104-37

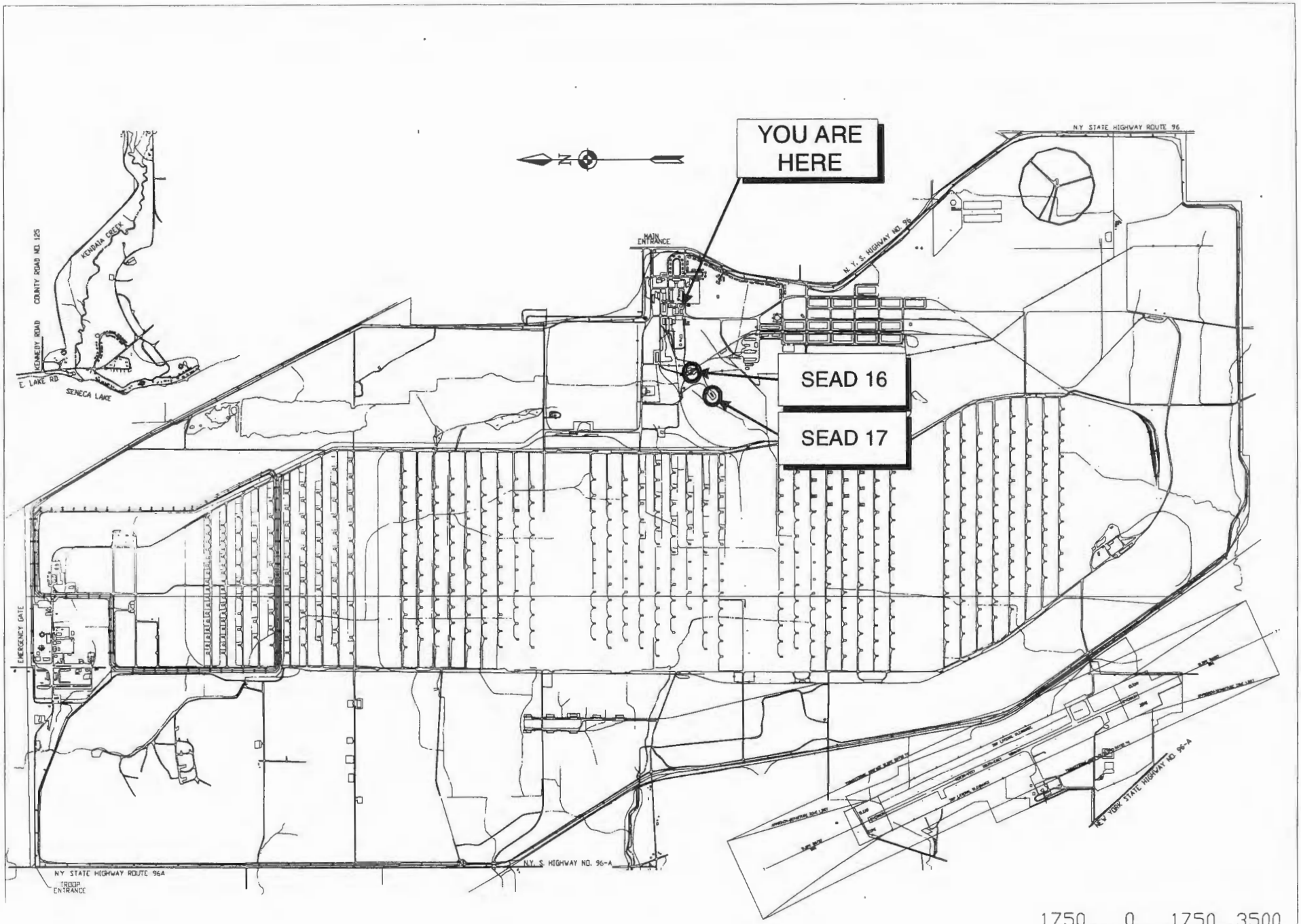
DEACTIVATION FURNACES
PEER REVIEW PRESENTATION

PRESENTED BY
RANDY BATTAGLIA

Deactivation Furnaces Presentation

- **Site Background**
- **Project Schedule**
- **Site Characterization**
- **Reuse Implications**
- **Risk Assessment**
- **Technology Selection**
- **Cost**
- **Initiatives to Reduce Cost**
- **Summary**

Site Background
Deactivation Furnaces


YOU ARE HERE
SEAD 16
SEAD 17
N
N.Y. STATE HIGHWAY ROUTE 96
MAIN ENTRANCE
N. Y. S. HIGHWAY NO. 96
COUNTY ROAD NO. 125
KENDAIA CREEK
KENNEDY ROAD
E. LAKE RD.
SENECA LAKE
EMERGENCY GATE
NY STATE HIGHWAY ROUTE 96A
TROOP ENTRANCE
N.Y. S HIGHWAY NO. 96-A
NEW YORK STATE HIGHWAY NO. 96-A
1750 0 1750 3500
1" = 3500'

Site Background
Deactivation Furnaces

- Two Rotary Kiln Incinerators were Used for Demil of Ammunition and Bulk PEP
- Munition-Specific Contamination was Found In and Around the Buildings: Metals, Explosives, and Stabilizers Unique to Munitions
- Adjacent to PID and Wetland Areas
- Both SWMU's Classified As Areas of Concern(AOC's)
- Expanded Site Inspections Confirmed the Presence of Pollutants and Identified the Threat
- RI Used to Quantify the Risk Posed by the Contaminants

Project Schedule
Deactivation Furnaces

Project Schedule
Deactivation Furnaces

● RI Submission	18 Jan 97
● FS Submission	02 Jun 97
● PRAP Submission	14 Nov 97
● ROD	28 Apr 98
● RD Start	FY 98
● RD Completed	FY 98
● RA Start	FY 99

SEAD-16 & SEAD-17
RI/FS Milestones

- Final ESI Issued, Dec. 11, 1995
- RI/FS Recommended
- Final RI Workplan Issued, Dec. 1, 1995
- COE Authorization to Proceed, July 2, 1996
- Fieldwork Mobilization, July 22, 1996
- Fieldwork Completed, Sept. 15, 1996
- 2nd Round GW Sampling Completed, December 13, 1996
- Draft RI Issued, Jan. 15, 1997

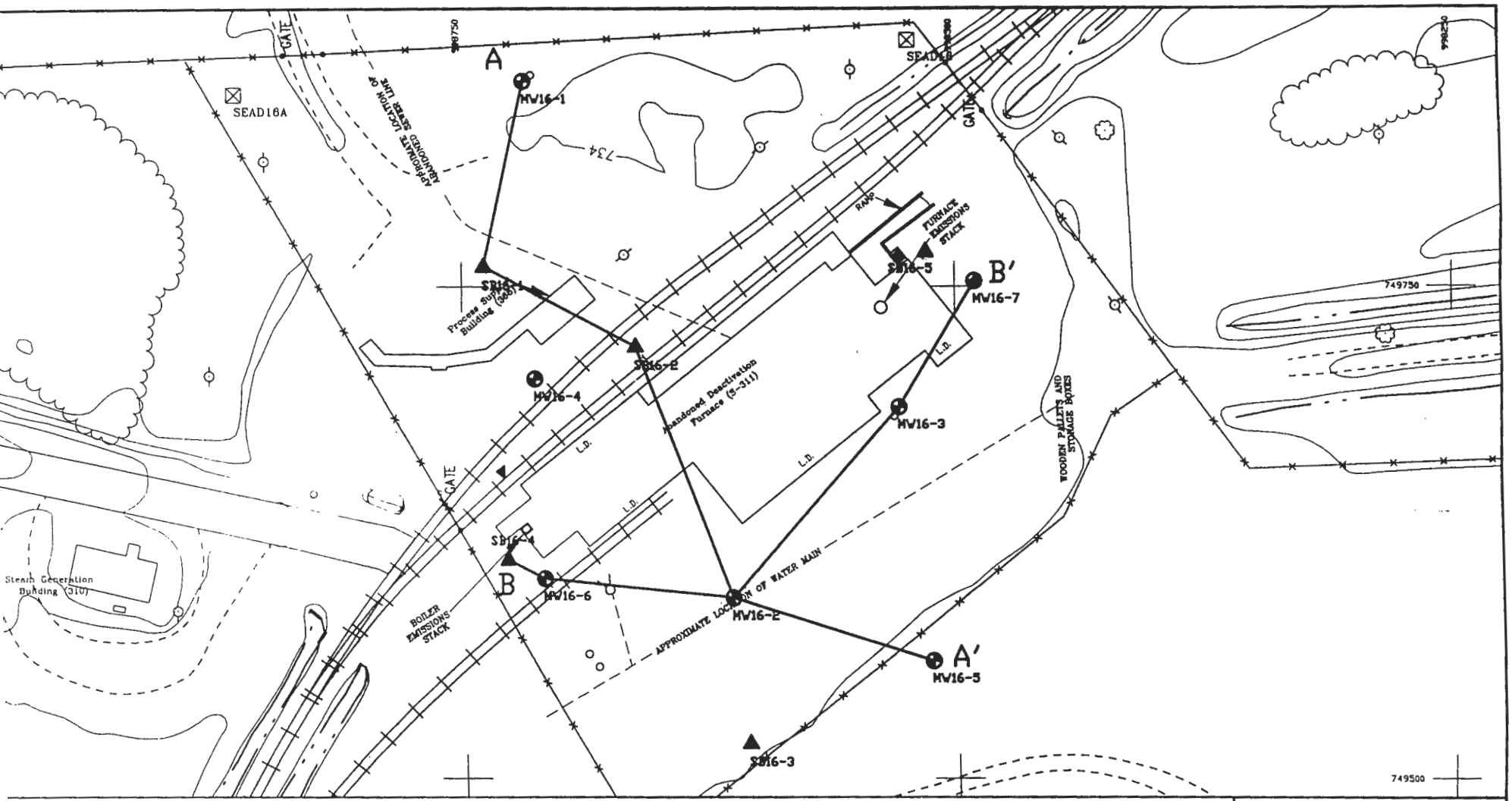
Site Characterization
Deactivation Furnaces

