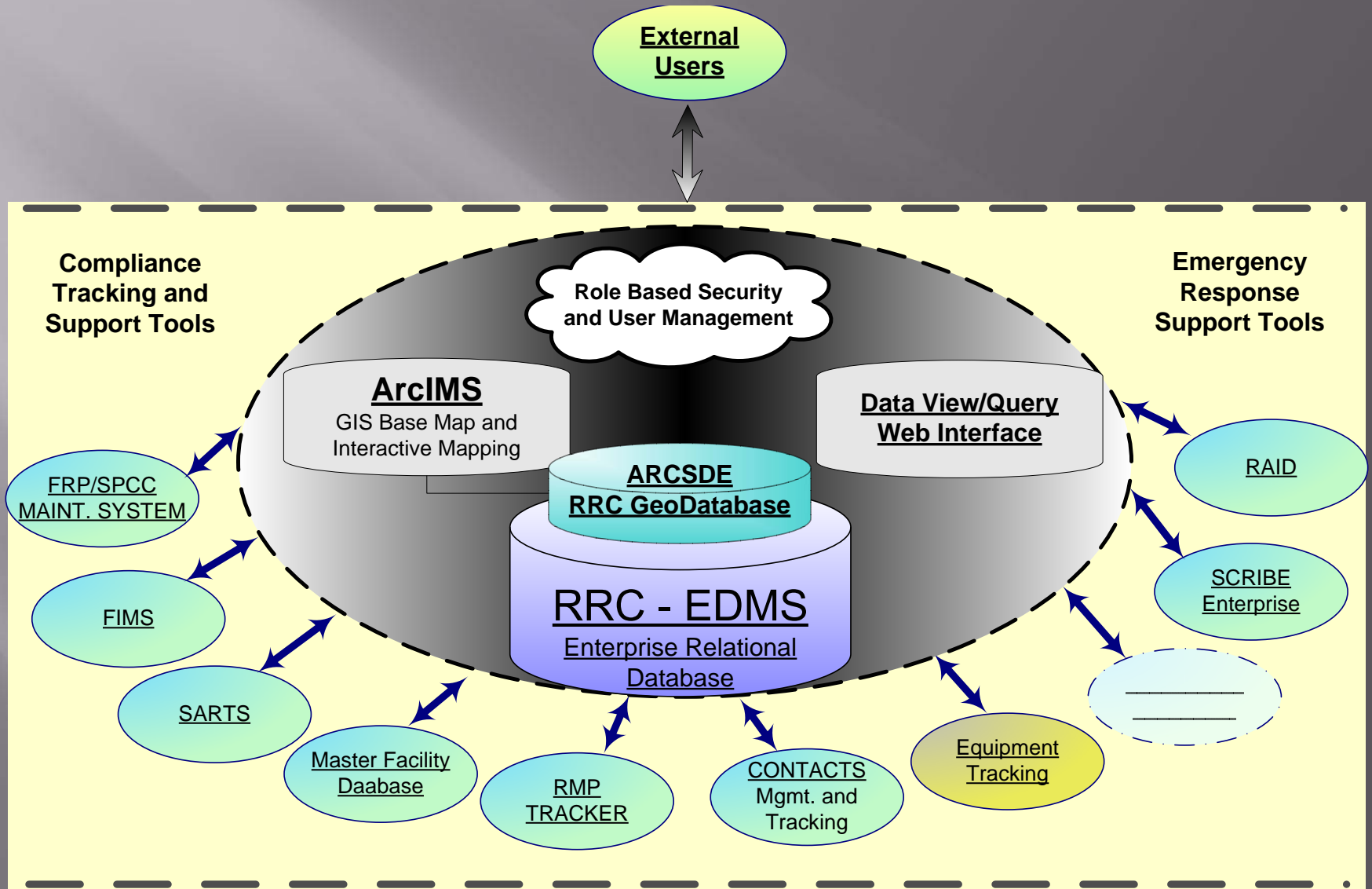
Home Contact Phone Number: [Redacted]

Signature: [Signature]

Date: 03-16-03

3-16-03

# Enterprise Architecture



# Complexity Requires Training, and Clear Data Quality Objectives

**EPA Response Manager > Response**  
**Current Incident > EPA Region 6 - Oklahoma Flooding HHW and JFO Support - Oklahoma Flood HHW Response** [Select]

Modules: HazMat, Release, Incident Zone, Sensitive Rece...  
 Basic Info, Timeline Log, Photos, Evacuations, Source, Cause, Weather

**Basic Information**

Status: Open  
 EPA TM: Ruhl, Chris  
 EPA OSC: Ruhl, Chris  
 START FTL: Delgado, Paige  
 Incident Date: 07/20/2007 Time: 1321  
 START Mob Date: 07/20/2007 Time: 1321  
 Demobilized?

