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NSWC INDIAN HEAD
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FINAL WORK PLAN FOR SITE SCREENING INVESTIGATION SITE 37 WITH TRANSMITTAL

NSWC INDIAN HEAD MD

3/24/2011

TETRA TECH NUS

3002

TETRA TECH

March 24, 2011

NOR-01036
Project Number 2622

NAVFAC Washington
Attn: Mr. Joe Rail, P.E. (Code OPB1E)
Washington Navy Yard, Building 212
1314 Harwood Street, SE
Washington, DC 20374-5018

Ref: CLEAN Contract No. N62470-08-D-1001
Contract Task Order JU11

Subject: Final Work Plan for Phase 2 Site Screening Process (SSP) Investigation
Site 37 - Causeway
Naval Support Facility Indian Head, Indian Head, Maryland

Dear Mr. Rail:

Tetra Tech is pleased to submit two copies of the technical memorandum entitled *Final Work Plan for Site 37 – Causeway* (enclosed). An electronic version (PDF) is provided on CD with each hard copy. All Team comments on the draft version were incorporated into this final version.

Additional copies were distributed as shown below. Please contact me at 757-466-4908 or ed.corack@tetratech.com if you have any questions or need additional copies.

Respectfully,

Tetra Tech

Ed Corack, P.E.
Project Manager

Enclosures

c: Mr. Nicholas Carros, NAVFAC Washington, NSF-IH (2 copies)
Mr. Dennis Orenshaw, EPA Region 3 (2 copies)
Mr. Curtis DeTore, MDE (2 copies)
Mr. John Trepanowski, Tetra Tech (cover letter only)
Mr. Garth Glenn, Tetra Tech (cover letter only)
Mr. Scott Nesbit, Tetra Tech (1 PDF CD only)
Admin Record – Mr. Glenn Wagner, Tetra Tech (1 copy)
Project File (1 copy)

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TETRA TECH

TECHNICAL MEMORANDUM

DATE: March 24, 2011

TO: Indian Head Installation Restoration Team (IHIRT)

FROM: Tetra Tech NUS, Inc.

SUBJECT: **Final Work Plan for Phase 2 Site Screening Process (SSP) Investigation**
Site 37 – Causeway
Naval Support Facility (NSF) Indian Head, Maryland
CLEAN Contract No. N62470-08-D-1001, CTO JU11

1.0 INTRODUCTION

Additional field investigation to locate and characterize waste at Site 37 – Causeway at the Naval Support Facility, Indian Head (NSF-IH) located in Indian Head, Maryland (**Figures 1** and **2**) has been identified by IHIRT. During prior investigations no significant contamination was identified in the subsurface soil and no waste was identified at the site. Elevated concentrations of inorganics, semivolatile organics, an energetic (RDX) and a pesticide (4,4'-DDD) were found in groundwater, surface water and/or sediment during the investigation, though it is uncertain if the contamination is present as a result of any waste management activity at Site 37.

Prior to starting a Remedial Investigation (RI), IHIRT believes additional SSP-stage investigation is needed to determine if waste is present at the site. The proposed investigation described herein includes the excavation of test trenches and the placement of soil borings to visually identify the presence of waste and collect samples to determine if contamination is present. If no waste is present, then an RI will not be necessary and the site can be closed out with no action.

2.0 SITE CHARACTERISTICS

Site 37 is a causeway on the northern side of Stump Neck Annex, along the Potomac River, adjacent to Mattawoman Creek and about 150 feet northeast of Building 2075. Archer Avenue runs along the top of the causeway. The road crosses a narrow neck of land that has been built up with fill materials (**Figure 3**). The top of the causeway is relatively flat with steep banks marking the southern boundary, giving way to the marshy headwaters of Chicamuxen Creek. The site is bounded to the north by gabion baskets that separate the graded road area from the sandy beach shoreline of Mattawoman Creek. The land surface elevation across the site ranges from approximately 1 foot above mean sea level (msl) along

the southern and northern edges to approximately 5 to 7 feet above msl on the Archer Avenue road surface.

It has been reported that the causeway fill may contain hazardous materials in addition to rubble. Onsite inspections verified the presence of large concrete slabs along the roadway for 300 to 400 feet—these are used to protect the Mattawoman Creek side of the roadway from erosion. In addition, rubble partly composed of old torpedo casings has been observed at the site. There has been no visual evidence of hazardous material on site during any prior investigation (Hart, 1983; Tetra Tech, 2003; IHIRT meetings in April and May 2010).

Logs from soil borings installed at the site indicate that shallow geologic conditions consist primarily of sand overlying silt and clay north of Archer Avenue and of sand and gravel at the well boring south of Archer Avenue. No waste material was encountered in the soil borings and no elevated organic vapor readings were recorded during the subsurface investigation. The shallow aquifer present beneath the site displays the characteristics of an unconfined system. Groundwater at the site is encountered at approximately 5.5 feet below ground surface (bgs).

3.0 PRIOR INVESTIGATION

An SSP field investigation was completed in 2002 (this is now referred to as the Phase 1 SSP investigation). The field investigation included the collection of three groundwater, five subsurface soil, three sediment, and three surface water samples (**Figure 4**). The samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs); pesticides and polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals, and explosives. A summary of the data is provided in Attachment A. No significant contamination was identified in the subsurface soil and no waste was identified at the site. Elevated concentrations of inorganics, semivolatile organics, RDX, and 4,4'-DDD were found in groundwater, surface water, and/or sediment during the investigation. The Phase 1 SSP report recommended that an RI be completed for the site (Tetra Tech, 2003).

4.0 PHASE 2 SSP INVESTIGATION

During the May 2010 IHIRT meeting, a site visit was made and plans for the investigation of the site were discussed. The team agreed to the following field tasks for the Phase 2 SSP investigation:

- Utility clearance
- Excavation of two test trenches
- Placement of seven soil borings

4.1 Utility Clearance

Due to the known presence of underground utilities along Archer Avenue, a utility location subcontractor will clear the proposed excavation and drilling locations. The proposed excavation and drilling locations identified on **Figure 5** may be relocated based on the results of the utility mark-out.

