

U.S. Environmental Protection Agency Information Session



October 24, 2013 Agenda

- Welcome and Introductions
 - Melissa Dimas, USEPA
- American Cyanamid Superfund Site Overview
 - Mark Austin, USEPA
- Impoundments 1 & 2 Focused Feasibility Study
 - Mark Austin, USEPA
- Impoundments 1 & 2 Pilot Testing Program
 - Dakon Brodmerkel, CH2MHill
- Questions

American Cyanamid Superfund Site



- 27 lagoons / impoundments
 - Manufacturing waste and other uses
 - Materials such as organic tars, acid tars, iron oxide, waste water residuals
- Contaminated soils and groundwater
- Contaminants include
 - VOCs (e.g. benzene, chlorobenzene)
 - SVOCs (e.g. 1,2-dichlorobenzene, aniline)
 - Metals

Site-wide Remedy

- Addresses specific waste materials, soil and groundwater
- EPA Record of Decision issued September 27, 2012



Site-wide Remedy

- Currently in engineering design phase
 - Pre-design investigations
 - Evaluating groundwater treatment technologies
 - Detailed engineering design
- Significant focus on the design and permitting of
 - new on-site groundwater treatment system, and
 - expanded groundwater containment/collection system



Ongoing Projects

- Interim groundwater removal and treatment system
 - Continue to operate system until the new Site-wide groundwater treatment system is operational
- Sampling and monitoring will continue:
 - Bedrock and shallow groundwater
 - Ambient air monitoring
 - Surface water and sediment
- 24/7 Site security and maintenance



Impoundments 1 and 2 Focused Feasibility Study Process



EPA's Focused Feasibility Study Process

Historic Data Evaluation

Interviews • Case Studies • Previous Treatability Tests

Technology Screening

Evaluation Work Plan • Focused on Feasible and/or New Technologies

Laboratory Scale Testing

Focused Testing of Technologies • Individually and in Combination



Field Pilot Testing

Design • Permitting • Field Testing of Promising Technologies

Focused Feasibility Study Report

Comparative Analysis of Treatment Options

Impoundment Contents

- American Cyanamid produced benzene, toluene, and xylene from coal light oil
- Acid tar, a by-product of refining coal light oil, was stored in two Impoundments
- Impoundments 1 and 2 were used from 1947 to 1965



	Imp 1	Imp 2
Area	2.1 acres	2.3 acres
Viscous Rubbery	~900 yds ³	~10,900 yds ³
Hard Crumbly	~13,700 yds ³	~12,900 yds ³
Amendments	~ 9,600 yds ³	--

Impoundment Materials

- Acid tar is challenging to handle
 - Very high content of volatile organic materials and malodorous compounds (potential for emissions and odors)
 - Low pH (acidic, very corrosive)
 - High sulfur content (emissions, odors, limited disposal options)

