

# Idaho Pole Superfund Site

No. 836,592.

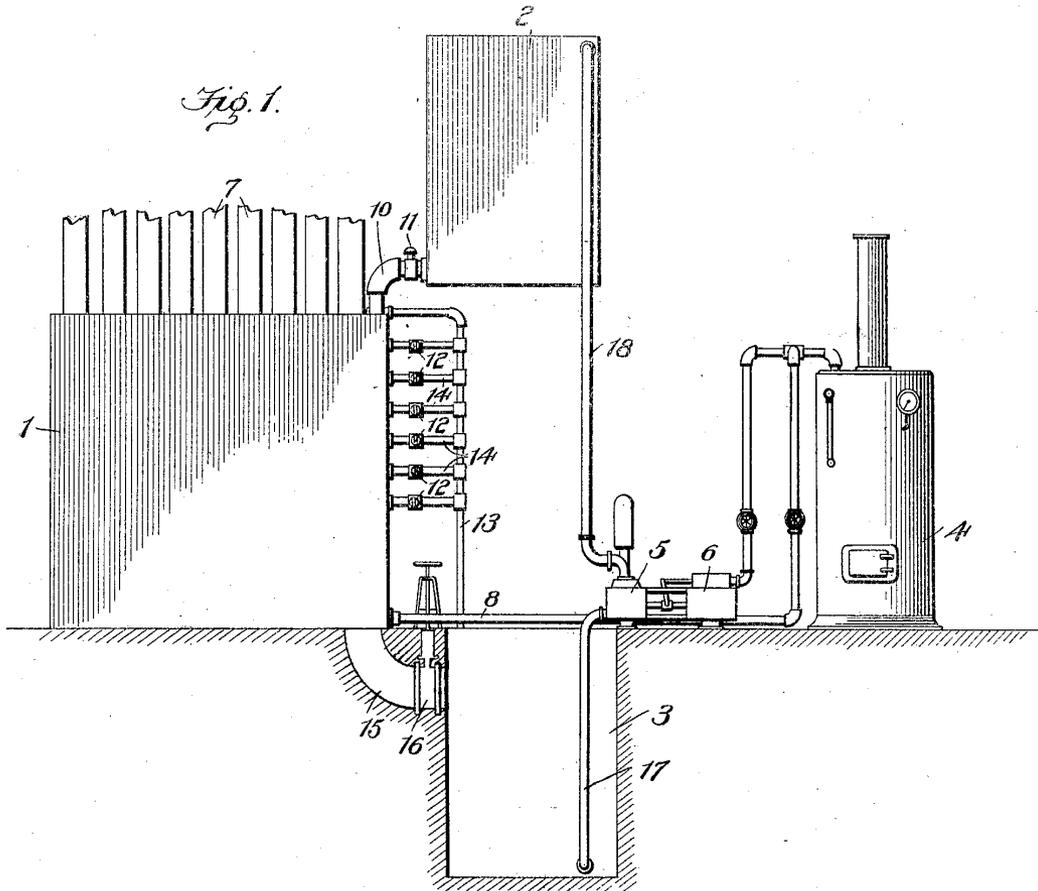
J. T. LOGAN.

PATENTED NOV. 20, 1906.

APPARATUS FOR TREATING THE BUTT ENDS OF POLES.

APPLICATION FILED MAR. 13, 1906.

2 SHEETS—SHEET 1.



Witnesses:  
*J. S. Logan*  
*A. D. Jackson*

By His Attorney,  
*J. S. Logan* Inventor  
*A. D. Jackson*

In the “Good ole days”...



Waste stored and disposed of according to the “best practices” of the time.

# Idaho Pole Site History

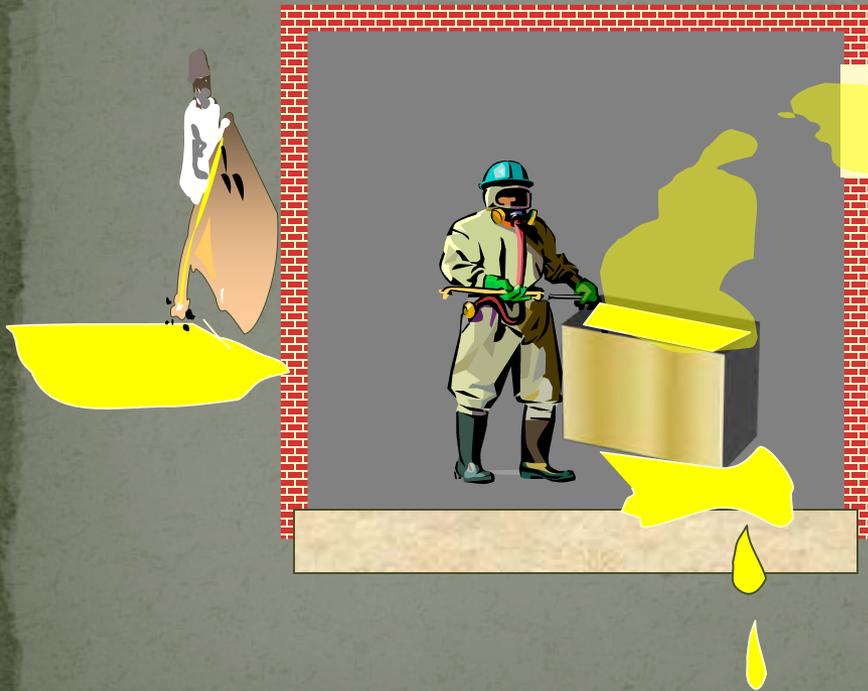


- Operated a wood treating facility from 1945 until 1997
- Used pentachlorophenol (penta) and creosote in carrier oil (diesel) to preserve wood
- During operations, releases of oily process fluids occurred



# “Releases”

Spills, drips, leaks, dumping, vapor emissions, waste water discharges, etc.

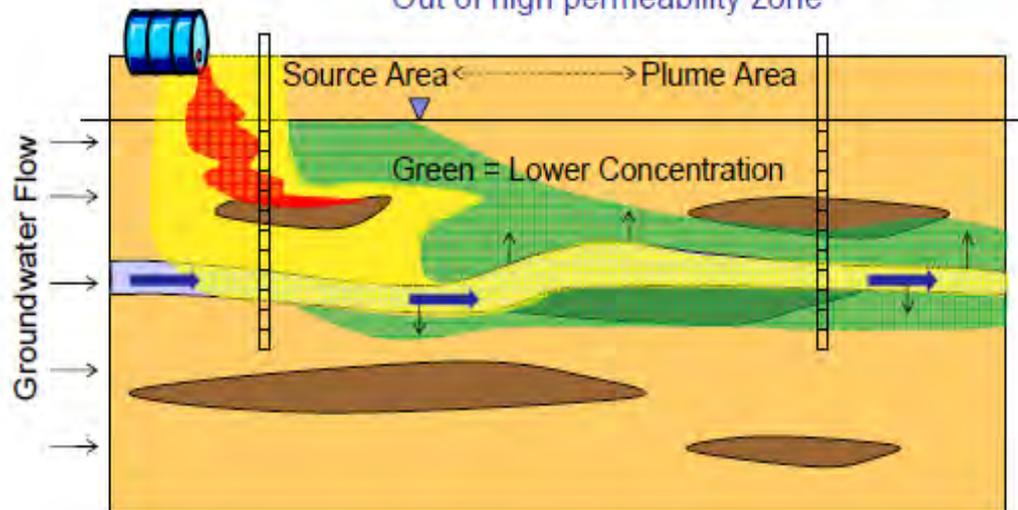


No “release” as long as everything stays inside the building or container

## Source-Plume Evolution: Early Stage

Dominant **Early Stage** Process:

Diffusion from high to low concentration  
Out of high permeability zone



Highly simplified illustration of heterogeneous geology

Don't actually see many DNAPL releases in "early stage". Usually after 10-20 years you have moved into middle or late stage, but early stage is important to understand as the starting point.

