



May 5, 2017

HWA Project No. 2007-098-2044

Washington State Department of Ecology
3190 160th Ave SE
Bellevue, WA 98008

Attention: Sunny Becker

Subject: **Riverside TPH Site
Residual Soil Excavation Report
Bothell, Washington**

Dear Ms. Becker:

This letter report describes additional remedial excavation activities that occurred at the Riverside TPH Site, located in Bothell, Washington (Figure 1).

1.0 INTRODUCTION

1.1 BACKGROUND

The Riverside Site currently consists of portions of undeveloped lots and public rights-of-way in Bothell, Washington. The City of Bothell (City) is currently the owner of the Riverside Site (herein referred to as the Site). An Agreed Order, number DE 6295, as amended in April 2010, was entered between the City and the Washington State Department of Ecology (Ecology). The Riverside Site includes a TPH Site and a halogenated volatile organic compound (HVOC) Site.

Two phases of total petroleum hydrocarbon (TPH) soil cleanup, via excavation, have occurred at the TPH Site. The first phase of TPH soil cleanup was conducted by a former property owner in 1992 with petroleum impacted soils excavated, treated on-site by bioremediation, and then returned to the excavation. Subsequent site investigations by the City confirmed the presence of petroleum impacted soils in the former excavation area and a second phase of TPH soil cleanup was conducted by the City in 2010, under a 2010 Interim Action Work Plan. Following these interim action soil cleanups, a Final Remedial Investigation (RI) report that was submitted to Ecology in February 2016 described no areas with soils remaining above cleanup levels at the Riverside TPH Site.

However, in July 2016, the City informed Ecology that as part of their due diligence, a prospective developer represented by Farallon Consulting (Farallon) had encountered petroleum contaminated soils during a Limited Subsurface Investigation on the northern portion of the Riverside Site.

The City subsequently met with Ecology and submitted a “Residual Soil Excavation Work Plan” (October 12, 2016), thereafter receiving Ecology’s concurrence to implement the remediation work. The work consisted of excavation and off-site disposal of all impacted soils.

According to Farallon’s report, soil samples collected from four borings indicated that residual petroleum impacted soils above Ecology’s Model Toxic Control Act (MTCA) Method A cleanup levels were present in one of the soil borings, FB-5, that was located near the southern border of the vacant lot (Figure 2). A soil sample collected from 10 feet below ground surface (bgs) in FB-5 exhibited gasoline-range total petroleum hydrocarbons (TPHg) at a concentration of 300 milligrams per kilogram (mg/kg). Oil-range TPH (TPHo) was detected below the cleanup levels in this soil sample, and diesel-range TPH (TPHd) and benzene were not detected above the laboratory detection limits. Soil cleanup levels established for the Site are MTCA Method A and B. The cleanup level for TPHg is 30 mg/kg (MTCA Method A) and TPHd is 1,824 mg/kg (MTCA Method B). Petroleum hydrocarbons and benzene were not detected above cleanup levels in the sample collected from 5 feet bgs in boring FB-5. Petroleum hydrocarbons and benzene were all non-detect for the FB-5 soil sample collected from 12.5 feet bgs..

Based on the results of the Farallon FB-5 boring, a residual soil excavation interim action was conducted to address the remaining TPH contaminated soils at the Bothell Riverside TPH Site. This soil cleanup at the Site included excavation and off-site disposal of all accessible impacted soils. Upon completion of the remediation work, Ecology requires that the post-remediation results contained in this letter report be incorporated into the Final RI/FS report. The Final RI/FS report will also include truck manifests, haulage documentation and photo documentation.

The excavation was performed in two separate events, the first round occurred during January 2017 and the second during March/April 2017. The following sections describe the cleanup.

2.0 SITE REMEDIATION

2.1 PRE-EXCAVATION ACTIVITIES

Based on background information and analytical data from previous studies conducted at the Site, Contaminants of Concern (COC) expected to be found in soils near boring FB-5 are petroleum hydrocarbons (gasoline, diesel, and oil range).