Site Geology at SEAD-16

- Glacial Till Thicknesses range from 0.5 feet to 3.0 feet
- Weathered Shale Thicknesses range from 0.2 feet to 2.7 feet
- Competent Shale

Site Characterization
Deactivation Furnaces

- PEP Materials Were Detected in Building S-311 and the groundwater; Above Groundwater Standards
- Metals in Soils, Groundwater, and Surface Water
- Glacial Till 0.5-3 feet; Weathered Shale 0.2-2.73 ft Water Table Levels Variable Directional Changes
- Metals in Soils: Sb, Ba, Pb, Hg, Zn
- Nitroaromatics(Soils): DNT, 2-amino-DNT, Tetryl
- Surface Water: Cd, Cu, Fe, Pb, Se, Zn
- Groundwater: Mn, Tl above standards
- PAH's Ubiquitous, Detected in Every Sample



▲ SOIL BORING
SB16-4

⊕ MONITORING WELL
MW16-7

25 0 25 50
1" = 50'

N

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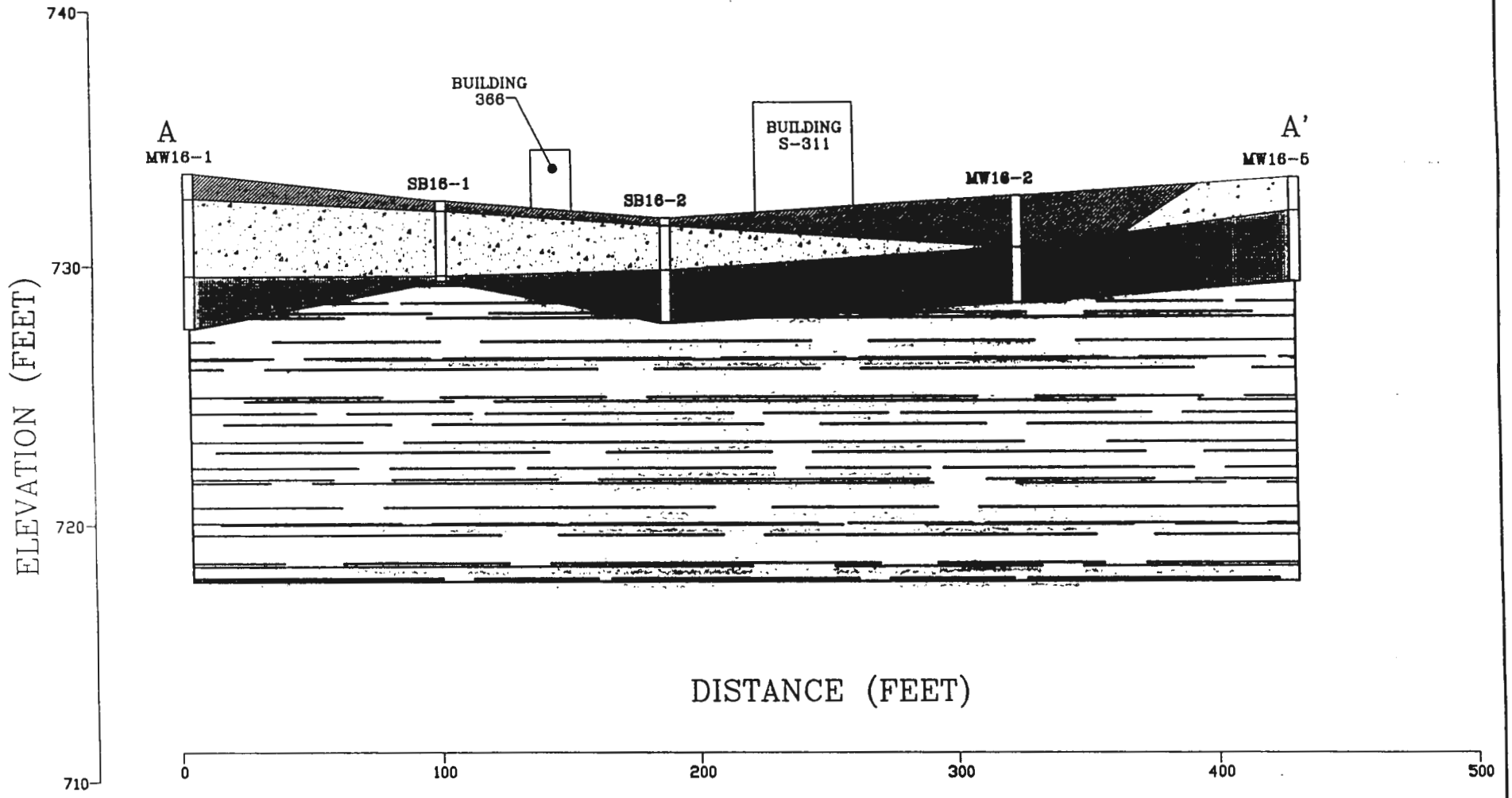
SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-16 ABANDONED DEACTIVATION FURNACE

SEAD-16
LOCATION OF
GEOLOGIC
CROSS-SECTIONS
A-A' AND B-B'



FILL

WEATHERED SHALE

GLACIAL TILL

COMPETENT SHALE

VERTICAL EXAGGERATION = 10 X

BUILDING VERTICAL SCALE IS ESTIMATED

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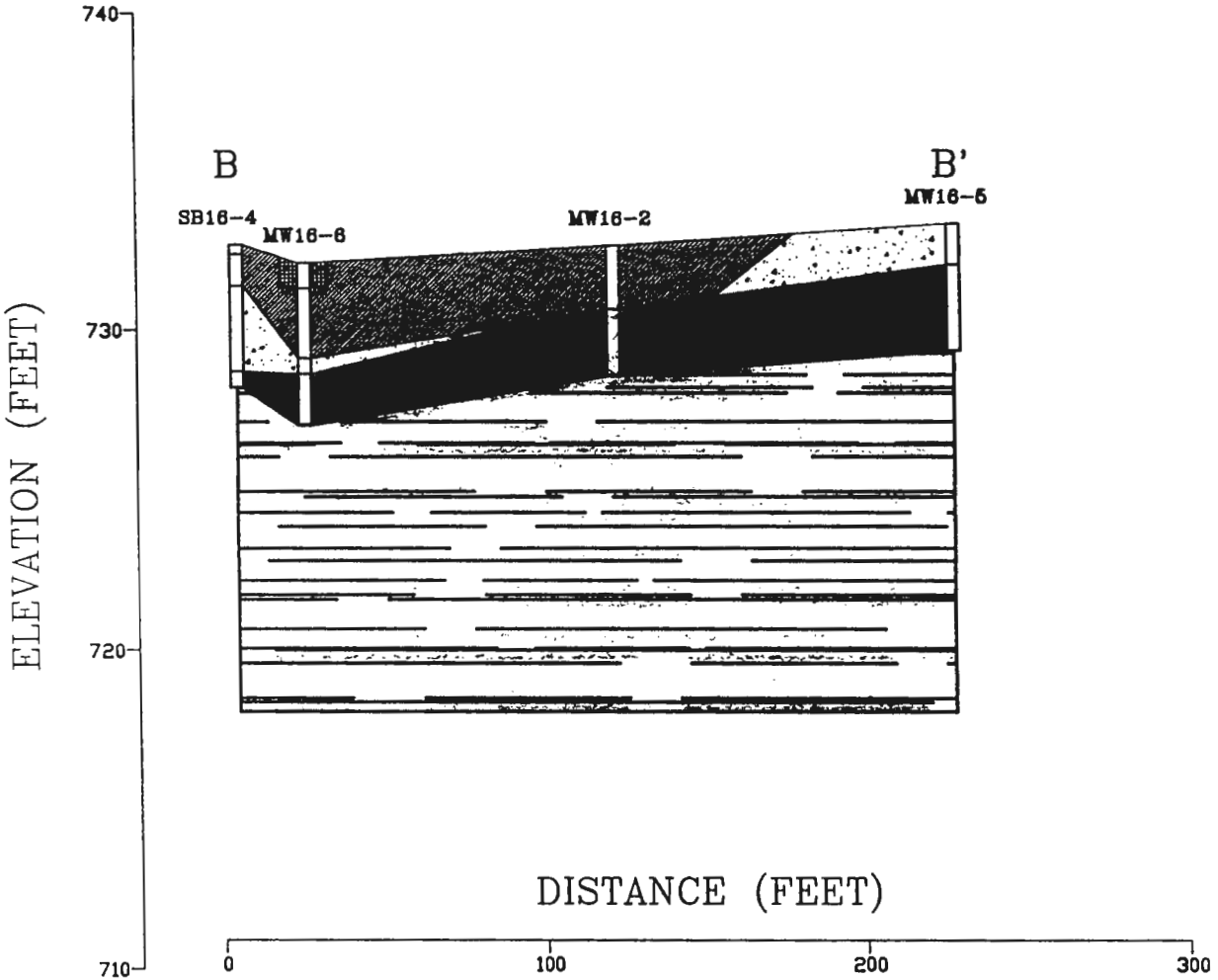
SENECA ARMY DEPOT ACTIVITY

