

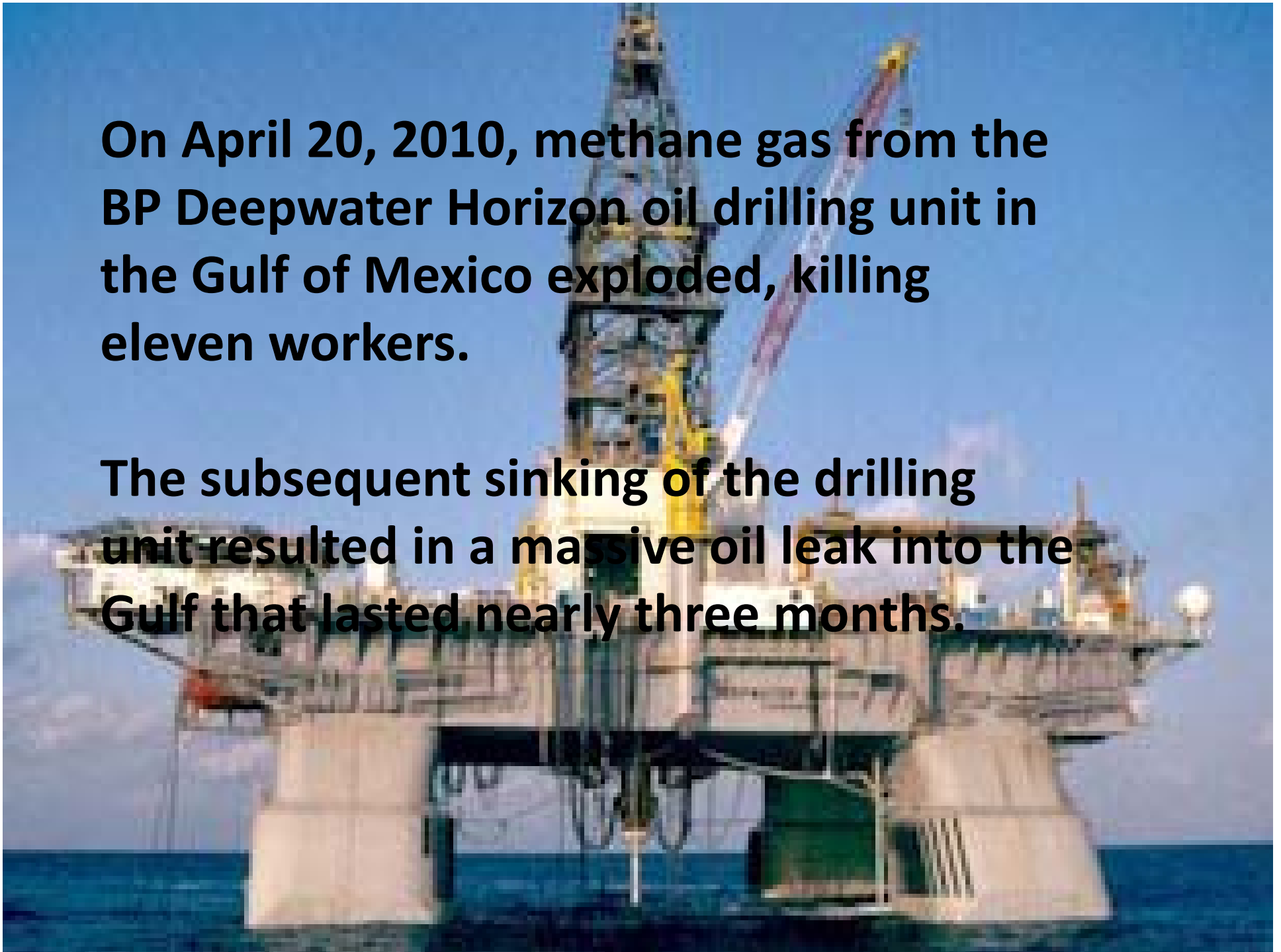


BP / Deepwater Horizon Oil Spill Enhanced Air Monitoring

Tim Slagle
US EPA Region 4
Science and Ecosystem Support Division
Athens, Georgia

