



TECHNICAL MEMORANDUM

Date: October 7, 2004
To: Indian Head Installation Restoration Team
From: Kim C. Turnbull, Tetra Tech NUS, Inc.
Subject: Decision Document
Site 48 – Nitroglycerin Plant Disposal Area
Naval District Washington, Indian Head
Indian Head, Maryland

1.0 INTRODUCTION

This technical memorandum is a Decision Document (DD) addressing Installation Restoration (IR) Program Site 48, Nitroglycerin Plant Disposal Area, at Naval District Washington, Indian Head (NDW-IH) in Indian Head, Maryland. The DD describes the history of Site 48, summarizes key findings from a review of available documents from the period 1992 to 2004, presents the results of a site visit in April 2004, and recommends a site management decision based on the document review and site visit findings.

This DD was prepared by Tetra Tech NUS, Inc. (TtNUS) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057, Contract Task Order Number 0006.

Site 48 is listed in Section 9.2A of the Federal Facility Agreement (FFA) (EPA Region III and DoN, 2000) for NDW-IH as requiring a remedial investigation (RI); however, there is sufficient information available to determine whether the site poses unacceptable risks to human health or the environment. Therefore, this DD was prepared in accordance with Section 9.3D(3) of the FFA for a Site Screening Area (SSA) that has been determined to not warrant an RI or status as an Accelerated Operable Unit (AOU) (FFA Section 2.1A).

2.0 SITE DESCRIPTION AND OPERATIONAL HISTORY

Site 48 is located in the central portion of the Main Area at NDW-IH. The site is located in a wooded area approximately 150 feet east of Building 766. Empty laboratory containers, bottles, metal scrap, and

refuse were disposed on the surface of the site. The duration and frequency of disposal are not known but there are several small piles of waste material scattered throughout the woods. During a site visit in April 2004, all of the containers and bottles appeared to be empty and many were intact.

Site topography consists of a gentle slope to the southwest where a steeper bank leads to a drainage ditch. Drainage collected by this ditch discharges into the Site 12 – Town Gut Landfill ponds, which in turn discharge into Mattawoman Creek. These ponds have undergone environmental sampling related to both Sites 8 and 12. This sampling demonstrated that there was little to no impact to the ponds from upgradient sources.

3.0 INVESTIGATION HISTORY

Site 48 was initially identified as an IR site because of potential releases of hazardous substances from laboratory containers. The site was first examined during the Preliminary Assessment (PA) in January 1992 (NEESA, 1992). Following the PA, a Site Inspection (SI) was performed in 1992 and documented in the Final SI Report, Phase II (E/A&H, 1994). The SI was conducted in two phases. Phase I included one IR site, and Phase II included 16 IR sites. The SI is the most recent investigation for Site 48.

4.0 DOCUMENT REVIEW

The following documents were reviewed as part of the preparation of this DD for Site 48:

- Preliminary Assessment Report (NEESA, 1992)
- Final Site Inspection Report, Phase II (E/A&H, 1994)

4.1 PA Report

The PA Report did not confirm whether any of the laboratory containers were intact or had released laboratory chemicals or other hazardous substances. The PA recommended random surface and subsurface soil sampling in the disposal area with analysis for volatile organic compound (VOCs) and semivolatile organic compounds (SVOCs).

4.2 SI Report

Three soil borings were installed in the disposal area as part of the SI. Three soil samples were collected from each boring at depth intervals of 0 to 1 foot, 5 to 6 feet, and 7 to 8 feet. Each sample was analyzed

for Target Compound List (TCL) VOCs, TCL SVOCs, and Target Analyte List (TAL) metals. No TCL VOCs or TCL SVOCs were detected. However, three unknown Tentatively Identified Compounds (TICs) were detected in five samples at estimated concentrations during the analysis for SVOCs. The SI Report stated that the significance of the TICs was not clear because the compounds were not identified and could be naturally occurring. The report also recommended that TIC data should undergo laboratory review in an attempt to identify these compounds, and additional soil samples should be collected, if necessary, for comprehensive laboratory analysis to identify TICs. Additional TIC information, including the concentrations detected, was not included in the SI Report.

The analytical results for metals that were detected in surface soil and subsurface soil are presented in Tables 1 and 2, respectively. The SI concluded that no metals were detected above background concentrations. However, representative NDW-IH background concentrations for soil and subsurface soil have since been updated (TtNUS, 2002). A comparison of the detected concentrations to the updated background data is provided in the next section.

