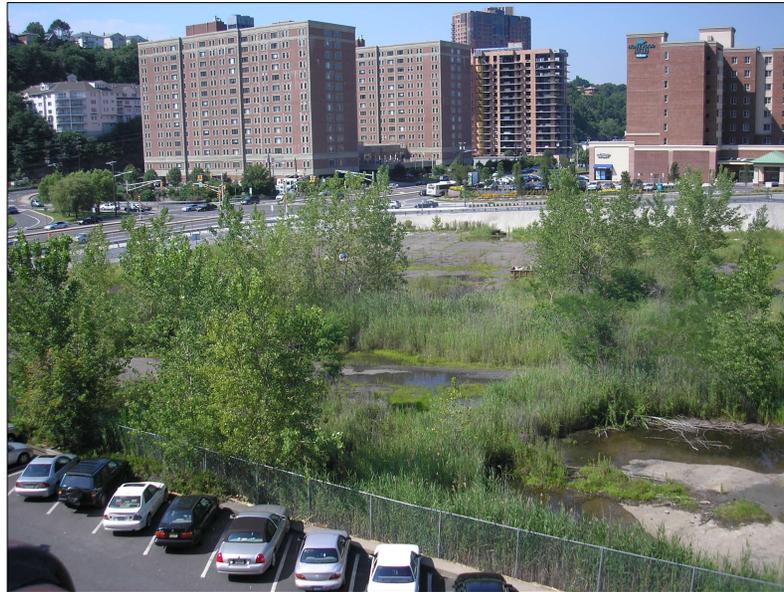




# Public Information Session



## Quanta Resources Superfund Site OU1 Remedial Investigation Results

July 29, 2008

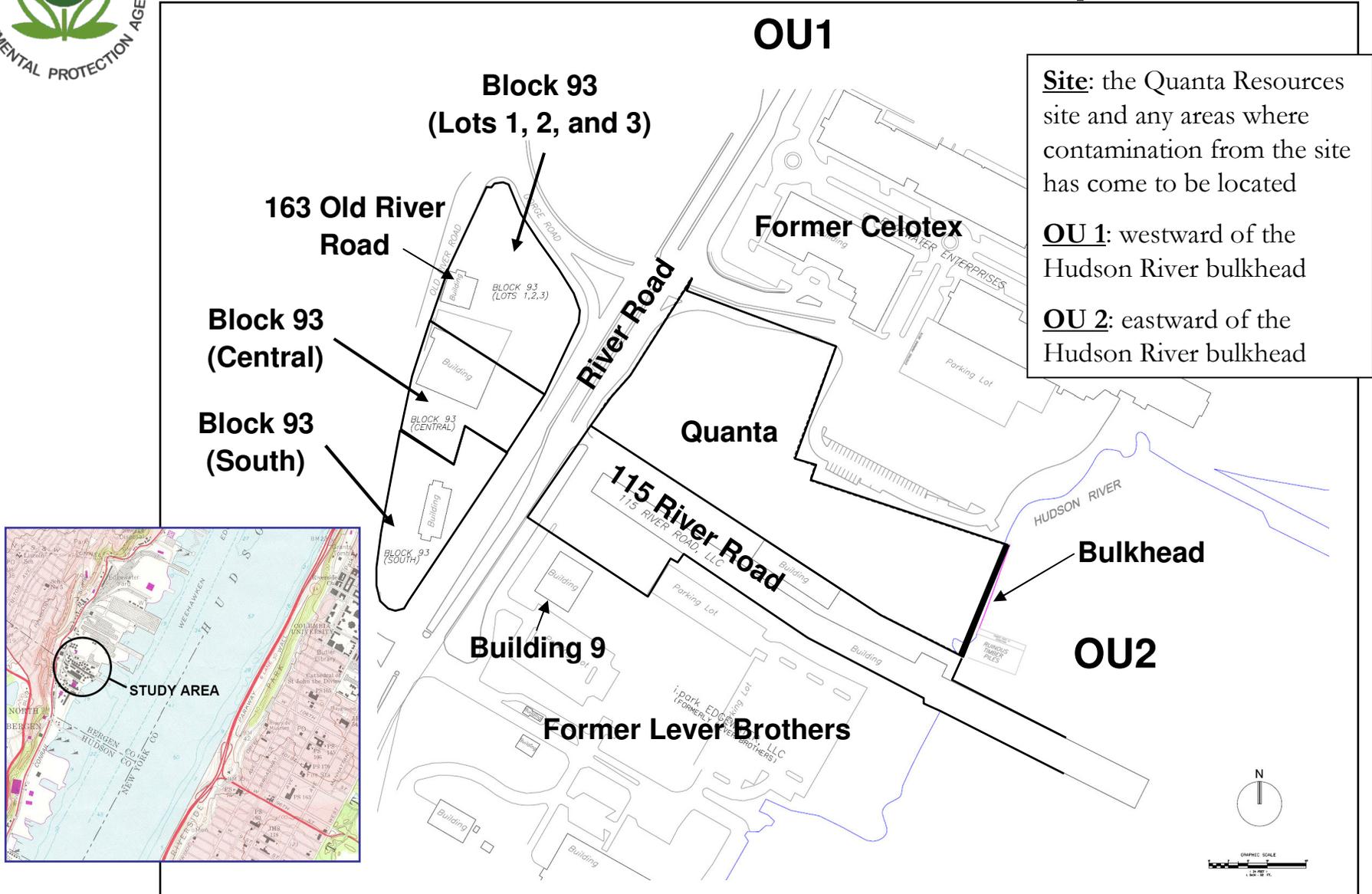


# Agenda

- Series of Two Public Information Sessions
- Tuesday, July 29<sup>th</sup>, 2008
  - Overview of Site
  - Summary of Remedial Investigation Results for Land Portion--Operable Unit 1 (OU-1)
    - Coal Tar/Non Aqueous Phase Liquid (NAPL)
    - Vapor Intrusion Evaluations
    - Final Phase of Field Investigation and Schedule
- Tuesday, August 5<sup>th</sup>, 2008
  - Edgewater Community Center: 7:00 PM
  - Continued Summary of Remedial Investigation Results for Land Portion (OU1)
    - Soil
    - Groundwater



# Site Location and Site Map





# Former Operations

- Sulfuric Acid Manufacturing Plant
  - Operated mid 1800's to 1957
  - Waste included "pyrite cinder"
  - High in metals, including arsenic
- Coal Tar Distillation Plant (1878-1971)
  - Coal tar was transported onto site for distillation
  - Theoretically, no waste generated—only spills
  - Produced pitch, asphalt, tar paper, paint, naphthalene
- Waste Oil Recycling (1974-1981)
  - Several owners
  - Closed by NJDEP



