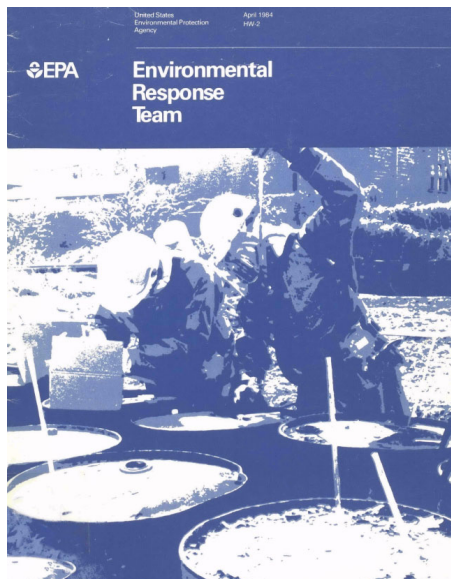


U.S. EPA Environmental Response Team



**Special Team under the National Contingency Plan
Established 1978**

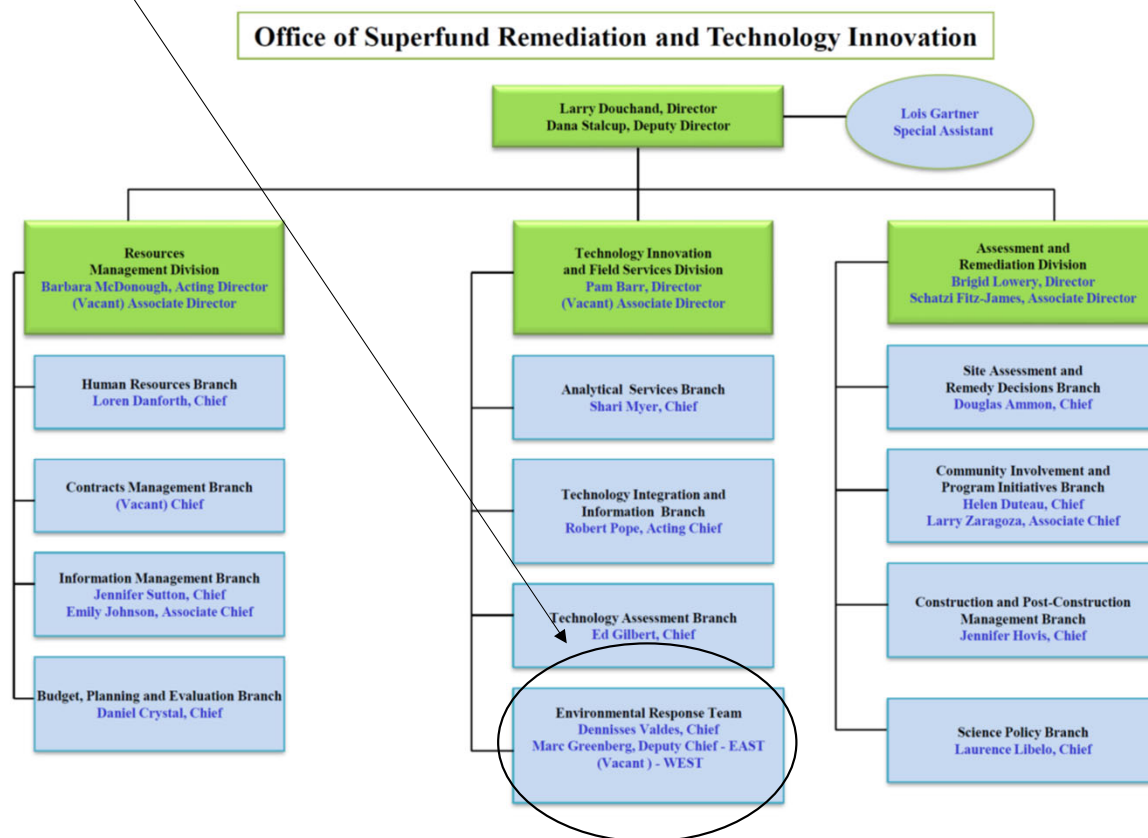
**Office of Land and Emergency Management/
Office of Superfund Remediation and Technology Innovation/
Technology Innovation and Field Services Division/
Environmental Response Team (ERT)**





Environmental Response Team (ERT)

- Office of Land and Emergency Management
- Office of Superfund Remediation and Technology Innovation
- Technology Innovation and Field Services Division
 - **ERT**
 - TIIB
 - TAB
 - ASB





Environmental Response Team (ERT)



ERT Supports EPA Programs, Regions & National Response Framework activities:

- Includes over 30 experienced responders & technical experts:
 - biologists, chemists, engineers, environmental scientists, health physicists
 - specialized field and laboratory equipment
- Provides scientific and field support to Regions for Superfund remedial, removal, emergency response including disasters, oil spills, and some international consultation
 - Response readiness and planning for immediate public safety.
 - variety of work helps ensure response skills stay current
- Provides field technical expertise to OSCs and RPMS at approx. 100 sites per year (e.g., site investigations, data management, health and safety)

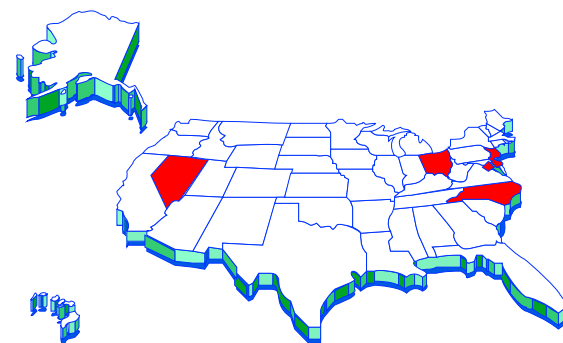




ERT Response Support Capabilities



- Field and advisory scientific and engineering expertise
- Equipment for monitoring, sampling and assessment of complex & unique contaminants across all media
- Mobile and fixed analytical laboratory support
- Detection, assessment, decontamination & disposal – incl. radioactive materials
- Oil spill response
- Level-A, –B and -C capabilities

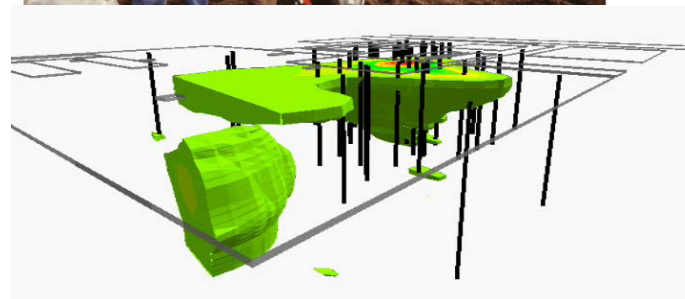
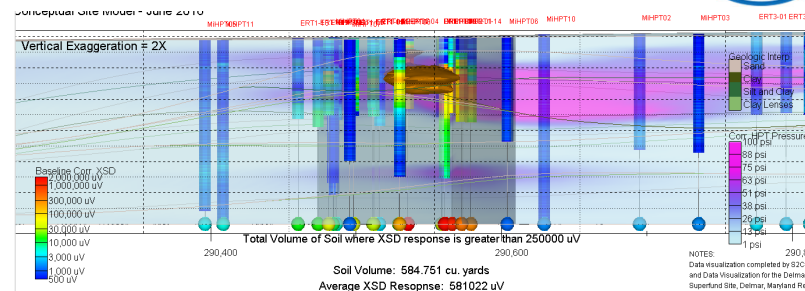




