



# Air National Guard

Schenectady Air National Guard Base

Site 3 and Site 6

Interim Removal Action / Focused Feasibility Study

Performance Review Meeting

April 29, 2008



## AGENDA

- ❖ Introductions
- ❖ Project Background
- ❖ Project Objectives
- ❖ Proposed IRA
- ❖ Completed IRA Work
- ❖ Pilot Study
- ❖ Risk Assessment
- ❖ Feasibility Study
- ❖ Discussion

### Air National Guard



### New York State Regulatory Agencies

Jody Murata  
Environmental Restoration  
Andrews AFB, MD  
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Environmental Manager  
Stratton ANG, NY

Anthony Kokocki  
NYSDEC, Schenectady, NY  
Bruce Donovan  
NYSDOH, Troy, NY

### Earth Tech

Scott Underhill  
Project Manager, Latham, NY  
Mark MacEwan  
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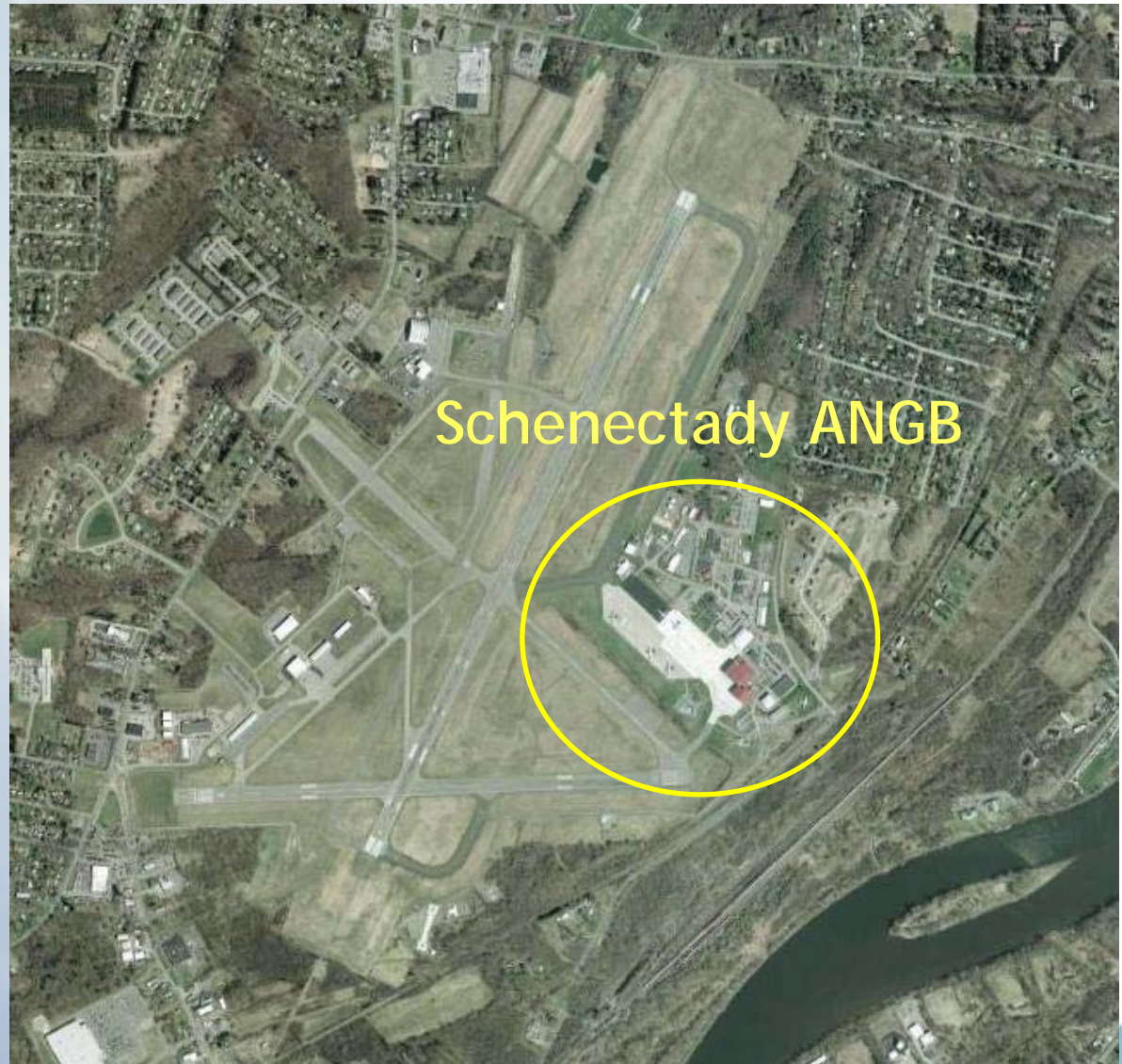
## Project Location

- ❖ Schenectady (Stratton) Air National Guard Base  
Scotia, New York
- ❖ 109<sup>th</sup> Airlift Wing
- ❖ Part of Schenectady County Airport

Schenectady ANGB

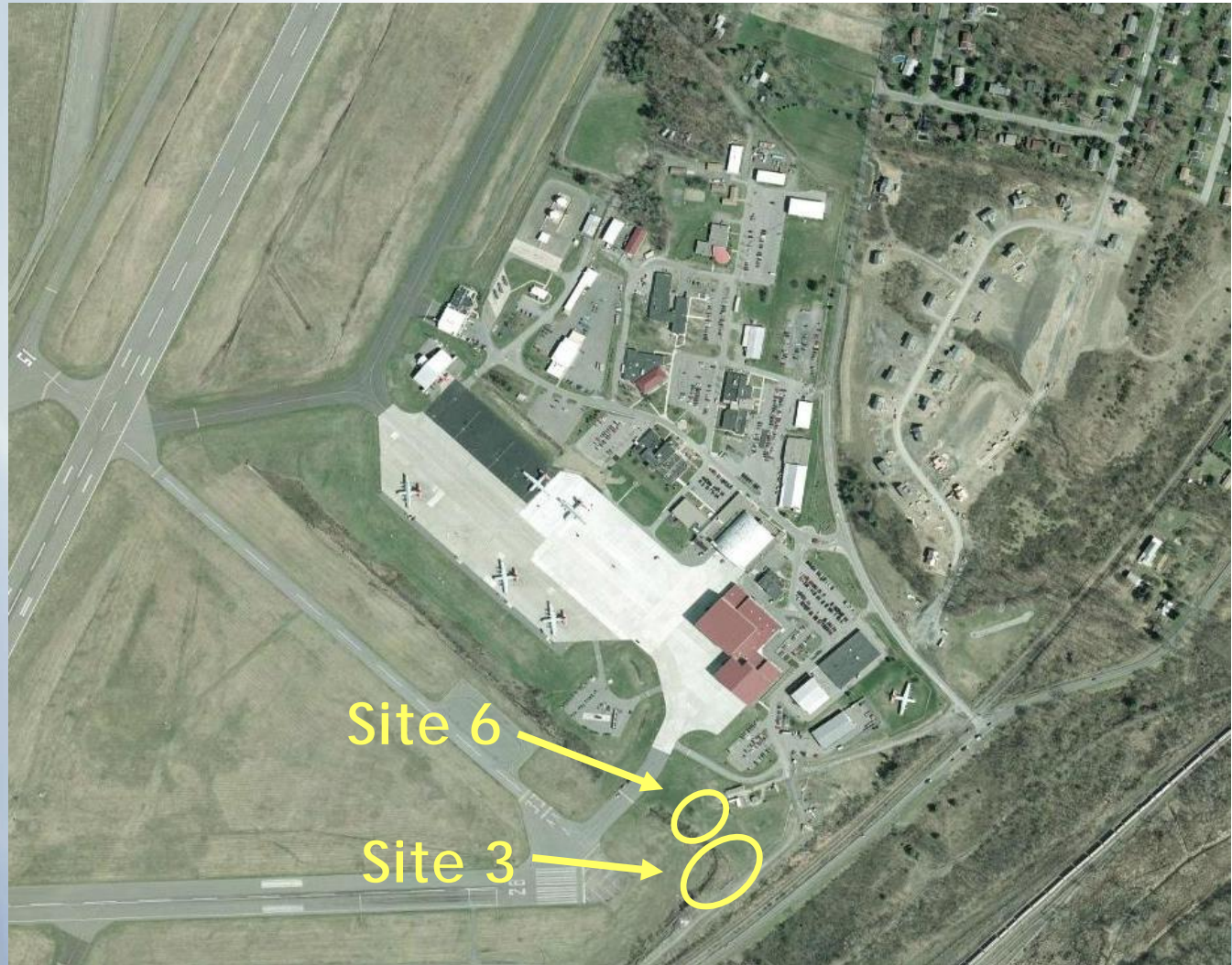


## Project Background



## Site Locations

- ❖ Site 3 - Drum Burial Area
- ❖ Site 6 - Suspected Spill Area



## Project Background

## AGENDA

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- ❖ Proposed IRA
- ❖ Completed IRA Work
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- ❖ Feasibility Study
- ❖ Discussion

## Project Background

### Environmental Investigations

Preliminary Assessment (1988)

Site Investigation (1996)

Remedial Investigation (1999)

Supplemental Data Collection - Site 6 (2002)

Feasibility Study - Site 6 (2002)

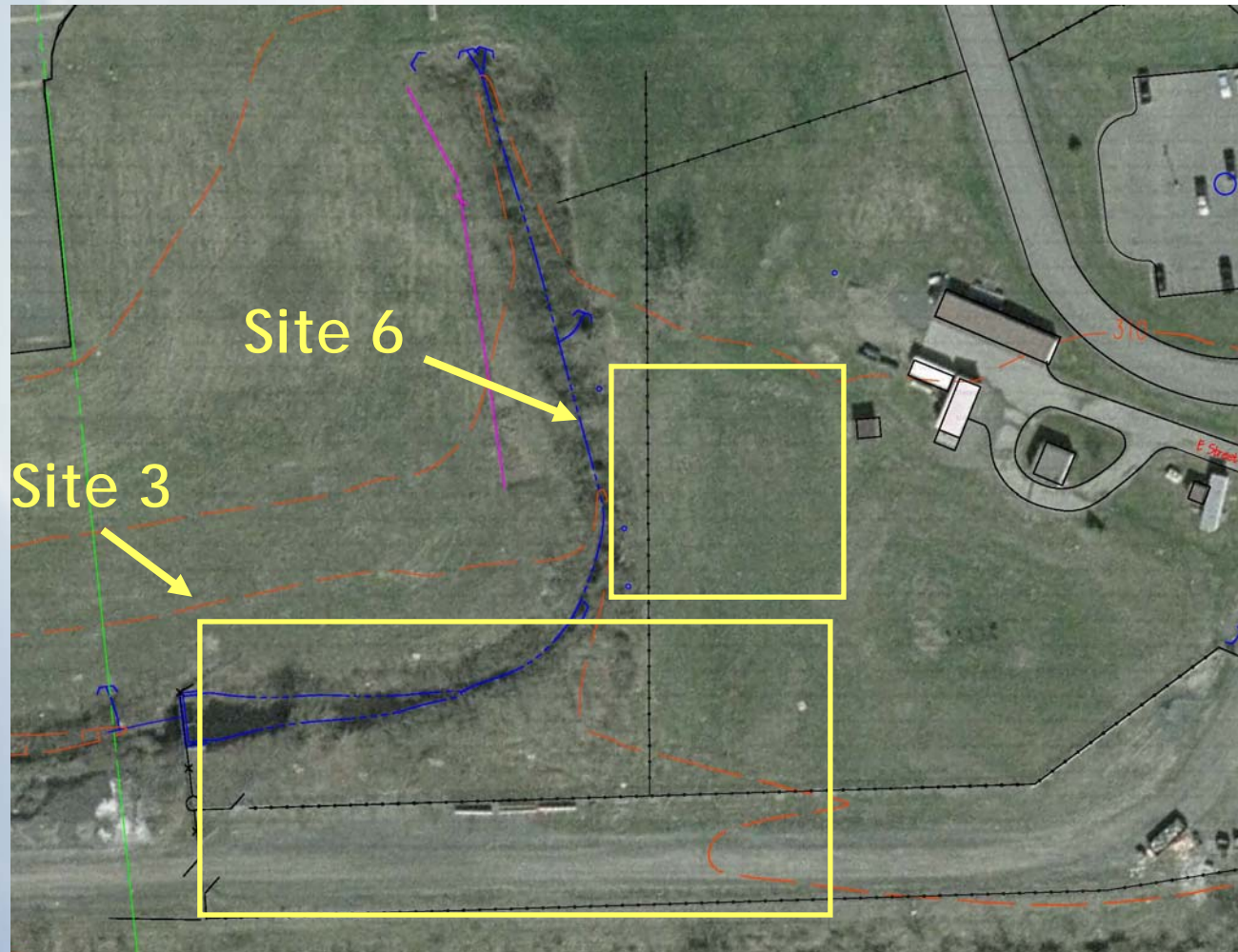
Geophysical Survey (2004)

### Removal Actions

Remove Buried Drums - Site 3 (1990)

Time Critical Removal Action (TCRA) - Site 6 (2002)

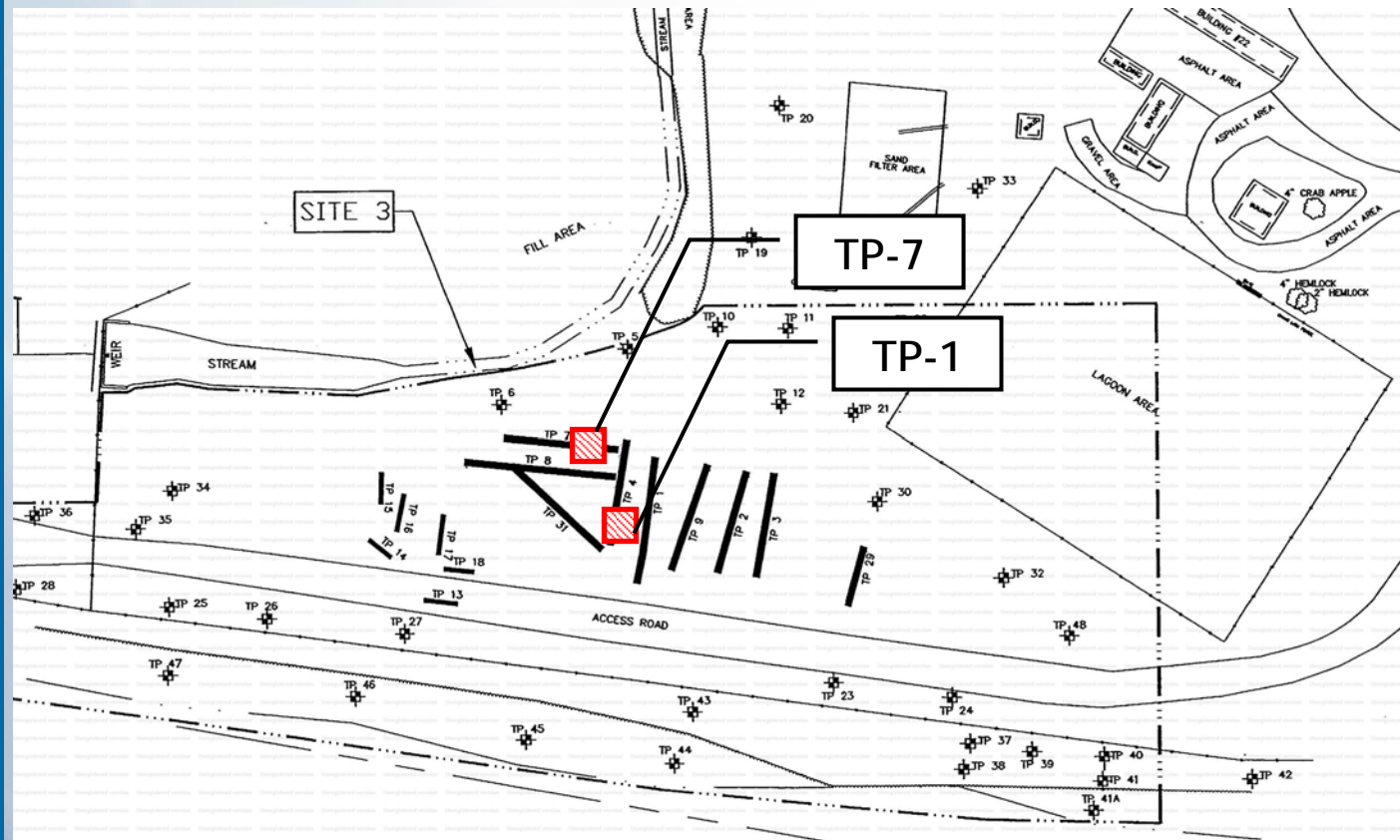
## Site Background



## RI Summary (1999)

- ❖ 48 Test Pits
- ❖ 6 Test Pits sampled
- ❖ Two Test Pits had exceedences of NYSDEC TAGM levels:
- ❖ TP-1: BTEX/debris
- ❖ TP-7: SVOCs/debris

