



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

AUG 09 2007

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mark E. Davidson
US Navy
BRAC PMO SE
4130 Faber Place Drive, Suite 202
North Charleston, SC 29405

Re: Naval Activity Puerto Rico (NAPR), formerly Naval Station Roosevelt Roads,
EPA I.D. Number PRD2170027203,

Draft Monitored Natural Attenuation Work Plan, AOC F, dated June 13, 2007;

Dear Mr. Davidson:

This letter is addressed to you as the Navy's designated project coordinator pursuant to the January 29, 2007 RCRA Administrative Order on Consent ("the Consent Order") between the United States Environmental Protection Agency (EPA) and the U.S. Navy (the Navy). EPA Region 2 has completed its reviews of the Draft Monitored Natural Attenuation Work Plan (the MNA Work Plan) for Area of Concern (AOC) F. The MNA Work Plan was submitted on behalf of the Navy, by Baker Environmental on June 13, 2007, and covers 8 individual sites where petroleum releases were previously being addressed under oversight by the PR Environmental Quality Board (PREQB), but are now being addressed under the Consent Order.

As part of its review, EPA requested our contractor, TechLaw to review the Draft MNA Work Plan. EPA, and our contractor, TechLaw, reviewed the Draft MNA Work Plan for: (1) general consistency with the EPA's 1999 Directive on "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (OSWER Directive #9200.4-17P [MNA Guidance]), and (2) for acceptability in addressing comments in the November 28, 2005 Technical Review prepared for EPA on the Navy's original Site Characterization Reports (from 1994 -1999) for the eight MNA sites comprising AOC F. That

November 2005 Technical Review was transmitted to Mr. Kevin Cloe and Mr. Pedro Ruiz of the Navy, with the EPA's email of November 29, 2005, and it was discussed extensively with representatives of the Navy during a meeting with EPA held on December 7, 2005 at EPA's offices in New York City. Copies of the November 29, 2005 Email and the November 28, 2005 Technical Review of the original Site Characterization Reports are included with this letter, as Attachments I and II, respectively.

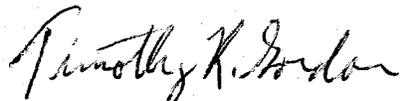
Based upon our reviews, EPA has the following comments:

- 1) the MNA Work Plan fully addresses only one of the two specific comments made in the November 28, 2005 Technical Review on the adequacy and acceptability of the Navy's original Site Characterization Reports (from 1994 -1999) for the eight MNA sites comprising AOC F. The draft MNA Work Plan only partially addresses the second specific comment in the November 2005 Technical Review relating to Site 520. That comment requested that an additional monitoring well be installed to the northwest of well MW-2 to determine the level of free product and dissolved phase constituents. While the draft MNA Work Plan includes a proposal for two additional wells for Site 520, neither well is located to the northwest of MW-2 in an apparent down gradient direction. Therefore, EPA requests that the Navy evaluate groundwater flow at Site 520 and install a new well to the northwest of MW-2. This is discussed in the Technical Review, included as Attachment III.
- 2) The draft MNA Work Plan states that the remedies being implemented at the various AOC F sites will reach the cleanup objectives in a reasonable amount of time. However, upon further inspection of Section 4.3, it appears that the reasonable time frame is based on the assumption that it is "reasonable to assume that degradation processes are occurring within a reasonable time frame." Furthermore, when evaluating the impacts of free product in Section 3.3 the MNA Work Plan concludes that, "a realistic time frame for an MNA program at this site can be made." In addition, Section 2.3 of the MNA Work Plan states that "[t]he time to remedia[te] to level below the . . . target levels . . . is difficult to estimate." In addition, in the case of Site 1738, Section 5.3 of the MNA Work Plan states that "TPH concentrations appear to be increasing." Thus the Navy has neither demonstrated nor provided other clear basis for concluding that the current MNA remedy will reach the cleanup objectives in a reasonable amount of time.
- 3) Additional comments on the draft MNA Work Plan are given in the enclosed Technical Review, included as Attachment III with this letter.

