



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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October 17, 2012

Mr. Louis Mosconi, CPG  
Phillips 66 Company  
3900 Kilroy Airport Way, Suite 210  
Long Beach, CA 90806

**Re: Opinion Pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the Following Site:**

- **Site Name:** Phillips 66 070644/Former Tidewater
- **Previous Names:** ConocoPhillips 5173 and Chevron 301233
- **Address:** 2800 Martin Luther King Jr. Way South, Seattle, WA 98144
- **Facility Site Number:** 42746846
- **VCP Number:** NW2612
- **ISIS Number:** 6056

Dear Mr. Mosconi:

Thank you for submitting documents regarding your proposed remedial action for the Phillips 66 070644 facility (Site), for review by the Washington State Department of Ecology (Ecology), under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding a review of submitted documents/reports pursuant to requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Gasoline- range petroleum hydrocarbons (GRPH) in soil and ground water
- Diesel- range petroleum hydrocarbons in (DRPH) soil and ground water
- Heavy- oil range petroleum hydrocarbons (HOPH) in soil and ground water
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) in soil and ground water

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(b) and WAC 173-340-515(5).



Mr. Louis Mosconi, CPG  
October 17, 2012  
Page 2

This opinion does not resolve a person's liability to the state under MTCA or protect a person from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). The opinion is advisory only and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your proposed remedial action(s):

1. October 9, 2012. Second Quarter 2012 Ground Water Monitoring and Sampling Report. Conestoga-Rovers & Associates (CRA).
2. April 27, 2012. *First Quarter 2012 [Ground Water] Monitoring and Sampling Report*. Stantec Consulting Corporation (Stantec).
3. March 14, 2012. *Soil and Ground Water Assessment Report*. Stantec.

The reports listed above will be kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Appointments can be made by calling the NWRO resource contact at (425) 649-7235.

Based on a review of supporting documentation listed above, pursuant to requirements contained in MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following releases at the Site, Ecology has determined:

You, through your consultant, Ed Turner, have requested that Ecology review the status of the cleanup at the Site based on the most current data submittals and offer some options for your consideration.

Despite the number of subsurface investigations that have been conducted at the Site, the lateral and vertical extent of the contaminate source remains undefined. Some as yet unidentified source may be contributing to the elevated concentrations of TPH-G, TPH-D, and TPH-O that persists in the ground water in vicinity of the former dispenser island.

Concentrations of TPH-G and TPH-D are present in monitoring wells MW-8, MW-3, and MW-5 on the western edge of the former dispenser islands. G-Logics reported the highest soil concentrations in the same vicinity in June 2005. The highest concentrations in soil were identified at depths between 15 and 20 feet below ground surface (bgs). Soil concentrations above MTCA Method A cleanup levels can remain in place below 15 feet and meet the soil cleanup levels for direct contact. Nevertheless, dissolved petroleum hydrocarbon concentrations in the ground water remain above MTCA Method A cleanup levels.

G-logics designed, installed and operated an ozone treatment system from September 2005 through June 2007 to mitigate the concentrations in the vicinity of the western pump island.

During the operation of the ozone system, several changes were made to the system including an additional compressor to increase the air flow to the wells and a distribution system for introducing Fenton's reagent. The injection pipe to introduce the Fenton's reagent could only be installed to a depth of six to seven feet even though it would have been installed at a greater depth had the subsurface been more stable. Well TW-1 was also installed to directly inject Fenton's reagent to the west of the pump island source area.

Stantec recommended:

- Preparation of a feasibility study upon completion of further delineation
- Preparation and Implementation of a Cleanup Action Plan (CAP)
- Installation of a soil vapor extraction system combined with air sparging (SVE/AS)
- Investigation of the possibility of down gradient co-mingling of contaminants from a ConocoPhillips branded station (Martin Luther King Union 76) directly to the west

Ecology considers these recommendations to be reasonable as the steps correspond to the steps outlined in MTCA with two exceptions. Ecology does not believe that SVE/AS would be appropriate for this Site based on results and difficulties encountered in previous attempts to use In-Situ Chemical Oxidation (ISCO). Certainly, though, it could be considered as a possible action as part of a feasibility study. While the possibility exists that down gradient co-mingling of contaminants could occur, Ecology has no report that the MLK Union 76 to the west of the Site has experienced a release. The MLK Union 76 is not a LUST listed site. The tanks on that site were replaced in 1991.

