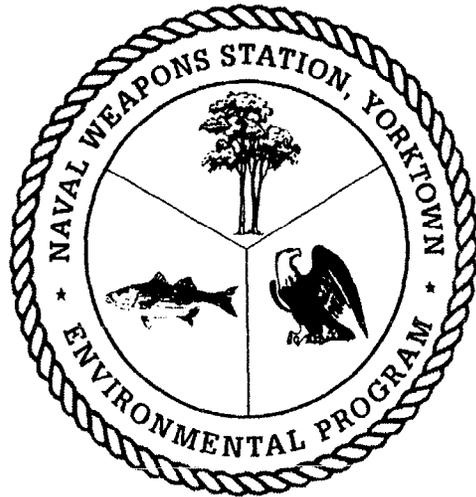


09.03-5/29/96-01278

# RESTORATION ADVISORY BOARD (RAB) MEETING

## Naval Weapons Station Yorktown

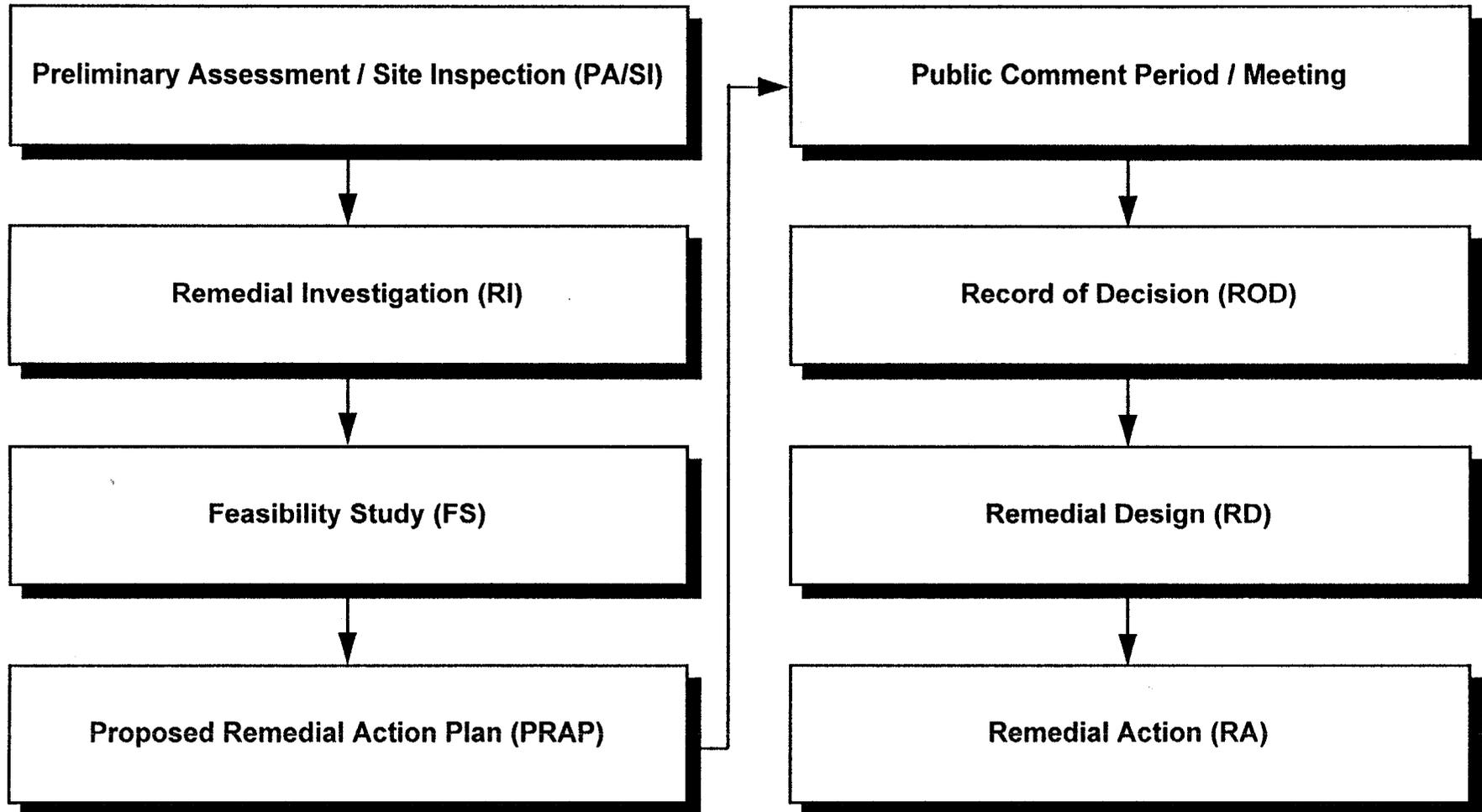
### 29 May 1996

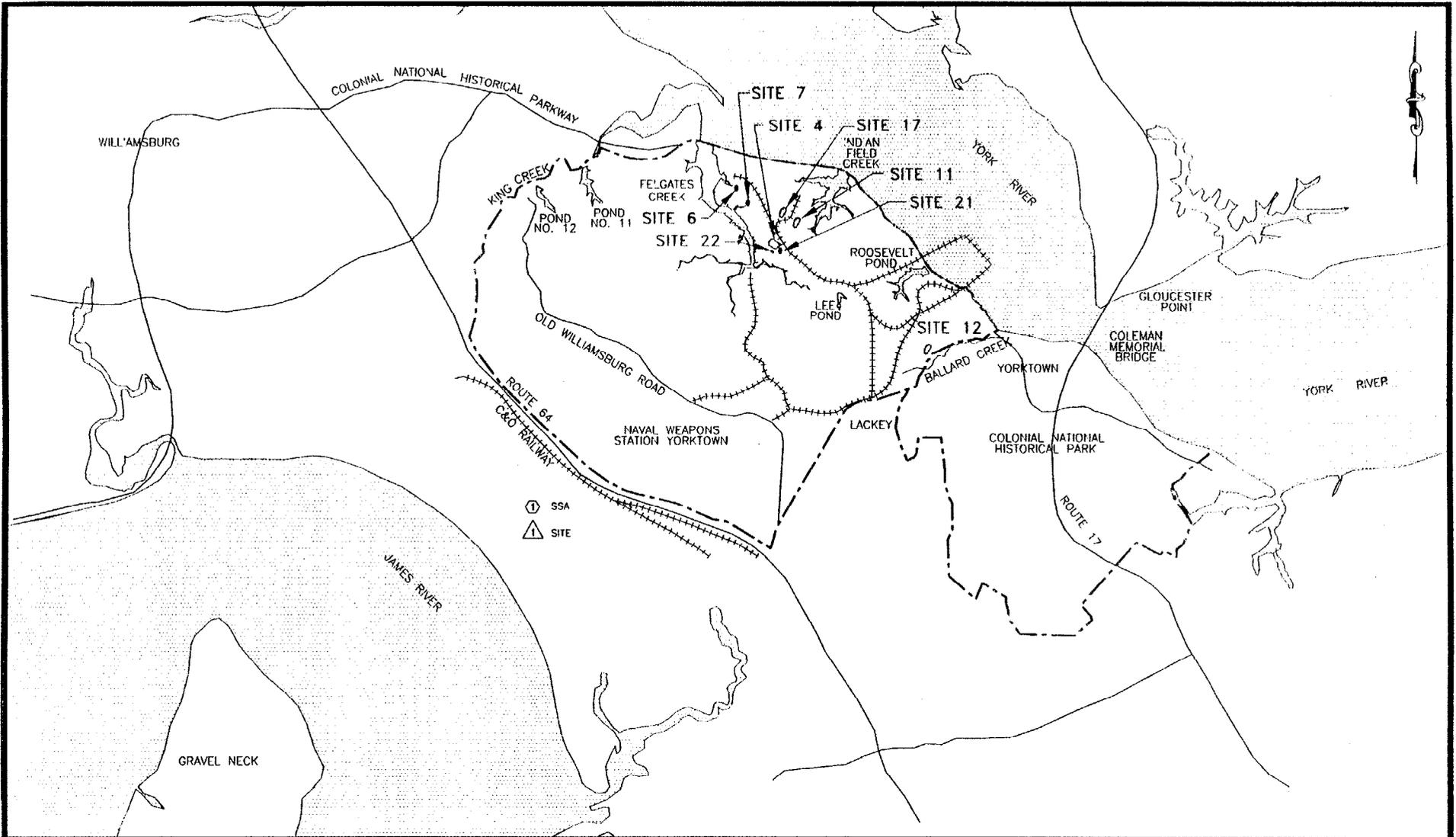


# Introduction

- **Sites 4, 21 and 22 - Work Plans**
- **Sites 11 and 17 - Work Plans**
- **Sites 1 and 3 - Remedial Investigation (RI)**
- **Sites 6 and 7 - Remedial Investigation (RI)**
- **Site 12 - Record of Decision (ROD)**