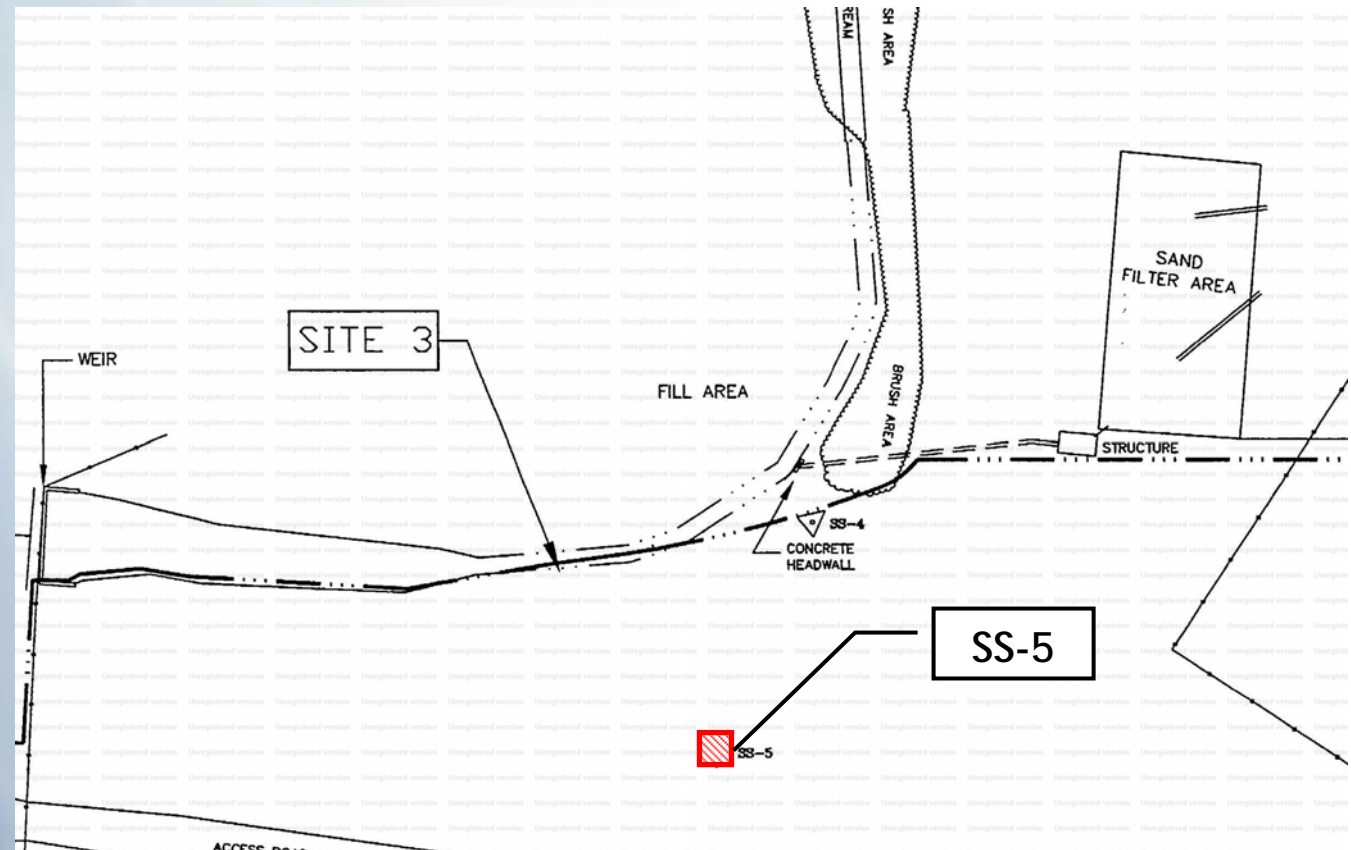
## Site 3 - Background



## RI Summary (1999)

- ❖ 2 Surface Soils Sampled
- ❖ SS-5: TAGM Exceedences of PAHs

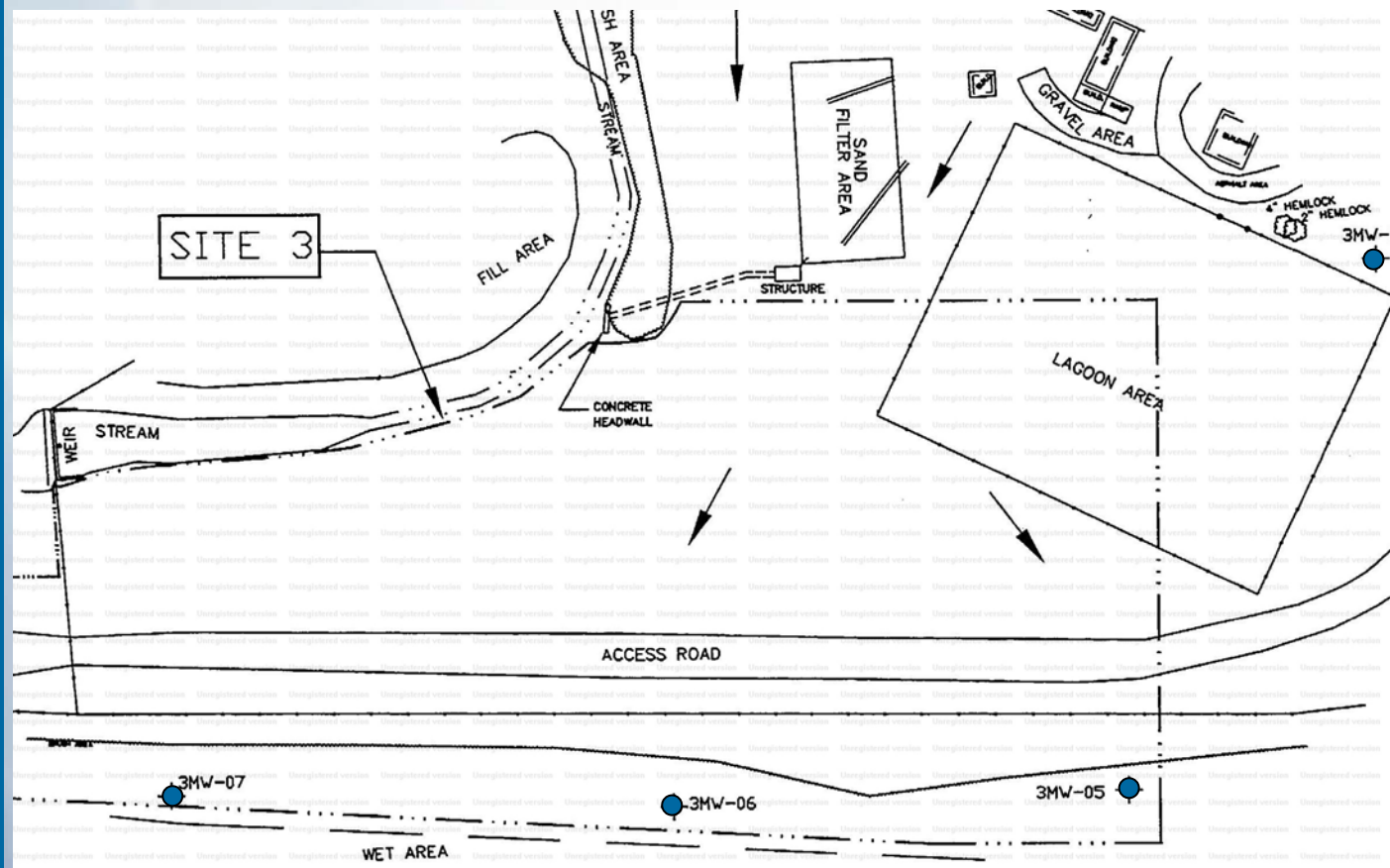
## Site 3 - Background



## RI Summary (1999)

- ❖ 4 Groundwater Wells Installed
- ❖ Sampled  
Oct 1999  
Dec 1999
- ❖ No site contaminants detected

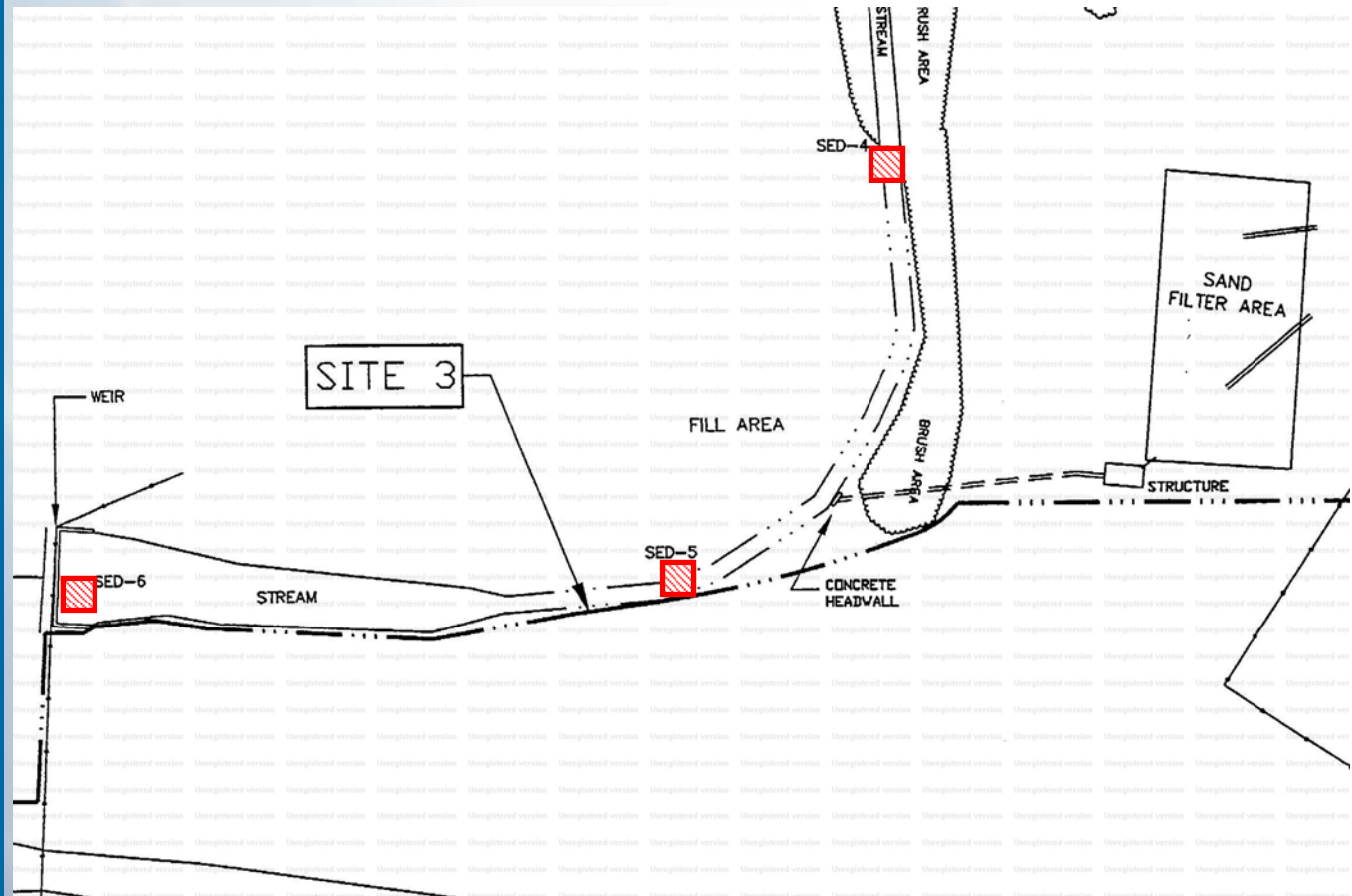
## Site 3 - Background



## RI Summary (1999)

- ❖ 3 Sediment Samples
- ❖ NYSDEC cleanup standard exceedences of PAHs in each sample

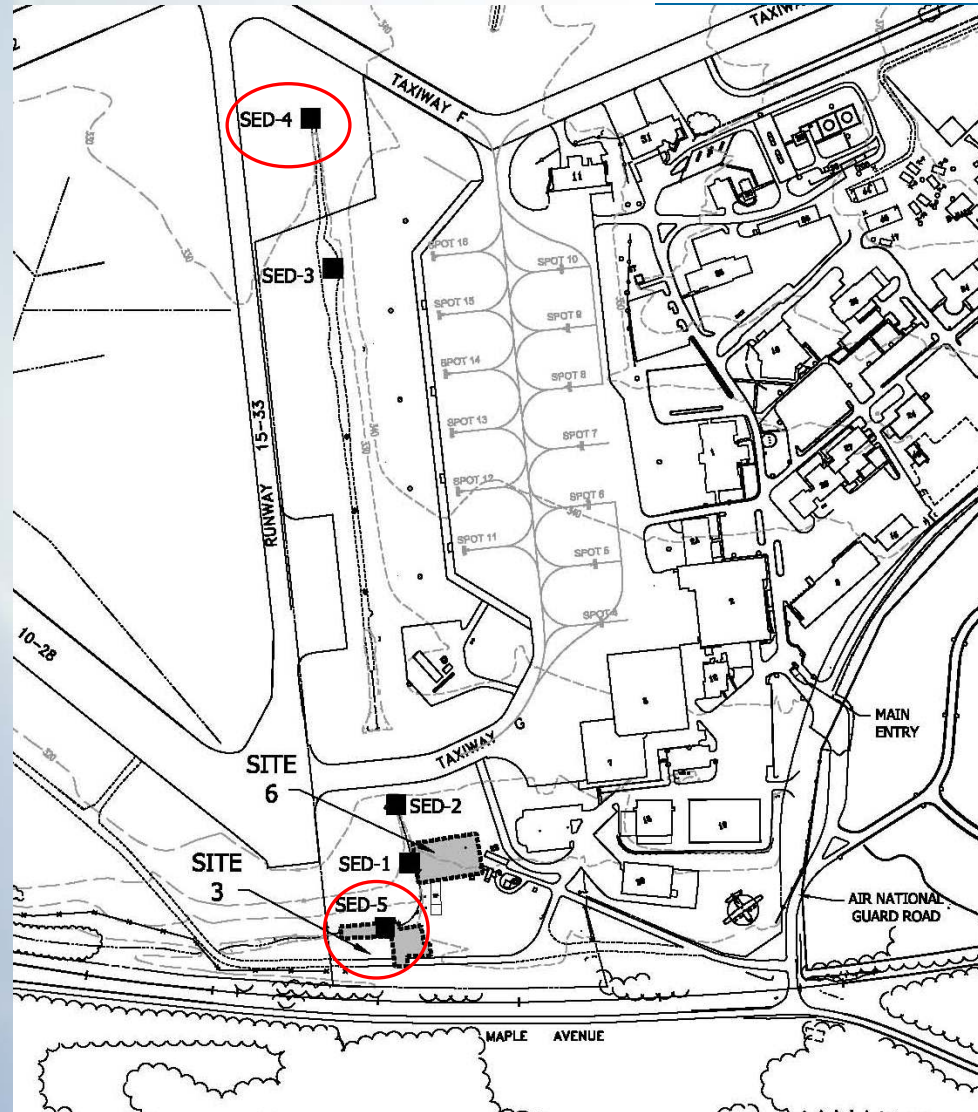
## Site 3 - Background



## Sediment Sampling (2006)

- ❖ 5 Sediment Samples
- ❖ NYSDEC cleanup standard exceedences of PAHs in
  - SED-5 (44,800 ppb)
  - SED-4 (1,460 ppb)

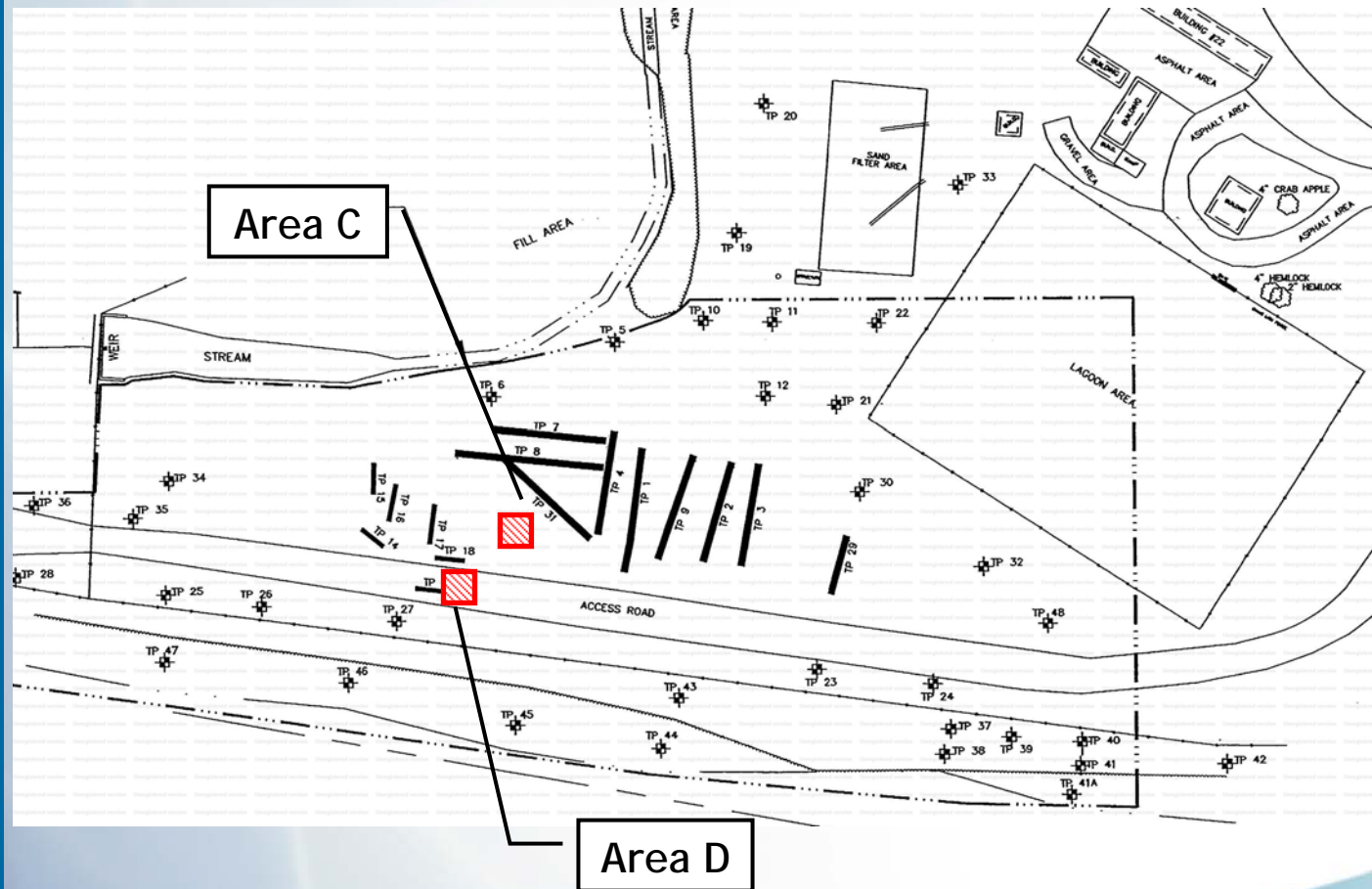
## Site 3 - Background



## Geophysical Survey (June 2004)

- ❖ Area C:  
Group of buried  
metallic anomalies  
(unidentified); depth  
unknown
- ❖ Area D:  
Group of buried  
metallic anomalies  
(unidentified); depth  
of 2- to 4-ft

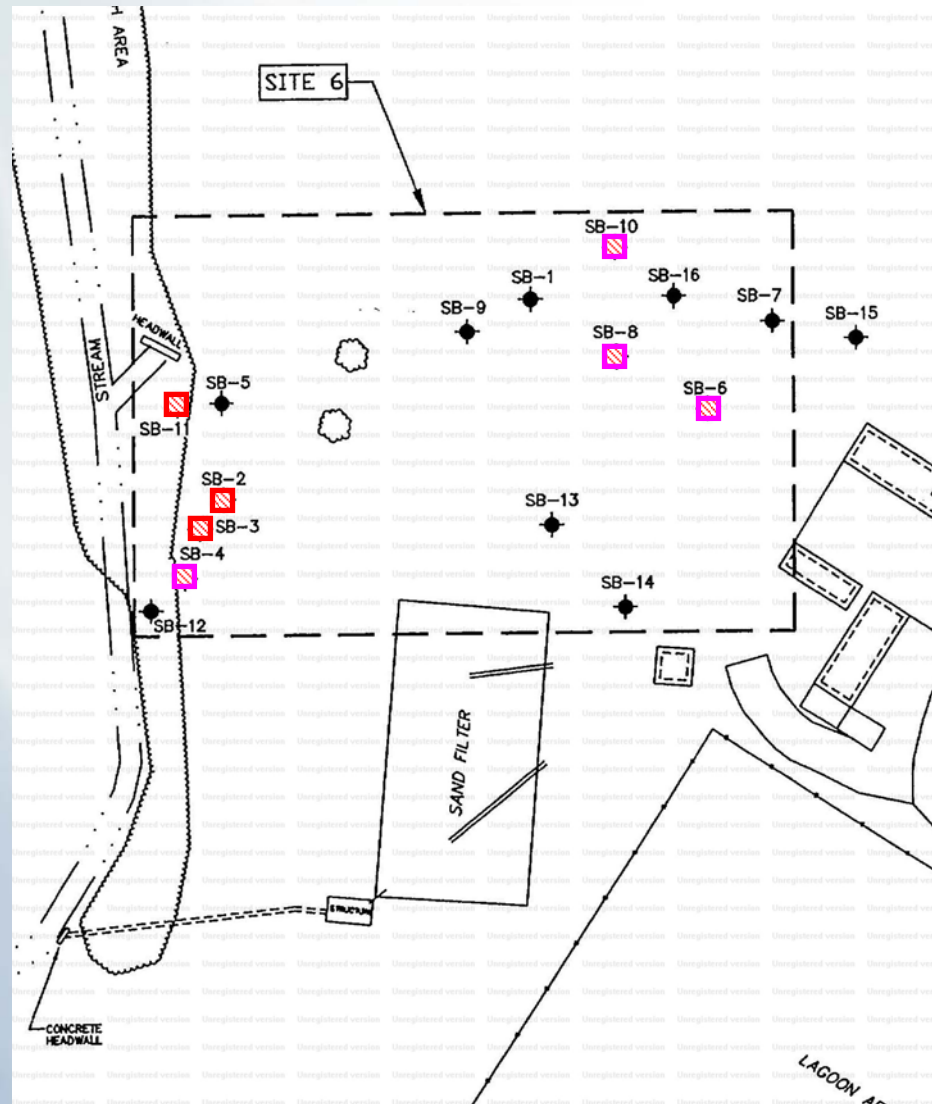
## Site 3 - Geophysical Survey



## RI Summary (1999)

- ❖ 16 Soil borings advanced
- ❖ Sampled based on PID screening
- ❖ Chlorinated hydrocarbon exceedences: SB-2,-3, and -11
- ❖ High PID readings: SB-4,-6,-8, and -10
- ❖ No exceedences: SB-1,-5,-7,-9,-12,-13,-14,-15, and -16

