Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Prepared for

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Final

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LIMITATIONS

This report has been prepared for the exclusive use during the Former Olympia Dry Cleaners Site Remedial Action. It has been prepared following the described methods and information available at the time of the work. No other party should use this report for any purpose other than that originally intended, unless Floyd|Snider agrees in advance to such reliance in writing. The information contained herein should not be utilized for any purpose or project except the one originally intended. Under no circumstances shall this document be altered, updated, or revised without written authorization of Floyd|Snider.

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List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
bgs	Below ground surface
BMP	Best Management Practice
CAP	Cleanup Action Plan
CDF	Controlled-density fill
COC	Chemical of concern
DCE	Dichloroethene
Ecology	Washington State Department of Ecology
HASP	Health and Safety Plan
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MTCA	Model Toxics Control Act
NPDES	National Pollutant Discharge Elimination System
PCE	Tetrachloroethene
PID	Photoionization detector
PSE	Puget Sound Energy
QAPP	Quality Assurance Project Plan
RAWP	Remedial Action Work Plan
ROW	Right-of-way
SAP	Sampling and Analysis Plan
Site	Former Olympia Dry Cleaners Site
SPCC	Spill Prevention Control and Counter Measure Plan
STEL	Short-term exposure limit
SWMP	Stormwater Management Plan
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leachate Procedure
TESC	Temporary Erosion and Sediment Control
USEPA	U.S. Environmental Protection Agency
WAC	Washington Administrative Code
UDP	Unanticipated Discovery Plan

1.0 Introduction

This Remedial Action Work Plan (RAWP) was prepared to provide details for the remedial actions that will be completed at the Former Olympia Dry Cleaners Site (Site). The Site is located at 606 Union Avenue Southeast in Olympia, Washington (refer to Figure 1). The remedial actions, which will consist of source removal via excavation, are being completed to remove tetrachloroethene- (PCE) and trichloroethene- (TCE) contaminated soil that resulted from former dry cleaning operations at the Site. The remedial actions are being completed in accordance with the Washington State Department of Ecology's (Ecology) October 29, 2014 Cleanup Action Plan (CAP) for the Site, and consistent with Washington Administrative Code (WAC) 173-340-360, the Model Toxics Control Act (MTCA).

The cleanup objective of the Remedial Action is to remove the majority of known and reasonably accessible residual source mass soil via excavation to eliminate the direct contact pathway and to significantly reduce the source of groundwater contamination at the Site.

2.0 Site Description and Summary of Environmental Conditions

The Former Olympia Dry Cleaners Property is located at 606 Union Avenue Southeast in Olympia, Washington (Figure 1). The property is currently in operation as Howard's Prestige Cleaners, a dry cleaning drop-off and pick-up location, and is located at the intersection of Union Avenue Southeast and Cherry Street Southeast. Dry cleaning activities are not currently performed on-site. Improvements to this property include the one-story, slab-on-grade Former Olympia Dry Cleaners Building (2,584 square feet in area) and asphalt-paved areas, which serve as parking, along the west and south perimeters. An unpaved alley (the North Alley), approximately 6 feet in width, borders the north side of the Former Olympia Dry Cleaners Building. Refer to Figure 2 for site features.

2.1 SITE DESCRIPTION

The Site is defined by the lateral and vertical extent of contamination that has resulted from the operation of a former dry cleaning machine on the Former Olympia Dry Cleaners Property. Based on the extent of contamination, the Site includes a portion of the Former Olympia Dry Cleaners Property, a portion of the property located adjacent to the north (the Cherry Street Q-Tip Trust Property), and a portion of the Cherry Street Southeast right-of-way (ROW; Figure 2). The Site covers approximately 3,700 square feet, based on the extent of PCE in affected soil and groundwater.

As mentioned, the Site encompasses a portion of the adjacent Cherry Street Q-Tip Trust Property, located at 1000 Cherry Street Southeast. This Cherry Street Q-Tip Trust Property is located north of the Former Olympia Dry Cleaners Property and across the North Alley (Figure 2). The western portion of this property is developed with a one-story building (Cherry Street Q-Tip Trust Building) that includes a basement beneath its northern portion. The building has historically been used as office space. The eastern and northern portions of this property are asphalt-paved and used as parking areas. The North Alley borders the south side of the Cherry Street Q-Tip Trust Building.

2.2 CHEMICALS OF CONCERN

The chemicals of concern (COCs) for the Site are the chemical compounds associated with dry cleaning activities that were detected in soil, groundwater, and surface water (i.e., the Seep) at concentrations exceeding the applicable MTCA cleanup levels. Indoor air is also a media of concern for the Site due to elevated soil vapor (soil gas) sample results from beneath the slab of the dry cleaners building (sub-slab sample). Prior testing of indoor air at the Cherry Street Q-Tip Trust Building did not indicate impacts to indoor air from site releases. Soil, groundwater, surface water, and air are the media of concern at the Site. PCE concentrations in soil are depicted on Figure 3, and PCE isoconcentrations in groundwater are depicted on Figure 4.

The following are COCs identified for each media of concern for the Site: PCE, TCE, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, 1,1-DCE, and vinyl chloride. The suspected source of

PCE and its degradation compounds (TCE, cis-1,2-DCE, and vinyl chloride) are associated with release of solvent to site soils from former dry cleaning operations.

2.3 CLEANUP LEVELS

Cleanup levels for the Site are presented in Table 1. Two factors control designation of appropriate cleanup standards for specific sites: specification of cleanup levels (the chemical concentrations that are protective of human health and the environment) for each COC in each impacted media; and identification of the point of compliance (the location on the Site where the cleanup levels must be attained). Table 1 is from the CAP and identifies the site-specific numerical cleanup levels, based on the applicable cleanup levels by media for each specific COC identified in Section 2.2.