4.2 Test Trenching

A backhoe or hydraulic excavator will be used to excavate two trenches adjacent to Archer Avenue to visually characterize the subsurface conditions along the causeway (**Figure 5**). A photoionization detector (PID) will be used to inspect the excavated materials and all observations will be recorded in the field logbook. Materials excavated will be returned to the trench unless it is observed to consist of waste or elevated PID readings are measured. In that instance, the excavated materials will be transported offsite for disposal and the trenches backfilled with clean fill.

If evidence of contamination is identified, soil or waste samples will be collected and analyzed for VOCs, SVOCs, Pesticides/PCBs, inorganics, and explosives. The samples will be collected in accordance with Section 3.1.4 of the *Master Field Sampling Plan (FSP)* (Tetra Tech, 2004a), facility Standard Operating Procedures (SOPs) (Tetra Tech, 2004b) SA-1.3 and SA-2.5, and the Master Quality Assurance Project Plan (QAPP) (Tetra Tech, 2004c). **Table 1** provides a summary of the analyses, methodologies, bottle requirements, preservation requirements, and holding times for the potential samples.

Upon completion of the site backfill and restoration, the trench locations will be determined using a global positioning system (GPS) survey in accordance with Master FSP Section 2.10.

4.3 Soil Borings

Seven soil borings will be placed at Site 37 to further characterize the subsurface conditions and the nature of any fill located at the site (**Figure 5**). Hollow-stem auger drilling methods will be used to advance split spoon samplers to a depth of 10 feet bgs. Visual observations and PID readings will be recorded on soil boring logs to record the type of material encountered.

If clean soil is encountered, the borings will backfilled with the soil cuttings at the completion of the drilling. If waste material is encountered in the borings, the material will be containerized, sampled, and disposed offsite as appropriate.

If evidence of contamination is identified, soil or waste samples will be collected and analyzed for VOCs, SVOCs, Pesticides/PCBs, inorganics, and explosives. The samples will be collected in accordance with Section 3.1.4 of the Master FSP and facility SOPs SA-1.3 and SA-2.5.

Upon completion, the soil boring locations will be determined using a GPS survey in accordance with Master FSP Section 2.10.

4.4 Sample Handling

In the event that soil samples are collected, the Master FSP and facility SOPs will be used to document and manage the samples.

4.4.1 Field Documentation

Field documentation will be conducted as described in Section 3.2.1 of the Master FSP and facility SOP SA-6.3.

4.4.2 Sample Nomenclature

Each sample collected will be assigned a unique sample tracking number consisting of a 12-digit alphanumeric code conforming to facility SOP CT-04.

4.4.3 Sample Packaging and Shipping

Samples will be packaged in accordance with Section 3.2.4 of the Master FSP and facility SOP SA-6.1.

4.4.4 Sample Custody

Custody of samples will be in accordance with Section 3.3 of the Master FSP and facility SOP SA-6.3.

REFERENCES

Hart, Fred C. Associates, Inc., 1983, Initial Assessment Study of Naval Ordinance Station, Indian Head, Maryland.

Tetra Tech, 2003. *Site Screening Process Report for Site 32 –Suspected Tool Burial, Site 33 – Scrap Metal Pit, Site 34 – Tool Burial, Site 36 – Closed Landfill, Site 37 – Causeway, Site 51 – Building 101 Dry Well, and Site 52 – Building 102 Dry Well, Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland.*

Tetra Tech, 2004a. *Master Field Sampling Plan for Installation Restoration Program Environmental Investigations at Naval District Washington, Indian Head, Indian Head, Maryland.*

Tetra Tech, 2004b. *Facility Standard Operating Procedures for Installation Restoration Program Environmental Investigations at Naval District Washington, Indian Head, Indian Head, Maryland.*

Tetra Tech, 2004c. *Master Quality Assurance Project Plan for Installation Restoration Program Environmental Investigations at Naval District Washington, Indian Head, Indian Head, Maryland.*

ENCLOSURES

Table 1	Analytical Methods for Phase 2 SSP
Figure 1	Facility Location Map
Figure 2	Vicinity Map
Figure 3	Existing Conditions
Figure 4	Phase 1 SSP Sample Location Map
Figure 5	Phase 2 SSP Proposed Investigation
Attachment A	Phase 1 SSP Data

TABLE 1

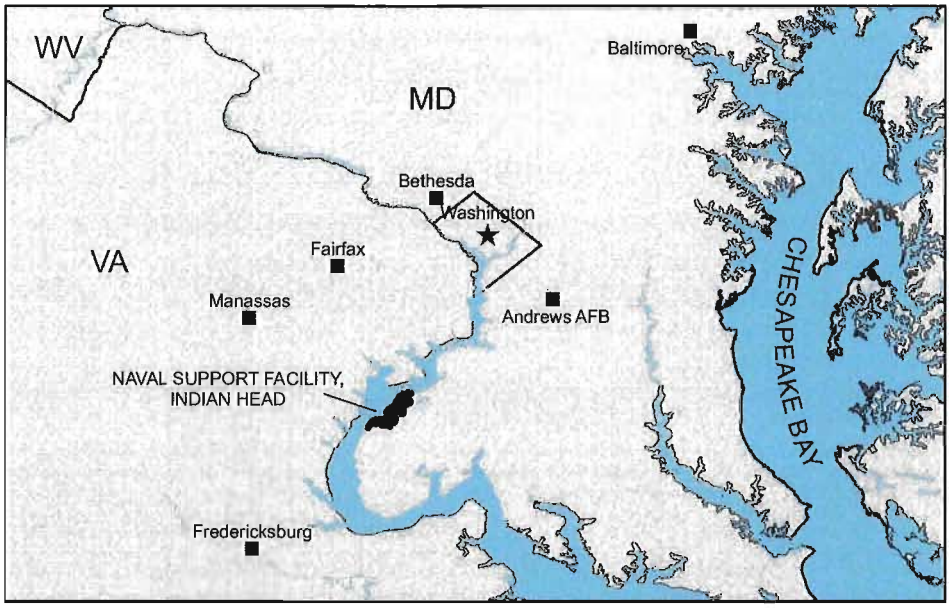
SUMMARY OF LABORATORY ANALYSES, METHODOLOGIES, BOTTLE REQUIREMENTS, PRESERVATION REQUIREMENTS AND HOLDING TIMES
PHASE 2 SSP INVESTIGATION
SITE 37 - CAUSEWAY
NSF INDIAN HEAD, MARYLAND

