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NSWC INDIAN HEAD
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DEPARTMENT OF THE NAVY

INDIAN HEAD DIVISION
NAVAL SURFACE WARFARE CENTER
101 STRAUSS AVE
INDIAN HEAD MD 20640-5035

5090
Ser 046C/108
28 Jun 99

Mr. Elmer Biles
6315 Indian Head Highway
Indian Head, MD 20640

Dear Mr. Biles:

We are forwarding the minutes from the Installation Restoration (IR) Program Restoration Advisory Board (RAB) meeting that was held on Thursday, June 17, 1999. The meeting was held at the Indian Head Senior Center, which is located at 100 Cornwallis Square, Indian Head, Maryland, 20640.

During the meeting, Mr. Kim Lemaster of the Maryland Department of the Environment (MDE) provided information on fish sampling that was performed in the Potomac River and Mattawoman Creek near our Activity. These two handouts are included as Attachments G and H of the meeting minutes. Mr. Lemaster stated that the experts at the MDE say that, although the fish are not pristine in the area, they are safe for consumption.

Please note that the next RAB meeting is scheduled for Thursday, October 21, 1999, from 7:00 - 9:00 p.m. Please be sure to mark this date on your calendar if you have not already done so. Once again, the meeting will be held at the Indian Head Senior Center.

We would like to thank those of you that attended the meeting. We hope to see all members at the next RAB meeting on Thursday, October 21, 1999, at the Indian Head Senior Center.

If you have any additional comments or questions concerning these matters, you may contact Mr. Shawn Jorgensen on (301) 743-6745.

Sincerely,

A handwritten signature in cursive script that reads "Susan P. Adams".

SUSAN P. ADAMS
Head, Safety Department
By direction of the Commander

Encl:

(1) Minutes from RAB Meeting of 17 Jun 99

Copy to:
RAB Members
Meeting Attendees
Interested Parties

INSTALLATION RESTORATION PROGRAM



INDIAN HEAD DIVISION,
NAVAL SURFACE WARFARE CENTER
101 STRAUSS AVENUE
INDIAN HEAD, MARYLAND
20640-5035



RESTORATION ADVISORY BOARD (RAB) MEETING

Date of Meeting: June 17, 1999

Restoration Advisory Board (RAB) Member Participants:

Mr. Elmer Biles (C)	Mr. Vincent Hungerford (C) *
Ms. Celia Carroll (C)	Mr. Robert Sadorra (N)
Mr. Curtis DeTore (S)	

RAB Members Not in Attendance:

Ms. Susan Adams (N) *	Mr. John McDevitt (C)
Ms. Lynn Covington (C)	Mr. Dennis Orenshaw (F)
Mr. Gary Davis (L)	Mr. Fred Pinkney (F)
Mr. Stephen Elder (L)	Ms. Karen Wiggon (L)
Mr. Charles Ellison (C)	

Additional Attendees:

Ms. Sherry Deskins (N)	Mr. Kim Lemaster (S)
Ms. Sharon Geil (C)	Mr. Shawn Jorgensen (N)
Mr. William Hudson (F)	

* Co-Chair

C = Community
F = Federal Official
L = Local Official
N = Navy Official
S = State Official

ENCL (1)

Major Issues Discussed/Accomplished:

1. Meeting Introduction

Ms. Sherry Deskins of the Indian Head Division, Naval Surface Warfare Center (IHDIV-NSWC) began the meeting by welcoming everyone to the Indian Head Senior Center.

Ms. Deskins then presented the meeting agenda, which is included as Attachment A.

2. IR Site 57 Remedial Investigation (RI) Report Status

Mr. Shawn Jorgensen of IHDIV-NSWC provided the status of the RI report for IR Site 57. Mr. Jorgensen provided a brief background of the site, including the fact that it was discovered when trichloroethylene (TCE) was found in Industrial Wastewater Outfall (IW) 80 at approximately 62 parts per billion (ppb).

The RI consisted of sampling soil, shallow groundwater, sediment and surface water to determine the extent of contamination in the IR Site 57 area and to determine the effectiveness of the removal action (pipe relining) that was conducted in October 1998. The fieldwork for IR Site 57 was completed in January 1999.

Initially, the draft RI report was scheduled for completion on June 18, 1999, which was moved up from late July 1999. However, due to inconsistencies in the data, additional sampling will be required, pushing the report completion date back to July 1999. As an example, the concentrations of TCE within the relined pipe varied throughout the pipe from 5 to 20 parts per billion (ppb) of TCE. However, there was not a consistent increase or decrease in the concentration of TCE within the pipe. The fluctuation is due to the fact that these samples were not obtained on the same day at the exact same time. Therefore, variations in water flow and temperature through the pipe contributed to the inconsistency of the data, which is not very useful in determining the effectiveness of the pipe liner.

When completed, a copy of the report will be provided to all RAB members. In addition, copies of the report will be available in the Information Repositories for community members to review.

A copy of Mr. Jorgensen's presentation is provided in Attachment B.

3. Remedial Investigation (RI) Report Clarifications and Comments

Mr. Jorgensen tackled some of the confusing issues involved with the RI report, including items contained in the risk assessment,

for example, the difference between current land use and hypothetical future land use. The current land use of the Restricted Area for risk assessment purposes is industrial. The current land use outside of the Restricted Area is both industrial and residential. However, when calculating the risks of sites within the Restricted Area, residential settings are also used for comparative purposes. Cleanup levels are based on the current land use, with residential values being lower than industrial values. However, the Navy will try to clean to residential levels as long as the cleanup is feasible and not cost prohibitive.

A copy of Mr. Jorgensen's presentation is provided in Attachment C.

4. IR Sites 12, 41, and 42 Feasibility Study Status and Budget Issues

Mr. Robert Sadorra of the Engineering Field Activity Chesapeake provided the status of the Feasibility Study (FS) Report for IR Sites 12 (Town Gut Landfill), 41 (Scrap Yard), and 42 (Olsen Road Landfill). The purpose of an FS is to describe, evaluate and compare cleanup alternatives and to select a remedy that is appropriate for the site.

Additional fieldwork is required before a remedy selection can be made. This would include determining the horizontal and vertical extent of the landfills using test pits and determining exact locations of contamination at the Scrap Yard using chemical specific sampling.

Mr. Sadorra informed the RAB that this fieldwork has been delayed until October 1999 because of funding issues. In addition, all scheduled work that has not already been awarded will not be awarded until October 1999. This is due to cost overruns with a landfill cap at Bainbridge.

A copy of Mr. Sadorra's presentation is included in Attachment D.

5. IR Site 47 Remedial Investigation Status

Mr. Sadorra provided a brief background of IR Site 47 (Mercuric Nitrate Disposal Area) and discussed the Remedial Investigation fieldwork that is scheduled to begin on July 6, 1999. This work will include installing shallow groundwater monitoring wells and obtaining soil, sediment, and shallow groundwater samples.

A copy of Mr. Sadorra's presentation is included as Attachment E.

6. Mattawoman Creek Study

Mr. Rob Sadorra provided a brief status of the Mattawoman Creek Study that was scheduled to begin in fiscal year 1999. Phase I includes a screening-level ecological risk assessment (ERA) and phase II includes the preparation of a proposed approach to accurately prepare an ERA of the Mattawoman Creek.

Originally, the final ERA report (phase I) was expected in November 1999 and the final phase II report was due in February 2000. However, due to budget cuts, these dates will change. The project will resume once funding becomes available.

A copy of Mr. Sadorra's presentation is included in Attachment F.

7. Additional Information

Mr. Kim Lemaster of the Maryland Department of the Environment (MDE) brought in a couple of handouts concerning fish sampling in the Mattawoman Creek and Potomac River. The first handout contains selected pages of the Public Health Assessment for the Naval Surface Warfare Center, Indian Head Division that was prepared by the Agency for Toxic Substances and Disease Registry on September 23, 1997. Copies of this entire document were given to the RAB members when it was initially published and copies are currently in the Information Repositories. The other handout consists of fish sampling data obtained by the MDE with respect to inorganics (metals) only. Copies of these handouts are included in Attachment G and H. Mr. Lemaster stated that the MDE has additional information on fish sampling for organics and he will forward that information when it becomes available to him.