RI/FS

SEAD-16 ABANDONED DEACTIVATION FURNACE

SEAD-16
GEOLOGIC
CROSS-SECTION
A-A'



FILL

WEATHERED SHALE

CONCRETE

GLACIAL TILL

COMPETENT SHALE

HORIZONTAL SCALE - 1" = 40'
VERTICAL EXAGERATION = 10X
BUILDING VERTICAL SCALE IS ESTIMATED

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SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-16 ABANDONED DEACTIVATION FURNACE

SEAD-16
GEOLOGIC
CROSS-SECTION
B-B'

Remedial Investigation at SEAD-16, Field Tasks Summary

- UXO Clearance and Support Required
- Seismic Refraction (4 - 115 ft. lines)
- Building Survey (Buildings S-311 & 366)
  - 2 Indoor Air, 1 Outdoor Air (Background)
  - 16 Building Materials for Asbestos
  - 8 Soil from the Floor
  - 2 Standing Water Samples

Remedial Investigation at SEAD-16, Field Tasks Summary

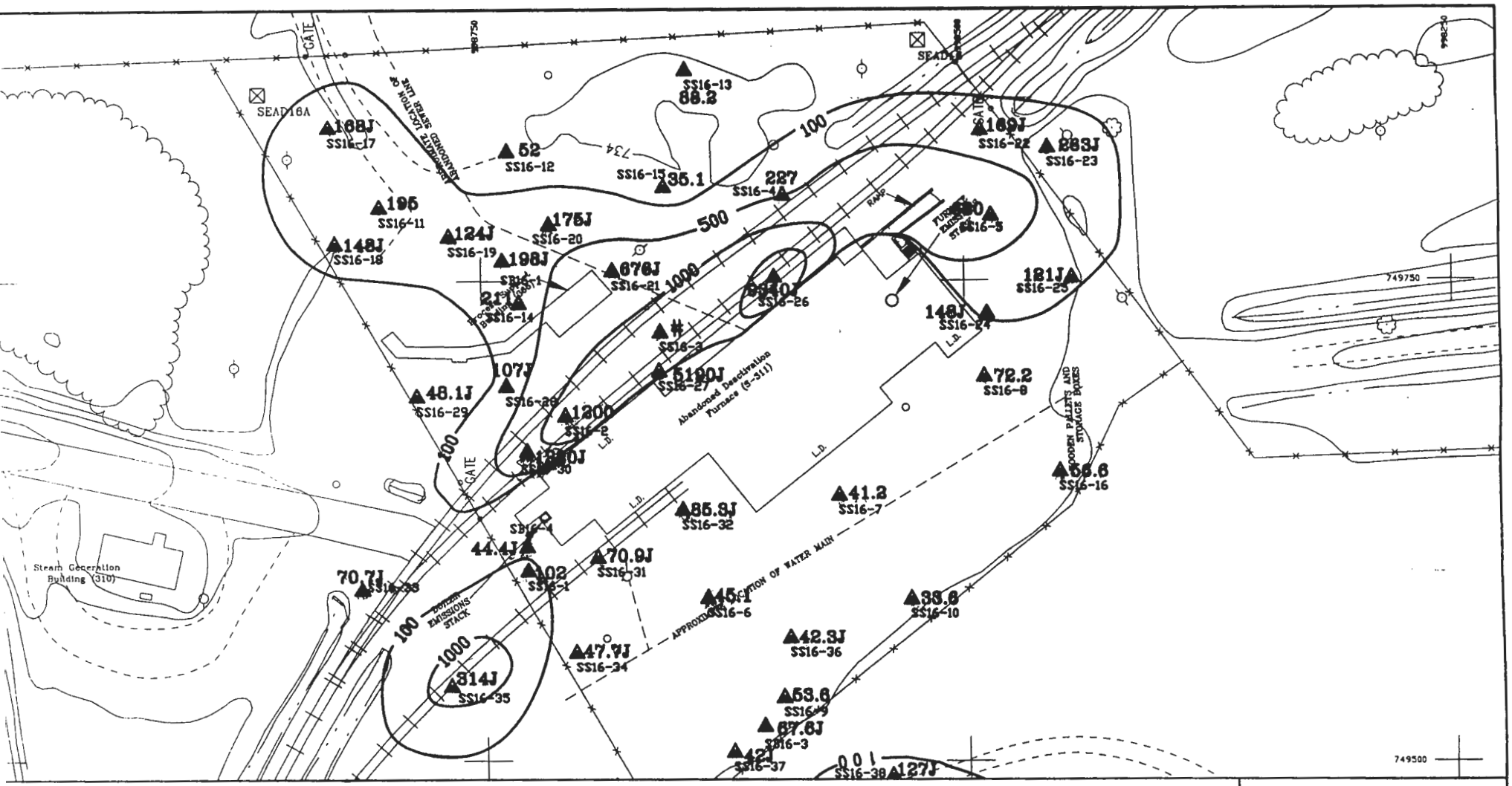
- 5 Soil Borings & 39 Surface Soil Samp.
- 7 Groundwater Monitoring Wells
  - 2 Rounds of Groundwater Sampling
- 10 Surface Water and Sediment Samples
- Ecological Survey
  - Aquatic Sampling in Kendaia Creek
  - Terrestrial Study

Surface Soil Sampling Summary at SEAD-16

- Metals Detected :
  - Sb(16 of 43, max 1930 mg/kg; Bkg. is 3.6 mg/kg)
  - Ba(8 of 43, max 9340 mg/kg; TAGM is 300 mg/kg)
  - Cu(43of 43, max 37,900 mg/kg; TAGM is 25 mg/kg)
  - Pb(41of 43, max 140,000 mg/kg;Bkg. is 22mg/kg)
  - Hg(26of 43, max 11.4 mg/kg; TAGM is 0.1 mg/kg)
  - Zn(35of 43, max 14,600 mg/kg; Bkg. is 82.5 mg/kg)

Surface Soil Sampling Summary at SEAD-16

- Nitroaromatics Detected :
  - 2,6 Dinitrotoluene (3of 43, max 0.320 mg/kg; TAGM is 1mg/kg)
  - 2,4 Dinitrotoluene (27 of 43, max 74 mg/kg; No TAGM)
  - 2-amino-4,6-dinitrotoluene (1of 43, 0.430 mg/kg; No TAGM)
  - Tetryl (1of 43, 0.220 mg/kg; No TAGM)



▲167J SS17-6 SURFACE SOIL SAMPLE WITH CHEMICAL CONCENTRATION

100 CHEMICAL CONCENTRATION CONTOURS

\# REJECTED DATA

25 0 25 50
1" = 50'