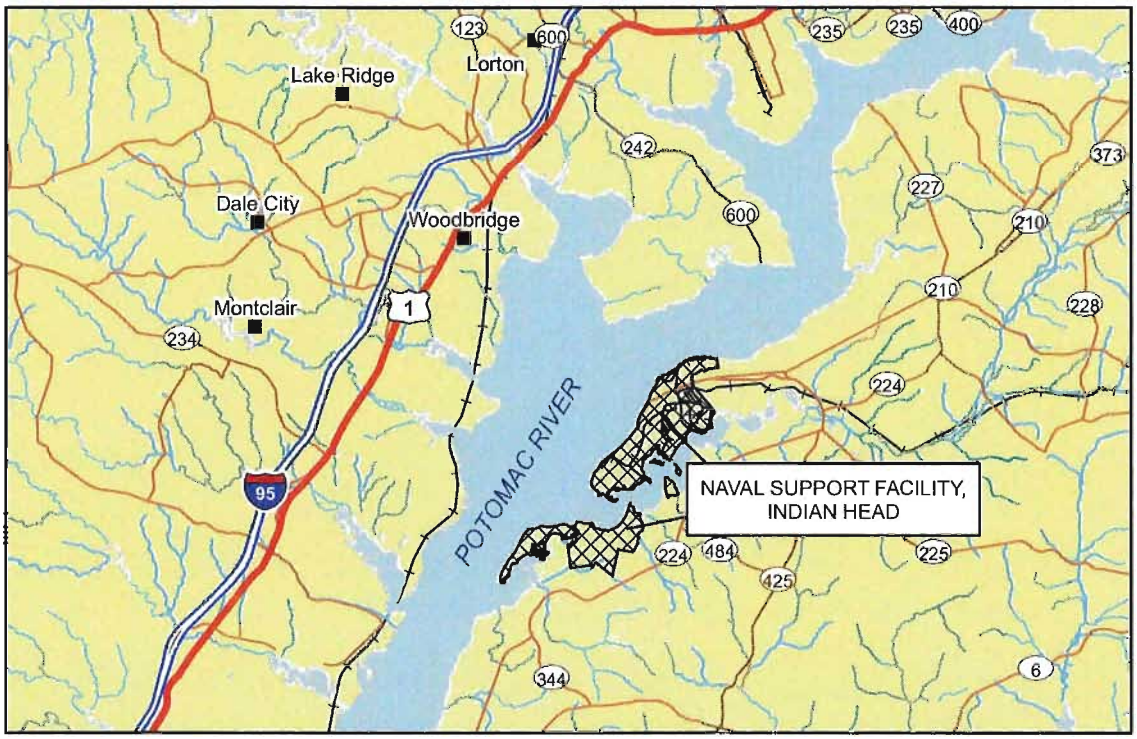
Analysis	Analytical Method	Quantity of Samples[1]	Container Type	Preservation Requirements	Holding Times[2]
SOIL					
VOCs	SW-846 8260B	TBD	Three 5-gram Encore samplers or terracores	2 cores in water and one in methanol, freeze to < -10 °C	48 hours from sampling to preparation, 14 days to analysis
SVOCs	SW-846 8270D	TBD	One 4-ounce glass jar	Cool to 4 (± 2) °C	14 days until extraction; 40 days from extraction to analysis
Pesticides/PCBs	SW-846 8081B/8082A	TBD	One 8-ounce wide-mouth glass jar	Cool to 4 (± 2) °C	14 days until extraction; 40 days from extraction to analysis
Metals	SW-846 6010C/7471B	TBD	One 4-ounce glass jar	Cool to 4 (± 2) °C	180 days to analysis except Mercury which is 28 days to analysis
Explosives	SW-846 8330B	TBD	One 4-ounce glass jar	Cool to 4 (± 2) °C	14 days until extraction; 40 days from extraction to analysis

PCBs Polychlorinated biphenyls
SVOCs Semivolatile organic compounds
TBD to be determined
VOCs Volatile organic compounds

1 Number does not include quality assurance/quality control samples to be analyzed.
2 All holding times are determined from the date of collection.

P:\GIS\NSWC_INDIAN_HEAD_NEW\FACILITY_LOCATION.MXD 06/30/10 JEE





DRAWN BY K. MOORE DATE 03/20/09	TETRA TECH	CONTRACT NUMBER CTO JU11
CHECKED BY S. NESBIT DATE 06/30/10	FACILITY LOCATION MAP NAVAL SUPPORT FACILITY, INDIAN HEAD INDIAN HEAD, MARYLAND	APPROVED BY S. NESBIT DATE 07/02/10
COST/SCHEDULE-AREA		APPROVED BY — DATE —
SCALE AS NOTED		FIGURE NO. FIGURE 1 REV 0