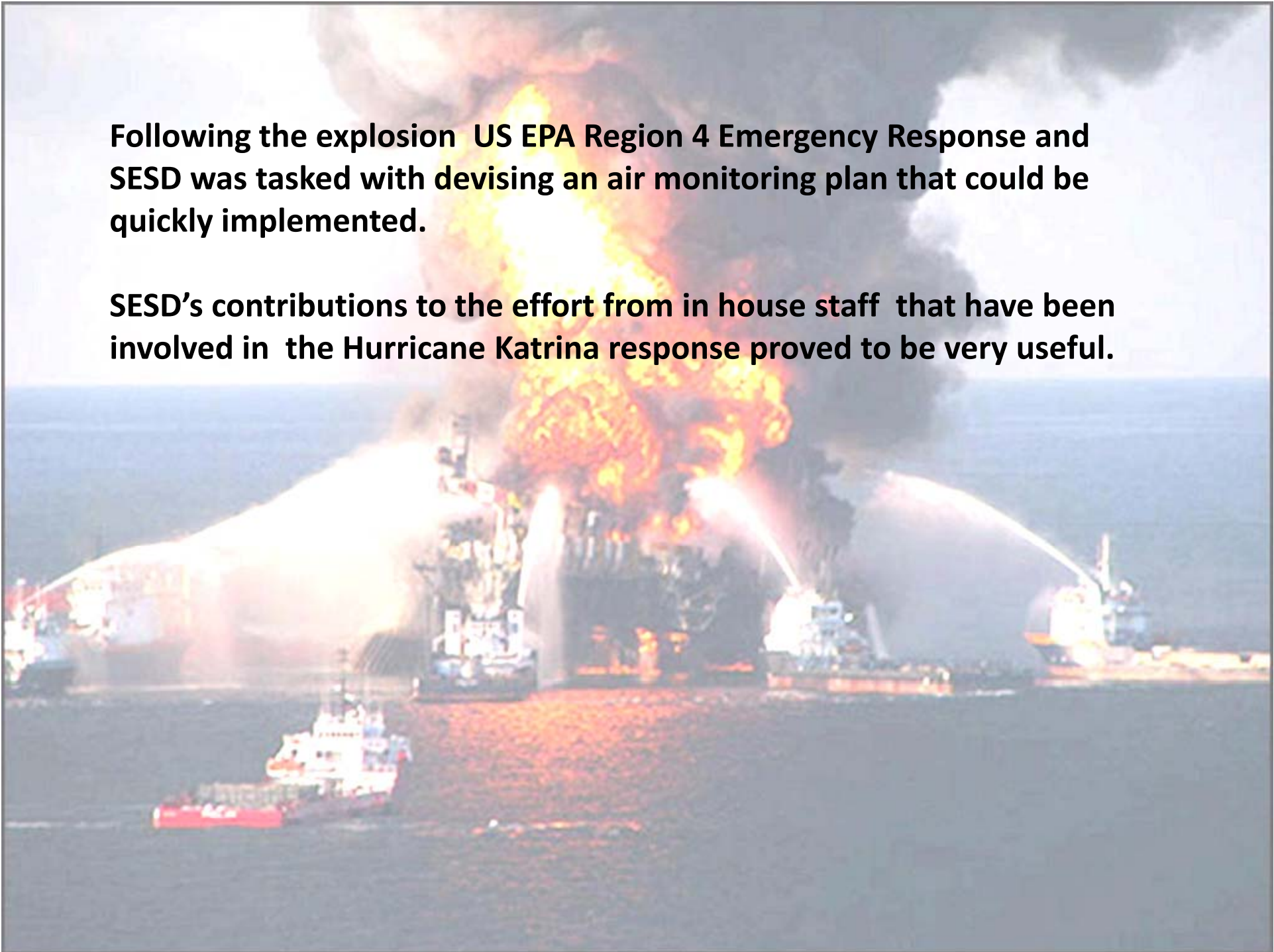
On April 20, 2010, methane gas from the BP Deepwater Horizon oil drilling unit in the Gulf of Mexico exploded, killing eleven workers.

The subsequent sinking of the drilling unit resulted in a massive oil leak into the Gulf that lasted nearly three months.



Following the explosion US EPA Region 4 Emergency Response and SESD was tasked with devising an air monitoring plan that could be quickly implemented.