# Installation Restoration Program Process





NOT TO SCALE

349503WP

**LEGEND**

- WATER BOUNDARY OR DRAINAGE
- ROADWAY
- +—— RAILROAD



**FIGURE 2-2  
LOCATION OF  
SITES 4, 21, AND 22**

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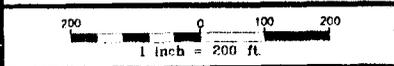
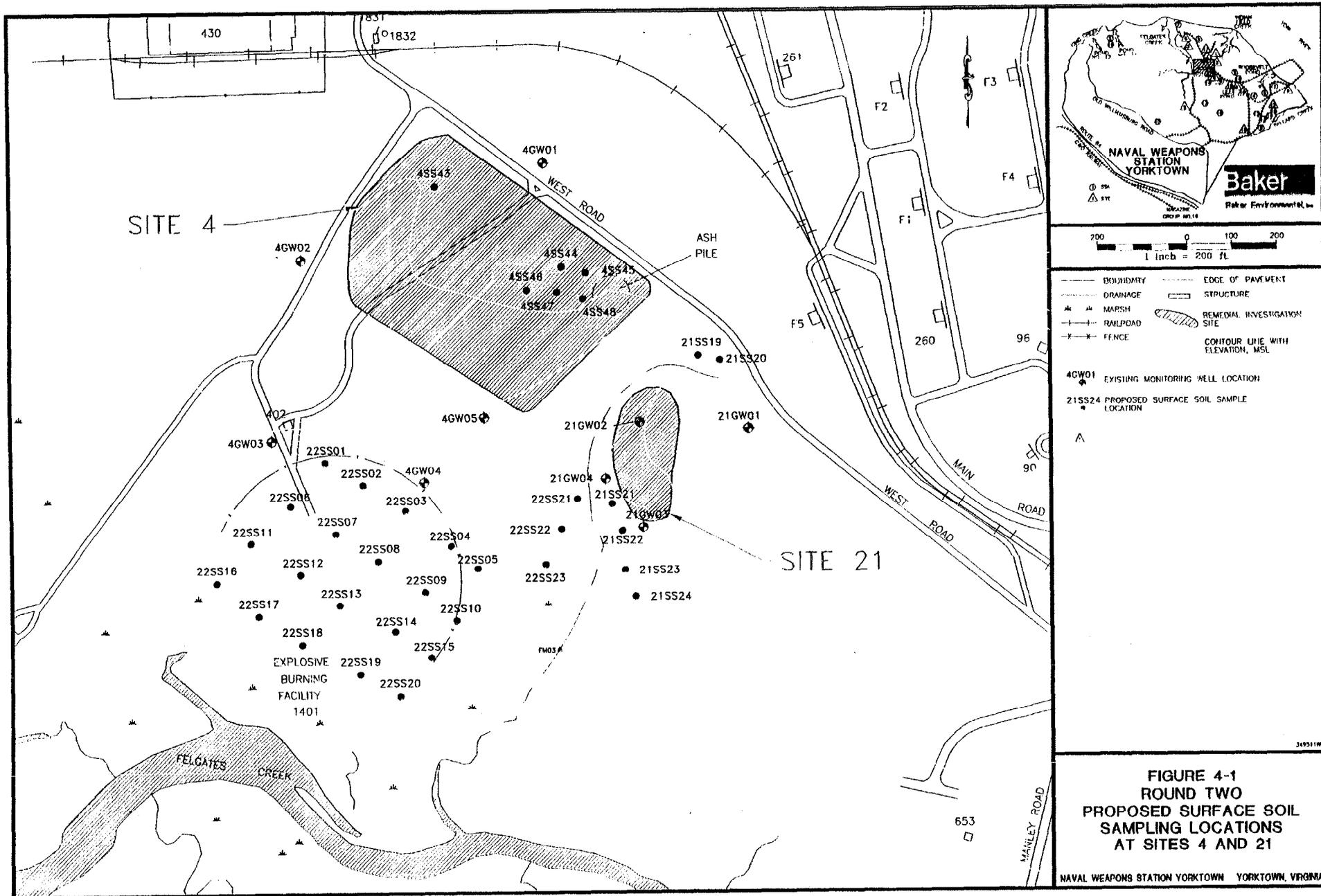
YORKTOWN, VIRGINIA

# **Sites 4, 21 and 22**

- **Site 4 - Burning Pad Residue Landfill**
- **Site 21 - Battery and Drum Disposal Area**
- **Site 22 - Burn Pad**

# **Sites 4, 21 and 22** *(continued)*

- **Current Site Status**
- **Proposed approach to Round Two Remedial Investigation**
  - ◆ **As presented in the Work Plans**



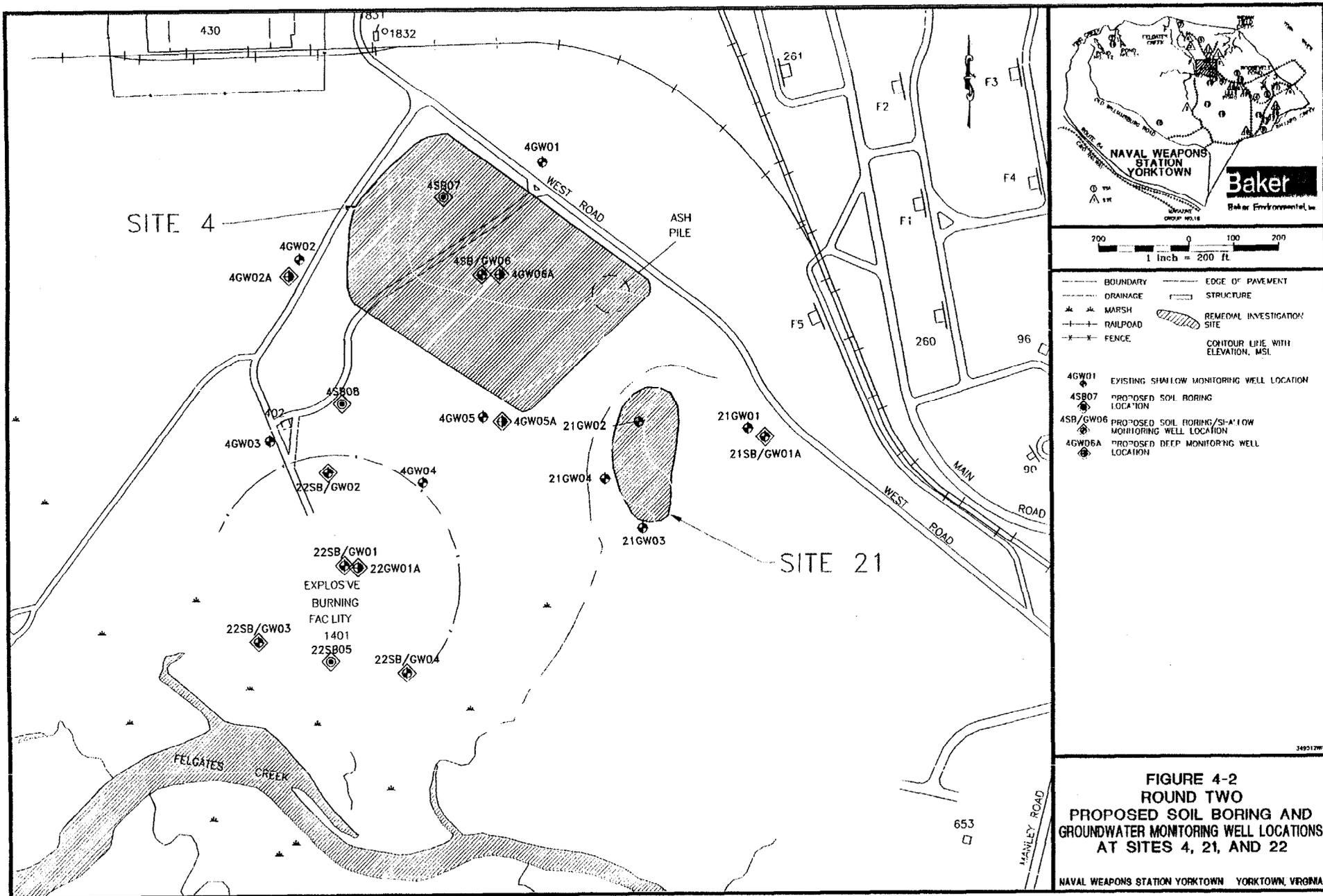
- BOUNDARY
  - DRAINAGE
  - ▲ MARSH
  - RAILROAD
  - X-X- FENCE
  - EDGE OF PAVEMENT STRUCTURE
  - REMEDIAL INVESTIGATION SITE
  - CONTOUR LINE WITH ELEVATION, MSL
- 4GW01 EXISTING MONITORING WELL LOCATION  
 21SS24 PROPOSED SURFACE SOIL SAMPLE LOCATION