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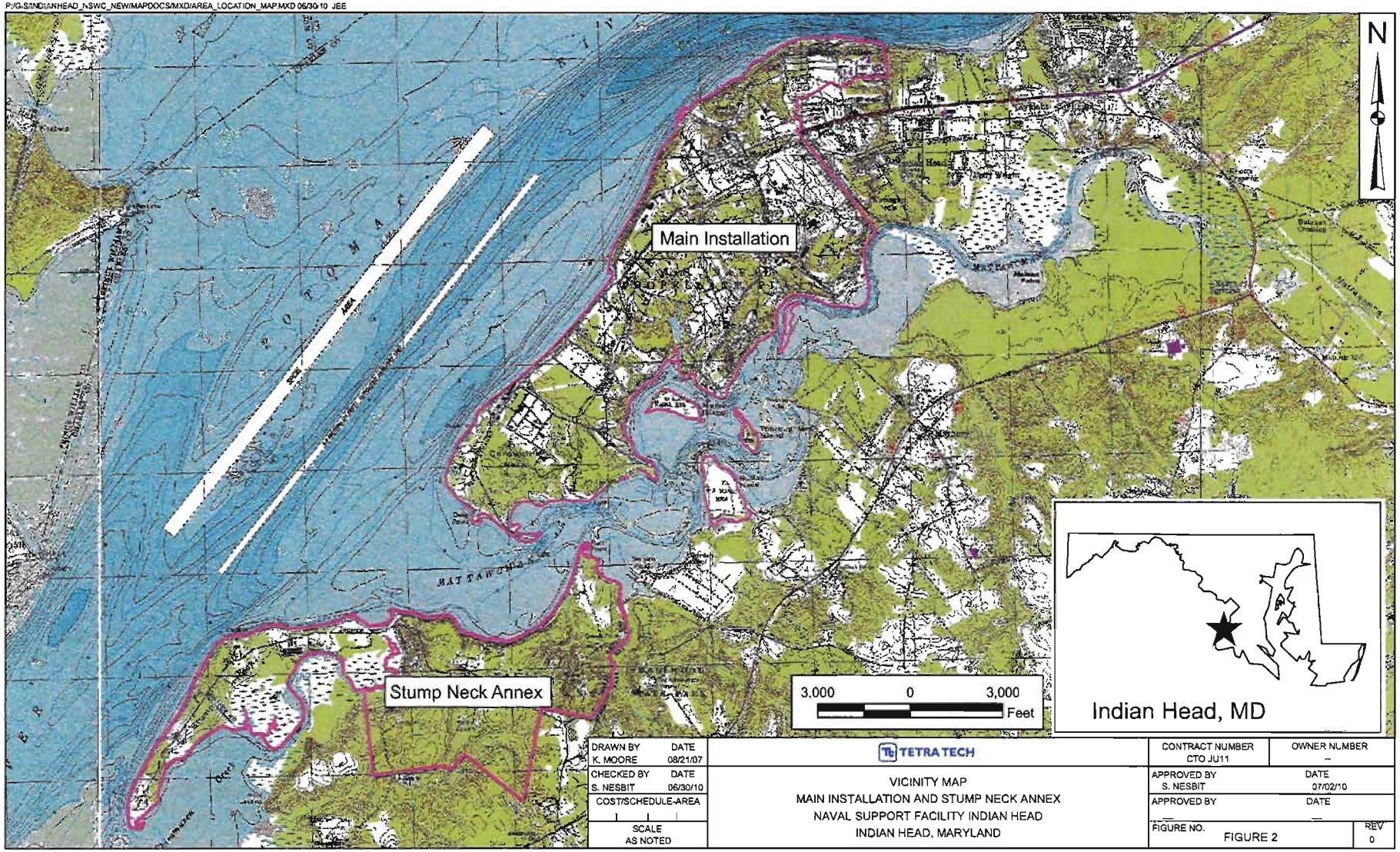
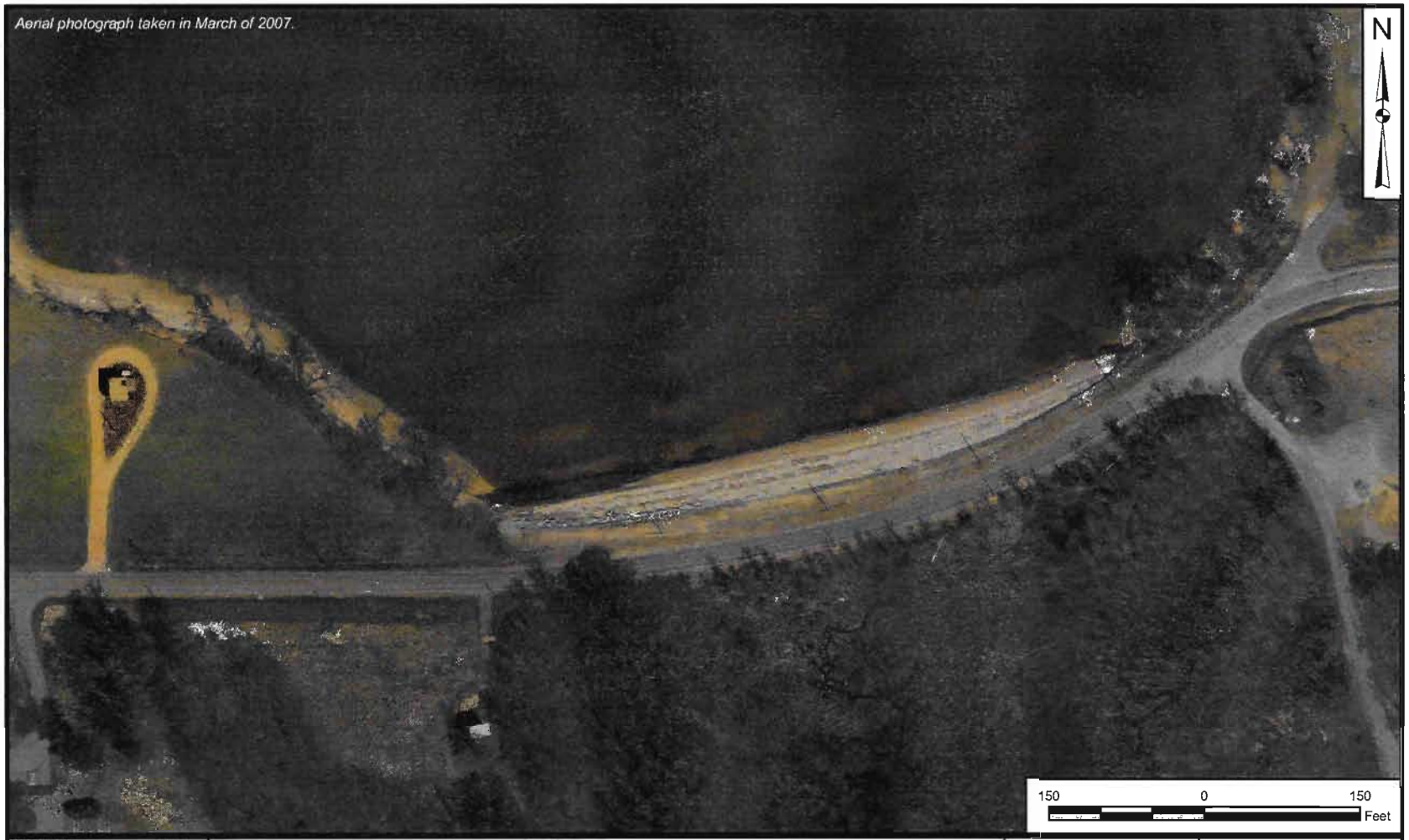