**Additional Information**

Incident Type: Other  
 Counter-terrorism?   
 Est # Injuries: 0  
 Est # Fatalities: 0

Comments: Response

Save



**EPA Response Manager > Reconnaissance**  
**Current Incident > EPA Region 6 - 8/20/07 Region 6 - Oklahoma Debris Recovery** [Select]

Modules: General, Response, Reconnaissance, Facilities, Shipping, Containers, Properties, Materials, Daily Reports, HHW

Data Report

Action ... [Go]

Filter Detail

Location ID	Type	Latitude	Longitude	Zip	County/Parish	# of Photos
● T0029-20070621-001	Single Point	34.8415125	-90.3941875		CRITTENDEN	0
● T0029-20070621-002	Single Point	34.8460125	-90.3828875		CRITTENDEN	0
● T0029-20070621-002a	Drum	50	50	Gallons	Recovery Required	Medium
Location ID	Type	Latitude	Longitude	Zip	County/Parish	# of Photos
● T0029-20070621-003	Single Point	34.8494125	-90.3783875		CRITTENDEN	0
● T0029-20070621-004	Single Point	34.8494125	-90.3783875		CRITTENDEN	0
● T0029-20070621-004a	Tank	750		Gallons	Recovery Required	High
Location ID	Type	Latitude	Longitude	Zip	County/Parish	# of Photos
● T0029-20070621-005	Debris Line	34.8516125	-90.3964875		CRITTENDEN	0
● T0029-20070621-005a	Single Point	34.8516125	-90.3173875		CRITTENDEN	0
● T0029-20070621-005b	Drum	75		Gallons	Recovery Required	High

# From Data to Information

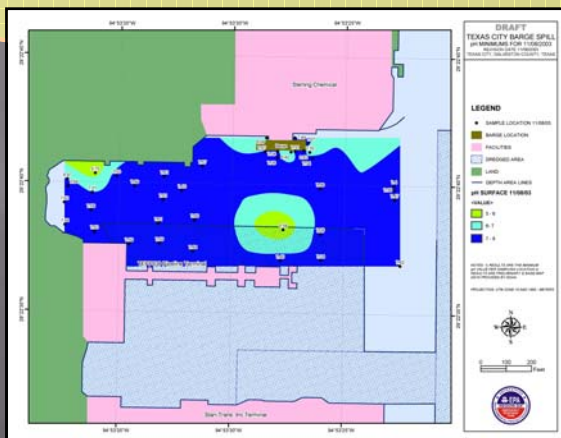
PDA Data Collection



Web Enabled - Near Real Time Monitoring Results

The screenshot shows a web browser displaying a monitoring results interface. It includes a table with columns for 'Monitoring Equipment', 'EPA ID', 'Date/Time', 'Latitude', 'Longitude', and 'Sample Value'. The table contains multiple rows of data points.

