

SUMMARY AND PRELIMINARY RESULTS

***PHASE II RED WATER PONDS ECOLOGICAL RISK
ASSESSMENT INVESTIGATION***

TNT AREAS A & C REMEDIAL INVESTIGATION

FORMER PLUM BROOK ORDNANCE WORKS

Presented To:

Restoration Advisory Board

December 6, 2000



Purpose and Objectives

- Define site physical features and characteristics
- Determine the nature and extent of source areas
- Determine whether contaminant distribution is consistent with DOD activities
- Characterize the risk to current and future human and/or ecological receptors

NOTE: TNT Areas A & C Remedial Investigation Report of Findings is presently being prepared to be issued as Draft in January 2001. Therefore, findings, recommendations, and conclusions presented herein are subject to revision.



Field Activities for the Red Water Ponds Investigation

- Preliminary land surveying for sample location
- Surface soil sampling for earthworm COPEC uptake estimates
- Fish sampling for COPEC uptake estimates based on tissue
- Sediment sampling for COPEC uptake estimates
- Surface water sampling for COPEC uptake estimates
- Background sampling
 - ◆ Analytical procedures
 - ◆ Land survey



Pre-Sampling Field Activities for the TNT Areas A & C Investigation

- **Locations of former building foundations determined by:**

- Historical maps and land surveying
- Land topography
- Metal detector

- **Foundation locations confirmed by excavation**

- Foundations located up to 3 ft below fill material





TNTA, Building 182 - DNT Sweating & Graining House. Trench with rebar. Western side of building foundation. Fill depth approximately 1 foot. Looking north.



TNTC, Building 613 - Fortifier House. SE corner of building foundation. Looking west.

Rationale for Screening Soil Sample Placement

- Based on locations of potential sources (buildings, pipelines, dewatering tanks, catch basins, etc.)
 - 3-5 Feet from building foundation
- Nitroaromatic detections observed at TNT Area B
- Experience at similar TNT production areas (West Virginia Ordnance Works, Volunteer Army Ammunition Plant)
- Historical nitroaromatic detections at TNT A and TNT C



Phase I & II - Surface Soil Screening Investigation

■ Soil sampling approach

- Identification of fill thickness/original ground surface
- Sample collection

■ Collected 719 “surface soil” screening samples

- 386 surface soil screening samples from TNTA
- 333 surface soil samples collected from TNTC

■ Surface soil samples collected in an iterative approach using field screening data to delineate contamination





TNTC, Building 681 - Mono House. SW corner of building foundation. Looking north.



TNTA, Building 116 - Wash House. Northern foundation wall.
Fill depth approximately 1 foot. Looking north.



TNTA, Building - Wash House, Blue stake indicating NW foundation corner. Looking south.

Phase III - Subsurface Soil Screening Investigation

■ Soil sample placement

→ 44 subsurface samples were collected at TNT A

→ 52 subsurface samples were collected at TNT C

■ Soil sampling procedures

→ Direct push technology used to collect samples



Confirmation Samples

■ Surface soil sampling

- Surface soil sampling procedures
- Collected 22 surface soil confirmation samples in TNTA and 25 from TNTC

■ Subsurface soil sampling

- Subsurface soil sampling procedures
- Collected 17 subsurface soil confirmation samples in TNTA and 15 from TNTC