In addition, the experts at the MDE say that the fish are not pristine, but are safe for consumption.

8. Comments, Questions, and Answers

Numerous comments were made and questions asked during the meeting. These comments, questions, and answers are provided in Attachment I.

9. Conclusion

Ms. Sherry Deskins concluded the meeting by thanking all in attendance and presented the tentative agenda for the next RAB meeting on October 21, 1999, which is included as Attachment J. Ms. Deskins also reiterated that the next meeting will once again be held at the Indian Head Senior Center and that a reminder will be sent to RAB members and interested citizens prior to the meeting.

**INDIAN HEAD DIVISION,
NAVAL SURFACE WARFARE CENTER
INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD (RAB) MEETING
AGENDA**

June 17, 1999

- 7:00 - 7:10 ARRIVAL/WELCOME
- Ms. Sherry Deskins
Indian Head Division, Naval Surface Warfare Center
Director, Waste Management and Protection Division
- 7:10 - 7:20 IR SITE 57 REMEDIAL INVESTIGATION REPORT STATUS
- Mr. Shawn Jorgensen
Indian Head Division, Naval Surface Warfare Center
IR Project Manager
- 7:20 - 7:45 REMEDIAL INVESTIGATION REPORT CLARIFICATIONS AND
COMMENTS
- Mr. Shawn Jorgensen
- 7:45 - 8:10 IR SITES 12, 41, AND 42 FEASIBILITY STUDY STATUS
AND BUDGET ISSUES
- Mr. Robert Sadorra
Engineering Field Activity Chesapeake
Remedial Project Manager
- 8:10 - 8:20 STATUS OF MATTAWOMAN CREEK STUDY
- Mr. Robert Sadorra
- 8:20 - 8:30 IR SITE 47 REMEDIAL INVESTIGATION STATUS
- Mr. Robert Sadorra
- 8:30 - 9:00 COMMENTS, QUESTIONS, AND ANSWERS
- 9:00 ADJOURN