Hard Crumbly



Viscous Rubbery



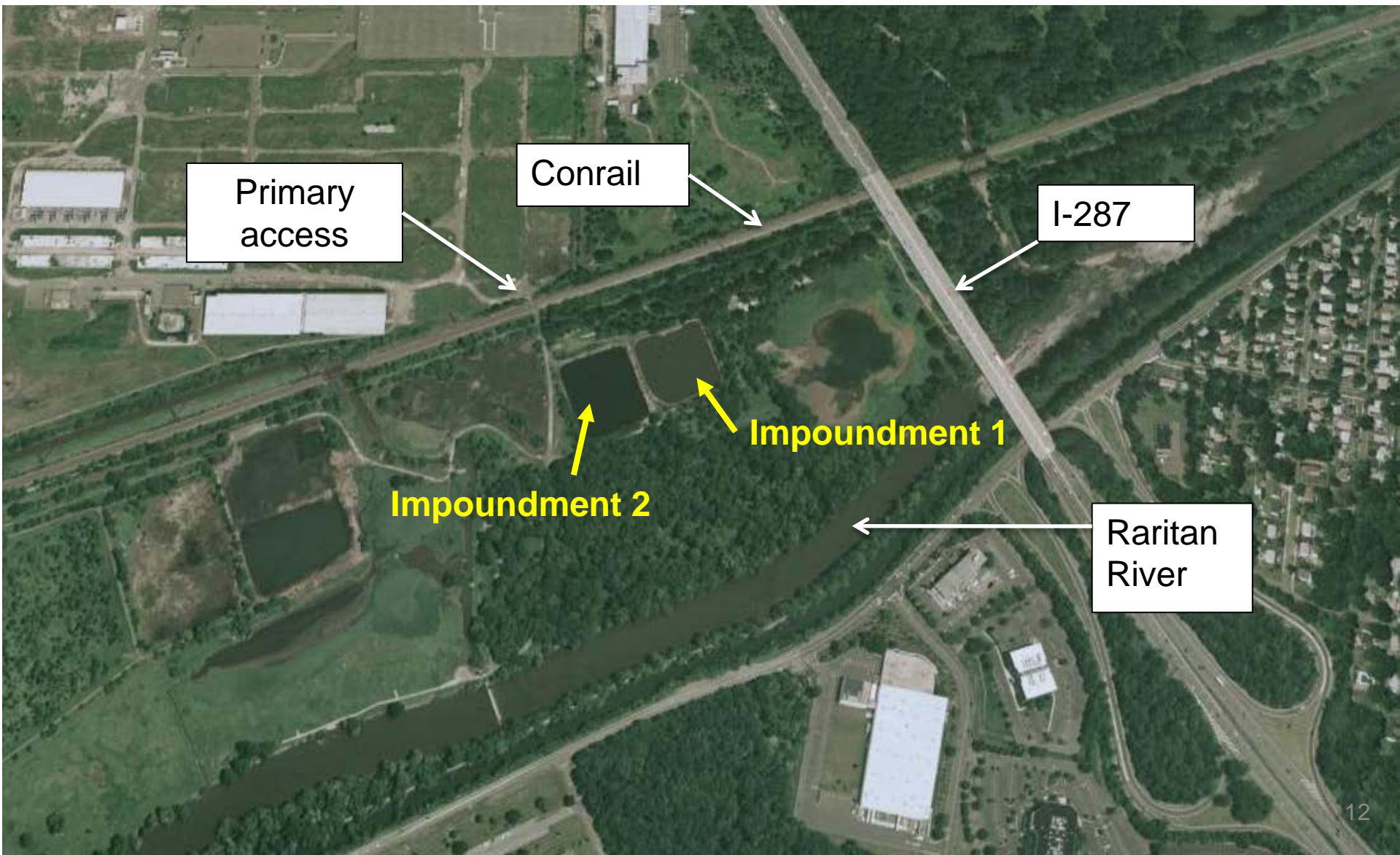
- Unique physical characteristics difficult to handle
 - tacky Viscous Rubbery material
 - fibrous Hard Crumbly material

Existing Conditions

- Materials covered with synthetic cover and water cap
 - To prevent odors and emissions
- Impoundments are controlled
 - Area fenced and patrolled
- Berms are regularly maintained
- Berms regularly inspected
 - Determined to be sound and able to withstand seismic and severe flooding events
- Additional berm armoring completed fall 2013



Location Constraints

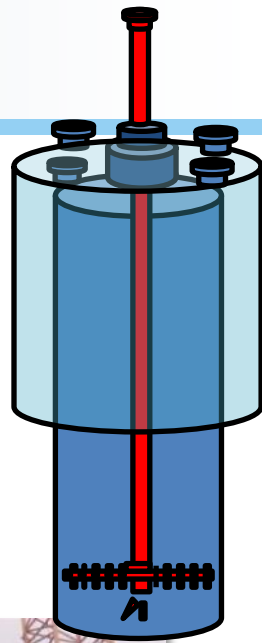


Impoundments 1 and 2 Pilot Test Program



Field Pilot Test Overview

- Evaluation of 3 approaches in treating materials
 - Thermal Treatment
 - Solidification/Stabilization (S/S)
 - Combination of Thermal followed by S/S
- 60 cu yds of material to be treated as it currently resides in impoundments
- Use of steel caisson cells
 - Tests performed inside 7' diameter steel column
 - Cells provide controlled environment
 - Mitigates safety concerns with material handling
 - Isolates cell contents from surrounding materials