# Remedial Investigation

- **The Site is Sufficiently Understood for Purposes of Evaluating and Selecting Options for Site Remediation**
  - Sources of contamination have been characterized
  - The nature and extent of contamination has largely been determined. Data gaps to the west, southwest, and near the bulkhead are currently being addressed through a final supplemental investigation.
  - Potential risks to human health and the environment have been assessed
  - No immediate risk to human health and the environment
  - Alternatives for addressing contamination and long term risk are being evaluated in the Feasibility Study



# NAPL Definitions

- NAPL (Non Aqueous Phase Liquid) on Site
  - Hydrocarbon liquids that do not readily mix with or dissolve in water (non-aqueous)
  - Examples include coal tar and spilled oil
  - Free-phase NAPL
    - May be able to flow and collect in monitoring wells
    - Mobility dependent on physical properties of NAPL & subsurface
  - Residual-phase NAPL
    - Immobile liquid trapped in pore space of soil
    - Will not collect in monitoring wells
    - Does not migrate
  - “Solid” Tar
    - Immobile non-liquid, also called “pitch”
    - Soft and hard tar in soil. Can have “taffy” consistency.
    - Shallow - can result in “tar boils” as a result of near surface heating by sun/air
- It is difficult to tell the difference between Free-Phase NAPL and Residual-Phase NAPL in the field
- Previously immobile NAPL can mobilize based upon changes in the pore pressure, as could happen with site development (filling). In other words, NAPL which is currently stable can begin to move if site conditions change.



# RI Characterization is Comprehensive

- **Field Investigations**
  - Over 3,600 soil analyses
  - Data from 37 groundwater monitoring locations over 4 rounds of sampling
  - Coal tar recovery testing
    - NAPL recovery using wells is only feasible in certain locations
  - Test pitting to determine if remnant underground utilities are acting as conduits for coal tar
    - Several conduits on Quanta showed NAPL adjacent
  - Coal tar/NAPL distribution refined
  - Comprehensive arsenic source sampling/evaluation
    - Complex geochemistry
  - Quarterly coal tar/NAPL thickness measurements
    - Dec '05, Mar '06, May '06, and Aug '06
- **Incorporation of data and/or evaluations from adjacent properties**



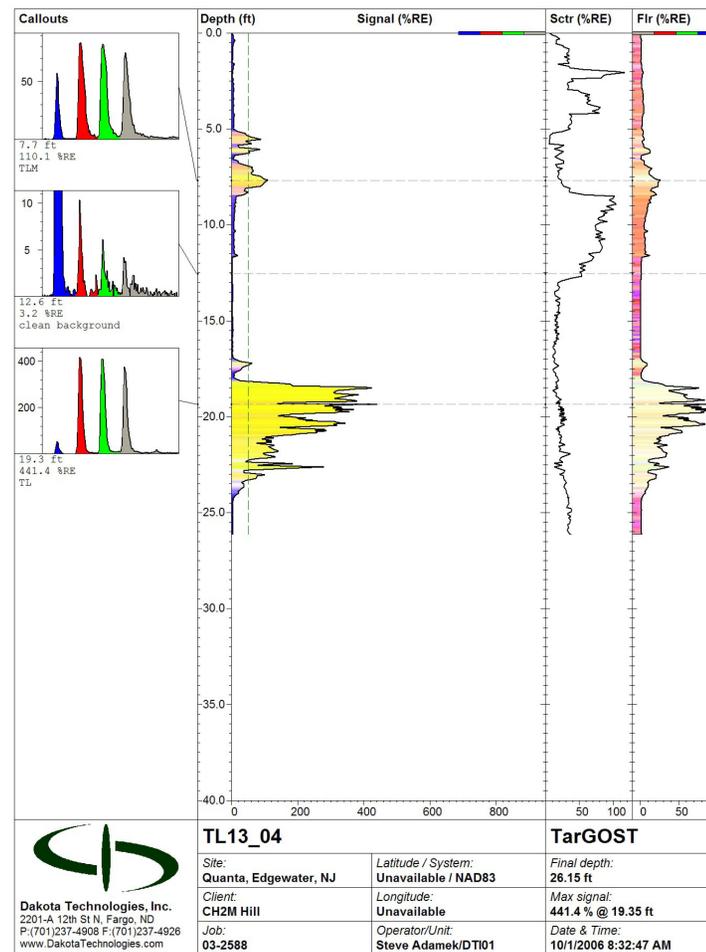
# Coal Tar/NAPL Zones

- Mobile NAPL Zones (NZ)
  - Estimated three dimensional area of NAPL (likely predominantly free-phase)
  - 5 distinct NZs (named NZ-1 through NZ-5)
- Mobile NAPL Zones based on
  - Visual observations of liquid (residual & free-phase)
  - Observation of free-phase NAPL in monitoring wells
  - TarGOST® responses (residual & free-phase)
- Non-mobile NAPL outside these Zones
  - Primarily residual
  - Thin, discontinuous lenses