A

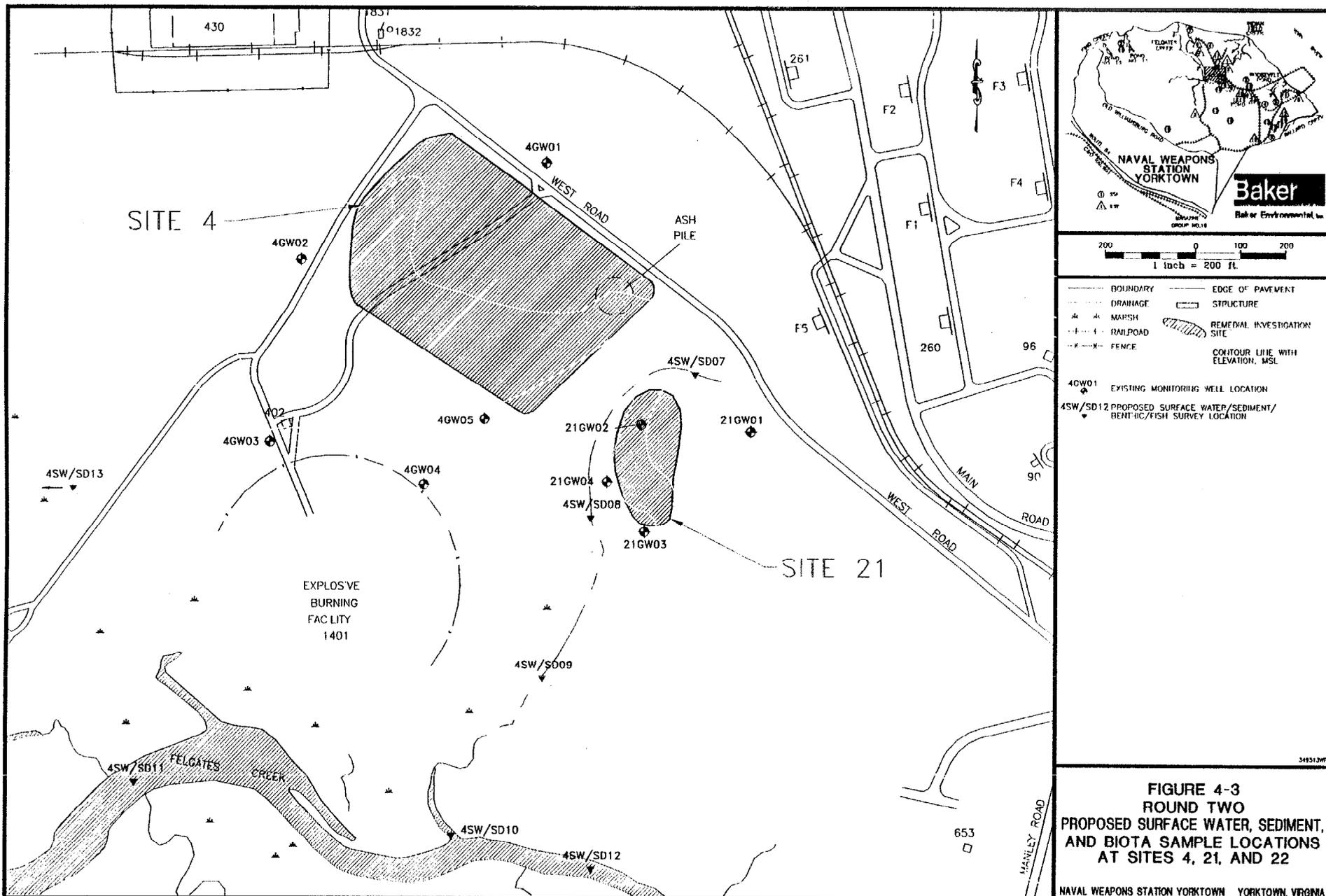
349311MP

**FIGURE 4-1  
 ROUND TWO  
 PROPOSED SURFACE SOIL  
 SAMPLING LOCATIONS  
 AT SITES 4 AND 21**

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**FIGURE 4-2  
ROUND TWO  
PROPOSED SOIL BORING AND  
GROUNDWATER MONITORING WELL LOCATIONS  
AT SITES 4, 21, AND 22**



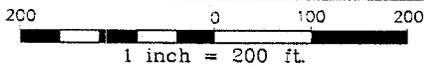
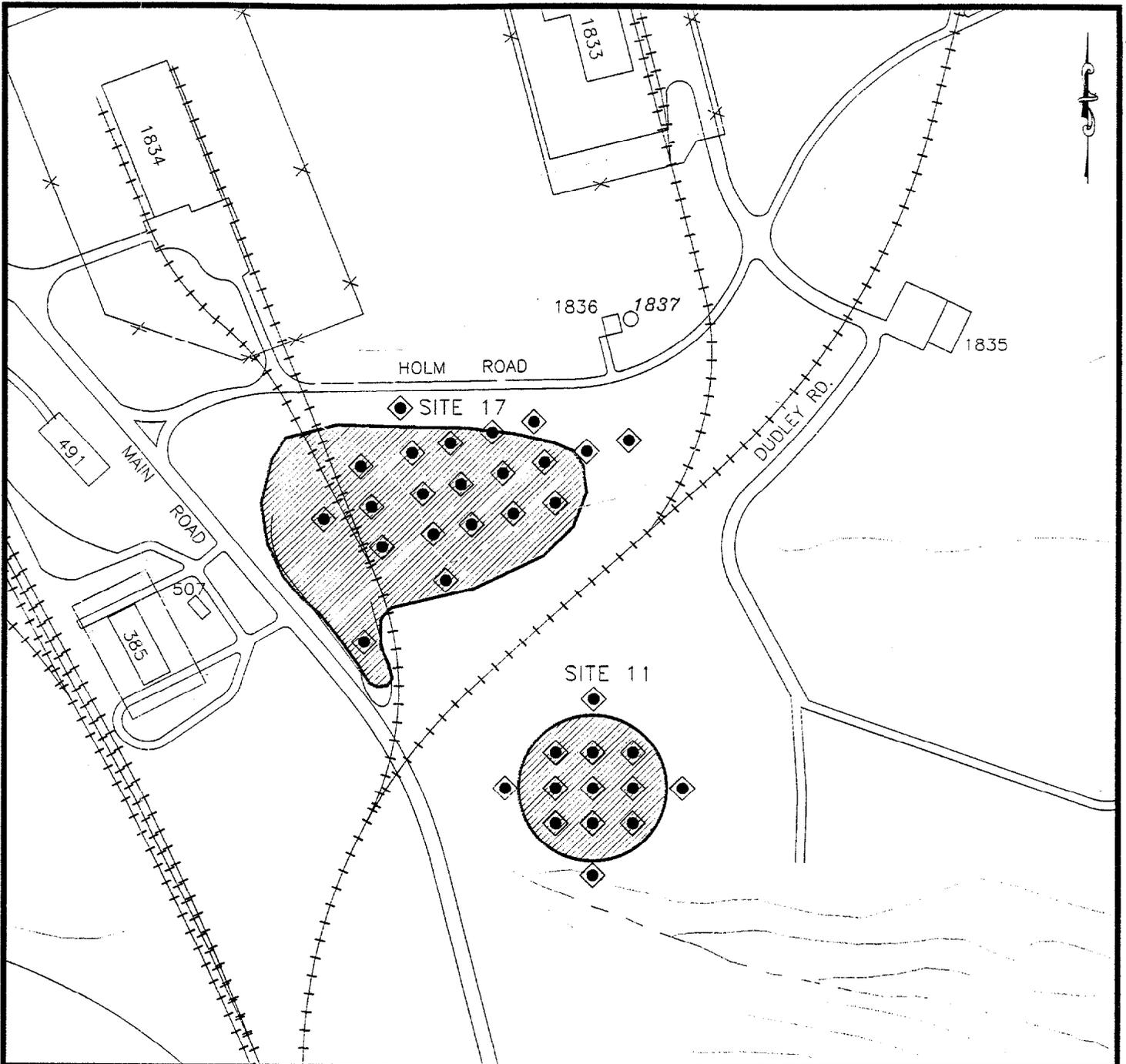
**FIGURE 4-3**  
**ROUND TWO**  
**PROPOSED SURFACE WATER, SEDIMENT,**  
**AND BIOTA SAMPLE LOCATIONS**  
**AT SITES 4, 21, AND 22**

# Sites 11 and 17

- **Site 11 - Abandoned Explosives Burning Pits**
- **Site 17 - Holm Road Landfill**

# **Sites 11 and 17** *(continued)*

- **Current Site Status**
- **Proposed approach to Round Two Remedial Investigation**
  - ◆ **As presented in the Work Plans**