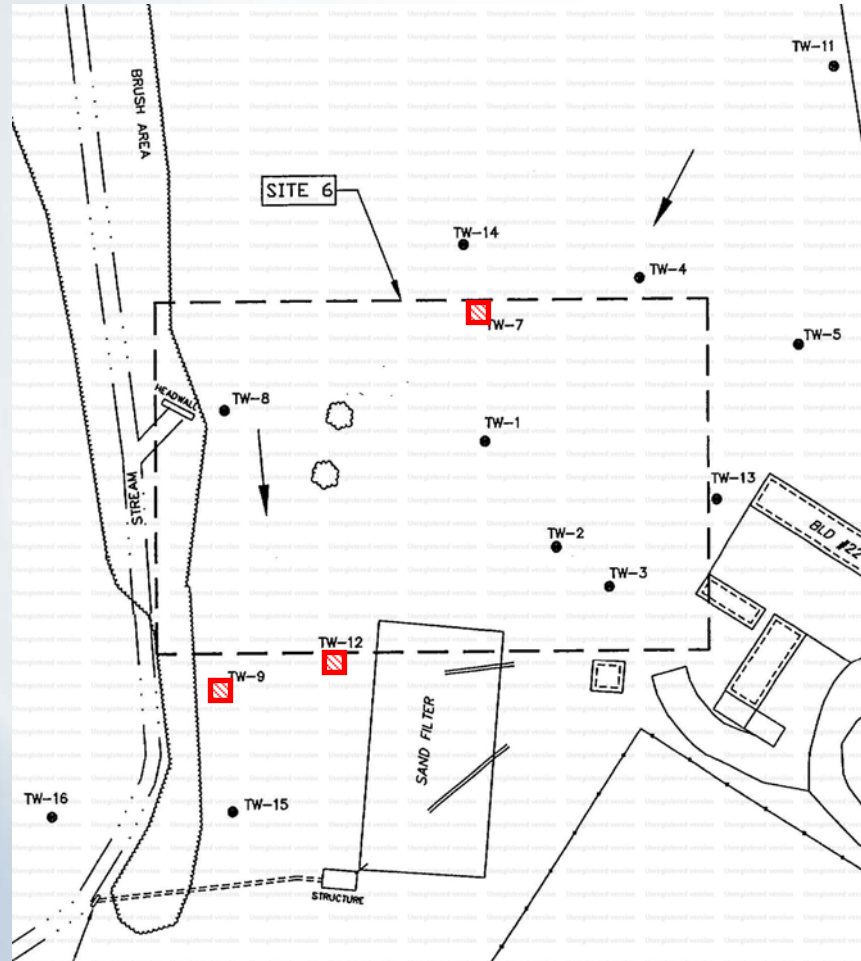
## Site 6 - Background



## RI Summary (1999)

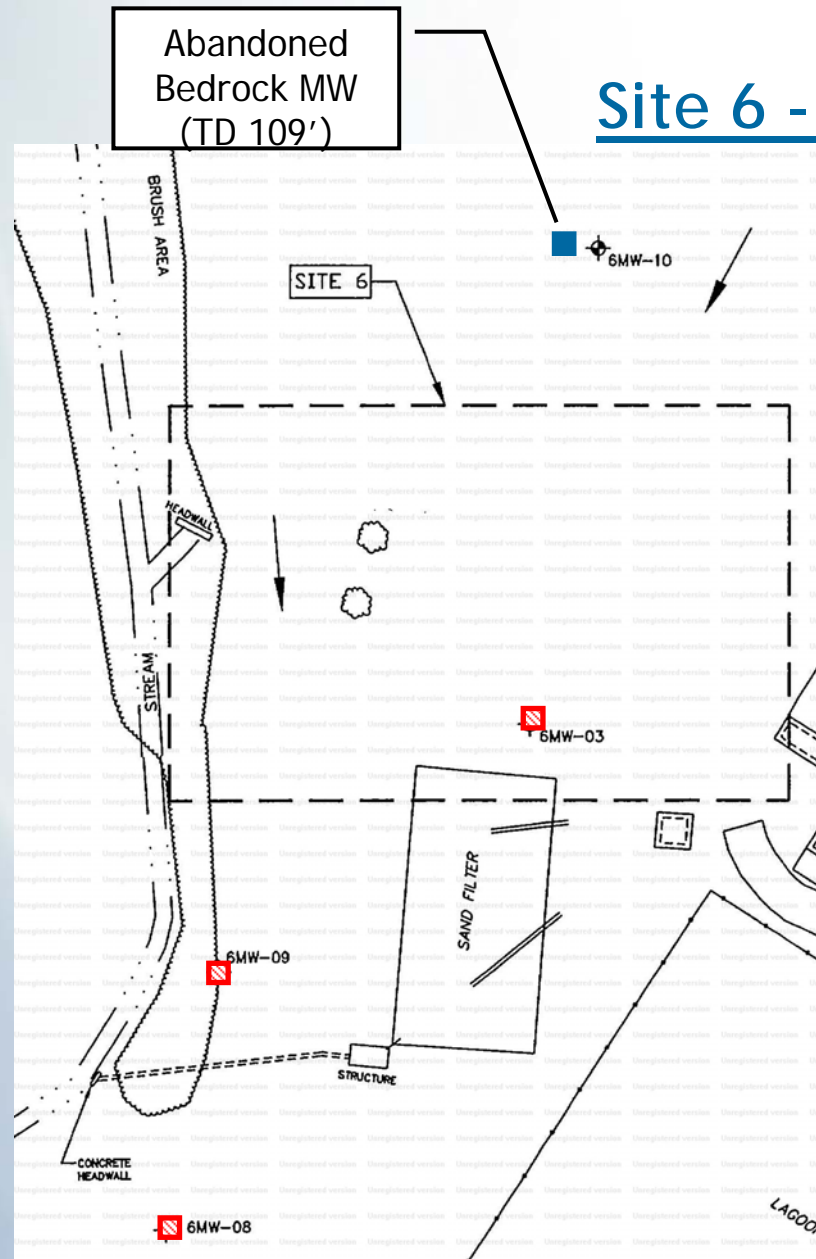
- ❖ 16 Temporary wells installed
- ❖ Screened for VOCs
- ❖ MCL exceedences of chlorinated hydrocarbons: TW-7, -9, and -12

## Site 6 - Background



## RI Summary (1999)

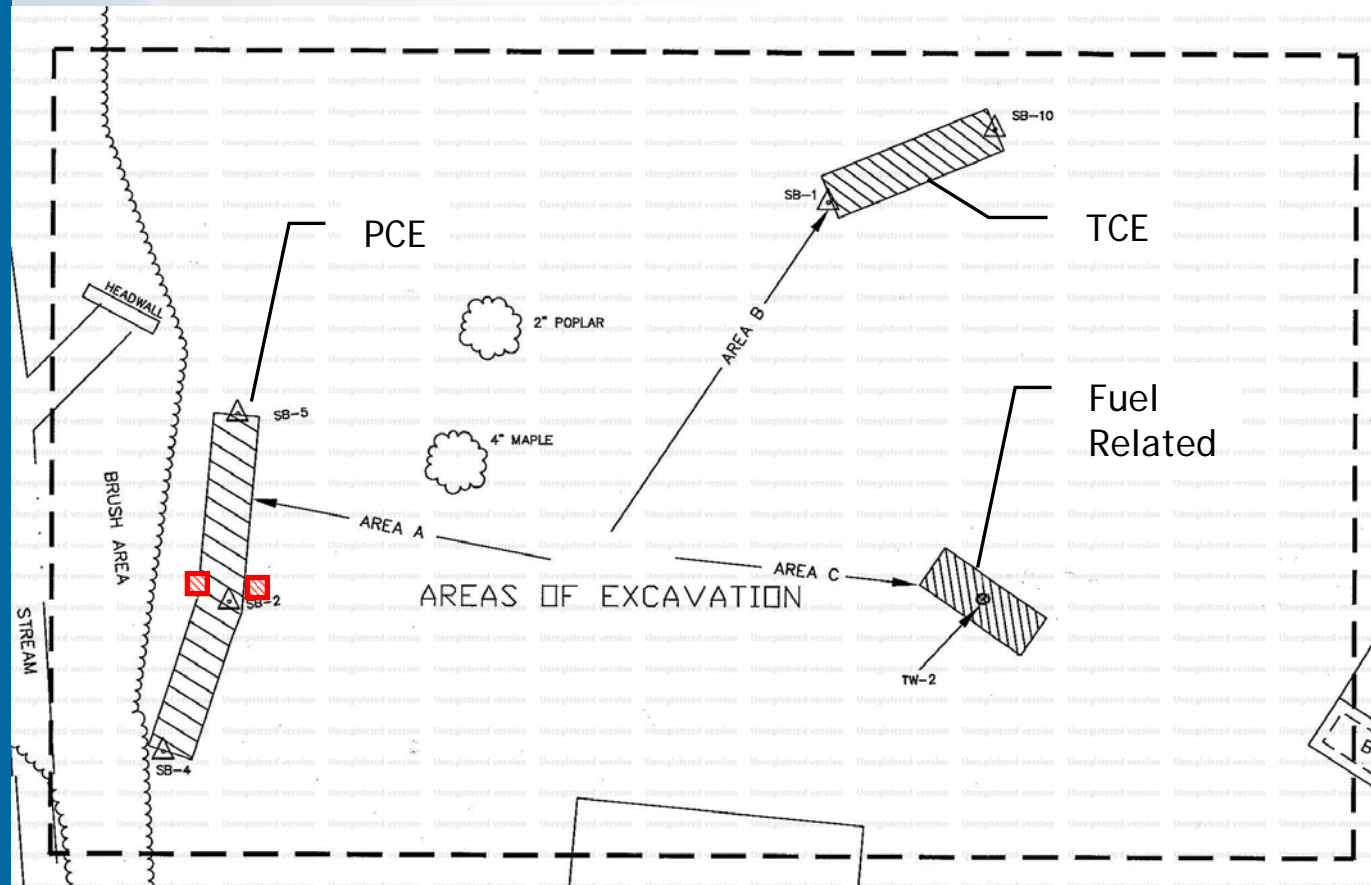
- ❖ 4 Groundwater wells installed; 1 deep bedrock boring
- ❖ Two sampling rounds: Oct & Dec 1999
- ❖ VOC exceedences: 6MW-03, -09, and -08



## TCRA Summary (2002)

- ❖ TCRA occurred in April 2002
- ❖ TCRA resulted in excavation of 3 areas: A, B, and C
- ❖ Soil excavated to a depth of 8 ft
- ❖ ~170 CY removed
- ❖ Disposed at ESMI
- ❖ Area A: 2 failed confirmation samples (PCE)
- ❖ Areas B and C: no failed confirmation samples

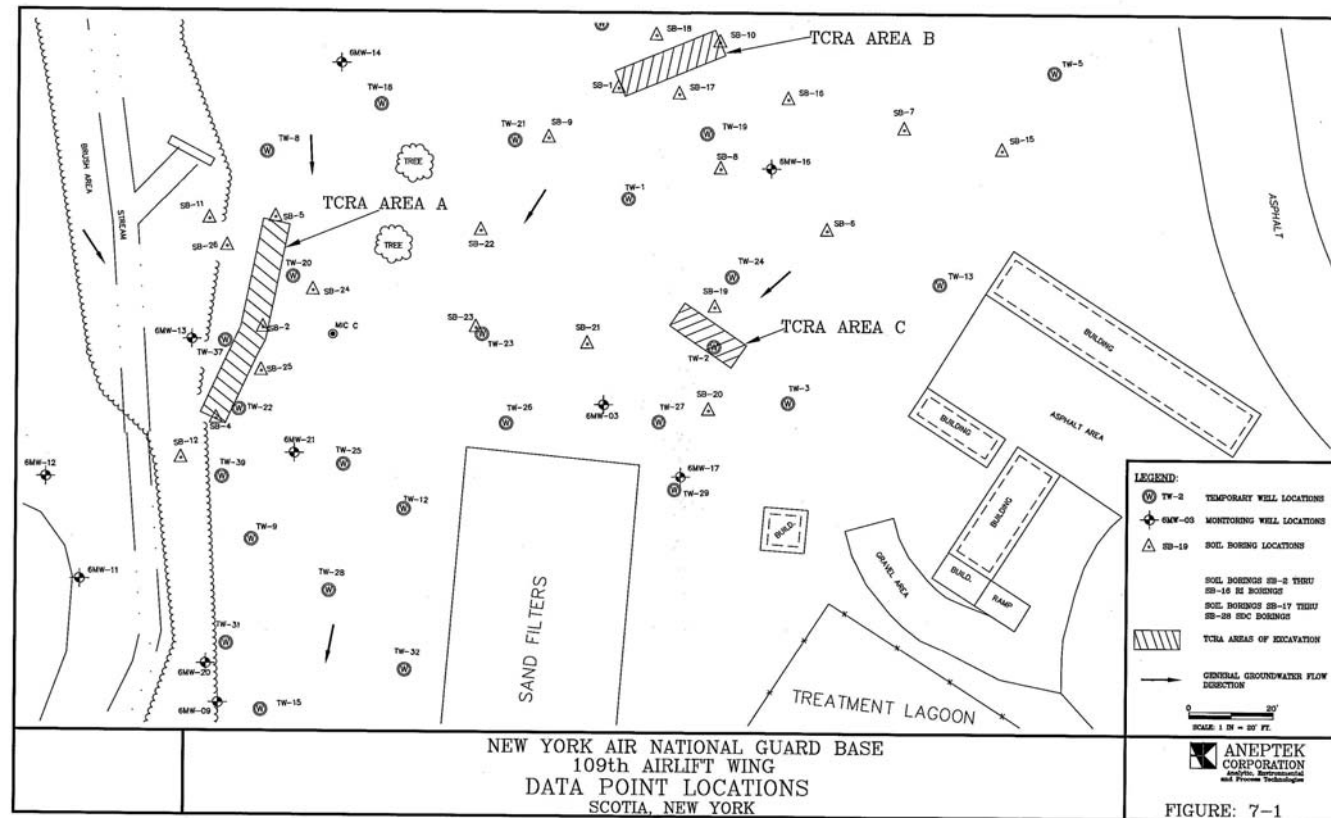
## Site 6 - Background



## Supplemental Data Collection (SDC) Summary (2002)

- ❖ 12 Soil borings: sampled for VOCs, SVOCs, metals based on field screening
- ❖ 23 Temporary wells: GC screening for VOCs
- ❖ 11 Monitoring wells installed & 15 MWs sampled for VOCs, SVOCs, metals in Jun and Aug 2002

## Site 6 - Background

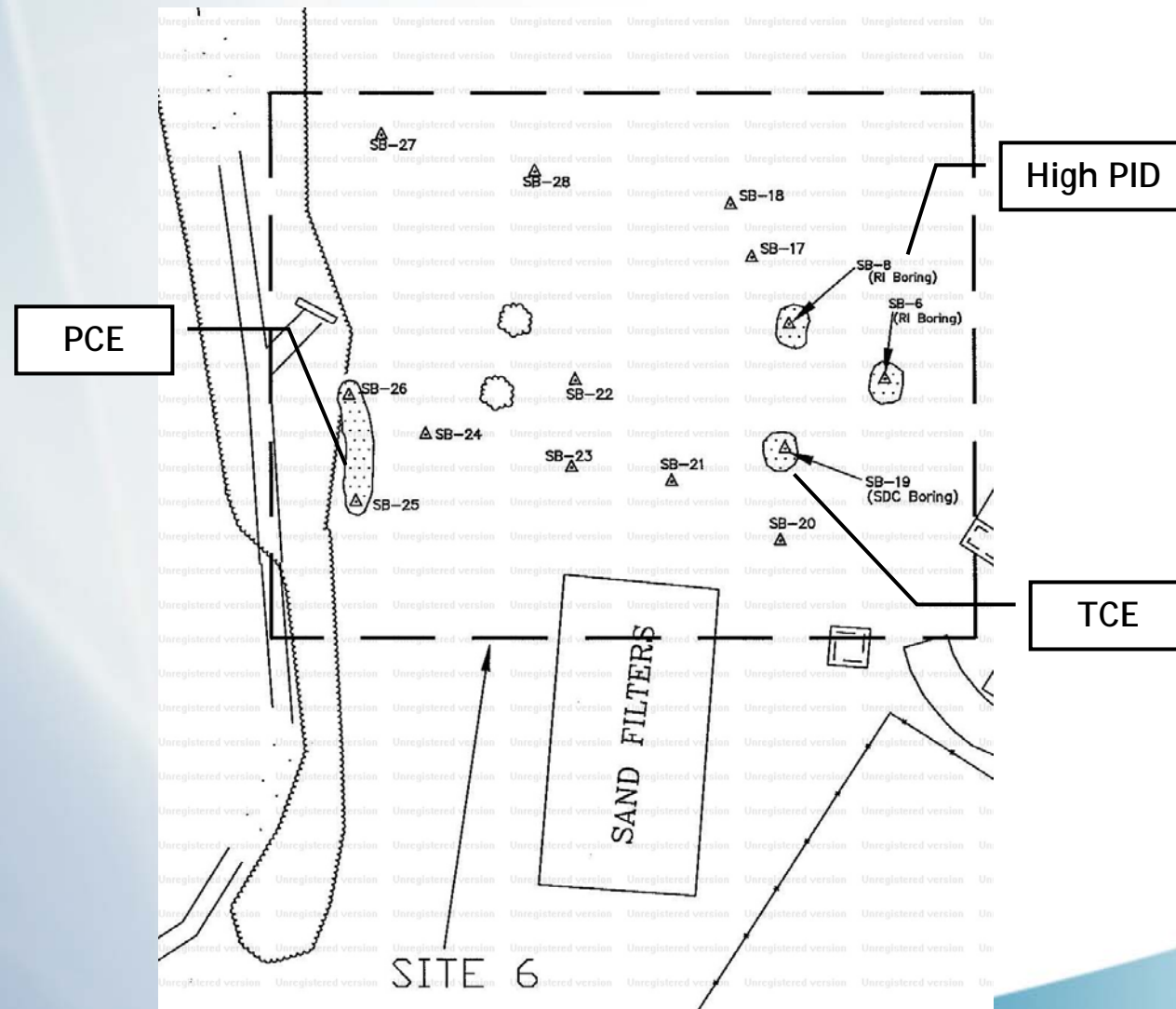


7-2

## SDC Soil Summary

- ❖ Two new “hot spots” identified; two existing from RI
- ❖ SB-25 and SB-26: PCE
- ❖ SB-19: TCE
- ❖ SB-6 and SB-8: high PID readings (RI)

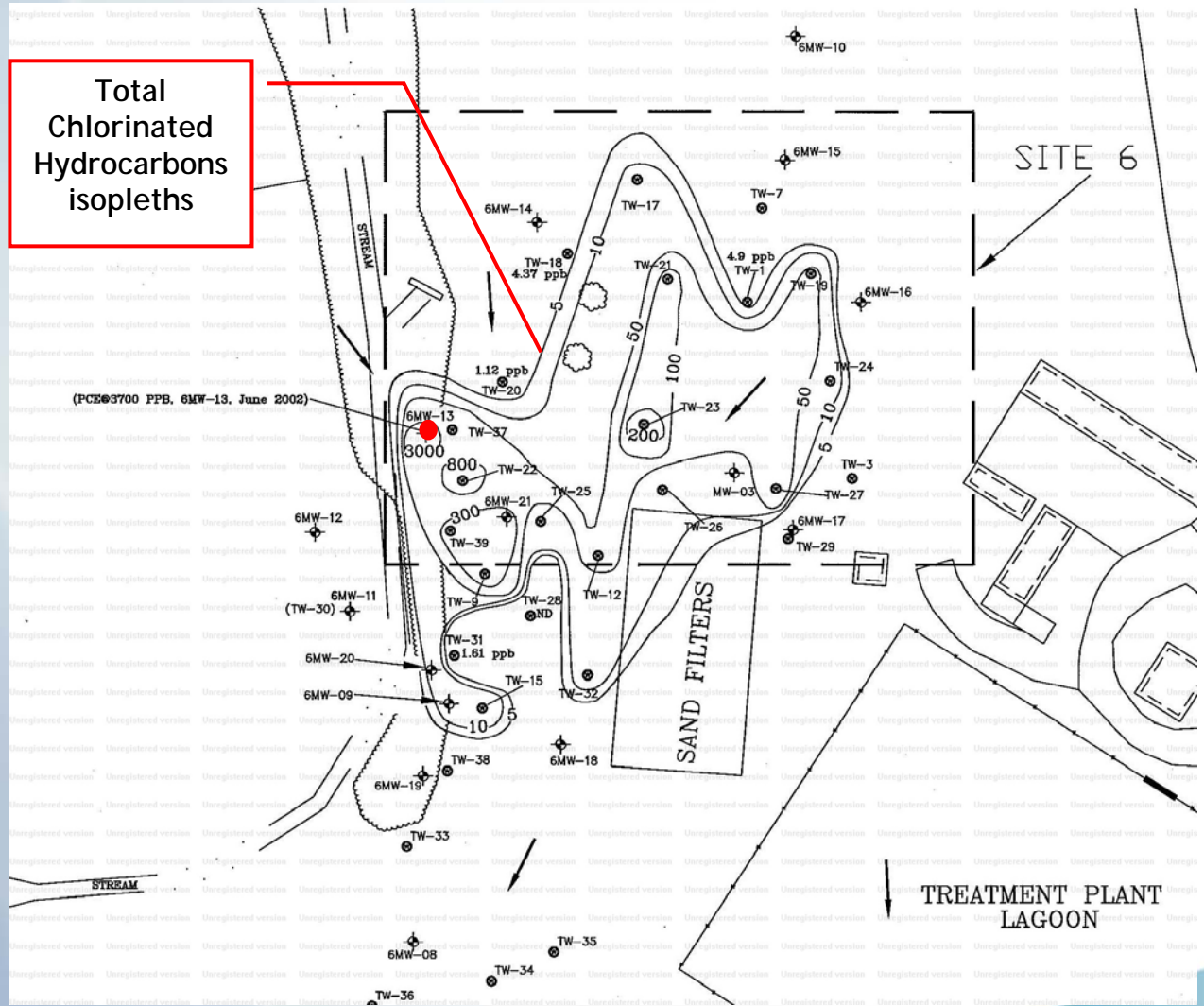
## Site 6 - Background



# SDC Groundwater Summary

- ❖ Chlorinated hydrocarbon plume delineated
- ❖ Overburden / weathered bedrock groundwater
- ❖ Max. concentrations ppb (Jun / Aug)  
PCE: 3,700 / 570  
TCE: 18 / 48  
cis-1,2-DCE: 41 / 120  
VC: 2.1 / 6.5