Major Lines of Support



- Fate & Transport
- Hydrogeology, Groundwater, Modeling
- Vapor Intrusion / Air Sampling (incl. indoor)
- Field & Lab Analytical Support; QA/QC
- Risk Assessment
- Direct sensing
- Remedial Design & Implementation
- Radiological Response
- Contaminated Sediments
- Data Management: planing, collection, storage, use
- Decision Support Tools– Data visualization & Viper
- Health and Safety – OLEM safety officer



Trace Atmospheric Gas Analyzer (TAGA)



Uses real-time MS/MS, GC/MS & GC systems

- Monitor/analyze toxic industrial chemicals and chemical warfare agents in air
 - Volatile and semi-volatile priority pollutant list at ppbv levels
- Can be used as a mobile lab for real-time monitoring (i.e., driving nearby site/incident)
- Can be used as a staged laboratory
- Onboard data reduction, GPS and mapping capabilities
 - Rapid production of tables & figures
 - Map data into one platform such as Google



Vapor Intrusion Site Approach

INITIAL SAMPLING

Sub-slab Location

INITIAL TAGA MONITORING

Ambient Air Investigation

Lifestyle Source Investigation

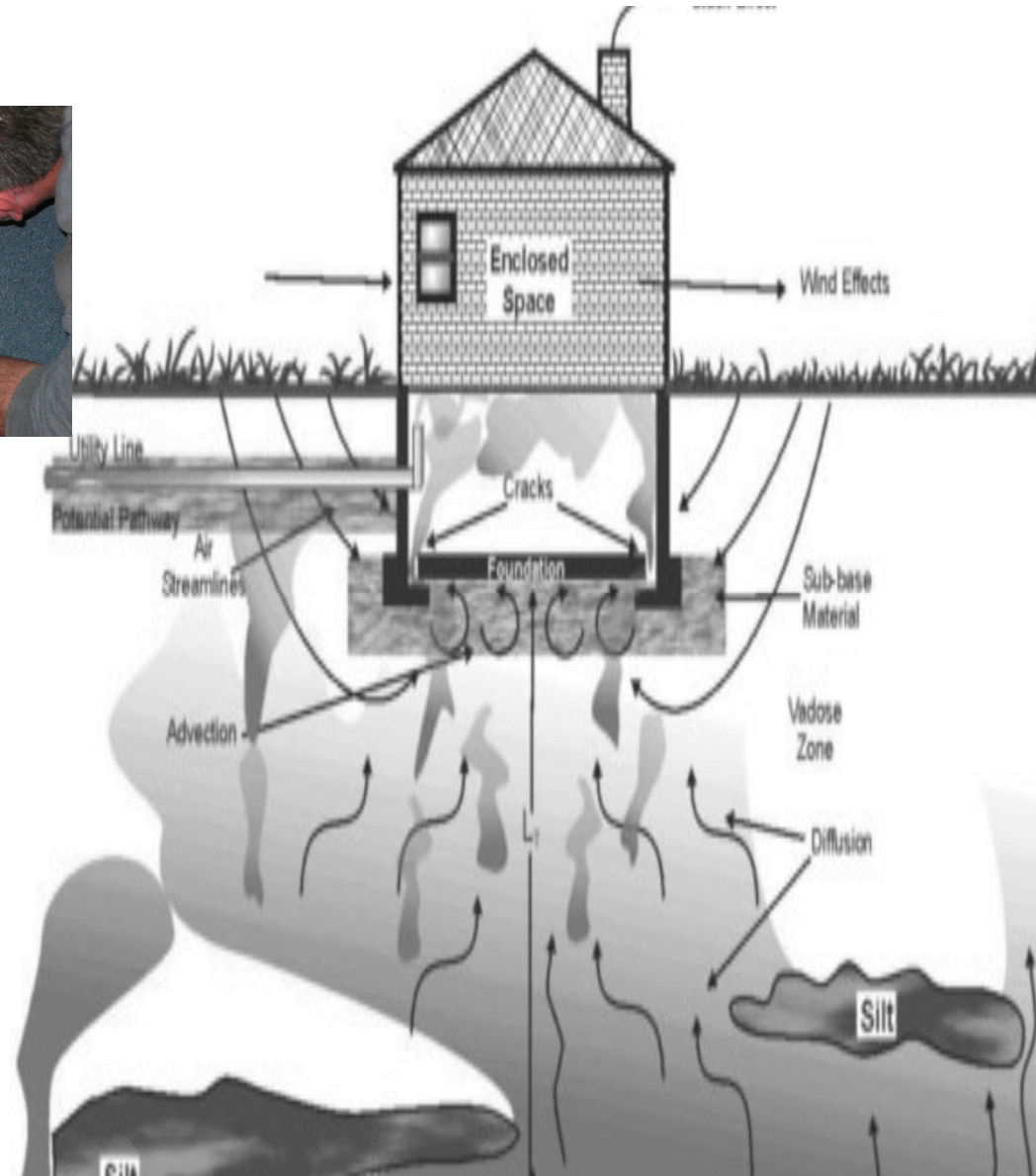
Subsurface Source Investigation

SUBSEQUENT SUMMA CANISTER SAMPLING

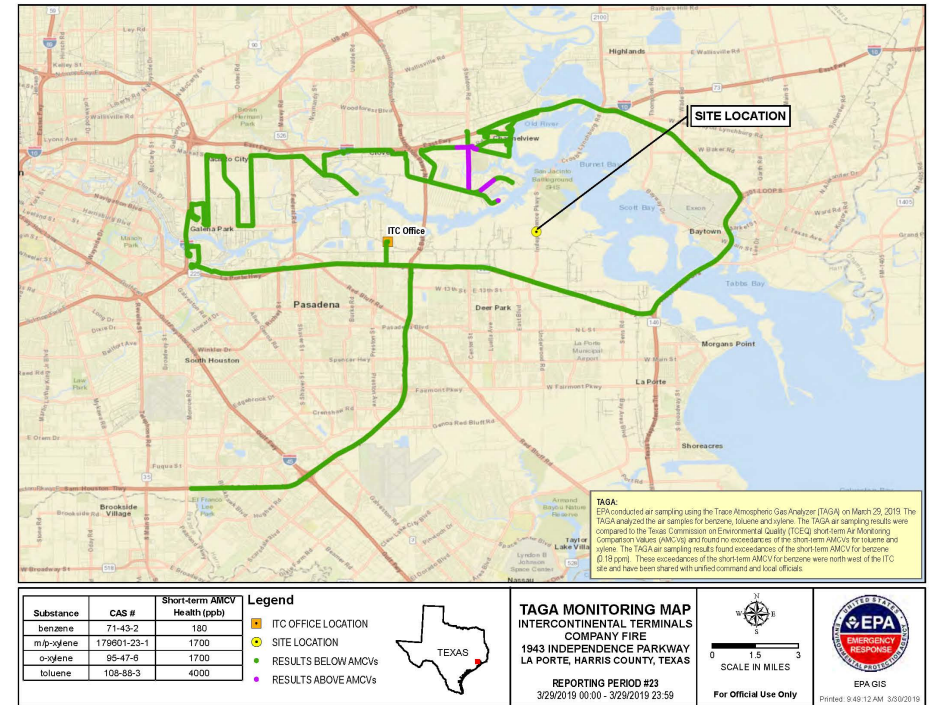
Sub-slab Location

Basement Location

First Floor Location

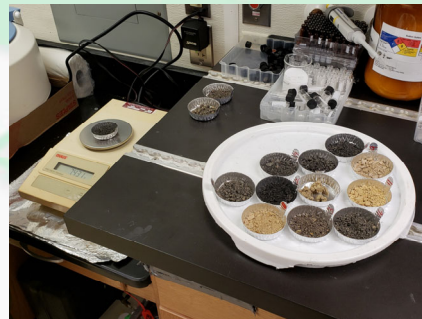
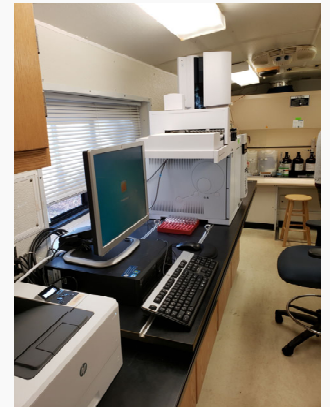


TAGA mobile monitoring – Intercontinental Terminals Company Fire Response



Laboratory – in house and field