# Regulatory Involvement

- State documented release of oily wood treating fluid in 1978
- Site was added to Superfund in 1986
  - 15% of Superfund Sites nationally are wood treating sites
- Idaho Pole Company placed under EPA order to conduct cleanup

# Strict, Joint & Several Liability

Strict: The assessment of liability for damages without requiring proof of negligence.

Responsible Party is financially liable even if the release was legal at the time.

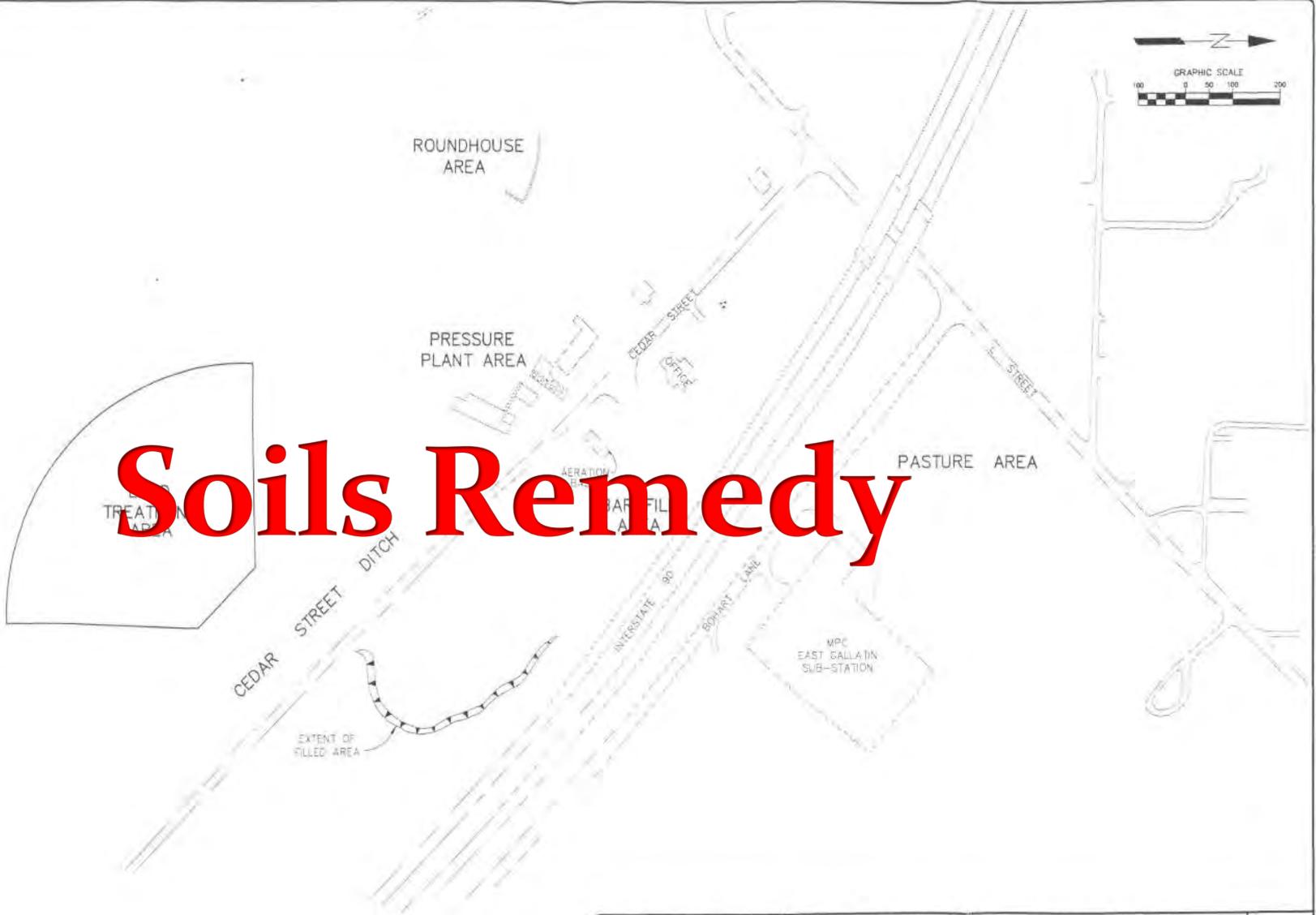


Analogy: You get a ticket TODAY for not stopping at a sign ten years ago...

# EPA issued a Record of Decision in 1992

- The contaminants of concern are pentachlorophenol, polycyclic aromatic hydrocarbons, and dioxins/furans
- Remedy is comprised of two components: soils and groundwater

FILENAME: S114  
169A.DWG  
CREATED: DEC 08 1993 09:53:06  
UPDATED: 13 JUN 97 14:59:41  
PLOTTED: 035 19 1997 15:04:38 44588271



# Soils Remedy

 <p>GERAGHTY &amp; MILLER, INC. Environmental Services</p>	<p>IDAHO POLE COMPANY - BOZEMAN, MONTANA</p> <p>LTU LOCATION</p>	<p>FIGURE 2</p>
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DRAWING NO. 401-71

# Soils Remedy

- Excavation and biological treatment of accessible contaminated soils
  - Approximately 24,000 cubic yards
  - Placed and treated in a Land Treatment Unit on the southeast portion of site
- Soil cleanup standards based on future industrial use
  - Does not allow for unlimited use/unrestricted exposure
  - Relies on institutional controls (e.g. deed restrictions)
  - Requires evaluations of the remedy every five years



Aerial photo during soil excavation



AERIAL PHOTOGRAPH TAKEN MAY 1997, PROVIDED BY IDAHO POLE COMPANY.