Groundwater Samples

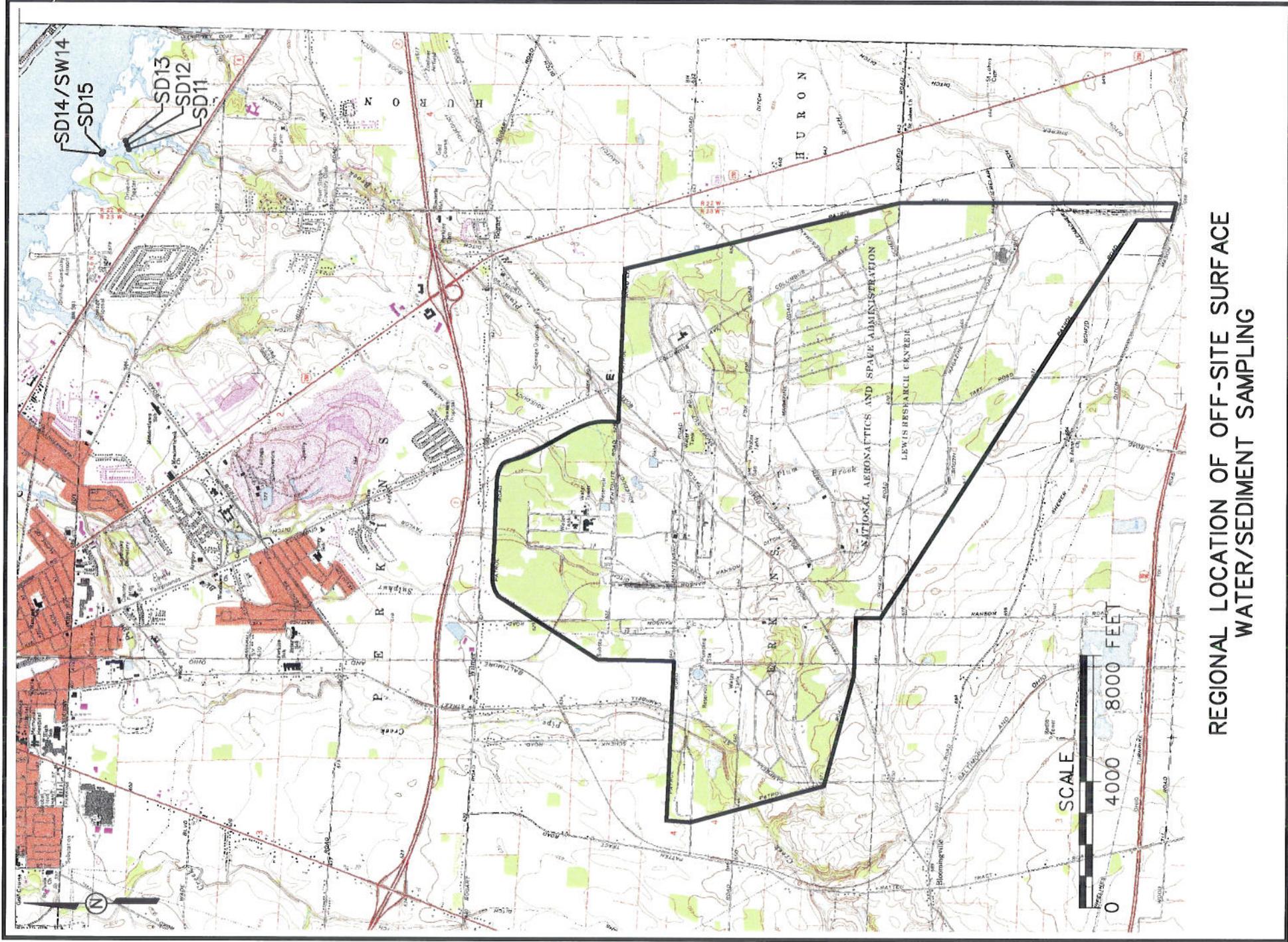
- **Sample placement**
- **Sampling procedures**
 - Temporary piezometer installation
 - Hydropunch sampling
- **Collected 9 groundwater samples from 10 locations at TNTA**
- **Collected 9 groundwater samples from 10 locations at TNTC**