The City engaged a construction contractor, Interwest Construction Inc. (ICI) of Burlington, Washington to perform the interim action soil cleanup during January 2017 excavation activities, and Kane Environmental Inc. (Kane) with subcontractor Spooner Contracting, LLC, to perform the interim action soil cleanup during the second round of

May 5, 2017

HWA Project No 2007 098 2044

cleanup in March/April 2017. HWA personnel monitored the cleanup activities and sampled soil to confirm successful cleanup.

Prior to the January excavation activities at the Site, HWA personnel reviewed documentation of previous investigations and remedial excavations to assess the lateral and vertical extent of TPH-impacted soils in the vicinity of the Farallon FB-5 boring. HWA then marked the estimated excavation area and completed utility locates to identify all public and private underground utilities.

2.2 SOIL EXCAVATION

During the first round of excavation activities, ICI excavated contaminated soil at the Site on January 10, 12, 13, and 18, 2017. During the second round, Kane/Spooner continued excavation activities at the Site on March 20, 23, 24, 27 through 31, and April 3, 2017. HWA personnel directed the cleanup based upon prior investigations and remedial excavation activities, as well as field screening information such as soil color, odor, and photoionization detector readings. When the screening information indicated clean soil, HWA collected confirmation samples for laboratory analysis to document that the soils left in place met the Site cleanup levels.

Contaminated soil was excavated generally to a depth ranging from 10 to 12.5 feet below ground surface (bgs), which was found to meet the cleanup levels for the bottom of the excavation. The approximate limits of soil excavation are shown on Figure 2. The final excavation was approximately 65 by 55 feet in its maximum width and length, respectively. Photos 1 through 7 in Appendix A depict the final excavation.

During the January cleanup, ICI excavated and transported 934.22 tons of soil to the CEMEX USA (formerly Rinker) Inert Materials Landfill facility in Everett, Washington for thermal desorption treatment followed by permitted landfill disposal. A copy of the CEMEX Release of Liability/Certificate of Disposal for the soil is presented in Appendix B. This CEMEX Release of Liability/Certificate of Disposal includes soil from a nearby project, therefore the total shows as 1325.42 tons of soil, only 934.22 of which are from the Bothell Riverside excavation.

During the March/April cleanup, 333.64 tons of soil were excavated and transported to CEMEX. An additional 613.41 tons were transported to a Waste Management transfer station in Woodinville, Washington, for transport and permitted disposal at the Waste Management landfill in Columbia Ridge, Oregon, for a total of approximately 947 tons excavated and disposed of properly during the March/April round of cleanup, and approximately 1,881 tons for all 2017 cleanup excavations. A copy of the CEMEX and Waste Management Release of Liability/Certificate of Disposal documents for the soil are also presented in Appendix B.

2.3 CONFIRMATION SAMPLING

During the January 2017 excavation activities, HWA personnel collected a total of 21 excavation sidewall and 4 excavation bottom samples to confirm soil cleanup (Table 1). Of the 21 sidewall and 4 bottom samples, 7 of the sidewall and 2 of the bottom location samples were over-excavated due to laboratory results indicating contaminants of concern (COC)s were above the MTCA regulatory cleanup levels. In addition, three confirmation samples collected, one from the northwest sidewall (sample R-PEX-32-10) and two from the south (sample R-PEX-19-10) and southeast (sample R-PEX-28-10) sidewalls, exhibited gasoline concentrations of 39, 64 and 86 mg/kg, respectively, which is above the established MTCA Method A cleanup level of 30 mg/kg. Soils in these areas were temporarily left in place but were later over-excavated during the second round of excavating in March/April 2017.

During the March/April 2017 excavation activities, HWA personnel collected a total of 23 sidewall and 5 excavation bottom samples to confirm soil cleanup (Table 1). Of the 23 sidewall and 5 bottom samples, 5 of the sidewall and 1 of the bottom location samples were over-excavated and re-sampled due to cleanup level exceedances.

Figure 2 depicts confirmation sample locations. Laboratory certificates are included in Appendix C. Table 1 includes laboratory data for the interim action residual soil cleanup conducted at the Site.