N

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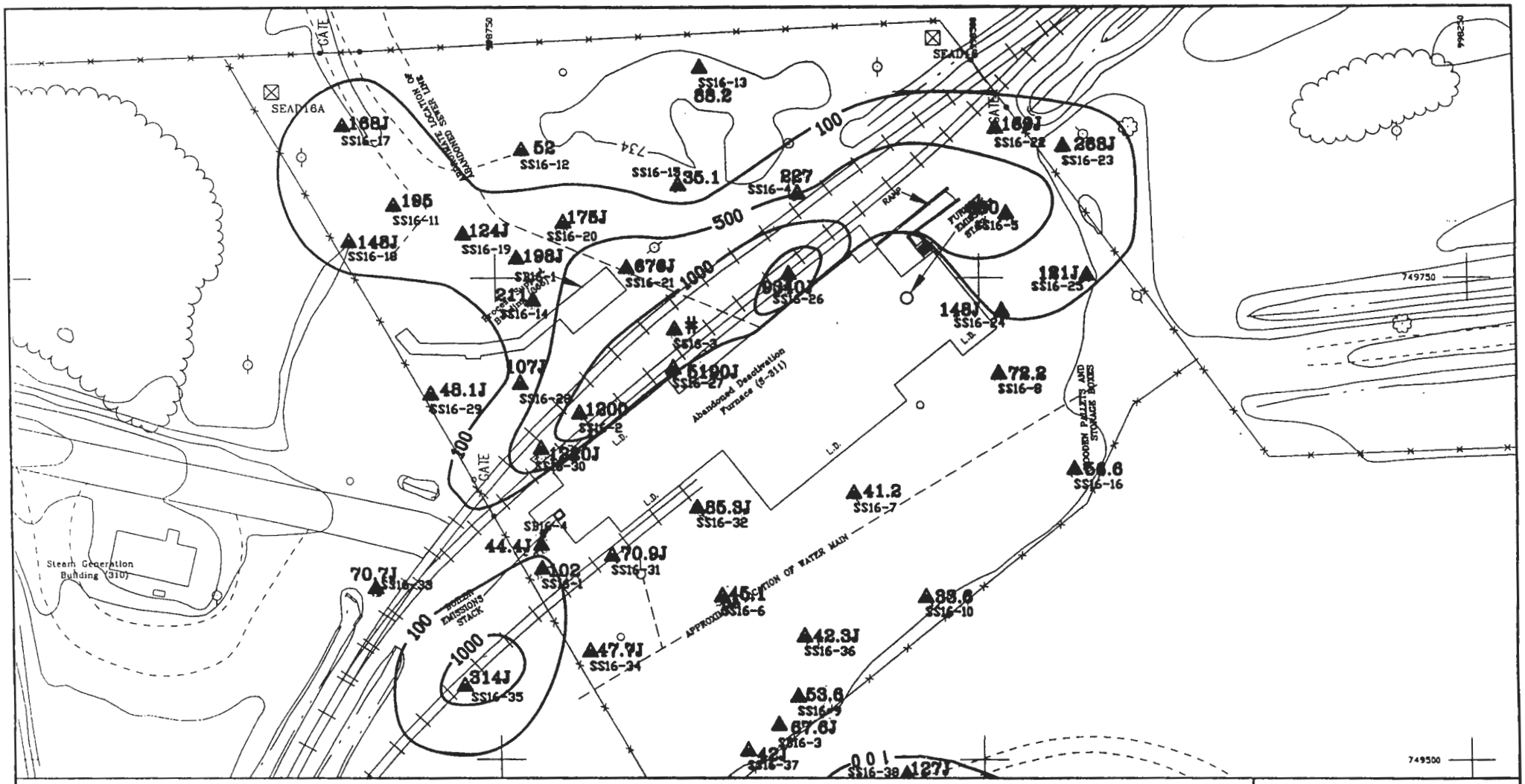
SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-16 ABANDONED DEACTIVATION FURNACE

SEAD-16
DISTRIBUTION OF
BARIUM
IN
SURFACE SOILS

ACAD:\SENECA\PRESENT\SD16BAR1.DWG



▲167J
SS17-6
SURFACE SOIL SAMPLE WITH CHEMICAL CONCENTRATION

100
CHEMICAL CONCENTRATION CONTOURS

25 0 25 50
1" = 50'

N

REJECTED DATA

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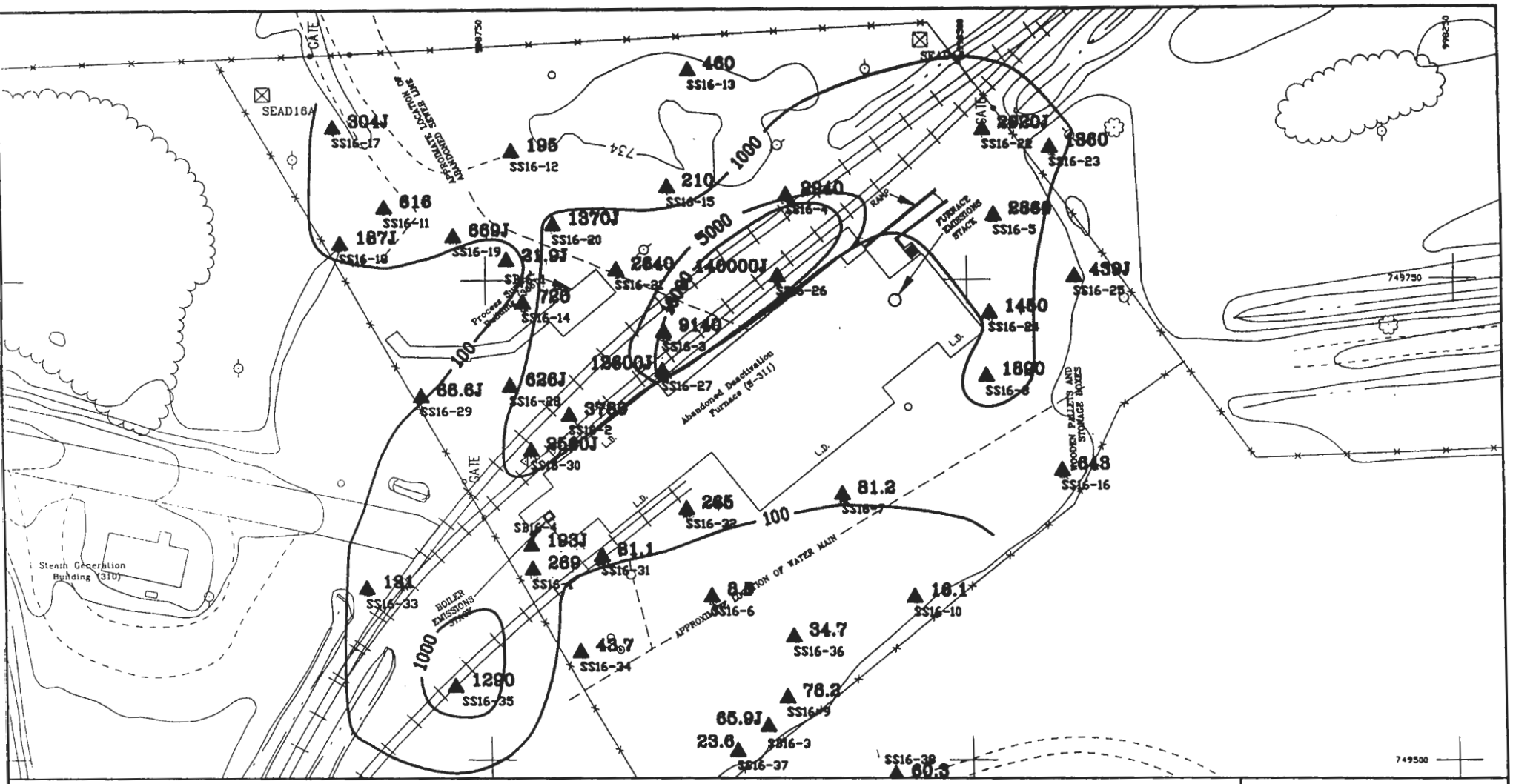
SENECA ARMY DEPOT ACTIVITY
EI/TS
SEAD-16 ABANDONED DEACTIVATION FURNACE

SEAD-16
DISTRIBUTION OF
MERCURY
IN
SURFACE SOILS



▲167J
SS17-6
SURFACE SOIL SAMPLE WITH CHEMICAL CONCENTRATION

100
CHEMICAL CONCENTRATION CONTOURS

25 0 25 50
1" = 50'

N

ACAD\SENECA\PRESENT\SD16LEAD.DWG

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SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-16 ABANDONED DEACTIVATION FURNACE

SEAD-16
DISTRIBUTION OF
LEAD
IN
SURFACE SOILS

Groundwater at SEAD-16

- Located in High Bedrock Elevation
- Water Table Thickness is Shallow Ranging from 2.7 to 5.1 feet, depending upon the season
- Direction of Flow Changes

Groundwater Sampling Summary for SEAD-16

- No VOCs Detected
- 2 Nitroaromatics Detected, None Above 5 ug/L Class GA Standard:
  - 1,3Dinitrobenzene (2of 7 MWs @1.8 & 0.26ug/L)
  - 2,4Dinitrotoluene (1 of 7 MWs @ 0.68ug/L)
- 7 Metals above GA Standard
  - Al , Fe, Mn, Pb, Sb, Na, Tl

Groundwater Sampling Summary for SEAD-16

- Metals Detected and Criteria :
  - Al (4 of 7 MWs; max 1.85 mg/L; Secondary MCL 0.2 mg/L)
  - Sb (2 of 7 MWs; max 0.012 mg/L; MCL 0.006 mg/L)
  - Pb (1 of 7 MWs; 0.024 mg/L; GA 0.025 mg/L; EPA DW Action Limit 0.015mg/L)
  - Tl (1 of 7 MWs; 0.006 mg/L; MCL 0.002 mg/L)

