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FINAL WORK PLAN FOR PRE-DESIGN INVESTIGATION AT SITE 21 NSWC INDIAN HEAD  
MD  
1/14/2011  
CH2MHILL

# Final Work Plan for Pre-Design Investigation, Site 21 (Bronson Road Landfill), Naval Support Facility Indian Head, Indian Head, Maryland

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## 1.0 Introduction

This work plan presents the proposed approach for conducting a pre-design investigation at Site 21 (Bronson Road Landfill) at the Naval Support Facility Indian Head (NSF-IH), Indian Head, Maryland. This work plan references the following documents:

- CH2M HILL, 2010. *Draft Record of Decision, Site 21 – Bronson Road Landfill* (herein referred to as the ROD).
- Tetra Tech NUS Inc., 2009. *Master Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Installation Restoration Program and Munitions Response Program Environmental Investigations, Naval Support Facility Indian Head, Indian Head, Maryland* (herein referred to as the Master Plan).
- CH2M HILL, 2010. *Proposed Plan, Site 21 – Bronson Road Landfill* (herein referred to as the Proposed Plan).

## 2.0 Rationale for Field Investigation

The selected remedy in the ROD includes installation of a soil cover, which will be protective of human health and environment. Tasks associated with installing this soil cover include the following:

- Verify or grade/fill to achieve a minimum 2-foot cover over waste material
- Construct 2 feet of soil cover (consisting of 18 inches of clean fill and 6 inches of topsoil)
- Grade for surface water control and stormwater management

The Maryland Department of the Environment (MDE) indicated that before construction of 2 feet of soil cover for the landfill, the Navy should ensure that there is a minimum of 2 feet of soil cover over the entire area of the landfilled waste where the construction will occur.

Because the landfill had been covered in the past with soil from other sites on NSF-IH, this pre-design investigation is necessary to assess the thickness of the soil over the entire landfill. The results will be used in the design of the landfill soil cover. In areas with thicknesses greater than 2 feet, the soil may be moved to areas with thicknesses less than 2 feet as long as this maintains or creates a minimum 4 percent subgrade cover design slope. If the soil cover is thick enough to be distributed across the site while maintaining a minimum subgrade slope, it may not be necessary to bring additional soil from offsite sources to achieve the minimum 2-foot cover before the soil cover construction. If the existing cover thickness is not sufficient or the minimum subgrade slope cannot be maintained, additional soil will be required to create the subgrade upon which the soil cover will be constructed. Because the available topographic data from the Base are very old, a topographic survey will be performed to obtain current elevations in support of the design.

### **3.0 Objectives**

The objectives of this investigation are to (1) determine the thickness of the existing cover over the landfill area and (2) obtain current land topographic data of the site. These objectives will be accomplished through the investigation approaches outlined in Section 4.

### **4.0 Scope of Work**

Field activities to be conducted include the following:

- Mobilization/ demobilization
- Utility clearance and site visit
- Field activities
  - Soil borings
  - Topographic survey
- Decontamination
- Investigation-derived waste (IDW) management

#### **Mobilization/Demobilization**

Mobilization will include coordination with the Navy, procurement of subcontractors, review of this Work Plan, and conducting a site orientation for the field staff.

Demobilization will consist of following proper decontamination procedures for all personnel and equipment and making sure that the site is left in the condition it was before mobilization.

#### **Utility Clearance and Site Visit**

CH2M HILL will contact Miss Utility and procure a private utility locate service before performing any intrusive work at the site. CH2M HILL personnel will stake out the soil boring locations before utility clearing and will provide oversight during utility clearance by the subcontractor.

#### **Field Activities**

##### **Soil Borings**

Eighteen soil borings (IS21SB08 through IS21SB25) will be advanced across the landfill (Figure 1, presented at the end of this work plan). The soil borings will be drilled using a

4.25-inch inner diameter hollow-stem auger, in accordance with standard operating procedure (SOP) #GH-1.3 of the Master Plan. The depth of the soil borings will be based on the depth at which solid waste is encountered. Drilling will stop upon encountering solid waste within a depth of 10 feet below ground surface (bgs). Drilling will also stop at a maximum depth of 10 feet bgs if solid waste is not encountered. As mentioned in the Proposed Plan, investigations conducted at the site showed the thickness of the fill may be up to 40 feet to 45 feet, but 5 feet to 10 feet of this is likely to be soil cover.

Split-spoon samples will be collected continuously from the ground surface to the soil-waste interface down to a maximum depth of 10 feet; sampling will be performed following the American Society for Testing and Materials (ASTM) procedures for standard penetration tests (ASTM D-1586). The soil will be described in the field according to the Unified Soil Classification System. Information from soil logging will be documented in the field notebook and on boring logs (Attachment 1).

Boreholes will be abandoned in accordance with Code of Maryland Regulations 26.04.04.11, Abandonment Standards, and SOP # GH-2.9 of the Master Plan. CH2M HILL will survey each soil boring location using a global positioning system.