- **Fixed lab: Multimedia analytical methods / techniques - PCB - VOCs - Air toxics (TO-15)**
- **Recalcitrant compound method development**
- **Cost effective on-site analytical support— instrumentation and/or mobile lab**



Onsite analysis



Super Typhoon Yutu (Saipan and Tinian Islands)

ERT set up and operated a field analytical laboratory to support cleanup of soil contaminated by transformers that were breached during the storm

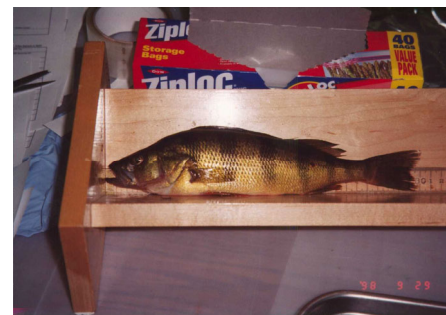




Ecological and Human Health Risk Assessment



- **Experienced risk assessors & technical experts**
- **Provide scientific and technical expertise to RPMs and OSCs regarding risk assessment and risk assessment issues**
 - Broad technical ecological and human health risk support
 - Boots on the ground data collection to support risk assessments
 - Risk document review
 - Five year and remedy reviews
 - Scientific and Technical Risk Task Order Contract available





ERT Scientific Dive Team

- Contaminated and Clean Water Dive Operations
- Multimedia Sampling (Sediment, Surface Water, Pore Water and Biota)
- Dive Observation/Video Documentation
- Dive Experience in Wide Range of Dive Environments/Dive Conditions
- Passive Samplers - Bioavailability





ERT Radiological Response Capabilities



■ On-site radiation detection & measurement

- Exposure Monitoring
- Contamination Surveys & Sampling
- Air Sampling
- Real Time Gamma Spectroscopy
- Gamma Radiation Mapping
- Contractor Oversight





