Velsicol Former Plant Site

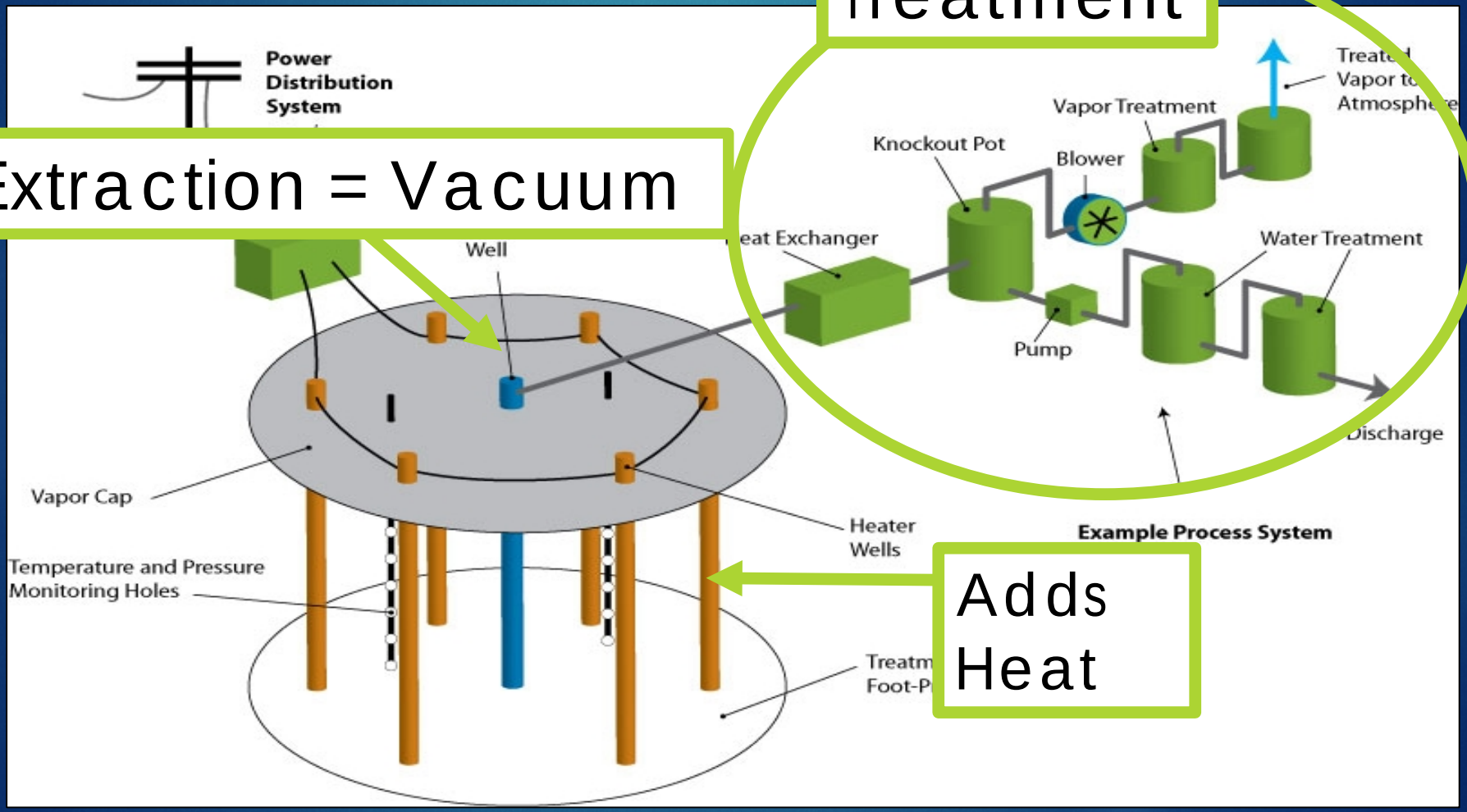
Proposed Air Monitoring Approach
In-Situ Thermal Treatment
NAPL/DBCP Area 1

JULY 19, 2017

Agenda

- Thermal Treatment Overview
- Purpose for Air Monitoring
- Basis for Air Monitoring Plan Development
- Establishing Action Levels
- Air Monitoring Methods
- Plan Summary and Development Status

Thermal Treatment Overview



Takeaway Concept

- Subsurface Heating
  - Heated area is covered and under vacuum
- Extraction
  - Contaminants removed under vacuum
- Conveyance
  - Conveyance piping is operated under vacuum
- Treatment
  - All treatment operations performed under vacuum