Table 1
Cleanup Levels[a]

Chemical	Soil	Groundwater	Surface Water (Seep)	Indoor Air-Residential[b]	Indoor Air-Commercial[c]
PCE	0.05 mg/kg	5 µg/L	3.3 µg/L[d]	9.6 µg/m^3	32 µg/m^3
TCE	0.03 mg/kg	5 µg/L	30 µg/L[d]	0.37 µg/m^3	2 µg/m^3
cis-1,2-DCE	0.03 mg/kg[e]	16 µg/L[f]	NA	NA	NA
trans-1,2-DCE	0.043 mg/kg[e]	100 µg/L[g]	10,000 µg/L[d]	27 µg/m^3	60 µg/m^3
1,1-DCE	0.03 mg/kg[e]	7 µg/L[g]	3.2 µg/L[h]	91 µg/m^3	670 µg/m^3
Vinyl Chloride	0.03 mg/kg[e]	0.2 µg/L	2.4 µg/L[d]	0.28 µg/m^3	0.9 µg/m^3

Notes:
- a Cleanup levels are MTCA Method A unless otherwise noted. Values taken from a query of Ecology's CLARC website on January 10, 2014 and CLARC Guidance documents for TCE, PCE, cis- and trans-1,2-DCE, 1,1-DCE, and vinyl chloride.
- b MTCA Standard Method B Indoor Air Cleanup Level.
- c MTCA Modified Method B to account for current commercial land use. Refer to Appendix A of the CAP.
- d Surface Water ARAR – Human Health, Marine, Clean Water Act.
- e MTCA Method B calculated value for protection of the soil-to-groundwater pathway (adjusted up to the soil PQL as appropriate).
- f MTCA Method B non-carcinogen Standard Formula Value.
- g Ground Water ARAR – State and Federal Maximum Contaminant Level.
- h Surface Water ARAR – Human Health, Marine, National Toxics Rule.

Abbreviations:

ARAR	Applicable or Relevant and Appropriate Requirements
CLARC	Cleanup Levels and Risk Calculation
µg/L	Micrograms per liter
µg/m3	Micrograms per cubic meter
mg/kg	Milligram per kilogram
NA	Not applicable or no cleanup level has been established
PQL	Practical quantitation limit

3.0 Proposed Removal Action Construction Activities

The proposed remedial action described in the CAP involves the excavation of almost all of the known and accessible soil contamination from the Site using slot trenches to help provide the necessary shoring. Excavation would occur outside the footprints of the two existing buildings on the Site as shown on Figure 5 and would involve a limited amount of excavation within the public ROW. The slot trenches would be backfilled with controlled-density fill (CDF) to form a low-permeability barrier to upwelling groundwater flow.

3.1 PRE-CONSTRUCTION PLANS, PERMITS, AND ACCESS

Prior to implementing the soil excavation activities, detailed project plans were prepared, which are included as appendices to this RAWP. Permits must be obtained from the City of Olympia prior to initiating the work as described below. A natural gas line owned by Puget Sound Energy (PSE) that currently runs through the proposed main excavation area will be relocated by the contractor prior to the work, in conjunction with PSE. Lastly, an off-site access agreement must be obtained from the adjacent property prior to initiating cleanup actions on their property.

3.1.1 Project Plans

This RAWP includes the necessary details on how the cleanup action will be performed, and includes a site-specific Health and Safety Plan (HASP), a Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP), a Spill Prevention Control and Counter Measure Plan (SPCC), a Temporary Erosion and Sediment Control (TESC) and Stormwater Management Plan (SWMP), and an Unanticipated Discovery Plan (UDP).

In addition, details regarding soil compliance monitoring requirements are detailed in Section 3.3 and soil handling details are included in Section 3.4.

A site-specific HASP was prepared for this work. Workers will wear the appropriate personal protective equipment, which is expected to be Modified Level D based on existing data. A daily safety briefing will be performed prior to any field work. A copy of the HASP is included as Appendix A.

A SAP and QAPP were prepared to detail field and laboratory procedures and quality control requirements. A copy of the SAP/QAPP is included as Appendix B.

A SPCC Plan was prepared to detail how to prevent spills from occurring or provide efficient and timely cleanup response if a spill occurs during the remedial action construction activities. A copy of the SPCC Plan is included as Appendix C.

A TESC and SWMP were prepared to identify the Best Management Practices (BMPs) that will be used to control and manage stormwater during remedial construction activities. A copy of the TESC/SWMP is included in Appendix D.

A UDP was prepared to detail the procedures for the unanticipated discovery of human remains or archaeological resources during the proposed soil excavations, in accordance with state and federal laws. A copy of the UDP is included in Appendix E.

3.1.2 Permitting

Several permits are required for the implementation of the remedial actions at the Site and are as described in the following sections.

3.1.2.1 Effluent Discharge Authorization

Authorization to discharge under the current discharge authorization permit for the Site shall be requested from the LOTT Clean Water Alliance if groundwater seeps or other water effluent is to be discharged to the sanitary sewer. The current permit was issued for discharge of the seep water that has been collected and treated since 2007. LOTT's Budd Inlet Treatment Plant and discharge of treated water to Budd Inlet are regulated under a National Pollutant Discharge Elimination System (NPDES) Permit. LOTT operates under an Ecology-issued NPDES Permit because treated effluent is released into Budd Inlet.

3.1.2.2 City of Olympia Requirements

Prior to excavating in the Cherry Street Southeast ROW, the substantive requirements of all applicable City of Olympia permits (ROW Obstruction, ROW Restoration, and Grading Permits) shall be met. The City of Olympia also requires additional bonding and insurance requirements for contractors performing work in the street ROW. The required applications and submittals will be provided to the City of Olympia upon preliminary approval of the figure set included in this RAWP by Ecology.