Near Real Time GIS Contamination Mapping

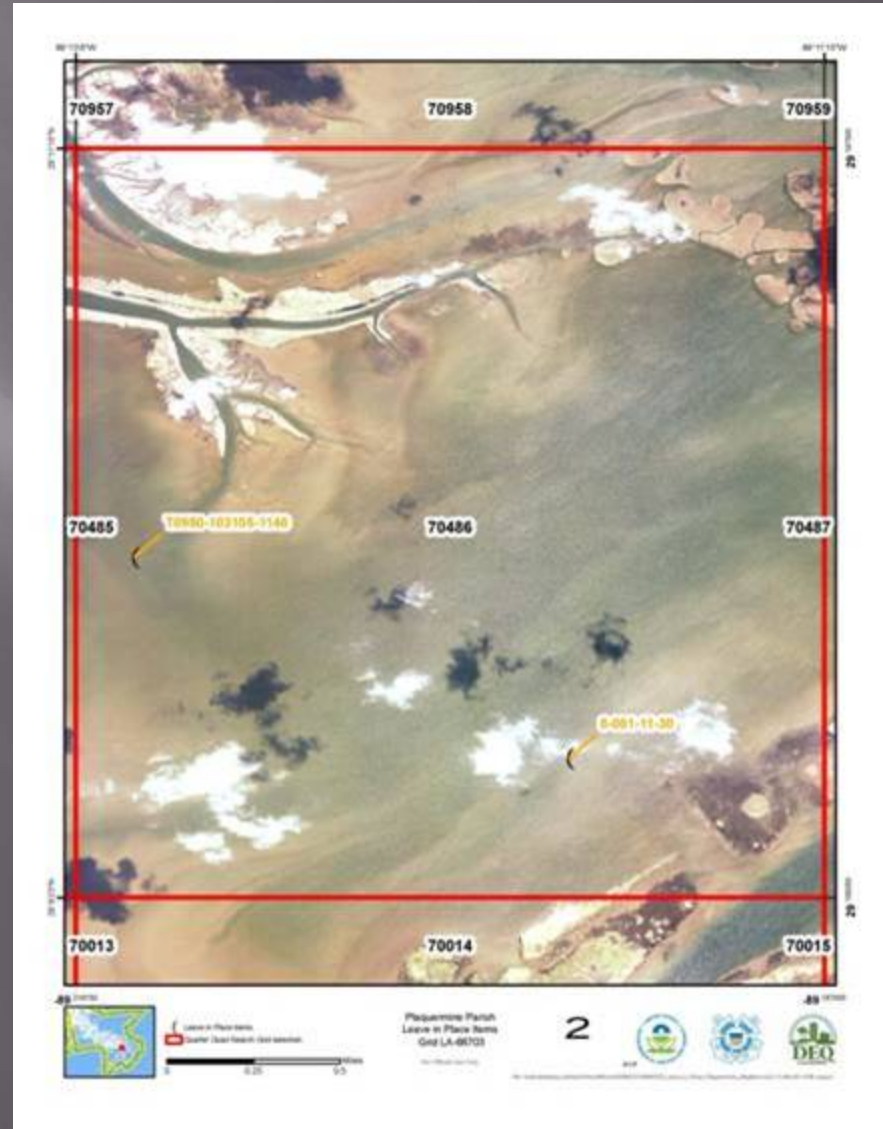


DATA Viewable In Safe Zone Command Post/RRC

# Operational Data Usage

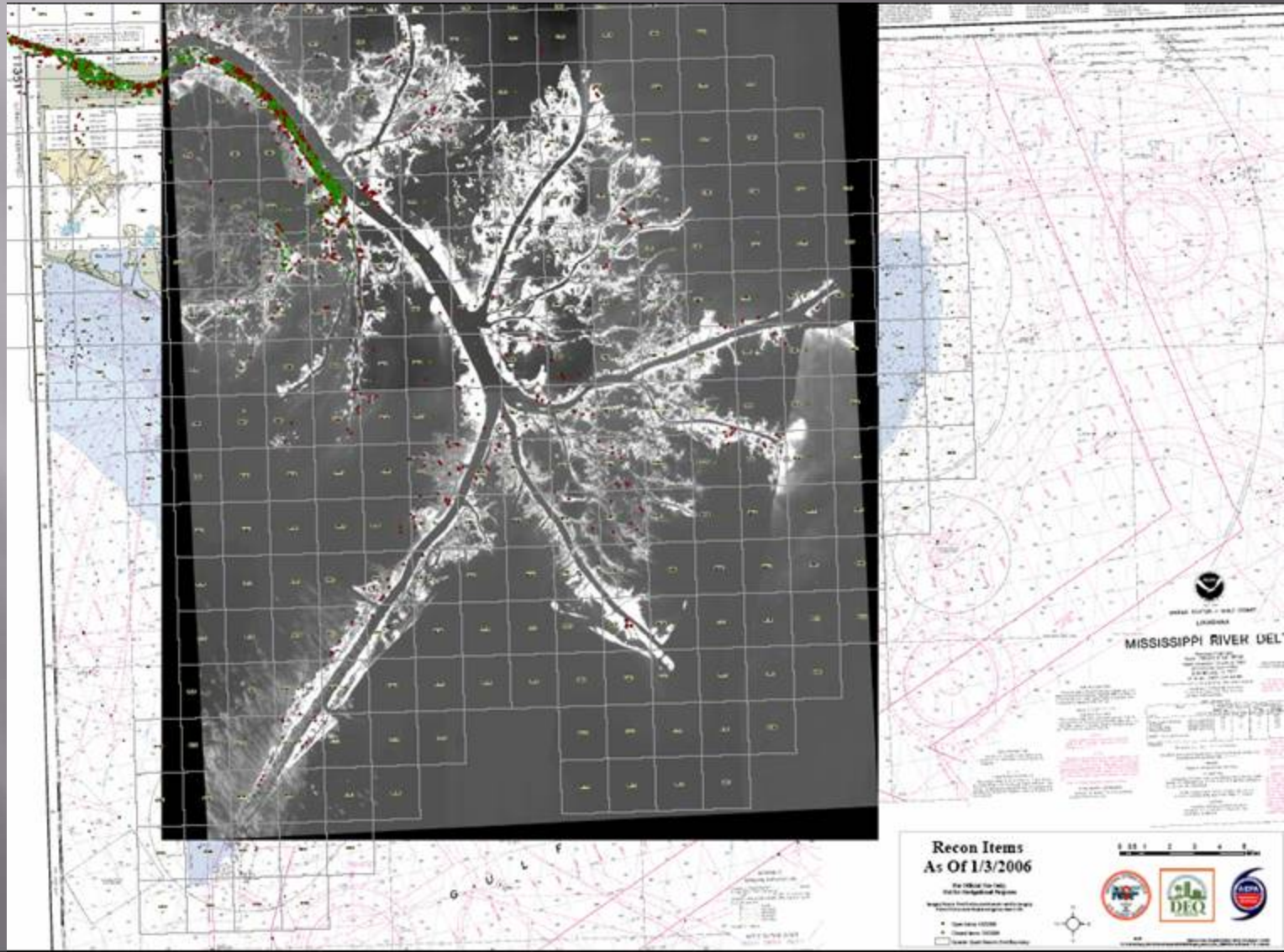