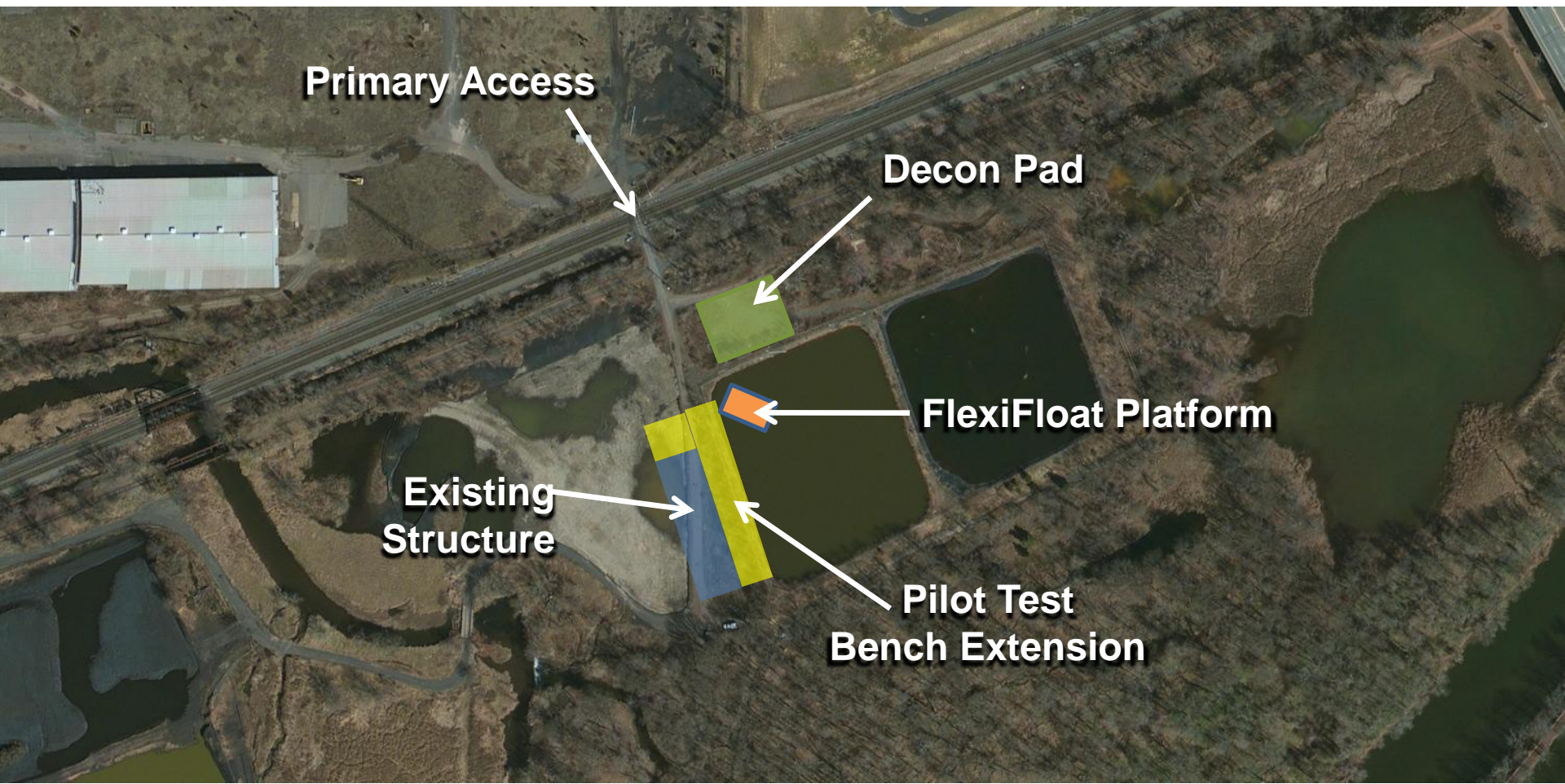


Pilot Test Safeguards

- Pilot test designed with safety as #1 goal
- Engineered safeguards address
 - Potential for flooding
 - Potential for power disruptions
 - Control and treatment of emissions and odors
 - Material handling safety concerns
- Engineering Reviews and Safety Briefings:
 - USEPA review of design and contingency plans
 - Specialized marine and process engineering experts
 - Process hazards review with Pfizer experts
 - Local and County Offices of Emergency Management