Within 60 days of your receipt of this letter, please submit a revised draft MNA Work Plan for AOC F, that addresses the above comments and those given in the Enclosed Technical Review.

If you have any questions, please telephone me at (212) 637- 4167.

Sincerely yours,



Timothy R. Gordon
Project Coordinator
Caribbean Section
RCRA Programs Branch

Enclosures (3)

cc: Mr. Julio I. Rodriguez Colon, P.R. Environmental Quality Board, w/encls.
Ms. Wilmarie Rivera, P.R. Environmental Quality Board, w/encls.
Mr. Pedro Ruiz, Naval Activity Puerto Rico, w/encls.
Mr. Dave Criswell, US Navy, BRAC PMO, w/o encls.
~~Mr. Mark Kimes, Baker Environmental, w/encls.~~
Mr. Matt Lary, TechLaw Inc, w/o encls.
Mr. Felix Lopez, USF&WS, w/o encls.

ATTACH. I

Timothy
Gordon/R2/USEPA/US
11/29/2005 11:39 AM

To kevin.cloe@navy.mil, ruizp@napr.navy.mil
cc Dale Carpenter/R2/USEPA/US@EPA,
ROGOVIN_KATHY@BAH.com, LUCAS KINGSTON
<wlkingston@msn.com>, yarissamartinez@jca.gobierno.pr,
bcc
Subject NAPR (ex Roos Rds) - EPA Review of MNA Site
Charcterization Reports

Hi Kevin and Pedro,

Attached below is a Technical Review of the 8 MNA Site Charcterization Reports prepared for EPA by Booz Allen. Please note particularly the recommendations for additional wells at both Sites 1738 and 520. Please be prepared to discuss how you will address these recommendations at the Dec 7 meeting.

In addition, since the attached BAH Technical Review indicates that the presence of free product at certain MNA sites "...will create delays in meeting MNA remediation objectives...", I wish to also discuss at the Dec 7 meeting, enhancing the free product recovery efforts (source removal) at the two MNA sites (Site 520 and 2842B), where present. Enclosure 3 (Tech Review of Year 3 and Year 4 Summary Reports) of our July 1, 2005 letter to Lt. Commander Terrell had previously discussed the lack of effectiveness of the free product removal at those two sites. The importance of source removal and control is discussed in EPA's 1999 MNA Guidance.

A representative of Booz Allen will be attending our Dec 7 meeting on the MNA sites. It is scheduled from 9:00 - 12 noon in the Large Conference room on the 22nd floor of EPA's NY offices at 290 Broadway. Representative of PREQB will also attend and/or participate via conference call.

Timothy R. Gordon
U.S. Environmental Protection Agency
RCRA Programs Branch
Caribbean Section
290 Broadway, 22nd. Floor
New York, NY 10007-1866
Phone (212) 637-4167

----- Forwarded by Timothy Gordon/R2/USEPA/US on 11/29/2005 11:04 AM -----



Rogovin Kathy
<rogovin_kathy@bah.com>
11/28/2005 12:02 PM

To Timothy Gordon/R2/USEPA/US@EPA, Patricia
Rosa/R2/USEPA/US@EPA
cc Berger Mark <berger_mark@bah.com>, Thompson Katie
<thompson_katie@bah.com>, Rogovin Kathy
<rogovin_kathy@bah.com>
Subject REPA3-2203-070 Deliverable

Dear Patricia and Tim,

In response to Work Assignment R02703-2, Naval Activity Puerto Rico, please find Booz Allen Hamilton's technical review of the Site Characterization reports for Sites 124, 520, 731, 734, 735, 1738, 1995, and 2842B at Naval Activity Puerto Rico.

The WordPerfect and .PDF signed deliverable are attached to this e-mail. Please feel free to contact me at 617.428.4441 if you have any problems accessing these files.