- **Contaminant vapor moves inward for all components**

Air Monitoring Purpose

- Confirm that potential air emissions from site remediation activities pose no human health risk
  - *Occupational (site work)*
  - *Perimeter*

Occupational Air Monitoring

- On-site air monitoring for personnel working in or around construction or operation of the thermal treatment system
- Performed for worker protection and to ensure health and safety of site personnel

Perimeter Air Monitoring

- Air sampling along the site perimeter and designated off-site locations
- Air sampling performed to monitor and make sure that the thermal remedy is functioning in a way that is protective of public health

- **The focus of today's presentation**

Air Monitoring Overview

- Document ambient air quality over time with laboratory sampling of:
  - The work area
  - Areas surrounding the site
- Sample during system installation and operation and compare:
  - Before treatment (baseline conditions)
  - During treatment (operating conditions)

Monitoring Plan Elements

- Identification of potential air contaminants
- Defining perimeter action limits (PALs)
- Determination of air monitoring locations
- Air monitoring technique overview
- Planning for action level exceedances

Identification of Potential Air Contaminants

- Historical site data
- Results of the 2014 remedial design investigation
- Data analysis performed to identify potential air contaminants to be monitored during thermal treatment
- DBCP included for increased protectiveness

Proposed Air Monitoring Parameters

- Acetone
- Benzene
- Bromobenzene
- Chlorobenzene
- 1,2-Dichloroethane
- Chloroethane
- Ethylbenzene
- Naphthalene
- 1,2-Dibromo-3-chloropropane (DBCP)
- Toluene
- p-Xylene
- m-Xylene
- o-Xylene
- p,p'-DDD
- p,p'-DDE
- p,p'-DDT

Defining Action Levels

- A value, that if exceeded, will trigger project personnel response
- Action levels are established using:
  - Human health risk-based concentration values equivalent to EPA's target risk range
  - Limits that can be detected by a laboratory (DBCP)

Action Level Calculation

- Action levels found using the EPA's health based Regional Screening Levels (RSL) calculator
- The RSL calculator considers 3 factors
  - The receptor (resident or workers).
  - Target media (air, soil, water).
  - The exposure scenario (chronic vs sub-chronic).
- Contaminant specific risk-based concentration values are then determined using the RSL calculator

Proposed Resident Exposure Scenario

- Assumed continuous exposure-the most protective scenario
  - Project duration (18 months)
  - 350 days/year
  - 24 hours/day
- Calculation inputs considered default inputs for residential land use