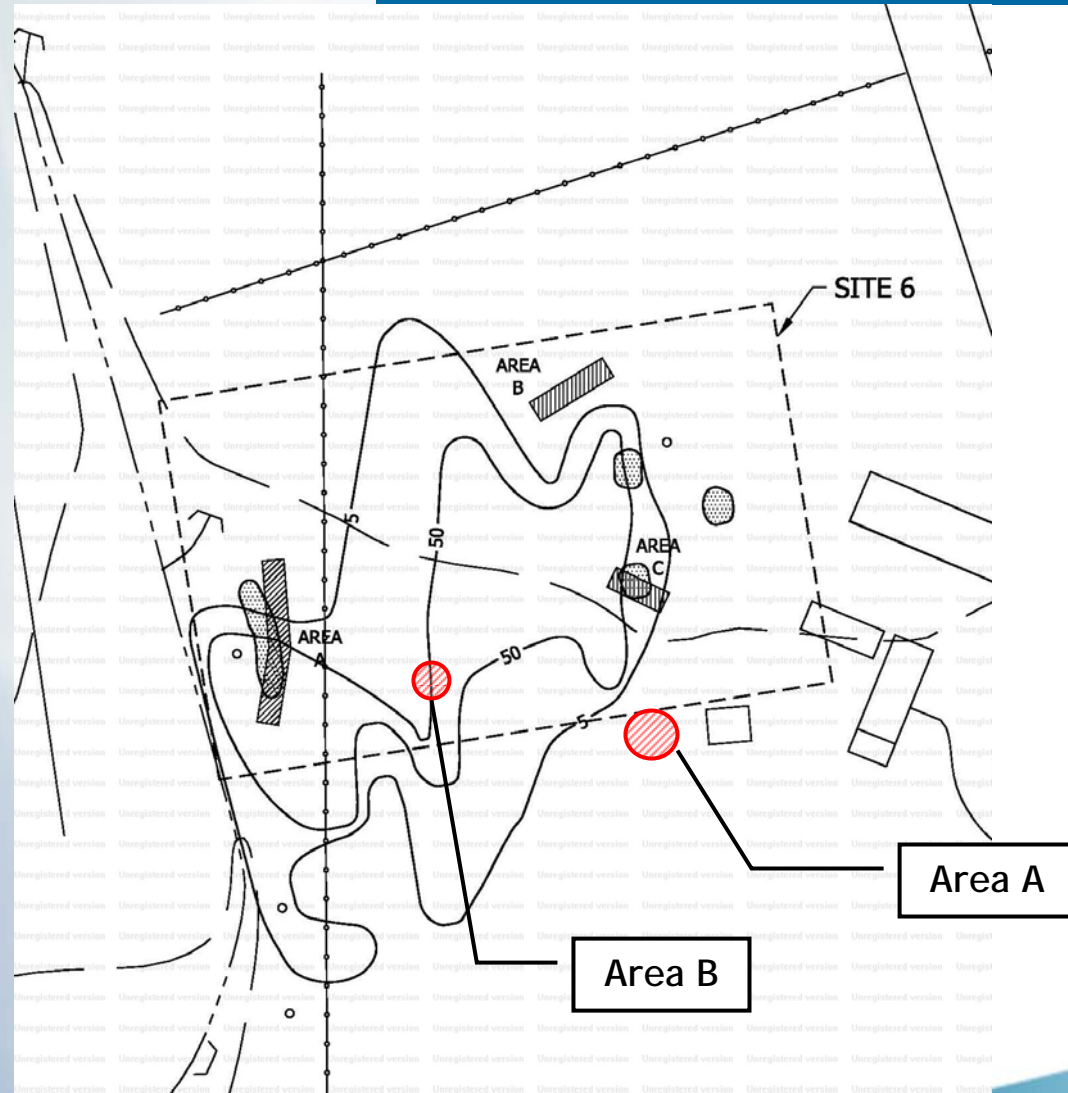
## Site 6 - Background



## Geophysical Survey (June 2004)

- ❖ Area A: Buried metallic anomaly (tank?); depth of ~ 2 feet
- ❖ Area B: Buried metallic anomaly (rectangular shape suggest foundation); depth unknown

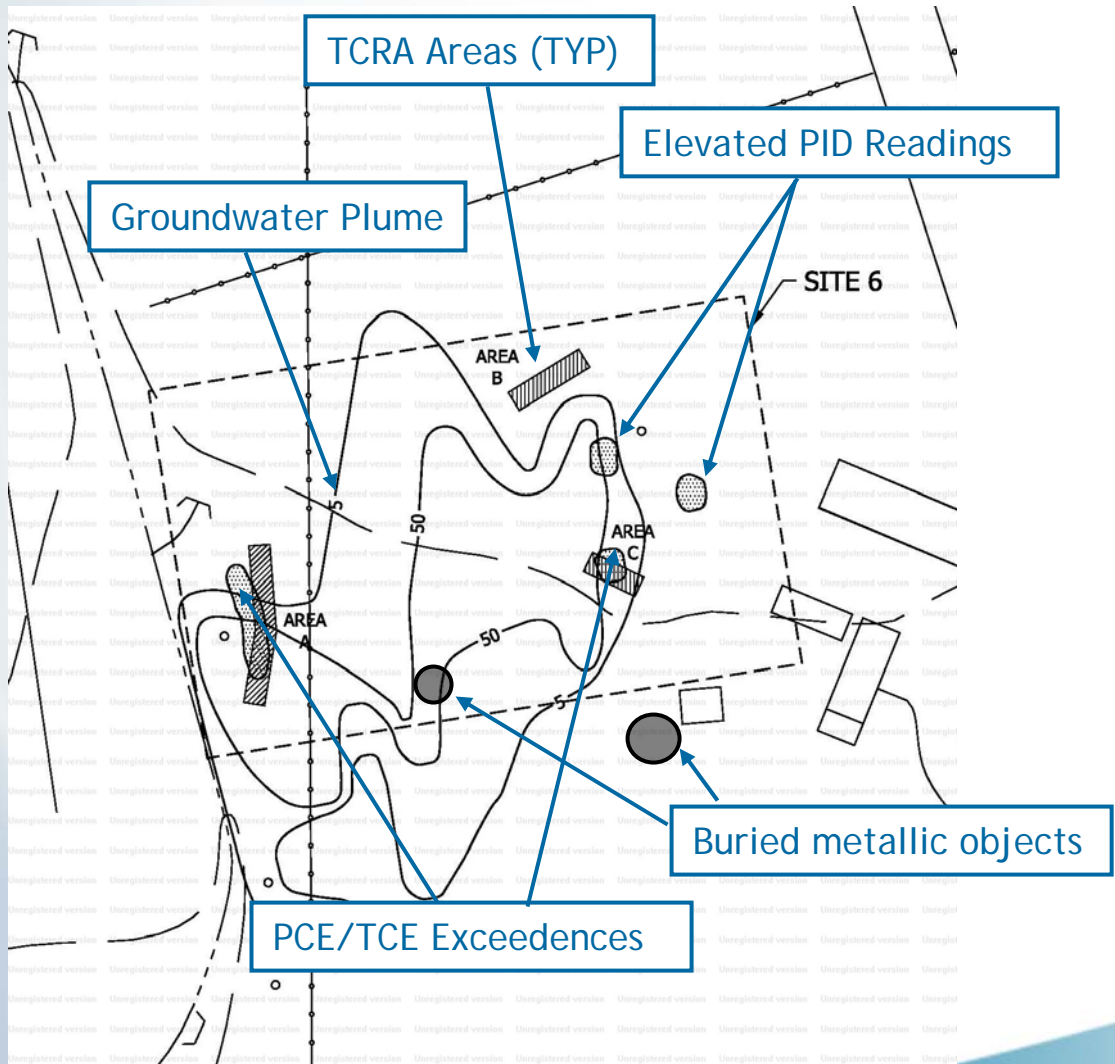
## Site 6 - Geophysical Survey



## Contaminant Summary

- ❖ Several soil "Hot Spots" remain
- ❖ Chlorinated hydrocarbon groundwater plume (no NAPL)
- ❖ Feasibility Study recommendations:
  - SOILS  
Excavate "Hot Spot" Areas
  - GROUNDWATER  
Enhanced biodegradation of groundwater plume

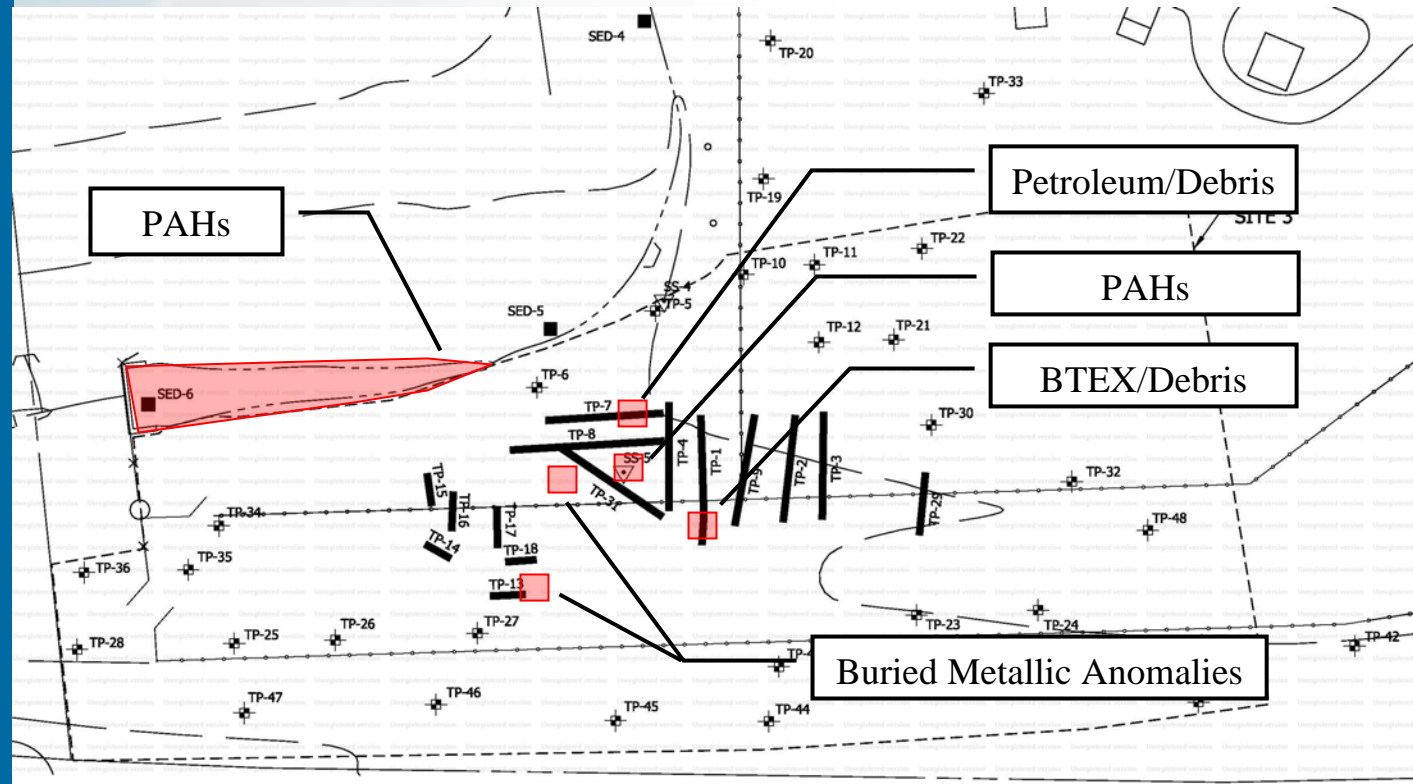
## Site 6 - Background Summary



## Contaminant Summary

- ❖ Two Test Pit (TP-1,7) contaminated areas (100 CY total)
- ❖ SS-5 (5 CY)
- ❖ Sediment in drainage ditch (50 CY)
- ❖ Two buried metallic anomalies (60 CY total)
- ❖ No contaminated groundwater
- ❖ No FS performed

## Site 3 - Background Summary



## Earth Tech awarded IRA/FFS Contract

- ❖ Awarded August 31, 2006
- ❖ 24 Month Duration
- ❖ Total Cost \$695k

## Project Objectives

### Remedial Objectives

Prevent Adverse Affects to  
Human Health and the Environment

### Perform Interim Removal Action (IRA)

Remove Contaminated Soil/Debris and  
Dispose Off-Site

### Perform Focused Feasibility Study - Site 6

Enhanced Bioremediation Pilot Study  
Risk Assessment  
Remedial Alternative Analysis

# Summary

- ❖ Soils: NYSDEC Part 375 Unlimited Use (most conservative of protection of human health, ecological resources, and groundwater)
- ❖ Groundwater: NYSDEC TOGS 1.1.1 Ambient Water Quality Standards

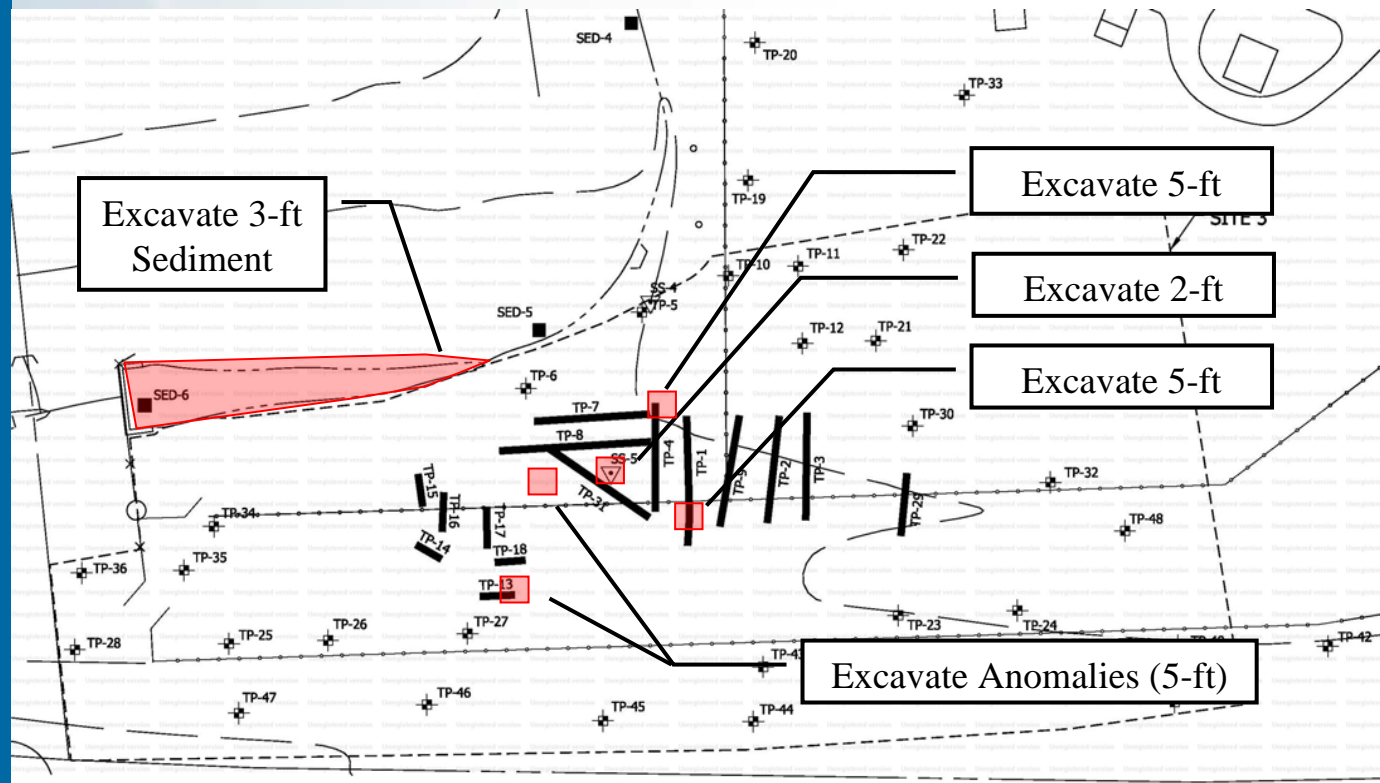
## Site Specific Action Levels

COCs	AWQS TOGS 1.1.1 (µg/l)	Ref	6 NYCRR Part 375 Unrestricted Use SCOs (mg/kg)	Ref
<b>VOCs</b>				
4-Isopropyltoluene	5	c	NS	
cis-1,2-Dichloroethene	5	c	0.25	a
Tetrachloroethene	5	c	1.3	a
Trichloroethene	5	c	0.47	a
Toluene	5	c	0.7	a
trans-1,2-Dichloroethene	5	c	0.19	a
Vinyl chloride	2	c	0.02	a
<b>SVOCs</b>				
2-Methylnaphthalene	NS		36.4	b
2-Methylphenol	1800	c	0.100 or MDL	b
Acenaphthene	370	c	20.0	a
Acenaphthylene	NS		100	a
Anthracene	50	c	100	a
Benzo(a)anthracene	0.092	c	1	a, d
Benzo(b)fluoranthene	0.092	c	1	a, d
Benzo(k)fluoranthene	0.92	c	0.8	a, d
Benzo(g,h,i)perylene	NS		100	a
Benzo(a)pyrene	0.0092	c	1	a, d
Bis(2-ethylhexyl)phthalate	5	c	50.0*	b
Chrysene	9.2	c	1	a, d
Dibenz(a,h)anthracene	0.0092	c	0.014 or MDL	b
Dibenzofuran	12	c	6.2	b
Diethyl phthalate	29000	c	7.1	b
Di-n-butyl Phthalate	50	c	8.1	b
Fluoranthene	1500	c	100	a
Fluorene	240	c	30	a
Indeno(1,2,3-cd)pyrene	0.092	c	0.5	a
Naphthalene	6.2	c	12	a
Phenanthrene	NS		100	a
Phenol	1	c	0.33	a
Pyrene	180	c	100	a

