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SAMPLING AND ANALYSIS PLAN ADDENDUM AREA OF CONCERN 642 (AOC 642) ZONE G CNC CHARLESTON SC

9/1/2001

CH2M HILL

AOC 642 Zone G
SAMPLING PLAN (RO)

Sampling Plan

AOC 642, Zone G

Charleston Naval Complex
North Charleston, SC

Prepared for

U.S. Navy Southern Division
Naval Facilities Engineering Command

Prepared by

CH2M-Jones

September 2001

Contract N62467-99-C-0960

Certification Page for RFI Report Addendum Soil Sampling Plan – AOC 642, Zone G

Surface and Subsurface Soil Investigation

I, Casey Hudson, certify that this report has been prepared under my direct supervision. The data and information are, to the best of my knowledge, accurate and correct, and the report has been prepared in accordance with current standards of practice for engineering.

South Carolina

Temporary Permit No. T2000358

Casey Hudson

Casey Hudson, P.E.

09.17.01

Date

SOUTH CAROLINA
CERTIFICATE OF AUTHORIZATION
CH2M
HILL, INC.
No. C00201

RFI Report Addendum Soil Sampling Plan
AOC 642, Zone G

Purpose of the Soil Sampling Investigation

This Sampling Plan describes the additional investigation proposed at Area of Concern (AOC) 642, in Zone G, at Charleston Naval Complex (CNC). The information obtained from this investigation will be utilized to evaluate the nature and extent of lead in soils at the location of a former pistol range.

Site Background and Setting

AOC 642 is a former pistol range used during the 1940s, that was reportedly located south of Building X-10, according to the original RCRA Facility Assessment (RFA). Subsequent to the EnSafe RCRA Facility Investigation (RFI) performed in 1996-97, review of historical maps and aerial photographs indicated that the pistol range was not actually located south of Building X-10, but west of Buildings X-12 and 143, within the present boundary of Solid Waste Management Unit (SWMU) 008. Although the AOC 642 RFI soil samples did not indicate lead contamination in soils, they may not have been positioned adequately to evaluate the revised AOC location (see Figure 1).

Most of the new AOC 642 location is currently an asphalt-paved parking area. The remainder of the site is within the area affected by the 1998 SWMU 8 Interim Measure (IM) soil removal work, and the surface soils there have been re-worked during excavation of two nearby waste pits. No surface evidence of the former pistol range remains.

Previous Investigations

RFI

The site was designated for a Confirmatory Sampling Investigation (CSI) in the RCRA permit. EnSafe collected ten surface soil samples from the area directly south of Building X-10. No monitoring wells were installed to directly monitor the original AOC 642 location; however, the new AOC boundary encompasses SWMU monitoring well G008GW005, and monitoring well G008GW006 is directly north of the AOC 642 boundary. Lead was not detected in these wells during the RFI sampling events.

Additional Investigations

No Interim Measures (IMs) or additional sampling have been conducted at AOC 642 since the RFI; however, the IM to excavate two oil pits in 1997 at the eastern end of SWMU 8 (adjacent to the site) resulted in reworking of surface soils at AOC 642, obscuring any visual evidence of the former pistol range.

In 1993 EnSafe conducted "confirmation soil sampling" in this area to investigate SWMU 8 prior to the RFI, and the results were presented in the *Zone G RFI Report, Revision 0* (EnSafe, 1998). Two of the 1993 borings were advanced within the current AOC 642 boundary, and several more were advanced just outside the boundary to the west (see Figure 1). The 1993 sampling results indicated no exceedances of the 400 milligrams per kilogram (mg/kg) soil screening level for lead, in either surface soils or subsurface soils.

AOC 642 was not addressed in the EnSafe RFI Work Plan Addendum within the 1999-2000 time frame. No spent bullet recovery operations were known to have been performed at this AOC during or after range closure, according to Navy sources.

Proposed Soil Sampling

Because the former pistol range is no longer visible, and because the IM operations at SWMU 8 have disturbed the ground surface at AOC 642, no biased sampling can be performed at range backstops, berms or other areas where lead would be expected to accumulate from range operations. Therefore, a blind grid sampling approach is proposed for this investigation, using the new AOC 642 boundaries for reference.

Soil Investigation

A series of 17 soil borings is proposed to evaluate soils in the interior and along perimeters of the AOC. Soil samples will be collected from both the surface (0 to 1 foot below land surface [ft bls]) depth, and the subsurface (3 to 5 ft bls) depth, at approximately 50-ft intervals across the site. CH2M-Jones' proposed sampling locations are shown on Figure 1. The total of 34 samples will be collected with a Geoprobe/drill rig, using a stainless steel Macrocore™ device or equivalent. Native soil cuttings will be used to backfill in each boring upon completion. Field equipment that is re-used will be decontaminated between borings, and pre-cleaned equipment will be used when possible to minimize the need for field decontamination.

