



THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 980



Dunn Field – Final Remedial Design

Former Memphis Depot
Dunn Field

Final Off-Depot Groundwater Remedial Design Public Briefing

Facilitated by:



Michael Dobbs, Chief

Environment, Safety and Occupational Health Office
Defense Distribution Center

Public Briefing

February 5, 2009

2009 02 05 RD Public Briefing Presentation

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Warfighter Support

Stewardship

Growth & Development

Leadership



PUBLIC BRIEFING

Presentation: Dunn Field Final Off-Depot Groundwater Remedial Design (RD)

- 30 minutes approximately
- Points of clarification (on presentation only) will be addressed following the presentation



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Presented by:



CH2MHILL

David Nelson, Project Manager
CH2M HILL

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PRESENTATION OVERVIEW

- Remedial Action Objectives
- Selected Remedy in 2008 Dunn Field Record of Decision (ROD) Amendment
- Remedial Design Process
- What is Air Sparging and Soil Vapor Extraction
- Basis of Design
- Remedy Attributes
- Schedule of Activities
- Points of Clarification



REMEDIAL ACTION OBJECTIVES

Dunn Field Area





REMEDIAL ACTION OBJECTIVES

- The objectives that remedial actions must meet to protect human health and the environment according to the intended future land use, as described in the ROD
 - Prevent human exposure to contaminated groundwater
 - Prevent further off-site migration of chlorinated volatile organic compounds (CVOs) in groundwater
 - Clean up shallow (fluvial aquifer) groundwater to drinking water quality to be protective of the deeper Memphis aquifer



SELECTED REMEDY IN 2008

DUNN FIELD ROD AMENDMENT

- Air Sparging with Soil Vapor Extraction (SVE)
 - Limit further off site migration of CVOCs in groundwater in excess of protective target goals
- Long-term groundwater monitoring (LTM) and natural attenuation (NA)
 - To document changes in plume concentrations, to detect potential migration to off-site areas or into deeper aquifers, and to track progress toward remedial goals

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SELECTED REMEDY IN 2008

DUNN FIELD ROD AMENDMENT

- Land Use Controls (LUCs)
 - Consisting of deed and/or lease restrictions for Dunn Field; Notice of Land Use Restrictions; Memphis/Shelby County zoning restrictions and Memphis/ Shelby County Health Department groundwater well restrictions



REMEDIAL DESIGN PROCESS

- Final RD (100%)
- Approved by Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) in October 2008
- Describes the Air Sparging/SVE process
- Includes complete design analysis, final drawings and specifications, and final operation and maintenance (O&M) requirements

