ConocoPhillips
76 Broadway
Sacramento, California 95818

RECEIVED

8:48 am, May 10, 2011
Alameda County
Environmental Health

May 9, 2011

Alameda County Health Agency – Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Attention: Ms. Barbara Jakub

Re: **Remedial Action Plan Addendum**
76 Service Station #0843
1629 Webster Street
Alameda, CA

Dear Ms. Jakub:

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have any questions or need additional information, please contact me at (916) 558-7612.

Sincerely,

Bill Borgh
Site Manager – Risk Management and Remediation

Attachment

REMEDIAL ACTION PLAN ADDENDUM
Contingency Plan for Hexavalent Chromium Generation

76 Service Station No. 0843 (2349)
1629 Webster Street
Alameda, CA

Antea Group Project No. C102349219

May 9, 2011

Prepared for:
ConocoPhillips
76 Broadway
Sacramento, CA 95818

Prepared by:
Antea™Group
11050 White Rock Road
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Rancho Cordova, CA
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May 9, 2011

Ms. Barbara Jakub
Alameda County Health Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: REMEDIAL ACTION PLAN ADDENDUM –
CONTINGENCY PLAN FOR HEXAVALENT CHROMIUM GENERATION
76 Service Station No. 0843 (2349)
1629 Wesbter Stree
Alameda, California
Alameda County

Dear Ms. Jakub:

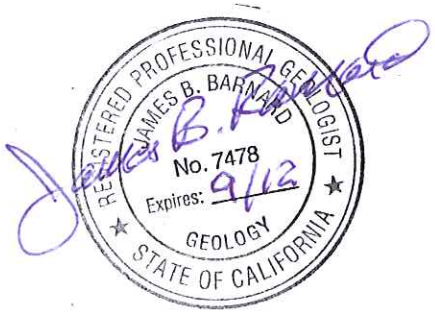
On behalf of ConocoPhillips Company (COP), Delta Consultants (Delta) is submitting this *Remedial Action Plan Addendum – Contingency Plan for Hexavalent Chromium Generation* for the above referenced location.

Sincerely,

ANTEA ™GROUP

James B. Barnard

James B. Barnard, P.G.
California Registered Professional Geologist No. 7478



cc: Mr. Bill Borgh, ConocoPhillips (electronic copy)
Sam and Michele Koka (hard copy)

REMEDIAL ACTION PLAN ADDENDUM –
CONTINGENCY PLAN FOR HEXAVALENT CHROMIUM GENERATION

76 Service Station No. 0843 (2349)
1629 Webster Street
Alameda, California
Alameda County

1.0 INTRODUCTION

This letter is in response to the recent request for additional information by Alameda County Environmental Health Department (ACEHD) in a letter to ConocoPhillips (COP) dated April 6, 2011 related to the *Remedial Action Plan (RAP)* prepared by Antea Group dated March 18, 2011.

The additional information requested by ACEHD was a contingency plan to address the potential generation of hexavalent chromium (CrVI) as a result of the addition of ozone into the sub-surface to reduce/destroy hydrocarbon constituents. A contingency plan to address CrVI was not included in the RAP.

Antea Group proposes the following activities in response to ACEHD's request for a CrVI contingency plan

2.0 HEXAVALENT CHROMIUM MONITORING

In the RAP, Antea Group proposed to add biodegradation parameters, including total Chromium (Cr) and Chromium VI (CrVI), to the analyzes performed on monitoring wells MW-5 and MW-6 on a quarterly frequency for a *minimum* of one hydrologic cycle.

3.0 GROUNDWATER CONTAMINANT PLUME MONITORING

Antea Group additionally recommends the addition of analysis for total vanadium and dissolved vanadium to all monitoring wells at the site for at least one hydrologic cycle.

A sampling event will be performed prior to initiation of proposed remedial activities at the site to establish constituent concentrations prior to implementation of the next phase of remediation.

As noted in the RAP, all monitoring wells will also be monitored and sampled on a quarterly frequency for a *minimum* of one hydrologic cycle. A longer period may be required for monitoring and sampling events once the ozone/oxygen injection is completed.

The RAP proposed ozone injection over a period of several months with scheduled monthly monitoring and sampling. Antea Group recommends modifying the proposed sampling frequency for all on-site monitoring wells, with the exception of MW-3 and MW-4. The modified frequency is to sample all on-site wells, with the exception of MW-3 and MW-4, within one to three days of system startup and semi-monthly thereafter. During pre-startup, after startup (one to three days), and semi-monthly thereafter, field measurements of dissolved oxygen (DO), temperature (TEMP), percent hydrogen (pH), and oxidation-reduction potential (ORP) will be recorded. A short turn-around-time (TAT) of a maximum of three days will be requested on the initial post-application samples to monitor key indicator metals (ferrous iron (FeO), manganese (Mn), vanadium (V), Cr, and CrVI) as well as petroleum hydrocarbon constituents such as total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethyl-benzene, and total xylenes (collectively BTEX), methyl tert-butyl ether (MTBE) and tert-butyl-alcohol (TBA). Once the first three sampling activities after commencement of remedial activities have been performed, analytical results well be evaluated and TAT will be adjusted as appropriate.

4.0 SYSTEM OPERATION - CONTINGENCY PLAN FOR HEXAVALENT CHROMIUM GENERATION

Due to the possibility of increased CrVI concentrations, Antea Group (Antea) and ConocoPhillips (COP) recommends the sparge point system be started with air/oxygen injection (biosparging) and slowly introduce ozone into the sparge points to minimize the potential for CrVI generation.

This method of injection should reduce the potential for CrVI formation and enhance the destruction of MTBE (the primary remedial action objective). However, if observed CrVI concentrations increase beyond the established environmental screening level (ESL) of 11.0 µg/l during remedial activities, application of ozone to those sparge wells nearest the monitoring wells reporting an increase in CrVI concentrations will be suspended and the subsurface be allowed to attenuate. Semi-monthly sampling will determine if CrVI is decreasing, stabilizing, or increasing in concentration.

In the event CrVI is observed above ESLs, biosparging will continue in the remaining wells with adjustments made in the applied constituents. Semi-monthly sampling will continue with TAT's reduced to the original three day maximum, until the CrVI concentrations in the subsurface stabilize.

In the event that CrVI continues to increase in concentration in the resting wells or appearing in other wells, then consideration of the use of a chromium reducing agent may be required to destroy/eliminate generated CrVI at the site.

5.0 HEXAVALENT CHROMIUM DISCUSSION

The First Quarter Monitoring Report for 2011 has shown that hexavalent chromium (CrVI) has increased in monitoring well MW-10 to above 14.0 µg/l in groundwater. While it's possible this increase may be a result of the ozone pilot test conducted during August/September 2009, CrVI concentrations reported in monitoring well MW-10 approximately two weeks after the pilot test were <2.0 µg/l. This is consistent with background CrVI concentrations in well MW-10 of 2.0 µg/l during May 2009, prior to performance of the pilot test.

It should also be noted that CrVI was also present above the laboratory's reporting limits in upgradient well MW-1 (2.0 µg/l) prior to performance of the ozone pilot test. This suggests that *background concentrations* of CrVI are present at the site, independent of remedial activities.

6.0 LIMITATIONS AND CERTIFICATION

This report was prepared in accordance with the scope of work outlined in Delta's contract and with generally accepted professional environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of ConocoPhillips Company for the expressed purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Delta. To the extent that this report is based on information provided to Delta by third parties, Delta may have made efforts to verify this third party information, but Delta cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Delta.

CONSULTANT: **ANTEA ™GROUP**