DRAWN BY K. MOORE DATE 08/21/07	TETRA TECH	CONTRACT NUMBER CTO JU11	OWNER NUMBER –
CHECKED BY S. NESBIT DATE 06/30/10	VICINITY MAP MAIN INSTALLATION AND STUMP NECK ANNEX NAVAL SUPPORT FACILITY INDIAN HEAD INDIAN HEAD, MARYLAND	APPROVED BY S. NESBIT	DATE 07/02/10
COST/SCHEDULE-AREA		APPROVED BY	DATE
SCALE AS NOTED		FIGURE NO. FIGURE 2	REV 0



DRAWN BY: J. ENGLISH — DATE: 06/30/10	TETRA TECH	CONTRACT NUMBER: CTO JU11	OWNER NUMBER: —
CHECKED BY: S. NESBIT — DATE: 06/30/10	EXISTING CONDITIONS SITE 37 NAVAL SUPPORT FACILITY INDIAN HEAD INDIAN HEAD, MARYLAND	APPROVED BY: S. NESBIT — DATE: 07/02/10	
COST/SCHEDULE-AREA		APPROVED BY: — — DATE: —	
SCALE: AS NOTED		DRAWING NO.: FIGURE 3	REV: 0

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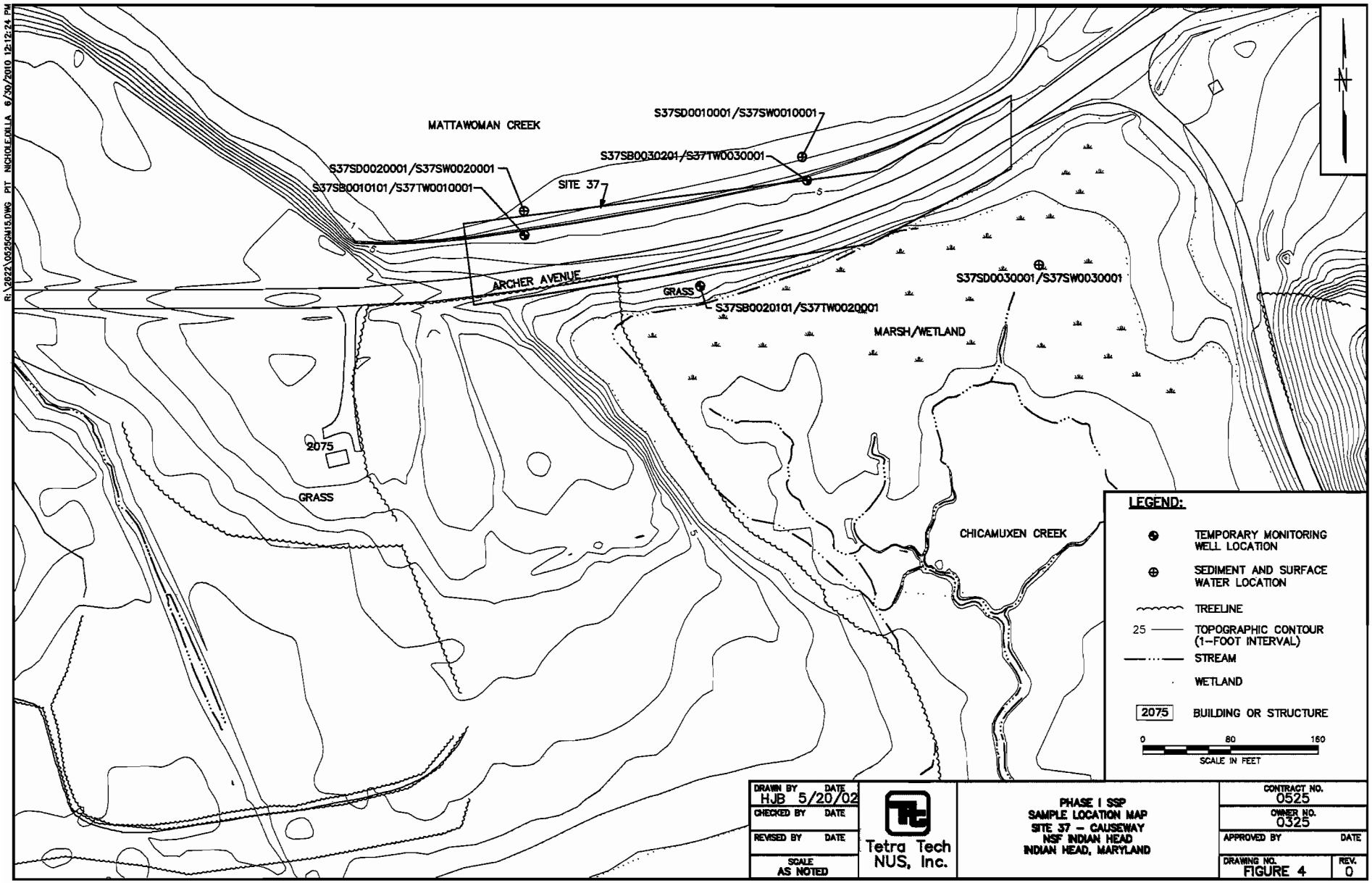