The sampling, sample preservation and shipping, and sampling documentation will be conducted in accordance with the procedures outlined in the approved Comprehensive Sampling and Analysis Plan (CSAP) portion of the final Comprehensive RFI Work Plan (EnSafe/Allen & Hoshall, 1994), and the U.S. Environmental Protection Agency (EPA) Environmental Services Division *Standard Operating Procedures and Quality Assurance Manual* (ESDSOPQAM) (1996a).

Soil Sample Analysis

Soil samples collected during this effort will be delivered by hand or via an overnight carrier to an offsite laboratory for chemical analysis. The samples will be analyzed for total lead (Pb) content by EPA Method SW-846-6010, at data quality objective (DQO) level III. Sample analyses will be conducted in accordance with the CSAP, the guidance in EPA's *Test Methods for Evaluating Solid Waste*, SW-846, 3rd Ed., Office of Solid Waste and Emergency Response (OSWER) (1996b), and in the EPA Environmental Services *Division Laboratory Operations and Quality Control Manual* (ESDLOQCM) (1997).

Table 1 presents a listing of proposed sample station locations, sample identification numbers, sampling interval, and target analytical parameters for analysis.

Data Presentation

The results of the additional soil investigation will be summarized and presented in an RFI Report Addendum for AOC 642. The RFI Report Addendum will document the field activities conducted during this investigation, and will provide the analytical results for the soil samples collected by CH2M-Jones.

Investigation-Derived Waste (IDW)

Sampling equipment will be pre-cleaned prior to use, in accordance with the CSAP and ESDSOPQAM, and will be cleaned in the field if necessary. All field-generated decontamination solvents/rinse water/adhered soil rinsates will be containerized in a labeled 55-gallon drum for transportation to a disposal and/or treatment facility. The drum contents will be sampled for waste characterization analyses, after which they will be transported to the RCRA less–than-90-day hazardous waste storage area in Building 1846 at the CNC until results are received. Personal Protective Equipment (PPE) from sampling will also be containerized for proper disposal through the CH2M-Jones field office. Excess

native soil cuttings removed from borings during sampling will be used to backfill the borehole.

References

EnSafe Inc. *Zone G RFI Report, NAVBASE Charleston*. Revision 0. February 28, 1998.

EnSafe Inc. *Zone G RFI Report Work Plan Addendum, NAVBASE Charleston*. January 17, 2000.

EnSafe Inc./Allen & Hoshall. *Final Comprehensive RFI Work Plan*. 1994.

U.S. Environmental Protection Agency. *Standard Operating Procedures and Quality Assurance Manual* (ESDSOPQAM). 1996a.

U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response (SW846). *Test Methods for Evaluating Solid Waste, SW-846*. Revision 4. December 1996b.

U.S. Environmental Protection Agency. *Laboratory Operations and Quality Control Manual* (ESDLOQCM). 1997.

TABLE 1
Summary of Proposed Soil Sampling and Analysis
Sampling Plan for AOC 642, Zone G, Charleston Naval Complex

Sampling Location	Sample Identification	Sampling Interval (ft bls)	Target Parameter List
G642SB012	642SB01201	0 – 1	Lead (total, mg/kg)
G642SB012	642SB01202	3 – 5	Lead (total, mg/kg)
G642SB013	642SB01301	0 – 1	Lead (total, mg/kg)
G642SB013	642SB01302	3 – 5	Lead (total, mg/kg)
G642SB014	642SB01401	0 – 1	Lead (total, mg/kg)
G642SB014	642SB01402	3 – 5	Lead (total, mg/kg)
G642SB015	642SB01501	0 – 1	Lead (total, mg/kg)
G642SB015	642SB01502	3 – 5	Lead (total, mg/kg)
G642SB016	642SB01601	0 – 1	Lead (total, mg/kg)
G642SB016	642SB01602	3 – 5	Lead (total, mg/kg)
G642SB017	642SB01701	0 – 1	Lead (total, mg/kg)
G642SB017	642SB01702	3 – 5	Lead (total, mg/kg)
G642SB018	642SB01801	0 – 1	Lead (total, mg/kg)
G642SB018	642SB01802	3 – 5	Lead (total, mg/kg)
G642SB019	642SB01901	0 – 1	Lead (total, mg/kg)
G642SB019	642SB01902	3 – 5	Lead (total, mg/kg)
G642SB020	642SB02001	0 – 1	Lead (total, mg/kg)
G642SB020	642SB02001	3 – 5	Lead (total, mg/kg)
G642SB021	642SB02101	0 - 1	Lead (total, mg/kg)
G642SB021	642SB02102	3 – 5	Lead (total, mg/kg)
G642SB022	642SB02201	0 – 1	Lead (total, mg/kg)
G642SB022	642SB02202	3 – 5	Lead (total, mg/kg)
G642SB023	642SB02301	0 – 1	Lead (total, mg/kg)
G642SB023	642SB02302	3 – 5	Lead (total, mg/kg)
G642SB024	642SB02401	0 – 1	Lead (total, mg/kg)
G642SB024	642SB02402	3 – 5	Lead (total, mg/kg)
G642SB025	642SB02501	0 – 1	Lead (total, mg/kg)
G642SB025	642SB02502	3 – 5	Lead (total, mg/kg)
G642SB026	642SB02601	0 – 1	Lead (total, mg/kg)
G642SB026	642SB02602	3 – 5	Lead (total, mg/kg)
G642SB027	642SB02701	0 – 1	Lead (total, mg/kg)
G642SB027	642SB02702	3 – 5	Lead (total, mg/kg)
G642SB028	642SB02801	0 – 1	Lead (total, mg/kg)
G642SB028	642SB02802	3 – 5	Lead (total, mg/kg)