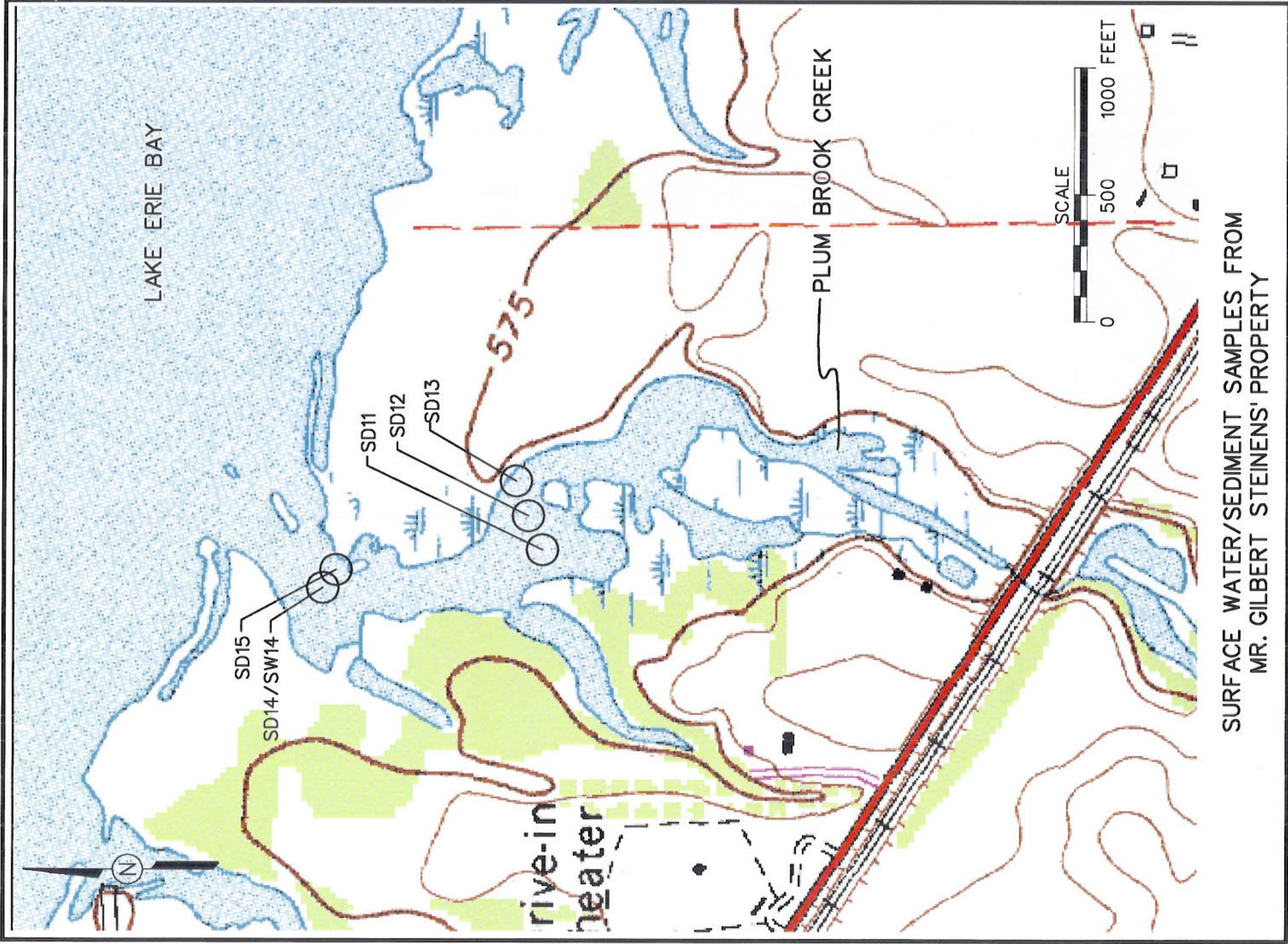
Surface Water and Sediment Samples

- **Sample placement**
- **Sample collection procedures**
- **TNTA (on-site and off-site)**
 - Collected 10 surface water samples (9 on-site and 1 off-site)
 - Collected 15 sediment samples (10 on-site and 5 off-site)
- **TNTC (on-site)**
 - Collected 10 surface water samples
 - Collected 15 sediment samples