*Installation Restoration Site 57
Bldg. 292 TCE Contamination*

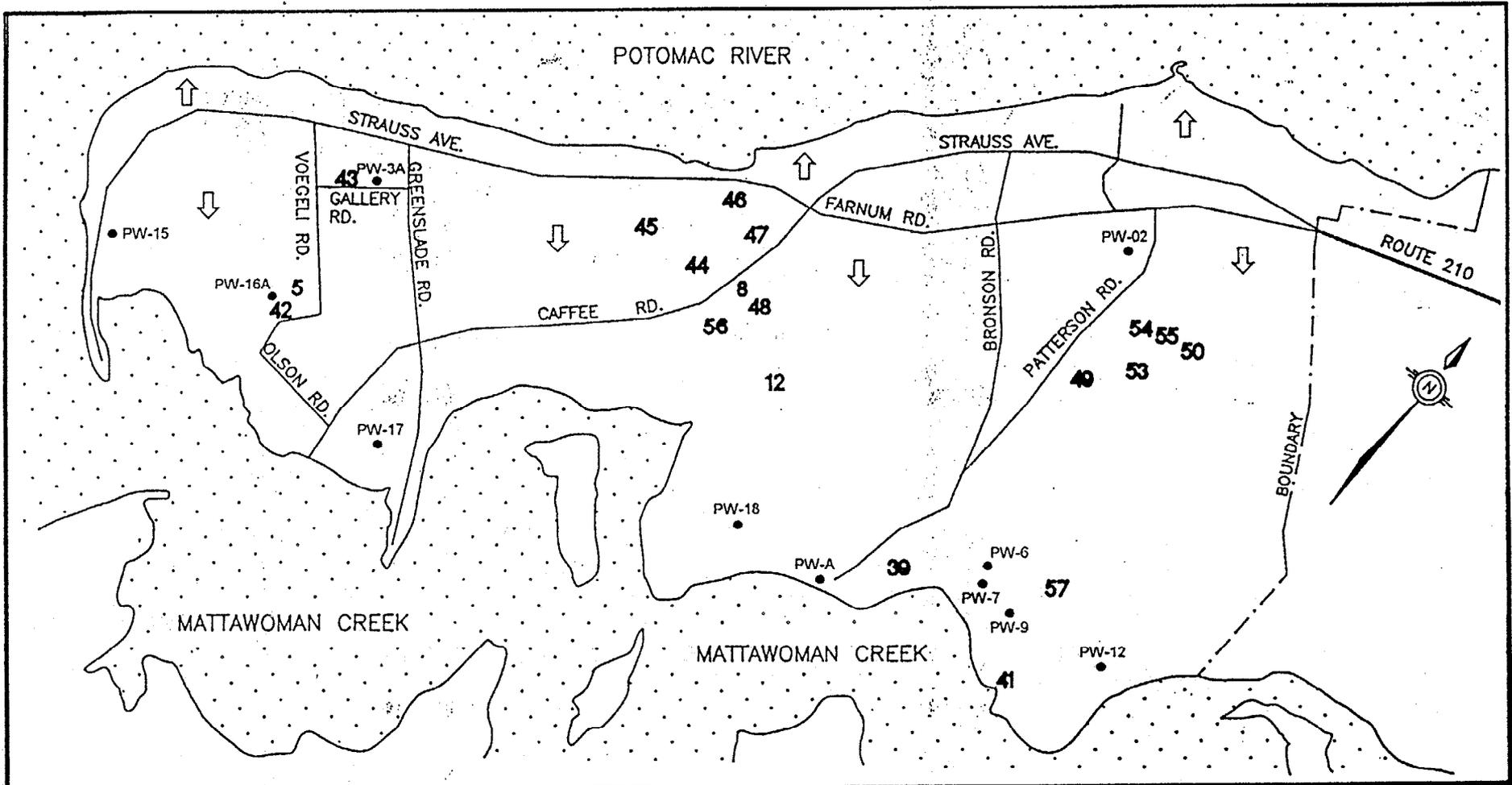


*NAVAL SURFACE WARFARE CENTER
INDIAN HEAD
RESTORATION ADVISORY BOARD*

June 17, 1999

*Shawn Jorgensen
Installation Restoration
Project Manager*

Attachment B



LEGEND

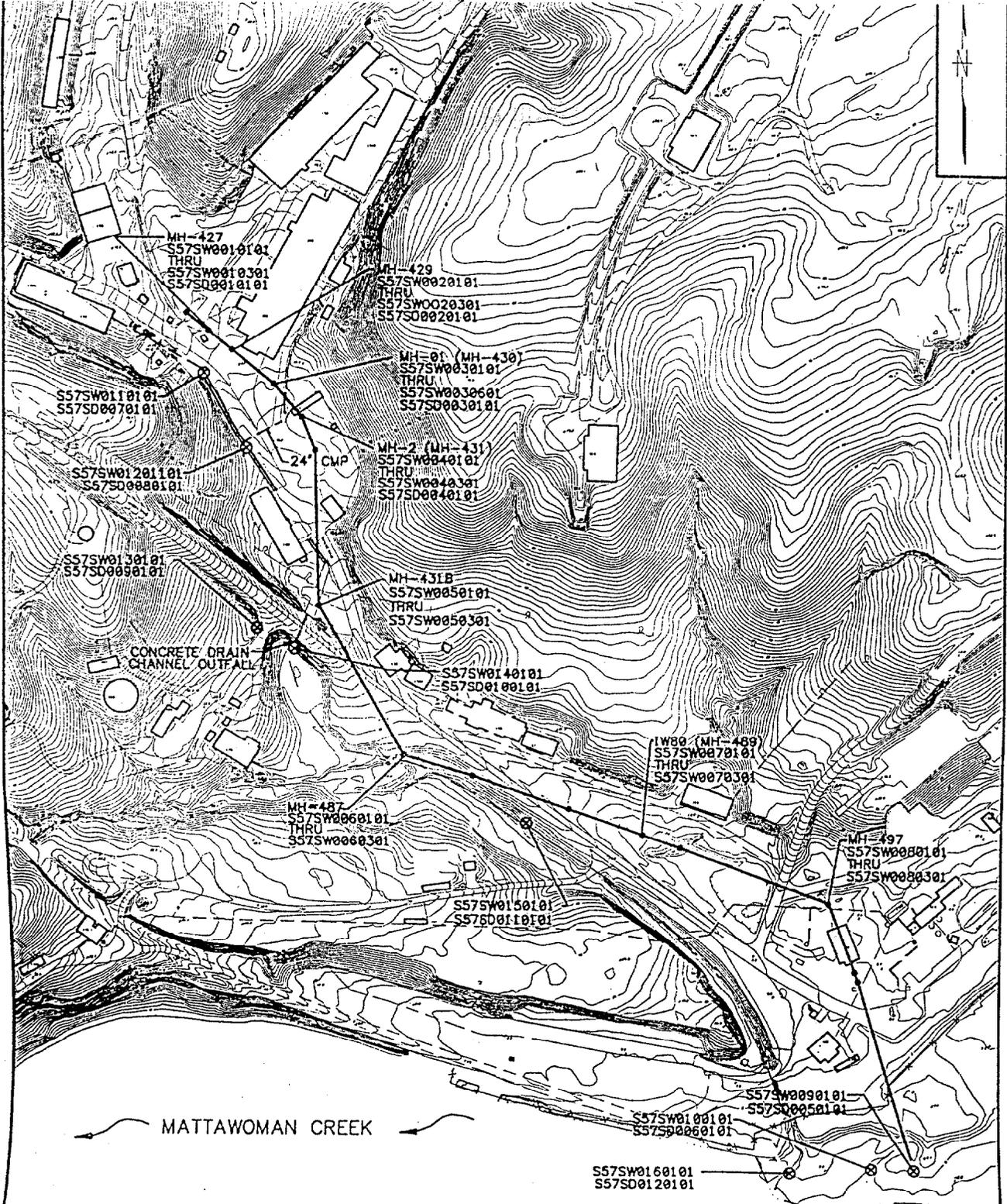
INSTALLATION RESTORATION SITES

5-SILVER IN SEDIMENT	47-MERCURIC NITRATE DISPOSAL
8-MERCURY IN SEDIMENT	48-DUMP SITE
12-TOWN GUT LANDFILL	49-CHEMICAL DISPOSAL PIT
39-ORGANICS PLANT	50-BUILDING 103
41-SCRAP YARD	53-GENERAL LABORATORY AREA
42-OLSON ROAD LANDFILL	54-BUILDING 101
43-TOLUENE DISPOSAL SITE	55-BUILDING 102
44-SOAK OUT AREA	56-LEAD IN SEDIMENT
45-ABANDONED DRUMS	57-TRICHLOROETHANE CONTAMINATION
46-CADMIUM SANDBLAST GRIT	

OTHER RELATED INFORMATION

PW-#	ARTESIAN (DEEP) WELLS
↓ ↑	GROUNDWATER (WATER TABLE) FLOW

**INDIAN HEAD DIVISION
NAVAL SURFACE WARFARE CENTER**



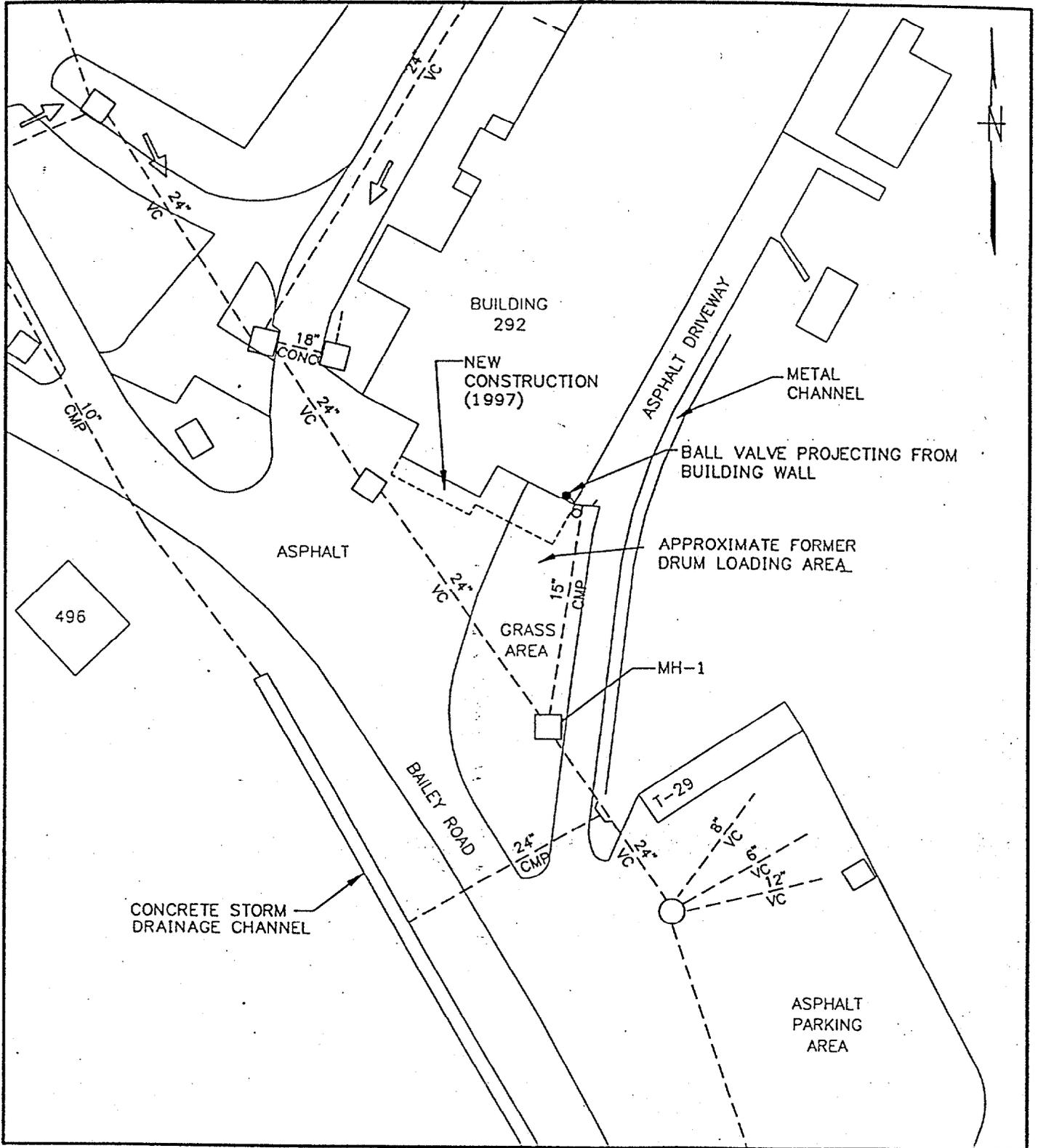
MATTAWOMAN CREEK

LEGEND

- ⊗ SEDIMENT AND/OR STORM WATER SAMPLE LOCATION
- ==== LOCATION OF CONCRETE DRAIN CHANNEL
- ==== LOCATION OF STORM SEWER MAIN LINE
- MANHOLE LOCATION STORM SEWER SYSTEM
- - - - - INTERMITTENT STREAM
- X X X CHAIN LINK FENCE

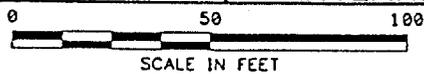
0 200 400
SCALE IN FEET

DRAWN BY HJP CHECKED BY DATE 2/12/98	<p>Brown & Root Environmental</p> <p>PROPOSED STORM WATER AND SEDIMENT SAMPLING FROM STORM WATER SEWER SYSTEM AND CONCRETE DRAIN CHANNEL LOCATION MAP SITE 57-FORMER DRUM LOADING AREA INDIAN HEAD DIVISION NSWC INDIAN HEAD, MARYLAND</p>	CONTRACT NO. 7129	OWNER NO. 0245
CGST/SCHED-AREA SCALE AS NOTED		APPROVED BY <i>[Signature]</i> DATE 7/8/98	APPROVED BY <i>[Signature]</i> DATE