Sincerely,

TECHNICAL REVIEW OF THE
SITE CHARACTERIZATION REPORT, SITE 124, MARCH 1999
SITE CHARACTERIZATION REPORT, SITE 520, APRIL 1999
SITE CHARACTERIZATION REPORT, SITE 731, MARCH 1998
SITE CHARACTERIZATION REPORT, SITE 734, MAY 1998
SITE CHARACTERIZATION REPORT, SITE 735, NOVEMBER 1994
SITE CHARACTERIZATION REPORT, SITE 1738, FEBRUARY 1999
SITE CHARACTERIZATION REPORT, SITE 1995, JUNE 1995
SITE CHARACTERIZATION REPORT, SITE 2842B, 1998

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO

REPA3-2203-070
November 28, 2005

GENERAL COMMENTS

1. Booz Allen Hamilton (Booz Allen) has reviewed the Site Characterization (SC) reports for monitored natural attenuation (MNA) sites 124, 520, 731, 734, 735, 1738, 1995, and 2842B, with submittal dates ranging from 1994 to 1999. The SC reports document field investigations that consisted of the advancement of soil borings, installation of monitoring wells, field and laboratory analyses of soil and groundwater samples, performance of slug tests to determine hydraulic conductivity, and measurement of water levels to assess groundwater flow direction and hydraulic gradient. Based on our review, Booz Allen concludes that the SC investigations and reports are generally of sufficient scope and detail to satisfy the technical guidelines for site characterization presented in EPA's MNA guidance entitled *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, Directive 9200.4-17P*. Two possible exceptions are documented in Specific Comments Nos. 1 and 2. Updated determinations of groundwater flow direction are required in these two instances to assess the need for additional contaminant delineation.
2. Booz Allen assessed whether the use of MNA at the eight sites was in accordance with the technical guidelines presented in EPA's MNA guidance, based on the nature and extent of contamination and physical site conditions. Based on our review, it appears that MNA is an appropriate remedial strategy for the following reasons:
 - The contaminants consist of petroleum hydrocarbons, which are known to be susceptible to biodegradation and do not produce toxic byproducts
 - The hydrogeology is relatively straight forward, which increases confidence in the reliability of the conceptual model and the ability of the performance monitoring network to adequately assess MNA effectiveness

- The sites typically have low hydraulic gradients and moderately low hydraulic conductivities, resulting in low groundwater velocities and travel times
- According to qualitative risk assessments performed as part of the SC investigations, there are no potential human receptors downgradient of the sites and groundwater exposure pathways are incomplete
- With a few exceptions, contaminant concentrations are relatively low.

No conditions were encountered at the eight sites that suggest that MNA is an inappropriate remedial strategy. The existence of free product, which is documented in a number of monitoring wells and soil borings, will create delays in meeting MNA remediation objectives, but does not necessarily preclude implementation of MNA at these sites.

SPECIFIC COMMENTS

Site Characterization Report, Site 1738

1. The SC report for Site 1738 indicates that monitoring well MW-3 was significantly impacted by benzene (9,500 µg/L) and benzene, toluene, ethylbenzene, and xylene (BTEX) contamination (29,700 µg/L). According to groundwater flow directions depicted in Figures 3-1 and 3-2, a groundwater mound existed at the former pump island / tank area that directed groundwater flow radially from this area. Consequently, it appears that a southern component of flow extended from the former pump island / tank area towards MW-3 and Forrestal Drive. No monitoring wells are located downgradient of MW-3 to determine the extent of groundwater contamination. Due to the level of contamination reported in MW-3 and no evidence of decreasing trends in contamination in monitoring data presented in the Year 4 Summary Report (December 2004), updated groundwater flow maps should be prepared and consideration should be given to additional monitoring well placement downgradient of MW-3.

Site Characterization Report, Site 520

2. The SC report for Site 520 documents free product in monitoring well MW-2. According to Figures 3-1 and 3-2, it appears that a northwestern component of flow existed in the vicinity of the former pump island and MW-2. There are no monitoring wells located downgradient of MW-2 to determine the extent of free product and dissolved-phase constituents. Due to the existence of free product documented in the SC report and persistent occurrence documented in the Year 4 Summary Report (December 2004), updated groundwater flow maps should be prepared and consideration should be given to additional monitoring well placement downgradient of MW-2.