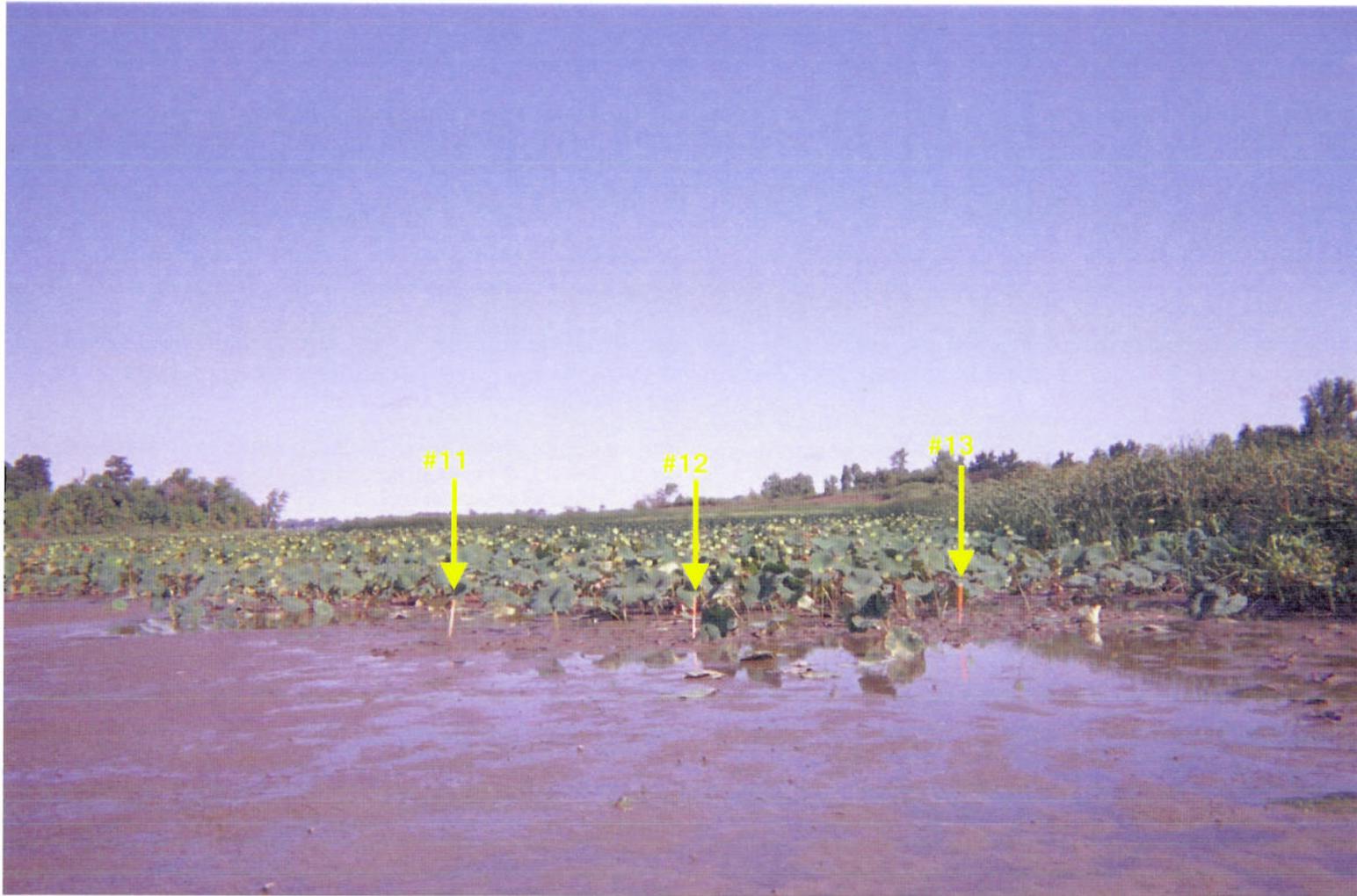




REGIONAL LOCATION OF OFF-SITE SURFACE WATER/SEDIMENT SAMPLING



SURFACE WATER/SEDIMENT SAMPLES FROM
MR. GILBERT STEINENS' PROPERTY



Sediment sampling locations SD11, SD12, and SD13 in Plum Brook Creek.
Mr. Gilbert Steinen's property. Looking north.

Screening Analysis (Soil Only)

- Analysis performed by off-site laboratory using nitroaromatic high performance liquid chromatography (HPLC) screening
- Based on SW-846, Method 8330
 - Shorter extraction time
 - No second column confirmation
 - Lower detection limits with multiple compounds than other “screening” analyses (e.g., colorimetric analysis)



Confirmation Analysis (Soil and Groundwater)

- Full suite analysis of selected samples based on field screening results
 - Nitroaromatics (Method 8330)
 - VOCs (Method 8260)
 - SVOCs (Method 3550B/8270C)
 - PCBs (Method 3550B/8082)
 - Metals (Method 3050B/6010B)



Land Survey

- Confirmation soil sample locations
- Collocated surface water and sediment sampling locations
- Groundwater sampling locations



TNT Area A & C Findings

■ Field Observations:

→ Foundations visible:

- ◆ TANTA - Corner portions for Mono House 111
- ◆ TANTC - Acid & Fume Recovery 689, Wastewater Settling Basins 657, corner portions for Mono House 601

→ Storm Water Ditches

→ Manholes:

- ◆ TANTA - Acid Fume Recovery Buildings 139, 149
- ◆ TANTC - Acid Fume Recovery Buildings 619, 609, 689, 699, and Wash House 616



TNT Area A & C Findings (continued)

■ Field Observations (continued):

→ Nitroaromatic residue from TNT manufacturing operations:

- ◆ TNTA - Bi-Tri House 112
- ◆ TNTC - Bi-Tri Houses 602, 682, and 692

→ Red Water:

- ◆ TNTA - Wash House 146 along with possible drum carcasses





TNTC - Storm ditch in front of/between Buildings 683 and 693. Stake SD-15 in front. Looking east.



TNTC, Building 692 - Bi-Tri House. SW corner of building foundation. Arrow indicates location of possible former flume line. Looking north.



TNTA, Building 146 - Wash House. West foundation. Looking north.



TNTC, Building 611 - Mono House. Sign on northern wall with blue stake indicating NE corner of building. Lead debris in front of sign. Looking south.

TNT A and TNT C Screening Analytical Summary

- Soil contamination evident at the Bi-Tri Houses, Wash Houses, and Fortifier Houses.
- Findings consistent with TNT B in terms of depths of contamination and extents.
- Findings consistent with historical investigations at TNT A and TNT C

