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THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 629

Memphis Depot



Groundwater Update

Presented to
Memphis Depot Restoration Advisory Board

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CH2M Hill



July 19, 2001



Presentation Overview



- **Monitoring Wells**
 - Background & Location maps
- **Groundwater Flow Directions**
- **Geological Conditions at the Depot**
- **Findings**
 - Main Installation & Dunn Field
- **Next Steps**
 - Main Installation & Dunn Field

Monitoring Wells



- **96 monitoring wells located at the Depot and surrounding area**
 - 29 wells on Main Installation
 - 32 wells on Dunn Field
 - 35 wells off-site in the community
 - A total of 92 wells used to gather sampling data
- **Remedial Investigation (RI) sampling between 1996 and 2001**
 - Findings reported in:
 - Groundwater Monitoring Reports
 - Main Installation RI Report & GW Feasibility Study (FS)
 - Dunn Field RI Report (expected fall 2001)

Groundwater Flow



Main Installation:

Shallow groundwater under the MI generally flows in three directions:

- southwest to northeast
- northeast to southwest
- north to south

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FIGURE 2-11
Groundwater Monitoring
Well Locations
Memphis Depot, DunnField RI
CH2MHILL



LEGEND

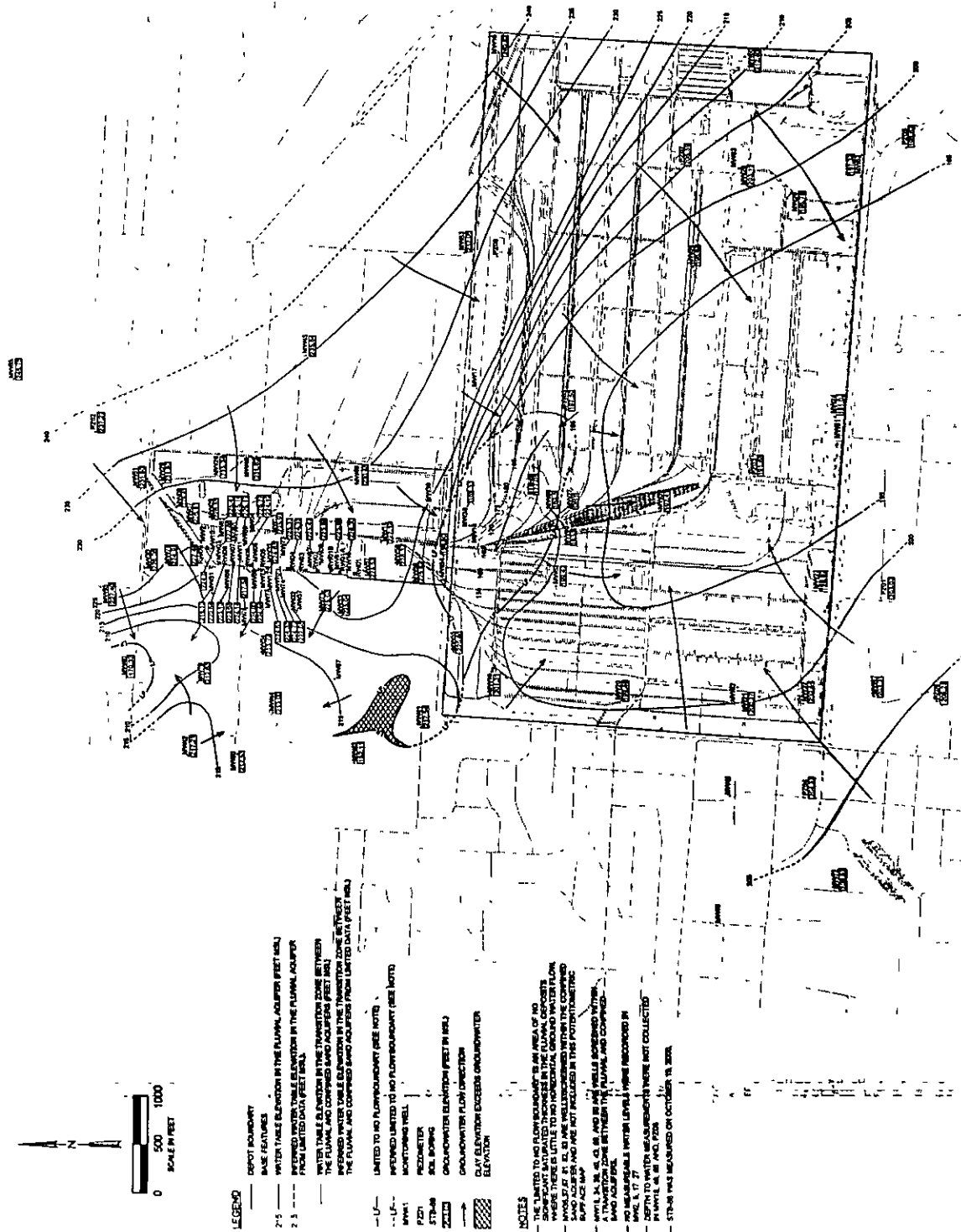
- SPOT BOUNDARY
- BASE FEATURES
- MW-1 MONITORING WELL
- PZ-1 PNEUMATIC
- ST-1 SOIL BORING