After the completion of excavation, the sidewalk and pavement shall be restored to meet the Olympia Engineering Design and Development Standards Manual requirements listed in Chapter 4 (Transportation) Sections 4B.175 (Pavement Restoration) and 4C (Sidewalks and Curbs). The City of Olympia's Engineering Design and Development Standards Manual is available online at: http://www.codepublishing.com/wa/olympia/?edds/OlympiaEDDSNT.html.

A portion of Cherry Street Southeast will be blocked of during the excavation in the ROW; therefore, a traffic control plan was prepared and will be submitted to the City of Olympia for approval as part of the grading permit application. This plan, which is included as Figure 6, identifies safety measures and controls necessary to safeguard the general public and workers during excavation work that will be completed in the City of Olympia ROW for Cherry Street Southeast.

3.1.3 Utility Locate and Relocation

Utilities within or immediately adjacent to the excavation areas were identified as part of the project planning. This notice was provided by contacting the call-before-you-dig one-call underground utility locate center on September 9, 2014.

A private utility locate was completed by APS on September 24, 2014 to verify the locations of the utilities in the excavation areas. Floyd|Snider marked out the limits of the excavation areas and confirmed that there is a natural gas line, a water line, and a storm drain catch basin and line that traverse through the main excavation area. In addition, the natural gas line and meter are also located within the secondary excavation area, which will affect the field delineation of that excavation.

A 4-inch natural gas main that runs through the proposed main excavation area is owned by PSE and is shown on Figure 5. This main, which serves the former Olympia Dry Cleaner Building with a 1-inch service line, will be cut and capped outside of the excavation footprint and rerouted into Cherry Street Southeast by PSE prior to the start of excavation. This work will be completed by PSE with trenching to be completed by the excavation contractor. A new service and meter will also be relocated and installed as part of the natural gas main relocation.

Concurrent with the PSE natural gas line relocation, a certified plumber will disconnect and reroute the water service line around the excavation, within the same trench as the natural gas line. Per PSE, the water line must be a minimum of 12 inches from the gas line for safety. To the extant practical, this work will be completed while the neighboring property is closed for business to minimize service disruption. According to a representative of the business, they are closed Friday through Sunday.

Although the utility relocation will be completed and permitted by PSE, the trenching will be completed by the excavation contractor. Therefore, the contractor will mobilize to the Site and set up stormwater controls and soil management BMPs prior to initiating the trenching. Floyd|Snider personnel will provide oversight during the trenching for the relocation of the natural gas line and the water line. The trench will be located outside of the excavation area limits, and the depth of the trench will be relatively shallow (between 2 and 3 feet below ground surface [bgs]) so impacted soil and groundwater are not expected to be encountered. Chlorinated volatile organic compounds in soil were not detected at concentrations greater than the laboratory method detection limits at the closest soil boring (B-5) at a depth of 3 feet bgs, and the depth to groundwater in the vicinity of the utility relocation is approximately 5 feet bgs.

Floyd|Snider personnel will periodically field screen soil with a photoionization detector (PID) during trenching. If field screening indicates that soil is not contaminated (i.e., volatile organic compounds are not detected with the PID), then it will be deemed suitable for use as backfill as long as it meets the City of Olympia requirements for backfill (to be determined by PSE). If field screening indicates that soil is potentially contaminated (i.e., volatile organic compounds measured greater than 1 parts per million by volume greater than background), then soils will be segregated and managed in accordance with Section 3.4 of this RAWP.

3.1.4 Off-Site Access

Cleanup action work will include removal of soil on the Cherry Street Q-Tip Trust Property. This will require an access agreement from the Cherry Street Q-Tip Trust. The front handicap entrance

to this building will be disturbed and blocked during excavation; however, an alternate rear handicap entrance is available for use during construction. In addition, several shrubs and a tree will be temporarily moved to the extent practical to complete the excavation. The front handicap entrance will be restored subsequent to completion of the excavation and the shrubs and tree will be replanted. A water line running through the excavation area will also be relocated.

3.1.5 Monitoring Well Decommissioning and Abandonment

Existing Monitoring Wells MW-10, MW-12, and MW-15 will be decommissioned by a certified well driller prior to initiating excavation in the main area. These monitoring wells are not necessary for long-term monitoring and will, therefore, not be replaced after excavation activities are complete.

Monitoring wells are not present within the footprint of the secondary excavation. However, to facilitate access to the secondary excavation area (well is above grade with bollards), Monitoring Well MW-08 will be abandoned prior to excavation.

Additional monitoring wells that will not be needed for long-term compliance monitoring will also be decommissioned at the same time as Wells MW-8, MW-10, MW-12, and MW-15. These additional wells include Monitoring Wells MW-1, MW-3, MW-4, and MW-7 as shown on Figure 5.

3.1.6 Pre-Excavation Soil Characterization

PCE-contaminated soil that is excavated can be landfilled at a Subtitle D landfill with a contained-in determination letter from Ecology. At least 60-days prior to the anticipated start of construction activities, soil samples will be collected to facilitate disposal profiling and coordination and Ecology's contained-in determination (refer to Section 3.4.1 for additional details). Soil samples will be collected from a total of four soil borings (three in the main excavation area and one in the secondary excavation area) using a direct-push drilling method with lined 5-foot sample cores. Soil borings in the main excavation area will be advanced to a maximum of 15 feet bgs and the soil boring in the secondary excavation area will be advanced to a maximum of 5 feet bgs.

Soil borings in the main excavation area will be co-located in the three areas with the greatest remaining PCE concentrations in soil after the Interim Action excavation in 2007 (sample Locations 06-C21@8FT, 06-C36@8FT, and 06-E07@8FT). Refer to Figure 7 for the proposed soil boring locations in the main excavation area. The PCE concentrations in each of these three areas are greater than 14 milligrams per kilogram (mg/kg), which is the maximum allowable concentration for disposal at a Subtitle D solid waste landfill, without Toxicity Characteristic Leachate Procedure (TCLP) testing. Therefore, each of these borings will be co-located and soil samples will be collected from the 5 to 10 foot interval for the Site COCs using U.S. Environmental Protection Agency (USEPA) Method 8260B and preserved using USEPA Method 5035. In addition, TCLP analysis for PCE and TCE will be completed on each of these samples.