Surface Water Sampling Summary for SEAD-16

- Drainage Ditches drain to Headwaters of Kendaia Creek, Class C
- No VOCs, PCBs/Pesticides and Nitroaromatics
- 6 Metals, (Cd, Cu, Fe, Pb, Se and Zn) were detected above Class C Surface Water Standard

Surface Water Sampling Summary for SEAD-16

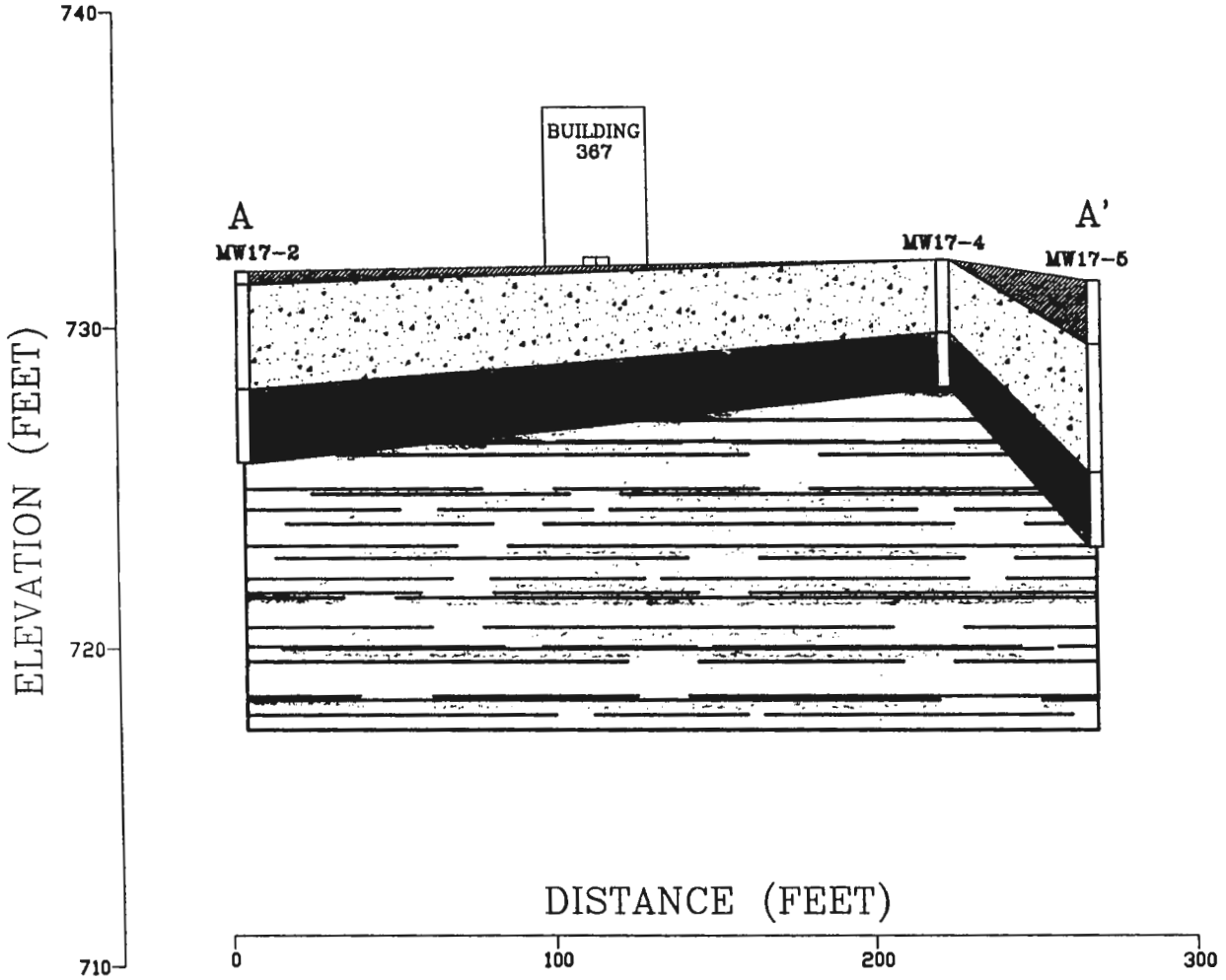
- Metals Detected and Class C Criteria :
  - Cd - 1 of 10 ; 2 ug/L; Class C 1.8 ug/L
  - Cu - 7 of 10; max 424 ug/L; Class C 20 ug/L
  - Pb - 9 of 10; max 813 & 97 ug/L; Class C Criteria 7 ug/L
  - Zn - 3 of 10; max 253 & 217 ug/L; Class C Criteria 141 ug/L

SUMMARY OF BASELINE HUMAN HEALTH RISK ASSESSMENT SEAD-16, Former Deactivation Furnace

EXPOSURE SCENARIO	TOTAL HAZARD INDEX	TOTAL CANCER RISK
Current on-site Worker	0.10	2.4×10^{-6}
Future on-site Industrial Worker	19.6	3.5×10^{-5}
Future on-site Construction Worker	2.15	5.1×10^{-6}
Future Trespasser (Child)	0.70	5.1×10^{-6}
EPA target value	1.0	$10^{-4} \times 10^{-6}$

Site Geology at SEAD-17

- Glacial Till Thicknesses range from 2.3 feet to 6.0 feet
- Weathered Shale Thicknesses range from 0.5 feet to 3.3 feet
- Competent Shale



FILL

WEATHERED SHALE

GLACIAL TILL

COMPETENT SHALE

HORIZONTAL SCALE - 1" = 40'
VERTICAL EXAGERATION = 10X
BUILDING VERTICAL SCALE IS ESTIMATED

ACAD\SENECA\PRESENT\SD17AA.DWG

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SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-17 ACTIVE DEACTIVATION FURNACE

SEAD-17
GEOLOGIC
CROSS-SECTION
A-A'

Remedial Investigation at SEAD-17, Field Tasks Summary

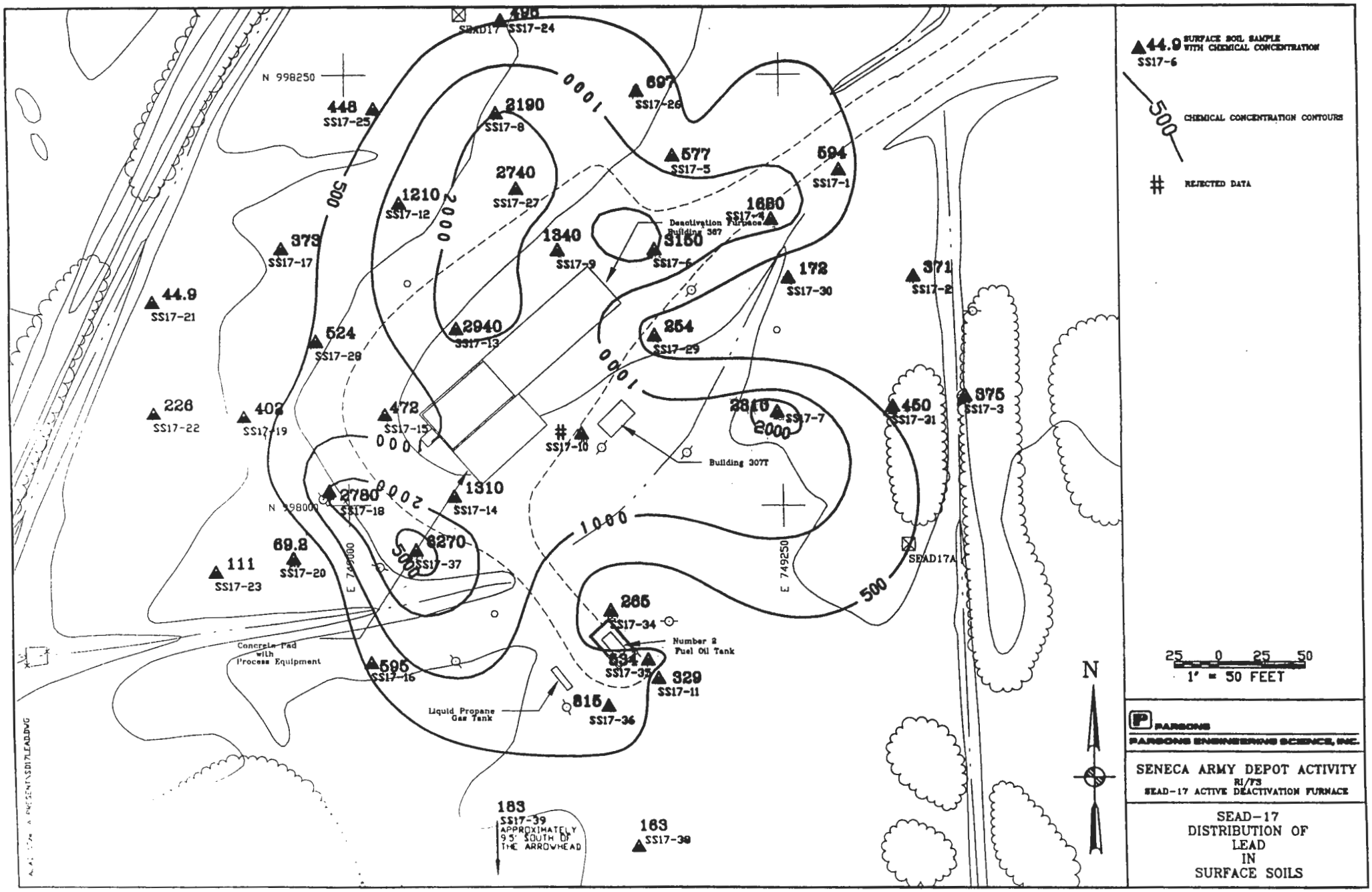
- UXO Clearance and Support Required
- 4 Soil Borings & 38 Surface Soil Samp.
- 5 Groundwater Monitoring Wells
  - 2 Rounds of Groundwater Sampling
- 10 Surface Water and Sediment Samples
- Ecological Survey
  - Aquatic Sampling of Headwaters of Kendaia Creek
  - Terrestrial Study