5.0 SUMMARY OF KEY FINDINGS

The analytical data collected during the SI were evaluated in this DD to estimate potential risks to human health and the environment. Tables 3 (surface soil) and 4 (subsurface soil) summarize information presented in Tables 1 and 2, respectively. Tables 3 and 4 provide the frequency of detection, range of detections, range of nondetects, the sample containing the maximum detected concentration, and the average concentration for each metal detected during the SI sampling. Tables 3 and 4 also provide a comparison of the maximum detected concentrations to representative NDW-IH background concentrations and EPA Region 3 risk-based concentrations (RBCs) for residential soil. Table 3 also compares detected concentrations in surface soil to EPA Region 3 Biological Technical Assistance Group (BTAG) soil screening levels. The maximum concentrations of iron and vanadium were greater than the RBCs. The maximum concentrations of aluminum, chromium, iron, lead, vanadium, and zinc were greater than BTAG screening levels. However, none of the metals were detected at concentrations greater than the representative background concentrations; therefore, any potential risks posed by the metals detected are not considered to be site-related.

The use of TICs in risk assessments is generally not warranted (especially if they are “unknown”) unless many TICs are present, the TIC concentrations may be very high, or if there is a strong likelihood that a particular TIC may indeed be present at the site.

6.0 RECOMMENDATIONS

The evaluation of existing information indicates that no further action is required for Site 48 to protect human health and the environment. However, the surface debris should be removed.

7.0 REFERENCES

E/A&H (EnSafe/Allen & Hoshall), 1994. Final Site Inspection Report, Phase II, Indian Head Division, Naval Surface Warfare Center. Memphis, Tennessee.

EPA (United States Environmental Protection Agency), 1994. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. EPA/540/F-94/043, Office of Emergency and Remedial Response, Washington, D.C.

EPA, 1995. Region III BTAG Screening Levels. Region III Biological Technical Assistance Group. Philadelphia, Pennsylvania.

EPA Region III and DoN (United States Department of the Navy), 2000. Federal Facility Agreement under CERCLA Section 120, Naval Surface Warfare Center, Indian Head Division, Indian Head, Maryland. Administrative Docket Number III-FCA-CERC-018.

EPA, 2003. EPA Region 3 Risk-Based Concentration Table: Technical Background Information, Revised April 16, 2003. Philadelphia, Pennsylvania.

EPA, 2004. EPA Region III Risk-Based Concentration Table, April 14, 2004 Update. Philadelphia, Pennsylvania.

NEESA (Naval Energy and Environmental Support Activity), 1992. Preliminary Assessment Report, Naval Ordnance Station, Indian Head, Maryland. Port Hueneme, California.

TtNUS (Tetra Tech NUS, Inc.), 2002. Background Soil Investigation Report of Indian Head and Stump Neck Annex, Naval Surface Warfare Center, Indian Head, Maryland. King of Prussia, Pennsylvania,

TABLE 1

SUMMARY OF POSITIVE RESULTS - SURFACE SOIL
SITE 48 - NITROGLYCERIN PLANT DISPOSAL AREA
NDW-IH, INDIAN HEAD, MARYLAND

Location	48SA0101	48SA0201	48SA0301
Depth Range (ft)	0 - 1	0 - 1	0 - 1
Sample Date	9/21/92	9/21/92	9/21/92
Inorganics (mg/kg)			
Aluminum	3700 J	3900 J	2900
Chromium	7.6	8.2	6.0
Copper	4.6 B	4.5 B	8.6
Iron	6370 J	8200 J	5730
Lead	14.3	4.4	4.2 J
Manganese	133 J	105 J	61.4
Vanadium	10.3 B	12.9	8.9 B
Zinc	57.2	13.5	11.1

Source: E/S&H, 1994.

Data Qualifiers:

B - Detected in blank; considered to be not detected.

J - Estimated

U - Not detected.