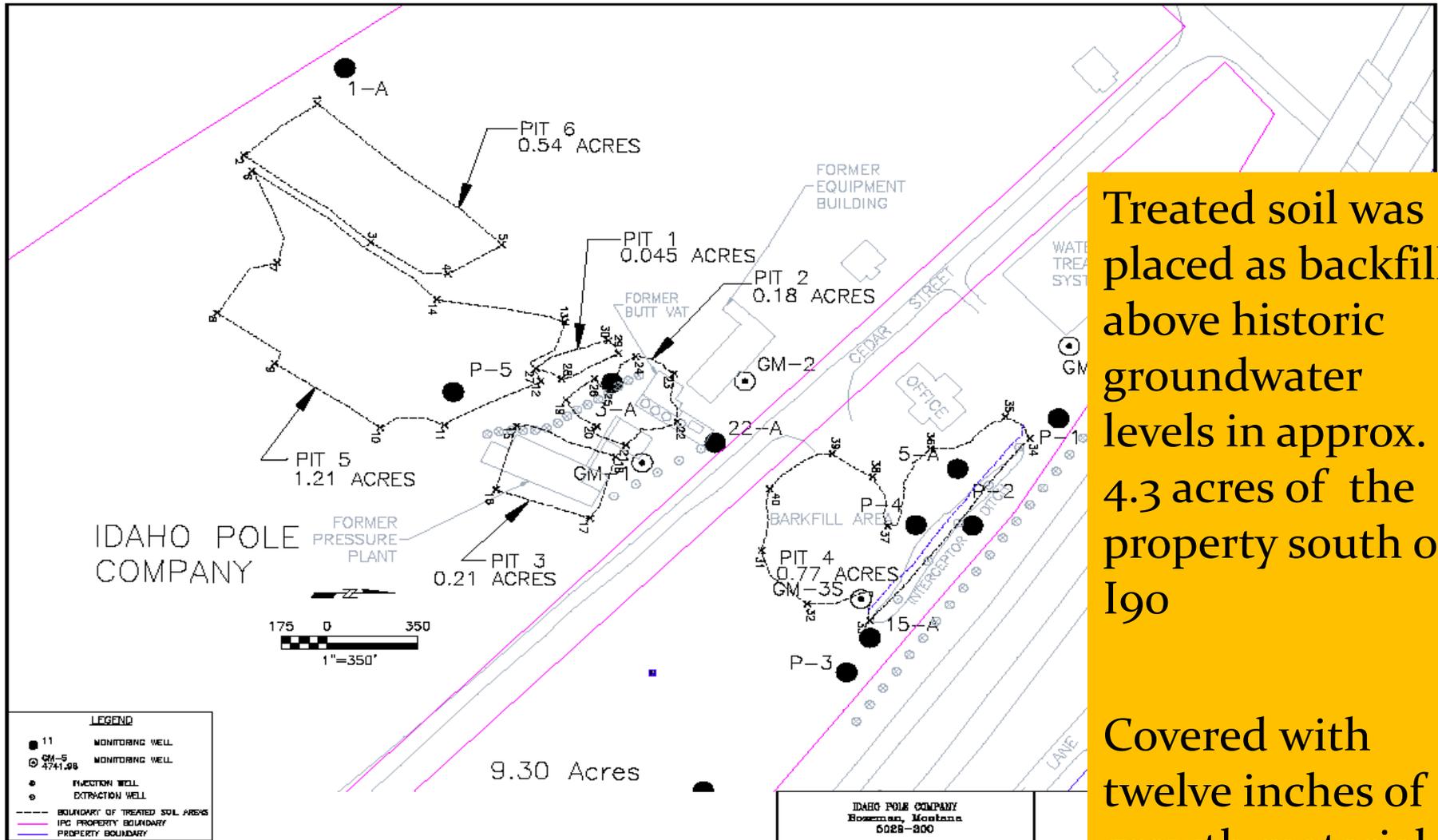
Maul Foster & Alongi, Inc.

DATE 3/99  
 DWN. JLN  
 APPR. \_\_\_\_\_  
 REVIS. \_\_\_\_\_  
 PROJECT NO. \_\_\_\_\_

Figure 1-3

1997 aerial photo after completion of soil excavation but before remaining building are demolished

# Treated Waste Locations

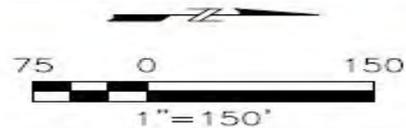


Treated soil was placed as backfill above historic groundwater levels in approx. 4.3 acres of the property south of I90

Covered with twelve inches of growth material



# Groundwater Remedy



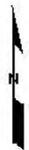
<p>IDAHO POLE COMPANY BOZEMAN, MONTANA 5029-300</p>	<p><b>GROUNDWATER REMEDY SYSTEM COMPONENTS IPC - BOZEMAN, MT</b></p>	<p>FIGURE <b>4-1</b></p>
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# Groundwater Remedy

- Groundwater monitoring
- Extraction/Injection wells, Granular Activated Carbon treatment, and return of treated water to the aquifer
  - **Nutrients added to treated water before reinjection**
  - **Reinjection enhances in situ biological degradation and controls potential migration of contaminants**
- Institutional Controls
  - **Controlled Groundwater Area in place to prevent access to contaminated groundwater**

# Monitoring Well Network





**Legend**

- Monitoring Location
- Site Boundaries

PRELIMINARY DRAFT

Scale (FT)



**IDAHO POLE COMPANY SITE**  
Idaho Pole Company, Bozeman, Montana

Coord: NAD 83 UTM Zone 12N m.	Issued: 13-MAR-2009
Drawn By: MV	Revised:
Checked: MV	Map ID:
Approved: MV	Figure 1