SITE LOCATION MAP
SITE 57 – FORMER DRUM LOADING AREA
INDIAN HEAD DIVISION NSWC
INDIAN HEAD, MARYLAND

FIGURE 2-1





IR Site 57 Background



- *TCE discovered in IW-80*
- *Bldg. 292 used TCE for degreasing until 1989 and decanted TCE to drums located outside of the building near storm sewer manhole (MH-1)*
- *Sampling in MH-1 revealed TCE contamination while upstream manholes had no contamination*
- *Soil gas, soil, and groundwater sampling TCE in soil and groundwater*
- *Concern of TCE migration from groundwater infiltration into the storm sewer*



IR Site 57

Work Completed



- *June 1998 - Engineering Evaluation/Cost Analysis (EE/CA) Completed (storm sewer rehabilitation)*
- *September 1998 - Video inspection completed on storm sewer*
- *October 1998 - Removal Action (pipe relining) completed*
- *October 1998 - Field work for Phase I RI (soil data) completed*
- *January 1999 - Field work for Phase II RI (groundwater, sediment, surface water) completed*



Site 57 Remedial Investigation Report Status



- *RI Conducted to:*
 - *Identify extent of contamination in both soils and groundwater*
 - *Determine the effectiveness of the Removal Action (pipe relining)*
- *Draft RI Report:*
 - *Scheduled for completion June 18, 1999 (originally late July)*
 - *Will be delayed because of data inconsistencies*
 - *Results for TCE in manholes in the relined pipe*
 - *Sample Dates*
 - *Flow Rates*
 - *Water Temperatures*
 - *Additional samples required*



Site 57 Remedial Investigation Report Status



- *After Sampling and Analysis has been completed*
 - *Copy of the RI report will be given to each member of the RAB*
 - *Copy of the RI report will be available in the Information Repositories:*

*IHDIV-NSWC
Building D-40
101 Strauss Avenue
Indian Head, MD
20640-5035*

*Charles County Public Library
La Plata Branch
Charles & Garrett Streets
La Plata, MD 20646*



Site 57 Future Schedule and Budget



- *Additional Sampling to complete RI*
- *Conduct Feasibility Study to evaluate alternatives for final remediation of the site*
 - *Award Date: October 1999 (changed from 8/30/99 as a “swing” project)*
 - *Cost of FS: \$125,000*
- *Dollars Spent to-date on IR Site 57 - \$818,000*
 - *Initial Investigation (Soil-Gas, soil, water) - \$106,000*
 - *Removal of Soil for Loading Dock - \$125,000*
 - *EE/CA and Treatability Study - \$127,000*
 - *Removal Action - \$240,000*
 - *Remedial Investigation - \$220,000*



Clarification of Information in Remedial Investigation Report



NAVAL SURFACE WARFARE CENTER INDIAN HEAD RESTORATION ADVISORY BOARD

June 17, 1999

*Shawn Jorgensen
Installation Restoration
Project Manager*

Attachment C



Sites Studied In RI Report



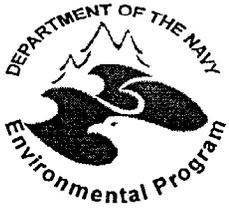
- *IR Site 12 - Town Gut Landfill*
- *IR Site 41 - Scrap Yard*
- *IR Site 42 - Olsen Road Landfill*
- *IR Site 44 - Soak Out Area*



Land Uses of the Facility For Risk Assessment



- *Current Land Use*
 - *Industrial*
 - *Includes the Entire Facility*
- *Hypothetical Future Land Uses*
 - *Industrial*
 - *Residential (most conservative)*



Risk Assessment Information



- *Generic Risk Assessment Equation for Carcinogens*

$$\text{Risk} = \text{Conc.} \times \frac{\text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}} \times \text{TF}$$

Conc. = Chemical Concentration

IR = Ingestion Rate (can also be Inhalation or Contact Rates)

EF = Exposure Frequency

ED = Exposure Duration

BW = Body Weight

AT = Averaging Time

TF = Toxicity Factor



Risk Assessment Information



- *Results of Risk Calculations for Carcinogens*
 - *Less than 1×10^{-6}*
 - *Typically, no remedial efforts required*
 - *Greater than 1×10^{-4}*
 - *Some degree of remediation required*
 - *Between 1×10^{-4} and 1×10^{-6}*
 - *Decisions for remediation made on a case-specific basis*



Risk Assessment Information



- *Risk Assessment for Non-Carcinogens*

$$HI = HQ_1 + HQ_2 + HQ_3 + \dots$$

$$HQ = \frac{\text{Estimated Exposure Intake}}{RfD}$$

HI = Hazard Index

HQ = Hazard Quotient, where HQ_1 is for chemical 1, etc.

RfD = Reference Dose



Risk Assessment Information



- *Generic Risk Assessment Equation for Non-Carcinogens*

$$\text{Estimated Exposure Intake} = \text{Conc.} \times \frac{\text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}} \times \text{TF}$$

Conc. = Chemical Concentration

IR = Ingestion Rate (can also be Inhalation or Contact Rates)

EF = Exposure Frequency

ED = Exposure Duration

BW = Body Weight

AT = Averaging Time

TF = Toxicity Factor



Risk Assessment Information



- *Results of Hazard Index (HI)*

$$HI = HQ_1 + HQ_2 + HQ_3 + \dots$$

- *If less than 1.0*
 - *Potential health risk is low*
 - *Site remediation not required*
- *If greater than 1.0*
 - *Potential noncarcinogenic health risks associated with exposure*
 - *Remediation of the site may be required*



Risk Assessment Information



- *Risk Is Calculated For:*
 - *Various Scenarios*
 - *Full-Time Worker*
 - *Construction Worker*
 - *Adult Resident*
 - *Child Resident*
 - *Trespasser*
 - *Two Types of Exposures for Each Scenario*
 - *RME - Reasonable Maximum Exposure*
 - *CTE - Central Tendency Exposure*



Risk Assessment Information



- *Some Variations In Exposures*

	Adult Resident		Full Time Employee	
	RME	CTE	RME	CTE
Exposure Frequency (days/year)	350	234	250	219
Exposure Duration (years)	24	7	25	5
Fugitive Dust & Volatiles Exposure Time (hours/day)	24	24	8	4



Groundwater Information



- *Groundwater Samples*
 - *Shallow Aquifer (Monitoring Wells)*
 - *Unconfined*
 - *Water Table*
 - *Lower Confined Aquifer (Drinking Water Wells)*
 - *Potapsco*
 - *Upper*
 - *Middle*
 - *Lower*
 - *Patuxent*