HYDROGEOLOGICAL AND GEOPHYSICAL SUPPORT





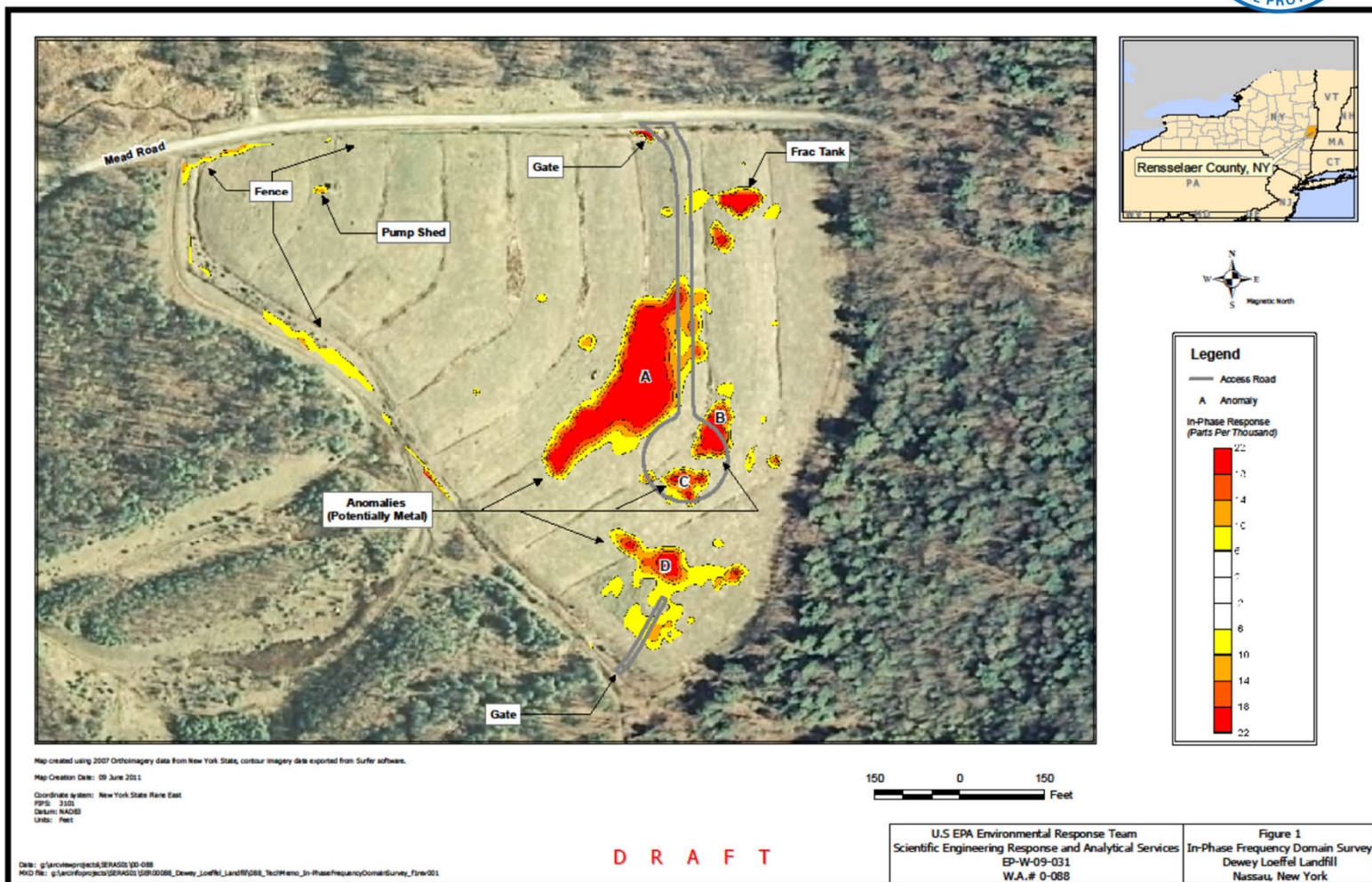
Geophysics

EM-31 In-phase survey



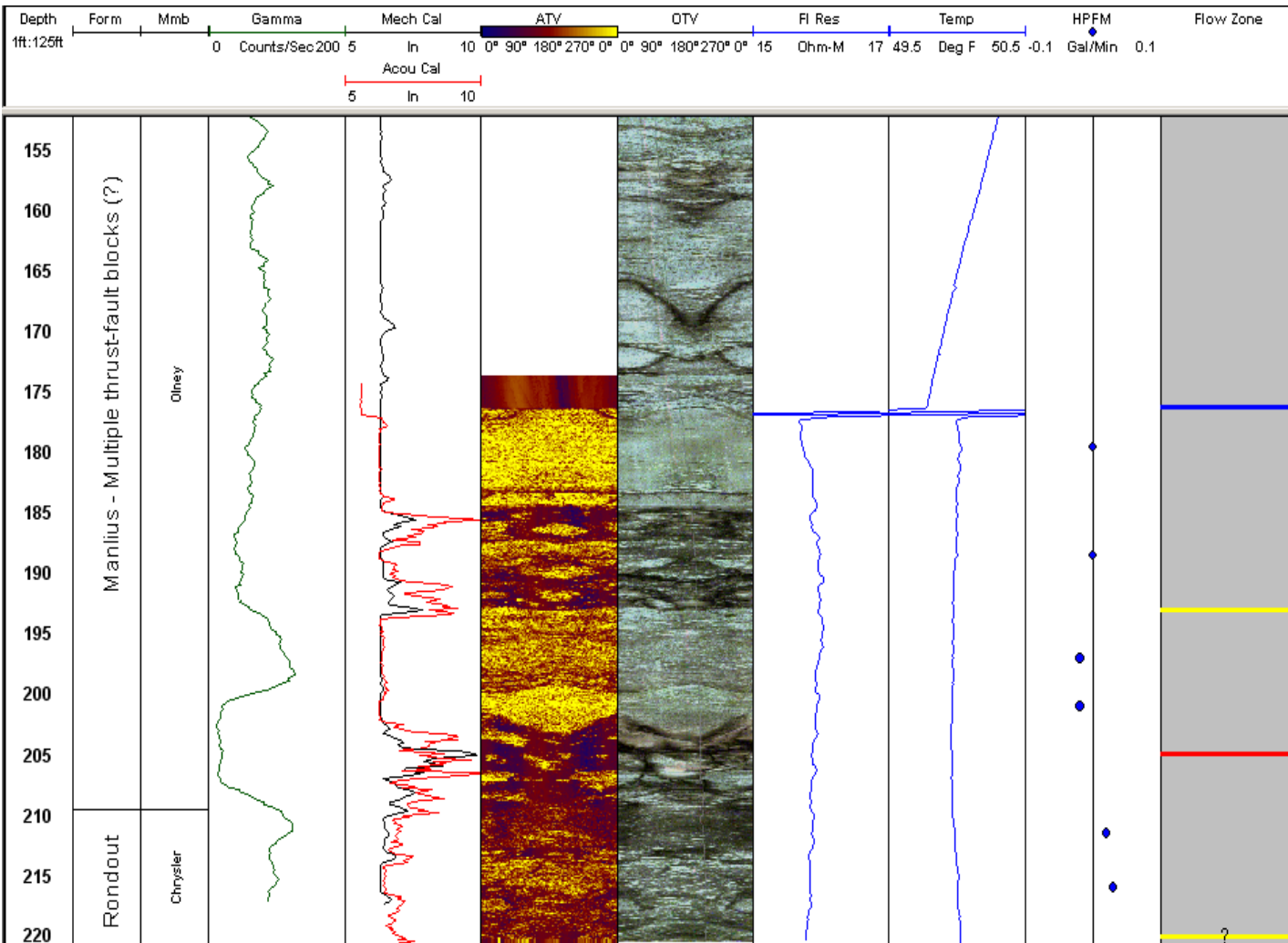
Surficial geophysical surveys

- Include magnetics, electromagnetics, ground penetrating radar (GRP)
- Can be used to delineate subsurface metal features (drums, USTs, etc.)
- Can identify potential preferential migration pathways such as paleo stream channels.