Don't forget  
Aerial Target  
Coordinate  
Correction

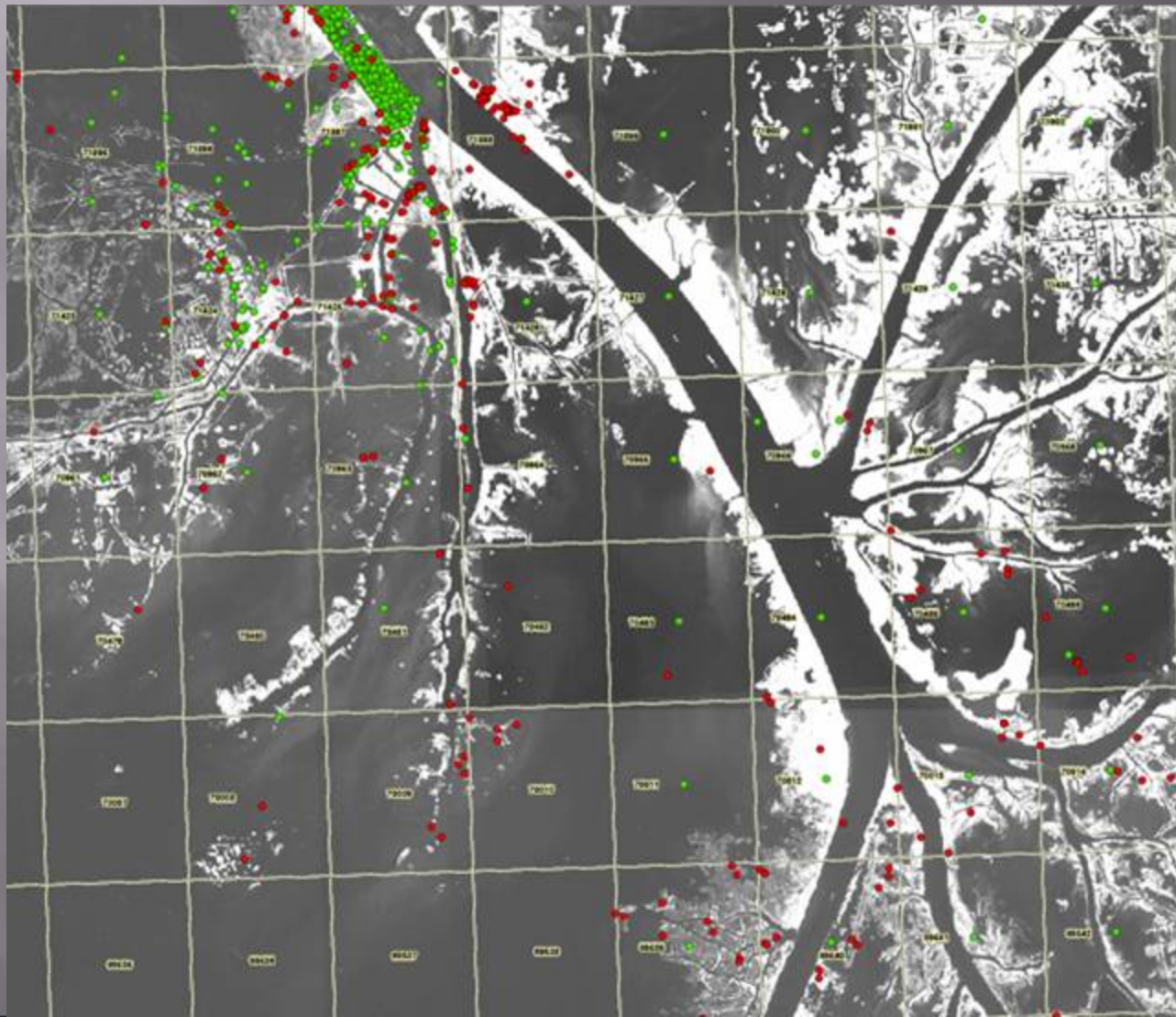




# Increased Situational Awareness On-Scene and Off



# Focus on Increased