SESD's contributions to the effort from in house staff that have been involved in the Hurricane Katrina response proved to be very useful.



On April 30th 2010 SESD was asked to Deploy to the Gulf to conduct air sampling

SESD would be implemented into the ICS (Integrated Command System) as a “Special Team “ to conduct air monitoring along the Region 4 coastline that may be affected by the oil spill.

The objective of the air monitoring and sampling will be to confirm the presence of airborne particulates (2.5 microns and smaller), VOCs and SVOCs in air resulting from the off shore in-situ burn, and from possible air quality impacts due to the oil spill coming onshore. The EPA will also be deploying samplers to assist in assessing whether oil dispersants being used on the oil slick are being transported through the atmosphere to populated areas on the coast.

The background image shows an offshore oil rig engulfed in a large fire. A thick, dark plume of smoke rises from the rig, filling the upper left portion of the frame. The rig itself is partially obscured by the flames and smoke. In the foreground, several support vessels are visible on the water, with some spraying water towards the burning rig. The sky is a pale, overcast blue.

SESD Advantages

SESD has a strong working relationship with its state and local air monitoring agencies

SESD has a large inventory of air toxics monitoring equipment (VOC and SVOC)

SESD has an in-house laboratory for analyzing air VOC samples (for a limited time)

SESD has the field expertise and ability for conducting a large scale air monitoring study

SESD staff and in-house ILS (Integrated Laboratory Systems) contractors work together routinely.

- 16 ILS employees participated in the field sampling on a rotational basis

SESD installed VOC and SVOC samplers at 5 established state operated monitoring locations along the Gulf Coastline. Co-located samplers were established at Waveland, MS

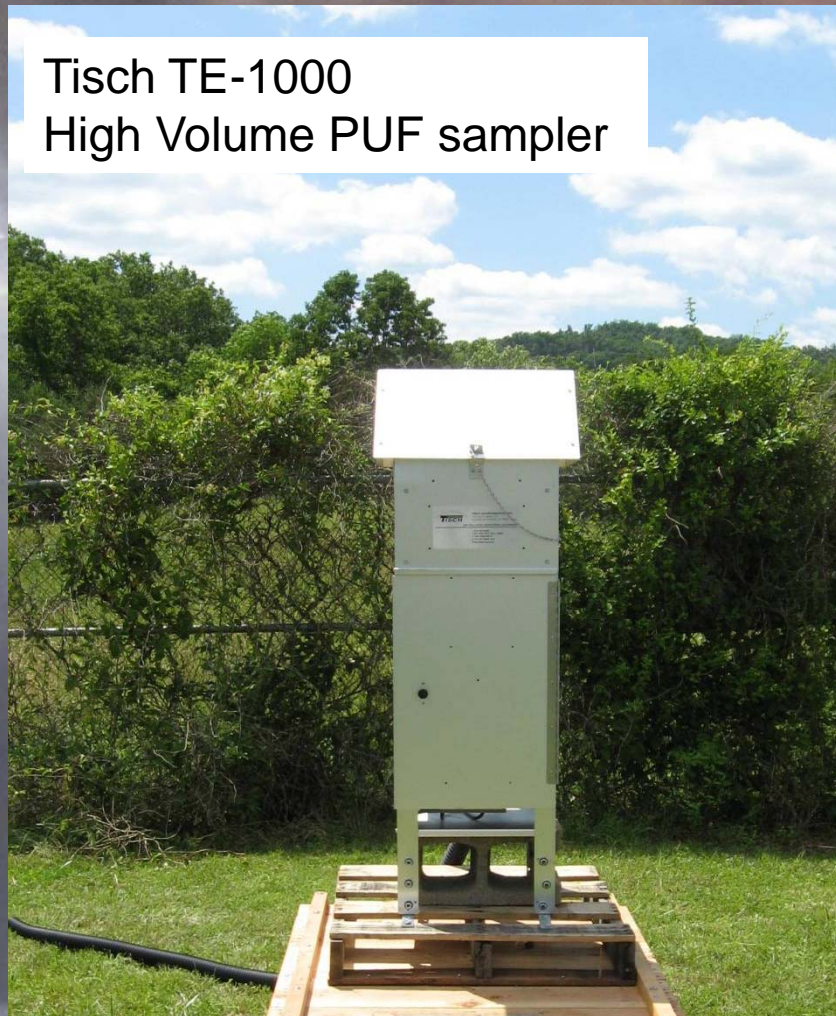


Advantages of using an established monitoring sites:

- Fenced area for security
- 110 volt AC power for high volume SVOC samplers and E-BAM samplers



Tisch TE-1000
High Volume PUF sampler



VOC canister sampler (co-located)
Waveland, MS site

In addition, SESD enhanced the existing PM 2.5 network with additional monitors

- **BAM 1020 - Fairhope, AL**
- **E-BAM - Pascagoula, MS**
- **E-BAM - Fort Walton Beach, FL**
- **E-BAM - Mobile Bay Road, AL**

Previously established PM 2.5 sites

- **TEOM - Waveland, MS**
- **TEOM - Gulfport, MS**
- **TEOM - Panama City, FL**

These monitors were used to track the aerosol concentrations emanating from the smoke plume.



ICS requested that SESD provide an electronic situation report in the morning and afternoon

A laptop computer with cellular modem for the constant flow of reports and e-mails proved to be invaluable

5/28/2010 MORNING

The 24 hour VOC samples are being collected at the 3 augmented fixed sites (Waveland, MS; Gulfport, MS; Fairhope, AL).

The 24 hour SVOC samples are being collected at all the 5 augmented fixed sites (Waveland, MS; Gulfport, MS; Fairhope, AL; Pensacola NAS, FL; Panama City, FL).

No collection problems have been reported to this point.

Greg Noah and Steve Williams from Met One Instruments are hosting an EBAM training session this morning at the Incident Command Center to train the state operators. The state operators will be expected to operate, conduct maintenance, and maintain the monitors. Technical issues prohibited the set up of the third EBAM in Ft. Walton Beach yesterday. The EBAM will be setup this afternoon.

R4 SESD personnel currently working on the air monitoring program:

Group Leader:

Jason Brown (ESAT) (West Run) CP (706) 340-5781

Doug Jager (EPA) CP (770) 597-7644

Field Personnel:

Mike Bowden (EPA) CP (706) 340-8046

Greg Noah (EPA) CP (706) 461-3438

Ian Adams (ESAT) (East Run)

Contact Phone Numbers:

East Run (706) 340-0922

West Run (706) 340-5513

SESD established its home base in Pensacola, FL as a central point which 2 sample teams departed from each morning and returned each evening.

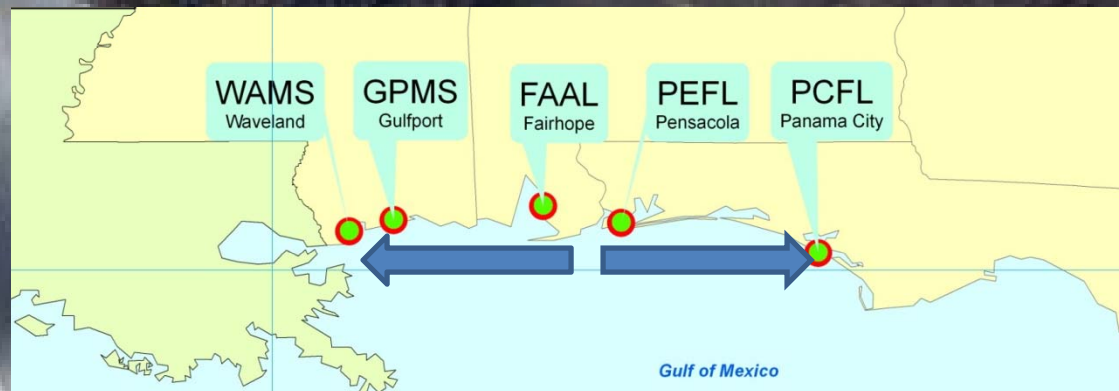
The east run included Pensacola, FL and Panama City Beach, FL
Round trip of 300 miles

The west run included Fairhope, AL, Gulfport, MS and Waveland, MS
Round trip of 320 miles

The VOC canisters were shipped via UPS to the SESD lab at “ends” of the routes in Panama City and Waveland for next day delivery during the week.

