DEPARTMENT OF ECOLOGY

Environmental Assessment Program

Date: July 28, 2006

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Toxics Cleanup Program, SWRO

FROM: Pam Marti, Hydrogeologist and Tanya Roberts, Environmental Specialist
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THROUGH: Will Kendra, Section Manager, Environmental Assessment Program
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SUBJECT: **ADDENDUM TO QUALITY ASSURANCE PROJECT PLAN**
SHELTON LAUNDRY AND CLEANERS
STUDY TRACKER CODE: 04-064-04
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The purpose of this addendum is to document that this project is being extended an additional year to determine if the injection of a hydrogen release compound (HRC) has been effective in reducing groundwater contaminant concentrations at this site. Sampling procedures for the one-inch wells are also being altered in an effort to reduce variability in duplicate sample results.

The original goal of this project was to collect groundwater samples to determine if PCE and TCE concentrations were above or below the Model Toxic Control Act (MTCA) cleanup standard of 5 µg/L. Groundwater samples were collected quarterly for one year, from July 2002 to April 2003, from eight on-site monitoring wells.

Because PCE concentrations exceeded the MTCA cleanup standard in well 4W, Ecology has continued to monitor the groundwater quality at this site. Between July 2002 and April 2005, PCE concentrations in well 4W have ranged from approximately 10 to 25 µg/L.

In an effort to remediate the remaining contaminants, 1,050 pounds of HRC were injected into the shallow groundwater in the area of well 4W in June 2005. The HRC was injected at depths of 5 to 20 feet below the ground surface at sixteen locations spaced at 8-foot intervals over an area of about 60 feet by 15 feet.

Monitoring of five on-site wells continued on a quarterly basis between August 2005 and May 2006 to monitor PCE concentrations following the injection of HRC. During this time, PCE concentrations in well 4W ranged from a low of 6.8 µg/L in November 2005 to a high of 324 µg/L in May 2006.

PCE concentrations in the treatment area were low at the time of the HRC injection, approximately 15 µg. Findings of previous studies suggest that the microbial growth and conditioning needed to reduce contaminant concentrations may take longer in these situations. Increases in contaminant concentrations such as those observed in well 4W have also been reported at other HRC sites as biosurfactants solubilize the volatile organics that are adsorbed to the aquifer media. These increases are typically temporary.

Schedule

Monitoring Period Extended an Additional Year

The monitoring program is being extended an additional year to determine if the HRC will be effective in decreasing the PCE concentrations in well 4W. Project milestones and projected dates of completion are listed below. At the end of the monitoring year, all data will be evaluated and summarized in a technical memorandum.

Milestone	**Date**
QAPP Addendum	August 2006
Groundwater Sampling	August 2006, November 2006, February 2007, and May 2007
Draft Memo	June 2007
Final Memo	July 2007

All field measurements and analytical result data will be made available in electronic format on Ecology's EIM data management system: www.ecy.wa.gov/eim/index.htm.

Environmental Information System (EIM) Data Set (If Applicable)	
EIM Data Engineer	Tanya Roberts
EIM User Study ID	PMART001
EIM Study Name	Shelton Cleaners & Laundry
EIM Completion Due	June 30, 2007
Final Report	
Report Author Lead	Pam Marti
Schedule	
Report Supervisor Draft Due	Darrel Anderson: June 2007
Report Client/Peer Draft Due	Lisa Pearson: June 2007
Report Final Due (Original)	July 2007

Budget

The estimated laboratory budget for one year of quarterly sampling is $6,600, which covers the analytical costs for groundwater samples and laboratory quality assurance charges as shown in the following table. The analytical costs for this project are being paid for by the Toxics Cleanup Program. Estimates reflect the 50% discount that Ecology programs receive at Manchester Lab.

Estimated Laboratory Cost by Parameter Per Sample Quarter

Parameter	Predicted Number of Samples	Quality Control Samples	Cost Per Sample	Estimate Total Lab Cost
VOAs	7	4	$150	$1,650

Sampling Procedures

Sampling Method for One-Inch Wells Changed to Mechanical Bladder Pump

The one-inch wells which have been sampled with a peristaltic pump will now be sampled with a stainless steel mechanical bladder pump. During the past year of sampling, it was noted that clumps of an unknown substance were present in the groundwater pumped from well 4W. The unknown substance may be remnants of the HRC or the resulting microbial growth. Results of duplicate samples collected from well 4W had large variability which may be attributed to the presence of the unknown material. The mechanical bladder pump has a mesh screen at its intake that should prevent the entrance of the unknown substance into the samples. The pump will be pre-cleaned and then decontaminated between each well by circulating a laboratory grade detergent and water mixture through the pump for at least 100 pumps, followed by at least 100 pumps of rinse water. Dedicated tubing will still be used for each well.

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