Groundwater Information

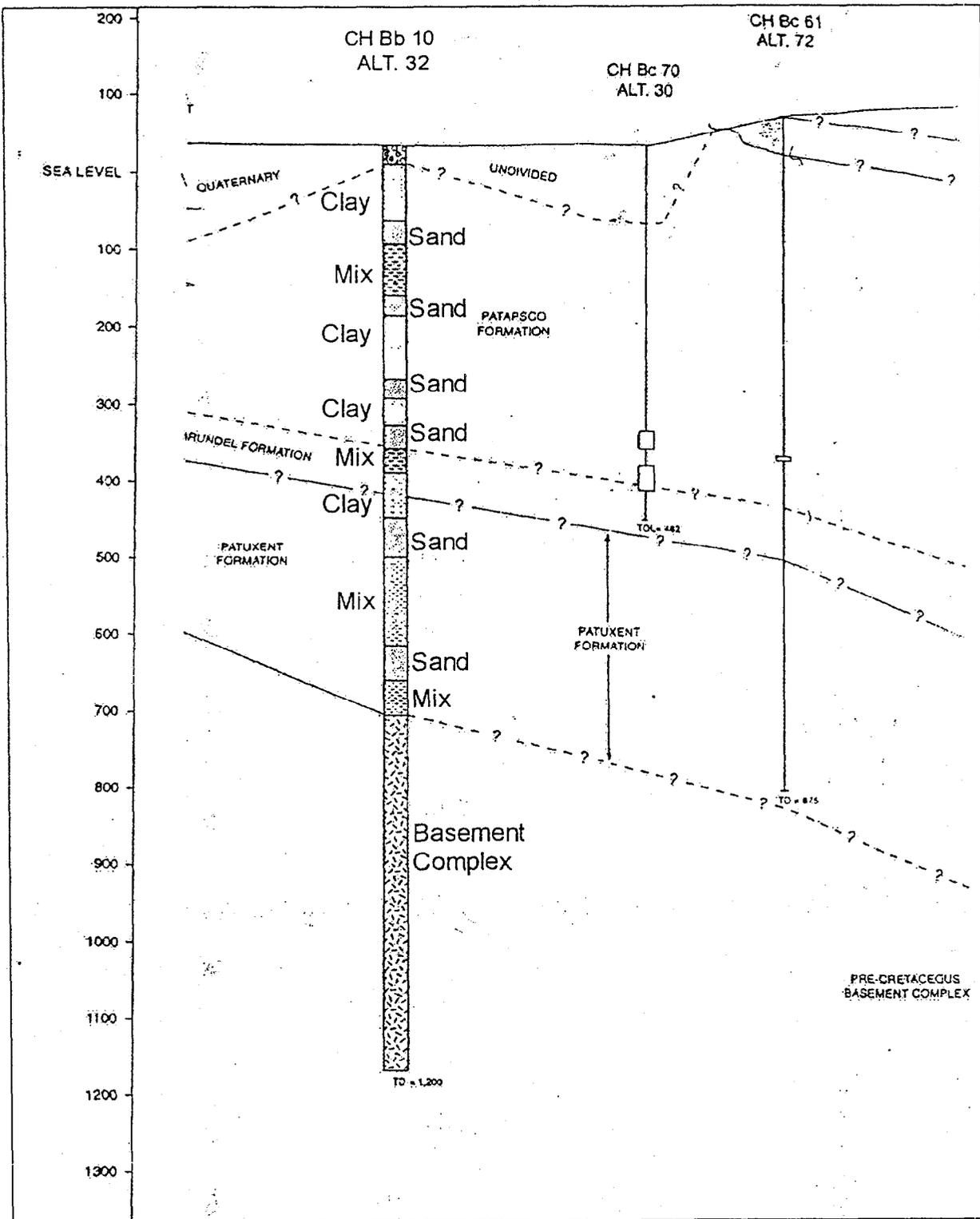


Table 1. - Stratigraphic relations and hydrologic character of geologic deposits in the Indian Head area of Charles County, Maryland.

System	Series	Group	Formation	Range of Thickness (feet)	Hydrologic Character	Map Symbol on fig. 7
Quaternary and Tertiary	Holocene to Miocene		Alluvium and terrace deposits	30-100	Water table to semi-confined aquifer	Q
			Unconformity			
Tertiary	Paleocene	Pamunkey	Aquia	20-40	Confining Unit	Ta
			Unconformity			
Cretaceous	Lower Cretaceous	Potomac	Upper	250-300	Confining unit	Kp
			Middle		Aquifer	
			Lower part		Confining unit	
			Unconformity			
			Arundel	50-75	Confining unit	
			Patuxent	250-300	Aquifer	
					Confining unit	
					Aquifer	
Pre-Cretaceous Rock			Unconformity Basement complex	Unknown	Confining unit	

U.S.G.S. Water-Resources Investigation Report 91-4059, 1997, p.10

SOIL BORING CH-Bb-10 NEAR SCRAP YARD DRILLED IN 1920



Drawing and information obtained from USGS Water-Resources Investigations Report 91-4059, 1997, pp. 56-57 and Plate 4



**NAVAL SURFACE WARFARE CENTER
INDIAN HEAD
RESTORATION ADVISORY BOARD**



Feasibility Study Project Status

Site 12 - Town Gut Landfill

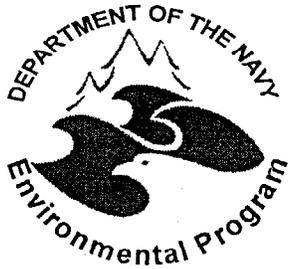
Site 41 - Scrap Yard

Site 42 - Olson Road Landfill

Robert Sadorra, RPM

Engineering Field Activity Chesapeake

June 17, 1999



Feasibility Study Project Status

Sites 12, 41, 42



Purpose

- *Describe, evaluate and compare alternatives*
- *Select Remedy*

Tasks

- *Alternative development*
- *Alternative evaluation and comparison*
 - *Overall protection of human health and the environment*
 - *Compliance with ARARs*
 - *Long-term effectiveness and permanence*
 - *Reduction of toxicity, mobility or volume through treatment*
 - *Short-term effectiveness*
 - *Implementability*
 - *Cost*
 - *State Acceptance*
 - *Community Acceptance*



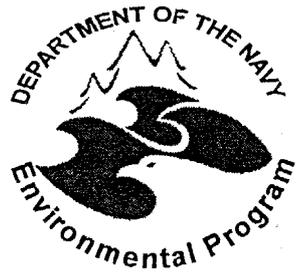
Feasibility Study Project Status

Sites 12, 41, 42



- *Feasibility Study Field Investigation Work Plan completed May 1999*
 - *Fill engineering data needs*
 - *Obtain data for cost estimation*

	<i>Test Pits</i>	<i>Surface Soil Samples</i>	<i>Sediment Samples</i>	<i>Toxicity Tests</i>	<i>Other Investigation Activities</i>
<i>Site 12 – Town Gut Landfill</i>	17	---	---	---	Wetlands Delineation
<i>Site 41 – Scrap Yard</i>	---	74	---	---	---
<i>Site 42 – Olson Road Landfill</i>	3	---	49	11	Wetlands Delineation



Feasibility Study Project Status Site 12 - Town Gut Landfill



-
- *What is the horizontal extent of the landfill?*
 - *Test Pits*
 - *What is the horizontal extent of wetlands that may be affected by a remedial action?*
 - *Onsite visual determination*



Feasibility Study Project Status

Site 41 - Scrap Yard



-
- *What is the extent of the surface soil contamination at the Scrap Yard?*
 - *Delineation with chemical specific sampling*
 - *What is the horizontal extent of paved surface within the Scrap Yard perimeter?*
 - *Drive points selected in the field*



Feasibility Study Project Status Site 42 - Olson Road Landfill



- *What is the horizontal extent of the landfill?*
 - *Test pits*
- *What is the extent of silver / phthalate contamination in the creek?*
 - *Delineation with chemical specific sampling?*
- *What concentration of silver / phthalate is toxic to organisms?*
 - *Site specific toxicity testing*
- *What is the horizontal extent of wetlands that may be affected by a remedial action?*
 - *Onsite visual determination*



Feasibility Study Project Status

Sites 12, 41, 42



-
- *Project has been delayed*
 - *Budget has been pushed to October*
 - *Fieldwork will begin as soon as funding is available*
 - *Draft report will be completed approximately 4 months after fieldwork*



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INDIAN HEAD
RESTORATION ADVISORY BOARD**



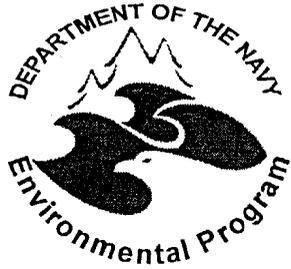
**Remedial Investigation
Project Status**

Site 47 - Mercuric Nitrate Disposal Area

Robert Sadorra, RPM

Engineering Field Activity Chesapeake

June 17, 1999

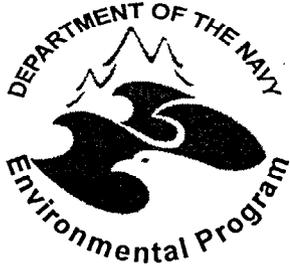


Remedial Investigation Project

Status Site 47



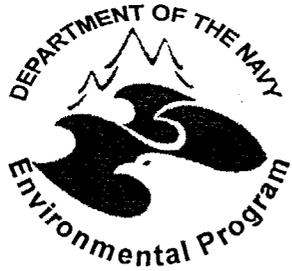
- *Site 47 - Mercuric Nitrate Disposal Area*
 - *Mercuric Nitrate was disposed in area approximately 24 sq. ft.*
 - *Limestone chips used to neutralize spent nitric acid*
 - *Procedure carried out between 1957 and 1965*
 - *RI will include additional soil, sediment and groundwater sampling*