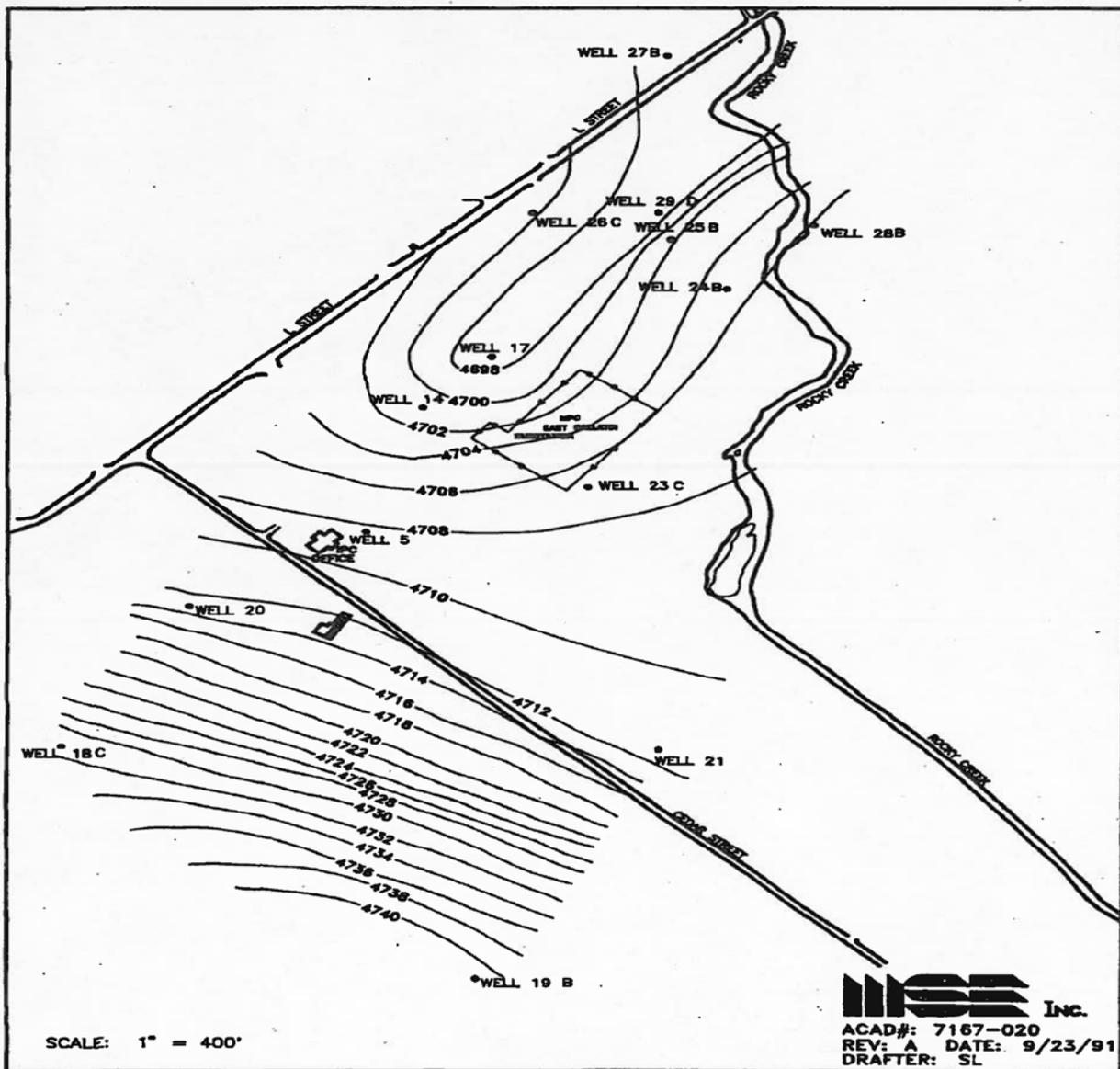
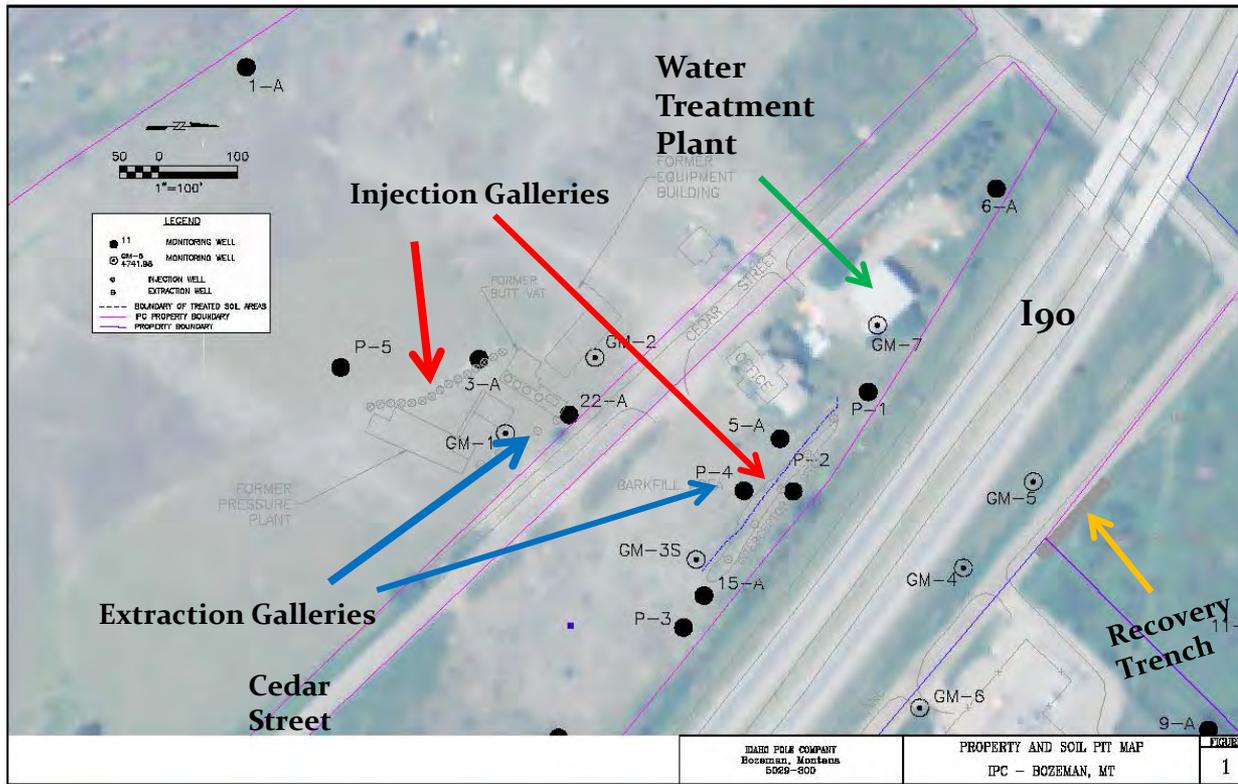


FIG. 3-5 CONTOUR MAP OF THE SURFACE  
OF THE FIRST SILTY CLAY UNIT

# Groundwater Remedy System



Ongoing since 1997

Includes 10 extraction wells in two extraction galleries and 35 injection wells in two injection galleries

A recovery trench located north of I-90 collects any free product that may be present

# Water Treatment Plant



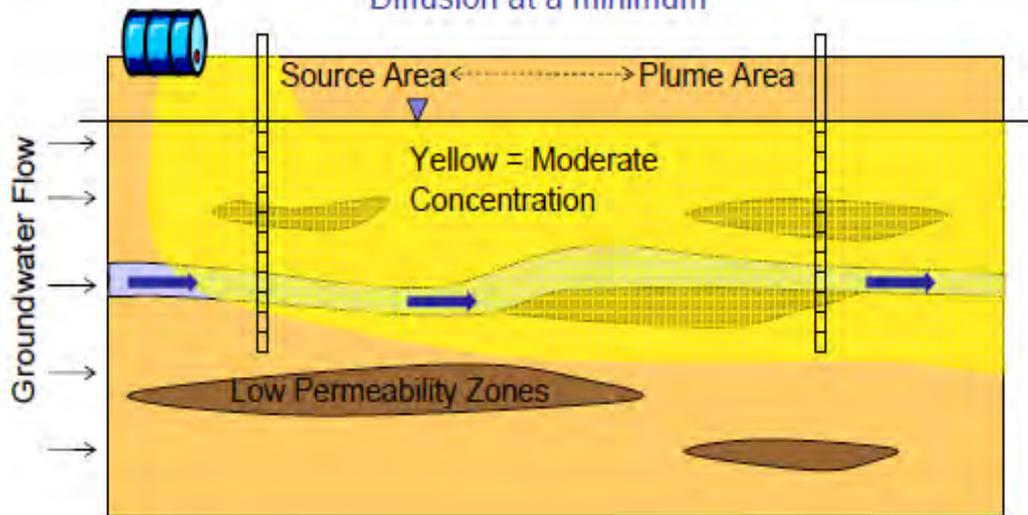
- Treats about 100 gallons per minute
- Over ½ billion gallons have been treated
- Approx. 60 pounds of PAH and 300 pounds of PCP have been removed



