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NAS PENSACOLA
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NOTICE OF SIGNIFICANT CHANGE TO THE RECORD OF DECISION SITE 15 WITH TRANSMITTAL NAS PENSACOLA FL
9/9/2002
CH2MHILL

CH2M HILL
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA
30346-1278
Tel 770.604.9095
Fax 770.604.9282

CH2MHILL
Constructors, Inc.

September 9, 2002
Mr. Bill Hill, ES31
Southern Division, Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, SC 29419-9010

Subject: Contract No. N62467-98-D-0095
Contract Task Order 0027 - Naval Air Station (NAS) Pensacola - Pensacola, Florida
Notice of Non-significant Change to the Record of Decision (ROD) at Site 15 (Operable Unit 4), NAS Pensacola, Florida

Dear Mr. Hill:

CH2M HILL Constructors (CCI) is pleased to provide this electronic copy of the Notice of Non-significant Change to the Record of Decision (ROD) at Site 15 (Operable Unit 4), NAS Pensacola, Florida. This version incorporates comments from USEPA.

Please contact me (770.604.9182, ext. 390) or Amy Twitty (850.939.8300, ext. 17) if you have any questions or comments regarding this material.

Sincerely,

CH2M HILL

for

Greg Wilfley
Project Manager

cc: Gena Townsend/EPA
Tracie Vaught/FDEP
Terry Hansen/TtNUS
Ron Joyner/NASP
Allison Harris/EnSafe
Brian Caldwell/EnSafe
Paul Stoddard/EnSafe
CCI Project File No. 171578

Notice of Non-significant Change to the Record of Decision (ROD) at Site 15 (Operable Unit 4) Naval Air Station (NAS) Pensacola, Florida

PREPARED FOR: Southern Division Naval Facilities Engineering Command

PREPARED BY: Amy Twitty, P.G. and Greg Wilfley

DATE: August 15, 2002

Introduction

The purpose of this memo is to document the new site-specific cleanup standard calculated for arsenic in surface soil for Site 15 (Operable Unit 4) at NAS Pensacola. Previously, the State of Florida Chapter 62-777 industrial Soil Cleanup Target Levels (SCTLs) were the established cleanup guidelines for constituents of concern (COCs) at the site as outlined in the ROD (Ensafe, Inc., 1999). The ROD requires the removal of contaminated soil above the industrial goals to eliminate dermal and ingestion risk pathways. Due to the widespread presence of low level arsenic at the site, an alternative cleanup goal was established using the 95 percent Upper Confidence Limit (UCL) methodology as described in the *Use of the 95% Upper Confidence Limit in Developing Exposure Point Concentrations of Contaminants in Soil* (Roberts and Halmes 1999). Although the final remedy of removal of contaminated soils at the site remains the same, the cleanup value for arsenic has been changed.

All other actions prescribed in the ROD shall remain unchanged.

Background

Site 15 (Operable Unit 4) is located in the northern portion of NAS Pensacola and is surrounded by the golf course on its southern and western sides and Bayou Grande approximately 600 feet to the north. The site, which includes the golf course maintenance facilities, is accessible from the west by an unpaved road and consists of portions of the golf course, maintenance buildings, equipment storage buildings, and concrete wash-down areas.

From 1963 to the present, fertilizer, pesticide, and herbicide materials for application at the golf course have been stored and mixed at the golf course maintenance facility. Application equipment is also rinsed at the facility's wash-down pads. Past practices have resulted in the release of contaminants at the site. During remedial investigation activities, several areas of soil contamination were identified. Arsenic was identified as one of the COCs.

Remediation activities at Site 15 are regulated under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The ROD for the site requires the removal of contaminated soil above the industrial goals to eliminate dermal

and ingestion risk pathways and the monitoring of groundwater to ensure the COCs are not migrating offsite (EnSafe, Inc., 1999). The estimated volume of soil to be removed based on all COCs was 580 cubic yards (EnSafe 1999).

