

***NAVAL WEAPONS STATION  
YORKTOWN***

**RAB Presentation**

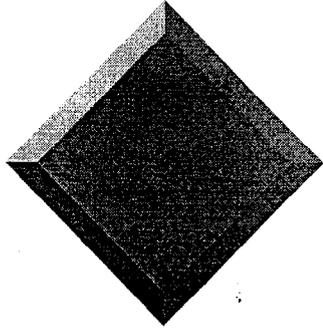
**Site 18 – Building 476 Discharge Area**

**WPNSTA Yorktown, Yorktown, Virginia**

**Record of Decision**

**September 2001**

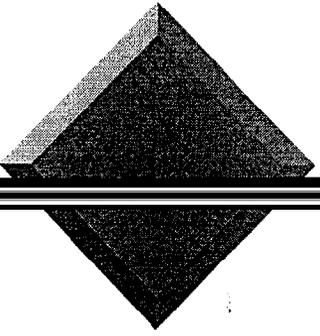
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# ***RECORD OF DECISION***

## ❖ **Site 18 – Building 476 Discharge Area - -**

- ¼ mile long drainage ditch north of Building 476 along small tributary to Lee Pond
- Used from 1940s to 1960s
- Discharge reportedly contained battery acid waste
- Potential contaminants: hydrochloric acid, calcium hydroxide, lead, cadmium, nickel, antimony



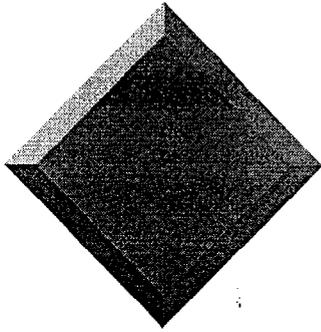
# *RECORD OF DECISION*

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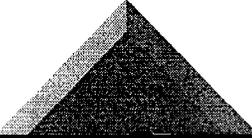
## ❖ Round One RI - -

- Soil: ammonia, zinc, lead, copper
- Sediment: beryllium
- Surface water: copper, zinc
- Groundwater: nothing above criteria in filtered samples



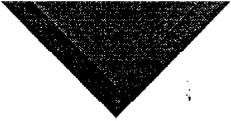
# ***RECORD OF DECISION***

- ❖ **Round Two RI – Additional data collected to do risk assessments - -**
  - Surface Soil: iron, arsenic
  - Subsurface Soil: arsenic, iron, aluminum, chromium, manganese, vanadium
  - Sediment: arsenic, iron, aluminum, chromium, manganese, vanadium; Thallium in deeper intervals, PAHs, a PCB detected in one sediment sample
  - Groundwater: nothing above criteria in filtered samples
  - Surface Water: arsenic, iron, manganese



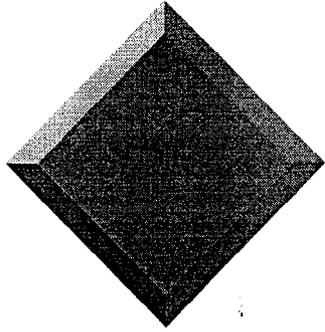
# ***RECORD OF DECISION***

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## ❖ **Human Health Risk Assessment - -**

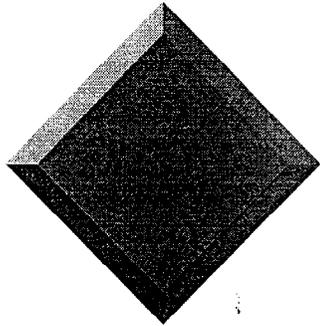
- Evaluated surface soil, subsurface soil, surface water, sediment, and groundwater
- Current and future scenarios evaluated
  - Current adult maintenance worker
  - Current adult on-Station trespassers
  - Current adolescent on-Station trespassers
  - Future commercial/industrial workers
  - Future on-site resident adults
  - Future adolescent resident children
  - Future adult construction workers



# ***RECORD OF DECISION***

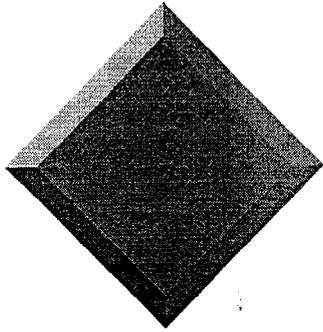
## ❖ **Site 18 Human Health Risks - -**

- Future adult construction worker only receptor at risk
- Site HI of 2 for this receptor driven by ingestion of iron and arsenic in surface soil.
  - HQs estimated for iron and arsenic individually are less than 1.0
  - Iron and arsenic target different organs
  - ESQD makes future change of land use unlikely
  - RBC for iron is provisional only
- No real adverse effects from Site 18 expected