### **Topographic Survey**

The topographic survey will be performed by a land surveyor registered in Maryland to obtain current topographic elevations of the landfill.

### **IDW Management**

IDW generated during field investigation activities will consist of soil cuttings from drilling activities, decontamination water, and disposable equipment. Handling and disposal of IDW will be performed in accordance with SOP # SA-7.1 of the Master Plan. However, IDW soil can be replaced in the boreholes because it will remain at the site as part of the final remedy, as approved via e-mail by Navy and MDE on November 18, 2010; and by the U.S. Environmental Protection Agency (EPA), on November 19 2010, respectively. IDW water will be accumulated in 55-gallon drums and staged at a designated onsite area approved by the Base. Disposable sampling and personal protective equipment will be placed into a 55-gallon drum or 5-gallon sealed bucket and labeled as IDW. They will be held at the site and disposed in the same manner as the IDW water.

## **5.0 Documentation**

All field information will be documented in a field notebook.

## **6.0 Data Evaluation and Reporting**

Field data will be used to determine the thickness of the existing soil cover. The results will be presented in a technical memorandum report and submitted to the Navy, EPA, and MDE.

## **7.0 Standard Operating Procedures**

Fieldwork will follow the SOPs provided in the Master Plan, as referenced herein.

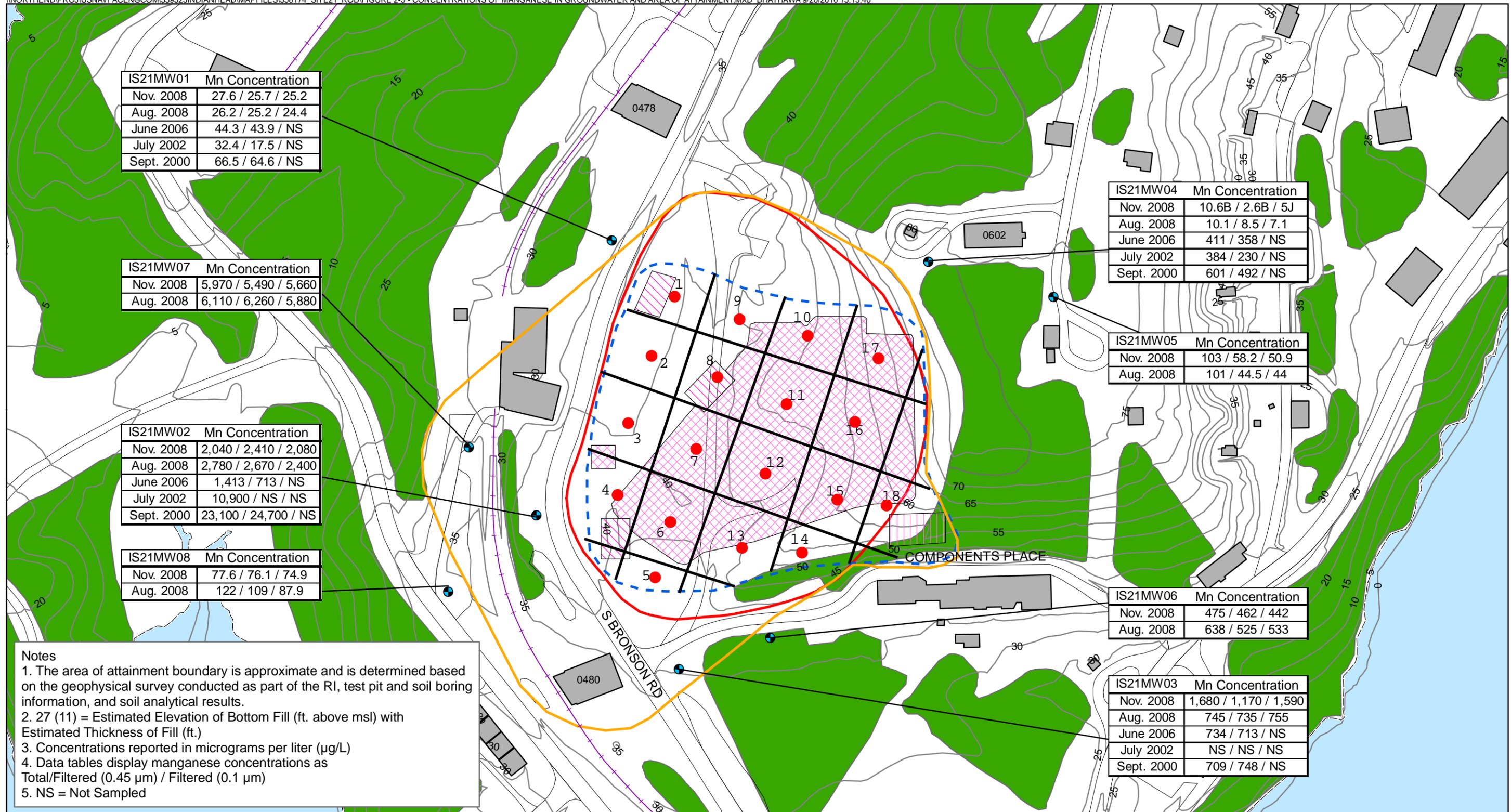
## 8.0 Health and Safety

CH2M HILL has prepared a Health and Safety Plan specific to this investigation that will be followed during the field activities. A copy of the plan will be kept onsite with the field team during field activities.

