SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

March 1, 2017

Mr. Dale Myers
Washington State Department of Ecology
3190 160th Avenue Southeast
Bellevue, Washington 98008

SUBJECT: 2017 WORK PLAN
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington
Project Number: 0914-003

Dear Mr. Myers:

SoundEarth Strategies, Inc. (SoundEarth) is pleased to present the Washington State Department of Ecology (Ecology) with a work plan and schedule for groundwater monitoring and ongoing remedial activities at the SKS Shell Station Site (SKS Site). The cleanup action at the SKS Site is being implemented in compliance with Prospective Purchaser Consent Decree #13-2-27556-2 (PPCD), entered on July 29, 2013. The remediation of petroleum-contaminated soil and groundwater associated with the SKS Site has been and continues to be performed concurrently with the development of a five-story, mixed-use building (the Whittaker) with two levels of underground parking.

The following tasks are expected to be conducted in 2017.

GROUNDWATER MONITORING

SoundEarth will continue to monitor groundwater levels and concentrations of gasoline- and diesel-range petroleum hydrocarbons (GRPH and DRPH), and benzene, toluene, ethylbenzene, and total xylenes (BTEX) in wells MW104, MW108, MW109, MW110, and RW03. Sampling of right-of-way (ROW) wells MW102, MW103, MW105, and MW107 is also planned for 2017.

GROUNDWATER ELEVATION AND FLOW STUDY

As noted in our recent Fourth Quarter 2016 Status Report, groundwater elevations beneath the SKS Site have decreased from what was previously observed during groundwater sampling conducted from 2013 to 2016. These lower groundwater levels were not anticipated. For the Fourth Quarter 2016 sampling event, concentrations of GRPH and benzene increased in the off-property wells RW03 and MW104. Concentrations of GRPH and BTEX in the selected compliance wells were lower during the Second and Third Quarter 2016 sampling events. We attribute the increase in groundwater contaminant concentrations to the lower water table, but it is not clear why groundwater levels were lower during the winter/wet season when water levels would be expected to be highest.

We are evaluating whether the subslab drainage system at the Whittaker building, as well as dewatering activities being conducted on new developments at surrounding properties, may be contributing to the lower groundwater elevations. In the event that groundwater levels continue to be depressed during First Quarter 2017, SoundEarth plans to conduct the following studies to further evaluate recent groundwater level fluctuations:

- **Subslab System Review.** SoundEarth will meet with the development contractor and review the subslab drainage system, including sumps and retention tanks for stormwater. A cross section will be prepared to show the potential effects of the drainage system and remediation barrier wall on groundwater flow and elevations. The cross-section will include new building slabs, footings, barrier system, and drainage features.
- **Surrounding Area Dewatering.** There are a number of new developments in the surrounding area that could be actively or passively dewatering in connection with subsurface excavation activities. The dewatering could be affecting the groundwater table at the SKS Site. SoundEarth will conduct a review of surrounding area developments. This evaluation may include interviews, site visits, and review of Seattle Department of Construction and Inspection records.
- **Transducer Study.** The majority of the SKS Site and surrounding areas were historically and currently covered by impervious surfaces, with very little surface water infiltration. Groundwater levels from 2012 to 2014 (prior to redevelopment) were fairly consistent throughout the year. Recent groundwater level measurements suggest variable conditions of groundwater may be attributable to subsurface excavation activities and/or disturbance of the original glacial till stratigraphy. To further access hydrogeologic conditions, SoundEarth will install pressure transducers and data loggers to record water level data in wells RW01 and MW110. Groundwater level data will be collected over a four to six month period. The transducer data will provide additional information regarding fluctuations in the groundwater levels. The data will be evaluated in combination with precipitation events and engineering barriers, such as the water proof barrier installed along the north and east shoring walls and the subslab footing drains and stormwater retention system, to determine what is contributing to the lower groundwater levels currently observed.
- **Groundwater contouring for ROW wells.** Groundwater levels will be measured for ROW wells, including the wells located within the Alaska Street/Fauntleroy Way intersection (MW102, MW103, and MW105). The groundwater levels will be converted to elevations and contoured to evaluate flow direction for comparison to pre-development conditions. Groundwater samples will also be collected from the ROW wells.