## AGENDA

# Site 3 - Interim Removal Action Proposed

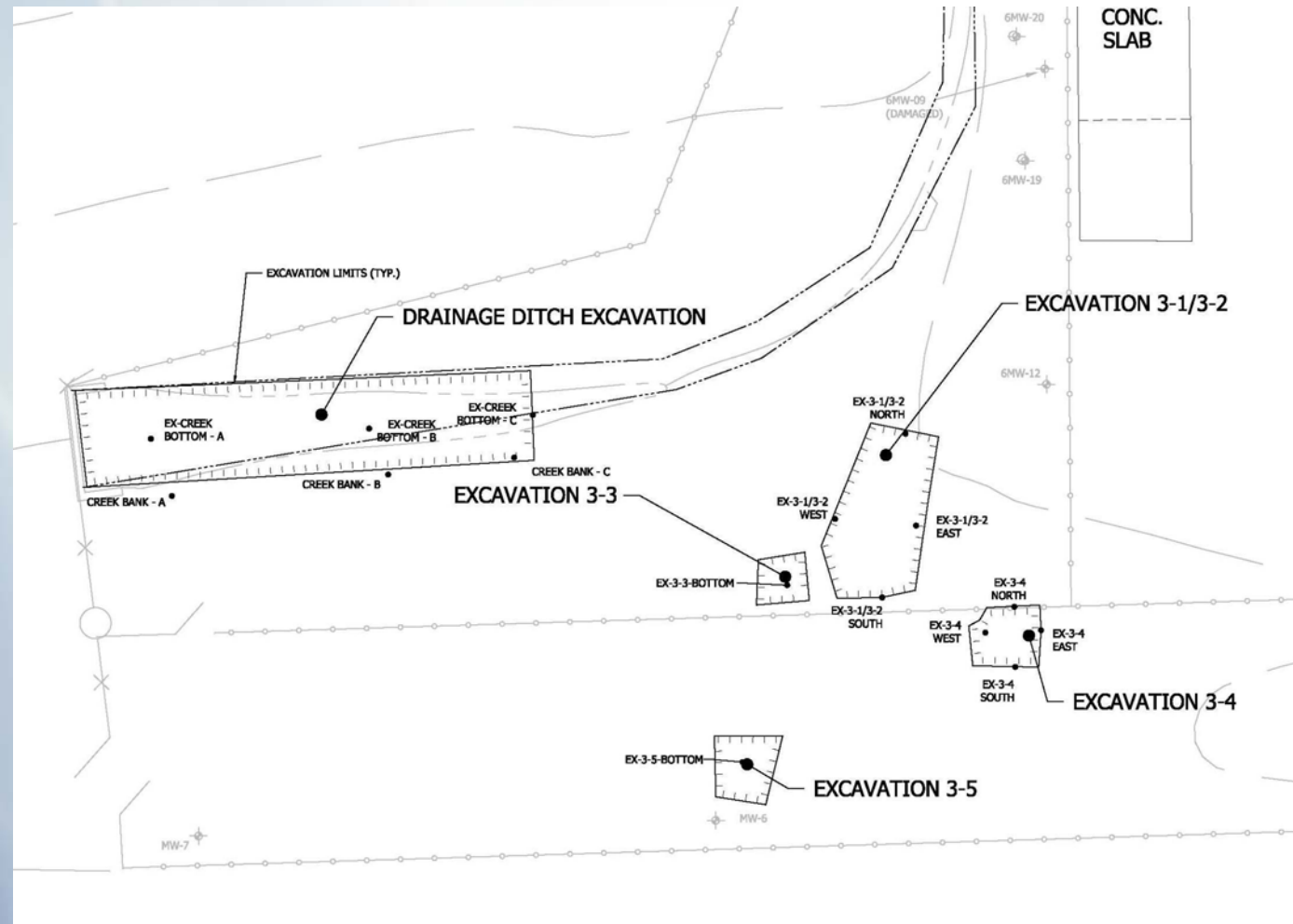
- ❖ Introductions
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- ❖ Discussion



# Summary

- ❖ 5 Excavations
- ❖ EX 3-1/3-2
  - Excavated to Caprock
  - 250 CY Removed
  - 4 Confirm. Samples
- ❖ EX 3-3
  - Excavated 5' in depth
  - 30 CY Removed
  - 1 Confirm. Sample
  - Removed metal debris
- ❖ EX 3-4
  - Excavated to caprock
  - 70 CY Removed
  - 4 Confirm. Samples
  - Removed metal debris
  - Removed 1 drum & 3 paint cans
- ❖ EX 3-5
  - Excavated 5' in depth
  - 40 CY Removed
  - 1 Confirm. Sample
  - Removed metal debris
- ❖ Drainage Ditch
  - All sediment removed
  - 310 CY Removed
  - 3 bank samples taken

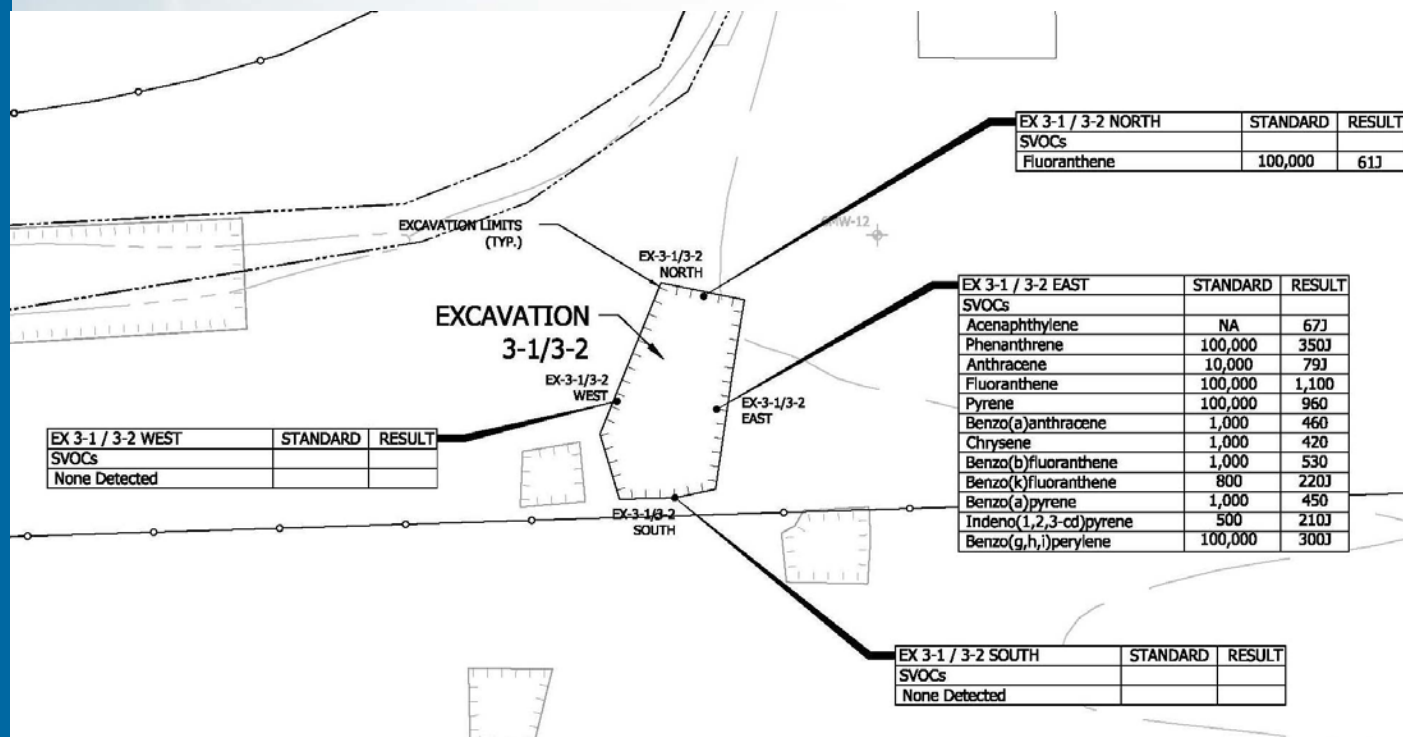
## Site 3 - Interim Removal Actions



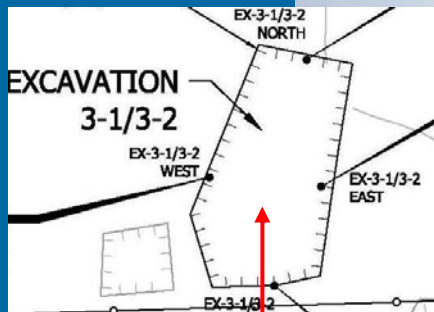
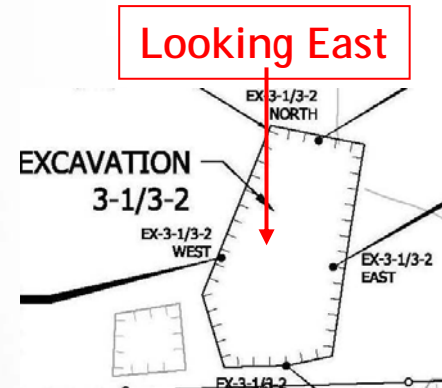
## Sampling Summary

- ❖ 4 Samples collected along sidewalls
- ❖ Analyzed for SVOCs
- ❖ Several detections, but all less than Part 375 Standard
- ❖ No Further Action

## Site 3 - Interim Removal Actions: EX 3-1/3-2



## Site 3 - Interim Removal Actions: EX 3-1/3-2



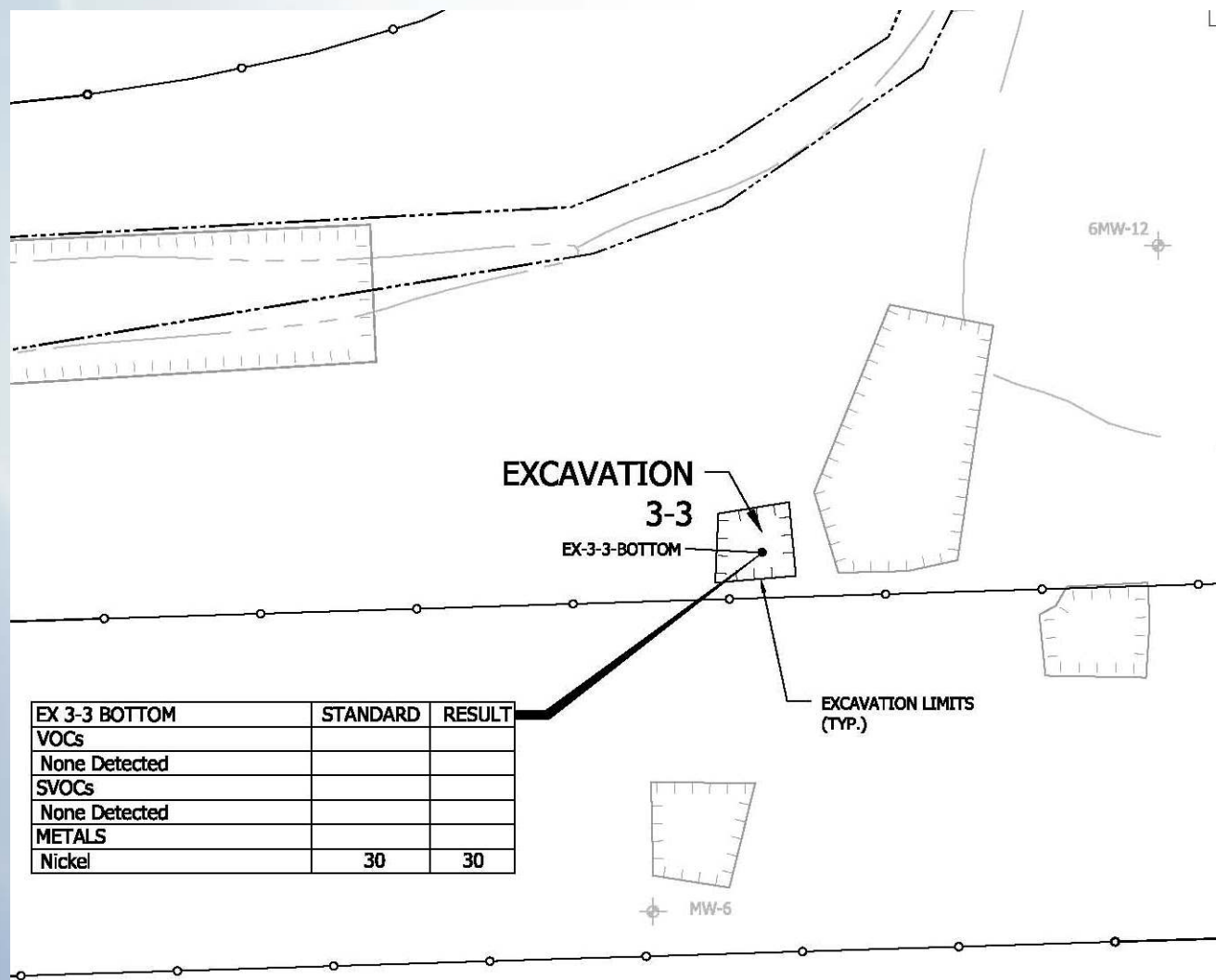
Looking West



## Sampling Summary

- ❖ 1 Sample collected at base of excavation
- ❖ Analyzed for VOCs, SVOCs, and Metals
- ❖ No Further Action

## Site 3 - Interim Removal Actions: EX 3-3



## Site 3 - Interim Removal Actions: EX 3-3

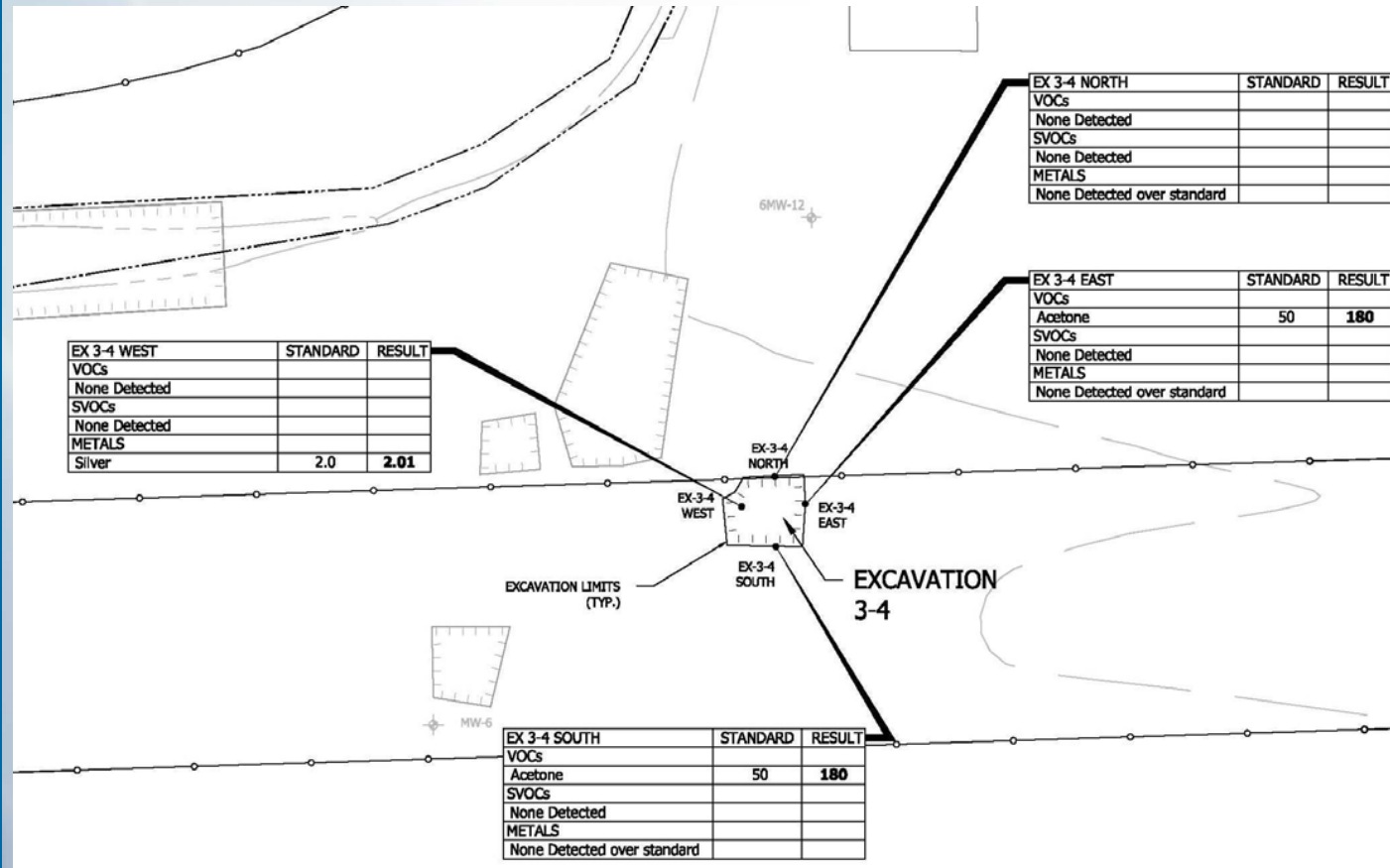


Buried Debris  
Removed from  
Geophysical  
Anomaly

## Sampling Summary

- ❖ 4 Samples collected along sidewalls
- ❖ Uncovered buried drum and 3 paint cans containing dried paint (over packed and disposed off-site)
- ❖ Analyzed for VOCs, SVOCs and Metals
- ❖ Two detections above Part 375 Standard: Acetone (180 ppb / standard 50 ppb)
- ❖ Evaluate with Risk Assessment

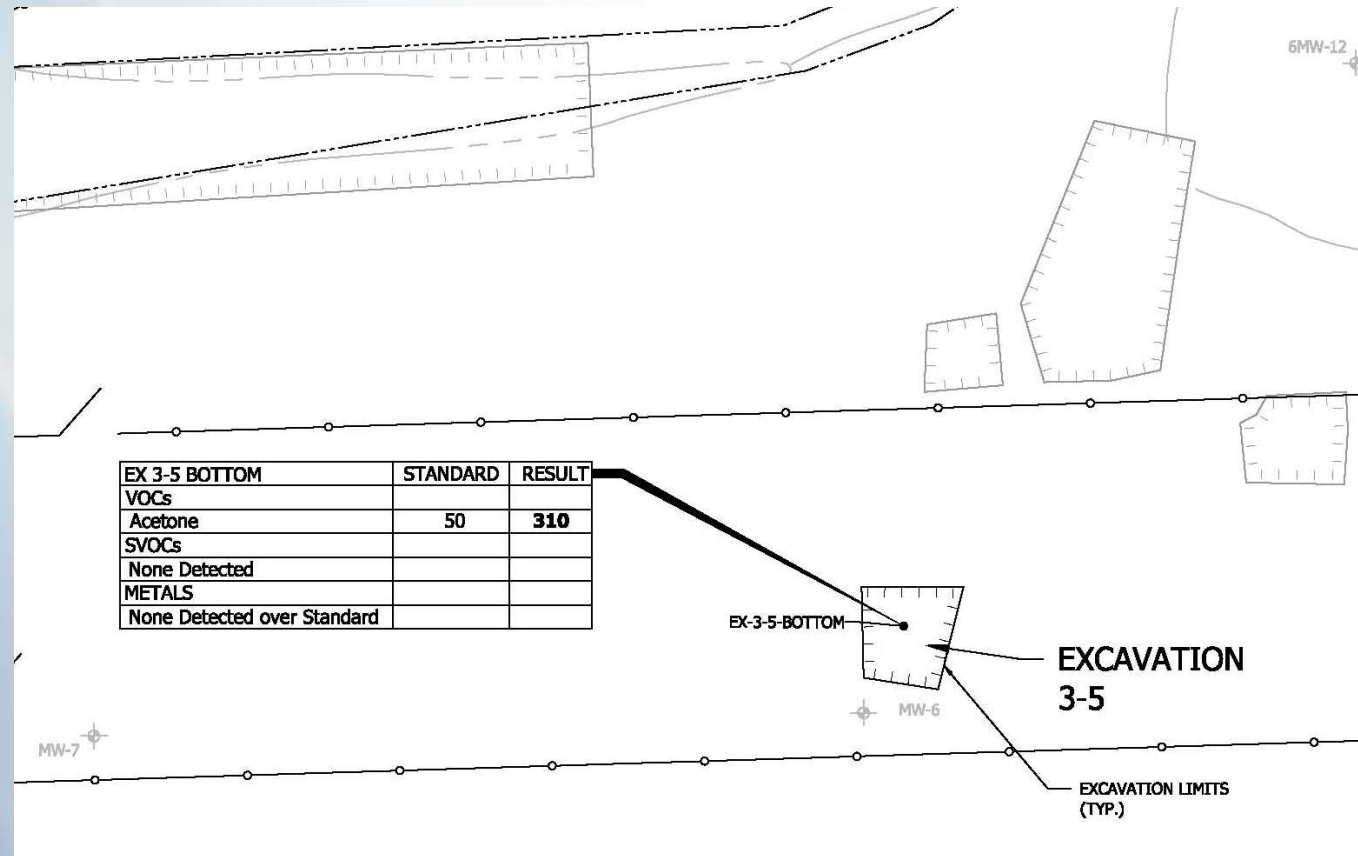
## Site 3 - Interim Removal Actions: EX 3-4