**TECHNICAL REVIEW OF NAPR's
DRAFT MONITORED NATURAL ATTENUATION
WORK PLAN
FOR AOC F
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203
DATED JUNE 13, 2007**

Submitted to:

**U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866**

Submitted by:

**TechLaw, Inc.
One Penn Plaza, Suite 2509
New York, NY 10119**

**EPA Task Order No.
Contract No.
TechLaw TOM
Telephone No.
EPA TOPO
Telephone No.**

**002
EP-W-07-018
Matt Lary
913-484-6706
Timothy Gordon
212-637-4167**

July 17, 2007

**TECHNICAL REVIEW OF NAPR's
DRAFT MONITORED NATURAL ATTENUATION
WORK PLAN
FOR AOC F
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203
DATED JUNE 13, 2007**

The following comments were generated based on review of the Draft Monitored Natural Attenuation (MNA) Work Plan (Work Plan), AOC F, dated June 13, 2007; Naval Activity Puerto Rico (NAPR) in Ceiba, Puerto Rico. TechLaw was tasked by U.S. EPA, in an email dated June 19, 2007, to review the Work Plan for (1) general consistency with the EPA's 1999 Directive on "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (OSWER Directive #9200.4-17P [MNA Guidance]), and (2) for consistency with the EPA's email from November 28, 2005, to Mr. Kevin Cloe of the Navy, which includes a technical review of the 1999 Site Characterization of the eight MNA sites.

TechLaw has identified several concerns related to the proposed activities with respect to the MNA Guidance. Additionally, the Work Plan addresses only one of the two specific comments included in the November 28, 2005 email.

EPA Comment Letter

1. **Evaluation of the Response to Specific Comment 2, Site Characterization Report, Site 520:** This comment requested that an additional monitoring well be installed to complete the characterization of groundwater contamination to the northwest of MW-2. While the Work Plan includes a proposal for two additional wells at Site 520, neither well is located to the northwest of MW-2. It should be noted that the recent groundwater gauging activities align with historical groundwater flow direction data, suggesting a northwesterly flow component. Therefore, in order to properly characterize the extent of contamination, a monitoring well should be installed to the northwest of MW-2. Revise the Work Plan to include installation of this additional well.

The Work Plan also proposes the installation of two new wells, redevelopment of several wells, and collection of comprehensive groundwater elevation data. This information should be used to conduct a thorough evaluation, and any identified data gaps should be addressed through recommending additional monitoring locations. It should be noted that future recommendations for new well placement should coincide with observed data gaps and should not be limited to potential activities discussed in Section 3.5.