Remedial Investigation Project Status Site 47



- *Site 47 - Mercuric Nitrate Disposal Area*
 - *Project awarded in November 98*
 - *Mobilization for field work scheduled for July 6*
 - *Draft report expected in October 99*



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INDIAN HEAD
RESTORATION ADVISORY BOARD*

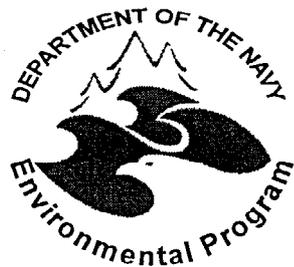


*Mattawoman Creek Ecological Assessment
Project Status*

Robert Sadorra, RPM

Engineering Field Activity Chesapeake

June 17, 1999



Mattawoman Creek Ecological Assessment Project Status



-
- *Initial planning and negotiations have been completed*
 - *Project will resume as soon as funding is available*

PUBLIC HEALTH ASSESSMENT

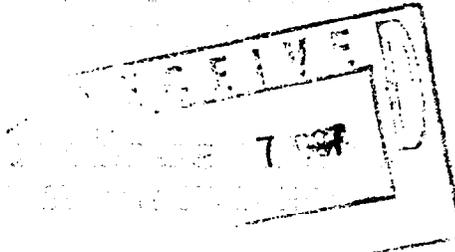
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD DIVISION (NSWC-IHDIV)

(a/k/a INDIAN HEAD NAVAL SURFACE WARFARE CENTER)

INDIAN HEAD, CHARLES COUNTY, MARYLAND

CERCLIS NO. MD7170024684

DATE 09/23/97



Prepared by:

Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

B. Fish in Mattawoman and Chicamuxen Creeks

Summary: Concentrations of cadmium, mercury, and zinc in Mattawoman Creek fish tissue do not pose a threat to public health through ingestion. However, to protect people eating fish, sampling and analysis for lead, silver, chromium, and copper should be performed to determine if these metals are entering the food chain in Mattawoman and Chicamuxen Creeks and bioaccumulating to concentrations requiring consumption limits. A summary of our evaluation of this situation is provided in Tables 4a and 4b.

Background: Studies conducted by the U.S. Fish and Wildlife Service provide data on levels of mercury, cadmium, and zinc in selected fish and shellfish collected from Mattawoman Creek (Figure 1) between 1987 and 1991 ^(32, 33). Overall, the concentrations of these metals in Mattawoman Creek fish tissue ranged from below to slightly above levels documented in similar monitoring programs in Potomac River, Maryland, and U.S. studies ⁽³³⁾. ATSDR evaluated these data using the chemical-specific Risk-Based Concentration (RBC) values for fish tissue ⁽³⁴⁾. U.S. EPA's RBCs are useful data-screening tools that assume exposure to only one contaminant and hold the risk to exposed individuals at highly conservative (protective) levels. The fish data and RBC screening values are provided in Table 5.

Using available data, we conclude that the 1991 concentrations of metals in Mattawoman Creek fish and shellfish do not pose a public health threat through ingestion. Cadmium was not detected in fish tissue samples above the detection limit (0.1 milligrams per kilogram [mg/kg]), which is well below the RBC for that metal (0.68 mg/kg). Mercury concentrations were also below the RBC (0.41 mg/kg), ranging from undetected to 0.31 mg/kg.

Similarly, maximum zinc concentrations in tissue samples from six species of fish and the brackish water clam ranged from 14 to 55 mg/kg. These values are 7 to 29 times lower than the RBC for zinc (410 mg/kg).

Other chemical contaminants from the NSWC-IHDIV have also impacted the surrounding sediments: lead, silver, chromium and copper are documented to occur in Mattawoman Creek sediments at elevated concentrations relative to background and Chesapeake Bay reference sites ⁽³²⁾. These chemicals may bioaccumulate in certain species of fish. However, because these chemicals were not included in the fish tissue analyses that have been conducted, it is not known whether they are entering the food chain in Mattawoman and Chicamuxen Creeks and bioaccumulating. The U.S. Fish and Wildlife Service has recommended that additional fish tissue analysis be performed and that the concentrations of selected chemicals in the base's discharges be reduced ⁽³²⁾.

TABLE 4a. No Apparent Public Health Hazard Situation: Fish Consumption

PATHWAY NAME	CONTAMINANTS	EXPOSURE PATHWAYS ELEMENTS					TIME	COMMENTS
		SOURCE	ENVIRONMENTAL MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	POTENTIALLY EXPOSED POPULATION		
Contaminated fish in Mattawoman and Chicamuxen Creeks	Mercury, zinc, cadmium	Releases of hazardous substances to soils and shallow groundwater at the site, and historical discharges of munitions process waste waters to the creeks	Fish	Eating (Ingestion of) contaminated fish	Ingestion	<u>Potentially Exposed:</u> people who eat contaminated fish from the creeks	Future	No apparent health hazard is posed by the metals contaminants to people eating fish caught from the creeks.

TABLE 4b. Potential Public Health Hazard Situation: Fish Consumption

PATHWAY NAME	CONTAMINANTS	EXPOSURE PATHWAYS ELEMENTS					TIME	COMMENTS
		SOURCE	ENVIRONMENTAL MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	POTENTIALLY EXPOSED POPULATION		
Contaminated fish in Mattawoman and Chicamuxen Creeks	Lead, silver, chromium, copper	Releases of hazardous substances to soils and shallow groundwater at the site, and historical discharges of munitions process waste waters to the creeks	Fish	Eating (Ingestion of) contaminated fish	Ingestion	<u>Potentially Exposed:</u> people who eat contaminated fish from the creeks	Past, current, future	Future sampling should also include tissue analyses for lead, silver, chromium, and copper to determine if these metals are bioaccumulating to concentrations of public health concern.

TABLE 5. Maximum whole body^a concentrations of total mercury, cadmium, and zinc (mg/kg WW)^b in fish collected from Mattawoman Creek (1987-1991)^c compared with EPA Risk-Based Concentration^d values.

Species	Mercury	Cadmium ^e	Zinc
Channel Catfish	0.068	< 0.1	55
Largemouth Bass	0.310	< 0.1	NA ^f
Bluegill	0.078	< 0.1	NA
Gizzard Shad	0.034	< 0.1	14
Brown Bullhead	0.072	< 0.1	14
White Perch	0.072	< 0.1	38
Black Crappie	ND ^g	< 0.1	7.9
Spot	0.035	< 0.1	18
Brackish Water Clam	0.025	< 0.1	17
Risk-Based Concentration (RBC) screening value	0.41	0.68	410

Note: mercury, cadmium, and zinc were chosen by the U.S. Fish and Wildlife Service for analysis in tissue samples based on records of maximum discharge concentrations from NSWC-IHDIV and chemical-specific bio-concentration factors in the literature (Reference 32).

^a determinations were made on whole body fish samples.

^b mg/kg WW: data and RBC values are expressed in units of mg metal per kilogram wet weight of fish tissue.

^c fish tissue data are summarized from References 32 and 33.

^d U.S. EPA Region III Risk Based Concentration values are derived from Reference 34.

^e detection limit for cadmium analysis: 0.1 mg/kg WW.

^f NA: data not available.

^g ND: chemical not detected.

Public Health Action Plan: Fish in Mattawoman and Chicamuxen Creeks

Conclusions:

1. Concentrations of mercury, cadmium, and zinc in fish from Mattawoman Creek do not pose a threat to people eating the fish.
2. Insufficient data exist to evaluate whether lead, silver, chromium or copper are bioaccumulating in fish tissue to concentrations of public health concern.