## Sampling Summary

- ❖ 1 Sample collected at base of excavation
- ❖ Analyzed for VOCs, SVOCs, and Metals
- ❖ Only 1 detection above Part 375 Standard
- ❖ Acetone (310 ppb / Standard 50 ppb)
- ❖ Evaluate with Risk Assessment

## Site 3 - Interim Removal Actions: EX 3-5



## Buried Debris

## Site 3 - Interim Removal Actions: EX 3-5



Exposed

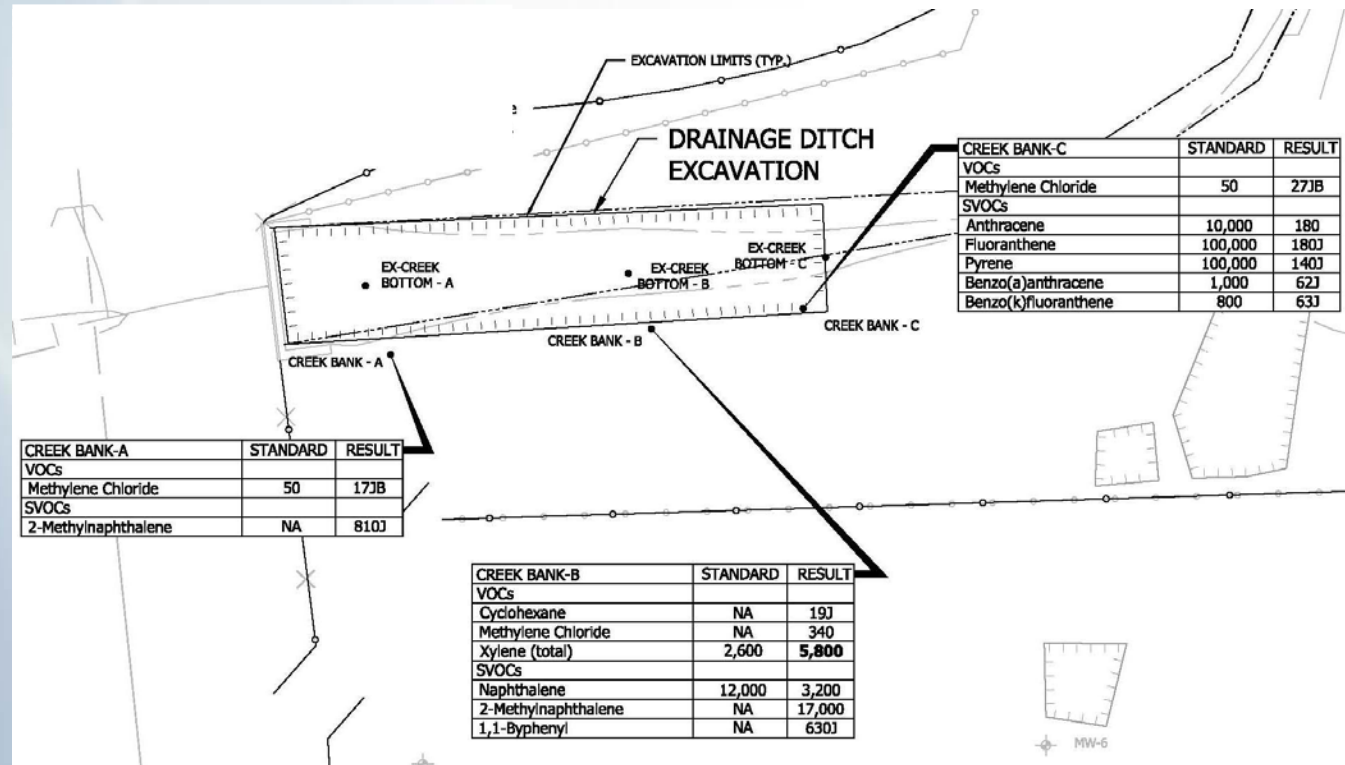
Removed



## Sampling Summary

- ❖ 3 Samples collected along ditch bank
- ❖ Analyzed for VOCs and SVOCs
- ❖ Only 1 detection above Part 375 Standard:  
Xylene (5800 ppb / Standard 260 ppb)
- ❖ Evaluate with Risk Assessment

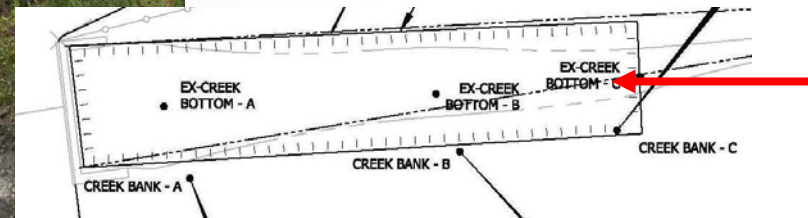
## Site 3 - Interim Removal Actions: Ditch



## Site 3 - Interim Removal Actions: Ditch

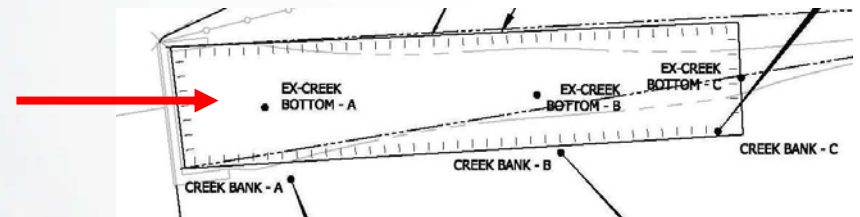


Bank Sample Location "B"



## Site 3 - Interim Removal Actions: Ditch

Bank Sample  
Location "B"



## Summary

- ❖ 5 Excavations
- ❖ EX 3-1/3-2 (250 CY)
- ❖ EX 3-3 (30 CY)
- ❖ EX 3-4 (70 CY)
- ❖ EX 3-5 (40 CY)
- ❖ Drainage Ditch (310 CY)
- ❖ 807 Tons off site to Town of Colonie Landfill
- ❖ 1 Overpack (drum and paint cans) off site to Chem Cycle, NJ

## Site 3 - Interim Removal Actions - Off-Site Disposal



# Site 3 - Interim Removal Actions - Summary

## Creek/Drainage Ditch

- All sediment removed
- Xylene exceedence (5800 ppb/SCO=260 ppb) in one creek bank sample (B)

**Evaluate With Risk Assessment**

## Site 3-3

- Soil removed to 5-ft
- Metal debris removed and recycled
- Nickel detected at SCO (30 ppb)

**No Further Action**

## Site 3-1/3-2

- Soil removed to bedrock
- No exceedences

**No Further Action**

## Site 3-4

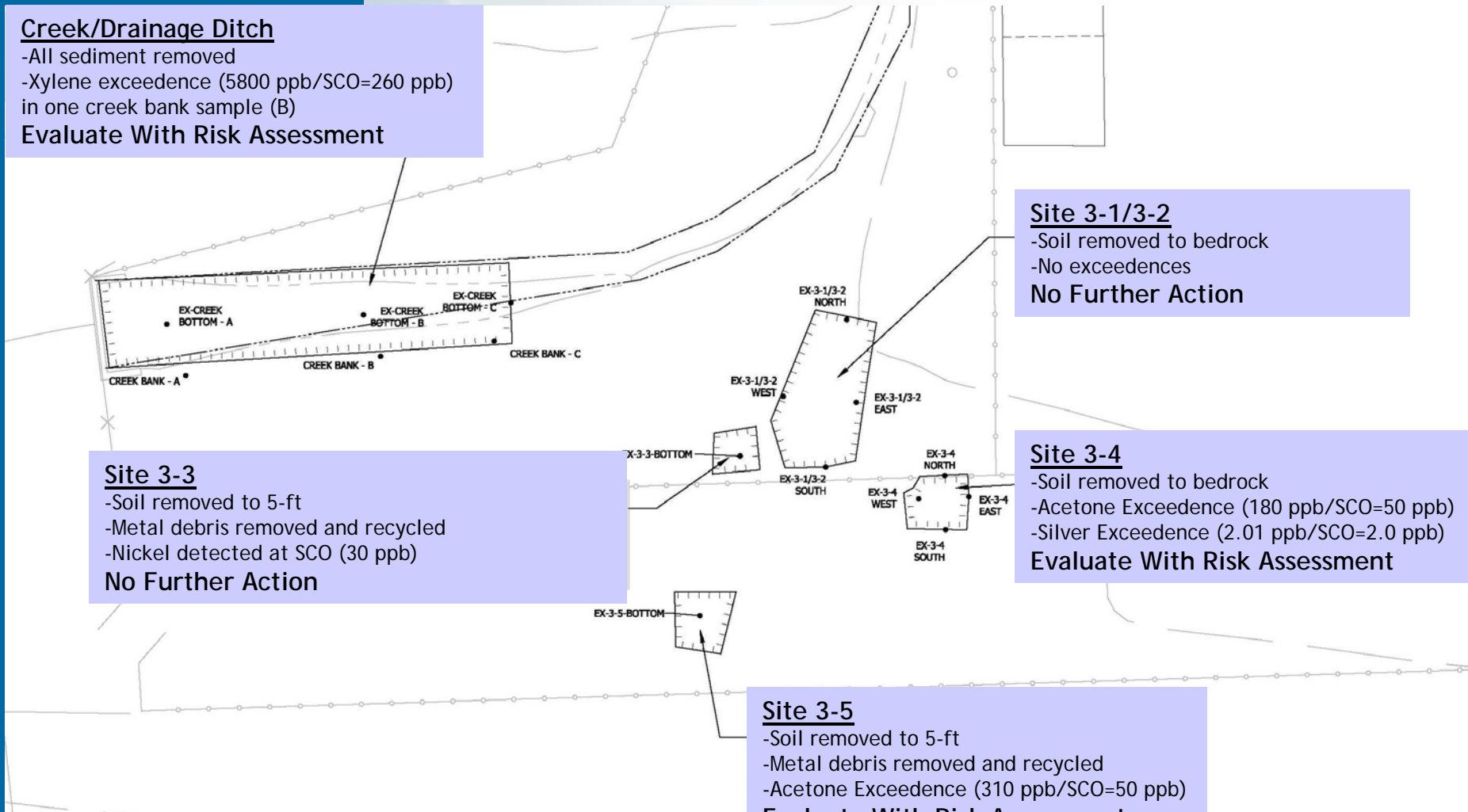
- Soil removed to bedrock
- Acetone Exceedence (180 ppb/SCO=50 ppb)
- Silver Exceedence (2.01 ppb/SCO=2.0 ppb)

**Evaluate With Risk Assessment**

## Site 3-5

- Soil removed to 5-ft
- Metal debris removed and recycled
- Acetone Exceedence (310 ppb/SCO=50 ppb)

**Evaluate With Risk Assessment**



# IRA Summary

- ❖ Excavate all soil above 50 ppb groundwater plume to caprock
- ❖ Total volume to excavate ~4,500 CY
- ❖ Stockpile excavated soil on site and segregate based on field screening with PID:
  - < 5 ppm
  - < 5 ppm < 50
  - < 50 ppm
- ❖ Stockpiled soil sampled and if results:
  - <Part 375 -> backfill
  - >Part 375 -> off-site
- ❖ Excavate buried metallic object
- ❖ Confirmation sampling

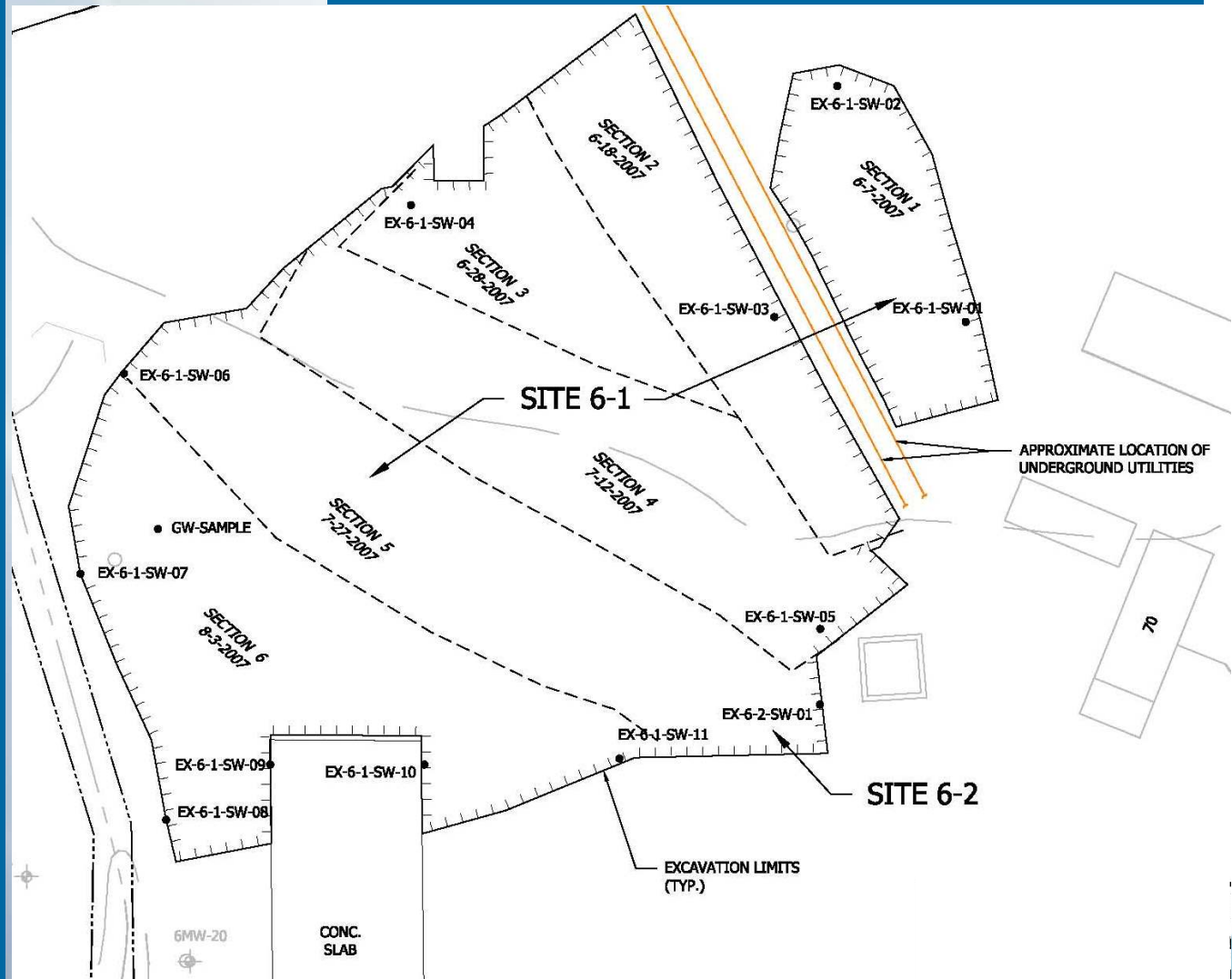
## Site 6 - Interim Removal Action - Proposed



## Summary

- ❖ All soils excavated and segregated with mechanical screener (larger rock used as backfill in bottom 12" to 18" of excavation)
- ❖ EX 6-1/6-2 Combined
  - Excavated to caprock
  - 4790 CY Removed
  - 12 Confirm. Samples
  - piping and concrete blocks were the geophysical anomaly
- ❖ 6 Sections excavated; each section had two stockpiles
  - < 5 ppm
  - 5 ppm to 50 ppm
- ❖ All stockpiled materials used as backfill
- ❖ 10-ft wide area not excavated due to underground utilities

## Site 6 - Interim Removal Actions



## Site 6 - Interim Removal Actions - Excavation

### Section 1 Backfill:

- Snow fence barrier placed
- No horizontal well installed



Area of elevated  
PID readings  
(no VOCs detected)



## Summary

- ❖ 6 Sections excavated
- ❖ Each section had 3 stockpiles:
  - rock (>2")
  - PID<5 ppm
  - 5 ppm<PID<50 ppm
- ❖ Rock stockpile not sampled used as backfill at base of excavation



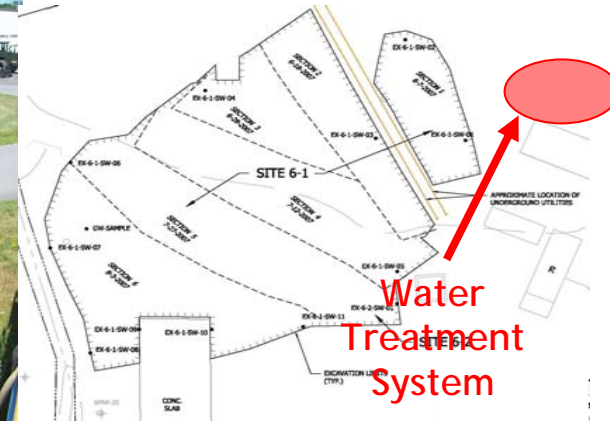
Screened Rock



## Summary

- ❖ Water treated with bag filters and carbon
- ❖ Treated water sampled once per 40,000 gallons
- ❖ Treated water discharged to Schenectady POTW
- ❖ A total of 36,522 gallons discharged

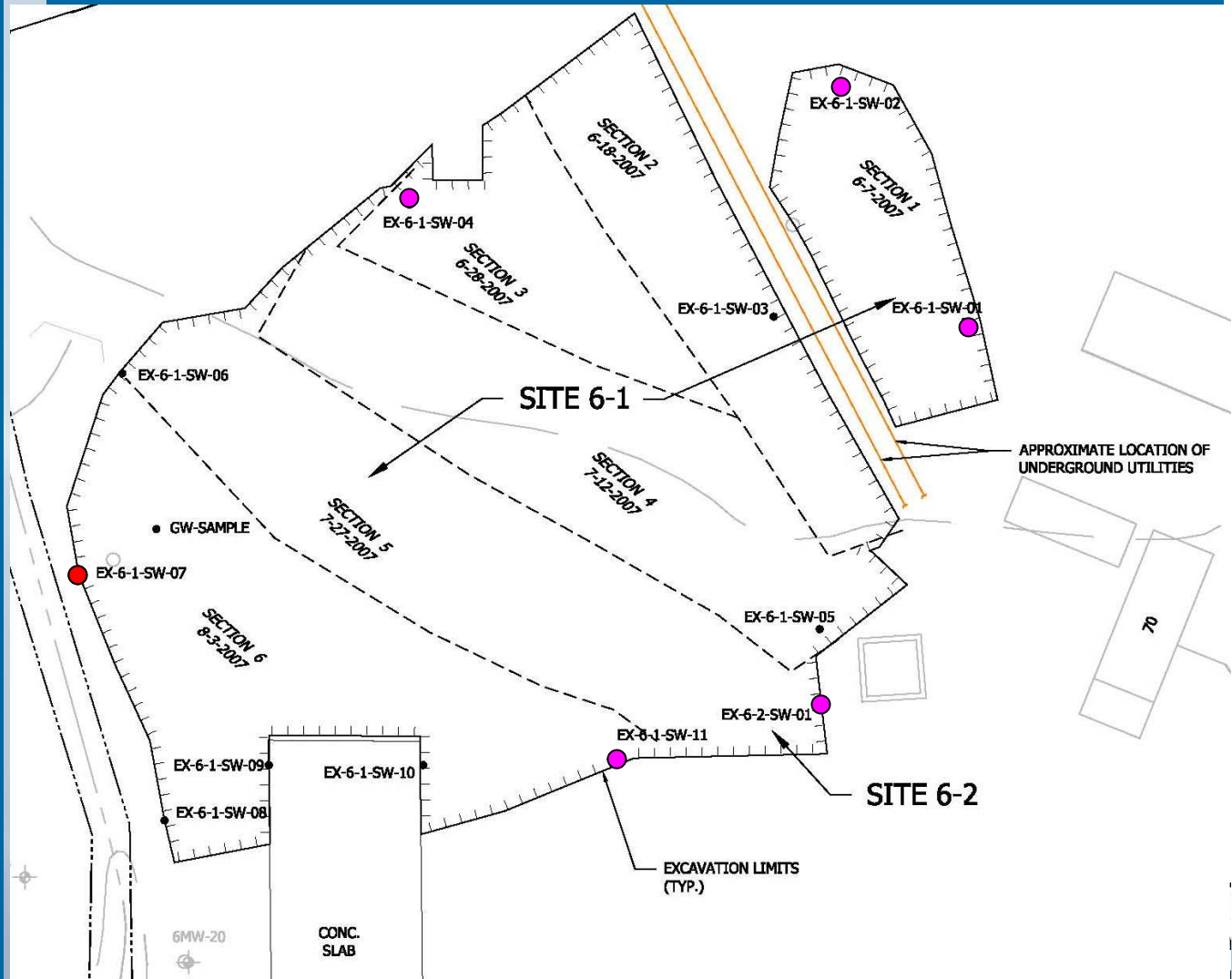
## Site 6 - Interim Removal Actions - Water