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SCALE IN FEET

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FIGURE 1A
Potentiometric Surface
Map of the Fluvial Aquifer
January 10, 2001
Memphis Depot Dunnfield Rd



Groundwater Flow



Dunn Field:

Shallow groundwater under Dunn Field generally flows in one direction:

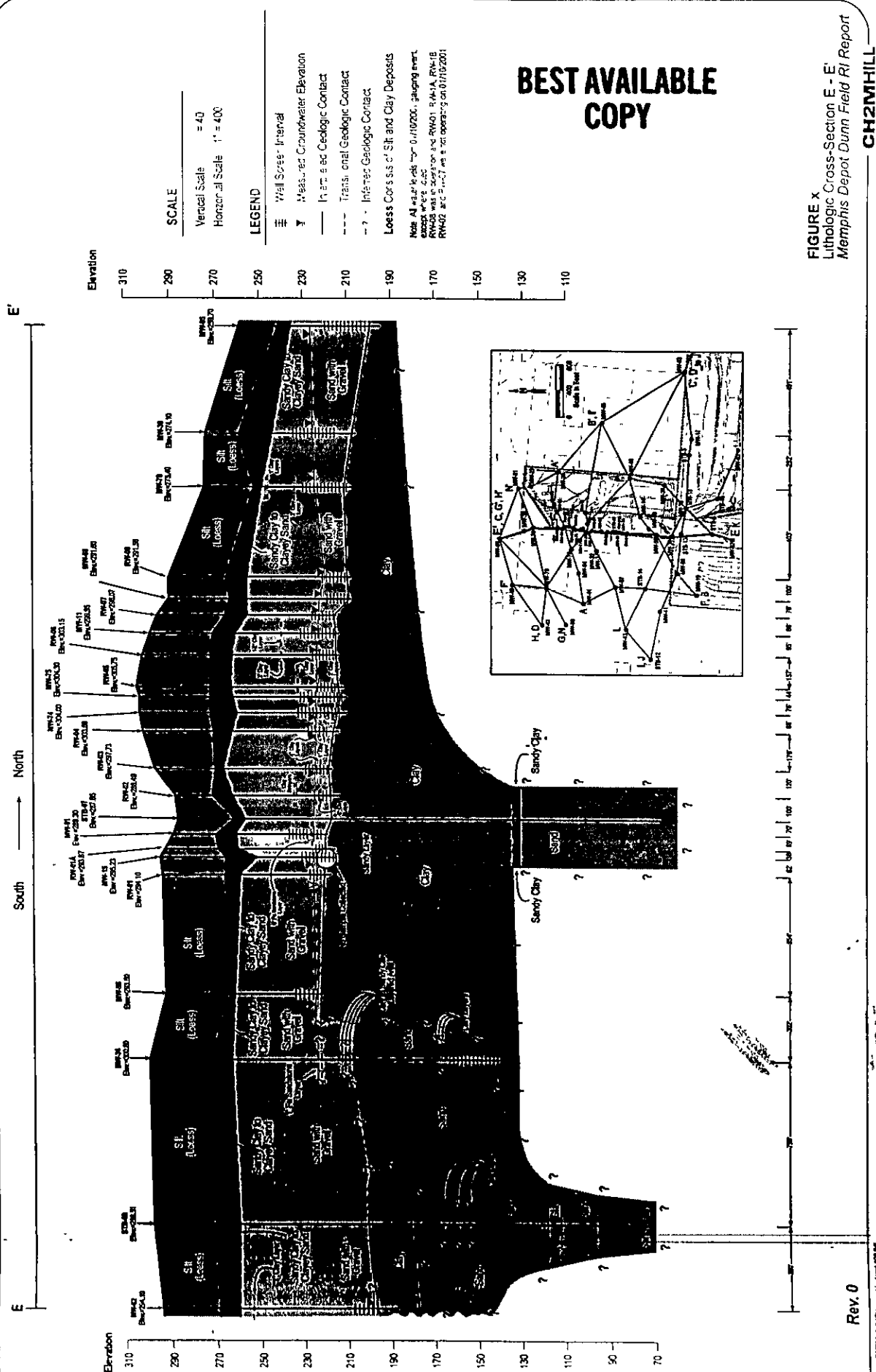
- east to west

Geological Conditions

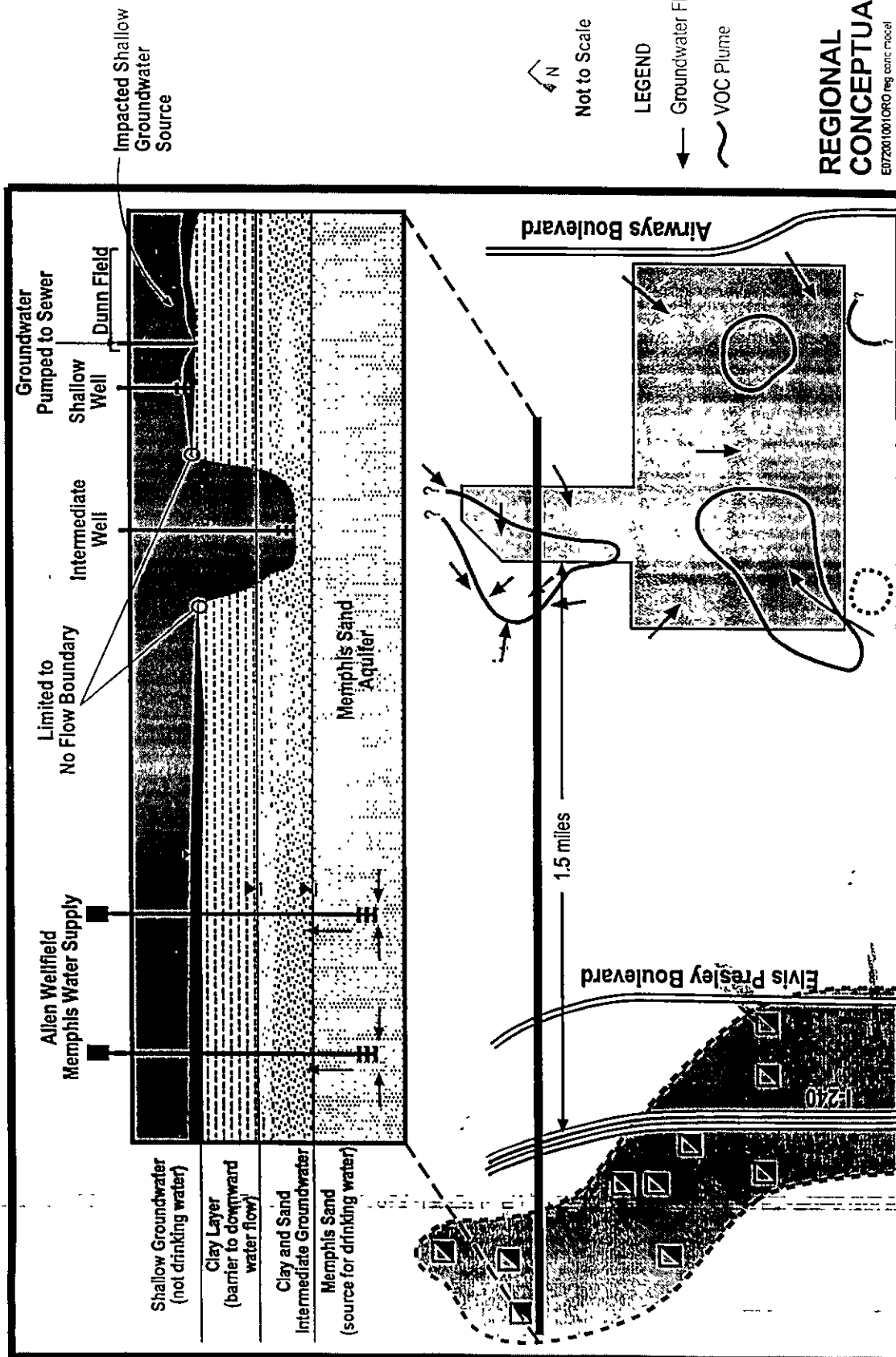


Main Installation & Dunn Field:

- Clay layers protect drinking water aquifer under Main Installation and Dunn Field
 - No solvents detected in closest municipal wells
 - Allen Wellfield
 - Some connections identified between shallow and deeper groundwater aquifers
 - Intermediate aquifer under Depot meets or surpasses safe drinking water standards
 - Drinking water aquifer is not affected by environmental conditions at the Depot
 - Meets or surpasses safe drinking water standards
 - Areas of "Limited to No Flow" limit the amount of groundwater entering through these connections



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Findings: Main Installation



- Drinking water aquifer under the MI is not affected by environmental conditions in shallow aquifer
- Shallow aquifer contains solvents
 - approx. 80 to 100 feet below surface
- Cleanup remedy outlined in Proposed Plan
 - August 2000
- TDEC to investigate suspected off-site sources of solvents

Findings: Main Installation



Volatile Organic Compounds (VOCs) in parts per billion (ppb)	MCL (ppb)	Total Wells at Safe Levels	Total Wells Greater than MCL	Highest Recent Levels Detected
Tetrachloroethene (PCE)	5	28	8	200* / 78
Trichloroethene (TCE)	5	31	5	50 / 39

* Well MW47 was resampled in March 2001 and PCE was <1 ppb
 MCL = Maximum Contaminant Level (health-protective standard)