Actions Taken or Proposed:

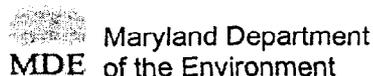
1. Numerous efforts by NSWC-IHDIV to reduce or eliminate discharges to the Mattawoman and Chicamuxen Creeks and the Potomac River include (i) the connection of the industrial wastewater discharges to the sanitary sewer system, permitting sampling and treatment prior to release (rather than discharging directly to the local creeks and river); and (ii) the construction of sediment and erosion controls at the wastewater outfalls, many of which are ditches, in order to prevent the release of suspended sediments into the creeks and river. In the future, a central sewage system connection is planned for the Stump Neck Annex in order to eliminate septic tank discharges.
2. Clean-up actions already been completed by NSWC-IHDIV, and clean-up activities will be completed in the future, will reduce the contaminated soil runoff and shallow groundwater discharges of contaminants to the creeks and river.

Recommendations:

Mattawoman Creek supports significant recreational and limited commercial fishing activity. However, Remedial Investigation studies at NSWC and RCRA Corrective Action investigations at the Stump Neck Annex do not currently include sampling activities to monitor possible future food chain contamination in Mattawoman and Chicamuxen Creeks^(3,4). Therefore, ATSDR makes the following recommendations:

1. If follow-up studies conducted by the U.S. Fish and Wildlife Service do not include fish tissue analyses for lead, silver, chromium, and copper, we recommend that NSWC-IHDIV initiate a sampling program to fill this data gap.
2. In the event that future remedial, RCRA closure, or RCRA corrective action activities, will disturb wastes and release contaminants to the creeks, ATSDR recommends additional collection and analysis of fish at that time.

Both sampling recommendations will permit NSWC-IHDIV to determine whether metals in the water and sediments are bioaccumulating in fish to concentrations requiring consumption limits to protect public health. In the event that such sampling is proposed, ATSDR requests involvement in the review of the Work Plan for those activities in order to ensure that the proposed sampling and analyses will generate the type and quality of data needed to draw conclusions about potential human health impacts.



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MONITORING CONTAMINANT LEVELS IN FISH, SHELLFISH, AND CRABS

FISH

Since the early 1970s, the Maryland Department of the Environment (MDE) has been monitoring chemical contaminant levels in fish found in Maryland waters. In 1977, MDE established a statewide water-quality monitoring network in the Maryland portions of the Chesapeake Bay and its tributaries. As part of this effort, whole fish have been analyzed yearly for a group of metals and pesticides known to concentrate in fish. This enables managers to identify compounds that may be undetectable in water samples, but detectable in fish tissue.

While this monitoring program did not focus specifically on the safety of fish for consumption, it was recently modified to address this concern.

Currently, Maryland's monitoring program divides state waters into three groups: 1) Western Maryland watersheds; 2) Chesapeake Bay watersheds, and 3) Baltimore/Washington urban watersheds. Samples from within each of these areas are taken every three years. Collections consist of two samples of accumulator species and one sample of game species. Of the accumulator samples, one includes whole fish, while the second includes only fillet tissue. Of the game species, only the fillet portion is analyzed. This allows water-quality managers to evaluate the relative levels of contaminants of concern accumulating in state waters, and contaminant levels in the fish to determine safety for human consumption.

FISH AND CRABS

MDE also periodically conducts intensive surveys of contaminant levels in the edible portion (fillet) of both resident and migratory species in the Chesapeake Bay and its tributaries. The species surveyed have included white perch, spot, channel catfish, brown bullhead, American eel, bluefish, striped bass, and blue crab.

SHELLFISH

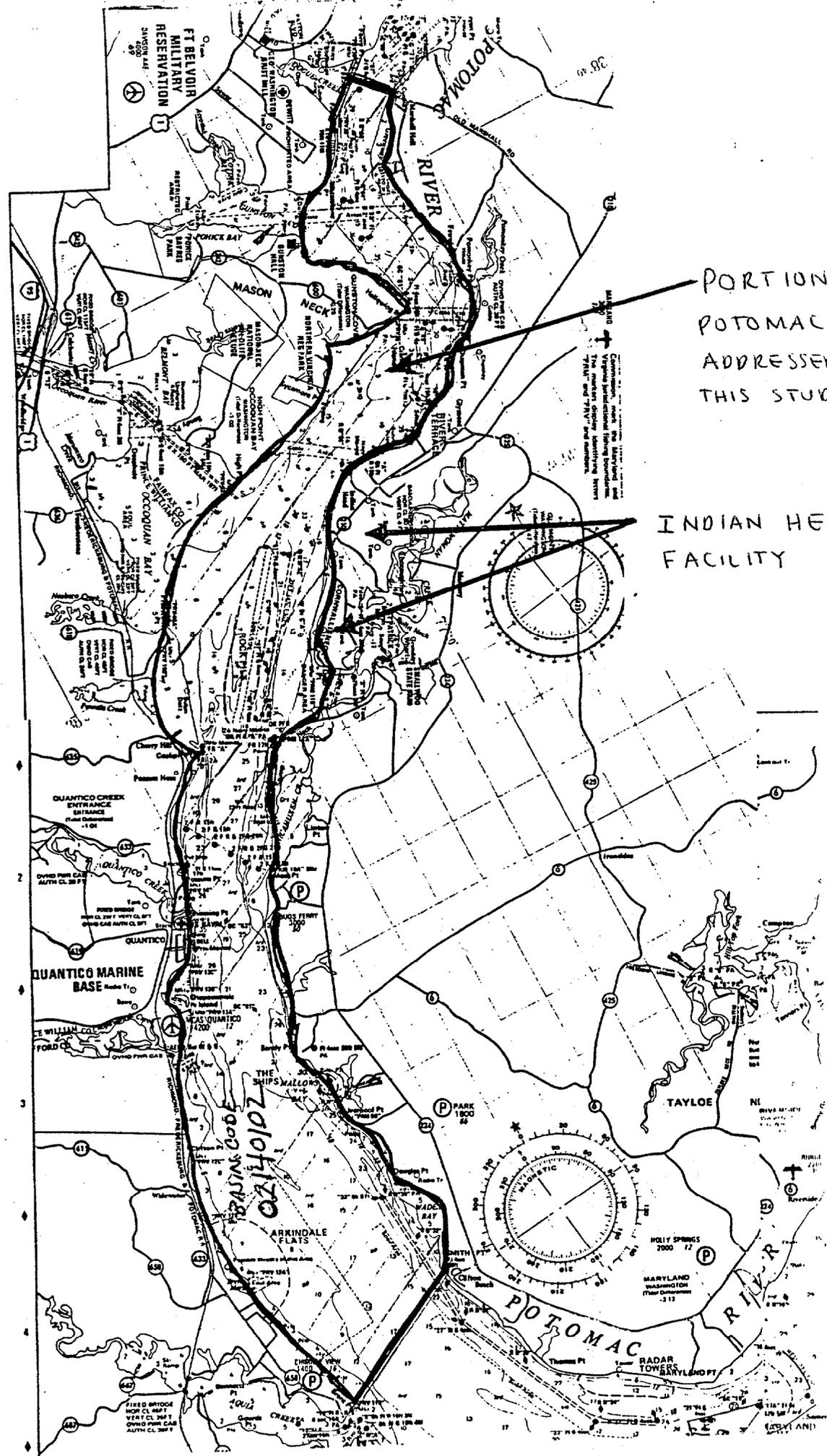
Since the early 1970s, MDE has been surveying metal and pesticide levels in oysters and clams from the Chesapeake Bay and its tributaries. This effort has, through 1987, been conducted on an annual or biannual frequency. In response to low levels of contaminants and negligible yearly changes in those levels, this baywide effort has been changed to a frequency of once every three years, with the off years being devoted to analysis of results and the performance of small, intensive shellstock surveys.

For more information contact:

Maryland Department of the Environment
Standards and Certification Division

(301) 631-3609.

410



PORTION OF
POTOMAC RIVER
ADDRESSED BY
THIS STUDY

INDIAN HEAD
FACILITY

BRAIN CODE
02140102

Vertical datum is Mean High Water
The magnetic dipping compass bearing
of "M" and "T" are indicated.