## Sampling Summary

- ❖ 12 Confirmation samples collected
  - ❖ 11 Analyzed for VOCs
  - ❖ 1 Analyzed for VOCs, SVOCs and Metals (EX6-2)
  - ❖ Exceedences of PCE (1), Acetone (5) and Nickel (1)
- PCE Exceedence  
● Acetone Exceedence

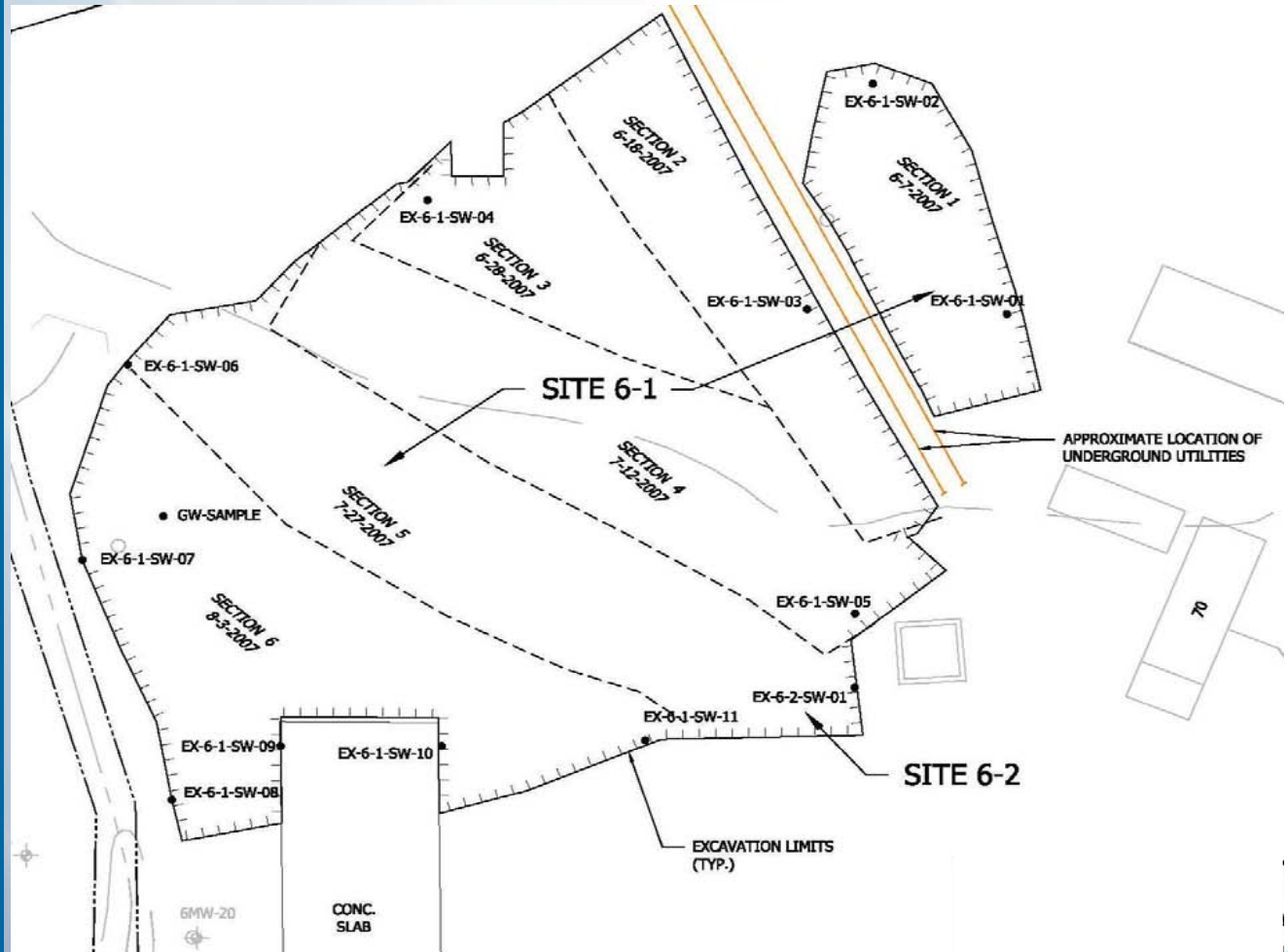
## Site 6 - Interim Removal Actions - Sampling



## Sampling Summary

- ❖ 6 Sections excavated
- ❖ Each section had 3 stockpiles:
  - rock (>2")
  - < 5 ppm
  - 5 to 50 ppm
- ❖ Soil stockpile analyzed for VOCs
- ❖ Exceedence of methylene chloride in stockpile 3 of 170 CY (60 ppb / Standard 50 ppb)

## Site 6 - Interim Removal Actions: Stockpile Samples



## Sampling Summary

- ❖ 2 Samples collected
- ❖ No chlorinated VOCs detected

## Site 6 - Interim Removal Actions: Soil Gas



## Site 3 & 6 - Interim Removal Actions - Site Restoration

Site 3

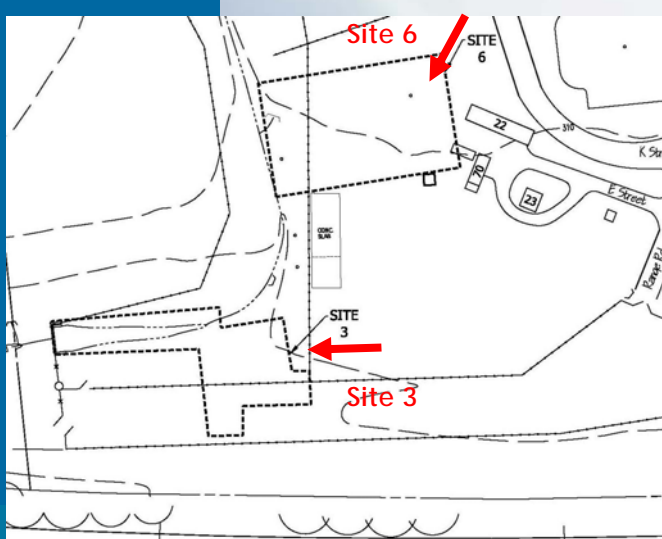


10/01/2007

Site 6



10/01/2007



## Summary

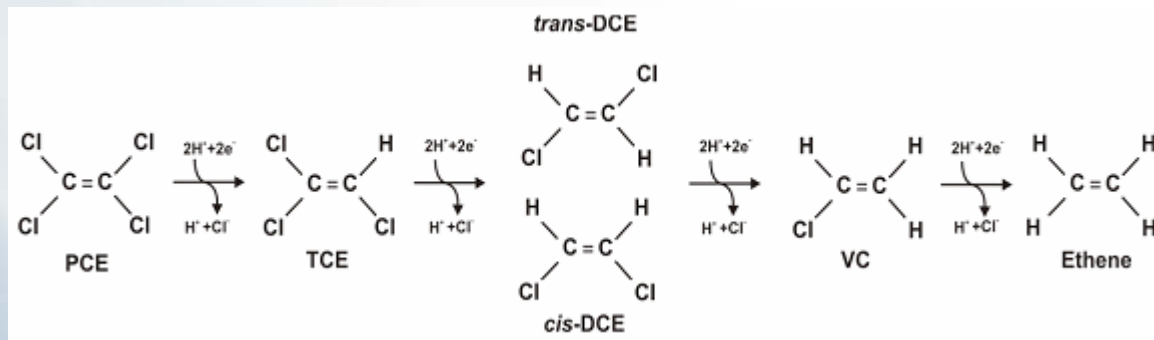
- ❖ Primary contaminant is PCE, with lesser amounts of TCE
- ❖ With source area removed, target treatment of groundwater
- ❖ Breakdown products observed on site

## Site 6 - Bioremediation Pilot Study

### Pilot Study Objectives

Determine applicability of enhanced bioremediation to remediate groundwater through substrate addition

### Dechlorination Process



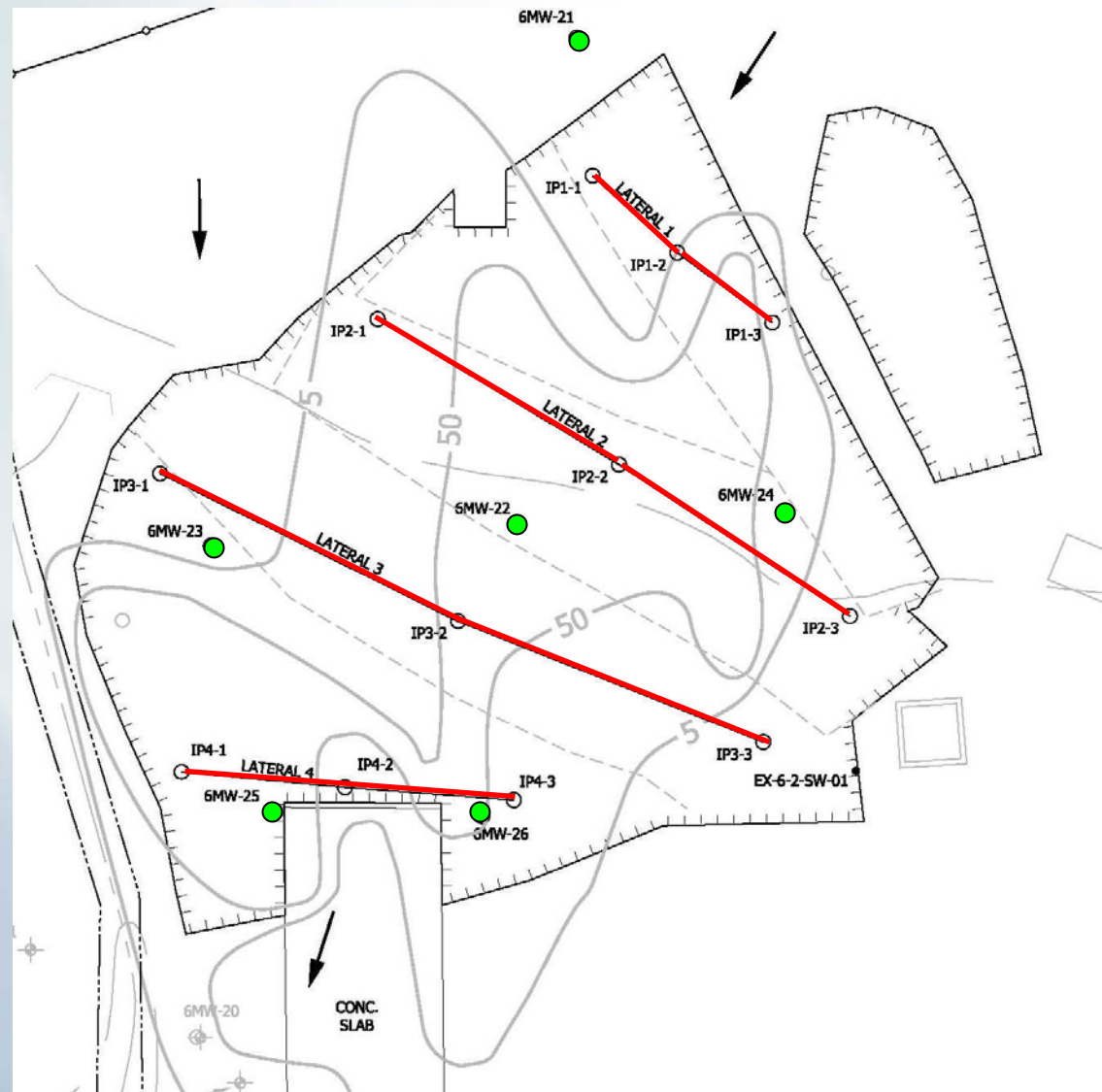
Well 6MW-13 Data in ppb (August 2002)

PCE	→	TCE	→	DCE	→	VC
570		48		98		1U

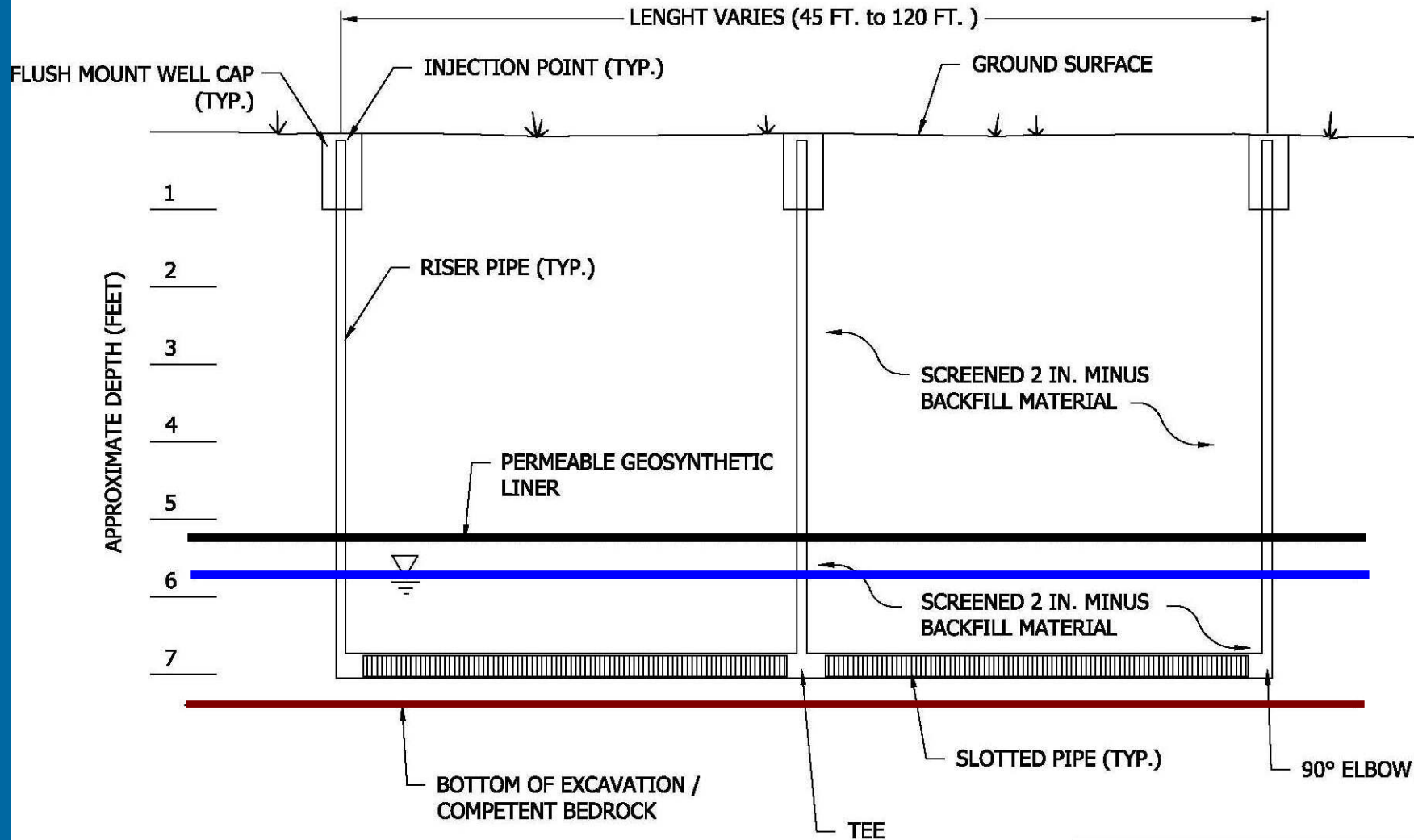
## Summary

- ❖ Installed 4 horizontal infusion wells
- ❖ Installed 7 overburden / weathered bedrock wells (TD ~ 9' with 5' screen)
- ❖ Installed a single bedrock well (40-ft deep) downgradient of Site 6
- ❖ Infused 10,000 gallons diluted EOS into well network in August 2007
- ❖ Sampling events:
  - Baseline: May 2007
  - 1<sup>st</sup> Round: Sep 2007
  - 2<sup>nd</sup> Round: Nov 2007
  - 3<sup>rd</sup> Round: Jan 2008

## Site 6 - In Situ Bioremediation Pilot Study



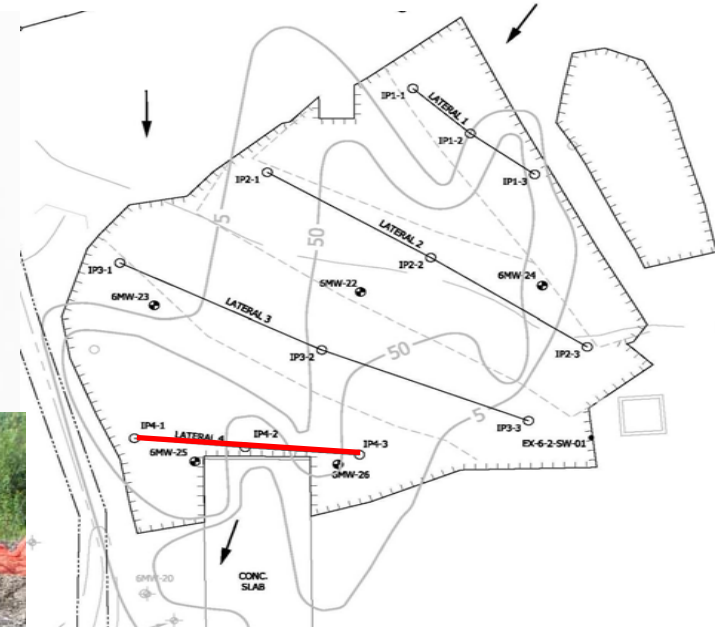
# Site 6 - In Situ Bioremediation Pilot Study



# Site 6 - In Situ Bioremediation: Horizontal Well Installation



Well screen and Tee connection to riser (not shown)