Backfill samples from January and March were tested for TPHd, TPHo, TPHg, and BTEX, and did not contain any of these constituents above laboratory reporting limits. Appendix C contains the laboratory report for all backfill samples. Table 2 and the laboratory reports also include results from 1) one backfill sample that contained TPH and was subsequently rejected to be utilized as backfill; and 2) one backfill sample that contained low concentrations of TPH that were thought to be spurious, because no TPH was detected in three subsequent samples of the same material.

2.4 GROUND WATER MANAGEMENT

The excavation depth ranged from 10 to 12.5 feet bgs. Minimal perched ground water seepage was encountered at a depth of approximately 8 feet bgs in the excavation. In addition, precipitation that occurred during excavation activities accumulated in the excavation. During the January 2017 excavation activities, ICI managed the water accumulation by pumping water from the excavation into a Baker holding tank, allowing sediments to settle, and discharging of the water utilizing an existing King County Industrial Waste Division permit obtained by ICI for temporary discharge of water generated during dewatering activities. During the March/April 2017 excavation activities, Kane contracted Marine Vacuum Services, Inc. to remove any groundwater encountered and/or accumulated precipitation using a 2,500-gallon Vacuum truck to dewater the excavation prior to digging.

May 5, 2017

HWA Project No 2007 098 2044

3.0 SITE RESTORATION

Due to contaminated soils being temporarily left in place after the January cleanup on the northwest, south and southeast sidewalls of the January excavation, a layer of polyethylene sheeting (Visqueen) was placed along the sidewalls of the excavation as an indicator of the boundary between the contaminated soils and the clean backfill and in an effort to keep clean backfill soils from becoming adversely impacted. ICI then backfilled and compacted the excavation with clean imported structural fill soils meeting the requirements of Select Borrow, per WSDOT Standard Specification 2-03.3(14)K. The imported select borrow was obtained from Wetlands Creations, who mined the soils from their facility in Monroe, Washington (i.e., native quarry materials not excavated or reused from any developed property).

During the March/April round of excavation and prior to backfilling and compaction activities, Kane imported and placed one to two feet of quarry spalls, obtained from CalPortland located in Kenmore, Washington, on the bottom of the excavation to approximately one foot above the ground water level. This was performed to ensure ground water did not mix with the structural fill soils, ultimately helping with compaction efforts. A filter fabric was placed on top of the layer of quarry spalls and the excavation was then backfilled and compacted with clean imported gravel borrow from CalPortland. Additionally, a layer of 5/8-inch minus crushed rock was placed and compacted in the top six inches of fill where the original paved driveway was located just off of State Route 522 leading into the Baskin Robbins and Gallo De Oro Mexican restaurant parking lot. This was to act as a temporary driveway until repaving could be completed at a later date.

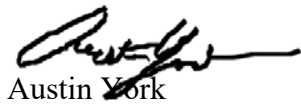
During backfilling activities, the select and gravel borrow were compacted to Method B of WSDOT Standard Specification 2-03.3(14)C, i.e., 90 percent of maximum dry density as determined using test method ASTM D 1557 (Modified Proctor) below four bgs, and 95 percent of maximum dry density for the upper four feet. Due to softer soils (peat) encountered in the bottom of the excavation, the first two lifts of backfill were placed and spread in layers of approximately two-feet of uncompacted thickness. Subsequent backfill lifts were placed and spread in layers not more than 10 inches in uncompacted thickness.



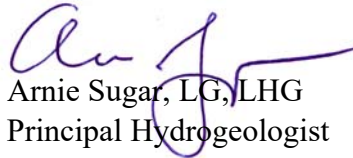
May 5, 2017
HWA Project No 2007 098 2044

We appreciate the opportunity to provide our services to you on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,
HWA GEOSCIENCES INC.