CHEMICAL INJECTIONS

The SKS Cleanup Action Plan incorporated into the PPCD included a proposed round of sodium persulfate activated by hydrogen peroxide injections in nine ROW wells (RW01 through RW09) located on the Alaska Street and Fauntleroy Way sidewalk. The injections were intended to accelerate the reduction of contaminants in groundwater. However, groundwater monitoring conducted in ROW groundwater wells after soil removal activities in 2015 indicated greatly diminished concentrations of GRPH and BTEX. During quarterly sampling in 2015 and 2016, contaminant concentrations were trending downward toward levels that would comply with MTCA Method A cleanup levels. Therefore, the proposed injections were delayed pending further monitoring.

We recommend that groundwater treatment be further delayed until additional information is obtained regarding the lower groundwater elevations beneath the SKS Site. The delay is technically appropriate because lower groundwater levels (26 to 27 feet below grade) are not conducive to treatment of petroleum-impacted smear zones (approximately 21 to 24 feet below grade). Additionally, the Fourth Quarter 2016 results may be an anomaly, such that subsequent monitoring would be needed to fully evaluate trends. We anticipate having a better understanding of groundwater levels and GRPH and BTEX concentrations after the completion of two additional quarters of groundwater monitoring and after performance of additional evaluations as appropriate.

UPDATED PROJECT SCHEDULE

The following summarizes the work conducted to date and the current schedule for anticipated reporting and monitoring work at the SKS Site:

Cleanup Plan Task	Date
UST Fuel Removal and Station Shutdown	Conducted: July 2013
Installation of Shoring for UST Removal	Conducted: November 2013
UST System Cleaning and Removal	Conducted: December 2013
Submit UST Removal Report	Conducted: January 2014
Permitting for Wells	Conducted: May 2014
Master Use Permit	Conducted: June 2014
Install Dewatering Wells (eight wells)	Conducted: July 2014
Install West Bounding Well MW107 (post demolition)	Conducted: October 2014
SKS Shell Demolition and Hoist removal	Conducted: October–November 2014
Construct Dewatering System in ROW wells	Conducted: March 2015
Operate Dewatering System	Conducted: March–June 2015
Contaminated Soil Excavation and Confirmation Sampling	Conducted: March–May 2015
Removal of Three Previously Unknown USTs	Conducted: March 2015
Backfill Excavation and Install Membrane Barrier	Conducted: August–September 2015
Install Compliance Wells MW108, MW109, and MW111	Conducted: September 2015
Prepare Interim Cleanup Action Report	Conducted: December–February 2016
First Quarter Post Cleanup GW Monitoring	Conducted: March 2016
Submit Cleanup Action Report	Conducted: October 2016
GW Elevation and Flow Study	Planned: March 2017
ROW Sampling	Planned: Second Quarter 2017
ChemOx	Planned: 2017 (Pending GW Study)
GW Monitoring & Contingent ChemOx Injection	Planned: 2018
GW Monitoring (as necessary)	Planned: 2017–2021

NOTES:
ChemOx = Chemical Oxidant
GW = groundwater
ROW = right-of-way
UST = underground storage tank

CLOSING

If you have any questions about the schedule and the proposed remedial activities, please contact me at 206-306-1900. We are happy to meet at your office or on site to discuss matters further.

Respectfully,

SoundEarth Strategies, Inc.

Rob Roberts
Senior Scientist

Suzy Stumpf
Senior Engineer

cc: Mr. Brad Reisinger, Lennar Multifamily
Mr. Kelley Kohout, Lennar Multifamily
Mr. Ken Lederman, Foster Pepper PLLC
Mr. Phil Carmody, GID
Mr. Jason Sweatt, GID
Mr. Ian Sutton, Joyce Ziker Parkinson, PLLC
Mr. Robert Linsday, Whole Foods Market
Mr. Dave Cook, Aspect Consulting

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