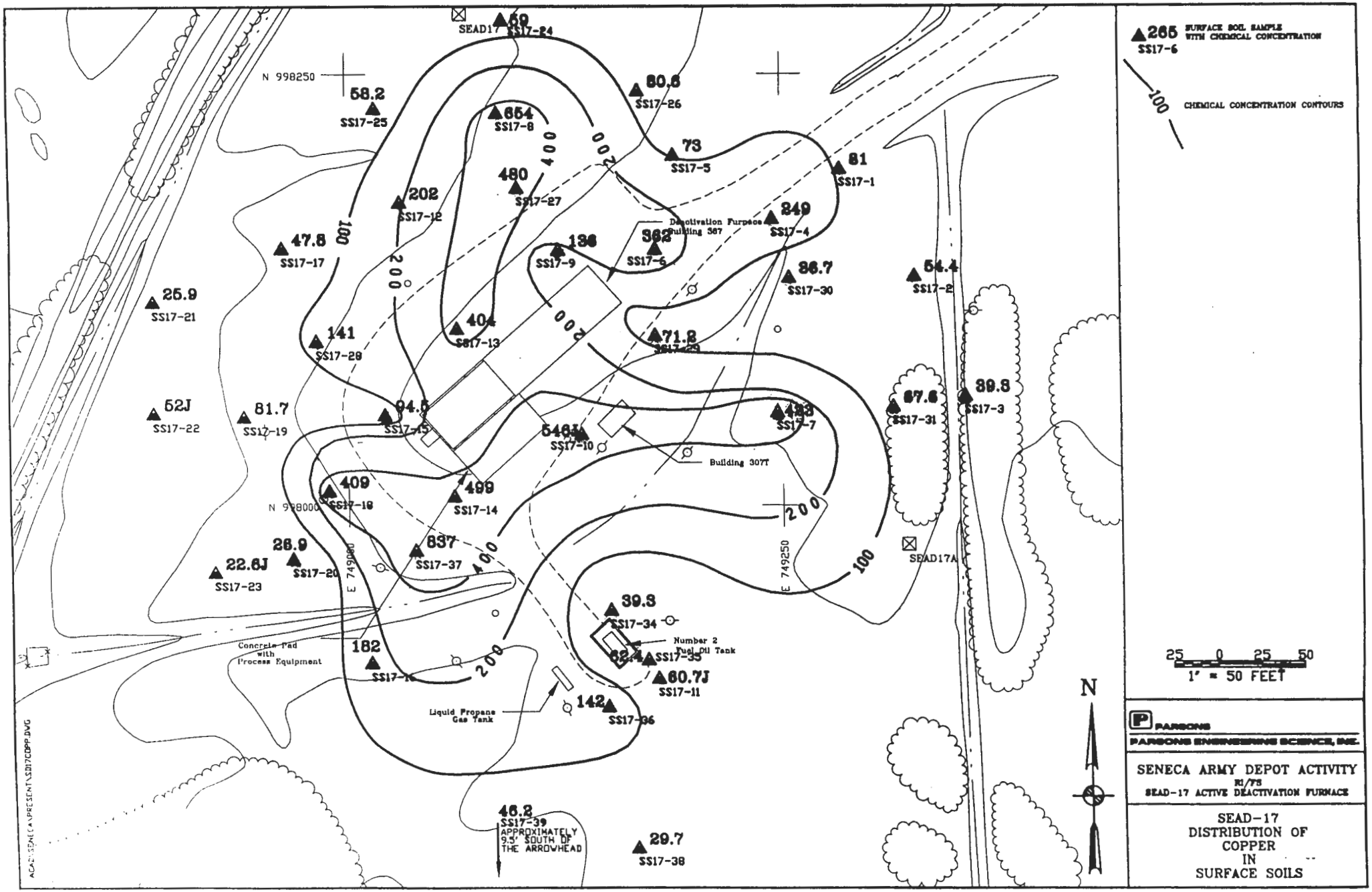
Surface Soil Sampling Summary at SEAD-17

- Metals Detected :
  - Sb(9 of 38, max 52 mg/kg; Bkg 3.6 mg/kg)
  - Ba(5 of 38, max 524 mg/kg; TAGM is 300 mg/kg)
  - Cu(37 of 38, max 837 mg/kg; TAGM is 25 mg/kg)
  - Pb(37of 38, max 6,270mg/kg;Bkg22mg/kg)
  - Hg(7of 38, max 1.0 mg/kg; TAGM is 0.1 mg/kg)
  - Zn(35 of 38, max 1,530 mg/kg; Bkg is 82.5 mg/kg)

Surface Soil Sampling Summary at SEAD-17

- Nitroaromatics Detected :
  - 2,4 Dinitrotoluene (4of 38, Ranged from 72 to 330 ug/kg; No TAGM)
- PAHs Detected:
  - 3-Nitroanaline (1 of 38, 990 ug/kg; TAGM is 500 ug/kg)
  - Dibenz(a,h)anthracene (3 of 38, max 59 ug/kg; TAGM is 14 ug/kg)


▲44.9 SURFACE SOIL SAMPLE WITH CHEMICAL CONCENTRATION
SS17-6
500 CHEMICAL CONCENTRATION CONTOURS
REJECTED DATA
25 0 25 50
1" = 50 FEET
N
PARSONS
PARSONS ENGINEERING SCIENCE, INC.
SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-17 ACTIVE DEACTIVATION FURNACE
SEAD-17
DISTRIBUTION OF
LEAD
IN
SURFACE SOILS
N 998250
N 998000
E 749000
E 749250
SEAD17
SEAD17A
Deactivation Furnace Building 307
Building 307T
Concrete Pad with Process Equipment
Liquid Propane Gas Tank
Number 2 Fuel Oil Tank
SS17-1 594
SS17-2 371
SS17-3 875
SS17-4 1680
SS17-5 577
SS17-6 3150
SS17-7 2810
SS17-8 2190
SS17-9 1840
SS17-10 #
SS17-11 329
SS17-12 1210
SS17-13 2940
SS17-14 1310
SS17-15 472
SS17-16 595
SS17-17 373
SS17-18 2780
SS17-19 403
SS17-20 69.8
SS17-21 44.9
SS17-22 226
SS17-23 111
SS17-24 496
SS17-25 448
SS17-26 697
SS17-27 2740
SS17-28 524
SS17-29 254
SS17-30 172
SS17-31 450
SS17-32 834
SS17-34 265
SS17-36 815
SS17-37 6270
SS17-39 163
APPROXIMATELY 95' SOUTH OF THE ARROWHEAD
163 SS17-39
1000
500
2000