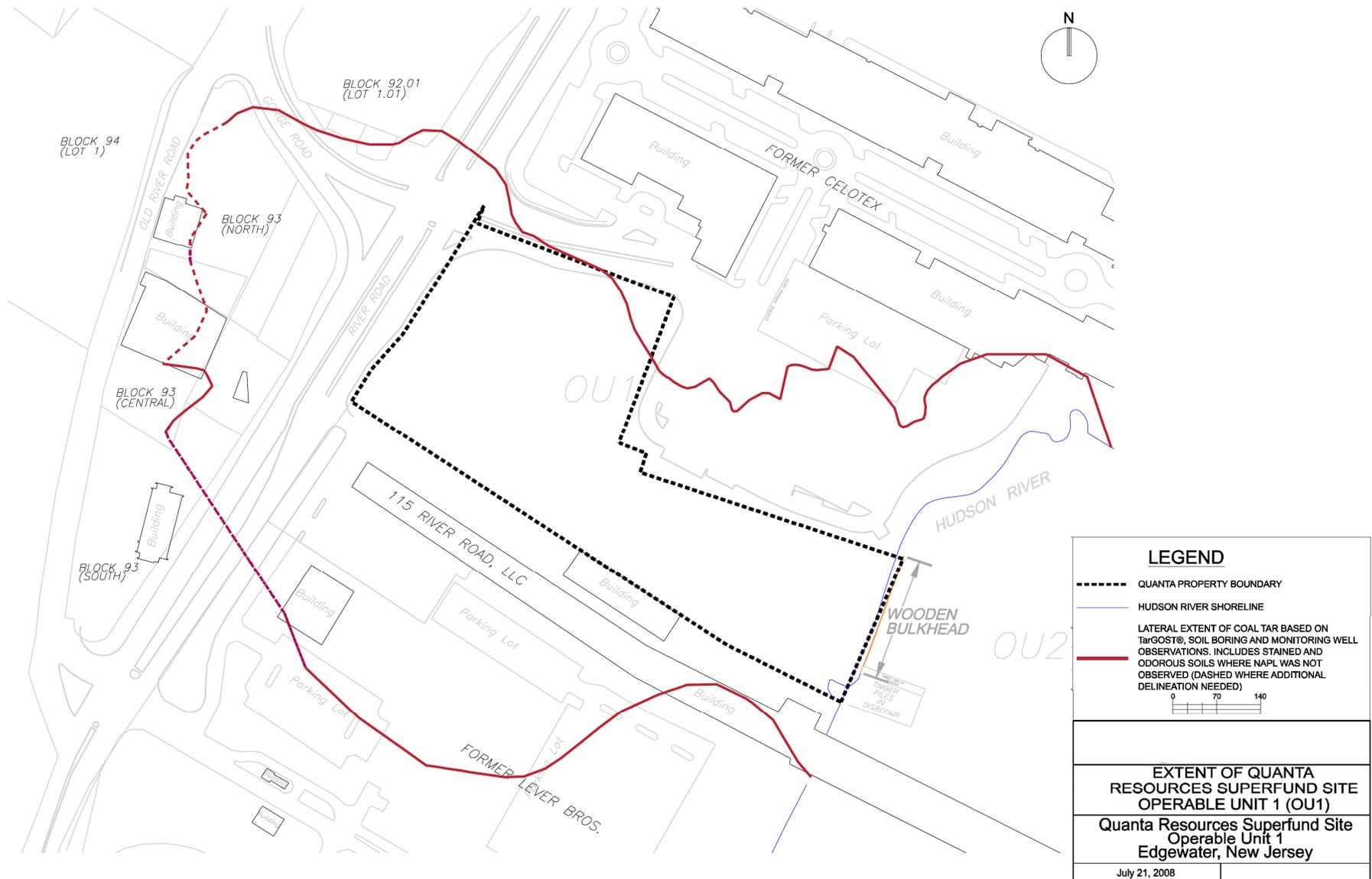


# TarGOST<sup>®</sup> Geophysics

- Uses Laser Induced Fluorescence (LIF)
- Green Optical Laser tuned specifically to detect coal tar.
- Limitations
  - Could not detect solid or “taffy” type coal tar.
  - Had difficulty detecting thin layers located close to bedrock.
  - False positives caused by Meadow Mat (ancient peat deposits).



# Lateral Extent of All Coal Tar Impacts



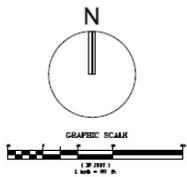
# NAPL Zones

## LEGEND

- ..... Quanta property boundary
- Bulkhead/Shoreline
- ▨ Shallow NAPL and Tar Boils (within ~10 ft bgs)
- Deep NAPL (>10 ft bgs)

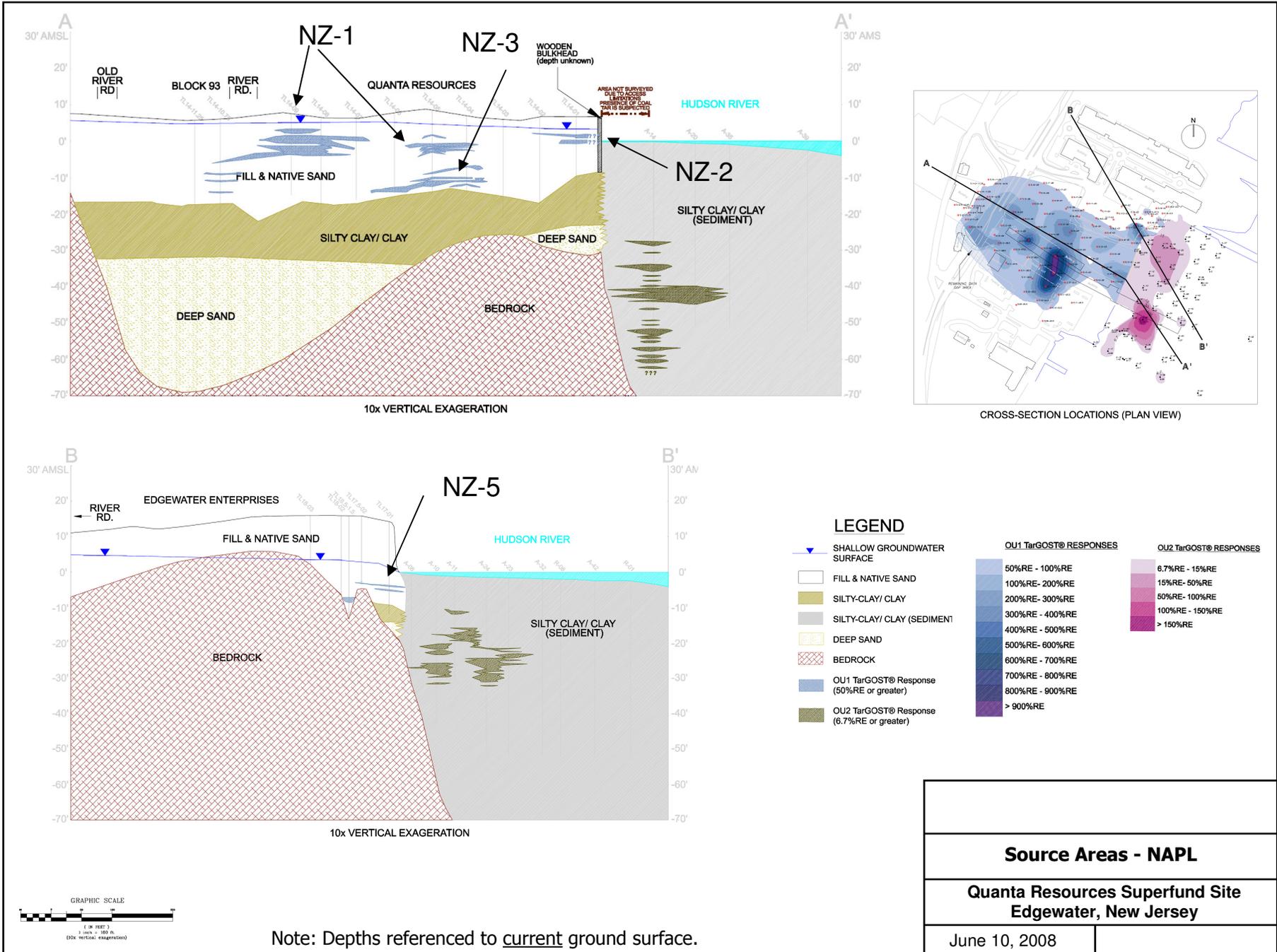


Extent of contamination west of NZ-4 is uncertain and will be determined as part of the summer 2008 field event