Austin York
Geologist



Arnie Sugar, LG, LHG
Principal Hydrogeologist

Figures:

Figure 1: Riverside Site Vicinity

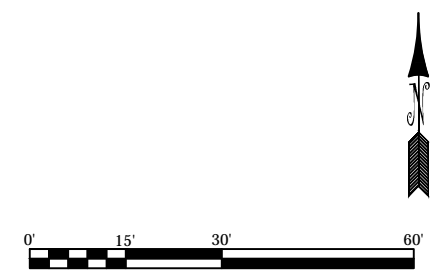
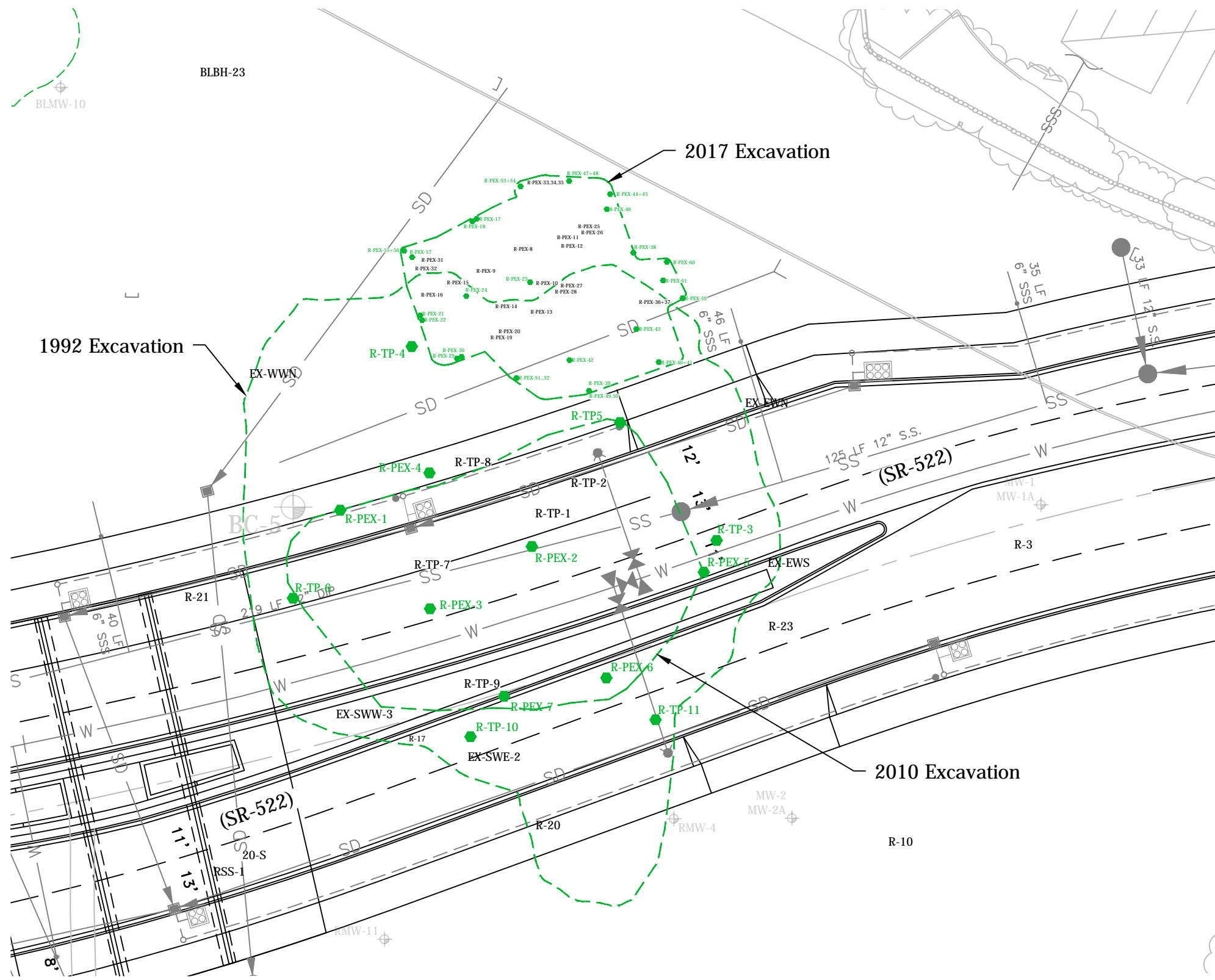
Figure 2: Riverside TPH Excavation Area