Soil samples will additionally be collected from the three main excavation soil borings from the 10 to 15 foot interval (ideally from 10 to 12 feet) to confirm the maximum depth of the excavation. These additional samples will also be analyzed for the Site COCs using USEPA Methods 8260B and 5035.

One soil sample will be collected from the soil boring from the secondary excavation for analysis of the Site COCs using USEPA Methods 8260B and 5035.

3.2 DESCRIPTION OF REMOVAL ACTION

The selected cleanup action will remove almost all of the known and reasonably accessible residual source mass soil from the Site. It would limit the extent of excavation to outside the footprints of the two existing buildings on the Site and would involve a limited amount of excavation within the public ROW. Excavation work would be performed in two areas. The approximate excavation footprints are shown on Figure 5. The estimated mass of soil to be excavated in these two areas would be approximately 400 tons. To the extent practicable, the excavation work will be scheduled during the dry season (May 1 to September 30) and during a forecasted stretch of dry weather to minimize complications associated with water accumulation and stormwater.

3.2.1 Main Excavation Area

The main excavation area is located near the northwest corner of the Former Olympia Dry Cleaners Property. This is the same area where excavation occurred as part of the 2006 interim remedial action; however, the area previously excavated did not remove all accessible contamination, both laterally and with depth. The remaining soil at the limits of the 2006 interim remedial action contained PCE concentrations as great as 96 mg/kg, which indicates that a significant residual source mass of PCE was left in place. The existing soil data show that the bulk of the residual source mass soil in this area is located primarily at depths of 4 to 10 feet bgs within the sidewall limits of the prior excavation.

The selected cleanup action would remove all the known and accessible soil in this area with residual PCE concentrations equal to or greater than the PCE MTCA Method A cleanup level of 0.05 mg/kg with a single exception. That exception lies well within Cherry Street Southeast at Boring B05, where a single soil sample from the boring at 7 feet bgs contained PCE at a concentration of 2.9 mg/kg. PCE was not detected in soil samples collected from this boring above and below that depth, at 3 feet, 11 feet, and 14 feet bgs. The soil data from Boring B05 indicate that at that distance from the source, the PCE has been constrained to soil stringers and represents very little source mass. Given this low concentration of PCE in Boring B05, the small amount of affected area and the difficulties associated with excavating into the public ROW, the proposed excavation limit for the selected cleanup action would extend approximately 5 feet into Cherry Street Southeast. This main excavation footprint would also include the Seep location. Soil would be removed up to a depth of approximately 10 to12 feet bgs. Data from the borings described in Section 3.1.6 will be useful in refining the final excavation depth.

3.2.2 Secondary Excavation Area

The secondary and smaller excavation area is located near the northeast corner of the Former Olympia Dry Cleaners Property. This shallow (5 feet bgs or less) excavation area would address a minor area of historical PCE concentrations in soil that slightly exceeded the MTCA Method A cleanup level.

3.2.3 Excavation Methodology

Following abandonment of the monitoring wells in the main excavation area, slot trenches will be used to remove the contaminated soil within the main excavation area, but are likely not necessary in the second smaller and shallower excavation area. The slot trench methodology involves the use of a trench box to dig a series of parallel 4-foot-wide trenches across the excavation area. The trench box would provide the necessary temporary shoring. A conceptual layout of these slot trenches within the main excavation area is shown on Figure 7. The conceptual layout of these slot trenches is shown with the trenches running parallel to Cherry Street Southeast based on conversations with the contractor (they were shown perpendicular to Cherry Street Southeast in the CAP). The actual slot trench layout will be determined during construction. Regardless of the layout, the edges of the slot trenches would be placed approximately 1 foot away from the edge of the current buildings to avoid any exposure of or damage to the foundation elements of these buildings. Because only one slot would be dug at a time with the use of the trench box for shoring, and the excavation immediately backfilled with CDF, there is no significant risk to adjacent building foundations.

The conceptual excavation sequencing using the slot trenches is shown on Figure 7. The slot trench that will be excavated first will be filled with CDF to provide a barrier wall between the excavation and the artesian well. The intent of this starting point is to minimize water infiltration into the excavation. The slot trench areas that would be excavated next in sequence would be completed by digging out soil within a trench box to a maximum depth of 12 feet bgs. After each trench is dug, the trench would be backfilled with CDF to within 4 feet of the ground surface. CDF is essentially lean concrete with a high proportion of sand. Calcium will be added to the CDF prior to pouring to accelerate the hardening process. During the CDF hardening process, which is expected to take approximately 0.5 to 2 hours, the trench box will be removed. Once the CDF cures, it leaves behind a solid low-permeability wall. After the backfilling and subsequent hardening of each of the alternating slot trench areas, the next sequence slot trench areas would be excavated. The use of the trench box would not be necessary for shoring because side-wall support would be provided by the adjacent cured CDF walls. Once excavated, these trenches would also be backfilled with CDF to within 4 feet of the ground surface. The final 4 feet of this entire excavation area would be backfilled with either site overburden soil that has tested as clean or with imported granular fill.