## Source-Plume Evolution: Middle Stage

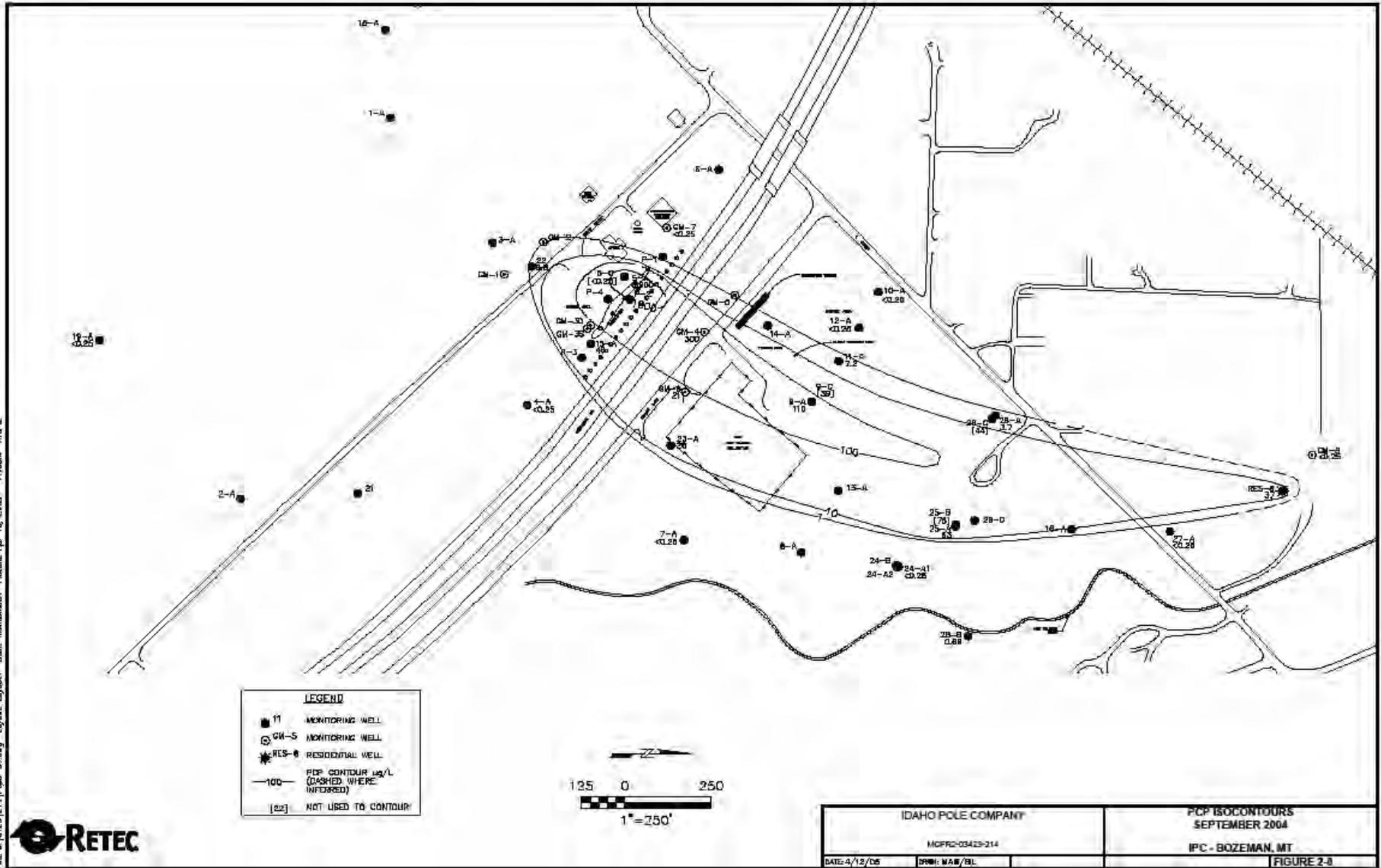
Dominant **Middle** Stage Process:

Relatively uniform contaminant distribution  
Diffusion at a minimum



Highly simplified illustration of heterogeneous geology

# 2004 PCP Contamination Contours



File: J:\2003\214\Draw-04.dwg Layout: Layout1 User: mckinnon Plotfile: Apr 12, 2005 - 7:13am xref.c



# 2008 Analysis



## Legend

### Ratio of Average Concentration to MCL

- ▲ < 1.0 X MCL
- ▲ 1.0 - 100 X MCL
- ▲ > 100 X MCL

### Mann-Kendall Trends

- D
- PD
- INT
- ND
- ND\*
- NT
- N/A

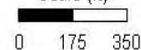
- Residential Wells
- Center of Mass 1998 - 2007 (First Moments)
- Site Boundaries

### Notes:

1. Average concentrations for PCP 1998 - 2007 were normalized by the MCL for PCP = 1 ug/L.
2. Mann-Kendall trends: D = Decreasing; PD = Probably Decreasing; INT = < 30% Detections; NT = No Trend; N/A = Insufficient Data; ND = No Detections; ND\* = One detection, not repeated.

PRELIMINARY DRAFT

Scale (ft)



## PCP CONCENTRATIONS, TRENDS AND CENTER OF MASS

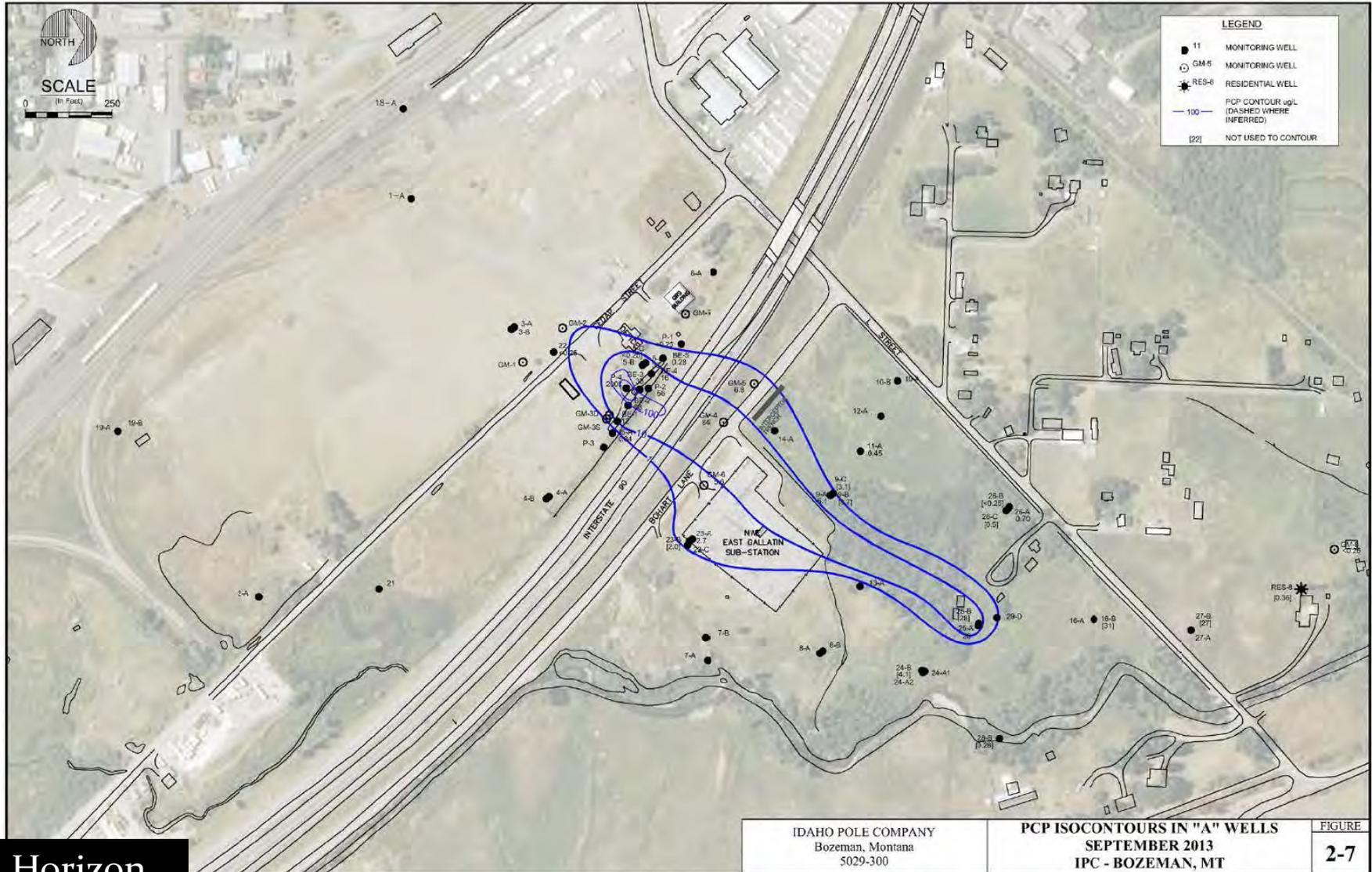
Idaho Pole Company, Superfund Site  
Bozeman, Montana