Situational Awareness On-Scene and Off

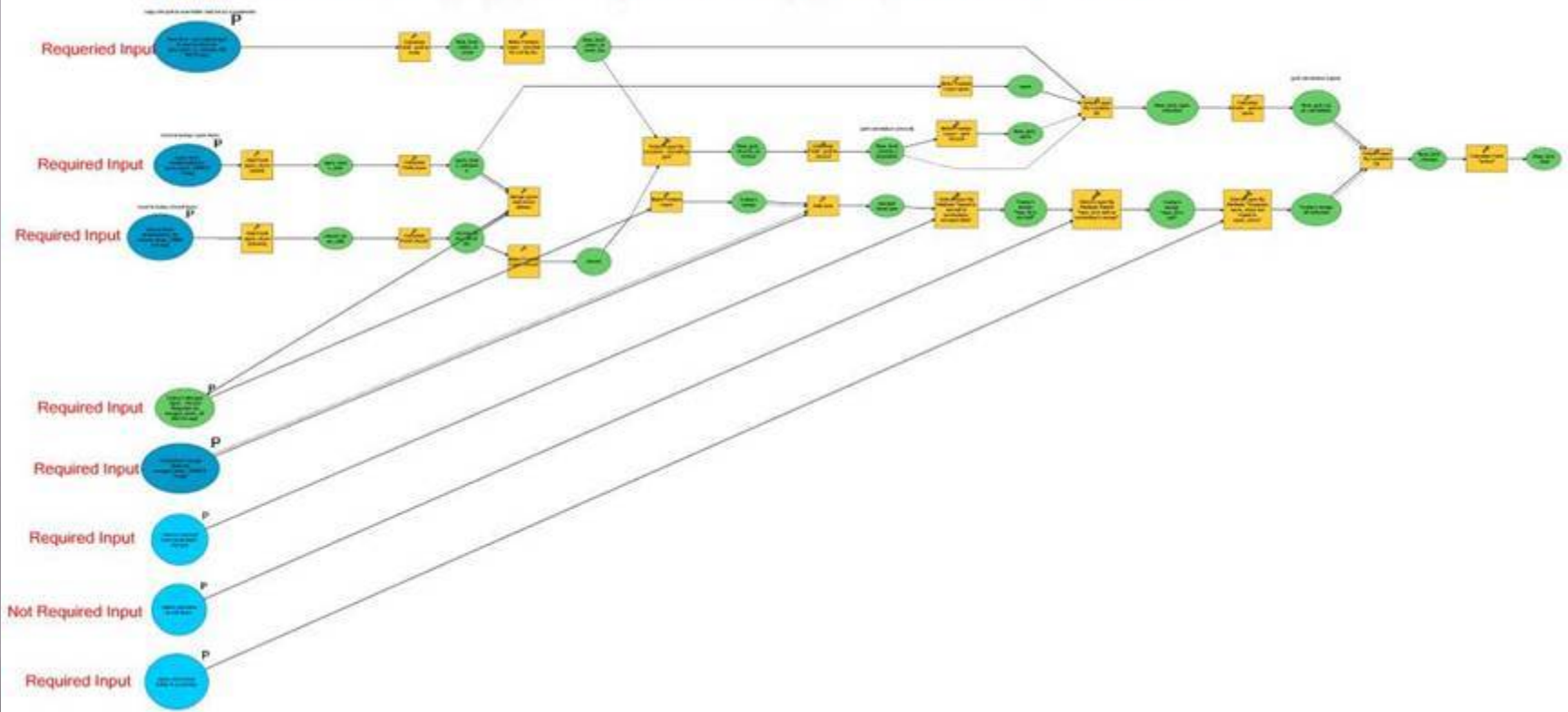


# GIS Data Modeling

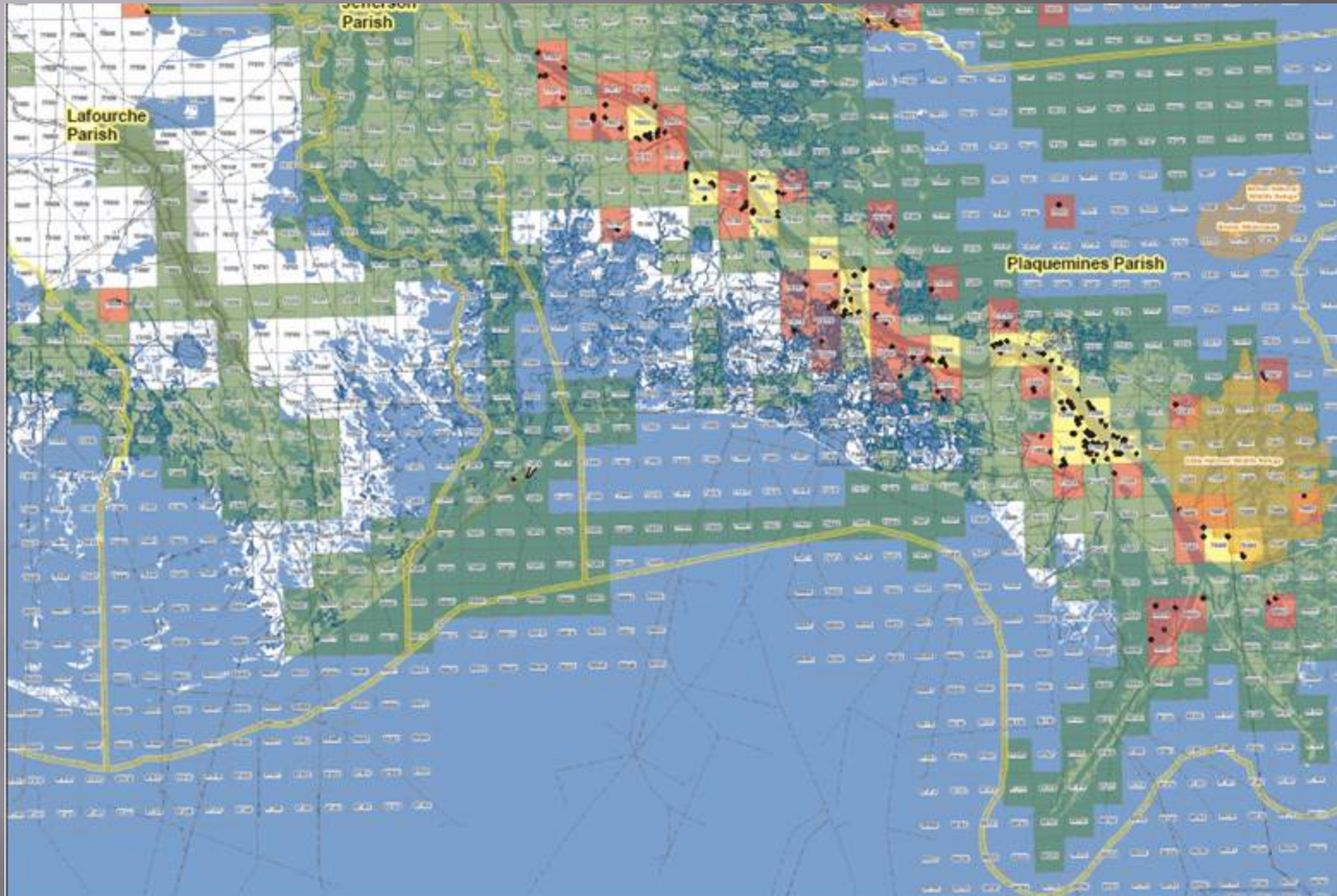
model to do active, open, and closed grid

run on (ie grid\_open\_vs\_closed\_20060124.shp)

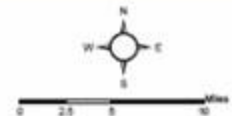
cannot make last one query a parameter you must manually update queries and data towards the left