Soil Investigation

As stated in the ROD, where contamination was not completely delineated, remedial soil volumes were calculated based on a sample-point basis to a depth of 2 feet below land surface (bls) and a 10-foot radius.

From August 24 through December 6, 2001, a total of 148 native surface soil samples, 29 subsurface samples, and associated Quality Assurance/Quality Control (QA/QC) samples were collected by CH2M HILL Constructors, Inc. (CCI) in the vicinity of the identified remedial areas for the source delineation of arsenic and other COCs. The surface soil samples were taken from 0 to 2 feet bls and analyzed for the specified COCs for that area. Select samples were analyzed for total arsenic using EPA Method 6010B.

Results

As listed in the ROD, remediation cleanup goals for arsenic in surface soil is 3.7 milligrams per kilogram (mg/kg). This is based on the FDEP Soil Cleanup Target Levels (SCTLs) from Chapter 62-770 of the Florida Administrative Code. Analytical results were initially compared to the cleanup goals established in the ROD.

Of the 128 surface soil samples analyzed for arsenic (including duplicates) through October 2001, 86 samples exhibited concentrations above the established cleanup goal of 3.7 mg/kg (nearly 70 percent). The sampling team remobilized twice from August through October after the initial soil samples were collected in an effort to delineate the 11 hot spots. After the three sampling events, only one of the hot spot areas (Area 10) had been fully delineated. This was correlating to approximately two times the estimated cleanup volume established in the ROD (and not fully delineated). The highest arsenic concentration through October was 440 mg/kg. Using the entire data set, the mean concentration was 13.7 mg/kg and the median was 5.4 mg/kg. And the amount of soil to be removed had increased dramatically (over 1,000 cys). Therefore, since such a large volume of soil had been found to exceed the cleanup goals during the first phase of the investigation, the arsenic cleanup goal was reevaluated.

Arsenic is known to be naturally occurring in the northwest Florida area as documented in a background study conducted for NAS Whiting Field in northern Santa Rosa County (Odenthal, 2001). Many sites at NAS Whiting Field had concentrations of arsenic above the FDEP cleanup criteria but most of these sites had no documented use of arsenic.
NAS Whiting Field collected a background data set from the Navy's outlying fields in northwest Florida (Pace Field, Spencer Field, Santa Rosa Field and Harold Field). Arsenic concentrations in this background, offsite data set ranged from 0 to 12 mg/kg. The study concluded arsenic concentrations in areas with no known contamination are comparable to the sites at NAS Whiting having no known arsenic sources. In a letter dated April 11, 2001, FDEP noted the arsenic concentrations at NAS Whiting Field are within the range of

naturally occurring concentrations at outlying fields. Although it is specific for NAS Whiting Field, a copy of this letter is included in **Attachment A**.

The pesticides used in the golf course maintenance area at Site 15 were known to contain arsenic; however, many of the arsenic concentrations around the golf course itself are consistent with background concentrations as described above.

In addition to examining background concentrations, CCI also performed statistical analyses on the surface soil concentrations at Site 15 by establishing a 95 percent upper confidence level (UCL). The 95 percent UCL was established based on the results of the surface soil samples collected from August through October 2001. The concentrations of arsenic to which human receptors will be exposed to over time were estimated in order to determine a 95 percent UCL on the mean of arsenic concentrations. Inherent in this approach is the assumption that an individual's contact with the contaminated area is random. The best representation of the concentration to which he/she is exposed is the average contaminant concentration over that area. Thus, an estimate of average concentration represents the concentration to which an individual might be exposed. Because it provides a conservative estimate of exposure point concentration over time, the 95 percent UCL of the mean concentration is generally the most appropriate basis for comparing site contaminant concentrations with cleanup values. As a general rule, an upper limit for contaminant concentrations in hot spots of three times the UCL should be health protective.

A statistical analysis of the surface soil sample results collected from the August through October 2001 sampling events was used to determine the 95 percent UCL. Several arsenic concentrations were outside (outliers) the range what would be considered as "background." All outliers were considered true areas of arsenic contamination and it is assumed they will be remediated.