Coord Sys:	NAD 83 UTM Zone 12N	Issued:	13-MAR-2009
Drawn By:	MV	Revised:	
Checked:	MV	Map D.:	
	MV		Figure 2

Center of dissolved mass moving downgradient and becoming more dilute



# 2013 PCP Contamination Contours



IDAHO POLE COMPANY  
Bozeman, Montana  
5029-300

PCP ISOCONTOURS IN "A" WELLS  
SEPTEMBER 2013  
IPC - BOZEMAN, MT

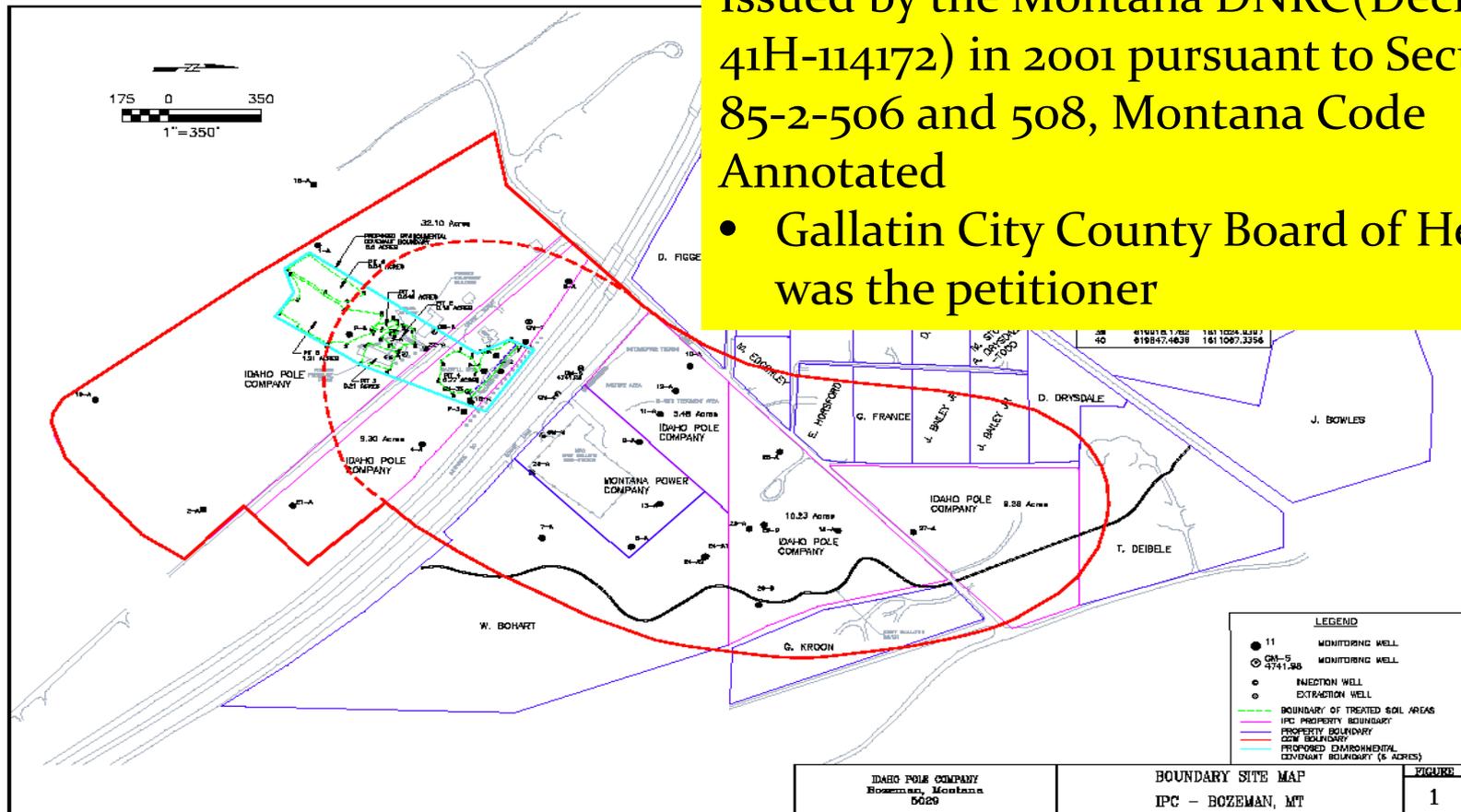
FIGURE  
2-7



# Controlled Groundwater Area

Issued by the Montana DNRC (Decision 41H-114172) in 2001 pursuant to Section 85-2-506 and 508, Montana Code Annotated