Pilot Test Location

- Testing to occur in Impoundment #2
- Infrastructure being built adjacent to Impoundment #2



Infrastructure

- Designed to withstand hurricanes and flood events
- Existing elevated bench being extended to hold vapor treatment equipment above floodplain
- Floating “marine” structure will hold treatment cells in impoundment
- Work platform will be anchored to withstand flooding or storm events



Bench Extension Area Adjacent to Imp #2



Flexifloat modular units



Anchoring Areas

Vapor Treatment

- Vapors generated during treatment will be captured and treated
- Vapor treatment system elevated above floodplain
- Thermal oxidizer removes organics
- Caustic scrubber removes acid gas
- Backup vapor treatment system



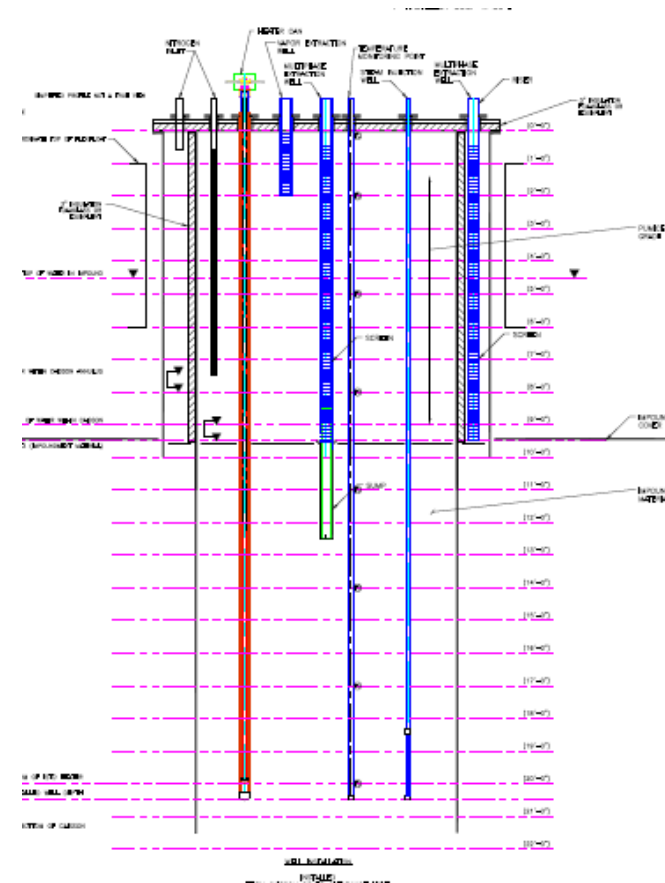
Thermal Oxidizer

Caustic Scrubber

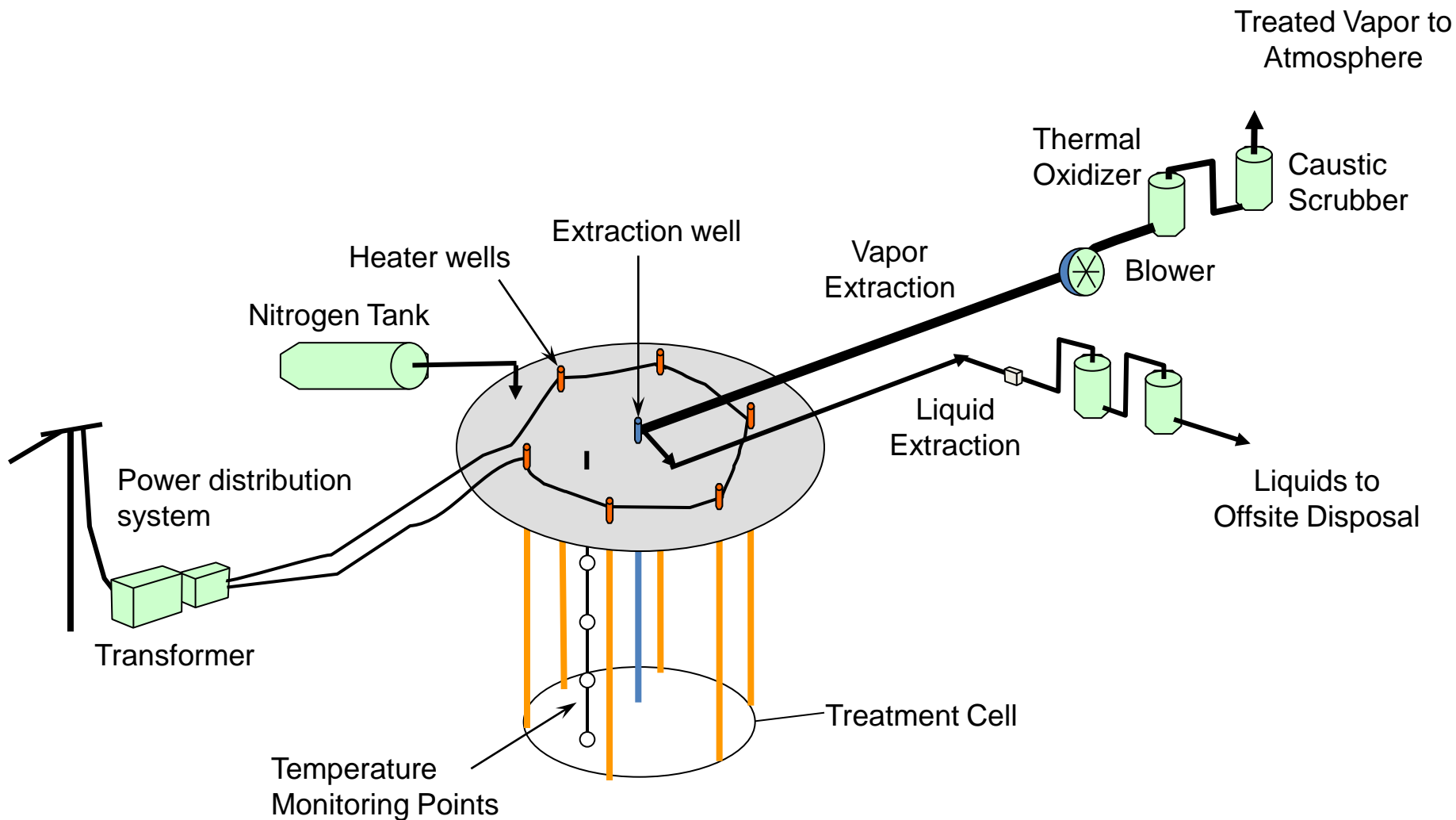
Water Vapor



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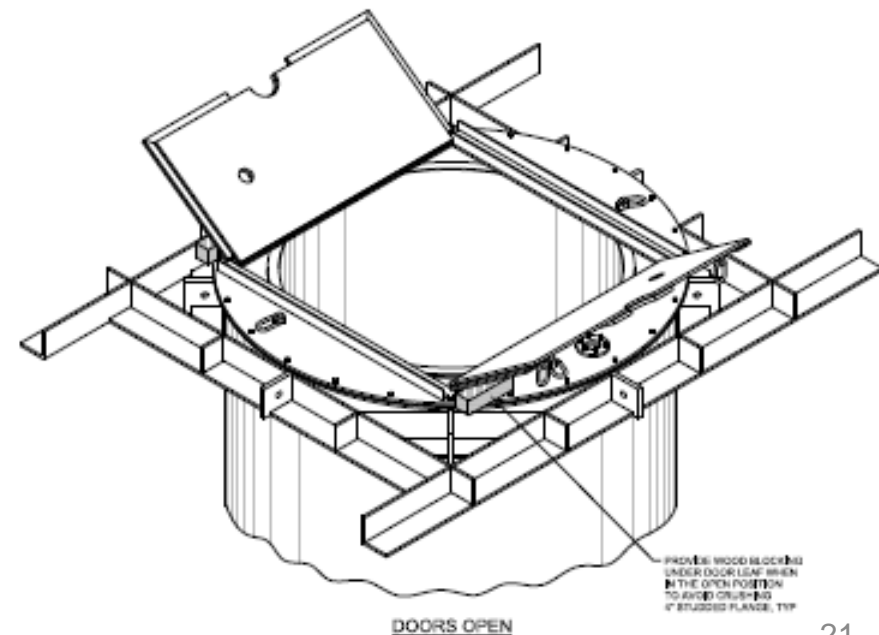
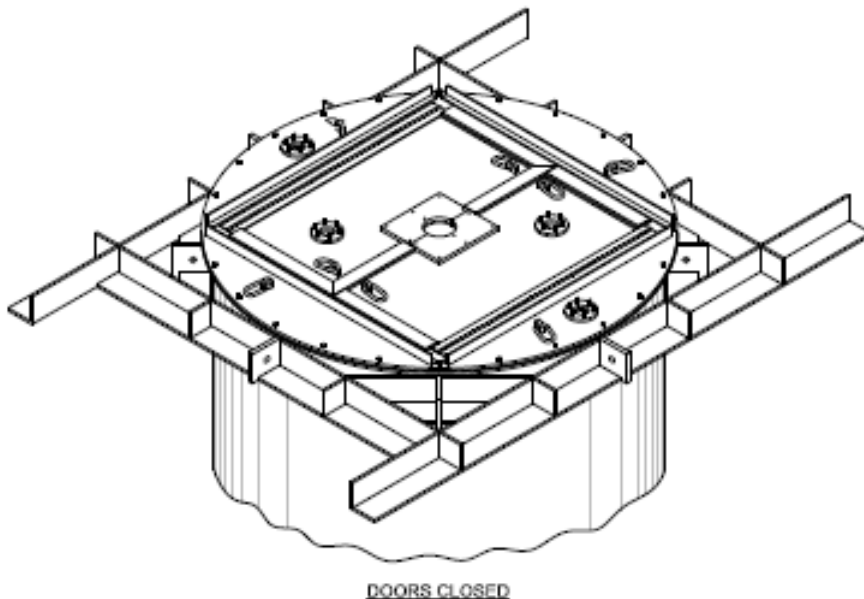