Groundwater and Down-Borehole Geophysics

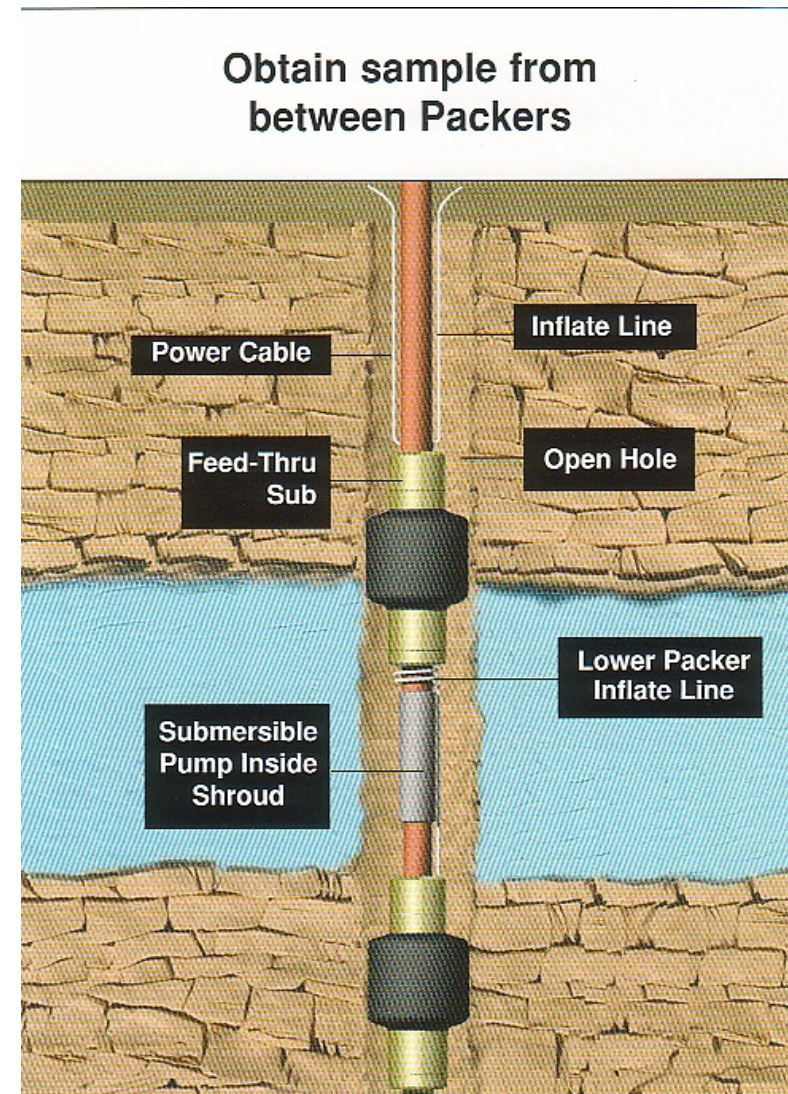


- Multi-display borehole geophysical log
- Technique in open rock wells can provide valuable insight to the geology, hydrogeology, and geochemistry of a site



Groundwater Straddle Packer Testing

Isolate sampling zones based on the geophysics with a focus on the fracture zones

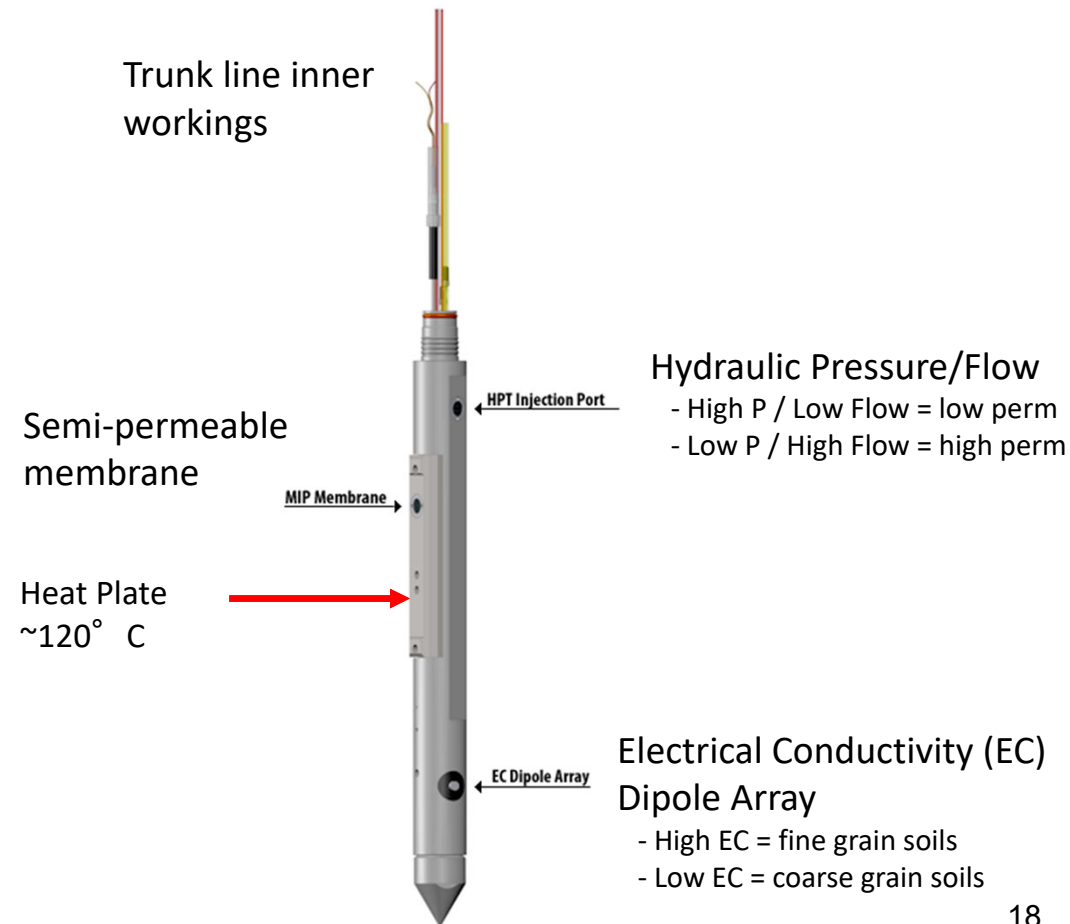


Direct Push Technologies




Trunk line threaded through drill rods

Membrane Interface Hydraulic Profile Tool (MiHpt)