# Situational Data Use



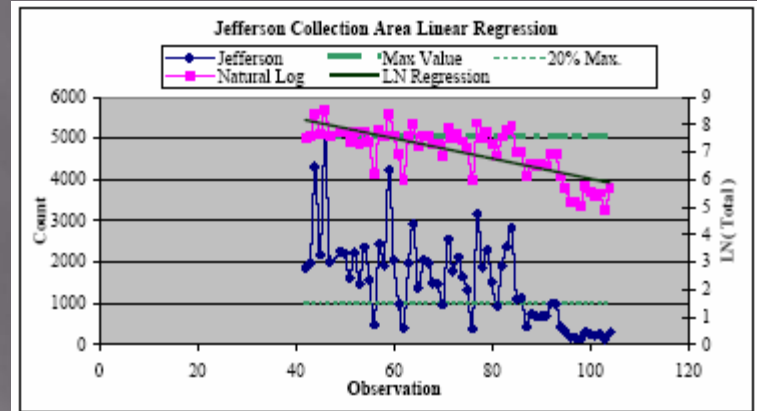
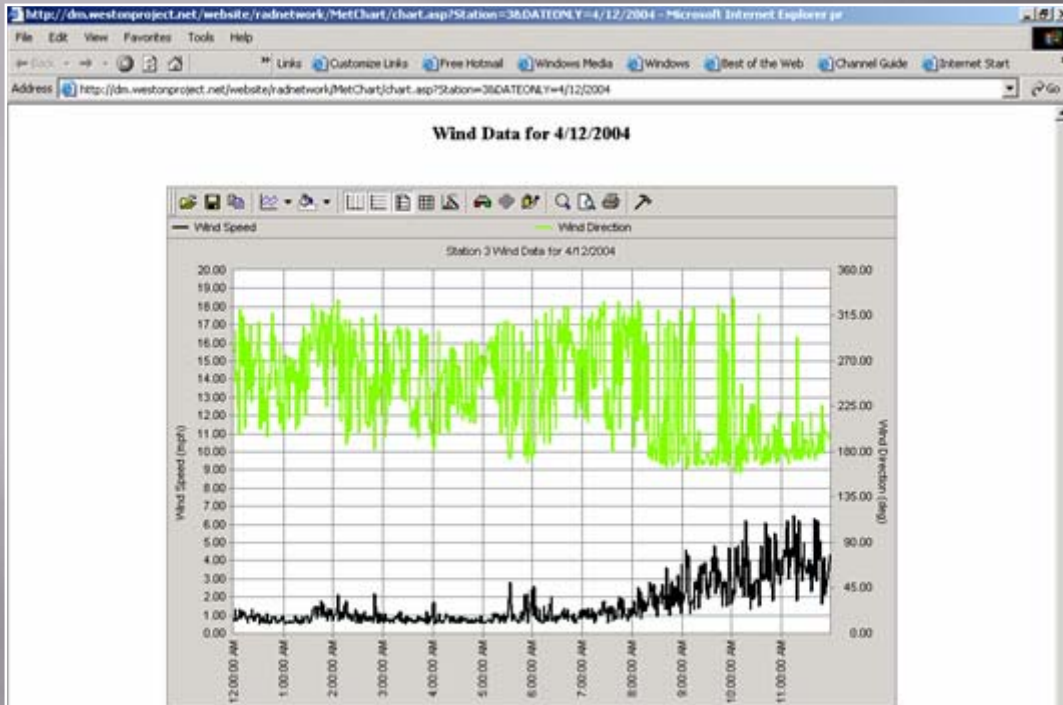
- Legend**
- Open House (01/01)
  - Active
  - Closed
  - Dam
  - Pipeline
  - System Location
  - Pipeline/Leak
  - Sub/Facility
  - Other Assets
  - Parish Boundary
  - Quarter Quarter Boundary



Status Grids as of 02/16/2006

For Official Use Only

# Situational Data Analysis



## Cumulative HHW Summary

Parish	Drums	Propane Tanks	Cylinders	Other (Large)	Small Containers	Vehicle Fuel Tanks	Totals by Parish	
							Report	Cumulative
510	4,551	1,159	3,914	792	8,821	0	19,237	19,237
Orleans	1,513	24,054	54,026	219	3,060,208	6,624	3,146,644	3,146,644
Jefferson	933	2,881	1,370	465	137,860	7	143,516	143,516
St. Bernard	2,178	15,346	19,047	452	1,624,388	541	1,661,952	1,661,952
Plaquemines	15,545	4,366	6,308	1,923	182,336	0	210,478	210,478
St. Tammany	556	2,452	1,841	245	130,454	6	135,554	135,554
Lafourche	1,352	420	212	50	32,462	0	34,496	34,496
Vermilion	4,573	1,022	890	935	55,202	0	62,622	62,622
Grand Isle	336	553	1,002	47	30,160	0	32,098	32,098
West Branch	9,187	3,174	1,856	1,453	137,198	0	152,868	152,868
<b>Totals</b>	<b>40,724</b>	<b>55,427</b>	<b>90,466</b>	<b>6,581</b>	<b>5,399,089</b>	<b>7,178</b>	<b>5,599,465</b>	<b>5,599,465</b>
<b>Grand Totals</b>	<b>40,724</b>	<b>55,427</b>	<b>90,466</b>	<b>6,581</b>	<b>5,399,089</b>	<b>7,178</b>	<b>5,599,465</b>	<b>5,599,465</b>

# Transition Planning and Analysis

## DRAFT - Unified Command - Louisiana Hurricanes Katrina/Rita ESF-10 Mission Assignment Progress Chart

The Mission Assignment tracking criteria and color-scheme described below is intended to reflect the status of Unified Command Operations and does not address factors used to determine transition back to the State or Local Parish. This is a Draft Document. The Chart Represents information that is currently available. This information is continuously being updated and is not intended to be a final work product.