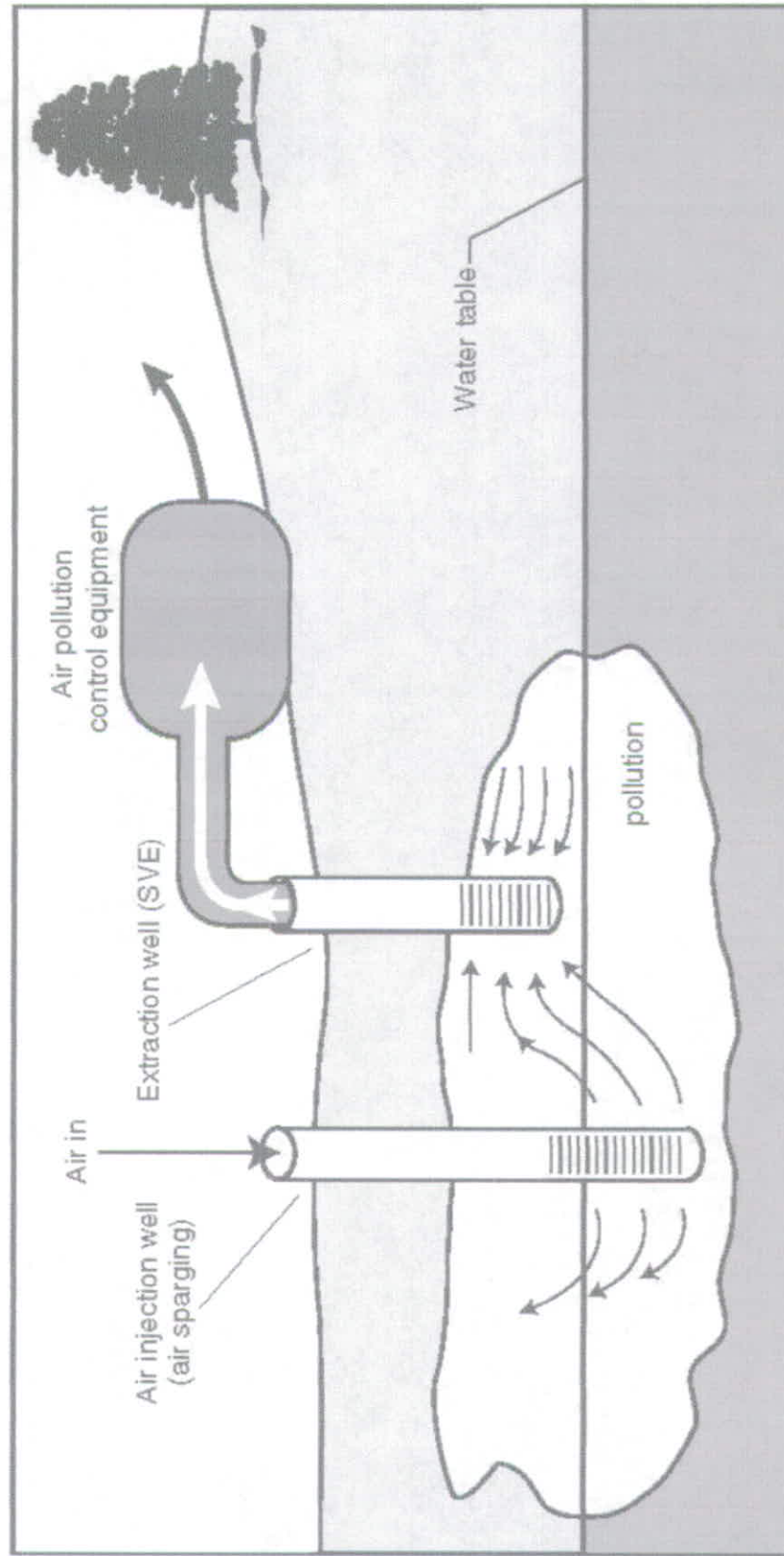


WHAT IS AIR SPARGING/SVE

- Air Sparging uses injected air to move CVOCs dissolved in groundwater into vapor above the water table
- A vacuum system (SVE) then pulls the air and CVOCs through extraction wells to a control building where air flow, pressure, and CVOC concentrations are monitored



WHAT IS AIR SPARGING/SVE?







BASIS OF DESIGN

Conceptual Site Model and Groundwater Flow Model

- Flow modeling indicates reduction of CVOCs in the fluvial aquifer away from source areas through time





BASIS OF DESIGN

- Air Sparging Remedy
 - Designed to treat the larger mass of off-depot groundwater contamination
 - Professional experience with Air Sparging at many sites with similar geologic and chemical conditions
 - Accepted practices defined within *Air Sparging Design Paradigm* (Battelle, 2002) indicated three most important factors:
 - Air distribution
 - Distribution of contaminants vs. air distribution
 - Contaminant characteristics



BASIS OF DESIGN

- SVE Remedy
 - Designed to remove any CVOOC vapors generated by the Air Sparging
 - System to be installed is based on experience and successful use on Dunn Field
 - Designed to capture 150% of injected air and vapors (i.e., installed system will capture more air than injected)



BASIS OF DESIGN

- LTM and NA
 - Accepted (regulatory and professionally) practice of monitoring plume reduction over time by natural processes
 - Sampling practices and data management based on experience and successful use on former Memphis Depot
- LUCs
 - Multiple LUCs are used to help ensure protection
 - Utilizes man-made (i.e., fencing) and local regulations