Appendices:

Appendix A: Site Photographs

Appendix B: Disposal Documents

Appendix C: Laboratory Reports



- EXPLANATION OF SYMBOL**
- APPROXIMATE PROPERTY BOUNDARY
 - APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION
 - R-PEX-9 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS < MTCA
 - R-PEX-8 APPROXIMATE LOCATION OF SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED
 - R-TP-4 TEST PIT LOCATION WITH CONCENTRATIONS < MTCA

BASE MAP PROVIDED BY PARAMETRIX



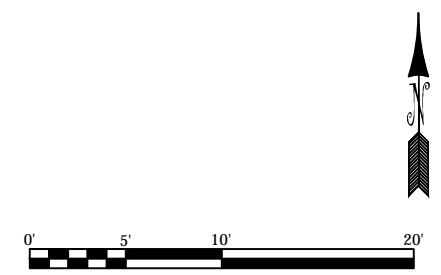
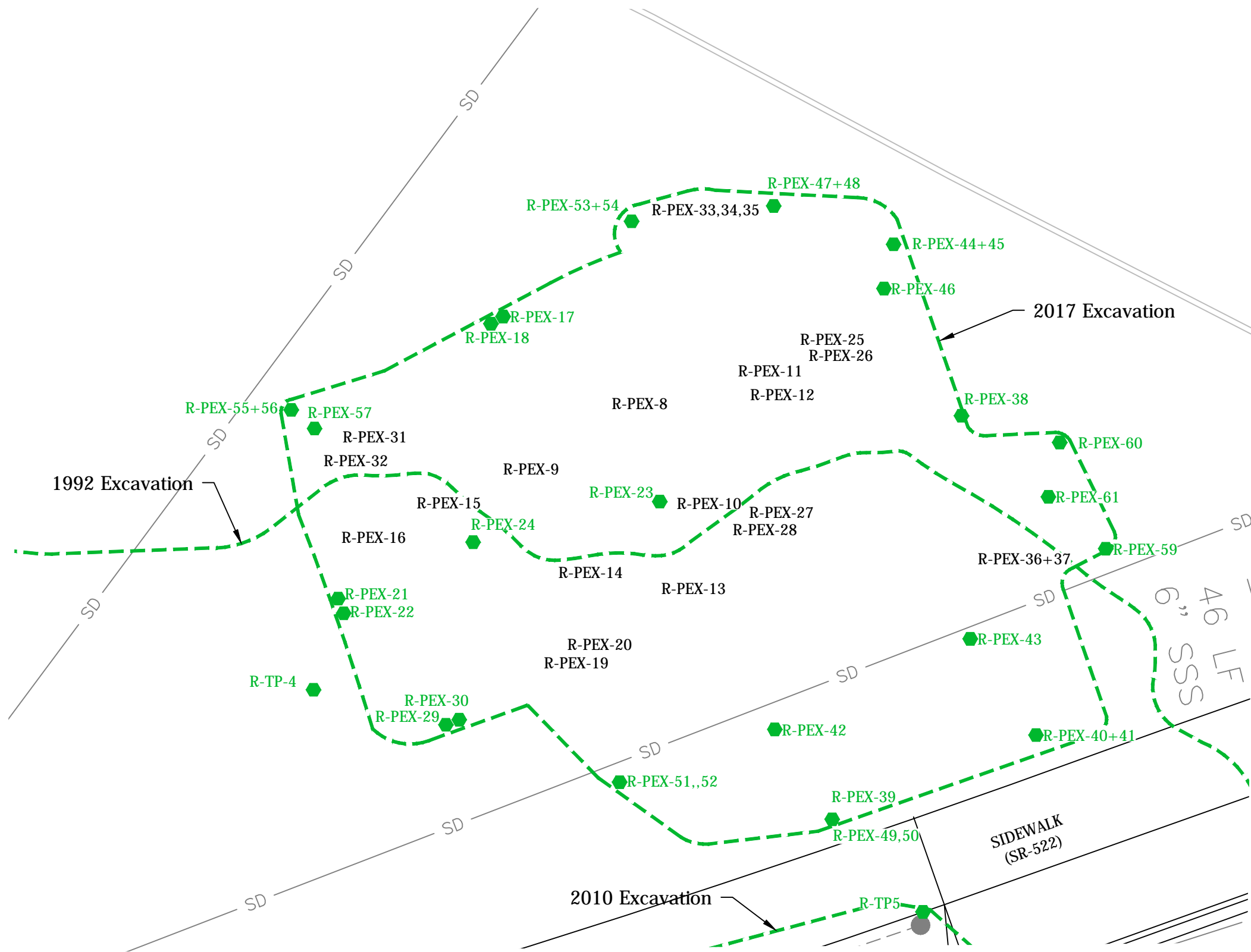
HWA GEOSCIENCES INC.

