

Final Work Plan

Investigation of Groundwater at Site 13, Indian Head Division—NSWC, Indian Head, Maryland

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Introduction

This memorandum presents the proposed scope of work for groundwater sampling activities intended to reduce the level of uncertainty regarding potential volatile organic compound (VOC) contamination in groundwater at Site 13. The Draft Final Remedial Investigation Report for Sites 11, 13, 17, 21, and 25 (CH2M HILL, 2002) concluded that the former painting activities at Site 13 likely had minimal impact on the underlying groundwater. The regulatory agencies have expressed concern about the level of uncertainty surrounding this determination. During the September 2002 Indian Head Installation Restoration Team (IHIRT) meeting, it was proposed that one monitoring well be installed at the approximate center of the site. The proposed well would be sampled for Low Concentration (LC) VOCs. The scope was further clarified during an IHIRT conference call held on October 9, 2002.

This draft final work plan memorandum reflects changes agreed to during the conference call and as documented by CH2M HILL in the Site 13 Con Call Record of Conversation, which was distributed to the team on the same day. In addition, it incorporates comments from Ms. Heidi Morgan received on October 4, 2002.

Background

Site 13 encompasses the area adjacent to the Paint Shop (Building 870). In July of 2000, nine surface soil samples and five subsurface soil samples were collected from soil borings installed at Site 13. The subsurface soil samples were collected from either the depth with the highest photoionization detector (PID) reading or, if there were no PID readings above background levels, the maximum boring depth. Sample collection depths ranged from 17 feet below grade to 30 feet below grade. Groundwater was not encountered in any of the soil borings.

The surface soil samples and subsurface soil samples were analyzed for Target Compound List (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs), and Target Analyte List (TAL) metals. The results were compared to the United States Environmental Protection Agency (EPA) Region III Soil Screening Levels (SSLs) with a dilution and attenuation factor of 20. In the surface soil samples, four compounds, 1,1,2-trichloroethane, acetophenone, 2,6-dinitrotoluene and arsenic, were detected at concentrations above their corresponding SSLs. In the subsurface soil samples, no organic compounds were detected above the SSLs. In fact, only one VOC, methylene chloride and two SVOCs, diethylphthalate and pyrene, were detected in the five subsurface soil samples (CH2M HILL, 2002).

These results suggest that the former painting operations had minimal impact on the surface soil and that little transport of organic compounds from the surface soil to the subsurface soil has occurred. Further, while the actual depth to groundwater is not known, the water table is greater than 30 feet below the ground surface (bgs) and 15 to 17 feet of fine-grained material were observed in each of the borings (CH2M HILL, 2002). The RI report concluded that the low concentrations observed, combined with the presence of the fine-grained material and the depth to groundwater, together suggest that the potential for former operations at Site 13 to impact to the underlying groundwater was minimal. It was noted, however, that there was some uncertainty associated with this conclusion.

Proposed Scope of Work

Based on a discussion at the September 2002 IHIRT meeting, an additional field effort was proposed with the objective of minimizing the uncertainty associated with groundwater quality at the site. To accomplish this objective, one groundwater monitoring well will be installed at Site 13 at the location shown on Figure 1. It should be noted that Site 13 encompasses a heavily wooded area at the base of a short embankment. It will be necessary to clear an access road in order to move the drilling equipment onto the site. Representatives of the Indian Head Division-Naval Surface Warfare Center (IHDIW-NSWC), Department of Natural Resources, and CH2M HILL conducted a site walk-through on September 19, 2002. During that site visit, an access route to the site was identified from the north side of Building 1753. This access area will minimize the number of trees that need to be cut and the amount of clearing that will be required.

The borehole will be drilled with a hollow-stem auger rig to a minimum depth of 30 feet bgs for the reasons noted above. A maximum depth of 80 feet is assumed because at that depth the augers will be approaching mean sea level, which is the maximum depth at which shallow groundwater should occur. It should be noted, however, that due to drought conditions present throughout the Mid-Atlantic region, the depth to water might exceed 80 feet bgs. Split-spoon samples will be collected every 5 feet during drilling for lithologic logging. Once groundwater is encountered, a monitoring well will be installed. The monitoring well will be constructed with Schedule 40 polyvinyl chloride (PVC) casing and screen. Following installation and development, the well will be sampled using low-flow methodology. Because the depth to groundwater will likely exceed the capacity of a peristaltic pump, which can pump water over a depth of slightly greater than 20 feet, a Grundfos pump will be used for the low-flow sampling. The sample will be analyzed for LC VOCs with a 24-hour turn-around-time (TAT). Following receipt of the analytical results, the data will be presented to the team in a brief technical memorandum and discussed on a

conference call with a recommendation as to whether additional field investigation is required.

Two contingencies are anticipated: a confining clay layer is encountered between 30 and 80 feet bgs during drilling; or groundwater is not encountered between 30 and 80 feet bgs.

In the event that a confining clay layer is encountered before reaching 80 feet bgs or before reaching groundwater, the clay layer will be penetrated to a maximum depth of 10 feet. A shelby-tube sample of the clay layer will be collected and a permeability test performed to quantify vertical permeability. In addition, soil in the closest split spoon sampler collected above the clay layer will be analyzed for LC VOCs. After collection of the soil samples from above and within the confining layer, a dry well will be installed. To ensure proper identification of soils encountered, the supervising geologist will use the American Society for Testing and Materials (ASTM) standard field methods for the classification of soils in accordance with the Unified Soil Classification System (USCS)(ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)).