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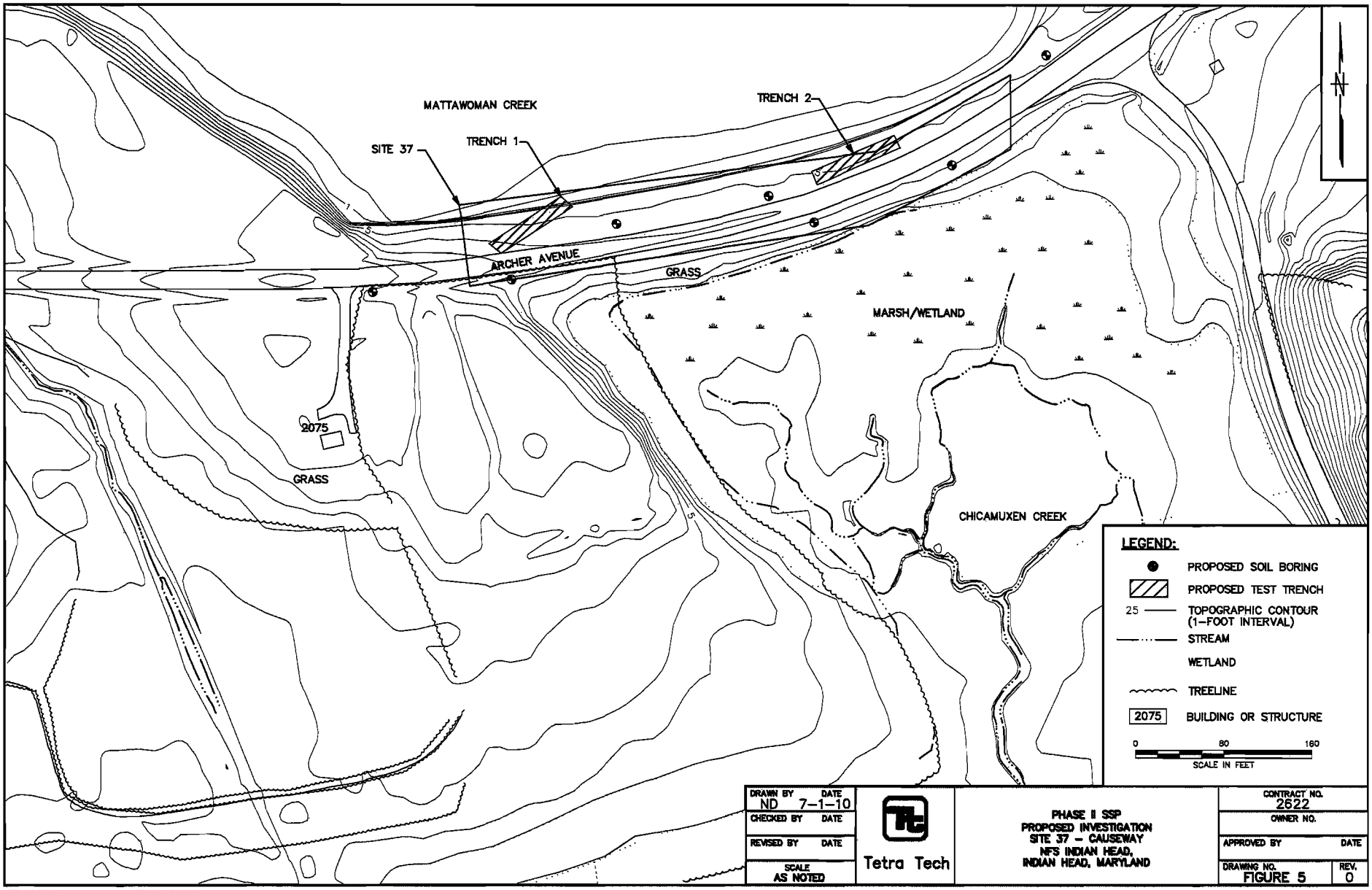
R:\2622\GIS\2622M65.DWG PIT NICHOLE.MILLA 7/1/2010 3:45:24 PM
MATTAWOMAN CREEK
TRENCH 2
SITE 37
TRENCH 1
ARCHER AVENUE
GRASS
MARSH/WETLAND
2075
GRASS
CHICAMUXEN CREEK
LEGEND:
PROPOSED SOIL BORING
PROPOSED TEST TRENCH
25 TOPOGRAPHIC CONTOUR (1-FOOT INTERVAL)
STREAM
WETLAND
TREELINE
2075 BUILDING OR STRUCTURE
0 80 160
SCALE IN FEET
DRAWN BY ND DATE 7-1-10
CHECKED BY DATE
REVISED BY DATE
SCALE AS NOTED
Tetra Tech
PHASE II SSP
PROPOSED INVESTIGATION
SITE 37 - CAUSEWAY
NFS INDIAN HEAD,
INDIAN HEAD, MARYLAND
CONTRACT NO. 2622
OWNER NO.
APPROVED BY DATE
DRAWING NO. FIGURE 5
REV. 0

Attachment A

Phase 1 SSP Data

TABLE 9-2

SUMMARY OF POSITIVE DETECTIONS - SUBSURFACE SOIL - SITE 37
SITE SCREENING REPORT
INDIAN HEAD DIVISION NSWC
INDIAN HEAD, MARYLAND

Sample Location	S37SB001/TW001	S37SB001/TW001	S37SB002/TW002	S37SB003/TW003	S37SB003/TW003
Sample Number	S37SB0010101	S37SB0010201	S37SB0020101	S37SB0030101	S37SB0030201
Collection Date	02/05/02	02/05/02	02/05/02	02/05/02	02/05/02
Interval, feet bgs	2 - 4	4 - 6	2 - 4	2 - 4	4 - 6
Volatile Organics (ug/kg)					
ACETONE	4 J	18	10 U	2 J	10 U
Semivolatile Organics (ug/kg)					
2-METHYLNAPHTHALENE	78 J	380 U	350 UJ	350 U	97 J
BENZO(A)ANTHRACENE	340 U	380 U	41 J	350 U	370 U
BENZO(B)FLUORANTHENE	340 U	380 U	110 J	350 U	370 U
BENZO(K)FLUORANTHENE	340 U	380 U	44 J	350 U	370 U
CHRYSENE	340 U	380 U	70 J	350 U	370 U
FLUORANTHENE	340 U	380 U	87 J	350 U	86 J
PHENANTHRENE	340 U	380 U	41 J	350 U	370 U
PYRENE	340 U	380 U	99 J	350 U	86 J
Pesticides/PCBs (ug/kg)					
4,4'-DDT	3.4 U	3.9	4.7	3.6 U	3.7 U
Inorganics (mg/kg)					
ALUMINUM	382 J	554 J	3410 J	3900 J	1010 J
ARSENIC	0.8 K	0.87 K	2.6 K	4.3 K	1.1 K
BARIUM	5.5	5.9	8.6	13.4	6.1
BERYLLIUM	0.095 K	0.093 K	0.12 K	0.13 K	0.084 K
CADMIUM	0.1 K	0.031 U	0.038 U	0.039 U	0.031 U
CALCIUM	78.5	571	2040	25.7	148
CHROMIUM	2.8 K	4.1	15	9.2	3.4 K
COBALT	0.79 U	0.7 U	3.7 K	4.7 K	1.1 K
COPPER	1.8 K	2.4 K	14.7	5.6 K	3.6 K
IRON	2600 J	3030 J	8970 J	11200 J	3550 J
LEAD	15.5	8.2	22.9	13.5	7.2
MAGNESIUM	56.5 U	112	2530	133	95.3
MANGANESE	60.4	28.8	76.6	108	53.2
NICKEL	3.8 K	3.8 K	16.1	3.1 K	4 K
POTASSIUM	61.6 U	82.5 U	186	182	70.9 U
SODIUM	52.3 U	58.3 U	821	47.9 U	34.5 U
VANADIUM	4 K	4.1 K	17.5 K	15 K	4.9 K
ZINC	9.1	8.2	14.7	9.6	8.6