Note: Depths referenced to current ground surface.

<b>Source Areas – NAPL</b>	
Quanta Resources Superfund Site Edgewater, New Jersey	
June 10, 2008	





# Description of NAPL Zones

- NAPL Zone 1
  - Free-Phase NAPL located between 3 and 11 ft below ground surface
- NAPL Zone 2
  - Free-Phase NAPL located between 3 and 25 ft below ground surface
  - Extent along the bulkhead will be investigated (field event: Summer 2008)
- NAPL Zone 3
  - Free-Phase NAPL located between 23 and 25 ft below ground surface
  - Confining layer limiting downward migration
- NAPL Zone 4
  - Free-Phase NAPL located between 10 and 15 ft and 20 and 30 ft below ground surface
  - Westerly extent will be investigated (field event: Summer 2008)
- NAPL Zone 5
  - Free-Phase NAPL located between 18 and 25 ft below ground surface
  - Bedrock limiting vertical migration
  - May be connected to NZ-2



## Key RI Conclusions for Coal Tar

- Coal tar is widespread across the site.
- Mobile Coal tar/NAPL is present in discrete zones (NZs).
- Differing depths and configurations represent differing hazards and risk.
- It may be technically infeasible to remove or treat all occurrence of coal tar.
- Sufficient information exists to move forward to Feasibility Study (remedy screening.)



# Final Phase of Field Investigation

- Summer/Fall 2008 implementation
- Determine nature and extent of contamination in the following areas
  - Western portion of the site (Block 93)
  - Bulkhead area (along the shoreline of the Hudson River)
- Determine the dimensions of the wooden bulkhead(s) to evaluate its effect on groundwater flow
- Confirm the complex geochemical processes of arsenic in groundwater
- Determine the groundwater impacts from OU1 in the transition zone within OU2 (Hudson River)



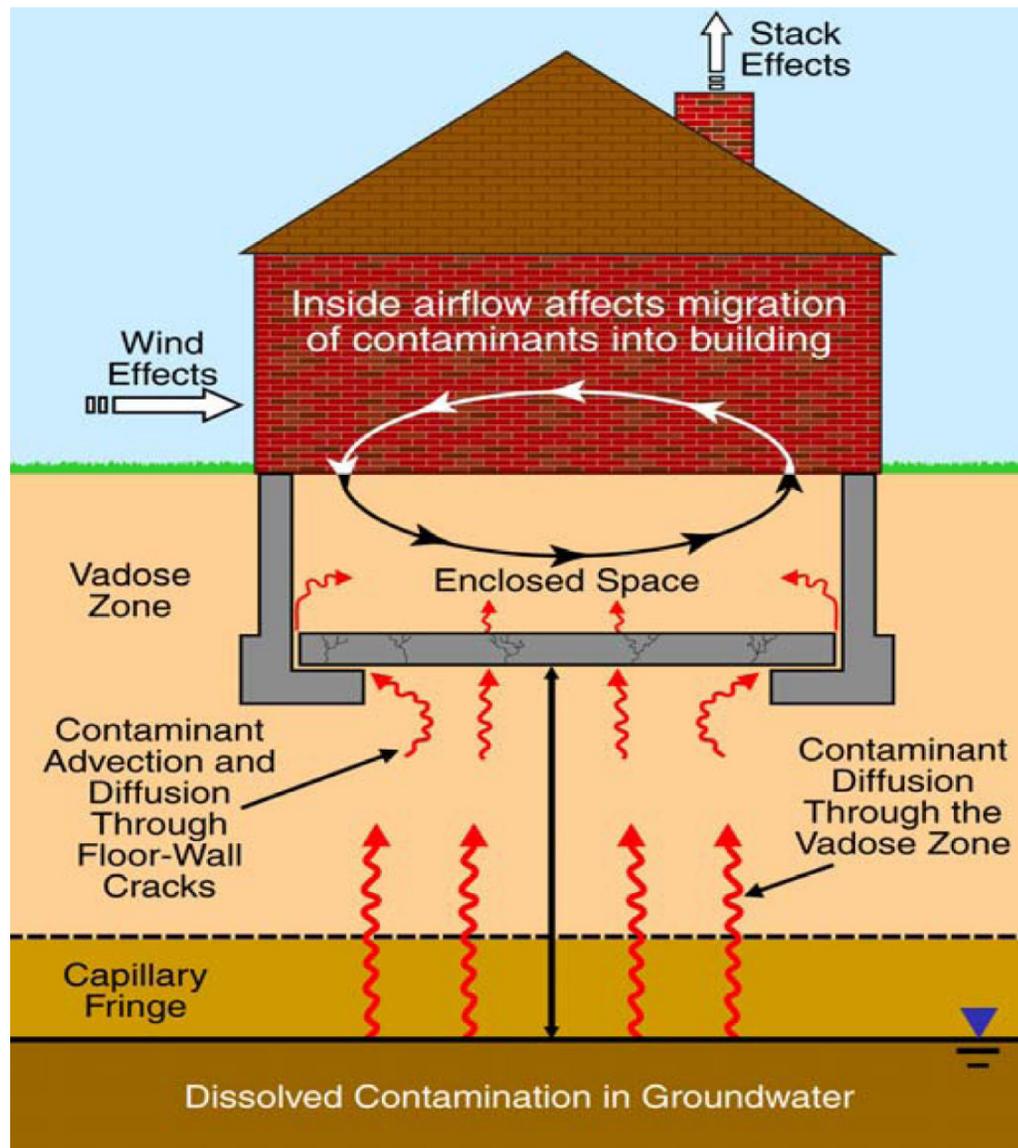
# Tentative OU1 Schedule

Task	Date
Submit Revised Work Plan for Supplemental Field Work	July 2008
Implement Work Plan for Supplemental Field Work (portions underway)	July-Oct 2008
Submit Draft Feasibility Study Report	Fall 2008
Submit Draft Supplemental Remedial Investigation Report	Winter 2008
Submit Final Remedial Investigation Report	Spring 2009
Revision of Draft Feasibility Study Report	Winter 2008
Submit Final Feasibility Study Report	Spring 2009
EPA's Proposed Plan for OU1	Spring 2009