Significant dewatering is not expected to be required during excavation because the trench box sides will prevent the sidewall soil from collapsing, and also limit recharge. Additionally, the current artesian supply well will be run continuously during excavation at its maximum capacity

starting a minimum of 48 hours prior to excavation to lower the artesian pressure in that area to minimize water infiltration into the excavation. Some amount of water control may be required to avoid displacement of groundwater outside the trench box while the trench is being filled with CDF. If dewatering is deemed necessary, water will be pumped to the existing Seep collection and treatment system, which consists of an 1,100-gallon polyethylene holding tank where collected water will be pre-treated with a potassium permanganate solution prior to transfer to a 6,000-gallon baker holding tank where additional treatment may be completed if deemed necessary. The water will be batch discharged to the sanitary sewer via a manhole on Cherry Street Southeast (under the current LOTT permit), which is located approximately 100 feet northwest of the Site, after laboratory samples are collected to confirm that chlorinated volatile organic compounds have been adequately treated.

Following excavation, the properties will be restored to their original grades, then repaved and landscaped. The sidewalk and a portion of Cherry Street Southeast would be repaved in accordance with City of Olympia standards (referenced in Section 3.1.2.2).

The key advantages of the slot trench methodology are: (1) it allows work to be performed to depth near buildings without shoring, and (2) it leaves in place a large area of low-permeability CDF. The CDF backfill would greatly reduce or divert the flow of artesian groundwater up into or through the excavated area such that is it no longer flowing through contaminated soils. This would greatly improve groundwater quality in this area compared to the current conditions.

Any utilities currently located within the excavation footprint, including the existing natural gas line discussed in Section 3.1.3 and a water line that serves the Cherry Street Q-Tip Trust Building, will be rerouted before excavation and replaced when the excavation is completed. Based on available information, additional utilities (with the exception of a temporary stormwater catch basin and drain line) are not expected to be encountered during excavation.

The water line will be temporarily disconnected by a plumber and reconnected subsequent to excavation. According to a neighboring tenant, the offices in the Cherry Street Q-Tip Trust Building are not open Friday through Sunday, so all efforts will be made to conduct the work during their office closure to minimize disruption. If the water line is not reconnected in sufficient time, temporary services will be supplied (i.e., bottled water and temporary bathroom facilities). These details will be included in the access agreement.

3.2.4 French Drain Installation

The Seep will likely be eliminated altogether after the completion of remedial actions because its current location will be excavated and filled with CDF. However, there would still be a possibility of it re-emerging once groundwater flow is reestablished around the perimeter of the excavated area. As a precautionary measure, a French drain collection pipe, which will consist of a 4-inch-diameter perforated pipe on the northern edge of the excavation area with a solid 4-inch pipe sloped to the south toward the Site's side sewer, will be installed within the top 4 feet of the excavation (above the CDF and within the backfill) to intercept upwelling groundwater before

it discharges to ground surface as a seep. The perforated drain pipe will be wrapped with geotextile fabric and installed within a layer of high-permeability drainage rock to facilitate water collection. Refer to Figure 7 for a depiction of the proposed layout and Figures 8a and 8b for cross-sections.

If re-emergence of the Seep occurs or if a new seep if formed after the completion of soil excavation and restoration activities, the seep(s) will be sampled for the Site COCs (refer to Section 2.2). If non-contaminated, the seep will be routed directly to the sanitary sewer. As a contingency, if measurable concentrations of the Site COCs are present in the new seep, a permanent form of treatment, such as granular activated carbon, will be installed before the seep is discharged to the sewer. A treatment vault or similar structure would be installed and the collection pipe would be connected to a vault that would be adequately sized for a pre-treatment cartridge or filter, if it is deemed necessary. Refer to Figure 8a for a depiction of the contingency measure.

3.3 POST-EXCAVATION COMPLIANCE AND MONITORING

Soil compliance samples will be collected subsequent to the completion of excavation to document post-construction conditions and verify areas where cleanup levels have been achieved. If sampling indicates a cleanup level exceedance after backfilling, statistical means will be used to evaluate compliance with cleanup levels.

Within the main excavation area on the Site, compliance soil samples will be collected at a minimum of one and up to two bottom locations within each slot trench segment. Soil samples will be field screened with a PID to field confirm that the contaminated soil has been removed from the bottom of the excavation. Additional compliance soil samples may also be collected as feasible along the vertical ends of some of the slot trenches to confirm the removal of contaminated soil or to document the remaining PCE concentrations in soil that are near buildings or other structures and considered inaccessible. Sidewall sampling along the length of each trench will not be possible due to the use of the trench boxes. Soil samples collected from the main excavation area will be submitted for laboratory analysis of the Site COCs using USEPA Method 8260B (using USEPA Method 5035 for sample preparation). Soil samples will be collected and analyzed in accordance with the SAP/QAPP included in Appendix B.

Compliance soil sampling will also be performed in the secondary excavation area to confirm the removal of contaminated soil or to document remaining in-place soil conditions. Soil samples will be collected from the bottom of the excavation approximately every 5 feet and field screened with a PID. If feasible, one soil sample per sidewall will also be collected and field screened with a PID. One to two bottom samples and a minimum of one sidewall sample will be selected for laboratory analysis based on the results of PID field screening. The remaining sidewall samples will be archived, pending results of the initial sample(s). Soil samples will be collected and analyzed in accordance with the SAP/QAPP included in Appendix B.

3.4 HANDLING AND DISPOSAL OF EXCAVATED SOIL

Contaminated soil will be pre-characterized for proper off-site disposal as discussed in Section 3.1.6. Excavated soil will be directly loaded into trucks with 20-foot roll-off containers to minimize on-site soil handling and stockpiling. Boxes will be lined with polyethylene sheeting and loads will be covered ("burrito-wrapped" with polyethylene) prior to transport. If necessary, drying agents may be used to allow materials to be transported to the receiving landfill without free liquid accumulation in the box. Cleaner overburden (such as the soil placed after the interim action) may be segregated from soil coming from areas of known contamination and separately stockpiled (if it is deemed suitable for backfill above the CDF). Excavated soil will be deemed suitable for reuse as backfill if it is free of contamination as evidenced by field screening (i.e., less than 1 part per million by volume as measured with a PID) and subject to verification testing as defined in the SAP, and if it meets the City of Olympia backfill criteria (refer to Figure 8a). Erosion and sedimentation control BMPs along with a designated truck loading area are shown on Figure 9.