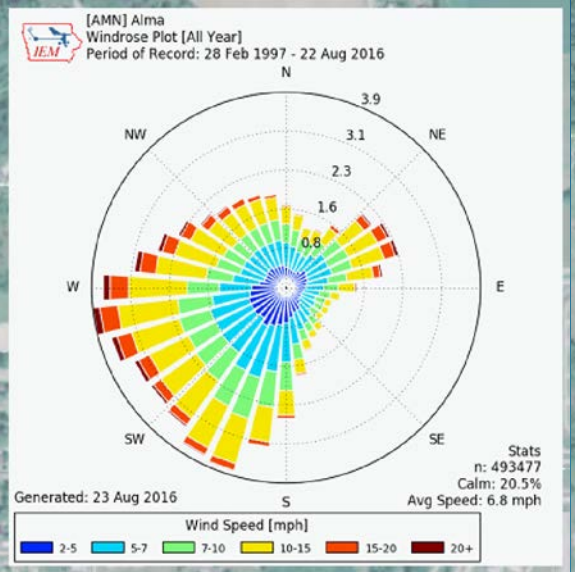
Proposed Perimeter Action Levels

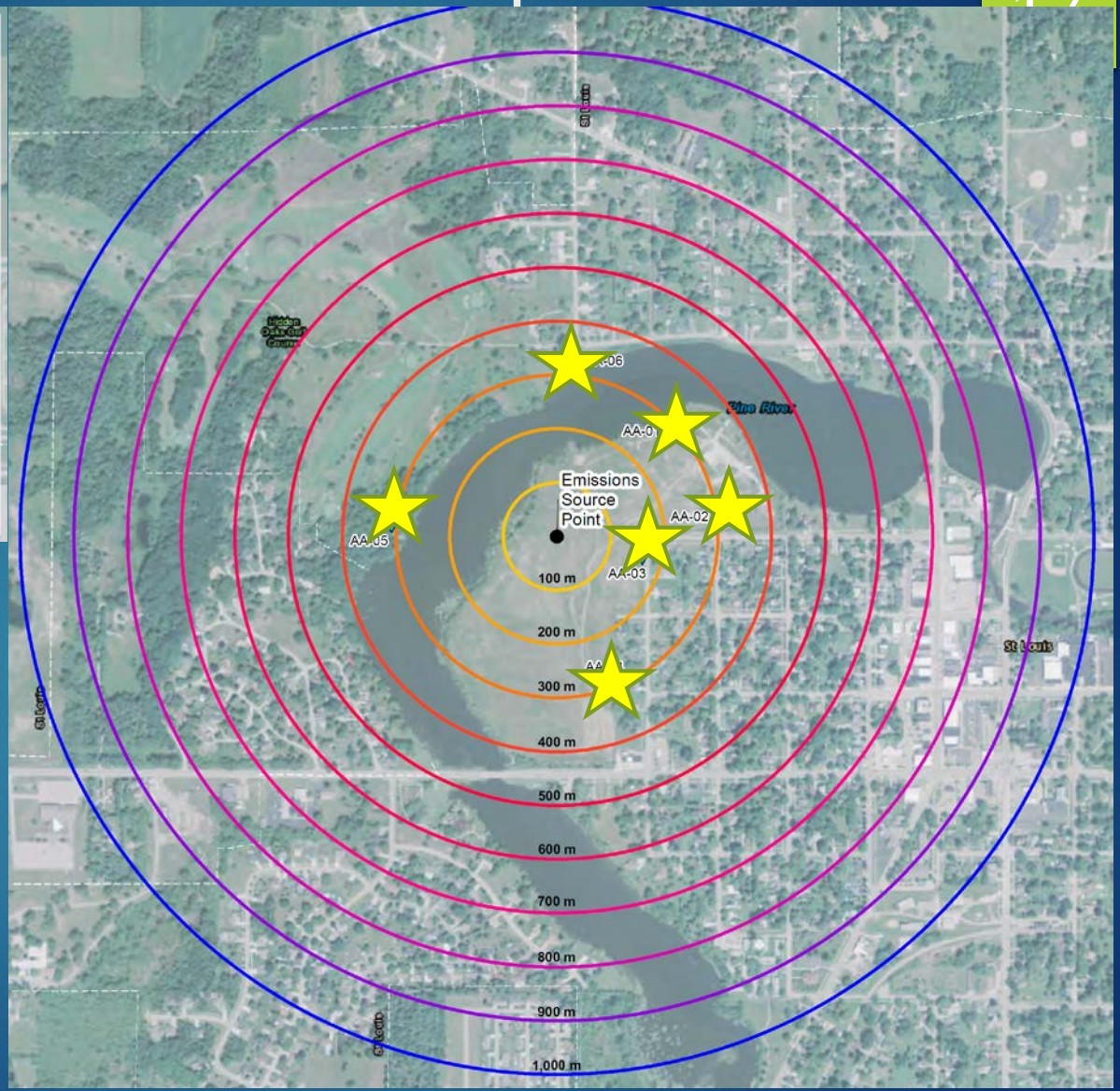
Parameter	Project Action Level (µg/m³)	Parameter	Project Action Level (µg/m³)
Acetone	32,200	Ethylbenzene	19.5
Benzene	6.2	Naphthalene	1.43
Bromobenzene	62.6	Toluene	5,200
Chlorobenzene	51.2	p-Xylene	100
DBCP	0.1	m-Xylene	100
1,2-Dichloroethane	1.9	o-Xylene	100
Chloroethane	10,400		
p,p'-DDD	0.7		
p,p'-DDE	0.5		
p,p'-DDT	0.5		

Sample Location Selection

- Perimeter air monitoring locations chosen by:
  - SCREEN3 - a statistical air dispersion model (EPA, 1995)
  - Historical meteorological data
  - Land use around the site

Proposed Ambient Air Sample Locations





Legend

- Ambient Air Sample Location
- Emissions Point (Thermal Oxidizer)

Distance from Emissions Point (meters)

- 100
- 200
- 300
- 400
- 500
- 600
- 700
- 800
- 900
- 1,000

How are Ambient Samples Collected?