# Vapor Intrusion Investigation

- ❑ Vapor Intrusion is the migration of volatile chemicals from the subsurface (groundwater or soil) to beneath buildings and into the indoor air
- ❑ Based on the levels of volatile chemicals in the groundwater and soil, the potential exists at the Quanta Resources Superfund Site, and a VI Investigation was conducted

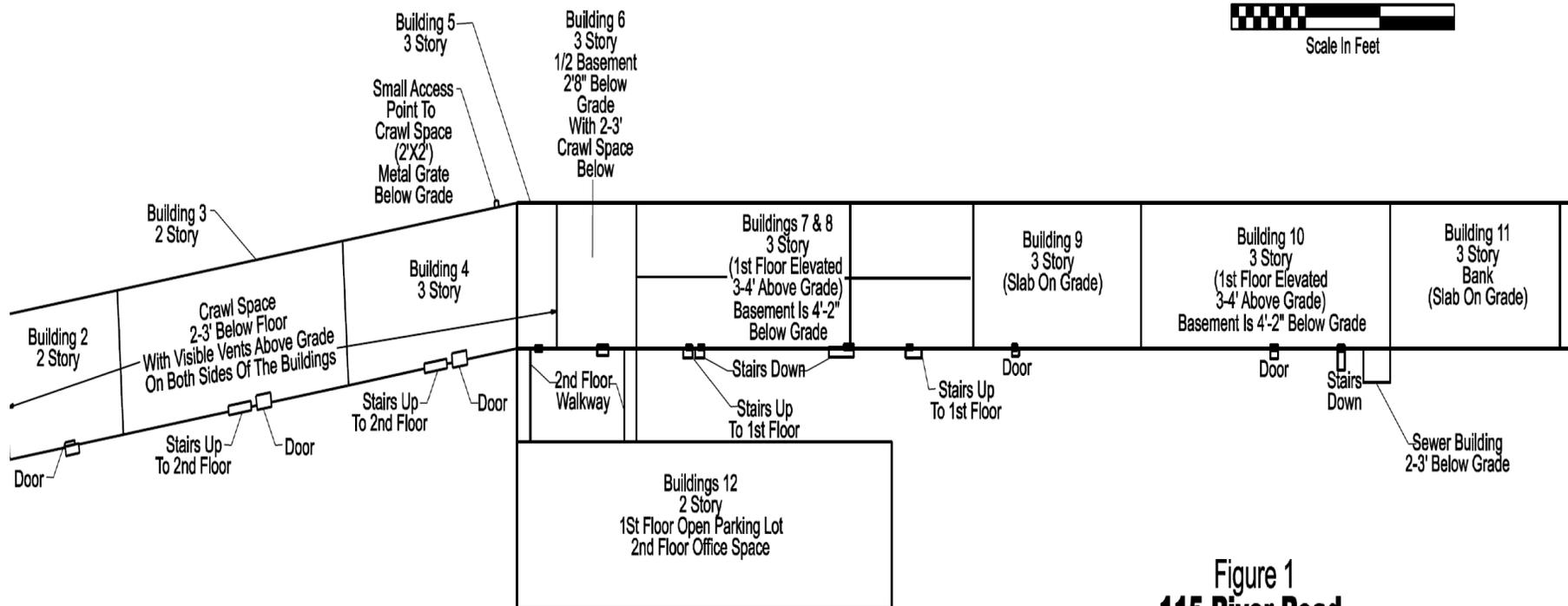
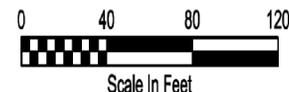


Interstate Technology Regulatory Council (ITRC); *Vapor Intrusion Pathway: A Practical Guideline* (2007)



# Vapor Intrusion Investigation

- Studies were conducted at 115 River Road and 163 Old River Road (former Jono's Restaurant)
  
- Subslab soil gas, indoor air, and ambient air samples were collected
  
- Building surveys were conducted and building pressure measurements were collected



**Figure 1**  
**115 River Road**  
**Building Layout**  
Quanta Resources Site  
115 River Road Building  
Edgewater, New Jersey