By eliminating all outliers having values greater than 15 mg/kg, the 95 percent UCL is calculated as 5.8 mg/kg, with 3 times the 95 percent UCL as 17.4 mg/kg. Using 17.4 mg/kg as the cleanup value, Areas 1, 2, 3, and 4 on the golf course, Area 5 south of the golf course road, and Area 10 approximately 50 feet south of Building 3596 could be eliminated. Only Areas 6, 7, 8, 9, and 11, which are located immediately in the vicinity of pesticide mixing activities, would require remediation.

CCI presented the preliminary data to the NAS Pensacola Partnering Team through a series of memos and at the Partnering Team meetings in 2001. Both EPA and FDEP representatives (with consensus from their management) approved the concept of using the 95 percent UCL and accepted 17.4 mg/kg as the new target cleanup value for arsenic in surface soil at Site 15. The new cleanup values falls well within the EPA guidance concentration levels predicted for this site that represent an excess upper bound lifetime cancer risk to an individual of between 1×10^{-4} and 1×10^{-6} risk levels.

Conclusions

Arsenic concentrations on the golf course and in areas not associated with the maintenance buildings are consistent with background concentrations in Northwest Florida and may not be the result of activities at the site. Therefore, surface soil at Site 15 was delineated for

arsenic using three times the 95 percent UCL (17.4 mg/kg) and the soil removal, which is consistent in scope and volume with the ROD, will be based on this new remedial goal.

Works Cited

Efron, B. and Tibshirani, R.J. *An Introduction to the Bootstrap*. Chapman and Hall/CRC, Boca Raton, Florida. 1993.

EnSafe, Inc. *Final Record of Decision, Operable Unit 4, NAS Pensacola, Pensacola, Florida.* November 1999.

Odenthal, LCDR Paul. NAS Whiting Field PWO, *The Palmer Brief.* February 2001.

Roberts, Stephen M. and Halmes, N. Christine. Center for Environmental and Human Toxicology, University of Florida, *Use of the 95% Upper Confidence Limit in Developing Exposure Point Concentrations of Contaminants in Soil,* May 11, 1999.

U.S. Environmental Protection Agency. *The Lognormal Distribution in Environmental Applications*. Office of Research and Development, Environmental Protection Agency. 1997.

ATTACHMENT A
FDEP Letter (April 2001)

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

April 11, 2001

Mr. James Holland
NAS Whiting Field
7151 USS Wasp Street
Milton, Florida 32570-6159

file: arsenic2.doc

RE: Analysis of Soil for Arsenic at Outlying Landing Fields

Dear Mr. Holland:

I have reviewed the above document dated April 3, 2001 (received April 9, 2001). The document describes soil sampling locations and analytical results for arsenic at four outlying landing fields associated with, but not adjacent to, NAS Whiting Field. Those facilities are Pace Field, Spencer Field, Santa Rosa Field and Harold Field. There are no known contaminated sites at those fields. Utilizing the information furnished in the document and in comparison with similar data from NAS Whiting Field, the Navy has requested a determination that arsenic levels observed at NAS Whiting Field are comparable with those seen at the outlying landing fields and that they are in naturally occurring concentrations.

Based on my review of those data, I have concluded that arsenic levels observed in soils at NAS Whiting Field are within the range of concentrations observed at the outlying fields and that they therefore are in naturally occurring concentrations. This determination may be applied only to arsenic in the soil for sites at NAS Whiting Field for which sufficient data presently exist. Please be aware that this finding does not preclude a future determination of a release of arsenic at any particular site if information and data warrant that conclusion.

If you have questions or need further clarification please contact me at (850) 921-4230.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

cc: Mollie Palmer, Office of the Secretary
Linda Martin, Southern Division, North Charleston
Amy Twitty, CH2M Hill, Navarre

TJB JJC ESN for