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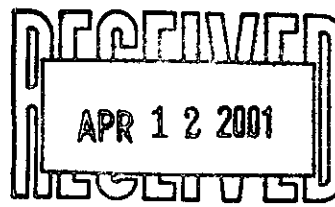


# THE MEMPHIS DEPOT TENNESSEE

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## ADMINISTRATIVE RECORD COVER SHEET

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CH2MHILL

TECHNICAL MEMORANDUM RD.01

## Remedial Action Scope of Work for Lead-Contaminated Soil Removal at Building 949, Main Installation, Memphis Depot

PREPARED FOR: Dorothy Richards  
U.S. Army Corps of Engineers  
Engineering and Support Center, Huntsville

PREPARED BY: CH2M HILL/ATL

DATE: April 11, 2001 (Revision 1)

### Introduction

In accordance with the February 2001 – Revision 2 version of the Memphis Depot Main Installation (MI) Record of Decision (ROD), CH2M HILL has developed this Remedial Action Scope of Work (SOW) technical memorandum (TM) regarding lead-contaminated soil removal southeast of Building 949 in Functional Unit 4 (FU4) of the MI. Figure 1 presents a generalized map of the area. The area adjacent to the southern side of Building 949 apparently was used as an outdoor spray paint site, which would account for dried paint residues accumulating on the surface. No records indicate that paint wastes were transported here for disposal. The area is identified as Screening Site 83.

In Section 2.11.2 of the MI ROD, the selected remedy includes the excavation, transportation, and off-site disposal of lead-contaminated surface soil. Specifically, the ROD states that 1 foot (ft) of contaminated surface soils will be removed from one 7,200-ft<sup>2</sup> area in FU4 where lead concentrations are equal to or greater than 1,536 milligrams per kilogram (mg/kg) and disposed at an appropriate off-site landfill. Following excavation of the contaminated soil, 1 ft of clean (laboratory-tested) backfill will be placed in all areas excavated, and the entire area landscaping will be restored to its original condition.

This area of the MI is also part of a recent property reuse by Barnhart Crane and Rigging Company (Barnhart) and is intended for future use as an office and warehouse. Barnhart requested on February 19, 2001 that the area south of Building 949 be examined for environmental remediation requirements prior to construction of a new building.

To satisfy requirements of the ROD and to confirm the extent of lead-contaminated soils at Building 949, CH2M HILL conducted a Remedial Design sampling event on April 2, 2001 at the site. Analytical data from this sampling event have been used as a supplement to information from the MI Remedial Investigation (RI). Based on available information, an approximate volume of soil to be removed from the area southeast of Building 949 is defined herein. In addition, the SOW for removal of surface soil southeast of Building 949, based upon remedial action objectives provided in the ROD, is presented.

## Supplemental Soil Sampling Effort

The area adjacent to the southern and southeastern portions of Building 949 includes an open, non-grassed field (specifically referred to as Open Storage Areas) and two concrete pads apparently installed at different times. Records show that the older concrete pad was the foundation of a building that was built between 1951 and 1953. The more recent concrete pad is believed to have been constructed when the Building 949 sprung structure was erected in approximately 1987. Based on RI analytical results from the east side of the older concrete pad, reported operations may have resulted in surface soil lead contamination on both sides of the old building foundation. If true, a similar pattern of contamination would be expected on the west side of the old building foundation, under the newer concrete access pad to Building 949. Based on this information, the US Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) decided that soil samples for lead analysis should be collected in three locations approximately 2 feet west of the old concrete pad. Two of these locations were positioned within the newer concrete pad with an additional location immediately south of, and adjacent to, the new concrete pad. Samples were to be collected from the 0- to 1-ft interval below the concrete in soils that are similar to those that were sampled east of the old concrete (in case there was a base course installed with the new concrete).

In addition, TDEC requested that a visual inspection of the soil be performed to see if any black sand was present in the borehole. The black sand (also known as "black beauty") was typically used for sand blasting of equipment and has been known to contain radiological substances.

On April 2, 2001, CH2M HILL representatives mobilized to the MI to collect the additional soil samples. Samples were collected in locations shown on Figure 2 and were collected according to the specifications described above using a decontaminated hand auger. Samples were analyzed for total lead using Method 6010B by Environmental Testing and Consulting, Incorporated of Memphis, Tennessee. Table 1 presents the analytical results for the samples. All results revealed levels of lead less than the remedial goal of 1,536 mg/kg.