Initially, VOC canisters were ferried back to Athens, GA for analysis on the weekends by ILS contractors.

Round trip 800 miles



An aerial night photograph of an industrial facility. A large fire is burning in the center, with bright orange and yellow flames. To the right, a very bright light source, possibly a flare or a large fire, illuminates the scene, creating a strong glare. The background is dark, suggesting a night sky.

VOC sample collection started on May 1, 2010

SESD lab conducted VOC analysis from to May1 until June 2 (33 days)

6 liter, 24 hour canister samples

Analysis by TO-15 GC/MS

64 Target Analytes

SVOC sample collection started May 16 (126 days)

High-Volume 24 hour PUF/ XAD cartridges

Analysis by Eastern Research Group

TO-13 for Poly Aromatic Hydrocarbons

22 Target Analytes

VOC and SMOC analysis started June 3 by ERG (107 days)

VOC analysis by TO-15 GC/MS

60 Target Analytes

Speciated Non-Methane Organic Compounds (SNMOC) by GC/FID

78 Target Analytes

Sample collection ended September 18, 2010

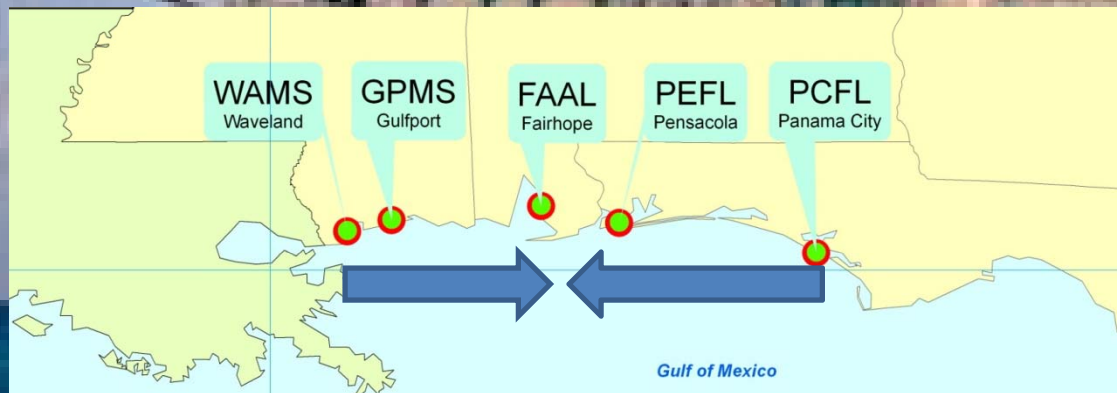
Changes...

When ERG was awarded the contract the samples could no longer be ferried to the lab for analysis on the weekends (725 miles one way).

Headquarters insisted that samples had to be shipped for analysis daily.

Alternatively, Delta Dash was used briefly which required the 2 teams to move their base of operation from Pensacola, FL to Panama City, FL and Waveland, MS. The teams would sample toward Mobile, AL for shipment at the airport. This was a problem with logistics and a 300 mile sample run.

This was later replaced with expensive shipping of the samples on the weekends via UPS-critical.



Data Summary

- **124 field sampling days**
- **923 VOC canisters**
 - Data points by TO-15 = 56,248
 - Data points by SNMOC= 55, 068
- **831 SVOC (PAH) samples**
 - Data points by TO-13 = 18,282
- **PM2.5 Data**
 - around the clock data capture
 - 3 EBAM sites
 - BAM 1020
 - 2 additional state sites
- **Daily calls to review data**
 - Region 4
 - National; Regions 4 and 6, OAQPS, Headquarters

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The Good Things

- Experienced Field people who have worked together before
- Experienced Laboratories who understand changing priorities
- An approved plan (QAPP) BEFORE we left
- SOPs developed from the Air Toxics in Schools Project
- Pre-printed logbooks
- Daily calls for data discussion; regional and national
- Hotels that would allow us to set up shop in the rooms and constant mail

Drawbacks

- Weekend shipping - cost usefulness
- Travel miles, GPS essential
- Temp extremes; heat exhaustion
- Fatigue