GENERAL COMMENTS

1. The Work Plan states that the groundwater sampling will be completed using a peristaltic pump. However, when collecting groundwater samples for volatile organic compound (VOC) analysis, it is recommended that the Navy implement low-flow groundwater sampling methods appropriate for VOC analysis. Low-flow sampling using appropriate technology allows for the collection of samples which are representative of the mobile load of contaminants present (dissolved and colloid-associated). Low-flow groundwater sampling techniques may not be appropriate at some well locations on-site (i.e., wells containing non-aqueous phase liquids [NAPL]). This sampling activity should be performed in accordance with U.S. EPA Publication Number EPA/540/S-95/504, *Low-Flow (Minimal Drawdown) Ground Water Sampling Procedures*, April 1996. Revise the Work Plan to include low-flow groundwater sampling when appropriate.
2. Each of the sites in the Work Plan has a reported petroleum related release; however, it does not appear that any investigation into the presence of Methyl tertiary-butyl ether (MTBE) has been conducted. MTBE is a common gasoline additive, and has been used in U.S. gasoline since 1979. Since 1992, MTBE has been used at higher concentrations in some gasoline (<http://www.epa.gov/mtbe/gas.htm>). Because MTBE dissolves easily in water and does not sorb well to soil, it migrates faster and farther than other gasoline components, thus making it more likely to contaminate aquifers. MTBE does not degrade easily and is difficult and costly to remove from ground water (<http://www.epa.gov/mtbe/gas.htm>). Therefore, it is unlikely that MTBE is a good candidate for MNA. Revise the Work Plan to include MTBE in the analytical parameters list (Table 8-1) for at least one sampling event, at each site with a suspected gasoline release.
3. Under the MNA Objectives (Section 2.3, 3.3, etc.), the Work Plan states that the MNA objectives are to monitor the natural reduction in contaminant concentrations. The Work Plan states that several wells have been designated for no further monitoring (NFM). Therefore, these wells will no longer be sampled for analytical parameters. However, monitoring under the MNA Guidance requires continued monitoring in areas where operation is continuing in order to detect any new releases (MNA Guidance). As a result, it is recommended that wells in currently utilized areas, including those potentially designated for NFM, be sampled at least once every five years, in conjunction with the 5-year review, to ensure that no new releases have occurred. Revise the Work Plan to include this methodology. Additionally, due to the local complexities exhibited in groundwater flow direction, it is recommended that the NFM wells be gauged for groundwater elevations whenever the associated sites are sampled.
4. Groundwater elevation data are not available for several monitoring wells. Therefore, an evaluation of the screened intervals could not be conducted. Based on the nature of free product contamination, if wells are screened at too great a depth, a light NAPL, such as free product gasoline, would not flow into the monitoring well. It is recommended that once the survey is completed, the wells be evaluated to determine whether they are

screened appropriately. Additionally, revise the Work Plan to include collection of ground surface elevation data for each of the monitoring wells.

5. The Work Plan states that the current MNA remedy will reach the cleanup objectives in a reasonable amount of time. However, upon further inspection it appears that the reasonable timeframe is based on the assumption that it is "reasonable to assume that degradation processes are occurring within a reasonable timeframe." The MNA guidance requires that several lines of evidence be investigated and presented to support the decision to use MNA. No historical groundwater or soil chemistry data have been presented in the Work Plan to demonstrate a clear and meaningful trend. Additional historical information should be included in the Work Plan to further justify the applicability of MNA at each site.
6. It is stated in the Work Plan that no further monitoring is necessary for select sampling locations, and for other sampling locations it is proposed that free product removal actions cease. However, sufficient information is not provided in the Work Plan to support these recommendations, such as comprehensive historical data. Revise the Work Plan to include complete historical analytical data for all sampling locations, groundwater elevations for each well, and free product thicknesses from each gauging event, as well as other appropriate supporting information, to justify these recommendations.
7. The contingency plan presented in Figure 10-1 is unclear. Although the intent of the contingency plan is understood, no information is provided in the Work Plan to clearly present contingency measures for the site. Revise the document to include a detailed discussion of the contingency plan and each proposed contingency measure.

SPECIFIC COMMENTS

1. **Section 7.1 Well Installation, Page 7-1:** The Work Plan states that the annular space near the well screen will be backfilled, a bentonite seal will be placed, and the annular space above the bentonite seal will be backfilled with cement/bentonite grout. The Work Plan does not provide any specifications on the actions that will be used to prevent bridging. Since standard operating procedures (SOP) do not appear to have been provided, it is unclear whether such actions will be taken. Similarly, SOPs related to well development, well sampling, soil sampling, and collection of the field parameters and other activities have not been included. Revise the document to ensure that all applicable SOPs are included and utilized during field implementation.
2. **Section 10.2 (listed as the second Section 10.1), Optimization, Page 10-1:** This section states that where free product has not been present for 12 consecutive months, no further gauging will be required. It is unclear, however, how often the free product will be gauged over the 12 month period. Additionally, free product removal activities have not been included on Table 8-2 Summary of Field Events or Figure 12-1 AOC F MNA Program Schedule. Revise the Work Plan to more clearly discuss free product gauging and removal activities, and ensure that gauging of free product will be conducted prior to and following free product removal activities.