3.4.1 Contained-In Determination

Spent PCE and TCE are each considered a F002-listed hazardous waste, as is environmental media contaminated with a listed hazardous waste. However, in accordance with Ecology's contained-in policy, a determination can be made by Ecology that an environmental media (i.e., soil) that contains a hazardous waste may no longer be considered hazardous if the hazardous substances are present in environmental media at concentrations less than risk-based levels.

If the results of soil characterization outlined in Section 3.1.6 (along with previously collected site data) indicate that PCE concentrations are less than 14 mg/kg and TCE concentrations are less than 10 mg/kg, and the soil does not otherwise exhibit the characteristics of a dangerous waste under either federal or state regulations, then a letter will be submitted to Ecology to request a contained-in determination for the excavated soils. For concentrations that exceed the threshold values for PCE and TCE (14 mg/kg and 10 mg/kg, respectively), then TCLP data must be collected and concentrations must be less than 0.7 milligrams per liter (mg/L) and 0.5 mg/L, respectively. A summary of analytical data and sample collection details will be provided in a contained-in request letter. It may take Ecology up to 2 weeks to provide the contained-in determination; therefore, the request will be submitted to Ecology with sufficient time prior to excavation for a determination to be made. Having the contained-in determination prior to initiating excavation will allow for direct loading of excavated soil for transport to a permitted Subtitle D landfill, thus minimizing the need for stockpiling at the Site.

3.4.2 Off-Site Soil Disposal

Based on the results of soil pre-characterization (refer to Section 3.1.6), the excavated soil will be identified as either hazardous waste or "contained-in" waste and hauled off-site to either a licensed Subtitle C hazardous waste (if designated as hazardous waste) or Subtitle D non-hazardous waste landfill (as contained-in) under an appropriate manifest or bill of lading. If

necessary, sawdust or other drying agent may be added to the soil prior to transport to limit the moisture content for acceptance at the receiving facility. It is currently anticipated that Roosevelt Regional Landfill operated by Republic Services will be the receiving landfill.

3.4.3 Miscellaneous Solid Waste Management

All miscellaneous solid waste, such as personal protective equipment, disposable sampling equipment, and general construction waste will be containerized or bagged in heavy-duty plastic bags, and disposed of as municipal solid waste or sent off-site for recycling as appropriate (concrete or asphalt).

3.5 HEALTH AND SAFETY AND DECONTAMINATION PROCEDURES

The following paragraphs summarize general health and safety and decontamination procedures that will be followed for removal action field activities.

3.5.1 Health and Safety

The work will be conducted in accordance with a site-specific HASP and workers will wear the appropriate personal protective equipment, which is currently expected to be Level D or modified Level D based on existing data. Level D consists of steel toe boots, safety glasses or goggles, and protective gloves to limit exposure to contaminated media.

Activities in areas where contaminated material will be handled will be conducted within a fenced or taped-off area to restrict public access into the work zone. BMPs will be used to prevent tracking of the materials out of the work area and to prevent unauthorized persons from entering the work area. The work area and equipment will be secured. Any temporary stockpiles will be covered with polyethylene sheeting at the end of each work day.

3.5.2 Decontamination Procedures

The excavation and water storage equipment used during this project (bucket, tools, holding tanks, etc.) will be cleaned after the project to meet a visually-clean debris surface standard using dry methods (broom, brush, etc.) if practicable. Trucks and excavation equipment will also be decontaminated prior to leaving the Site. Decontamination shall include cleaning of any part of the truck or equipment that has come in contact with site soil, including steel or rubber tracks and tire treads.

If water is necessary for cleaning, decontamination of large equipment will be completed within a bermed area and on a competent surface covered with plastic sheeting. Decontamination water will be containerized and managed along with any waters generated from dewatering or storm water controls into the on-site aboveground storage tanks and batch tested prior to disposal. If necessary, water will be treated on-site prior to discharge. Small amounts of decontamination water (i.e. under 1 gallon) may be mixed with dry excavated soil and transported off-site for disposal.

4.0 Post-Excavation Compliance Monitoring

After the active remedy elements have been completed, a long-term groundwater monitoring plan and vapor intrusion monitoring plan will be submitted to Ecology for review and approval. In accordance with the Consent Decree, the Draft Compliance Monitoring Plan (which will include both a long-term groundwater monitoring plan and a vapor intrusion plan) will be submitted to Ecology within 30 days of the completion of cleanup action excavation and contaminated soil transport and disposal (whichever is later). The cleanup action excavation will be deemed complete after the French drain installation, backfill, equipment decontamination and demobilization, and site restoration (i.e., re-paving) activities are complete. This plan will be finalized and implemented upon Ecology approval.

The long-term groundwater monitoring plan will include monitoring for the presence of seeps during each groundwater sampling event and the sampling of any re-emergent seeps. Quarterly groundwater monitoring will occur for the first year following the cleanup action. Depending on the results, a request may be made to reduce the monitoring frequency to semi-annual, and eventually to annual in a network that, at a minimum, will include five downgradient wells (MW-6, MW-11, MW-14, MW-09, and MW-13). These wells are shown on Figure 5.

The vapor intrusion monitoring plan shall describe how indoor air, sub-slab soil vapor, and/or ambient air samples will be collected from the former Olympia Dry Cleaners Building. Ecology will be contacted during the development of the vapor intrusion monitoring plan regarding the Short-Term Exposure Limits (STELs) for TCE, which are currently under development. It will also include sampling to determine mean short-term TCE indoor air concentrations. Should the monitoring results for indoor air indicate an exceedance of the cleanup levels or STELs, the nature of any follow-on contingency actions at the Site will depend on the magnitude of the exceedance, and may include physical modification to ventilation systems, sealing of floors and foundation cracks, or installation of a passive or active building or sub-slab ventilation system.