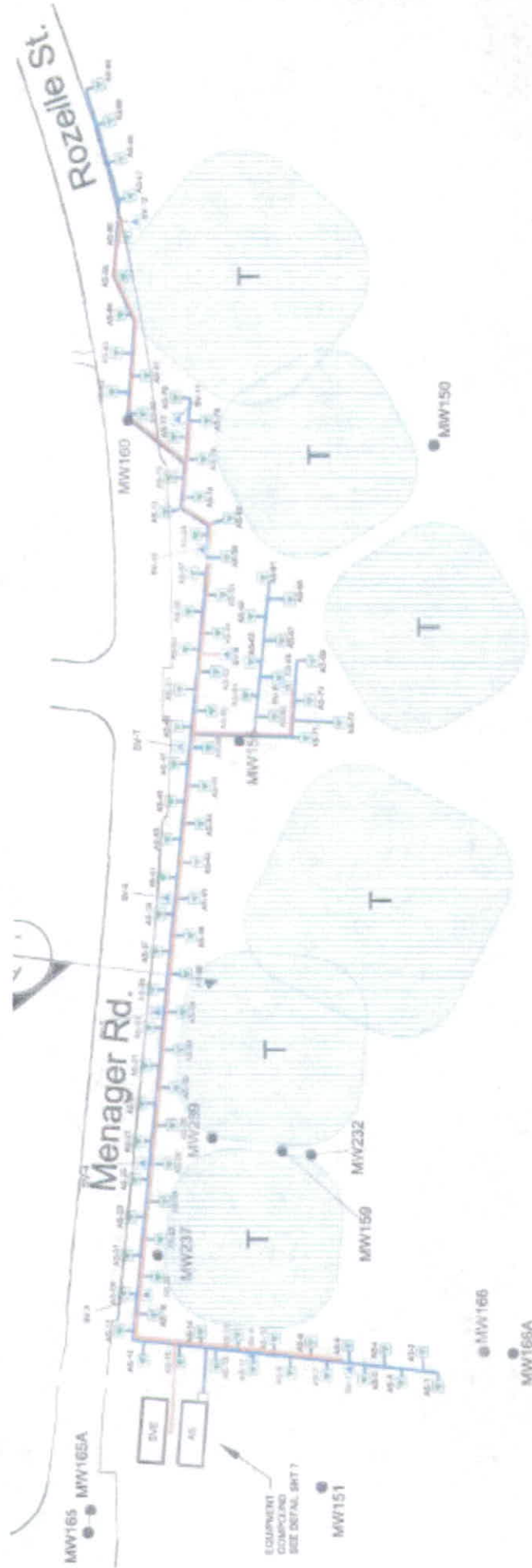


REMEDY ATTRIBUTES

- Air Sparging
 - 90 injection wells, primarily along Menager Ave, injecting up to 15 standard cubic feet per minute (scfm)
 - Each well drilled to estimated 90 to 100 feet below ground surface (ft bgs)
 - Majority of wells in two offset rows with 15 feet between rows
 - Additional rows located to address most contaminated core of plume
 - *Final configuration dependent upon most recent groundwater sampling results*