MARYLAND
WATERWAY
MILEAGE
- 313

RADAR
TOWER
MARYLAND PT

E Fish Tissue Contaminants (Metals ONLY) Data for the Middle Potomac River

In Code	WO Station	Alias	Stream Name	Species	Tissue Type	Date Sampled	Metals (ppm)								
							Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
140102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Brown Bullhead	Fillet	01-Jan-90		0.090	0.005	0.250	0.280	0.018	0.025	0.250	6.200
40102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Brown Bullhead	Whole Organism	01-Jan-85		0.290	0.670	0.500	1.870	0.018		2.900	16.500
40102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Brown Bullhead	Whole Organism	01-Jan-87		0.160	0.310	0.800	1.540	0.002		3.700	14.800
40102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Brown Bullhead	Whole Organism	01-Jan-90		0.120	0.120	0.250	0.470	0.034	0.120	0.250	5.350
40102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Gizzard Shad	Whole Organism	01-Jan-87		0.140	0.190	1.200	2.310	0.003		3.200	25.200
140102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Spot	Whole Organism	01-Jan-85		0.930	0.370	0.250	1.600	0.012		1.600	13.600
140102	XDA8825	Mid-river 1700 yds. W of Sandy Pt. and 2100 yds. NW of N *40* 17 ft, Depth	Potomac River	Striped Bass	Fillet	01-Jan-86		0.556	0.149	0.250	1.448	0.021		0.889	3.493
140102	XEA1130	Adjacent to dock at Quantico 30 ft. depth	Potomac River	Striped Bass	Fillet	01-Jan-86		0.594	0.207	0.250	1.142	0.054		0.554	2.416
140102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	Striped Bass	Fillet	01-Jan-86		0.457	0.150	0.250	0.907	0.082		0.433	2.000
140102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	White Catfish	Fillet	01-Jan-94		0.025	0.025	0.195					
140102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	White Perch	Fillet	01-Jan-90		0.025	0.005	0.250	0.280	0.021	0.370	0.250	24.200
140102	XEA6596	Bouy N45 off Indian Head St depth 44 ft	Potomac River	White Perch	Fillet	01-Jan-94	0.025	0.025	0.025	0.150	0.230	0.061	0.025	0.120	9.840

INSTALLATION RESTORATION PROGRAM



INDIAN HEAD DIVISION,
NAVAL SURFACE WARFARE CENTER
101 STRAUSS AVENUE
INDIAN HEAD, MARYLAND
20640-5035



RESTORATION ADVISORY BOARD (RAB) MEETING COMMENTS, QUESTIONS AND ANSWERS

June 17, 1999

IR Site 57 Remedial Investigation (RI)

Question: At one time, you were going to put documents in the Charles County Public Library (CCPL), Potomac Branch in Bryans Road. Is this going to happen?

Answer: Currently, only documents that require public review and comment are being placed in the Bryans Road library. Once the CD-ROM containing the Information Repository is completed, we will place the CD-ROM in all three libraries - the CCPL La Plata Branch, the CCPL Potomac Branch, and the General Library at the Indian Head Division, Naval Surface Warfare Center, Building D-40.

Comment: RAB members will get a copy of the RI Report once it has been completed.

Question: Will this wrap it up for IR Site 57?

Answer: No. After the RI has been completed, a Feasibility Study (FS) will be conducted to determine the best method for remediating the site. Then, the final remediation will begin.

Question: What are the expected total costs and the timeline for completion?

Answer: The total cost and amount of time required for remediation will depend on the best cleanup method for the site, as determined in the FS. For example, if pump and treat is selected for the groundwater, it could take 20 to 30 years before the concentration of contaminants in the shallow groundwater decrease to acceptable levels.

Question: Have you tried to correlate the data that you currently have to the flows and temperatures?

Answer: No. We do not have temperatures and flows for the data that was collected for the RI. However, we do have this data for samples taken by Activity personnel for the National Pollutant Discharge Elimination System (NPDES) permit. We only have five samples available to us for this, all taken at Industrial Wastewater Outfall 80 (IW80), and have not tried to correlate this data yet.

Remedial Investigation (RI) Report Clarifications and Comments

Question: Have you decided to separate out Site 39 from Site 41?

Answer: Yes. Sampling for Site 39 (Silver Release to Sediments) consisted of sampling the water and sediment in the Mattawoman Creek. It was logical to combine this with site 41, since any runoff from the Scrap Yard would end up in the creek, as well. However, since that time, we have discovered that contamination is present near Building 497 and 498. Therefore, sampling will be required near the buildings, which are a minimum of 700 feet from the Scrap Yard.

Comment: The risk discussed during this presentation includes human health risk only, not ecological risk.

Comment: You shouldn't restrict your thinking to only industrial use with respect to cleanup.

Response: The Navy would like to remediate sites to residential levels, however, costs may be too prohibitive. In addition, other sites need attention to ensure the health and safety of workers.

Comment: Banks are reluctant to provide funding for the purchase of land with possible hazardous waste issues.

Response: This is true. However, sites that have been transferred to the public, such as Base Realignment and Closure (BRAC) sites, that are not cleaned to residential levels become Brownfield sites. If the purchaser of a Brownfield site wants to clean it to residential levels, the purchaser would provide the funding and the Maryland Department of the Environment would provide oversight for the cleanup to ensure that no one is put at risk.

Question: Is there or will there be a table somewhere showing what sites have been cleaned and to what level?

Answer: Once the feasibility study has been completed and the best cleanup alternative has been determined, a Record of Decision (ROD) will be prepared. The ROD describes all of the activities that have been performed at a site and the planned remediation of the site. This would include everything from general site information, such as when the site was in operation, to the cleanup technology that will be used to remediate the site, as well as cleanup level.

In addition, if a site is not remediated to residential levels, then a restriction will be placed on the deed of the land to ensure that no one is put at risk from the site. Requirements for long-term monitoring, if required, would also be included in the ROD.

Comment: Information concerning all of the sites, including a fact sheet for each site and schedule for cleanup, is included in the Site Management Plan (SMP). We can include a table at the beginning of the plan to show where we are with each site and, if remediated, to what level - industrial or residential.

Comment: You should change the statement in the RI about the area only being used as an industrial site. This could change in the future.

Response: We do not see any of the sites in the Installation Restoration program being used for anything but industrial purposes in the foreseeable future. It would be unrealistic to state that they will be used for residential purposes and would defeat the purpose of having different cleanup levels for industrial and residential settings.

IR Sites 12, 41, and 42 Feasibility Study (FS) Status and Budget Issues

Question: Why aren't sediment samples being taken at Site 12, Town Gut Landfill?

Answer: We are more concerned with surface soil at Site 12. In addition, pollutants leaving the Town Gut Landfill were looked at during the RI. Very shallow wells were placed along the edge of the landfill, by the water's

edge, to determine what contaminants, if any, were leaving the landfill via shallow groundwater.

We are looking at sediment samples at Site 42, the Olsen Road Landfill, because the swale at the toe of the landfill contains silver, which came from Site 5, X-Ray Building 731. Two separate removal actions were conducted on the area upgradient of the landfill to remove the silver from the soil and sediment with the understanding that the rest of the swale would be managed with the Olsen Road Landfill.

Comment: Test wells were placed around the Lorton Landfill. These permanent wells are used to capture contaminants leaving the landfill and to determine what contaminants are leaving the landfill via shallow groundwater.

Comment: This is similar to what we have done at the Town Gut Landfill, with respect to the location of the permanent wells. However, we are not currently capturing runoff or groundwater from the site.

Status of Mattawoman Creek Study

Question: Can we review the scope of work for this project?

Answer: Yes. However, the scope of work is very generic. It includes the development of a plan for the study and some minor sediment sampling to assist in determining future fish sampling locations.

Comment: Currently, the Mattawoman Partnership Project is getting a panel together to ensure the protection of the Mattawoman Creek.

IR Site 47 Remedial Investigation (RI) Status

Question: Who has the contract for this work?

Answer: The contractor is CH₂M Hill.

**INDIAN HEAD DIVISION,
NAVAL SURFACE WARFARE CENTER**

**INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD (RAB)
MEETING AGENDA
(Tentative)**

October 21, 1999

- 1. IR Site 57 Remedial Investigation (RI)
Report Update**
- 2. IR Sites 47 and 53 RI Status**
- 3. Budget and Schedule**