5.0 Schedule and Reporting

Field work will commence following final approval of the RAWP and once required construction permits are obtained and weather conditions appropriate. It is anticipated that construction activities will be completed within 3 weeks. It is expected that the construction will occur in late Spring/Early Summer 2015. This estimated schedule is subject to change based on Ecology's review schedule, issuance of permits, contractor availability, site access, and weather conditions.

The Compliance Monitoring Plan (which will include both a long-term groundwater monitoring plan and a vapor intrusion monitoring plan) will be submitted to Ecology within 30 days of the completion of the cleanup action excavation and contaminated soil transport and disposal (whichever is later).

A Remedial Action Completion Report, which will include as-built drawings and other information documenting construction of the cleanup action, will be submitted to Ecology within 90 days of completion of activities.

Consistent with the requirements of WAC 173-340-420, Ecology will review the remedial action every 5 years to ensure protection of human health and the environment, as described in the CAP.

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Figures

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Remedial Action Work Plan
Former Olympia
Dry Cleaners Site
Olympia, Washington

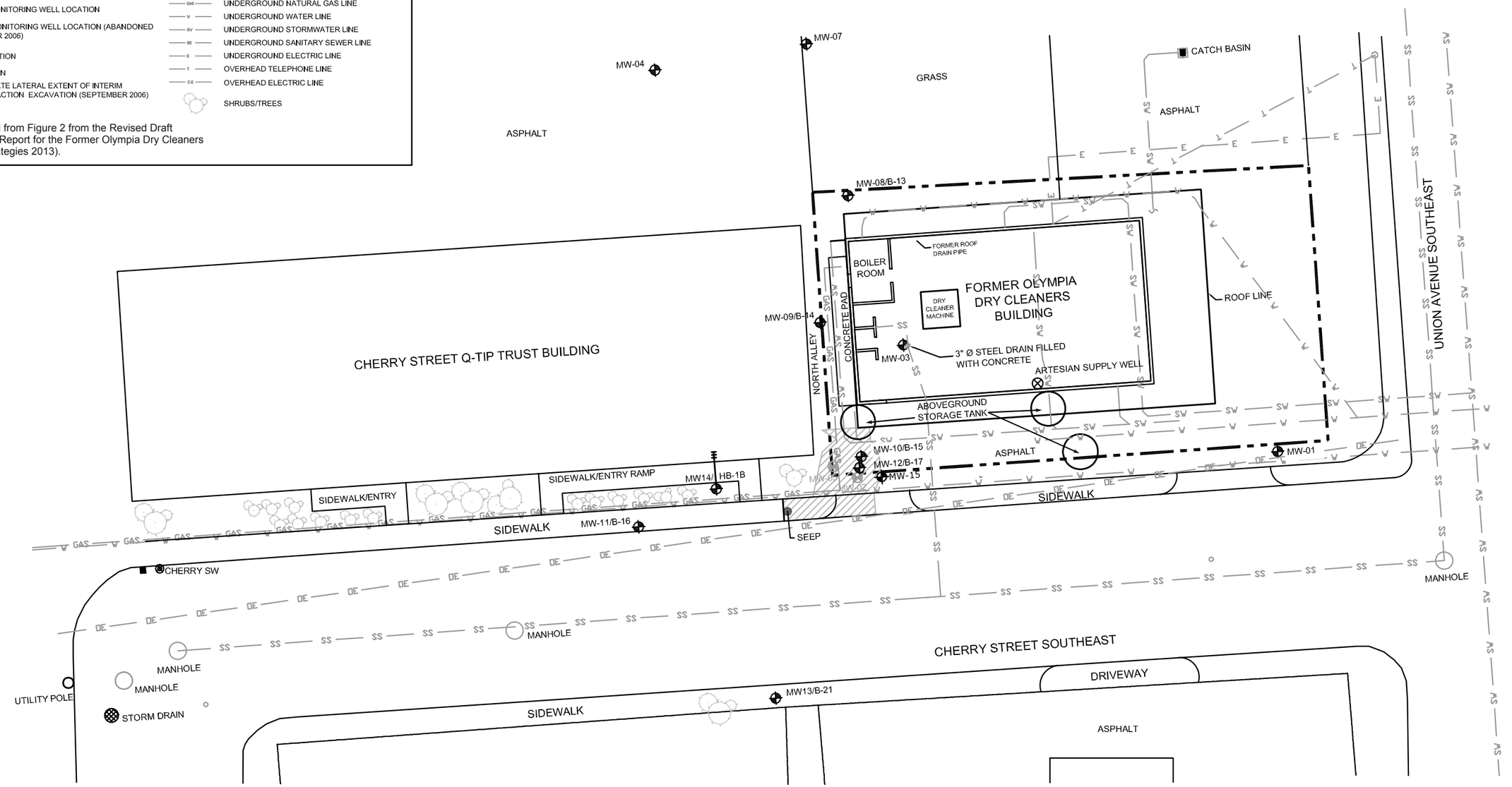
Figure 1
Site Vicinity Map

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\Figure 1 (Vicinity Map).mxd
10/15/2014

LEGEND

- MW-04 — MONITORING WELL LOCATION (STEMEN, 2001-2002 & SES 2008)
- ANGLED MONITORING WELL LOCATION
- MW-02 — FORMER MONITORING WELL LOCATION (ABANDONED SEPTEMBER 2006)
- SEEP LOCATION
- CATCH BASIN
- APPROXIMATE LATERAL EXTENT OF INTERIM REMEDIAL ACTION EXCAVATION (SEPTEMBER 2006)
- PROPERTY BOUNDARY
- GAS — UNDERGROUND NATURAL GAS LINE
- W — UNDERGROUND WATER LINE
- SW — UNDERGROUND STORMWATER LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- E — UNDERGROUND ELECTRIC LINE
- T — OVERHEAD TELEPHONE LINE
- OE — OVERHEAD ELECTRIC LINE
- SHRUBS/TREES

Note: Figure is adapted from Figure 2 from the Revised Draft Feasibility Study Report for the Former Olympia Dry Cleaners (SoundEarth Strategies 2013).