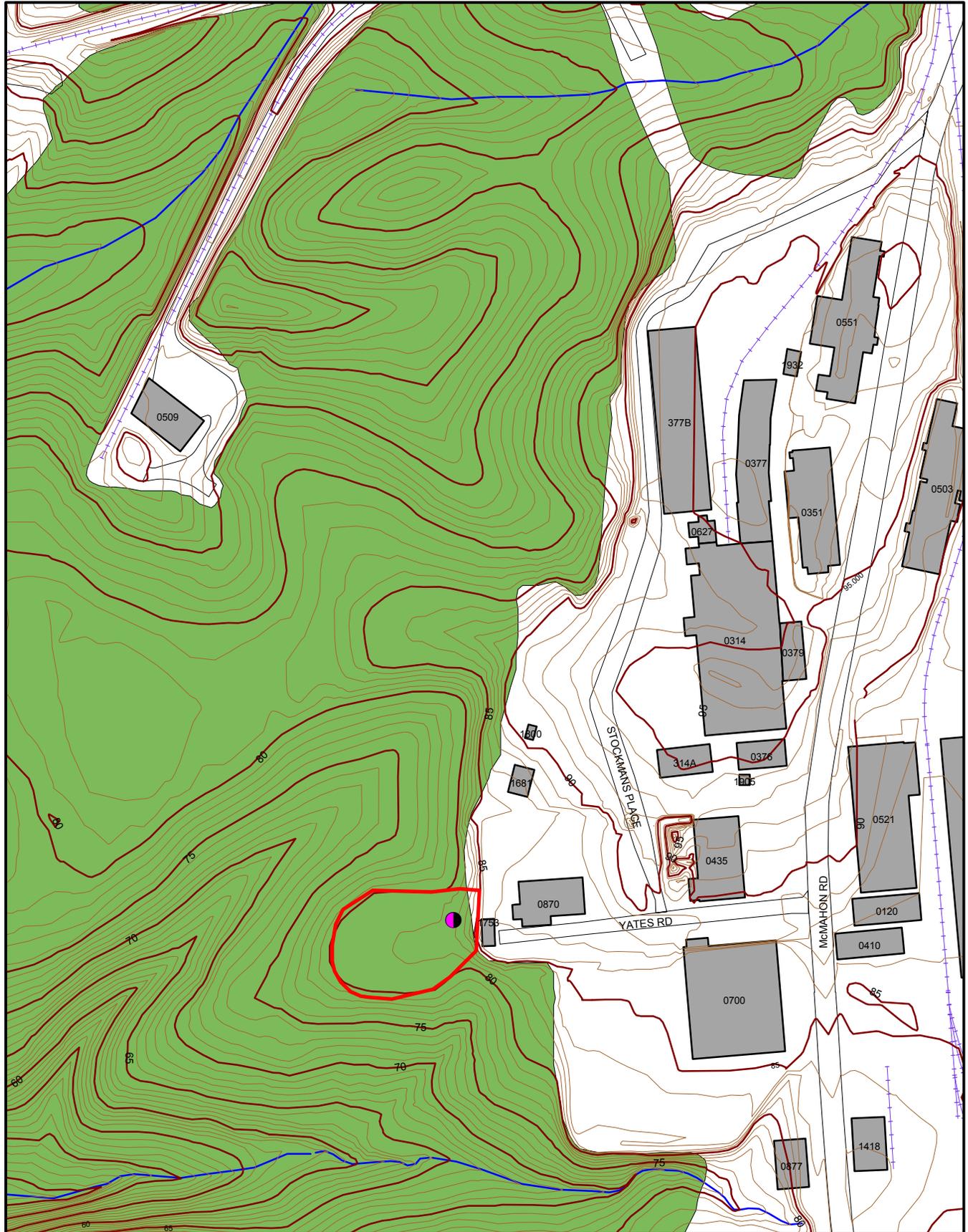
If groundwater is not encountered above a depth of 80 feet bgs, the drill rig will continue drilling until either groundwater is encountered or the drill rig reaches its maximum drilling depth. If the drill rig reaches its maximum depth without hitting groundwater, then a dry well will be installed at 80 feet bgs.

Schedule

It is anticipated that field activities will coincide with those planned for Site 28. Sampling will occur two weeks following installation.

References

CH2M HILL. August 2002. *Draft Final Remedial Investigation Report, Sites 11, 13, 17, 21, and 25, Indian Head Division—NSWC, Indian Head, Maryland.*



LEGEND			<p>Figure 1 Proposed Monitoring Well Location Site 13 IHDIV-NSWC, Indian Head, Maryland</p>
<ul style="list-style-type: none"> Proposed Monitoring Well Wooded Area IR Site Boundary Buildings Topographic Contours (1 foot Intervals) Topographic Index Contours (5 foot Intervals) 	<ul style="list-style-type: none"> Waterbodies Railroads Road 		

0 75 150 Feet