Notes:
U - Not detected at detection limit value shown.
J - Estimated value.
K - Estimated value, biased high.

TABLE 9-4

SUMMARY OF POSITIVE DETECTIONS - GROUNDWATER - SITE 37
SITE SCREENING REPORT
INDIAN HEAD DIVISION NSWC
INDIAN HEAD, MARYLAND

Sample Location	S37SB001/TW001	S37SB001/TW001	S37SB001/TW001	S37SB001/TW001
Sample Number	S37TW0010001	S37TW0010001-F	S37TWDUP001	S37TWDUP001-F
Unfiltered/filtered?	Unfiltered	Filtered	Unfiltered	Filtered
Duplicate of:			S37TW0010001	S37TW0010001-F
Collection Date	02/05/02	02/05/02	02/05/02	02/05/02
Volatile Organics (ug/L)				
TOTAL XYLENES	1 U		1 U	
Semivolatile Organics (ug/L)				
2-METHYLNAPHTHALENE	5 U		5 U	
ACENAPHTHENE	5 U		5 U	
BIS(2-ETHYLHEXYL)PHTHALATE	5 U		2 J	
FLUORENE	5 U		5 U	
NAPHTHALENE	5 U		5 U	
NITROBENZENE				
PHENANTHRENE	5 U		5 U	
Explosives (ug/L)				
NITROBENZENE	0.2 U		0.2 U	
RDX	0.5 U		0.5 U	
Inorganics (ug/L)				
ALUMINUM	214	18.9	92.5	23.4
ARSENIC	6.1 K	2 U	5.8 K	2 U
BARIUM	149 J	127 J	157 J	131 J
CADMIUM	0.41 K	0.2 U	0.46 K	0.2 U
CALCIUM	94600	91700	99900	92600
CHROMIUM	1 U	0.86 U	0.77 U	0.77 U
COBALT	4.7 K	4.3 U	4.7 K	4.1 U
IRON	10500	3260	11000	2290
MAGNESIUM	24900 J	23800 J	26100 J	24300 J
MANGANESE	2840 J	2660 J	2980 J	2740 J
NICKEL	4.7 U	4.5 U	4.5 U	4 U
POTASSIUM	6660 J	6470 J	6780 J	6630 J
SELENIUM	2.5 K	2 U	3.4 K	2 U
SILVER	0.5 U	0.71 U	0.5 U	0.91 U
SODIUM	155000	153000	158000	153000
VANADIUM	0.3 U	0.3 U	0.3 U	0.3 U

Notes:
Blank means no analysis was performed.
U - Not detected at detection limit value shown.
J - Estimated value.
K - Estimated value, biased high.
L - Estimated value biased low.

TABLE 9-4

SUMMARY OF POSITIVE DETECTIONS - GROUNDWATER - SITE 37
SITE SCREENING REPORT
INDIAN HEAD DIVISION NSWC
INDIAN HEAD, MARYLAND

Sample Location	S37SB002/TW002	S37SB002/TW002	S37SB003/TW003	S37SB003/TW003
Sample Number	S37TW0020001	S37TW0020001-F	S37TW0030001	S37TW0030001-F
Unfiltered/filtered?	Unfiltered	Filtered	Unfiltered	Filtered
Duplicate of:				
Collection Date	02/06/02	02/08/02	02/06/02	02/08/02
Volatile Organics (ug/L)				
TOTAL XYLENES	2		1 U	
Semivolatile Organics (ug/L)				
2-METHYLNAPHTHALENE	6		5 U	
ACENAPHTHENE	2 J		5 U	
BIS(2-ETHYLHEXYL)PHTHALATE	5 U		5 U	
FLUORENE	3 J		5 U	
NAPHTHALENE	10		5 U	
NITROBENZENE	5 U		5 U	
PHENANTHRENE	4 J		5 U	
Explosives (ug/L)				
NITROBENZENE	0.2 U		0.087 J	
RDX	1.2		0.5 U	
Inorganics (ug/L)				
ALUMINUM	14.9 U	55.5 U	11.5 U	31.8 U
ARSENIC	2 U	2 U	2 U	3.2 K
BARIUM	299	134	92.1 J	229
CADMIUM	0.2 UL	0.98 J	0.2 UL	0.76 J
CALCIUM	231000	171000	131000	149000
CHROMIUM	0.4 U	0.66 K	0.4 U	0.4 U
COBALT	0.43 U	11.4 K	1.2 U	2.5 U
IRON	444	15100	194	12700
MAGNESIUM	13900	34900	47400	26500
MANGANESE	183	3310	56.7	2050
NICKEL	2.1 U	14.9 K	10.8 U	5.6 U
POTASSIUM	4400	4570	7640	6470
SELENIUM	3.1 J	2 UL	2 UL	2 UL
SILVER	0.5 UL	0.5 UL	0.86 J	0.5 UL
SODIUM	72900	321000	216000	717000
VANADIUM	0.3 U	0.3 U	0.3 K	0.3 U

Notes:
Blank means no analysis was performed.
U - Not detected at detection limit value shown.
J - Estimated value.
K - Estimated value, biased high.
L - Estimated value biased low.