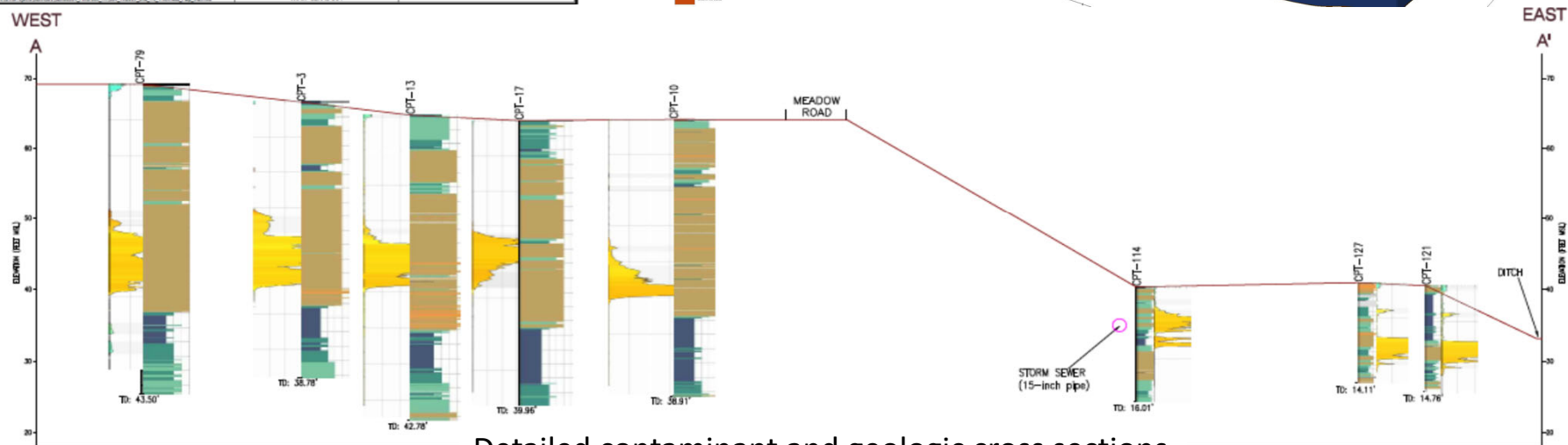
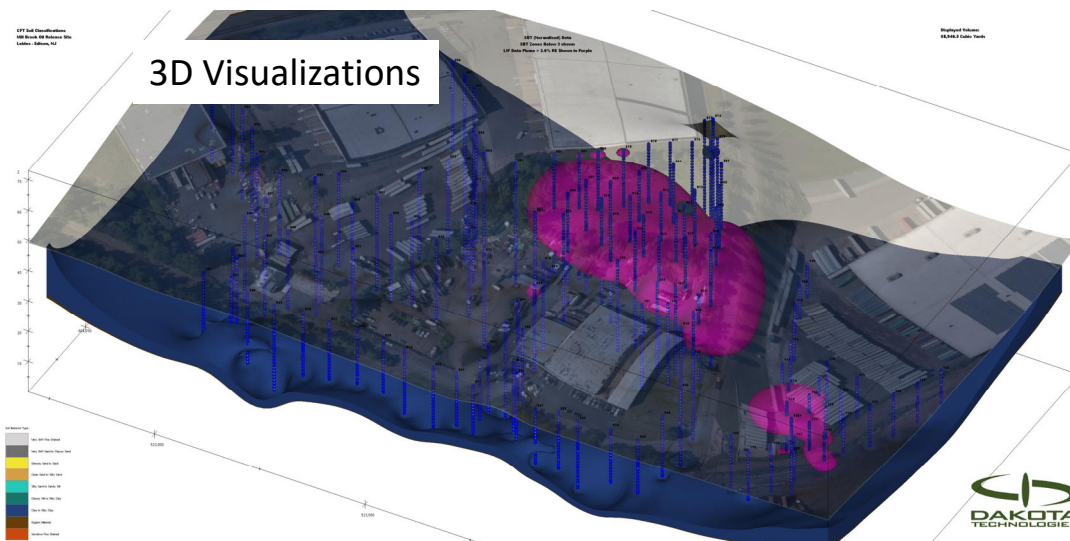
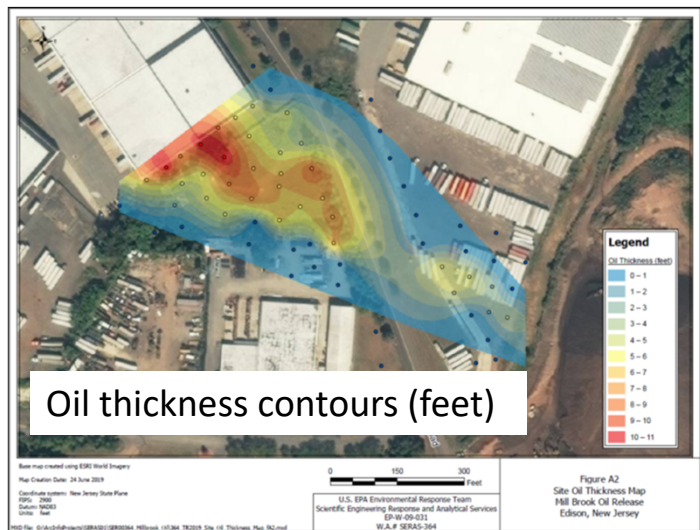
Mill Brook Oil Release

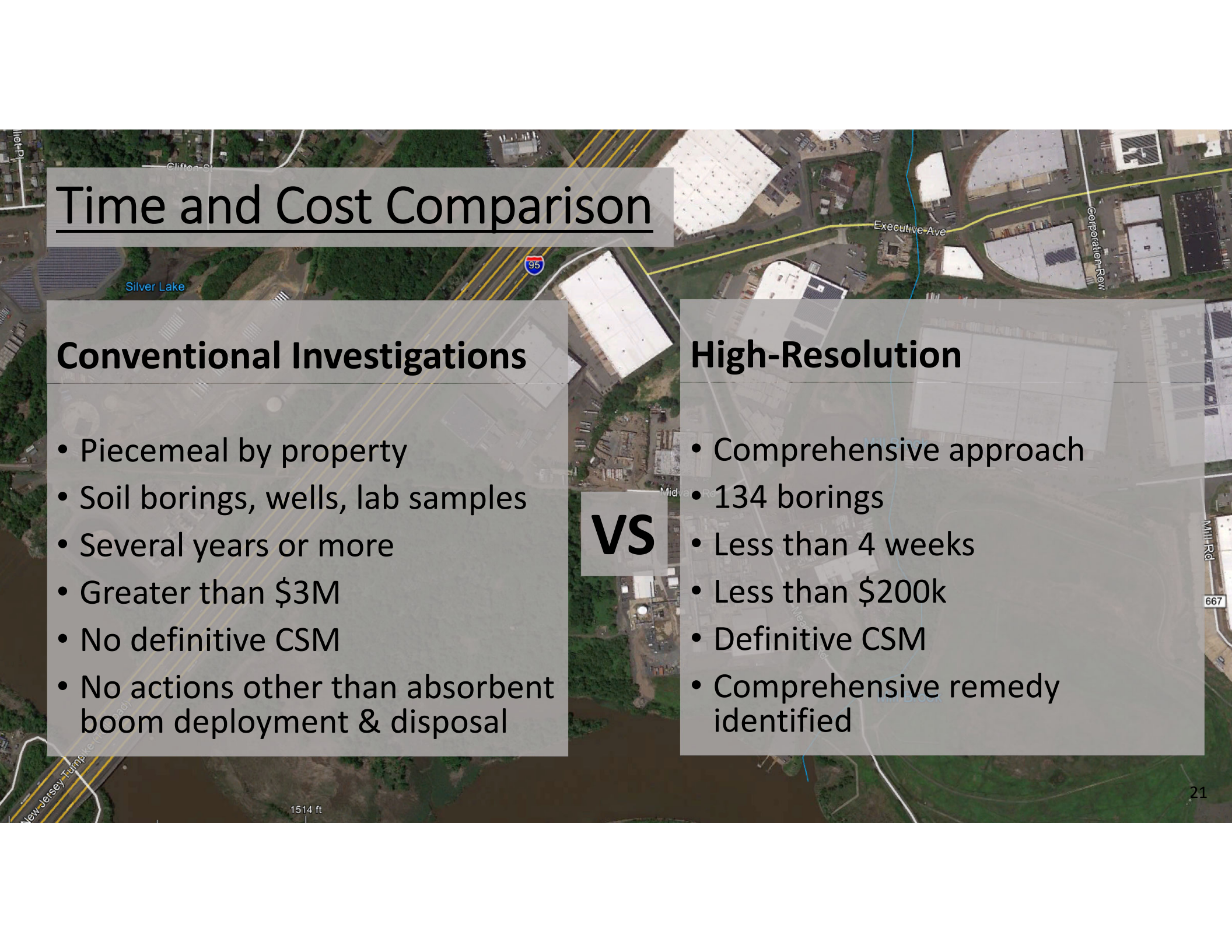
High-Res Boring Plan

- Multiple properties 
- Accessible former refinery operations
- Oil seep and discharge areas



Work Products





Time and Cost Comparison

Conventional Investigations

- Piecemeal by property
- Soil borings, wells, lab samples
- Several years or more
- Greater than \$3M
- No definitive CSM
- No actions other than absorbent boom deployment & disposal