## 9.0 Schedule

Fieldwork is anticipated to begin during the week of November 29, 2010 before the bald eagle nesting starts in mid-December. It is assumed that it will take 3 days to complete field activities.

<b>Activity</b>	<b>Anticipated Dates</b>
Utility Clearance and Site Visit	November 29, 2010
Installation of Soil Borings	December 1, 2010 through December 3, 2010
Topographic Survey	Week of November 29, 2010



IS21MW01 Mn Concentration	
Nov. 2008	27.6 / 25.7 / 25.2
Aug. 2008	26.2 / 25.2 / 24.4
June 2006	44.3 / 43.9 / NS
July 2002	32.4 / 17.5 / NS
Sept. 2000	66.5 / 64.6 / NS

IS21MW07 Mn Concentration	
Nov. 2008	5,970 / 5,490 / 5,660
Aug. 2008	6,110 / 6,260 / 5,880

IS21MW02 Mn Concentration	
Nov. 2008	2,040 / 2,410 / 2,080
Aug. 2008	2,780 / 2,670 / 2,400
June 2006	1,413 / 713 / NS
July 2002	10,900 / NS / NS
Sept. 2000	23,100 / 24,700 / NS

IS21MW08 Mn Concentration	
Nov. 2008	77.6 / 76.1 / 74.9
Aug. 2008	122 / 109 / 87.9

IS21MW04 Mn Concentration	
Nov. 2008	10.6B / 2.6B / 5J
Aug. 2008	10.1 / 8.5 / 7.1
June 2006	411 / 358 / NS
July 2002	384 / 230 / NS
Sept. 2000	601 / 492 / NS

IS21MW05 Mn Concentration	
Nov. 2008	103 / 58.2 / 50.9
Aug. 2008	101 / 44.5 / 44

IS21MW06 Mn Concentration	
Nov. 2008	475 / 462 / 442
Aug. 2008	638 / 525 / 533

IS21MW03 Mn Concentration	
Nov. 2008	1,680 / 1,170 / 1,590
Aug. 2008	745 / 735 / 755
June 2006	734 / 713 / NS
July 2002	NS / NS / NS
Sept. 2000	709 / 748 / NS

**Notes**  
 1. The area of attainment boundary is approximate and is determined based on the geophysical survey conducted as part of the RI, test pit and soil boring information, and soil analytical results.  
 2. 27 (11) = Estimated Elevation of Bottom Fill (ft. above msl) with Estimated Thickness of Fill (ft.)  
 3. Concentrations reported in micrograms per liter (µg/L)  
 4. Data tables display manganese concentrations as Total/Filtered (0.45 µm) / Filtered (0.1 µm)  
 5. NS = Not Sampled

**Legend**

- Monitoring Well
- Road
- Contours (5ft)
- Railroad
- Approximate Site Boundary
- Approximate Area of Proposed Soil Cover
- Approximate Area for Institutional Controls
- ▨ Buried Metal Debris
- ▩ Buried Metal and Non-Metal Debris
- ▧ Surface and Buried Metal Debris
- Buildings
- Installation Boundary
- Wooded Area
- Proposed Soil Borings

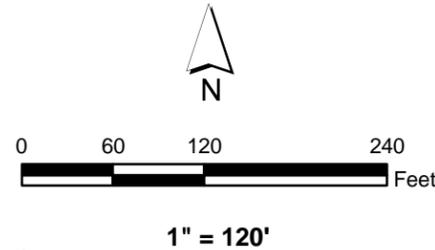


Figure 1  
 Locations of Proposed Predesign Soil Borings  
 Site 21 - Bronson Road Landfill  
 NSF-IH, Indian Head, Maryland

**Attachment 1**

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PROJECT NUMBER	BORING NUMBER
SHEET 1 OF 1	
<b>SOIL BORING LOG</b>	

PROJECT : \_\_\_\_\_ LOCATION : Indian Head, MD  
 ELEVATION : \_\_\_\_\_ DRILLING CONTRACTOR : \_\_\_\_\_  
 DRILLING METHOD AND EQUIPMENT USED : \_\_\_\_\_  
 WATER LEVELS : \_\_\_\_\_ START : \_\_\_\_\_ END : \_\_\_\_\_ LOGGER : \_\_\_\_\_

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)			
	6"-6"-6"-6" (N)					
0						DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): 3reathing Zone Headspace
5						
10						