PLANNED AIR SPARGING SYSTEM

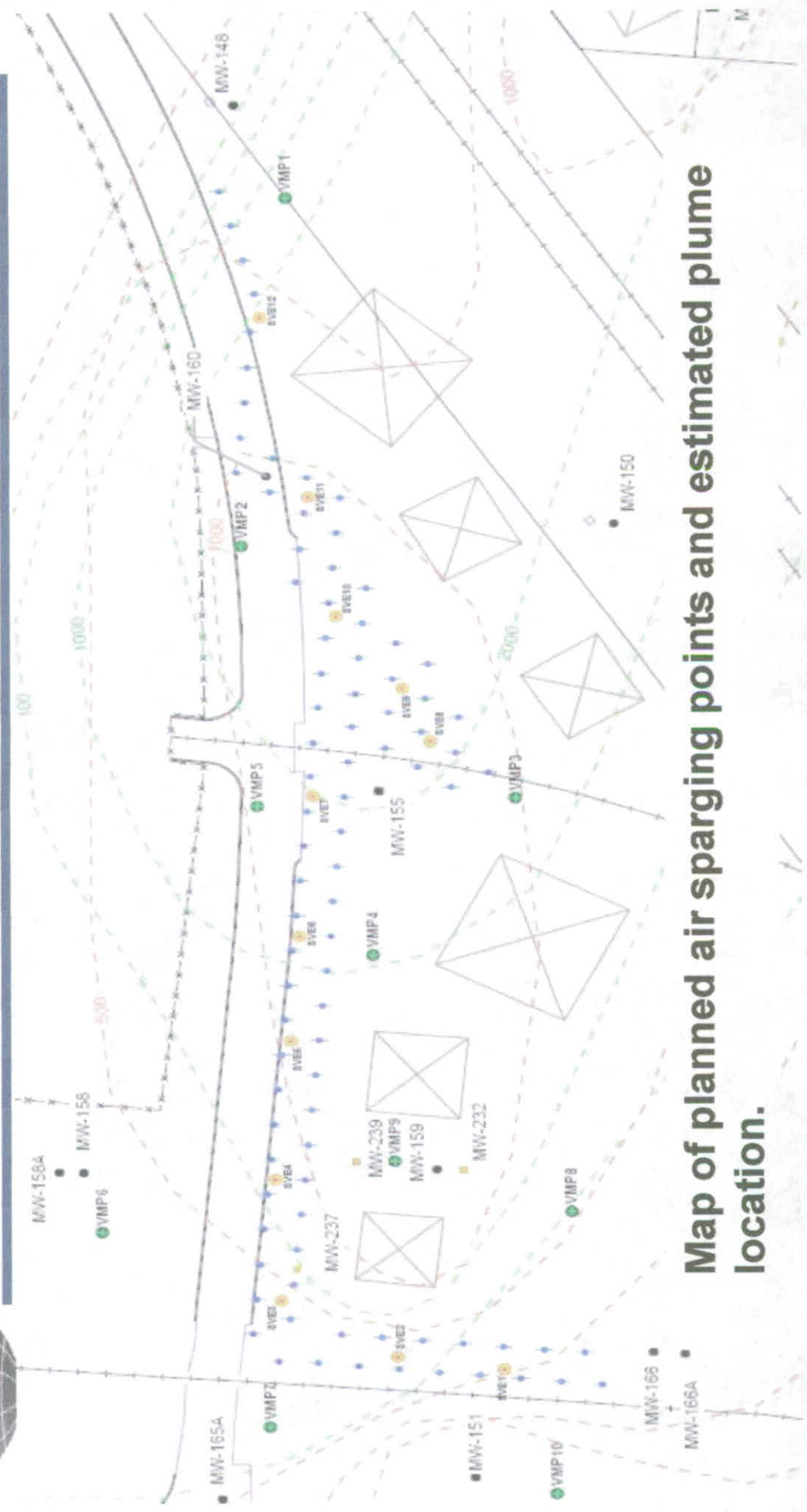


***Source: Final RD Construction Drawings**

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PLANNED AIR SPARGING SYSTEM



Map of planned air sparging points and estimated plume location.