VS

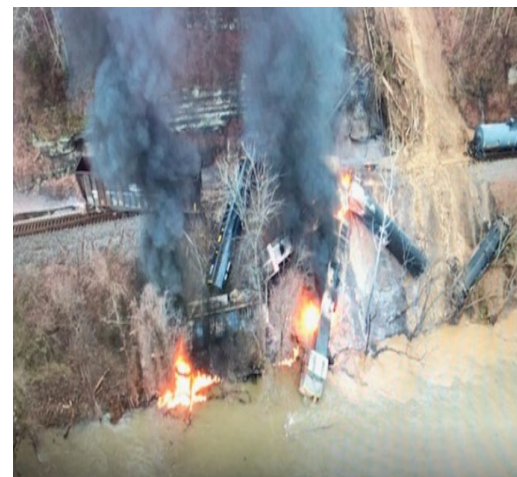
High-Resolution

- Comprehensive approach
- 134 borings
- Less than 4 weeks
- Less than \$200k
- Definitive CSM
- Comprehensive remedy identified



ERT Responds to Chemical and Oil Spills

- General support: bioremediation, booming strategies, response equipment, in-situ burning, dispersants, disposal, shoreline assessment/cleanup, tracer studies
- ERT provides National Contingency Plan/Oil Pollution Act (NCP/OPA) interpretations for responders to oil spills
- ERT provides classroom and hands-on field training for responding to oil spills in slow and fast water incidents





Community Air Monitoring & Sampling



- Air monitors can be stationed throughout a township
- “Lunchbox” type multi-sensor monitoring instrument
 - PID for ppm level VOCs
 - Up to 2 specific sensors for other toxics (e.g., H_2S , HCN)
 - LEL, O_2
- Monitors connected to a telemetric network for real-time evaluation by users
- Summa cannisters for sampling





Monitoring and ERT Viper Support



VIPER: DEPLOYMENT MANAGER

Welcome hoppe.michael@epa.gov! [Log Out] [Change Password]

Deployments (65)
Help

[R03 Papal Visit Deployment](#)

All Times Eastern, DST
Observed

Start: 9/23/2015
End:
Description:

2384-2: Operations PM 092415

Start: 9/24/2015 5:32:13 PM
End: 9/27/2015 11:00:49 PM
Description: All locations, running on REOC VIPER laptop
Location: Philly

[View Recent Data in Google Earth](#)

Instruments and Latest Readings:

AreaRAE(s):

Instrument ID	Connection	Location	GMMA	LEL	HCN	VOC	H2S	CI2	NH3	Received
(203) AreaRAE * Broad & Sansom	Down	39.9495320, -75.1640030	12 uR/hr	2.3 %	0.3 ppm	0.0 ppm	0.2 ppm			9/27/2015 11:00 PM
<div style="display: flex; justify-content: space-between; align-items: center; font-size: 0.8em;"> H2S > 0.3 WARNING - High Alarm: 0.3; Low Alarm: n/a Reading ID: 8464704 H2S: 0.3 ppm 9/27/2015 10:59 PM </div>										
(34) AreaRAE * 7th & Race	Down	39.9550730, -75.1509350	5 uR/hr	0.0 %		0.0 ppm		0.2 ppm	0.0 ppm	9/27/2015 11:00 PM
(39) AreaRAE * 22nd & Green	Down	39.9653950, -75.1739850	2 uR/hr	0.0 %	0.0 ppm	0.0 ppm	0.0 ppm			9/27/2015 11:00 PM
(40) AreaRAE * 20th & Callowhill	Down	39.9610020, -75.1722370	11 uR/hr	0.0 %		0.2 ppm		0.0 ppm	0.0 ppm	9/27/2015 11:00 PM
(46) AreaRAE * 15th & Spring	Down	39.9568150, -75.1645950	9 uR/hr	0.0 %	0.0 ppm	0.0 ppm	0.0 ppm			9/27/2015 11:00 PM
(52) AreaRAE * 6th & Walnut	Down	39.9474370, -75.1514300	11 uR/hr	0.0 %		0.3 ppm		0.0 ppm	0.0 ppm	9/27/2015 11:00 PM
(86) AreaRAE * 18th & Arch	Down	39.9553300, -75.1701420	9 uR/hr	0.0 %		0.1 ppm		0.0 ppm	0.0 ppm	9/27/2015 11:00 PM
(89) AreaRAE * 3rd & Chestnut	Down	39.9487280, -75.1458630	12 uR/hr	0.0 %	0.2 ppm	0.0 ppm	0.0 ppm			9/27/2015 11:00 PM
(90) AreaRAE * 18th & Wood	Down	39.9600630, -75.1684400	7 uR/hr	0.0 %	0.2 ppm	0.0 ppm	0.0 ppm			9/27/2015 11:00 PM
(95) AreaRAE * Cherry & Woodstock (Church)	Down	39.9566850, -75.1730050	6 uR/hr	0.0 %	0.0 ppm	0.0 ppm	0.0 ppm			9/27/2015 11:00 PM
(97) AreaRAE * 23rd & Summer	Down	39.9588630, -75.1769000	--- uR/hr	0.0 %		0.0 ppm		0.2 ppm	0.0 ppm	9/27/2015 11:00 PM
(98) AreaRAE * 17th & Ranstead	Down	39.9520800, -75.1697250	8 uR/hr	0.0 %		0.0 ppm		0.0 ppm	0.0 ppm	9/27/2015 11:00 PM

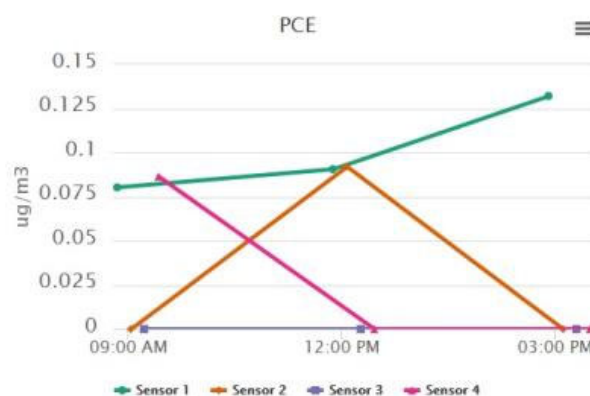
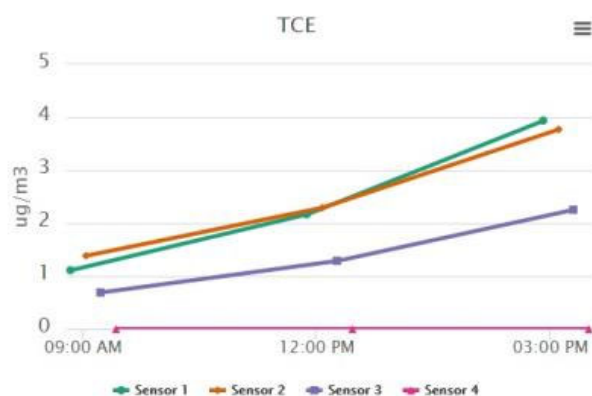