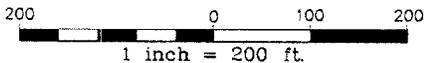
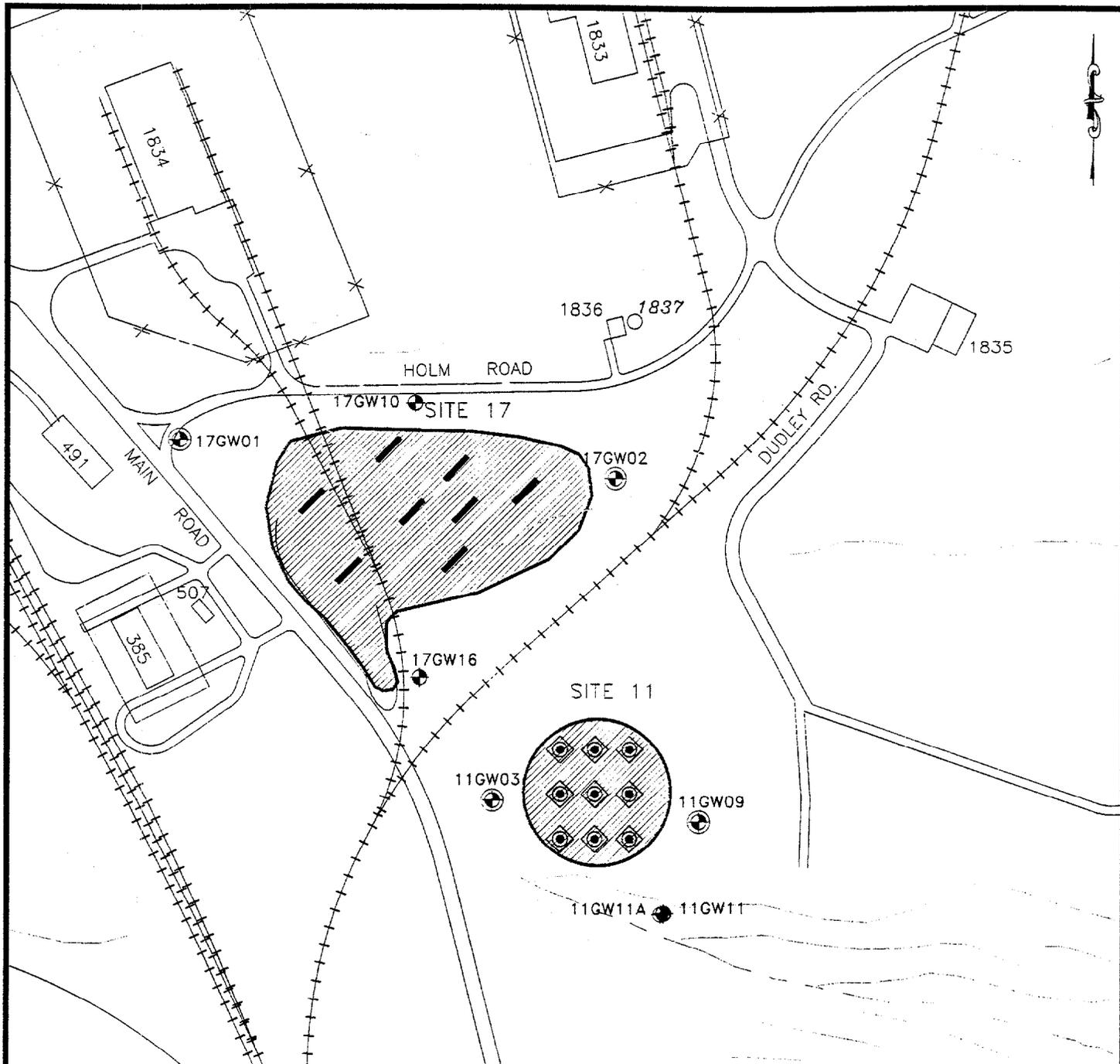


- DRAINAGE
- EDGE OF PAVEMENT
- RAILROAD
- FENCE
- BUILDING
- REMEDIAL INVESTIGATION SITE
- PROPOSED SURFACE SOIL SAMPLE LOCATION



**FIGURE 4-1  
PROPOSED SURFACE SOIL  
SAMPLE LOCATIONS  
SITES 11 AND 17**

354502WP



- DRAINAGE
- EDGE OF PAVEMENT
- RAILROAD
- FENCE
- BUILDING
- REMEDIAL INVESTIGATION SITE

- 11GW11A DEEP MONITORING WELL LOCATION (WESTON, 1993)
- 11GW09 SHALLOW MONITORING WELL LOCATION (DAMES AND MOORE, 1986)
- 17GW10 SHALLOW MONITORING WELL LOCATION (WESTON, 1993)
- ◊ PROPOSED SUBSURFACE SOIL SAMPLE LOCATION
- PROPOSED TEST PIT LOCATION

354508WP



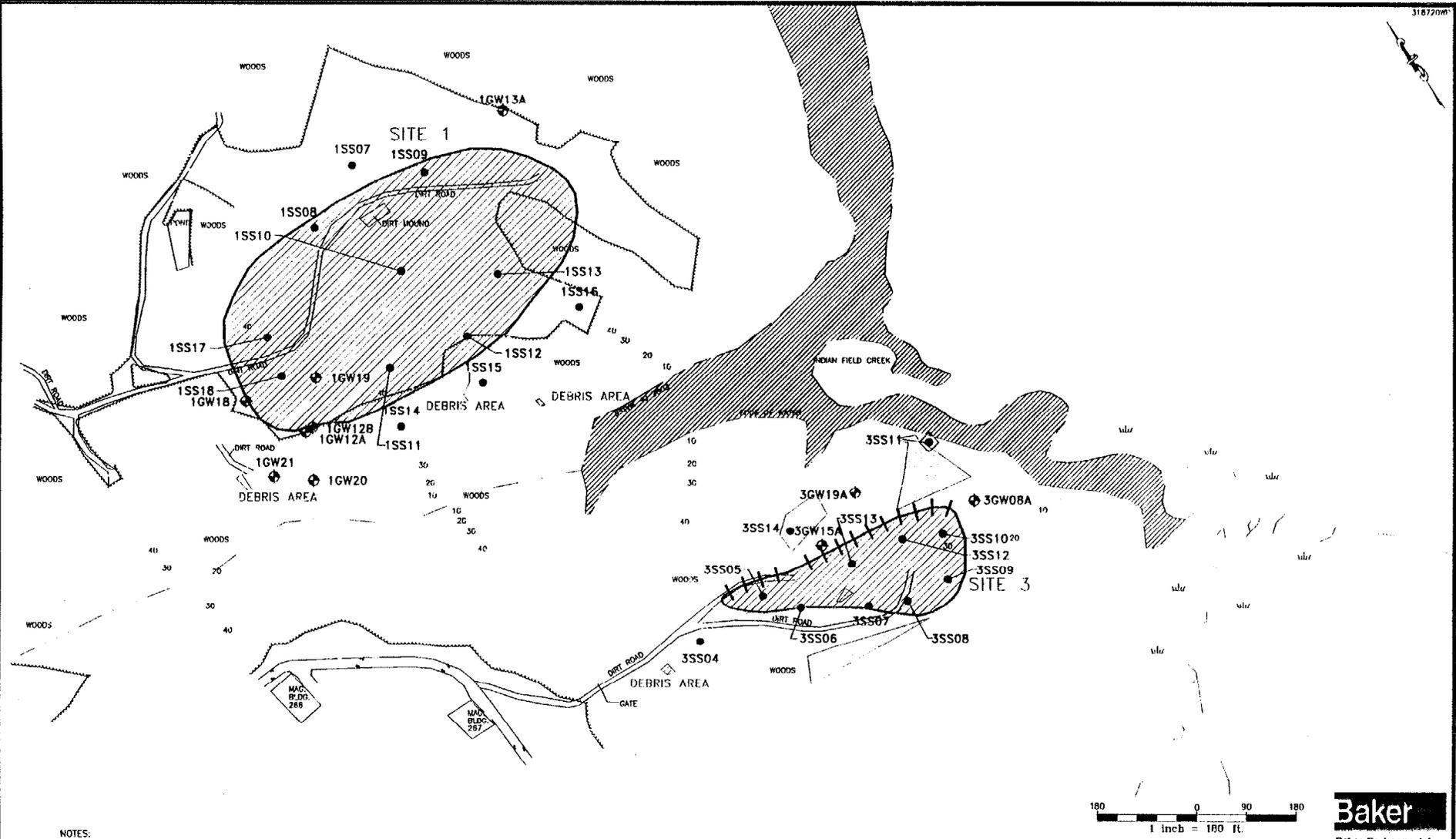
**FIGURE 4-2  
PROPOSED SUBSURFACE SOIL AND  
GROUNDWATER SAMPLE LOCATIONS  
SITES 11 AND 17**

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YORKTOWN, VIRGINIA

# RI Report - Sites 1 and 3

- **Components of an RI Report**
  - ◆ **Site description and history**
  - ◆ **Environmental setting**
  - ◆ **Nature and extent of contamination**
  - ◆ **Human health risk assessment**
  - ◆ **Ecological risk assessment**
  - ◆ **Conclusions / Recommendations**
- **RI → FS → PRAP → ROD**



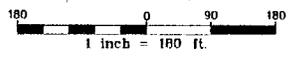
NOTES:

1. ELEVATIONS SHOWN WERE TAKEN FROM AN ALUMINUM RIVET LOCATED IN CONCRETE HEADWALL N. OF H. RD. TO AMMO OVERHAUL. BENCH MARK NUMBER MR-23 ELEVATION=44.11'
2. HORIZONTAL INFORMATION SHOWN WAS TAKEN FROM A DRAWING TITLED "HORIZONTAL SURVEYING CONTROL POINTS INDEX" BY TALBOT AND ASSOCIATES, LTD. CODE IDENT. NO. 80091 SHEET NUMBER 1-7.
3. ADDITIONAL SURFACE SOIL LOCATIONS ARE ASSOCIATED WITH EACH OF THE SUBSURFACE SOIL LOCATIONS ON FIGURE 4-2.