TABLE 9-6

SUMMARY OF POSITIVE DETECTIONS - SURFACE WATER - SITE 37
SITE SCREENING REPORT
INDIAN HEAD DIVISION NSWC
INDIAN HEAD, MARYLAND

Sample Location	S37SD001/SW001	S37SD001/SW001	S37SD002/SW002	S37SD003/SW003
Sample Number	S37SW0010001	FD01310202	S37SW0020001	S37SW0030001
Duplicate of:		S37SW0010001		
Collection Date	01/31/02	01/31/02	01/31/02	02/05/02
Semivolatile Organics (ug/L)				
2-METHYLNAPHTHALENE	2 J	5 U	5 U	5 U
4-METHYLPHENOL	5 U	5 U	5 U	3 J
NAPHTHALENE	5	5 U	5 U	5 U
PHENOL	5 U	2 J	5 U	5 U
Pesticides/PCBs (ug/L)				
4,4'-DDD	0.02 U	0.02 U	0.02 U	0.032
Inorganics (ug/L)				
ALUMINUM	91.9 U	99.5 U	134 U	1350
BARIUM	74.4 J	74.2 J	73.7 J	124 J
CADMIUM	0.21 K	0.24 K	0.27 K	0.41 K
CALCIUM	72200	71600	70600	17300
COBALT	1.1 U	1.1 U	0.99 U	29.6 K
IRON	124 U	155 U	140 U	9080
LEAD	0.4 U	0.4 U	0.4 U	9.1
MAGNESIUM	127000 J	126000 J	124000 J	12900 J
MANGANESE	61 J	63.9 J	61.5 J	2430 J
NICKEL	2.4 U	2.1 U	2.3 U	10.3 K
POTASSIUM	54400 J	54600 J	50400 J	3340 J
SELENIUM	2.1 K	2 U	2 U	2 U
SODIUM	980000	988000	978000	112000
THALLIUM	5 K	7.7 K	6.2 K	2 U
VANADIUM	8.4 K	8.1 K	8.2 K	1.9 K
ZINC	2 U	2 U	2 U	42.7

Notes:
U - Not detected at detection limit value shown.
J - Estimated value.
K - Estimated value, biased high.

TABLE 9-8

SUMMARY OF POSITIVE DETECTIONS - SEDIMENT - SITE 37
SITE SCREENING REPORT
INDIAN HEAD DIVISION NSWC
INDIAN HEAD, MARYLAND

Sample Location	S37SD001/SW001	S37SD001/SW001	S37SD002/SW002	S37SD003/SW003
Sample Number	S37SD0010001	FD01310201	S37SD0020001	S37SD0030001
Duplicate of:		S37SD0010001		
Collection Date	01/31/02	01/31/02	01/31/02	02/05/02
Interval, feet bgs	0 - 1	0 - 1	0 - 1	0 - 1
Volatile Organics (ug/kg)				
ACETONE	12 U	11 U	12 U	85 J
Semivolatile Organics (ug/kg)				
2-METHYLNAPHTHALENE	390	370 U	400 U	2000 J
ACENAPHTHYLENE	61 J	370 U	400 U	2300 UJ
BENZALDEHYDE	360 U	370 U	400 U	700 J
BENZO(A)ANTHRACENE	360 U	710	400 U	2300 UJ
BENZO(A)PYRENE	360 U	630	400 U	2300 UJ
BENZO(B)FLUORANTHENE	360 U	320 J	400 U	2300 UJ
BENZO(G,H,I)PERYLENE	360 U	150 J	400 U	2300 UJ
BENZO(K)FLUORANTHENE	360 U	83 J	400 U	2300 UJ
CHRYSENE	360 U	1100	400 U	2300 UJ
DIBENZO(A,H)ANTHRACENE	360 U	57 J	400 U	2300 UJ
FLUORANTHENE	360 U	170 J	400 U	2300 UJ
INDENO(1,2,3-CD)PYRENE	360 U	79 J	400 U	2300 UJ
NAPHTHALENE	360 U	370 U	400 U	640 J
PHENANTHRENE	360 U	260 J	400 U	2300 UJ
PYRENE	360 U	1100	400 U	520 J
Pesticides/PCBs (ug/kg)				
4,4'-DDD	3.6 U	3.7 U	4 U	180 J
4,4'-DDE	3.6 U	3.7 U	4 U	73 J
Explosives (mg/kg)				
NITROCELLULOSE	0.49 U	0.69 U	0.69 U	4.5 J
Inorganics (mg/kg)				
ALUMINUM	356 J	356 J	208 J	10200 J
ARSENIC	0.69 K	2.6 K	0.64 K	11.5 J
BARIUM	4.2 J	4.1 J	3 J	140 J
BERYLLIUM	0.17 K	0.14 K	0.071 K	2 J
CADMIUM	0.076 K	0.058 K	0.16 K	1.5 J
CALCIUM	129	72.7	82.7	4550 J
CHROMIUM	4 K	3.3 K	2.3 K	18 J
COBALT	0.95 K	0.95 K	0.56 U	34.2 J
COPPER	0.55 U	2.3 U	1.2 U	100 J
IRON	5970 J	5030 J	1620 J	25800 J
LEAD	6.8	5.7	8.5	456 J
MAGNESIUM	101	104	70.1	2550 J
MANGANESE	73.6 J	61.9 J	34.2 J	435 J
NICKEL	1.5 K	1.7 K	0.78 K	51.9 J
POTASSIUM	101 U	77.6 U	75.2 U	1590 J
SILVER	0.7 K	0.58 K	0.22 K	0.69 UJ
SODIUM	101	70.8	112	1530 U
VANADIUM	5.3 K	8.4 K	3.1 K	43.5 J
ZINC	11.6	13.5	10.5 U	141 J

Notes:
U - Not detected at detection limit value shown.
J - Estimated value
K - Estimated value, biased high.