# ***RECORD OF DECISION***

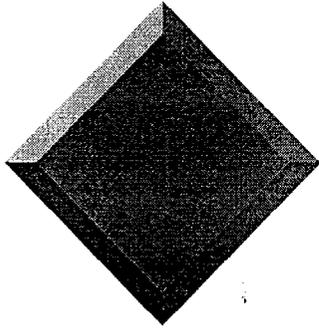
- ❖ **Site 18 Ecological Risk Assessment - -**
  - Weight-of-evidence approach - site contaminant concentrations are compared to published toxicity information
  - Site contaminants are evaluated by mathematical models



# ***RECORD OF DECISION***

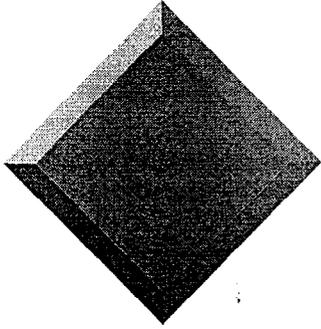
## **❖ Terrestrial Receptors Evaluated - Site 18 - -**

- Soil flora and fauna
- American woodcock
- Red-tailed hawk
- Bobwhite quail
- Marsh wren
- Red fox
- Short-tailed shrew
- Meadow vole
- Deer mouse



# ***RECORD OF DECISION***

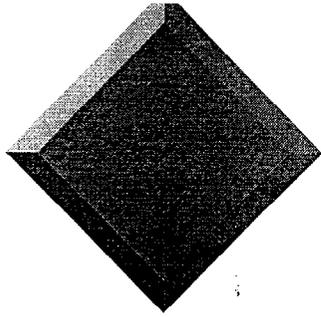
- ❖ **Comparison with Benchmark Toxicity Values - -**
  - Exceeded flora values - aluminum, chromium, mercury, vanadium
  - Exceeded fauna values - aluminum, chromium, iron, mercury



# ***RECORD OF DECISION***

## ❖ **Terrestrial Receptor Models - -**

- Most conservative: aluminum, chromium, copper, iron, and lead
- Least conservative: aluminum, chromium, copper, iron, and lead



# ***RECORD OF DECISION***

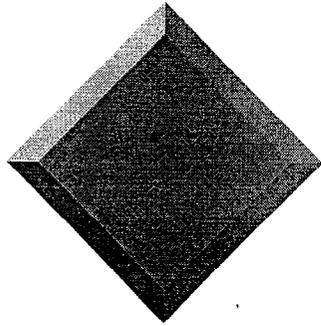
## **❖ Aquatic Receptors - -**

### **➤ Surface Water**

- Benchmark toxicity screening: aluminum, copper, iron
- Receptor models: copper, iron, lead

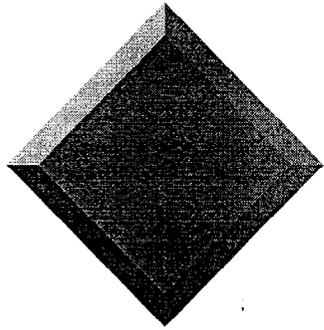
### **➤ Sediment**

- Benchmark toxicity screening: pyrene, alpha-chlordane, gamma chlordane, Arochlor-1254, beryllium, iron
- Receptor models: copper, iron, lead



# *RECORD OF DECISION*

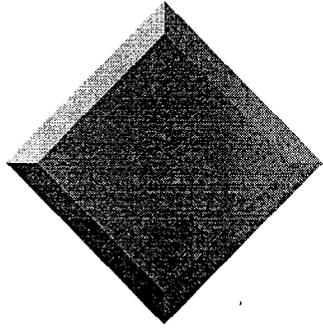
Generally, ecological risk process is conservative. Using the mean concentration as a model input instead of the maximum concentration allows evaluation of the entire site, not a specific sampling point. At Site 18, this approach resulted in HQs of less than 1.0 for most metals and for pyrene, Arochlor-1260, and gamma chlordane.



# ***RECORD OF DECISION***

## ❖ **Summary of Risk Results - -**

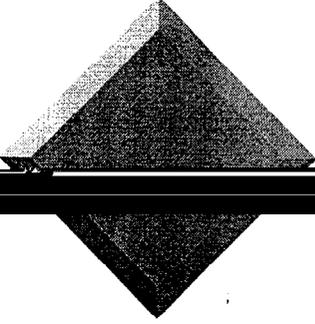
- No human health risk
- No clear pattern of site related contamination that could affect ecological receptors



# ***RECORD OF DECISION***

## **Description of Remedial Alternatives**

Based on risk assessment results, the no action alternative was the only one considered for Site 18



# *Comments, Questions and Concerns*

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