TABLE 2

SUMMARY OF POSITIVE RESULTS - SUBSURFACE SOIL
 SITE 48 - NITROGLYCERIN PLANT DISPOSAL AREA
 NDW-IH, INDIAN HEAD, MARYLAND

Location	48SA0102	48SA0103	48SA0103-D	48SA0103-AVG	48SA0202	48SA0203	48SA0302	48SA0303
Depth Range (ft)	5 - 6	7 - 8	7 - 8	7 - 8	5 - 6	7 - 8	5 - 6	7 - 8
Sample Date	9/21/92	9/21/92	9/21/92	9/21/92	9/21/92	9/21/92	9/21/92	9/21/92
Inorganics (mg/kg)								
Aluminum	4090 J	4980 J	5250 J	5115	4610 J	2930 J	1810	2230
Arsenic	2.7 J	1.0 B	1.0 B	1.0 B	1.2 B	0.56 BJ	0.43 UJ	0.73 BJ
Chromium	8.0	11.9	13.8	12.85	9.5	7.2	4.7	7.4
Copper	5.2 B	8.0	8.9	8.45	7.6	6.7	5.4	4.0 B
Iron	9800 J	7310 J	6540 J	6925	6760 J	4850 J	3620	4050
Lead	9.6	20.6	14.6	17.6	5.8	5.5 J	2.7 J	5.1 J
Manganese	124 J	67.4 J	35 J	51.2 J	26.8 J	41.9	25.6	20.5
Sodium	22.7 U	26.8 J	25.7 U	26.8 J	25 U	21.5 B	31.2 B	29 B
Vanadium	11.9	19.1	23	21	17.7	20.2	6.4 B	9.5 B
Zinc	18.7	33.2	18.2	25.7	12.2	12.4	8.2	8.3

Source: E/S&H, 1994.

D - Field duplicate sample.

AVG - Average of original and duplicate sample results.

Data Qualifiers:

B - Detected in blank; considered to be not detected.

J - Estimated

U - Not detected.

TABLE 3

**DATA EVALUATION - SURFACE SOIL
SITE 48 - NITROGLYCERINE PLANT DISPOSAL AREA
NDW-IH, INDIAN HEAD, MARYLAND**

Chemical	Frequency of Detections	Range of Detections	Range of Nondetects ⁽¹⁾	Sample Containing Maximum Detection	Average of All Results ⁽²⁾	Concentration Used for Screening ⁽³⁾	Representative Background Concentration for Surface Soil ⁽⁴⁾	Exceeds Background? (Y/N)	EPA Region 3 RBC Residential Soil ⁽⁵⁾	EPA Region 3 BTAG Screening Level ⁽⁶⁾	Selected as a COPC? (Y/N)	Rationale
Inorganics (mg/kg)												
Aluminum	3/3	2900 - 3900	---	48SA0201	3500	3900	18329	N	7800	1.0	N	BKG
Chromium	3/3	6.0 - 8.2	---	48SA0201	7.3	8.2	24.2	N	23 ⁽⁷⁾	0.0075	N	BKG
Copper	1/3	8.6	4.5 - 4.6	48SA0301	4.4	8.6	18.7	N	310	15	N	BKG
Iron	3/3	5730 - 8200	---	48SA0201	6770	8200	43170	N	2300	12	N	BKG
Lead	3/3	4.2 - 14.3	---	48SA0101	7.6	14.3	149	N	400 ⁽⁸⁾	0.01	N	BKG
Manganese	3/3	61.4 - 133	---	48SA0101	99.8	133	2248	N	160 ⁽⁹⁾	330	N	BKG
Vanadium	1/3	12.9	8.9 - 10.3	48SA0201	7.5	12.9	53.5	N	7.8	0.5	N	BKG
Zinc	3/3	11.1 - 57.2	---	48SA0201	27.3	57.2	38.1	N	2300	10	N	BKG

Rationale Codes:

For Elimination as a COPC:

BKG = Equal to or less than background.

Abbreviations:

COPC Chemical of Potential Concern
OSWER Office of Solid Waste and Emergency Response
RfDo Oral Reference Dose
RBC Risk-Based Concentration

Footnotes:

- 1 Values presented are sample-specific quantitation limits.
- 2 Averages are calculated using 1/2 of the detection limit for nondetects.
- 3 The maximum detected concentration is used for screening purposes.
- 4 TINUS, 2002.
- 5 EPA, 2004. Value is based on a hazard quotient of 0.1 for noncarcinogens or an incremental lifetime cancer risk of 1E-6 for carcinogens.
- 6 EPA, 1995.
- 7 The value for hexavalent chromium is presented.
- 8 OSWER soil screening level for residential land use (EPA, 1994).
- 9 The screening value for residential land use calculated using the RfDo for nonfood is presented. The screening value for residential land use calculated using the RfDo for food is 1,100 mg/kg.