PARSONS

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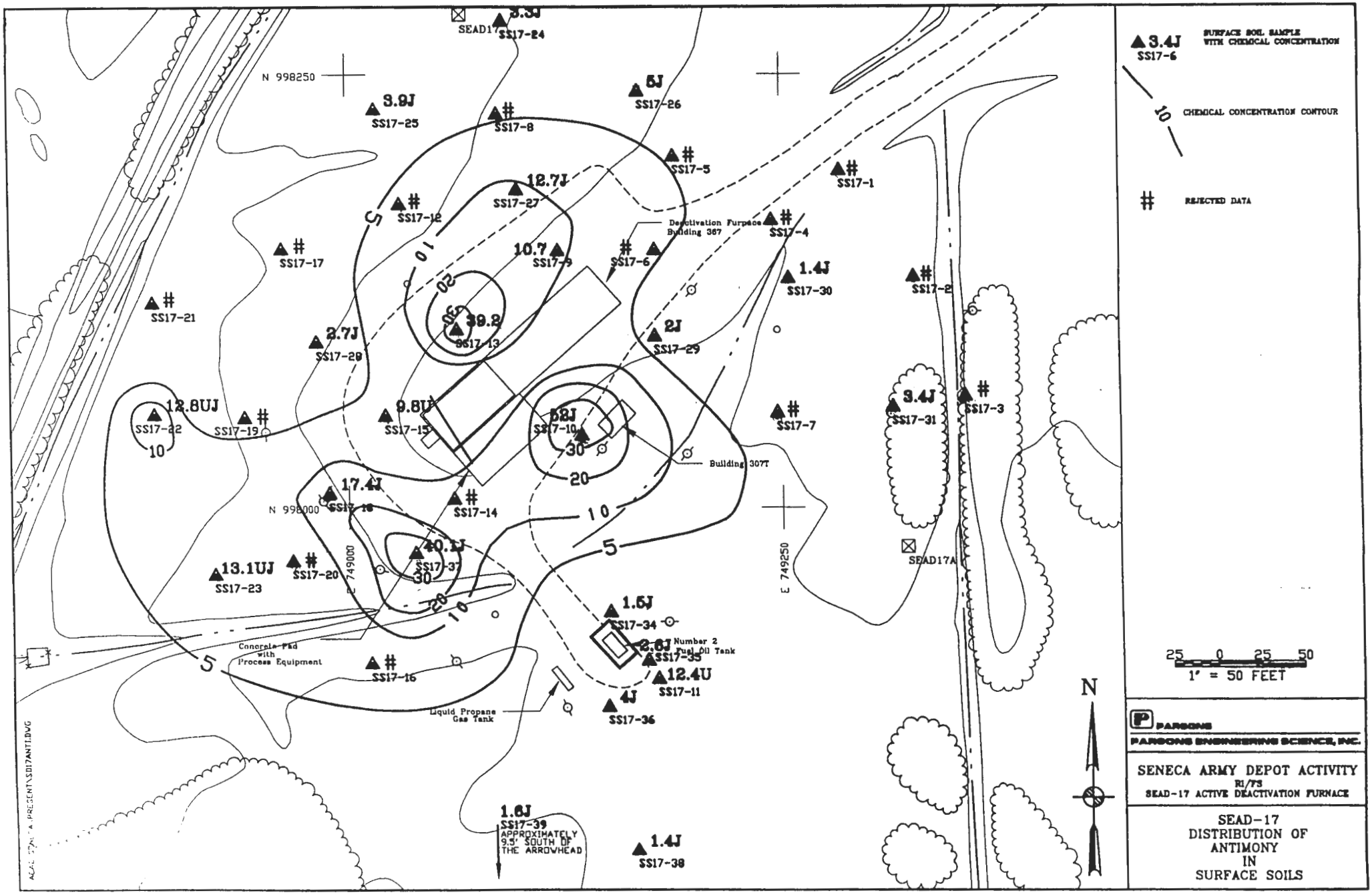
SENECA ARMY DEPOT ACTIVITY

91/75

SEAD-17 ACTIVE DEACTIVATION FURNACE

SEAD-17
DISTRIBUTION OF
COPPER
IN
SURFACE SOILS

ACAD\SENECA\PRESENT\SD17CDPP.DWG


3.4J
SS17-6
SURFACE SOIL SAMPLE WITH CHEMICAL CONCENTRATION
10
CHEMICAL CONCENTRATION CONTOUR
#
REJECTED DATA
N 998250
N 998000
E 749000
E 749250
SEAD17
SEAD17A
3.3J
SS17-24
3.9J
SS17-25
5J
SS17-26
12.7J
SS17-27
10.7
SS17-9
39.2
SS17-13
2.7J
SS17-28
2J
SS17-29
1.4J
SS17-30
3.4J
SS17-31
12.8UJ
SS17-22
9.8UJ
SS17-15
58J
SS17-10
17.4J
SS17-18
40.1J
SS17-37
13.1UJ
SS17-23
1.6J
SS17-34
2.6J
SS17-35
12.4U
SS17-11
4J
SS17-36
1.6J
SS17-39
APPROXIMATELY 9.5' SOUTH OF THE ARROWHEAD
1.4J
SS17-38
Deactivation Furnace Building 367
Building 307T
Concrete Pad with Process Equipment
Liquid Propane Gas Tank
Number 2 Fuel Oil Tank
SS17-1
SS17-2
SS17-3
SS17-4
SS17-5
SS17-7
SS17-8
SS17-12
SS17-14
SS17-16
SS17-17
SS17-19
SS17-20
SS17-21
25 0 25 50
1" = 50 FEET
N
PARSONS
PARSONS ENGINEERING SCIENCE, INC.
SENECA ARMY DEPOT ACTIVITY
RI/FS
SEAD-17 ACTIVE DEACTIVATION FURNACE
SEAD-17
DISTRIBUTION OF
ANTIMONY
IN
SURFACE SOILS

Groundwater at SEAD-17

- Located in High Bedrock Elevation
- Water Table Thickness is Shallow Ranging from 2.7 to 5.1 feet
- Depth to Water :
  - 2.4 feet to 3.2 feet in April
  - 6.9 feet to 7.6 feet in August
- Direction of Flow Changes Depending on the Time of Year

Groundwater Sampling Summary for SEAD-17

- 1st Round 2 Wells Contained Water
- No VOCs Detected
- 4 Semi-Volatile Compounds Detected, None above the GA Standard
- No Nitroaromatics Detected
- No PCBs or Pesticides Detected
- 2 Metals above GA Standard
  - Mn and Tl

Groundwater Sampling Summary for SEAD-17

- Metals Detected and Criteria :
  - Mn (1 of 2 MWs; 73 ug/L; Secondary MCL 50 ug/L)
  - Tl (2 of 2 MWs; 4.7 ug/L; MCL 2 ug/L)

Surface Water Sampling Summary for SEAD-17

- Drainage Ditches drain to Headwaters of Kendaia Creek, Class C
- No VOCs, PCBs/Pesticides or Nitroaromatics Detected
- 4 Metals, (Cu, Fe, Pb and Se) were detected above Class C Surface Water Standards

Surface Water Sampling Summary for SEAD-17

- Metals Detected and Class C Criteria :
  - Cu - 1 of 10; 33 ug/L; Class C 20 ug/L
  - Pb - 3 of 10; max 37 ug/L; Class C Criteria 7 ug/L
  - Se - 5 of 10; max 3.5 ug/L; Class C Criteria 1 ug/L

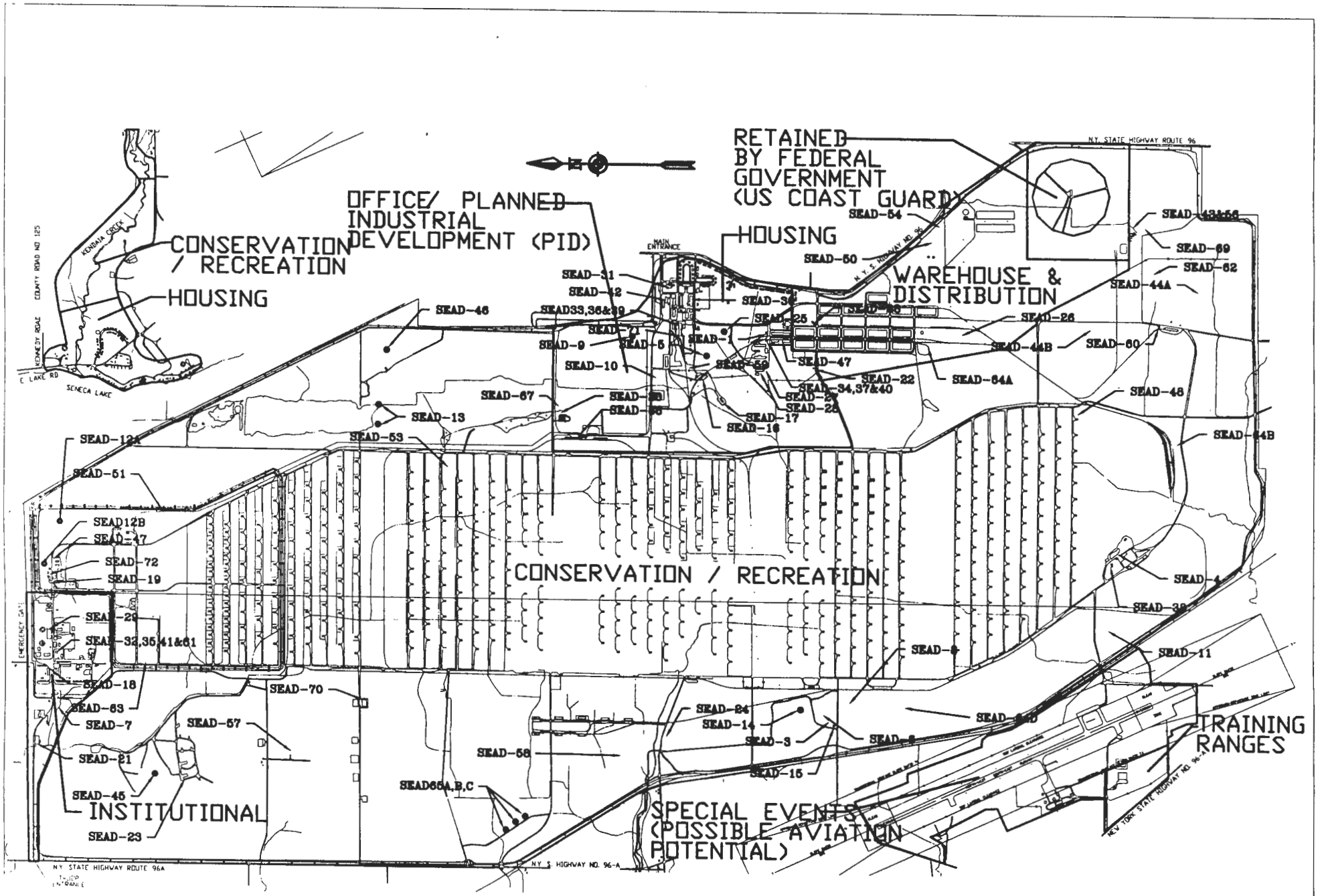
SUMMARY OF BASELINE HUMAN HEALTH RISK ASSESSMENT
SEAD-17, Existing Deactivation Furnace