Findings: Dunn Field



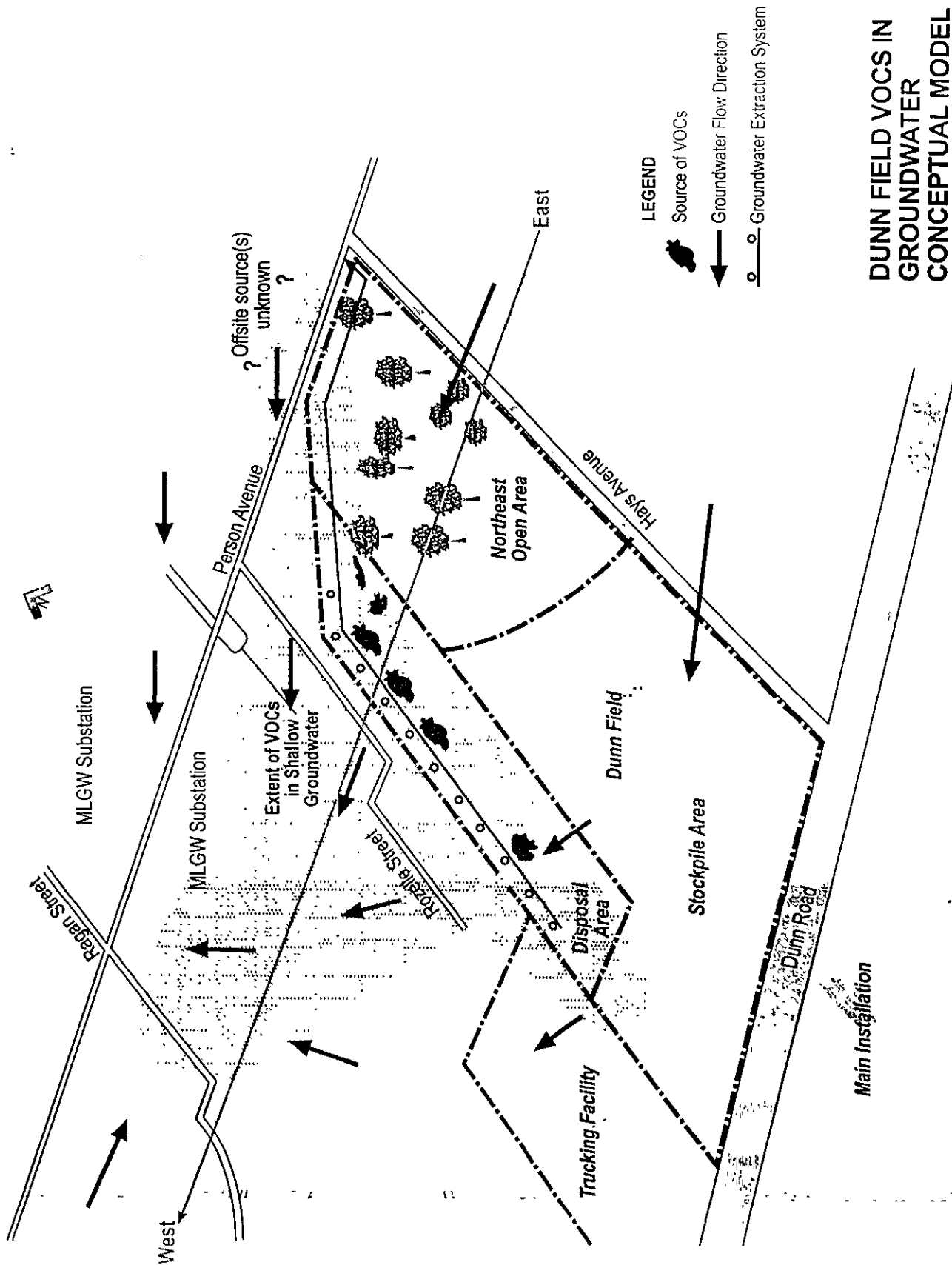
- Drinking water aquifer under Dunn Field is not affected by environmental conditions in shallow aquifer
- Shallow aquifer contains solvents
 - Approx. 80 to 100 feet below surface
 - Samples from 27 wells meet health-protective standards
 - Samples from 29 wells do not meet health-protective standards
 - This water is not used in the municipal drinking water system.

Findings: Dunn Field



Volatile Organic Compounds (VOCs) in parts per billion (ppb)	MCL (ppb)	Total Wells at Safe Levels	Total Wells Greater than MCL	Highest Recent Levels Detected
Tetrachloroethene (PCE)	5	40	16	120
Trichloroethene (TCE)	5	29	27	2,500
Cis 1,2-Dichloroethene (DCE)	70	47	9	250
1,1-Dichloroethene (DCE)	7	47	9	57.9
1,1,2,2-Tetrachloroethane (PCA)*	<1*	39	17	33,000
1,1,2-Trichloroethane (TCA)	5	52	4	8
Carbon Tetrachloride	5	49	7	61.3
Chloroform*	5*	46	10	605
Vinyl Chloride	2	55	1	8

* No MCL established. A general health risk value is used.
MCL= Maximum Contaminant Level (health-protective standard)



Next Steps: Main Installation



1. **Finalize Record of Decision**
2. **Design selected cleanup remedy**
 - Enhanced bioremediation
 - Deed restrictions for shallow groundwater
 - Install additional monitoring wells
3. **Begin cleanup actions**
4. **Long-term monitoring**
 - Monitor effectiveness of cleanup remedy
 - Ensure compliance with deed restrictions

Next Steps: Dunn Field



- **Fall 2001 – Remedial Investigation Report**
- **Early 2002 – Feasibility Study**
- **Spring 2002 – Proposed Plan**
 - Identifies cleanup alternatives preferred by DLA, EPA and TDEC
- **Spring 2002 – Public Comment Period**
- **Fall 2002 – Record of Decision**

** projected dates are based on current information*

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ADMINISTRATIVE RECORD

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