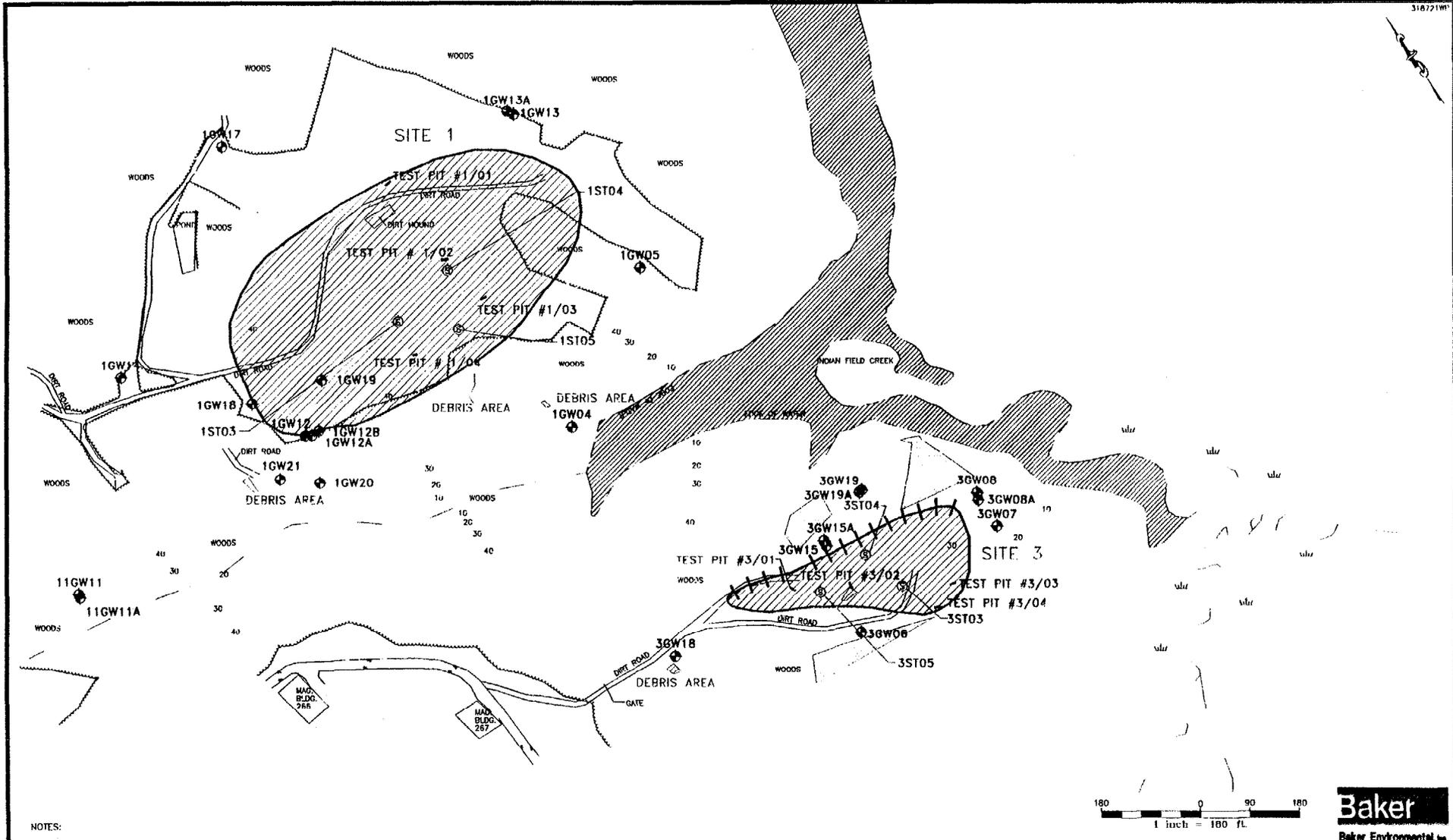
**LEGEND**

	- EDGE OF WATER		- REMEDIAL INVESTIGATION SITE
	- TREELINE		3SS04 - SURFACE SOIL SAMPLE LOCATION
	- EDGE OF PAVEMENT		1GW19 - MONITORING WELL/SOIL BORING LOCATION
	- BUILDING		
	- WETLANDS		
	- DEBRIS AREA		

NOTE: SURFACE SOIL SAMPLES WERE COLLECTED AT SELECT SOIL BORING LOCATIONS.



**FIGURE 2-1**  
**SURFACE SOIL**  
**SAMPLING LOCATIONS**  
**SITES 1 AND 3**  
**NAVAL WEAPONS STATION YORKTOWN**  
**YORKTOWN, VIRGINIA**



- NOTES:
- ELEVATIONS SHOWN WERE TAKEN FROM AN ALUMINUM RMET LOCATED IN CONCRETE HEADWALL N. OF N. RD. TO AMMO OVERHAUL. BENCH MARK NUMBER MR-23 ELEVATION=44.11'
  - HORIZONTAL INFORMATION SHOWN WAS TAKEN FROM A DRAWING TITLED "HORIZONTAL SURVEYING CONTROL POINTS INDEX" BY TALBOT AND ASSOCIATES, LTD. CODE IDENT. NO. 80091 SHEET NUMBER 1-7.
  - ADDITIONAL SURFACE SOIL LOCATIONS ARE ASSOCIATED WITH EACH OF THE SUBSURFACE SOIL LOCATIONS ON FIGURE 4-2.

**LEGEND**

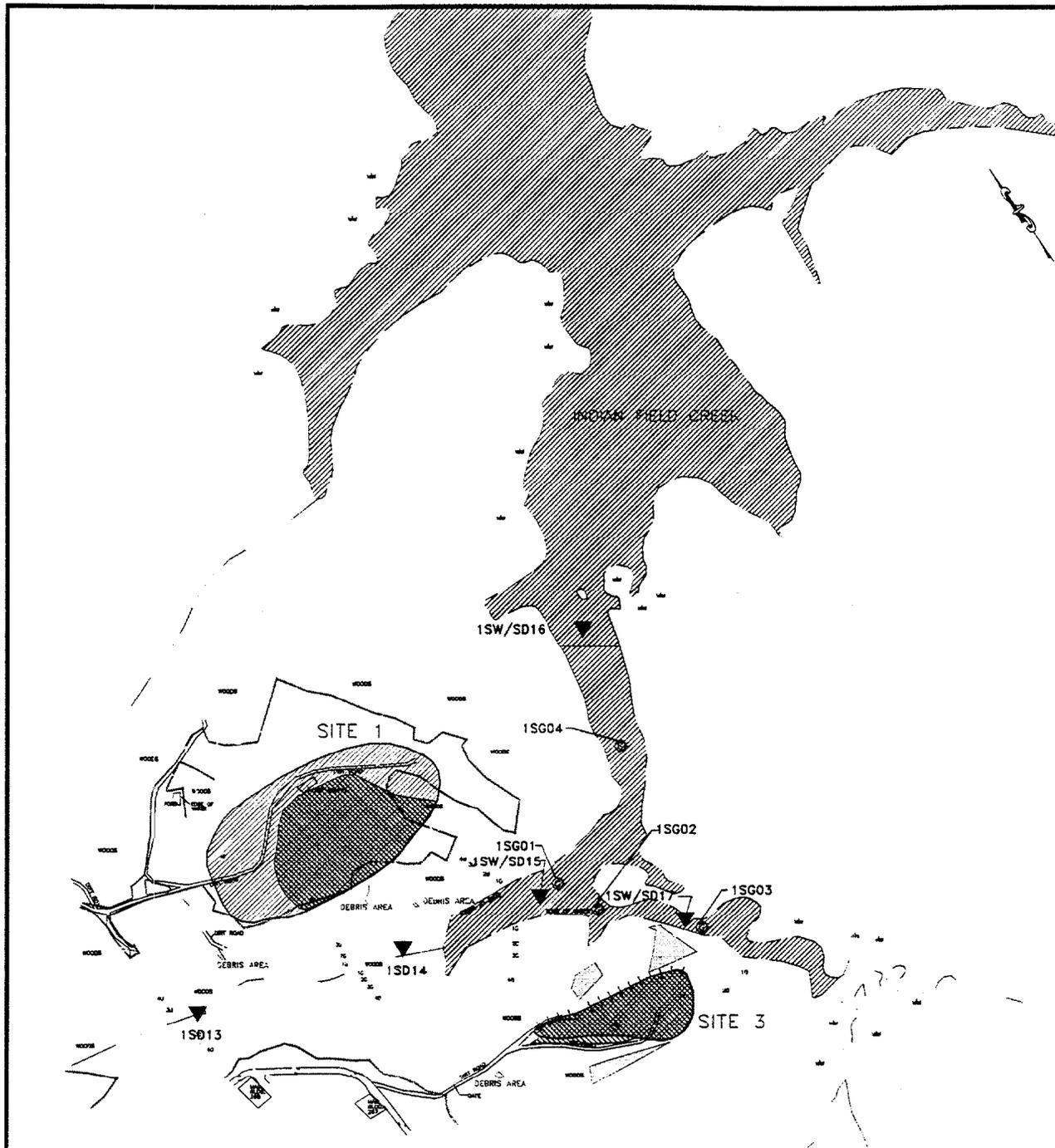
	EDGE OF WATER		REMEDIAL INVESTIGATION SITE
	TREELINE		MONITORING WELL/SOIL BORING LOCATION
	EDGE OF PAVEMENT		SHELBY TUBE SAMPLE LOCATION
	BUILDING		TEST PIT #1/03 LOCATION
	WETLANDS		
	DEBRIS AREA		