Length of horizontal well ready for placement

# Site 6 - In Situ Bioremediation: Horizontal Well Installation



Length of horizontal well being placed



Horizontal well placed and covered with rock and filter fabric

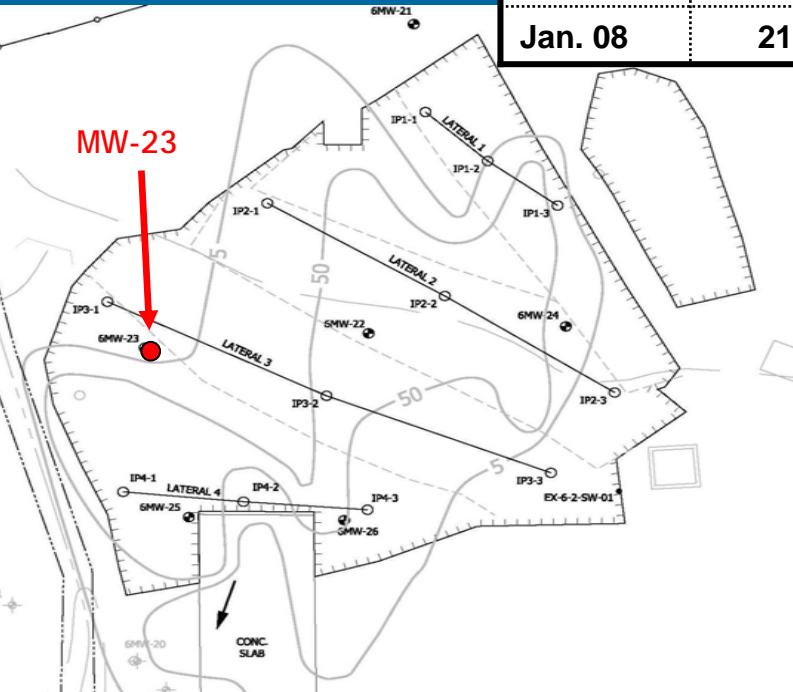


# Site 6 - In Situ Bioremediation: Horizontal Well Installation

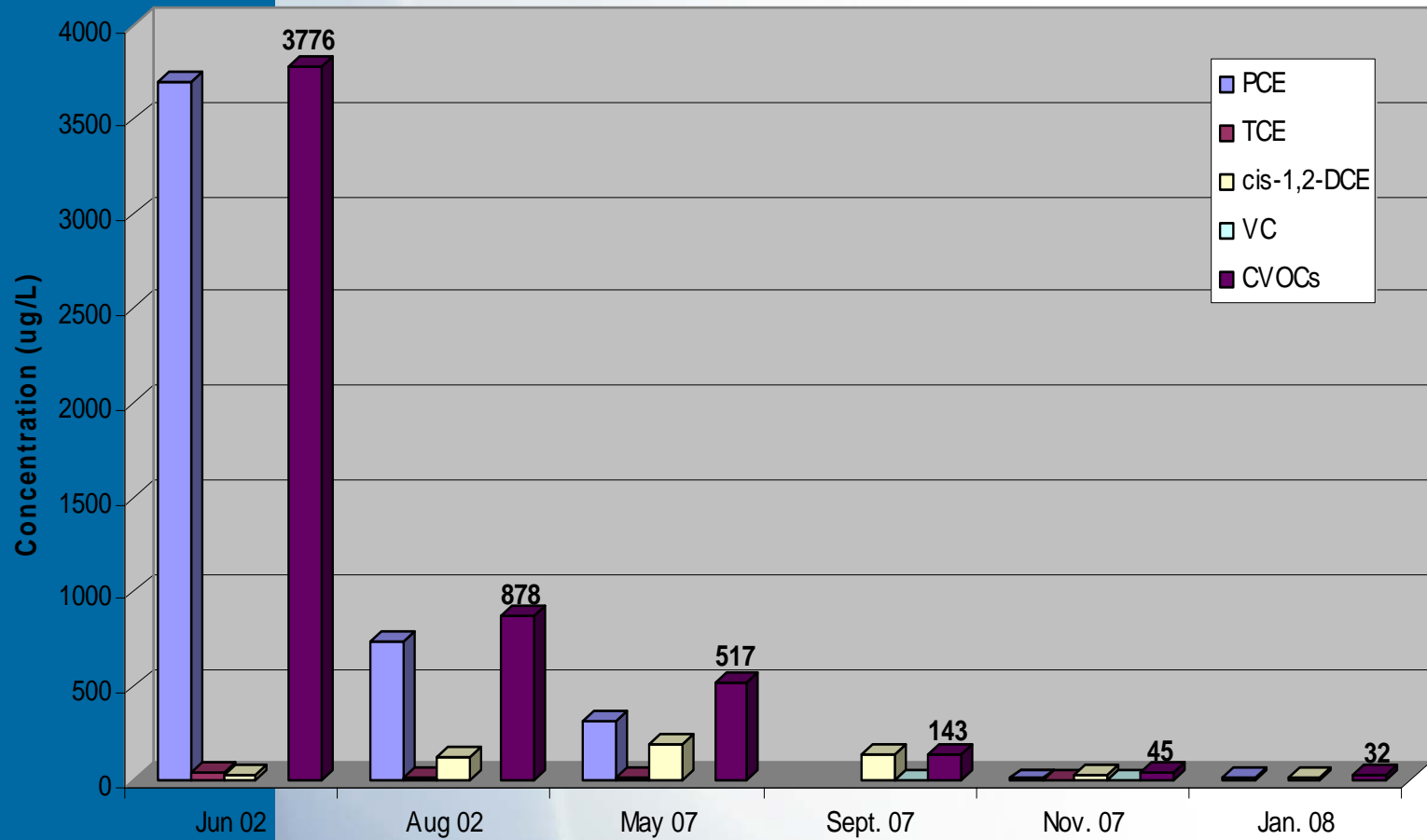


## Site 6 - In Situ Bioremediation: MW-23 Results

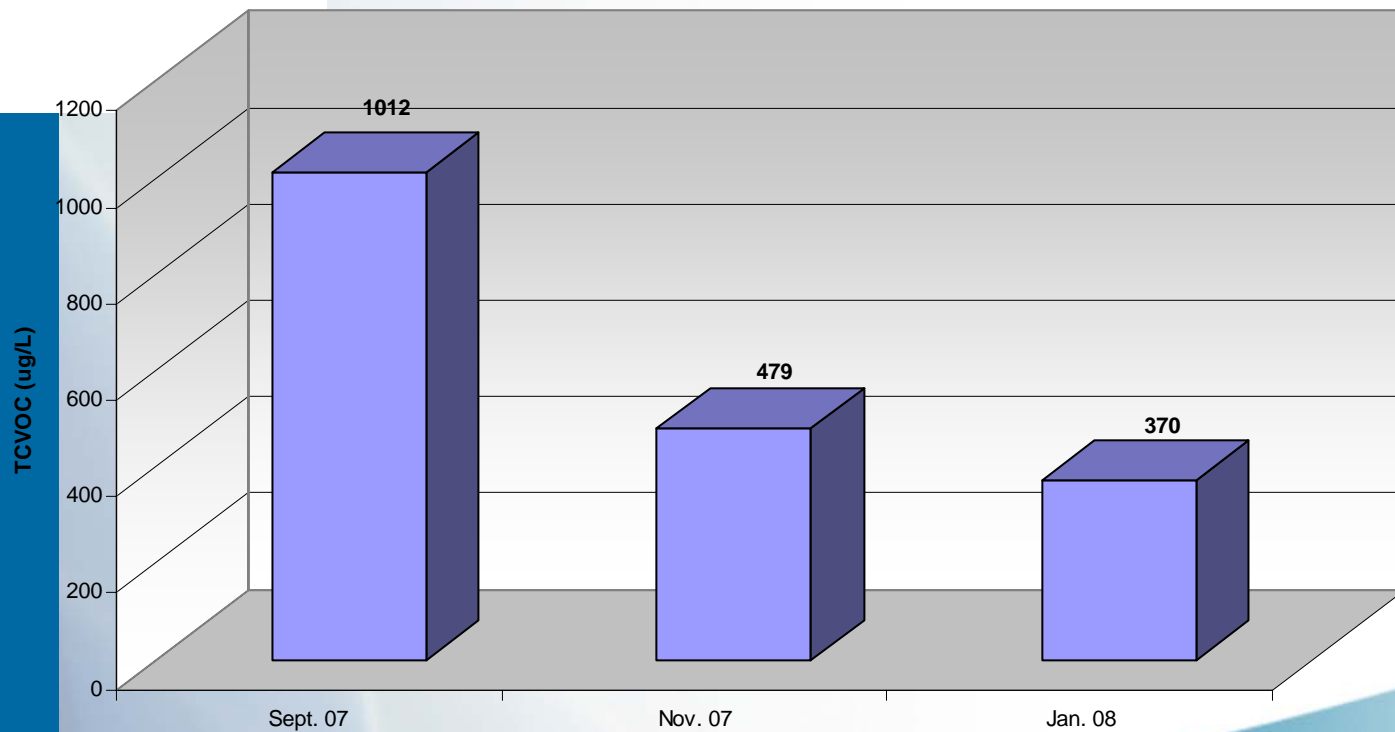
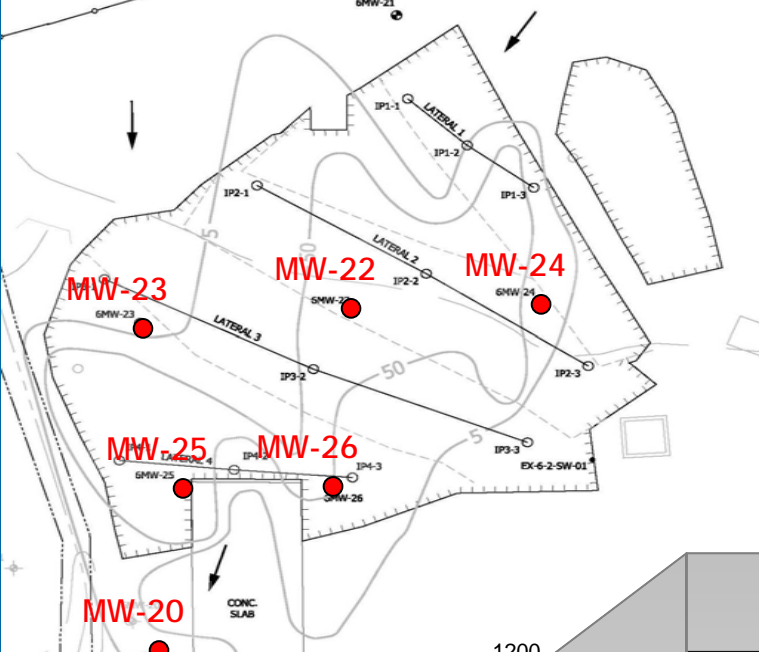
	PCE	TCE	DCE	VC	TVOCs	TOC	Chloride
Jun 02	3700	48	28	ND	3776		
Aug 02	740	18	120	ND	878		
May 07	310 D	17	190 D	ND	517	1.41	0
Aug 07**	50	44	13	ND	107		
Sept. 07	ND	ND	140	3.1 J	143.1	27	56
Nov. 07	9.8 J	3.7 J	29	3.0 J	45.5	3.66	36
Jan. 08	21	ND	11	ND	32	3.12	14



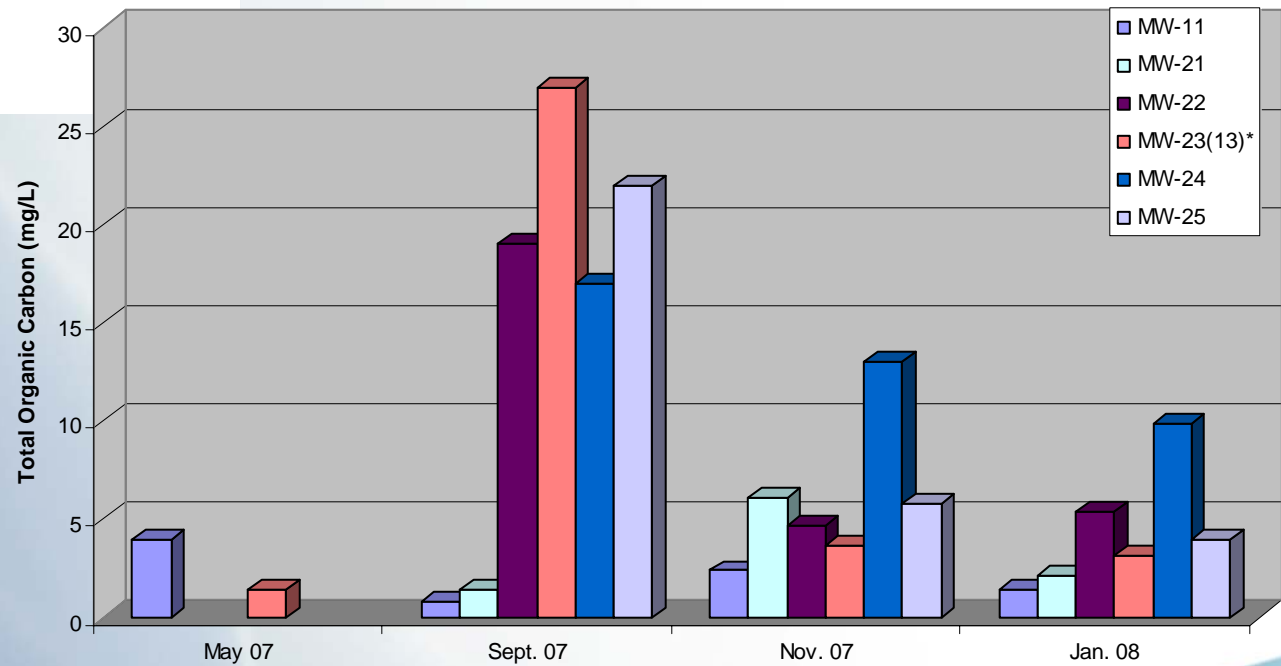
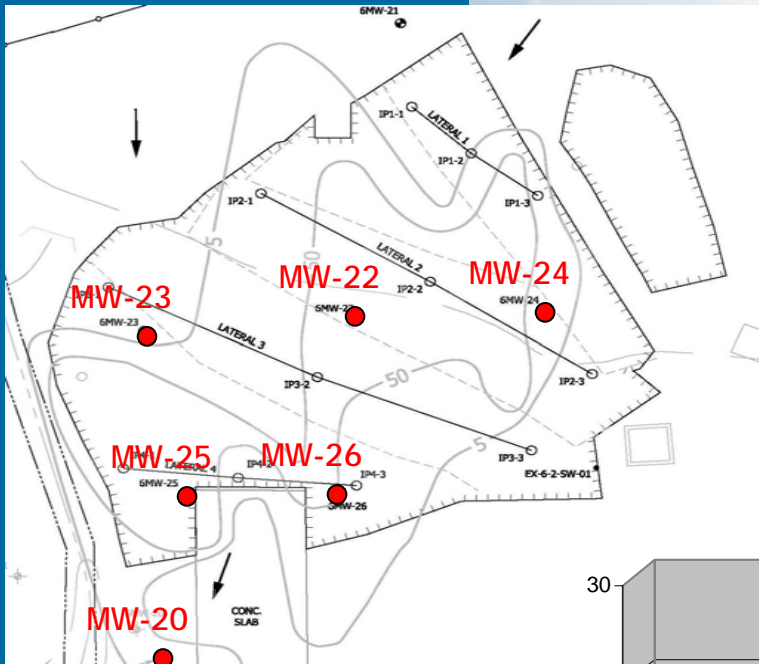
## Site 6 - In Situ Bioremediation: MW-23 Results



## Site 6 - In Situ Bioremediation: September/November Results



# Site 6 - Total Organic Carbon Results



## NYSDEC Cleanup Standards

- ❖ Part 375 provides risk based cleanup standards for SOILS based on several scenarios.
- ❖ Protection of Groundwater
- ❖ Protection of Ecological Resources
- ❖ Protection of Human Health with:
  - Residential
  - Restricted Residential
  - Commercial
  - Industrial
- ❖ NYSDEC TOGS 1.1.1, Class GA provides GROUNDWATER cleanup standards (same as or more restrictive than federal MCLs)

## Human Health and Ecological Risk Assessment

### Two Tier Risk Assessment on Soils and Groundwater

#### TIER 1

Use Risk Based Standards Specified in NYSDEC Part 375 to determine what compounds exceed standards:

->provides list of Contaminants of Concern (COCs)

#### TIER 2

Determine Mean Concentration of the COCs based on 95% UCL (EPA ProUCL) and compare the mean to standard

-> if Hazard Quotient for a COC is greater than 1, then a risk exists

## Site 3

### Location of COCs

- ❖ Silver (EX-3)
- ❖ Xylenes, Napthalenes, 2-Methylnapthalene (Creek Bank)

## Risk Assessment Summary: Soils

SOILS	Site 3		Site 6	
	COCs	Hazard Quotent	COCs	Hazard Quotent
Human Health	None		Benzo(a)anthracene	0.7
			Chrysene	0.8
			Benzo(k)flouranthene	0.3
Ecological	Silver	0.8	Nickel	1
	Xylenes	2	Pyrene	1
	Napthalene	0.5	Tetrachloroethene	1
	2-Methylnapthalene	0.6		

### SUMMARY:

The Risk from Soils is the Xylene in the Creek Bank Sample

## Site 3 Groundwater

- No further action was required for the groundwater following the RI, therefore groundwater was not evaluated as part of the IRM/FFS

## Risk Assessment Summary: Groundwater

Parameter	Standard	% Detects	Max. Concentration	Mean Concentration
Vinyl Chloride	2	30	62	17.2
cis-1,2-Dichloroethene	5	60	85	32
Trichloroethene	5	50	6	2.5
Tetrachloroethene	5	40	21	7.6

## Site 6 Groundwater

- Standard based on NYSDEC TOGS 1.1.1 Residential GW

### SUMMARY:

The Risk from Groundwater is PCE, cis-1,2-DCE and VC

## Evaluation Criteria

- ❖ Overall protection of human health and the environment
- ❖ Compliance with applicable regulations
- ❖ Long-term effectiveness
- ❖ Reduction in toxicity, mobility, or volume through treatment
- ❖ Short-term effectiveness
- ❖ Implementability
- ❖ Cost

## Focused Feasibility Study

### Site 3 Soils:

- No Further Action (Excavations 1 through 5)
- Ecological Risk exists in Bank along creek behind weir; the weir acts as an oil/water separator -> therefore No Further Action

### Site 3 Groundwater:

- No Further Action

### Site 6 Soils:

- No Further Action

### Site 6 Groundwater:

- Groundwater Treatment Alternatives

Monitored Natural Attenuation  
Enhanced Bioremediation  
Groundwater Extraction

# Estimated O&M Time Frame

## Focused Feasibility Study: Costs

- ❖ Alt. 2 - 30 Years
- ❖ Alt 3 - 10 Years
- ❖ Alt 4 - 5 Years

Item Description	Alt 1 No Action	Alt 2 Monitored Natural Attenuation with Institutional Controls	Alt 3 Hydraulic Containment, Groundwater Removal with onsite treatment	Alt 4 Enhanced Bioremediation
Site Preparation	\$ -	\$ -	\$ 2,000	\$ -
YEAR 1 Groundwater Removal and Treatment	\$ -	\$ -	\$ 40,000	\$ -
YEAR 1 EOS Injection	\$ -	\$ -	\$ -	\$ 104,000
YEAR 1 Discharge Monitoring (QUARTERLY)	\$ -	\$ -	\$ 5,000	\$ -
YEAR 1 Groundwater Monitoring (ANNUAL)	\$ -	\$ 20,000	\$ 9,000	\$ 20,000
Subtotal Capital Costs	\$ -	\$ 20,000	\$ 56,000	\$ 124,000
Engineering (20% construction costs)	\$ -	\$ -	\$ 11,200	\$ -
Contingency (20% construction costs)	\$ -	\$ -	\$ 11,200	\$ -
TOTAL CAPITAL COSTS	\$ -	\$ 20,000	\$ 78,400	\$ 124,000
Annual Operation and Maintenance	\$ -	\$ -	\$ 25,000	\$ -
Annual Discharge Monitoring	\$ -	\$ -	\$ 13,000	\$ -
Annual Long-Term Groundwater Well Monitoring	\$ -	\$ 11,000	\$ 4,800	\$ 13,000
Five-Year Groundwater Monitoring (annualized average cost)	\$ -	\$ 3,300	\$ 3,300	\$ 4,000
Subtotal Annual O&M Costs	\$ -	\$ 14,300	\$ 46,100	\$ 17,000
Present Worth O&M Costs	\$ -	\$ 220,000	\$ 356,000	\$ 74,000
Total Capital Costs	\$ -	\$ 20,000	\$ 78,400	\$ 124,000
Total Present Worth O&M Costs	\$ -	\$ 220,000	\$ 356,000	\$ 74,000
TOTAL COST	\$ -	\$ 240,000	\$ 440,000	\$ 200,000

## Outline of PP/ROD

- ❖ Decision summary
- ❖ Present/Future landuse
- ❖ Summary site risks
- ❖ Remedial action objectives
- ❖ Alternatives evaluation
- ❖ Selected remedy
- ❖ Community participation
- ❖ Responsiveness summary

## Project Plan/Record of Decision

Upon Acceptance of FFS (currently reviewing)  
a PP/ROD will be submitted to the NYSDEC

Recommendation of FFS

### Soils

Site 3 - No Further Action

Site 6 - No Further Action

### Groundwater

Site 3 - No Further Action

Site 6 - *In situ* treatment  
(Enhance Bioremediation)

## Schedule

### IRA Completion Report

NYSDEC Submitted - Dec 2007

### Enhanced Bioremediation Pilot Study

Groundwater Sampling - Sep, Nov 2007, Jan 2008

### FFS Report

NYSDEC Review - Apr 2008

### Project Plan/Record Of Decision

NYSDEC Review - Jul 2008

# Questions/Discussion/Comments