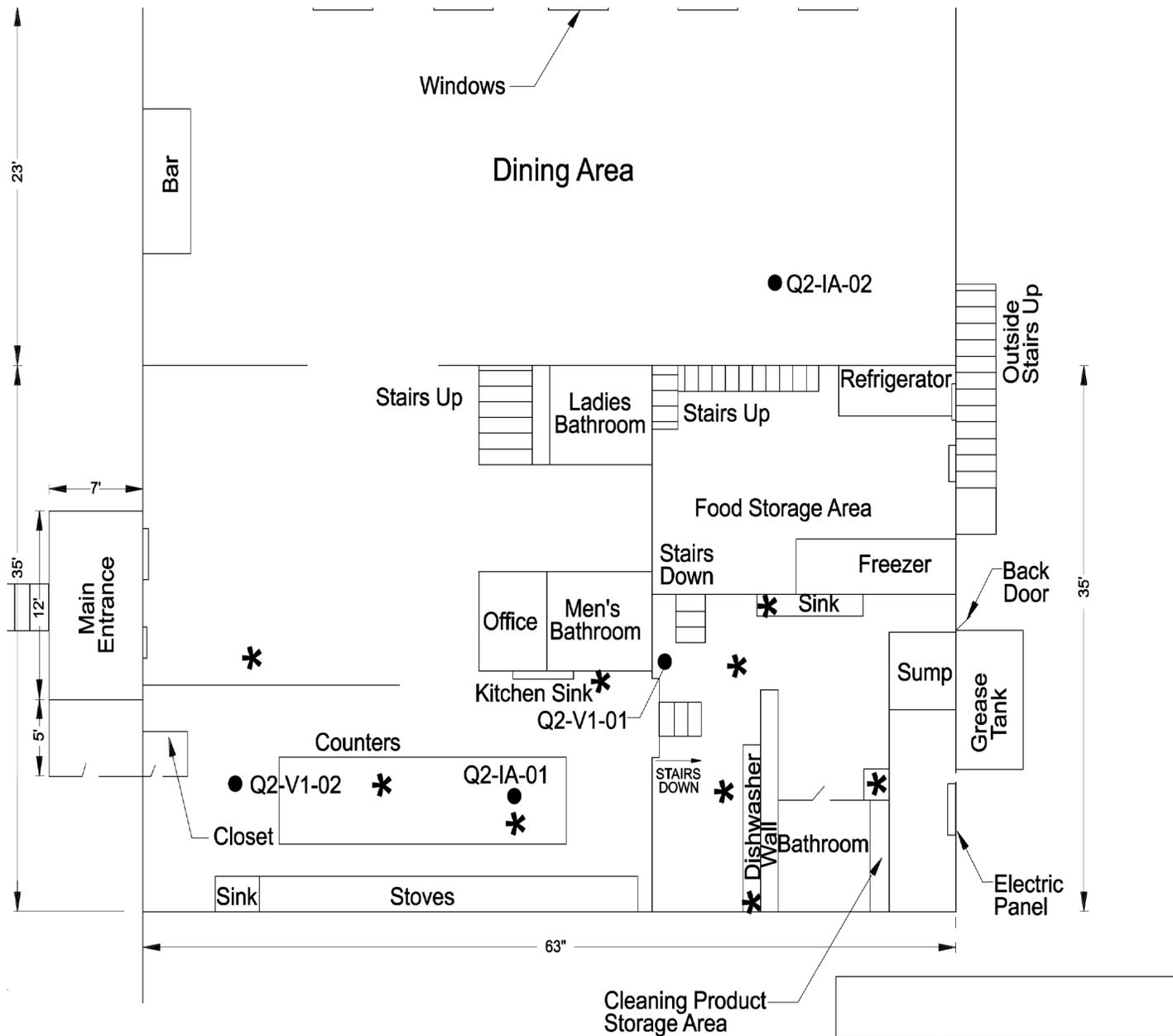
# Vapor Intrusion Investigation

- Six ambient samples collected to assess any other sources or impacts
- Five samples were collected at or near 115 River Road
- One sample was collected north of 115 River Road



# Vapor Intrusion Investigation

- Samples collected over 4 rounds: March 2006, July 2006, March 2008, April 2008
  
- All samples collected from the day care center were below NJ DEP Rapid Action Levels (RAL) and Health Department Notification Levels (HDNL)
  
- In the most recent sampling (April 2008) collected under typical operating conditions, no constituents were detected in indoor samples at levels above RAL and HDNL levels
  
- Samples collected during biased conditions (basement fans turned off, HVAC working, windows and doors closed) in March 2008 showed levels of benzene and naphthalene in the unoccupied basement of building 7/8 exceeded RALs and HDNLs
  
- Building owners have been instructed to keep basement fans running at all times



\* Floor Drains

Figure 1  
**163 Old River Road Building**  
**Vapor Intrusion Evaluation**  
**Sampling Locations - First Floor**



# Vapor Intrusion Investigation

- ❑ 163 Old River Road: Former Jono's Restaurant, now Tomaso's Ristorante
- ❑ Samples collected in March 2008: 3 indoor air; 2 subslab soil gas; 1 ambient
- ❑ No constituents were detected at levels above NJ DEP RALs or HDNLs



# Vapor Intrusion Investigation

- 115 River Road
  - No indoor air samples in workspaces were elevated above NJ DEP RALs or HDNLs
  - Basement ventilation controls are in place to reduce any potential indoor impacts
  - Subslab soil gas samples indicate potential for VI; additional sampling is planned for winter of 2008 – 2009 to confirm indoor air levels continue to be below levels of concern



# Vapor Intrusion Investigation

□ 163 Old River Road

No indoor air samples were elevated above NJ  
DEP RALs or HDNLs



# Questions and Answers

- Questions ?
- 2<sup>nd</sup> Public Information Session
  - Tuesday, August 5<sup>th</sup>, 2008
  - Edgewater Community Center: 7:00 PM