- Gallatin City County Board of Health was the petitioner

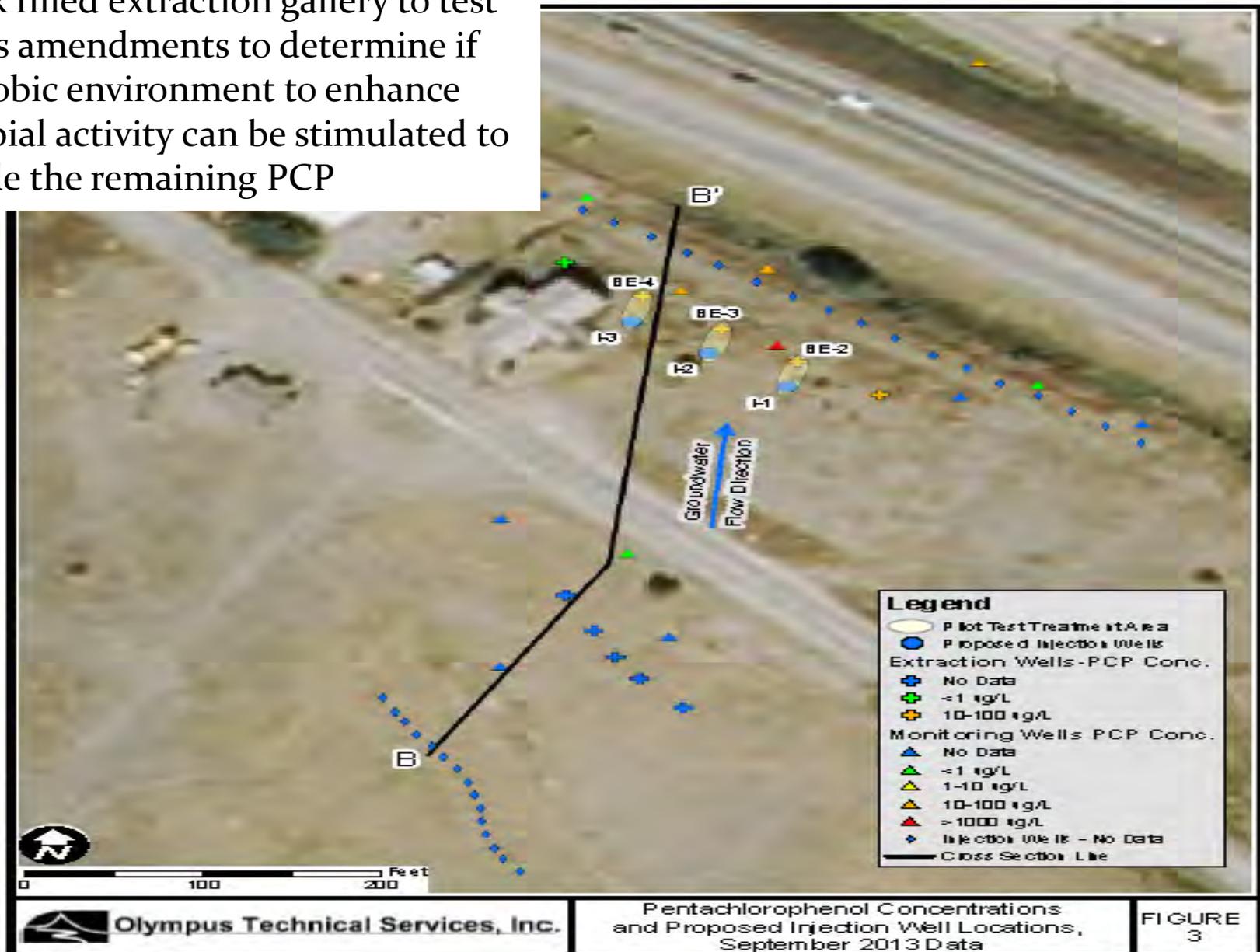


UPDATE TIME:  
 1200\_04\_110808\_0\PROJECTS\MCPM\BOUNDARY SITE MAP.dwg

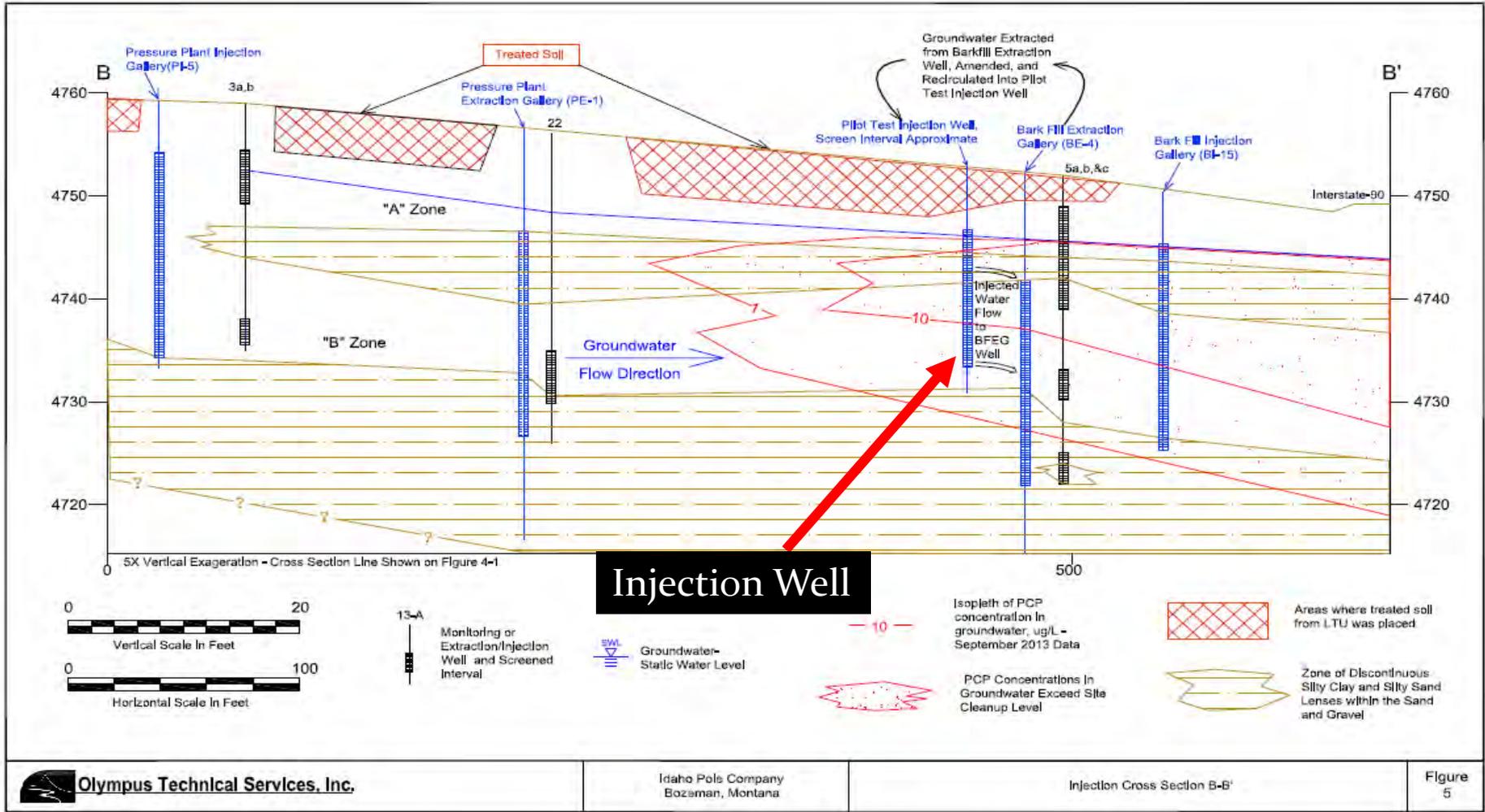
# 2014 Field Investigations



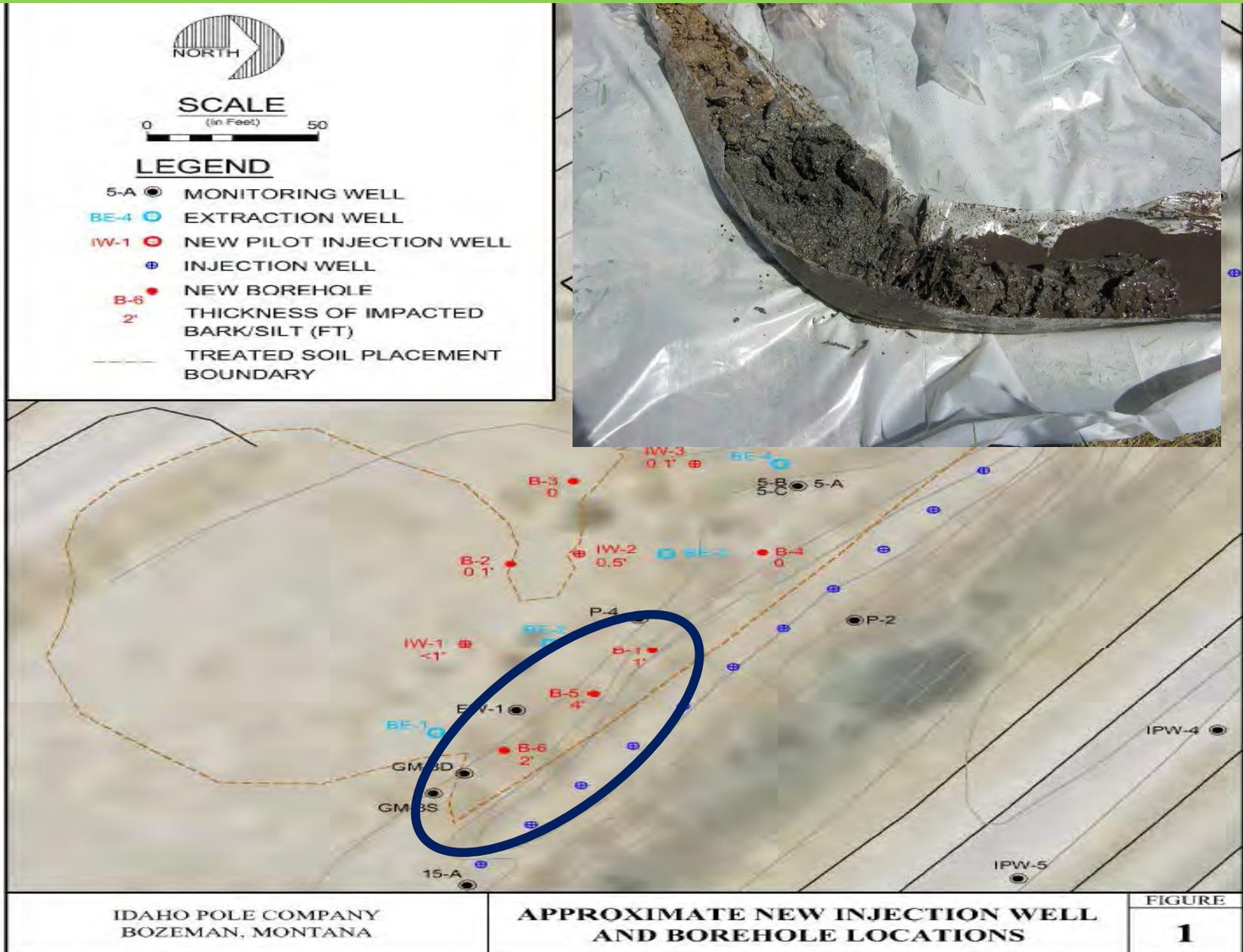
Installed 3 injection wells upgradient of bark filled extraction gallery to test various amendments to determine if an aerobic environment to enhance microbial activity can be stimulated to degrade the remaining PCP