Table 1 Soil Sample Analytical Results		
Sample ID	Analytical Result <sup>a</sup>	Detection Limit <sup>a</sup>
SS-83(1)	9.08	0.134
SS-83(1) Dup	9.87	0.134
SS-83(2)	10.6	0.134
SS-83(3)	53.4	0.134
SS-83(4)	13.3	0.134
SS-83EQ	ND	1.72

<sup>a</sup> Analytical results and detection limits reported in milligrams per kilogram except those for SS-83EQ, which are expressed in micrograms per liter. ND= non-detect

The highest level of lead detected was 53.4 mg/kg in sample SS-83(3), which was located at the southern end of the new concrete pad. Also, the visual review of soil for black sand did not reveal any visible layers or seams.

These analytical results indicate that the soil along the west side of the older concrete pad is not impacted by lead and that the newer concrete pad does not require removal.

## Remedial Design Scope of Work

The MI ROD states that 1 ft of contaminated surface soils will be removed from one 7,200-ft<sup>2</sup> area in FU4 where lead concentrations are equal to or greater than 1,536 mg/kg and disposed at an appropriate off-site landfill. Following excavation of the contaminated soil, 1 ft of clean (laboratory-tested) backfill will be placed in all areas excavated, and the entire area will be restored to its original condition. As stated in the ROD, the estimated volume of soil to be removed is approximately 267 cubic yards (cy). However, as shown in Figure 2, and based on RI and recent soil sample data, the initial footprint of the area to be removed is estimated to be closer to 4,050 ft<sup>2</sup>, or 150 cy. The maximum volume of soil removed will be determined by horizontal and vertical confirmation sampling and analyses performed during and after the excavation effort.

Disposal characterization samples should be collected and analyzed prior to disposal of excavated soil. Based on the concentrations of lead, it is conservatively assumed that all of the excavated lead-impacted soil would be hazardous and would be disposed at a hazardous waste RCRA Subtitle C landfill. Disposal characterization of the excavated soil will be conducted in accordance with 40 CFR 261.24. As noted in the MI ROD, some excavated soil from the MI may be characterized as a hazardous waste according to RCRA and would, therefore, be subject to RCRA Land Disposal Restrictions (LDRs) if the waste is excavated and treated or removed from the area of contamination. All remedies involving these activities would have to comply with the LDRs (63 *Federal Register* 28555; May 26, 1998) and achieve 90 percent removal efficiency or 10 times the universal treatment standard for that contaminant in the material before disposal in a RCRA Subtitle C permitted landfill.

Excavation, transportation, and off-site disposal will require temporary controls that will limit the use of those areas immediately adjacent to the excavation sites within the MI during implementation. These restrictions will be coordinated with the Depot reuse implementation plans. Engineering controls for the project will include collection and treatment of surface water present in excavations, prevention of surface water and stormwater from entering excavations, and minimization of the generation of fugitive dust emissions. Health and safety measures during the project will include, where appropriate, site workers wearing the appropriate dermal and respiratory protective equipment to minimize the likelihood of exposure during intrusive activities in the lead-contaminated areas.

At the completion of excavation activities, the excavation will be backfilled and compacted to American Society for Testing and Materials (ASTM) standards. Potential future uses for this area may include construction of warehouse and office buildings. Soil compaction efforts should meet standards for building foundations.

As stated in the ROD, implementation of this alternative will be fully protective in FU4 for industrial use by eliminating the risk of exposure to areas of surface soil with lead exceeding levels acceptable under an industrial land use scenario. This alternative will remain effective after completion because contaminated soil will have been removed. Removal is reliable and permanent. No monitoring or management beyond the implementation period will be required.