TABLE 4

DATA EVALUATION - SUBSURFACE SOIL
 SITE 48 - NITROGLYCERIN PLANT DISPOSAL AREA
 NDW-IH, INDIAN HEAD, MARYLAND

Chemical	Frequency of Detections ⁽¹⁾	Range of Detections ⁽¹⁾	Range of Nondetects ⁽²⁾	Sample Containing Maximum Detection	Average of All Results ⁽³⁾	Concentration Used for Screening ⁽⁴⁾	Representative Background Concentration for Subsurface Soil ⁽⁵⁾	Exceeds Background? (Y/N)	EPA Region 3 RBC Residential Soil ⁽⁶⁾	Selected as a COPC? (Y/N)	Rationale
Inorganics (mg/kg)											
Aluminum	6/6	1810 - 5250	---	48SA0103-D	3460	5250	34406	N	7800	N	BKG
Arsenic	1/6	2.7	0.43 - 1.2	48SA0102	0.78	2.7	24.4	N	0.43	N	BKG
Chromium	6/6	4.7 - 13.8	---	48SA0103-D	8.3	13.8	101	N	23 ⁽⁷⁾	N	BKG
Copper	4/6	5.4 - 8.9	4.0 - 5.2	48SA0103-D	5.5	8.9	56.5	N	310	N	BKG
Iron	6/6	3620 - 9800	---	48SA0102	6000	9800	151453	N	2300	N	BKG
Lead	6/6	2.7 - 20.6	---	48SA0103	7.7	20.6	37.5	N	400 ⁽⁸⁾	N	BKG
Manganese	6/6	20.5 - 124	---	48SA0102	48.3	124	1270	N	160 ⁽⁹⁾	N	BKG
Sodium	1/6	26.8	21.5 - 31.2	48SA0103	15.3	26.8	826	N	---	N	BKG
Vanadium	4/6	11.9 - 23	6.4 - 9.5	48SA0103-D	13.1	23	133	N	7.8	N	BKG
Zinc	6/6	8.2 - 33.2	---	48SA0103	14.3	33.2	79.5	N	2300	N	BKG

Rationale Codes:

For Elimination as a COPC:

BKG = Equal to or less than background.

Abbreviations:

COPC Chemical of Potential Concern
 OSWER Office of Solid Waste and Emergency Response
 RfDo Oral Reference Dose
 RBC Risk-Based Concentration

Footnotes:

- 1 Sample and duplicate counted as two separate samples when determining minimum and maximum detected concentrations and as one sample when determining frequency of detection.
- 2 Values presented are sample-specific quantitation limits.
- 3 Averages are calculated using 1/2 of the detection limit for nondetects.
- 4 The maximum detected concentration is used for screening purposes.
- 5 TiNUS, 2002.
- 6 EPA, 2004. Value is based on a hazard quotient of 0.1 for noncarcinogens or an incremental lifetime cancer risk of 1E-6 for carcinogens.
- 7 The value for hexavalent chromium is presented.
- 8 OSWER soil screening level for residential land use (EPA, 1994).
- 9 The screening value for residential land use calculated using the RfDo for nonfood is presented. The screening value for residential land use calculated using the RfDo for food is 1,100 mg/kg.

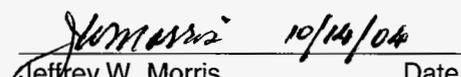
**CONCURRENCE FOR NO FURTHER ACTION
SIGNATURE PAGE**

**Site 48 – Nitroglycerin Plant Disposal Area
Naval District Washington, Indian Head
Indian Head, Maryland**

In 2004, in partnership with the United States Environmental Protection Agency (USEPA) Region III and the Maryland Department of the Environment (MDE), the Navy prepared this decision document for Site 48 (Nitroglycerin Plant Disposal Area) at the Naval District Washington, Indian Head in Indian Head, Maryland. Based upon a review of available information, it is the consensus of the Department of the Navy (DoN), the USEPA Region III, with concurrence from the MDE, and members of the Indian Head Installation Restoration Team (IHIRT), that Site 48 requires no further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended. As appropriate, constituent concentrations, pathways, and receptors were evaluated by comparing analytical data to the most recent version of USEPA Region III risk-based concentrations (RBCs) and ecological screening levels, conducting human health and ecological risk evaluations, reviewing historical site data, and applying best professional judgment. In the event that contamination posing an unacceptable risk to human health or the environment is discovered after execution of this agreement, the IHIRT agrees to reevaluate Site 48 as deemed necessary.


Dennis Orenshaw 10/14/04
Remedial Project Manager Date
USEPA Region III


Shawn Jorgensen 10/14/04
Remedial Project Manager Date
Naval District Washington, Indian Head


Jeffrey W. Morris 10/14/04
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Joseph Rail 10/14/04
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