Ecology also offers the following suggestions for your consideration:

- Ecology assumes this Site can be remediated to meet the MTCA Method A cleanup levels for soil and ground water. This Site is not an industrial property; therefore, either MTCA Method A or Method B Cleanup levels are appropriate for this Site. The points of compliance would be throughout the Site or the Property if a Property-specific decision were requested.
- Even though attempts to cleanup this Site have been conducted in a somewhat non-sequential process to date, enough data does seem to exist to define an approach to the cleanup. Mr. Turner, your consultant, believes (1) monitored natural attenuation (MNA), (2) proof of non-potable water or (3) ISCO represent the most feasible options for cleaning up this Site.
- If MNA were to be chosen as the preferred cleanup action, it needs to meet all of the requirements in Ecology's *Guidance on Remediation of Petroleum Contaminated Ground Water by Natural Attenuation*, Publication Number 05-09-091. Since

ground water is still contaminated within the Property, an Environmental Covenant is needed. Also ground water monitoring must be continued to demonstrate the plume is contained within the Property boundary. This requires a feasibility study including a disproportionate cost analysis (DCA) as well as approval of the NWRO management team. Ecology has prepared an informal outline document to guide a feasibility study to aid in meeting these requirements. I have included this outline for your reference.

- Ecology considers most of the ground water in the State to be a potential potable source. A remote possibility is that low water yield at the Site could be a reason to suspend cleanup actions. To prove ground water to be non-potable, the yield of the wells at the Site would need to be determined. Some attempts at establishing yield have been more difficult than anticipated. In addition, a cleanup level for the ground water would need to be established. Washington does not have a published value. In at least one case, Ecology used the values established by Oregon. These are known as Utility Cleanup levels. They are designed to protect the health of utility workers who might encounter the ground water.
- This consideration of water being non-potable by Ecology would be made not only on the basis of low-yield (less than 0.50 gallons/minutes) but also with respect to the depth of the regional water level. Ground water cleanup standards are found in WAC 173-340-720. Potable ground water is defined and discussed in WAC 173-340-720 (2). All of the requirements in this Section, especially WAC 173-340-720 (2) c (i through vii), need to be met.
- Investigate the possibility of conducting a pilot test using In Situ Chemical Oxidation (ISCO) using a product provided by FMC Corporation (FMC). The product is named "Klozur" and contains sodium per-sulfate. Sodium hydroxide is used to activate the per-sulfate. The blended products are not hazardous and can be safely handled and injected. The in-situ injection of these compounds is intended to achieve aggressive fast-acting contaminant mass reduction associated with chemical oxidation. While ISCO has been previously attempted using another product, this application offers an option. All of the ISCO methods require however, that the oxidant can be delivered to the source. Delivery of Fenton's solution was incomplete in previous actions. Since unstable soil prevented installing the delivery tube horizontally, the delivery of the sodium per-sulfate could be through vertical tubes over a surface matrix or through the existing monitoring wells.

In summary, Ecology suggests conducting a feasibility study to choose which option is most appropriate for this Site.

Mr. Louis Mosconi, CPG  
October 17, 2012  
Page 5

**This opinion does not represent a determination by Ecology that a proposed remedial action will be sufficient to characterize and address the specified contamination at the Site or that no further remedial action will be required at the Site upon completion of the proposed remedial action.** To obtain either of these opinions, you must submit appropriate documentation to Ecology and request such an opinion under the VCP. This letter also does not provide an opinion regarding the sufficiency of any other remedial action proposed for or conducted at the Site.

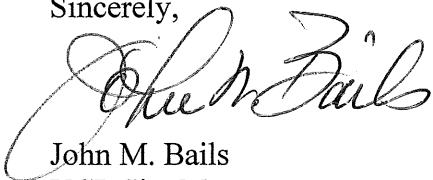
Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me at (425) 649-7099 or by email at [jbai461@ecy.wa.gov](mailto:jbai461@ecy.wa.gov).

Sincerely,



John M. Bails  
VCP Site Manager  
Toxics Cleanup Program

Enclosure (1): Feasibility Study (FS) Outline

cc: Edwin Turner, Conestoga-Rovers & Associates (CRA)