Site Highlight – R9 AMCO



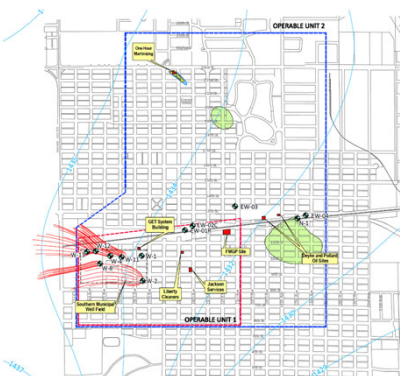
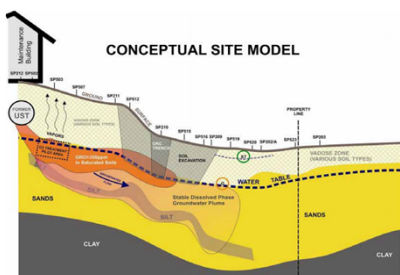
- Viper was used to collect perimeter and work zone VOC readings and meteorological observations during remediation
- Low level GC/MS real-time analysis at set sampling points was conducted by a vendor. The data were easily delivered to the Viper system
- R9 developed a process to pull data from Viper and create custom reports on a time delay (to allow for QC) basis to share with the public

February 26, 2017

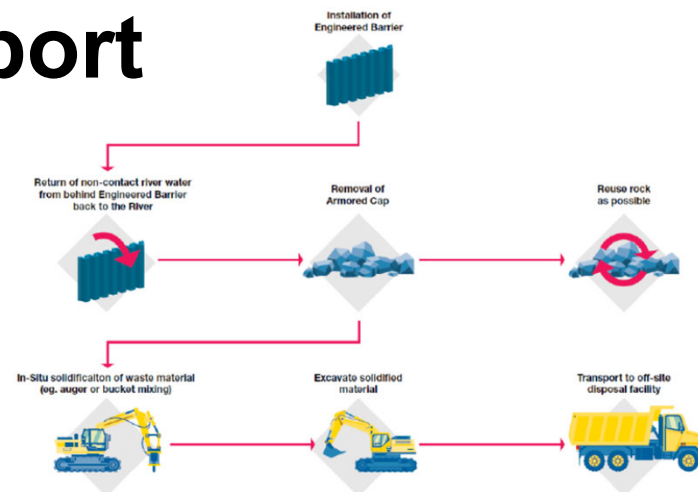




ERT Engineering Support



- **General support: Assist in developing and updating Site Conceptual Models (CSMs), remedial strategy, remedial design**
- **Provide groundwater model development and review services**
- **Provide advice and support on remediation system design, and construction oversight support is available**





Engineering Support: Vegetative Slope Stability Analyses



- Performed an emergency evaluation of fire impacted slopes
- Concern about slope stability as rain approached
(e.g., rockfalls, land slides, catastrophic collapse)
- Used geotechnical engineering analytical model
- Landslide risks were found to be of concern



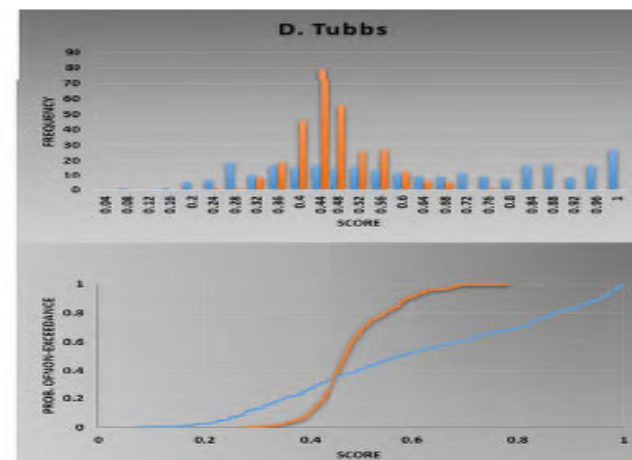
Photo 29: Evidence of road washout; fill material and straw placed on the hillside to prevent further material loss.



Photo 31: Soil piping likely related to the burning of root structures.



Photo 30: Earth cracks on a burned surface in the Mark West Springs area of Sonoma County.





Incremental Sampling



- Experience in design and implementation of Incremental Sampling for remedial site assessments
- Can reduce assessment costs while providing representative data
- Compatible With On-site Analysis of Wide Range of Contaminants for Rapid Assessments of Large Areas





ERT is an in-house resource to the program and regions



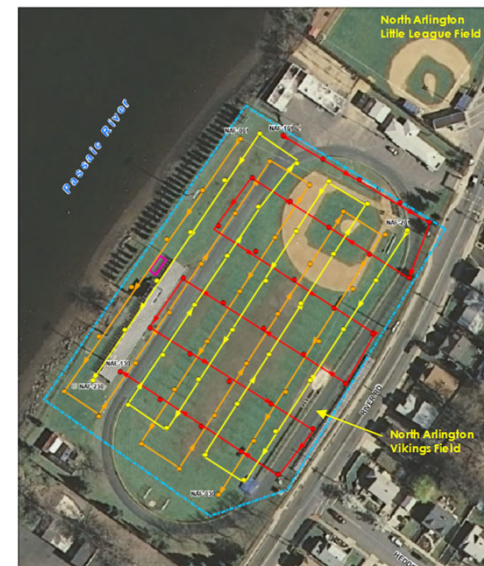
- National expert technical support to RPMs, OSCs and the Superfund program
- Consultation and/or direct field support
- Solve problems
- Clean up contaminated sites
- Provide training

ERT Website

<http://www.epa.gov/ert>

TechHub link

https://usepa.sharepoint.com/sites/oswer_Community/superfundtechsupport/SitePages/Tech%20Hub%20-%20Search%20Resources.aspx





Requesting Support from ERT



Angela Carpenter

Acting Branch Chief

Edison, NJ

212-637-4435

Carpenter.Angela@epa.gov

Marc S. Greenberg, Ph.D.

Deputy Branch Chief – East

Edison, NJ

732-452-6413

greenberg.marc@epa.gov

Ramon Ortiz, P.E.

Deputy Branch Chief

Las Vegas, NV

702-784-8006

ortiz.ramon@epa.gov

OR CALL ANY ERT MEMBER!

732-321-6740 (Edison main)

702 784-8000 (Las Vegas main)

- ▶ *ERT generally funds its own personnel, including site related travel.*
- ▶ *Salary time and travel costs are documented using site charge numbers provided by the RPM or OSC. This is for cost recovery purposes.*
- ▶ *ERT contractor support – Available if needed following discussions with you. We have a process for committing funds to the SERAS contract.*

U.S. EPA Environmental Response Team

Special Team under the National Contingency Plan
Established 1978



43+ years of Service
1978 to 2021

...and more to come!