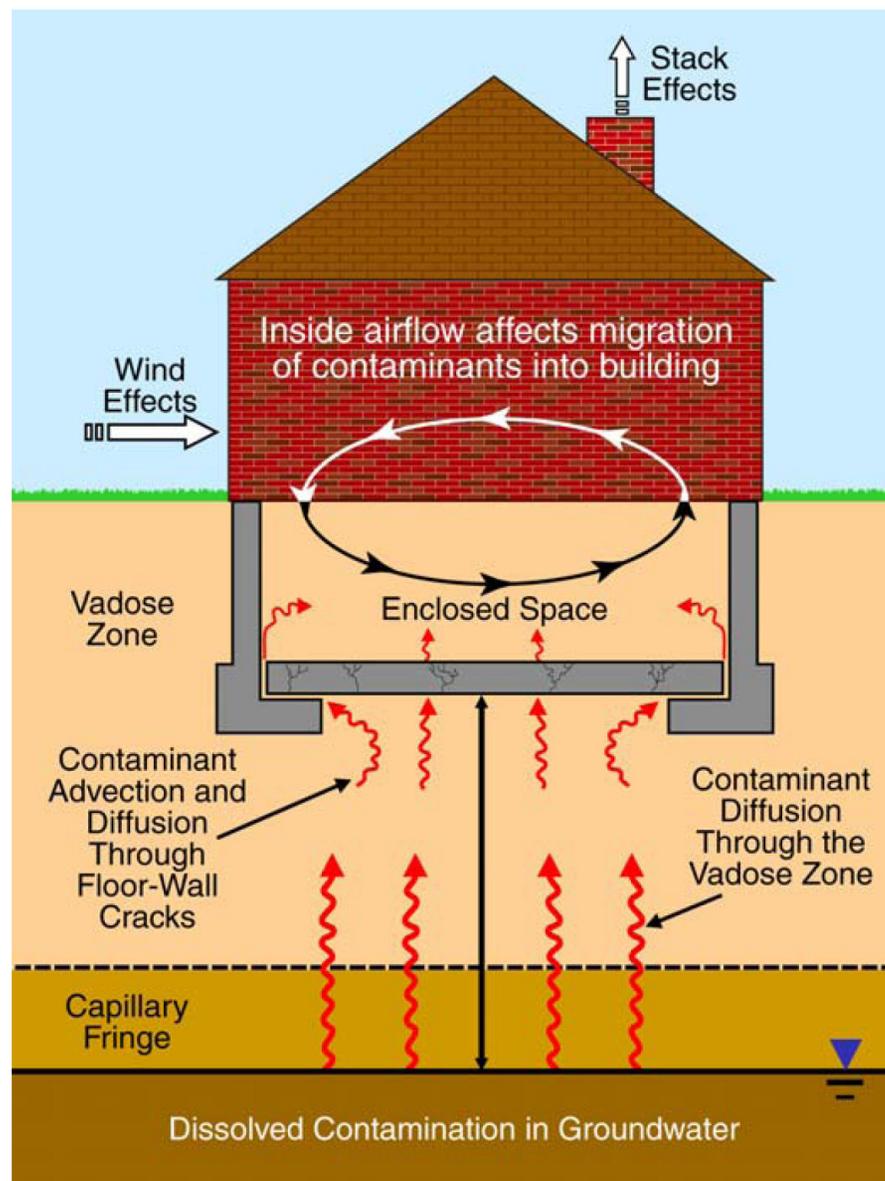


# Indoor Air Vapor Intrusion Evaluations

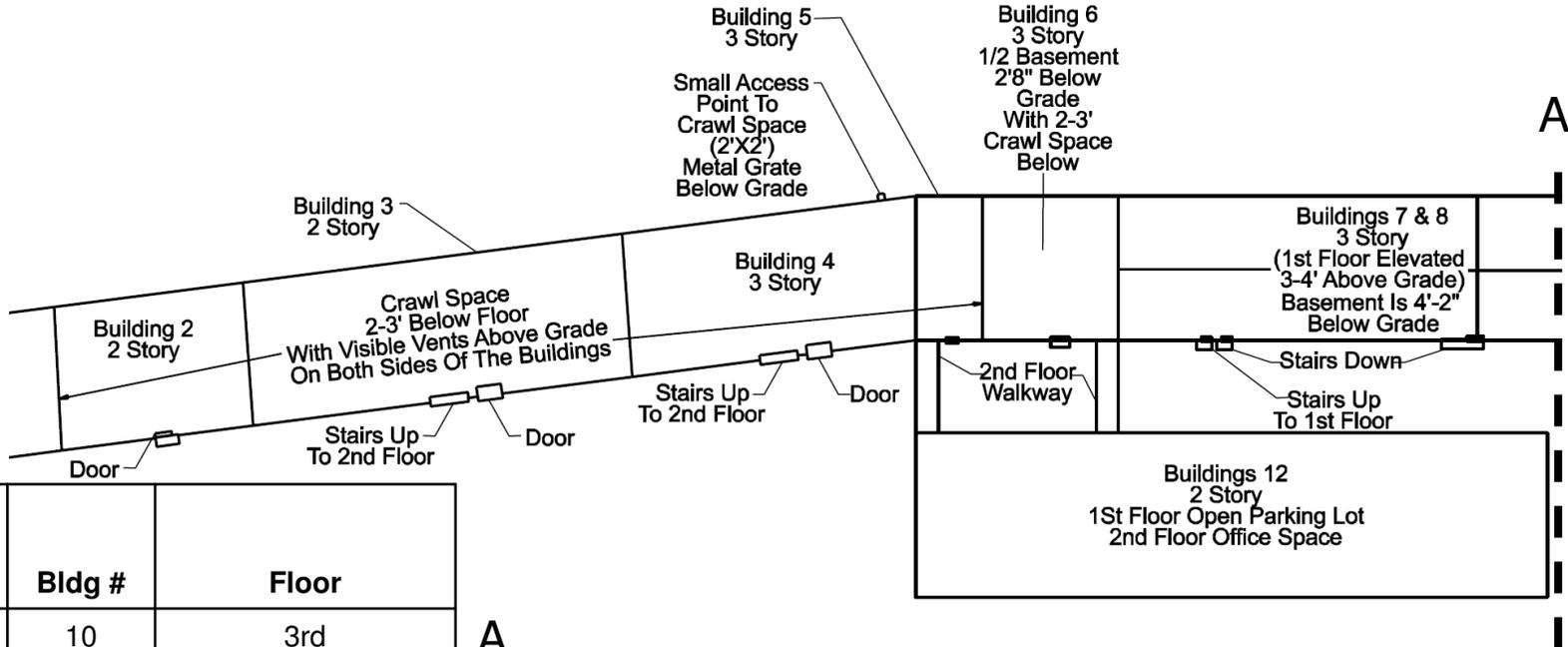
- Vapor Intrusion
  - Migration of volatile chemicals from the subsurface into air of overlying buildings
- Studies conducted at 115 River Road and 163 Old River Road,
  - Groundwater, subslab soil gas, and indoor air sampling
  - Building surveys
  - Building pressure measurements



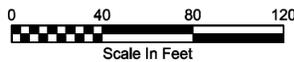
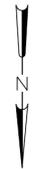
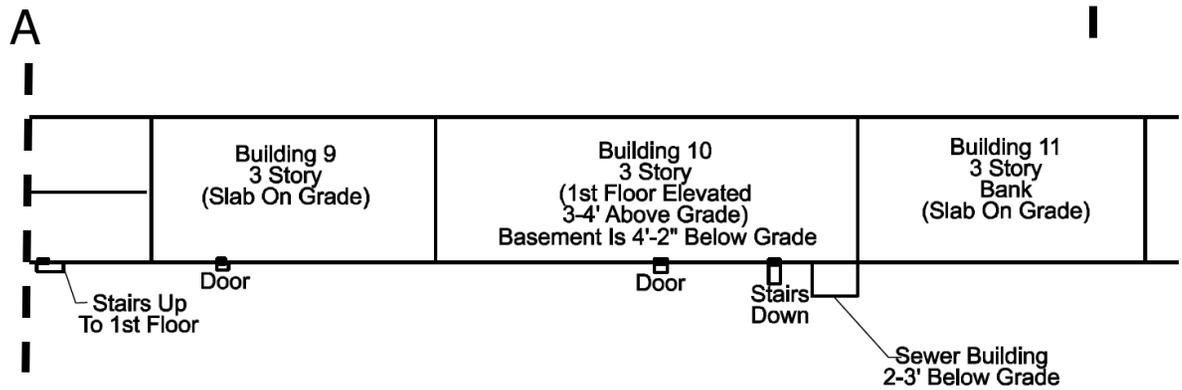
# Vapor Intrusion Pathways