REMEDY ATTRIBUTES

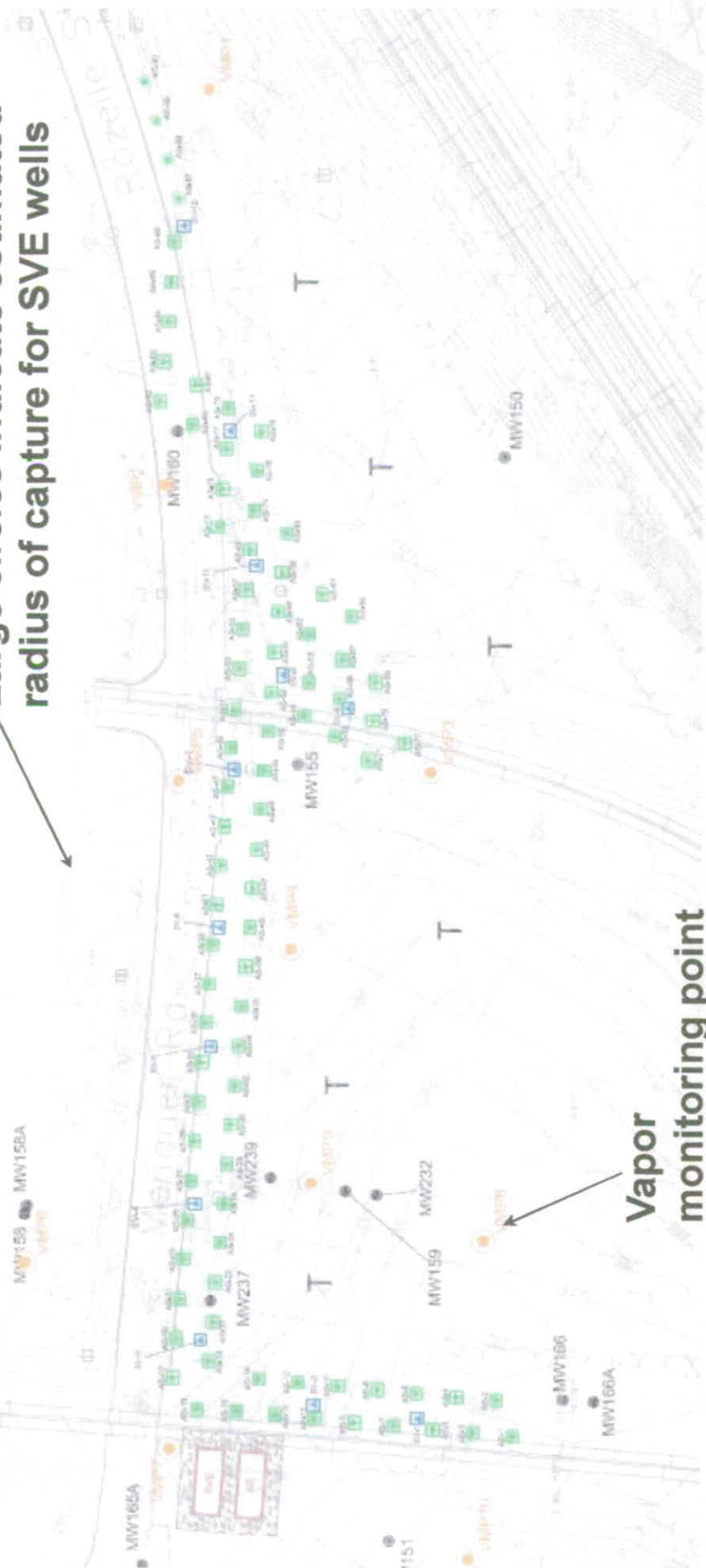
- SVE
 - 12 wells drilled to 35 to 65 ft bgs with 30 feet of screen
 - Design flow rate of 150 scfm on approx. 50 foot centers to effectively capture vapors
 - 10 vapor monitoring points to monitor capture effectiveness
 - Designed to operate in concert with Air Sparging system
 - *Final configuration dependent upon most recent groundwater sampling results and Air Sparging point configuration*



PLANNED SVE SYSTEM

MLG&W Substation

Large circles indicate estimated radius of capture for SVE wells





REMEDY ATTRIBUTES

- Treatment System
 - Systems connected via buried piping to two buildings west of Air Sparging points
 - Buildings will hold Air Sparging compressor and SVE blower and control center
 - Air Sparging/SVE systems will run concurrently
 - Buildings designed for noise reduction
 - *Building location limited by utilities and Memphis Light, Gas and Water (MLGW) approval*



REMEDY ATTRIBUTES

- Additional activities
 - Install 9 fluvial and 2 intermediate aquifer performance monitoring wells
 - Off-gas monitoring, SVE performance air monitoring, and system O&M performed regularly through out remedial action
 - Systems expected to operate 5 years to meet groundwater remedial goals
- Remedy completion includes system decommissioning and well abandonment



REMEDY ATTRIBUTES

- LTM and NA
- To document changes in plume concentrations
- To detect potential migration to off-site areas or into deeper aquifers
- To track progress toward remedial goals
- Expected monitoring period is for 30 years to ensure groundwater remediation goals are met



REMEDY ATTRIBUTES

- Land use controls
- Consisting of deed and/or lease restrictions on Dunn Field; Notice of Land Use Restrictions; Memphis/Shelby County zoning restrictions and Memphis/ Shelby County Health Department groundwater well restrictions
- In place until restrictions are unnecessary



SCHEDULE OF ACTIVITIES

- Public Briefing – February 2009
- Remedial Action Work Plan – Spring 2009
- Remedial Action Implementation – Summer/Fall 2009
- System start-up – Fall/Winter 2009/2010
- Performance Monitoring and O&M – 2010 to remedy completion



POINTS OF CLARIFICATION

- Points of clarification about the presentation only will now be addressed



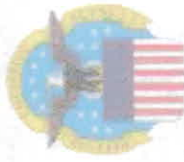
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