EXPOSURE SCENARIO	TOTAL HAZARD INDEX	TOTAL CANCER RISK
Current on-site Worker	0.029	6.0×10^{-7}
Future on-site Industrial Worker	0.122	2.7×10^{-6}
Future on-site Construction Worker	0.84	1.3×10^{-6}
Future Trespasser (Child)	0.33	2.2×10^{-6}
EPA target value	1.0	$10^{-4} \times 10^{-6}$

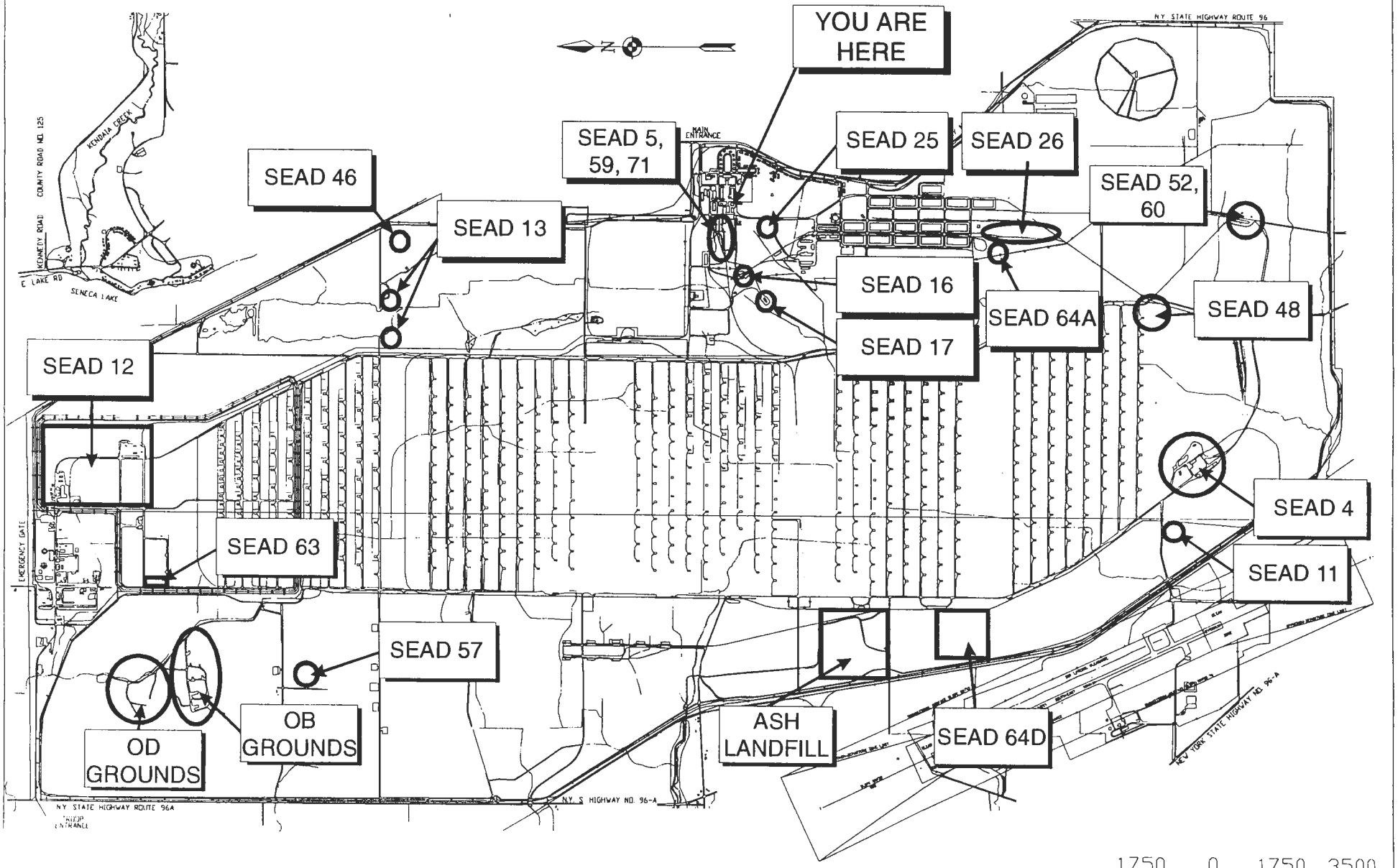
Reuse Implications
Deactivation Furnaces

Reuse Implications
Deactivation Furnaces

- Both Sites Are Located in the Planned Industrial Area (PID)
- The PID Area is a High Priority for Reuse
- Army Can Excess the PID Area to the LRA for Redevelopment



LANDSITE.DWG


YOU ARE HERE
SEAD 5, 59, 71
SEAD 25
SEAD 26
SEAD 46
SEAD 13
SEAD 52, 60
SEAD 16
SEAD 64A
SEAD 48
SEAD 17
SEAD 12
SEAD 4
SEAD 63
SEAD 11
SEAD 57
OD GROUNDS
OB GROUNDS
ASH LANDFILL
SEAD 64D
N.Y. STATE HIGHWAY ROUTE 96
MAIN ENTRANCE
KENDAIA CREEK
COUNTY ROAD NO. 125
KENNEDY ROAD
E. LAKE RD
SENECA LAKE
EMERGENCY GATE
N.Y. STATE HIGHWAY ROUTE 96A
N.Y. S HIGHWAY NO. 96-A
NEW YORK STATE HIGHWAY NO. 96-A
1750 0 1750 3500
1" = 3500'

Risk Assessment
Deactivation Furnaces

Risk Assessment
Deactivation Furnaces

EXPOSURE SCENARIO	SEAD-16 TOTAL HAZARD INDEX	SEAD-16 TOTAL CANCER RISK	SEAD-17 TOTAL HAZARD INDEX	SEAD-17 TOTAL CANCER RISK
Current on-site Worker	0.1	2.4x10E-6	0.029	6.0x10E-7
Future on-site Industrial Worker	**19.6**	3.5x10E-5	0.122	2.7x10E-6
Future on-site Construction Worker	**2.15**	5.1x10E-6	0.84	1.3x10E-6
Future Trespasser (Child)	0.7	5.1x10E-6	0.33	2.2x10E-6

Technology Selection
Deactivation Furnaces

Technology Selection Deactivation Furnaces

- Feasibility Study Due 2 Jun 97
- RCRA Impacts For SEAD-17
- Risk Driven Remediation versus Exceedances of ARAR's or Promulgated Standards
- Industrial Future Use

Cost
Deactivation Furnaces

Cost
Deactivation Furnaces

- FY96 Award for RI/FS $1,078K
- $1,150K for RD FY 99
- $6,000K for RA FY 00
- $50K for LTM FY 00,01

Initiatives to Reduce Cost Deactivation Furnaces

Initiatives to Reduce Cost Deactivation Furnaces

- Combined RI/FS, RD, and RA Work for the Two Sites
- Risk Driven Remediation vs. RCRA Closure and Cleanup

Summary
Deactivation Furnaces

Summary
Deactivation Furnaces

- RCRA Closure an ARAR
- RD/RA Costs are Planning Estimates
- Groundwater Hits May Require Further Characterization
- Soil Removal for Metals
- Deactivation Furnace Use for Soil Contamination