SOURCE: PFR & A, AUGUST 1985.

180 0 90 180  
1 inch = 180 FT

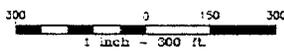
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Baker Environmental

**FIGURE 2-2**  
SUBSURFACE SOIL AND  
GROUNDWATER SAMPLING LOCATIONS  
SITES 1 AND 3  
NAVAL WEAPONS STATION YORKTOWN  
YORKTOWN, VIRGINIA



NOTES:

1. ELEVATIONS SHOWN WERE TAKEN FROM AN ALUMINUM RIVET LOCATED IN CONCRETE HEADWALL, N. OF N. RD. TO AMMO OVERHAUL. BENCH MARK NUMBER MR -23 ELEVATION=44.11'
2. HORIZONTAL INFORMATION SHOWN WAS TAKEN FROM A DRAWING TITLED "HORIZONTAL SURVEYING CONTROL POINTS INDEX" BY TALBOT AND ASSOCIATES, LTD. CODE IDENT. NO. 80091 SHEET NUMBER 1-7.



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**LEGEND**

- |  |                               |  |  |
|--|-------------------------------|--|--|
|  | - EDGE OF WATER               |  | - SUSPECTED LIMIT OF SITE  |
|  | - TREELINE                    |  | - ROUND TWO RI SURFACE WATER/SEDIMENT/BENTHIC/FISH SURVEY LOCATION |
|  | - BUILDING                    |  | - STAFF GAUGE LOCATION   |
|  | - WETLANDS                    |  |  |
|  | - DEBRIS AREA                 |  |  |
|  | - REMEDIAL INVESTIGATION SITE |  |  |

FIGURE 2-5  
ROUND TWO RI  
SURFACE WATER, SEDIMENT, AND BIOTA  
SAMPLE LOCATIONS - SITES 1 AND 3

NAVAL WEAPONS STATION YORKTOWN  
YORKTOWN, VIRGINIA

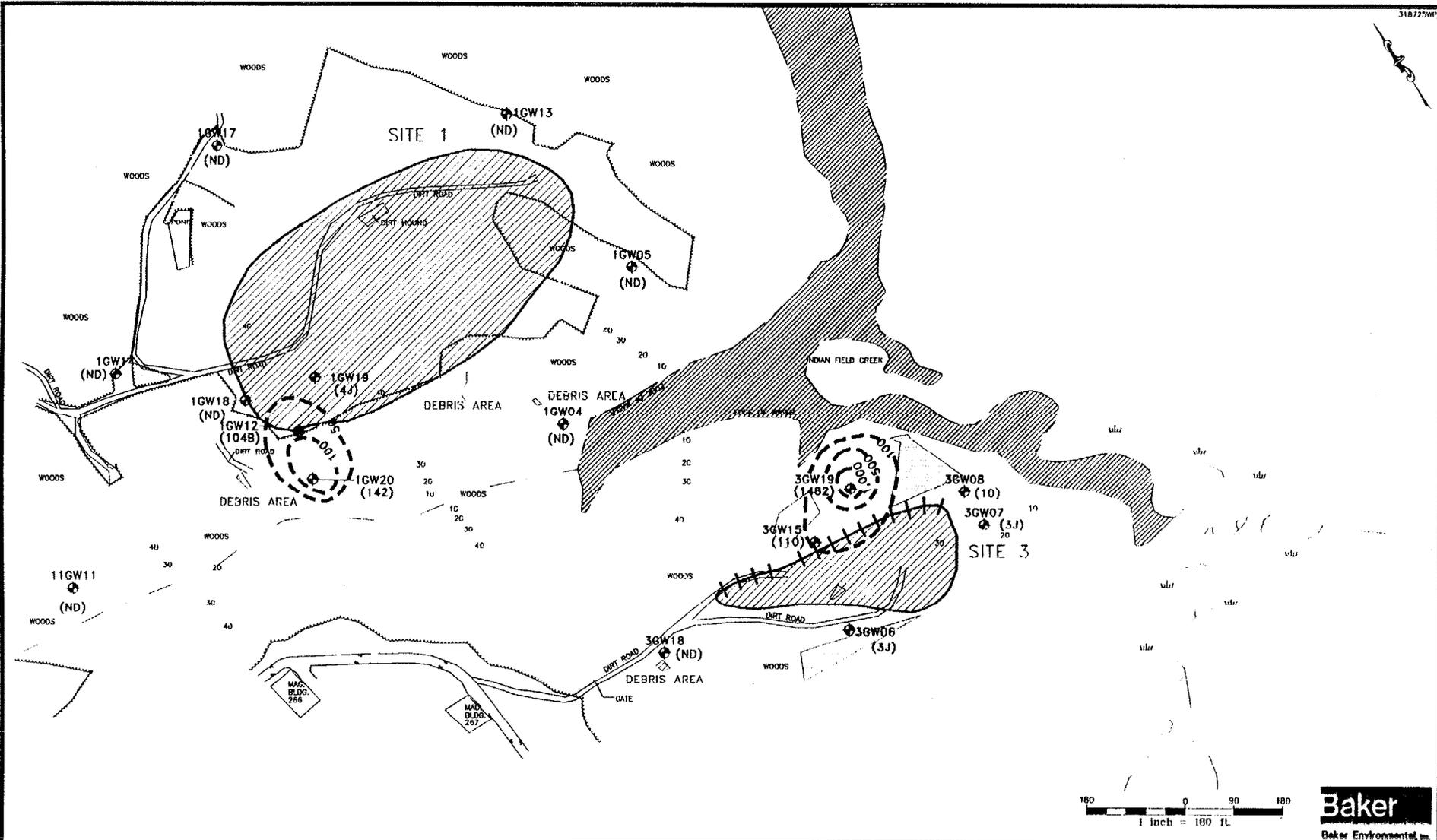
# RI Report - Sites 1 and 3 *(continued)*

- **Nature and extent of contamination**

- ◆ **Surface soil** - **Semivolatiles, Organics**
- ◆ **Subsurface soil** - **Semivolatiles, Inorganics**
- ◆ **Groundwater** - **Volatiles, Semivolatiles, Inorganics**
- ◆ **Surface Water** - **Inorganics**
- ◆ **Sediment** - **Inorganics**

# **RI Report - Sites 1 and 3** *(continued)*

- **Of these media, groundwater most impacted from site operations**
- **Surface Soil "Hot Spot" at Site 3**