Mission Assign.	Activity	Operations	Metric Definition	East						
				Orleans	Jefferson	St. Bernard	Plaquemines	St. Charles	St. Tammany	
2	*	Search and Rescue - EPA Vessel Operations	Rescue - Using EPA and EPA contractor vessels, rescue stranded citizens impacted by floodwater. Percent complete.	24/06		24/06				
3	B	Reconnaissance - FRP Facilities	Facility Response Plan (FRP) sites - Percent of facilities required to have facility response plans assessed in Parish.	100%	94%	95%	91%	100%	100%	
		Reconnaissance - RMP Facilities	Risk Management Plan (RMP) sites - Percent of facilities required to have a risk management plan assessed in Parish	100%	89%	89%	100%	90%	100%	
		Reconnaissance - TRI Facilities	Toxic Release Inventory (TRI) sites - Percent of toxic release inventory facilities assessed in parish.	100%	91%	100%	100%	100%	87%	
		Reconnaissance - RCRA Facilities	Resource Conservation and Recovery Act (RCRA) - Percent of RCRA facilities assessed in Parish	87%	35%	28%	85%	88%	29%	
		Reconnaissance - UST (AI) Facilities	State of Louisiana Agency Interest (AI) sites - Percent of State-regulated facilities assessed in Parish.	92%	92%	100%	98%	100%	100%	
	C	Reconnaissance - School Assessment	Recon - Percentage of public and parochial schools assessed in Parish.	92%	92%	87%	100%	98%	12/22/06	
	D	Hazardous Materials Releases and Oil Spills	Conduct response and removal activities to mitigate hazmat releases and oil spills. Percent complete.							
E	Hazardous Debris - Orphan Drums/Containers	Orphan Drum/Containers - Collection of orphan drums and containers located within EPA's jurisdiction. Percent Complete.	98%	100%	66%	95%	98%	99%		

# Pros and Cons of the Cadillac

Great Data

**Where should you  
be ...**

Low Equipment  
and Training Cost

Real-Time  
Data from the Field

# The Next Level of Situational Awareness

EPA Web Hub > **Response Manager** Quick Links: [Response Manager](#)

Event: Hurricane Katrina Response | [Change Event](#)

**Modules**

- + ER
- + Facilities
- + Recon
- + Call Center
- + IBW
- + Equipment Mgr
- + Scribe.NET
- + Mapping


**Setup**

- + Events
- + Incidents
- + Equipment
- + Contacts

**Administration**

**Help**

**Field Reconnaissance Status Grid** [edit](#)



**Planning Situation** [edit](#)


[ESF-10 Progress Chart v6\\_11-21.pdf](#)  
[ESF-10 Progress Chart v6\\_Totals\\_11-21.pdf](#)  
[ESF-10 Progress Transition v6\\_11-21.pdf](#)

**West Branch Weather** [edit](#)

Cameron, LA  
 70°F  
 Clear  
 Wind: N at 0 mph  
 Humidity: 94%

Today	Wed	Thu	Fri
07°   70°	06°   62°	09°   67°	06°   67°

**Orphan Drums/Containers Collection Status** [edit](#)



**Environmental Unit** [edit](#)


Musahy Oil Samples (11/25/2005 7 am) ... 24 Samples  
 - [Preview on Map](#)  
 Proposed Sample Locations for XXXX School (11/24/2005 7 pm)  
 Soil Samples (11/23/2005 7 am) ... 120 Samples  
 - [Preview on Map](#)

**Central Branch Weather** [edit](#)

New Iberia, LA  
 70°F  
 Clear  
 Wind: N at 0 mph  
 Humidity: 93%

Today	Wed	Thu	Fri
09°   67°	08°   66°	09°   65°	07°   67°

**Explosives & Small Arms Removal Status Map** [edit](#)



**IBW Disposal Summary** [edit](#)

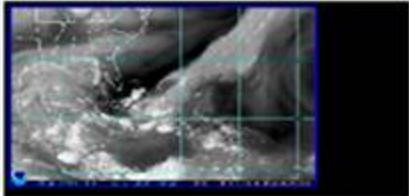
[IBW Disposal Summary\\_11/25/2006](#)  
[IBW Disposal Summary\\_11/24/2007](#)  
[IBW Disposal Summary\\_11/23/2009](#)  
[IBW Disposal Summary\\_11/22/2009](#)

**East Branch Weather** [edit](#)


New Orleans, LA  
 79°F  
 Mostly Cloudy  
 Wind: N at 0 mph  
 Humidity: 78%

Today	Wed	Thu	Fri
00°   72°	00°   69°	08°   70°	00°   70°


**NOAA Satellite Feed** [edit](#)



**Incident.com Police and Fire** [edit](#)




**US Weather Radar** [edit](#)



Today is: 26-Nov-2006

Current User: Andersson, John-Eric (EPA Region 6)

Powered by 



# So... What kind of data do you need and how fast?



ment Team: Allison, Schacher Date: 01 Nov 2005 12:49:32 Lat: 29° 23' 25.79" Long: -8