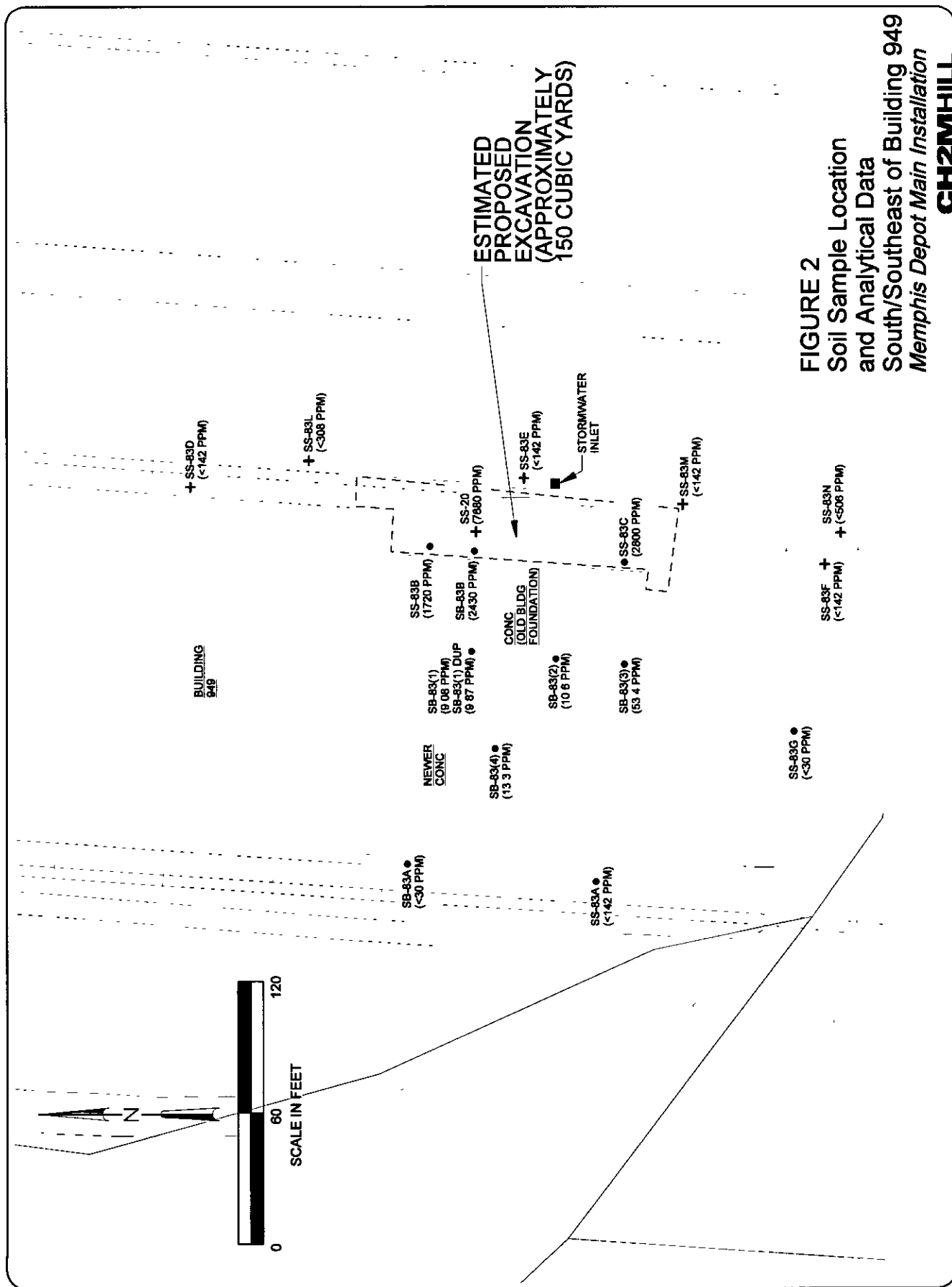
An approved Remedial Action (RA) workplan will be required prior to beginning remedial action field activities. The workplan will include, but not be limited to, a health and safety plan for the project, engineering and site controls, excavation methods to be implemented, soil storage procedures, a transportation and disposal plan, procedures for confirmation sample collection and analysis, solid waste handling procedures, and site restoration techniques.

## Estimated Remedial Action Costs

Table 2-13 of the MI ROD includes estimated costs from the MI Soils Feasibility Study for the excavation and off-site disposal of soils from the area southeast of Building 949. These estimated costs are repeated here in Table 2 for initial cost comparison. Please note that planning and management costs are typically estimated to be a percentage of remedy cost, and, therefore, do not factor into comparative cost evaluations. The estimates provided in Table 2 are typically accurate within plus 50 to minus 30 percent.

Table 2 Estimated Remedial Action Costs	
Activity	Estimated Capital Cost (\$)
Implementation Plan	7,200
Excavation and Disposal of Soils, Engineering and Site Controls	139,950
Confirmation Sampling	7,400
Restoration of Site and Landscaping	21,330
<b>ESTIMATED TOTAL</b>	<b>175,880</b>





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