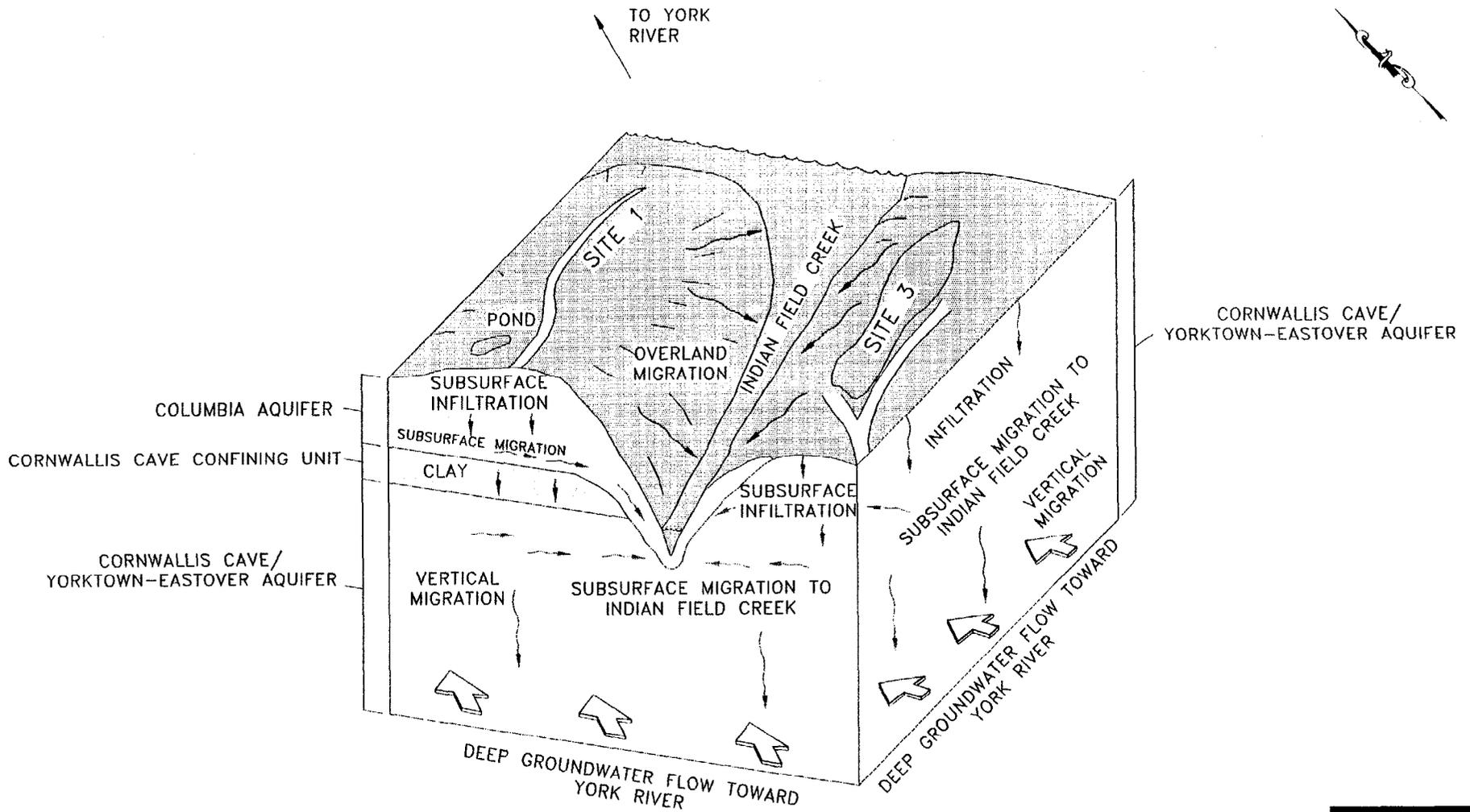
NOTE: CONCENTRATIONS QUALIFIED WITH A "B" ARE NON-DETECT ACCORDING TO EPA REGULATIONS, BUT ARE PRESENTED ON FIGURES TO DEPICT THE MOST CONSERVATIVE SCENARIO.

LEGEND			
	- EDGE OF WATER		- REMEDIAL INVESTIGATION SITE
	- TREELINE		- MONITORING WELL LOCATION
	- EDGE OF PAVEMENT		- TOTAL VOC CONCENTRATIONS IN ug/L
	- BUILDING		- ESTIMATED VOC CONCENTRATION CONTOUR IN ug/L
	- WETLANDS		
	- DEBRIS AREA		

SOURCE: PHR & A, AUGUST 1985.

FIGURE 4-13  
 HORIZONTAL EXTENT OF TOTAL VOCs IN THE COLUMBIA AQUIFER (SITE 1) AND THE CORNWALLIS CAVE/YORKTOWN-EASTOVER AQUIFER (SITE 3)  
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 YORKTOWN, VIRGINIA





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FIGURE 5-1  
SCHEMATIC SITE MODEL  
SITES 1 AND 3  
NAVAL WEAPONS STATION YORKTOWN  
YORKTOWN, VIRGINIA

N.T.S.

# RI Report - Sites 1 and 3 *(continued)*

- **Human health risk assessment**
  - ◆ **Risk scenarios**
    - **Current on-station adult trespassers**
    - **Current on-station adolescent trespassers**
    - **Future on-site adult resident\***
    - **Future on-site child resident\***
    - **Future on-site adult construction worker**

**\* = *unacceptable risk range***

# RI Report - Sites 1 and 3 *(continued)*

- **Ecological risk assessment**
  - ◆ **Terrestrial**
  - ◆ **Aquatic**
  - ◆ **Sites 1 and 3 pose no unacceptable threat to the environment**

# **RI Report - Sites 1 and 3** *(continued)*

- **Preliminary conclusions**
  - ◆ **Unacceptable risk to future residents from surface soil at Site 3**
    - **Driven by semivolatiles detected at very high concentrations in one sample ("Hot Spot")**
  - ◆ **Unacceptable risk to future residents from groundwater at both sites**
    - **Concentrations are below site-specific risk-based cleanup levels**
  - ◆ **No unacceptable threats to environment**

# **RI Report - Sites 1 and 3** *(continued)*

- **Preliminary recommendations**
  - ◆ **Resample surface soil "Hot Spot" at Site 3**
  - ◆ **Bypass Feasibility Study (FS) Report**
  - ◆ **Go directly to Proposed Remedial Action Plan (PRAP)**
  - ◆ **Proposed plan will likely include the following components:**
    - **No further remedial action**
    - **Institutional controls**
    - **Long term groundwater monitoring**

# Sites 6 and 7

- **Draft Remedial Investigation Report due in 1st week of June**
- **Chemicals of Concern include explosives in Site 6 Former Impoundment and the lower drainage area of Site 7**
- **Site 6 and 7 soils were subjected to Bench-Scale Treatability Study work by Army Corps of Engineers (WES)**

# **Sites 6 and 7** *(continued)*

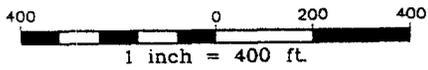
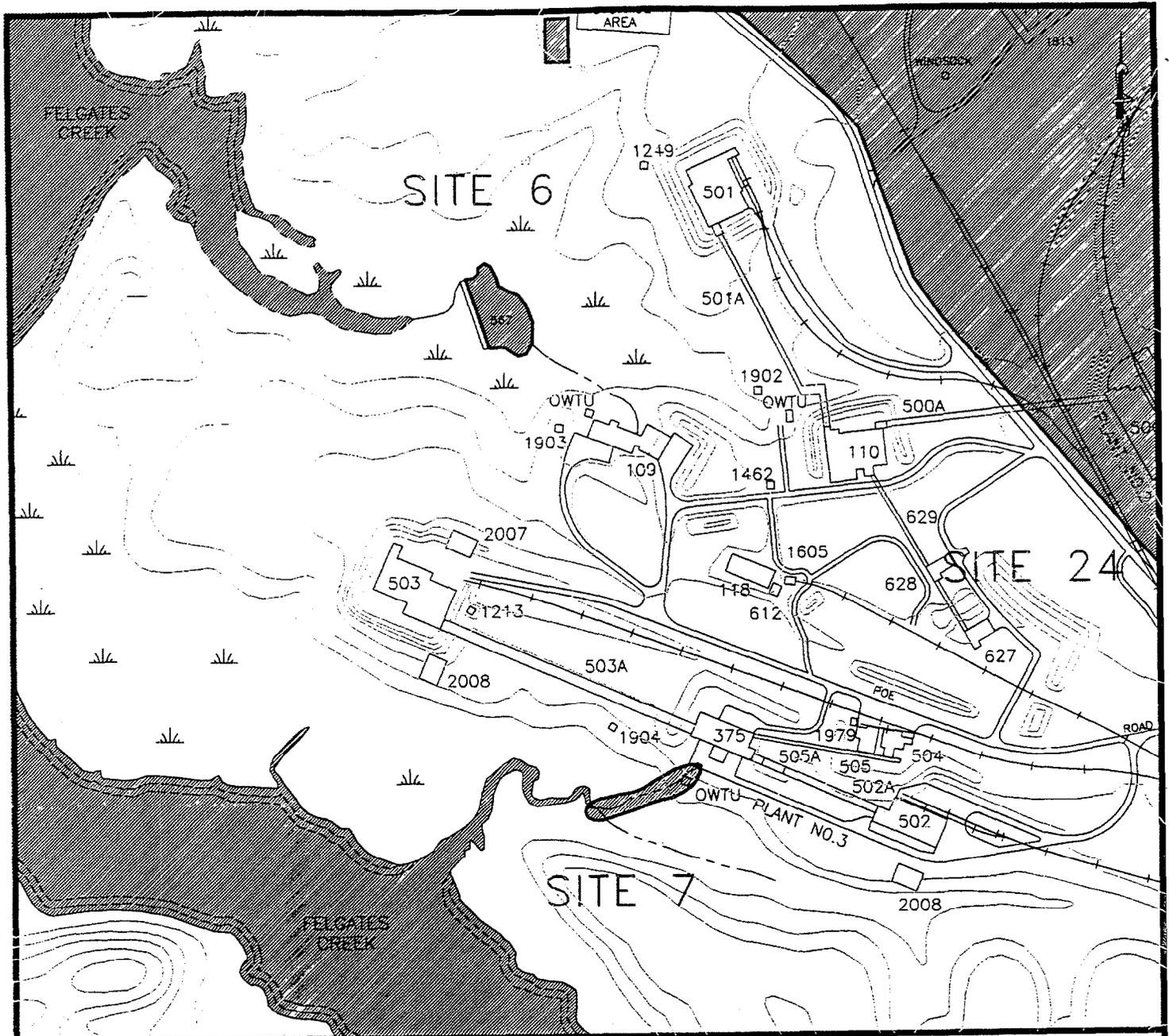
- **Complicated RI Report - Many different site Areas of Concern (SAOCs)**
- **Site 6 SAOCs**
  - ◆ **Borrow pit soils**
  - ◆ **Site 6 surface soils**
  - ◆ **Site 6 subsurface soils**
  - ◆ **Former Impoundment Area SW / SEDs**
  - ◆ **Tributary SW / SEDs**
  - ◆ **Felgates SW / SED**
  - ◆ **Groundwater (shallow / deep)**