Interstate Technology Regulatory Council (ITRC), *Vapor Intrusion Pathway: A Practical Guideline*, 2007



Indoor Air Sample Locations	Bldg #	Floor
Q1-IA-01	10	3rd
Q1-IA-02	10	1st
Q1-IA-03	10	Basement
Q1-IA-04	9	2nd
Q1-IA-05	9	1st
Q1-IA-06	8 (9)	3rd
Q1-IA-12	7	1st
Q1-IA-21	8	Basement
Q1-IA-22	10	Basement
Q1-IA-23	7	Basement
Q1-IA-24	8	Basement
Q1-IA-25	8	Basement
Q1-IA-26	8	1st
Q1-IA-27	7	2nd
Q1-IA-28	6	Basement



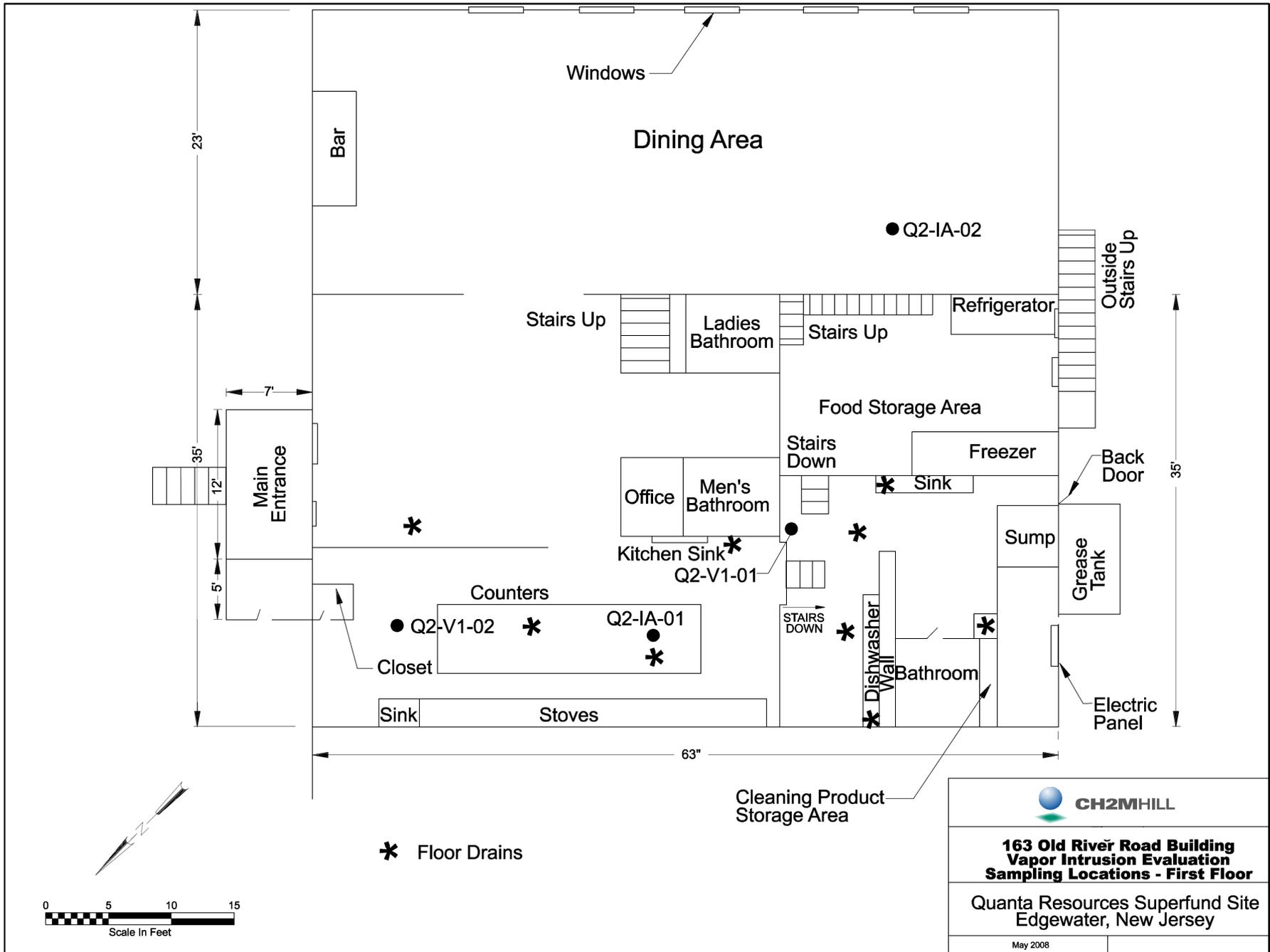
Note: Day care located in Building 7/8

<b>115 River Road Building Layout</b>
Quanta Resources Site 115 River Road Building Edgewater, New Jersey



# 115 River Road Vapor Intrusion Evaluation

- Four rounds of sampling including March 2006, July 2006, March 2008, and April 2008
- Under routine operating conditions in the building, no constituents associated with vapor intrusion and discernable from outdoor air and commercial products stored indoors were detected in indoor air samples at concentrations above USEPA's target indoor air concentration based on a prescribed risk level of  $10^{-4}$  and a non-cancer Hazard Index of 1, which would require action
- Under non-routine and conservative conditions (basement ventilation fans turned off and sealed with plastic), concentrations of benzene in the unoccupied Building 7/8 basement were lower than USEPA's target indoor air concentration based on the prescribed risk levels noted above
  - Constituents associated with vapor intrusion and discernable from outdoor air and commercial products stored indoors were detected in indoor air samples collected in occupied spaces (including the day care) at concentrations below USEPA's target indoor air concentrations based on the prescribed risk levels noted above
- The building owners are instructed to keep the Building 7/8 basement fans operational at all times and to install passive vapor controls





## 163 Old River Road-Vapor Intrusion Evaluation

- Currently Tomaso's Ristorante (formerly known as Jono's Restaurant and Cantina)
- Sampling conducted in March 2008
- No site-related constituents in indoor air were detected at concentrations above USEPA's target indoor air concentrations



# Key RI Conclusions for Vapor Intrusion Evaluations

- The vapor intrusion evaluations indicate that a potential vapor intrusion pathway is not causing levels of concern for site-related constituents in indoor air
- Basement ventilation controls are being maintained in the 115 River Road Building until a final remedy is in place
- Additional indoor air sampling events are planned for the 2008–2009 heating season to confirm indoor air concentrations remain below levels that would be of concern