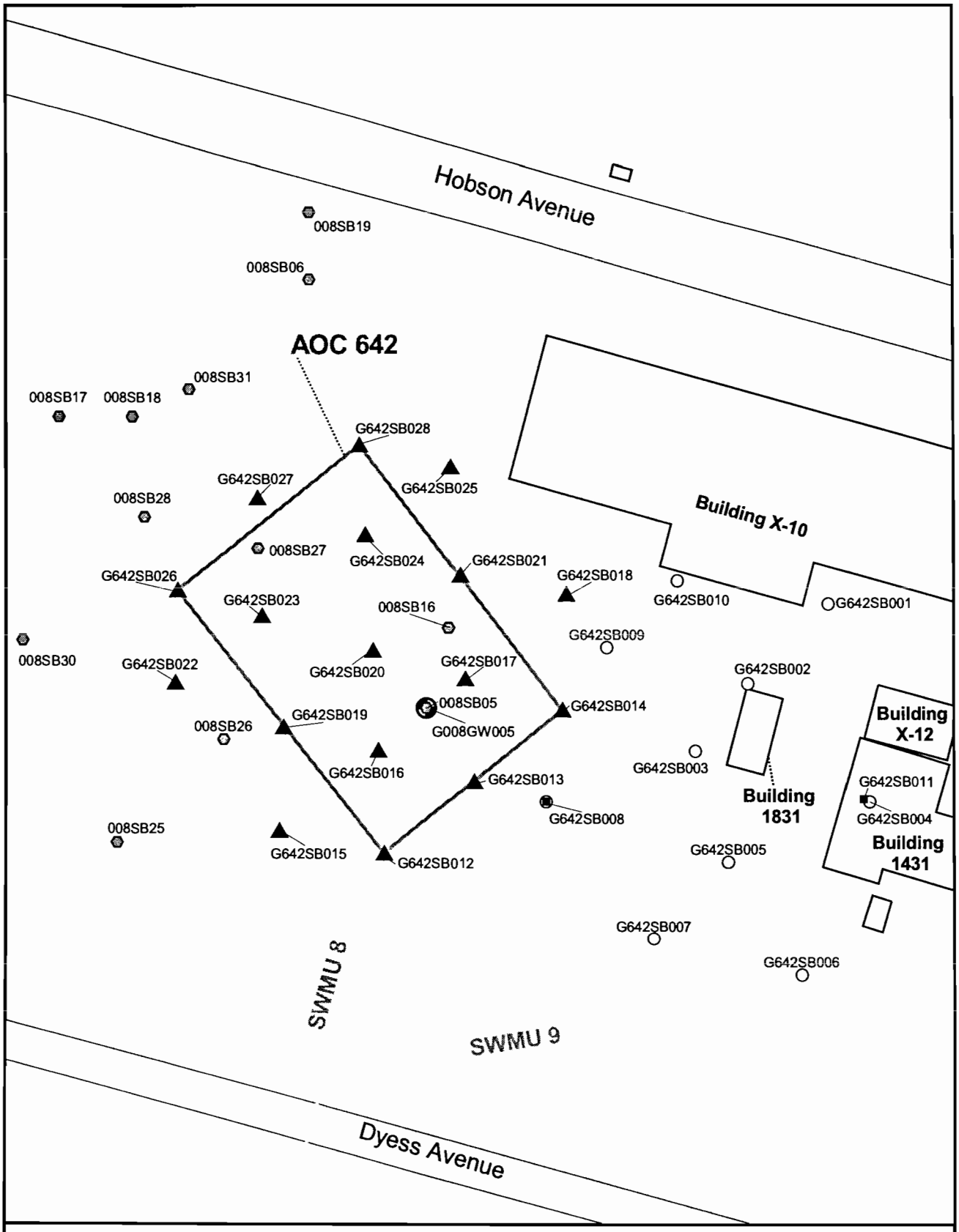

Figure 1
Proposed Soil Sampling Locations
AOC 642, Zone G
Charleston Naval Complex

CH2MHILL

File Path: C:\18gis\Projects\Zone_G\aoc_642\aprs\aoc_642 apr, Date: 05 Sep 2001 13:38, User: ASWINFOR, Figure 1 Proposed Soil Sampling Locations