# **Sites 6 and 7** *(continued)*

- **Site 7 SAOCs**
  - ◆ **Site 7 surface soils**
  - ◆ **Site 7 subsurface soils**
  - ◆ **Tributary SW / SEDs**
  - ◆ **Felgates SW / SEDs**
  - ◆ **Groundwater (shallow / deep)**

## **Sites 6 and 7** *(continued)*

- **Multiple SAOCs are necessary to define risk and potentially affected media for the purpose of remediation**
  - ◆ **"lessons learned" from Site 12**
- **Miscellaneous**
  - ◆ **Explosives Test Kits**
    - **D Tech<sup>®</sup> Test Kits -- Immunoassay - Not successful**
    - **Ensys<sup>®</sup> Test Kits - Chemical - Awaiting Laboratory Analytical Results**



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### SITES 6 AND 7 FELGATES CREEK

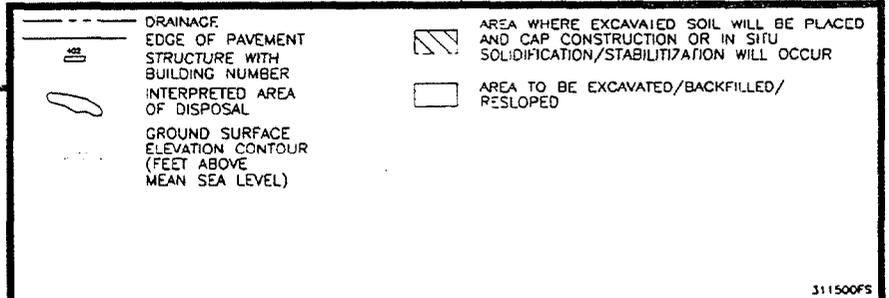
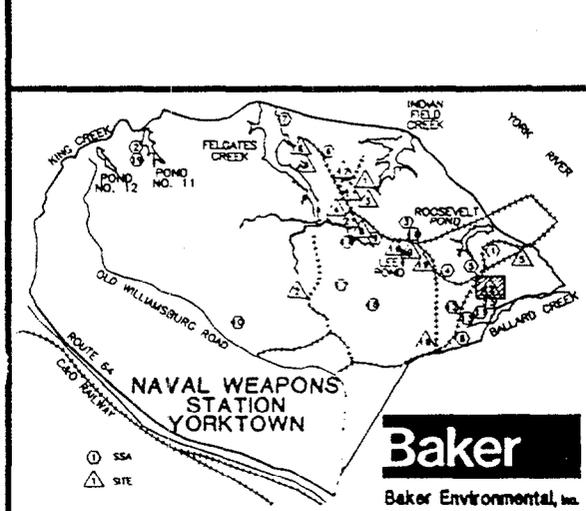
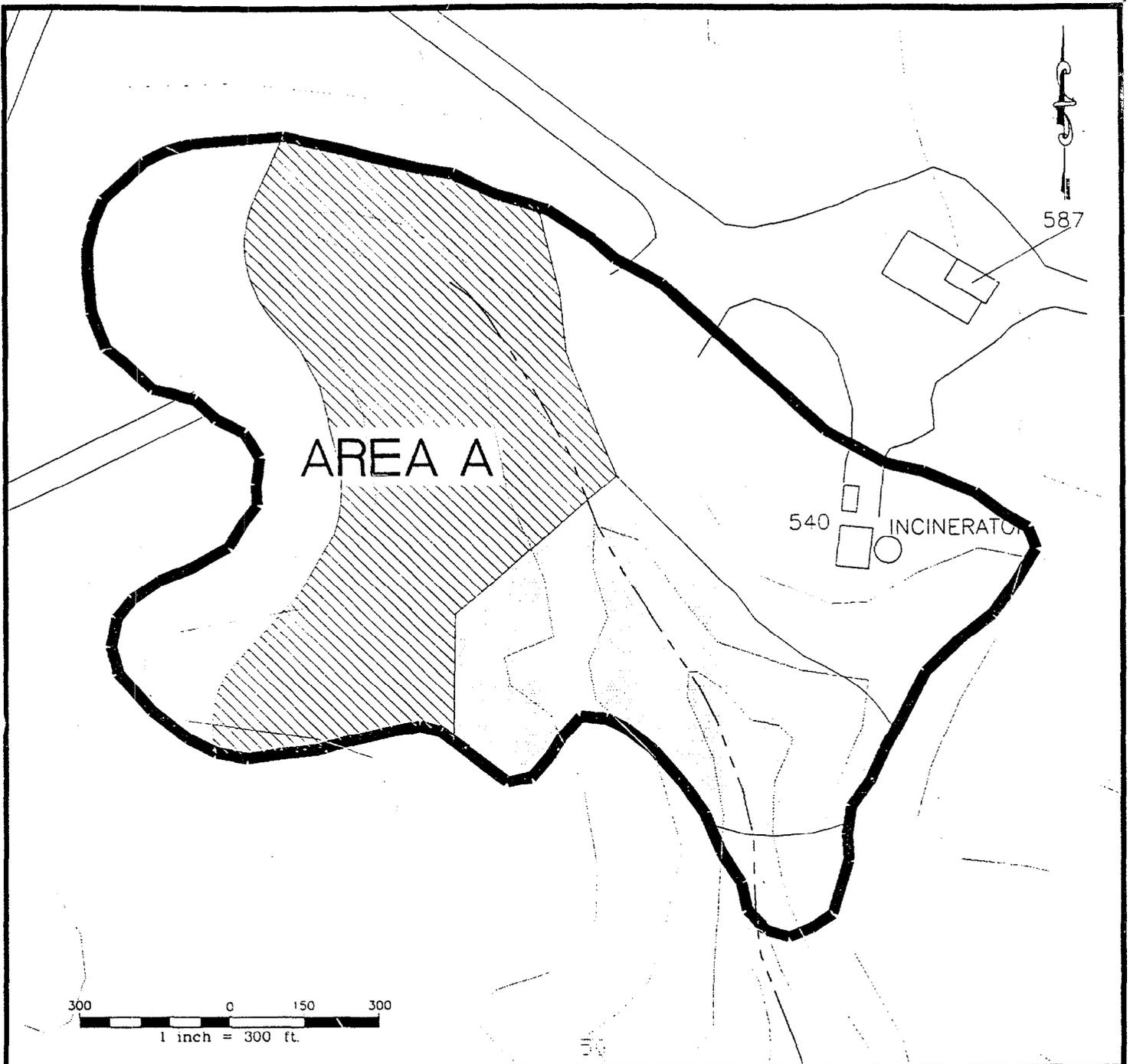


NAVAL WEAPONS STATION YORKTOWN

YORKTOWN, VIRGINIA

# Site 12

- **Awaiting USEPA Region III / Commonwealth of Virginia comments on Draft Final RI Report and Draft Final FS**
  - ◆ **Preliminary Indications from both agencies indicate that the remedy proposed to the public will be a limited removal/ onsite disposal of lead contaminated soil on the top-side of area A with a soil cover / erosion control**
  - ◆ **Long-term monitoring of Ballard Creek and groundwater (Cornwallis Cave / Yorktown aquifers)**



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**FIGURE 5-2**  
**SOIL RAAs 3 AND 5: EXTENT OF CAP AND IN SITU SOLIDIFICATION/STABILIZATION TREATMENT**  
**SITE 12 - AREA A**

**NAVAL WEAPONS STATION YORKTOWN** **YORKTOWN, VIRGINIA**