**BOTHELL RIVERSIDE SITE
RI/FS
BOTHELL, WASHINGTON**

**EXTENT OF INTERIM
ACTION CLEANUP**

DRAWN BY EFK
CHECK BY AS NK, AY
DATE 04.12.17

FIGURE NO. **1**
PROJECT NO. **2007-098 T919**



- EXPLANATION OF SYMBOL**
- APPROXIMATE PROPERTY BOUNDARY
 - APPROXIMATE LIMITS OF CONTAMINATED SOIL EXCAVATION
 - R-PEX-9 APPROXIMATE LOCATION OF CONFIRMATION SOIL SAMPLE LEFT IN PLACE WITH CONCENTRATIONS < MTCA
 - R-PEX-8 APPROXIMATE LOCATION OF SOIL SAMPLE IN AREA THAT WAS SUBSEQUENTLY EXCAVATED
 - PRE-INTERIM ACTION SOIL SAMPLE MEETING
 - MTCA CLEANUP LEVELS
 - R-TP-4 TEST PIT LOCATION WITH CONCENTRATIONS < MTCA

6" SSS
46 LF



HWA GEOSCIENCES INC.

RIVERSIDE SITE
BOTHELL, WASHINGTON

EXTENT OF 2017 INTERIM
ACTION CLEANUP

DRAWN BY <u>EFK</u>	FIGURE NO. 2
CHECK BY <u>AS/NK/AY</u>	PROJECT NO.
DATE 04.12.17	2007-098 T2044

May 5, 2017
HWA Project No 2007 098 2044

APPENDIX A



Photograph 1: View facing East toward the final boundaries of the January 2017 Bothell Riverside remedial excavation.



Photograph 2: View facing Northeast toward the January 2017 Bothell Riverside remedial excavation during backfilling activities. Polyethylene sheeting placed in the excavation as an indicator of the boundary between contaminated soils and clean backfill.



Photograph 3: View facing South toward boundaries of the March/April 2017 Bothell Riverside remedial excavation.



Photograph 4: View facing Southeast toward the March/April 2017 Bothell Riverside remedial excavation during backfilling activities. Quarry spalls were placed in the bottom 1 to 2 feet of the excavation.



Photograph 5: View facing Southeast toward the March/April 2017 Bothell Riverside remedial excavation during backfilling activities. A filter fabric was placed over the quarry spalls prior to backfilling with gravel borrow.



Photograph 6: View facing Southeast toward the March/April 2017 Bothell Riverside remedial excavation. Cleanup efforts continued to the East side of the driveway located just off of State Route 522 leading into the Baskin Robbins and Gallo De Oro Mexican restaurant parking lot.



Photograph 7: View facing Southwest toward the March/April 2017 Bothell Riverside remedial excavation during the end backfilling activities. Gravel borrow materials were placed in 10" lifts and compacted from approximately 9' bgs to grade. A layer of 5/8-inch minus crushed rock was placed and compacted in the top six inches of fill where the original paved driveway was located.

May 5, 2017
HWA Project No 2007 098 2044

APPENDIX B

May 5, 2017
HWA Project No 2007 098 2044

APPENDIX C