Thermal Treatment

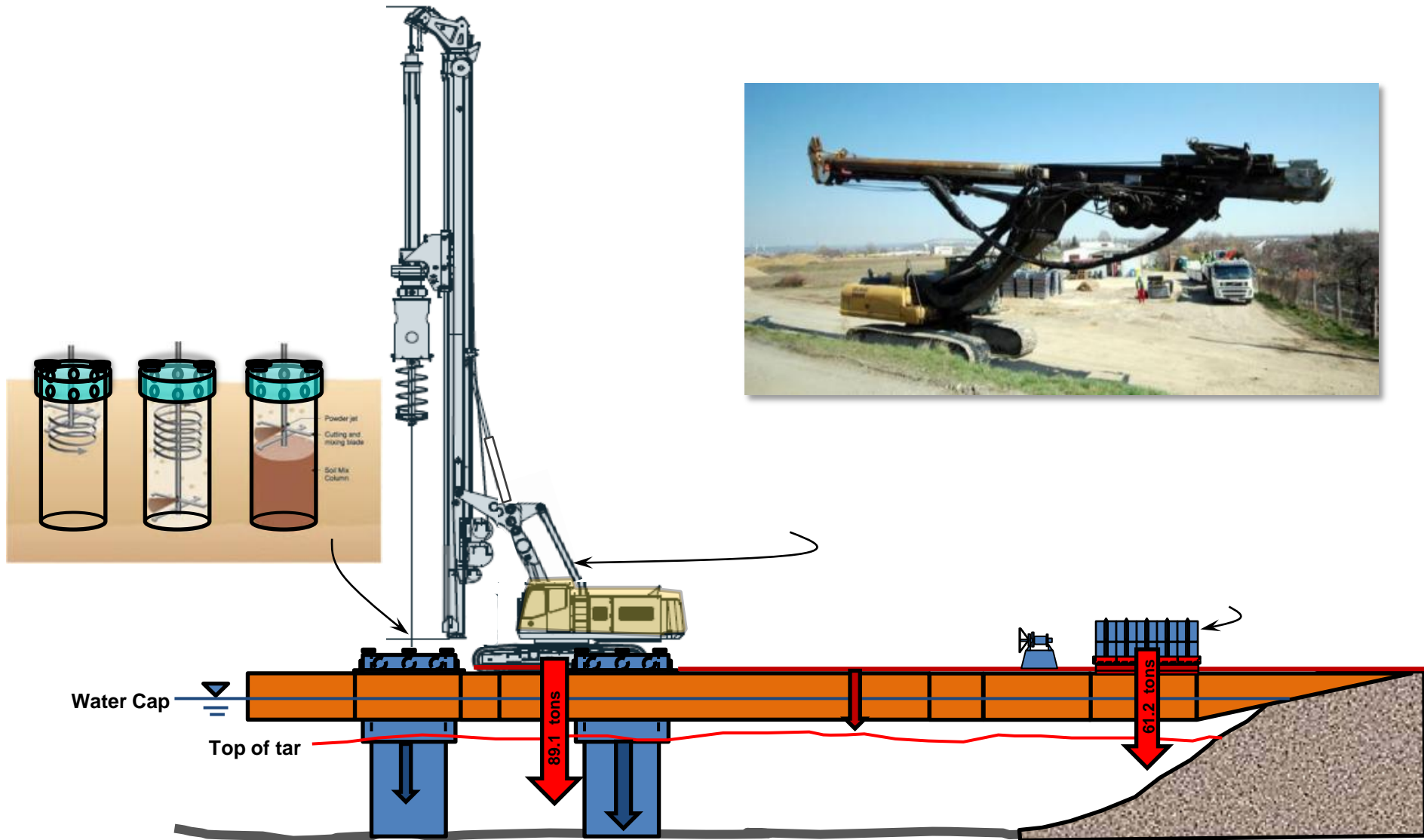


Stabilization and Solidification Treatment

- Primary goal is to add “mixtures” to the material to reduce acidity and alter material properties for additional handling
- These pozzolan chemicals (e.g. hydrated lime, LaFarge NewCem, LaFarge Portland cement, etc.)
- Approx. 3 week operation



Stabilization and Solidification Treatment



Pilot Test Completion

- Treated material from each caisson will be sampled
 - Evaluate treatment effectiveness
 - Identify disposition options
- Excavation of treated material from each caisson
- Transport off-site for disposal or energy recovery



Decontamination Pad

- All process equipment and vehicles will be decontaminated before leaving the site
- Decontamination pad will consist of a containment area with impervious liner to collect decontamination liquids



Continuous Air Monitoring During Pilot Test

- To monitor personal and protect workers from exposures
- Continuous real-time monitoring for VOCs and sulfur compounds
- Augmented with Summa canisters for laboratory analysis



If real-time monitoring indicates possible emissions, adjustments will be made - including possible shut down

Precautions and Contingencies

- Safeguards and precautions incorporated into design
 - Anchoring designed to withstand hurricane events and flooding events that may overtop berms
 - Backup power sources ensure vapor treatment system can operate in case of power loss or flooding
 - Thermal treatment to be performed under oxygen-deprived conditions for safety
- Hazards and mitigation plans for:
 - Flooding
 - Fire
 - Air Release
 - Spills
 - Access or Egress
 - Flooding or weather false alarms
 - Power outages (weather related or otherwise)
 - Security issues

Notifications and Preparations

- Emergency Responder Briefing
 - Local and County emergency management personnel briefed on planned operations and emergency response plan



Follow-up efforts:

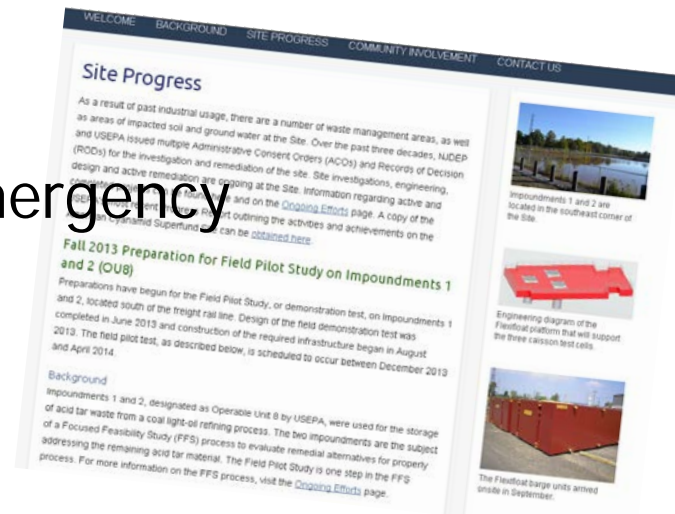
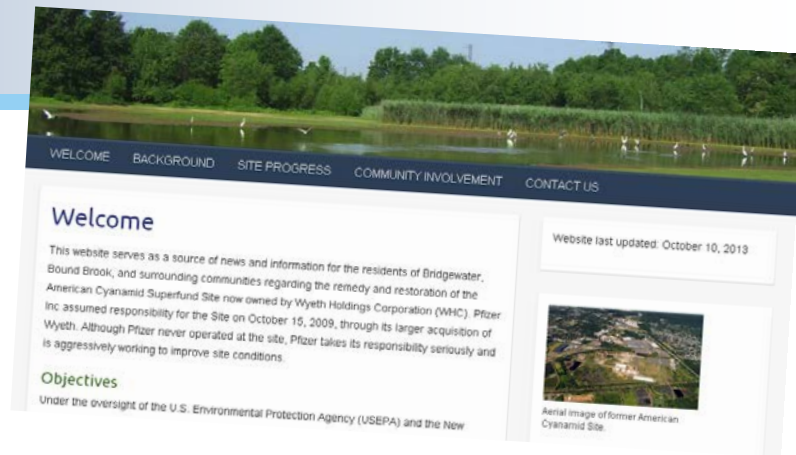
- Fire hydrant flow test
- 911 Briefing Sheet
- Improvements to secondary access road
- Follow-up meeting with Finderne Fire Dept

Notifications and Preparations

- Communications with Neighbors
 - Quarterly briefings with immediate neighbors
 - September briefing focused on Pilot Test operations
 - Ongoing communications
- Municipal Leaders and Townships
 - Regular updates and briefings with Bridgewater and Bound Brook
 - August / September briefings focused on Pilot Test operations
 - Presentation to Bridgewater Resident Steering Panel
 - Outreach to surrounding townships

Ongoing Communications

- Fact Sheet Updates
 - USEPA and CRISIS
- Communications with Neighbors
 - Emailed updates and periodic meetings
- Community Notifications in case of Emergency
 - Local and County OEM
 - Bridgewater Department of Health
- Online Updates
 - www.AmCyRestoration.com
 - www.epa.gov/region02/superfund/npl/american_cyanamid/
 - www.crisistoxicwatch.org/
 - <http://health.bridgewaternj.gov/american-cyanamid-steering-panel/>



Schedule

- Pilot System Construction
 - Infrastructure construction
 - Initiated in August / continuing through Oct 2013
 - Caisson installation – Oct 2013
 - Vapor treatment system construction – Nov 2013
 - Thermal pilot system commissioning/start-up – Dec 2013
- Pilot Study Operations
 - Thermal Operations – Dec 2013 to Feb 2014
 - Stabilization/Solidification Operations – Mar 2014

Questions

If you want to be included on EPA's email or postal mailing list for this site please contact:

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*Every effort will be made by EPA to maintain the confidentiality of your contact information.