Summa Canister

Equipment Detail

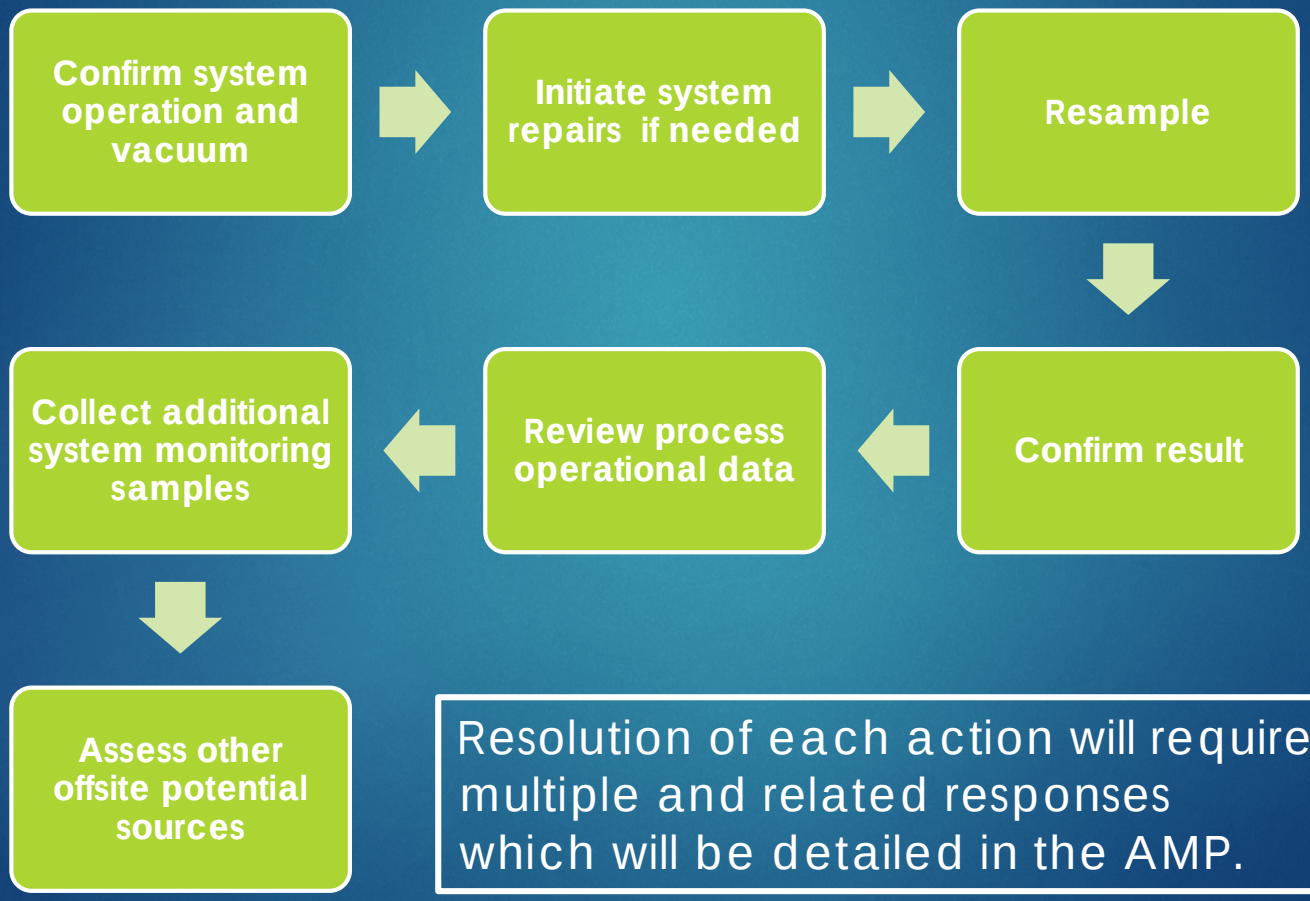
Summa sample canister and regulator

With Sun Shield (typical)

Without Sun Shield (for detail)

Typical Sampling Equipment

Action Limit Exceedance-Response Steps



Resolution of each action will require multiple and related responses which will be detailed in the AMP.

Proposed Monitoring Frequency

- Baseline
  - 6 locations- 2 sampling events per week-4 weeks prior to installation
- System Installation
  - 6 locations – daily for 2 weeks – evaluate data- potentially reduce sample frequency
- System Operation
  - 6 locations – daily for 2 weeks – evaluate data- potentially reduce sample frequency

Summary

- Air Monitoring Plan- in progress
- Draft Plan will be available in mid August
- Community input will be needed within 2 weeks to minimize implementation delay

Questions