# Source Area Hydrogeologic Cross Section



# What Was Encountered?



IDAHO POLE COMPANY  
BOZEMAN, MONTANA

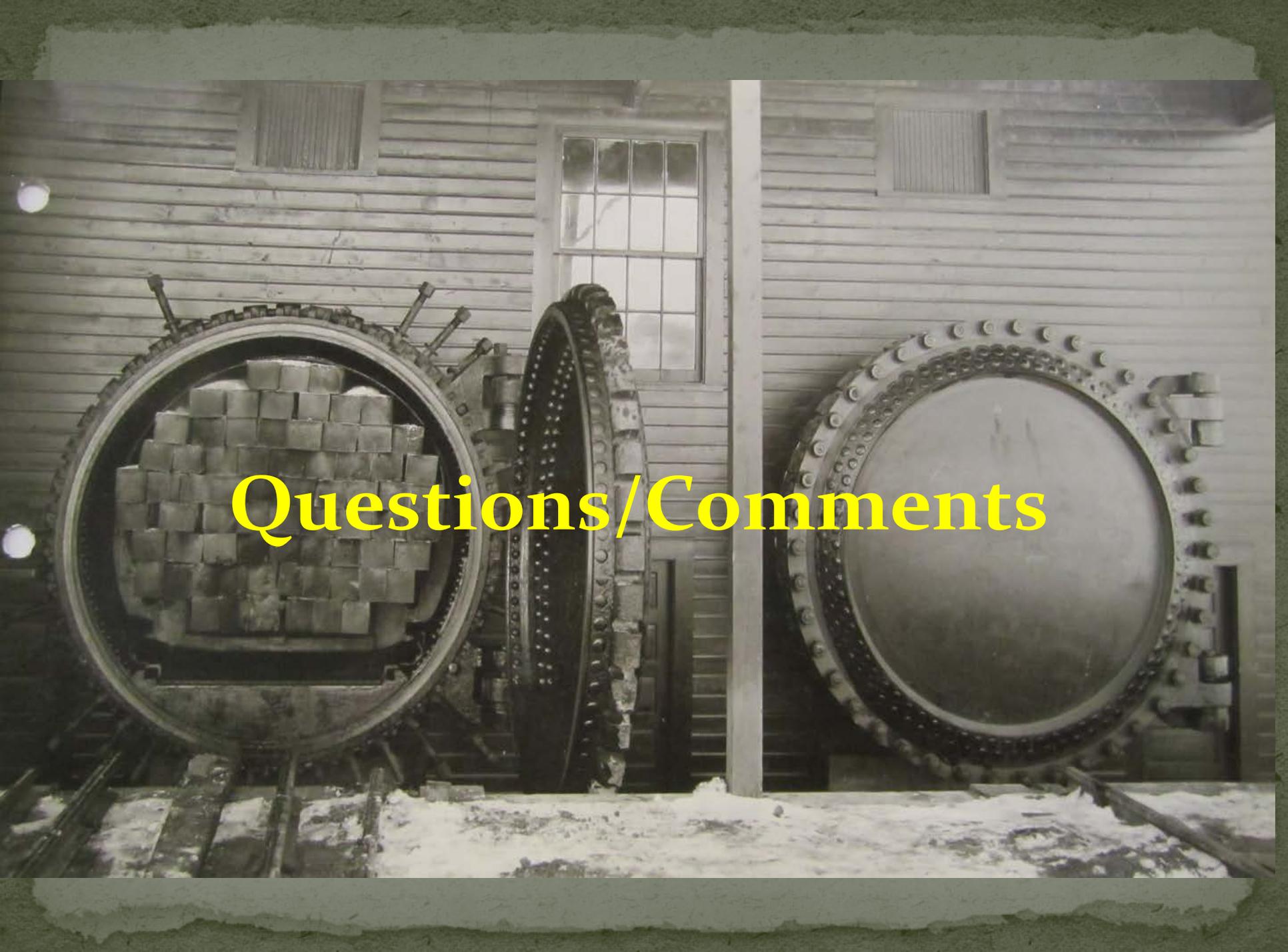
APPROXIMATE NEW INJECTION WELL  
AND BOREHOLE LOCATIONS

FIGURE

1

# 2015 and Beyond

- Five-year review due by September 2015
- Treatment of remaining residual contamination in source area
  - Additional investigations anticipated this summer
- Site closure



Questions/Comments