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Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 2
Site Features Map

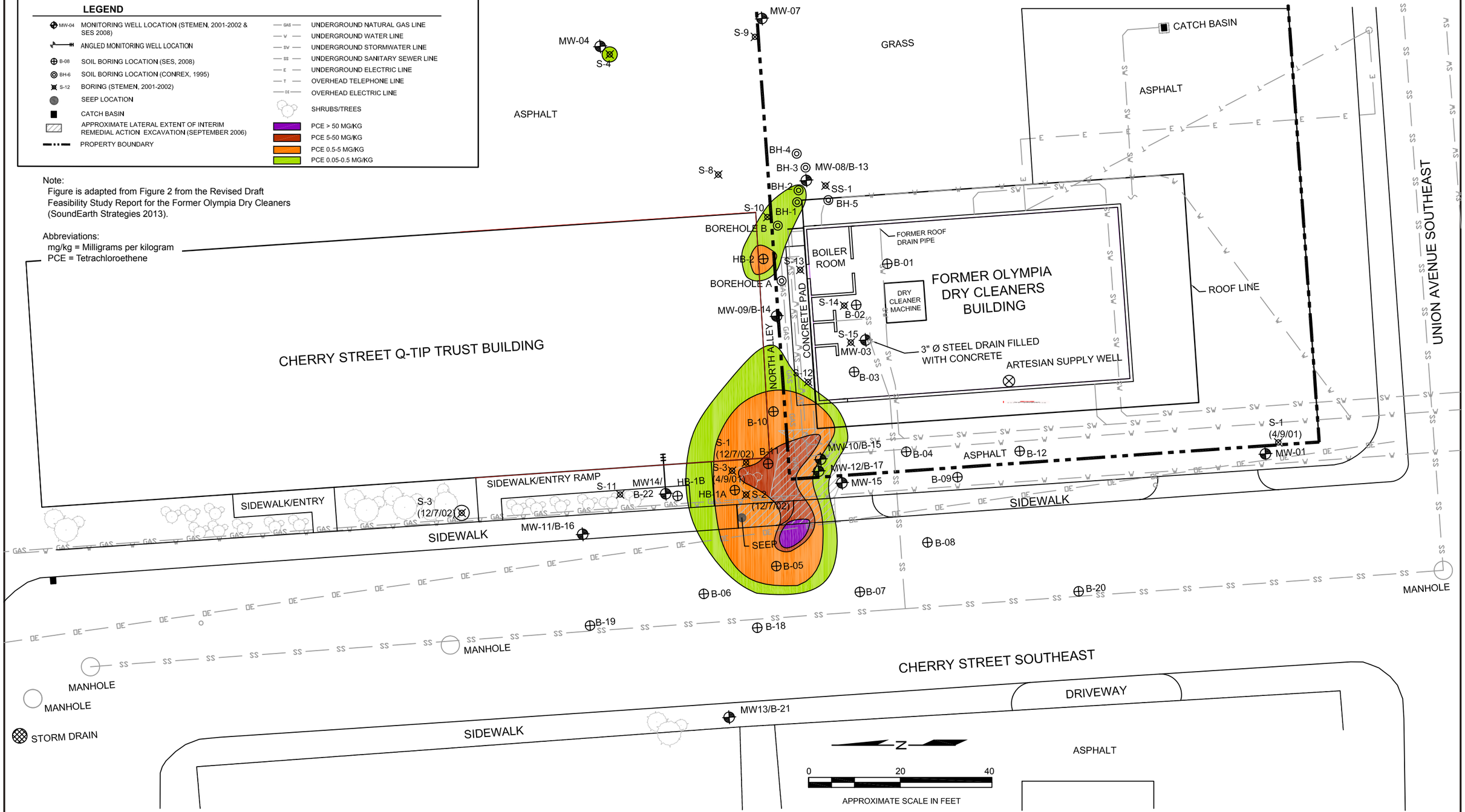
G:Project\Clients\Floyd Snider\GTH Olympia/Cleanup Action Plan Figure 2

LEGEND

- MW-04 — MONITORING WELL LOCATION (STEMEN, 2001-2002 & SES 2008)
- ANGLED MONITORING WELL LOCATION
- B-08 — SOIL BORING LOCATION (SES, 2008)
- BH-6 — SOIL BORING LOCATION (CONREX, 1995)
- S-12 — BORING (STEMEN, 2001-2002)
- SEEP LOCATION
- CATCH BASIN
- APPROXIMATE LATERAL EXTENT OF INTERIM REMEDIAL ACTION EXCAVATION (SEPTEMBER 2006)
- PROPERTY BOUNDARY
- UNDERGROUND NATURAL GAS LINE
- UNDERGROUND WATER LINE
- UNDERGROUND STORMWATER LINE
- UNDERGROUND SANITARY SEWER LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- SHRUBS/TREES
- PCE > 50 MG/KG
- PCE 5-50 MG/KG
- PCE 0.5-5 MG/KG
- PCE 0.05-0.5 MG/KG

Note:
Figure is adapted from Figure 2 from the Revised Draft Feasibility Study Report for the Former Olympia Dry Cleaners (SoundEarth Strategies 2013).

Abbreviations:
mg/kg = Milligrams per kilogram
PCE = Tetrachloroethene



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Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

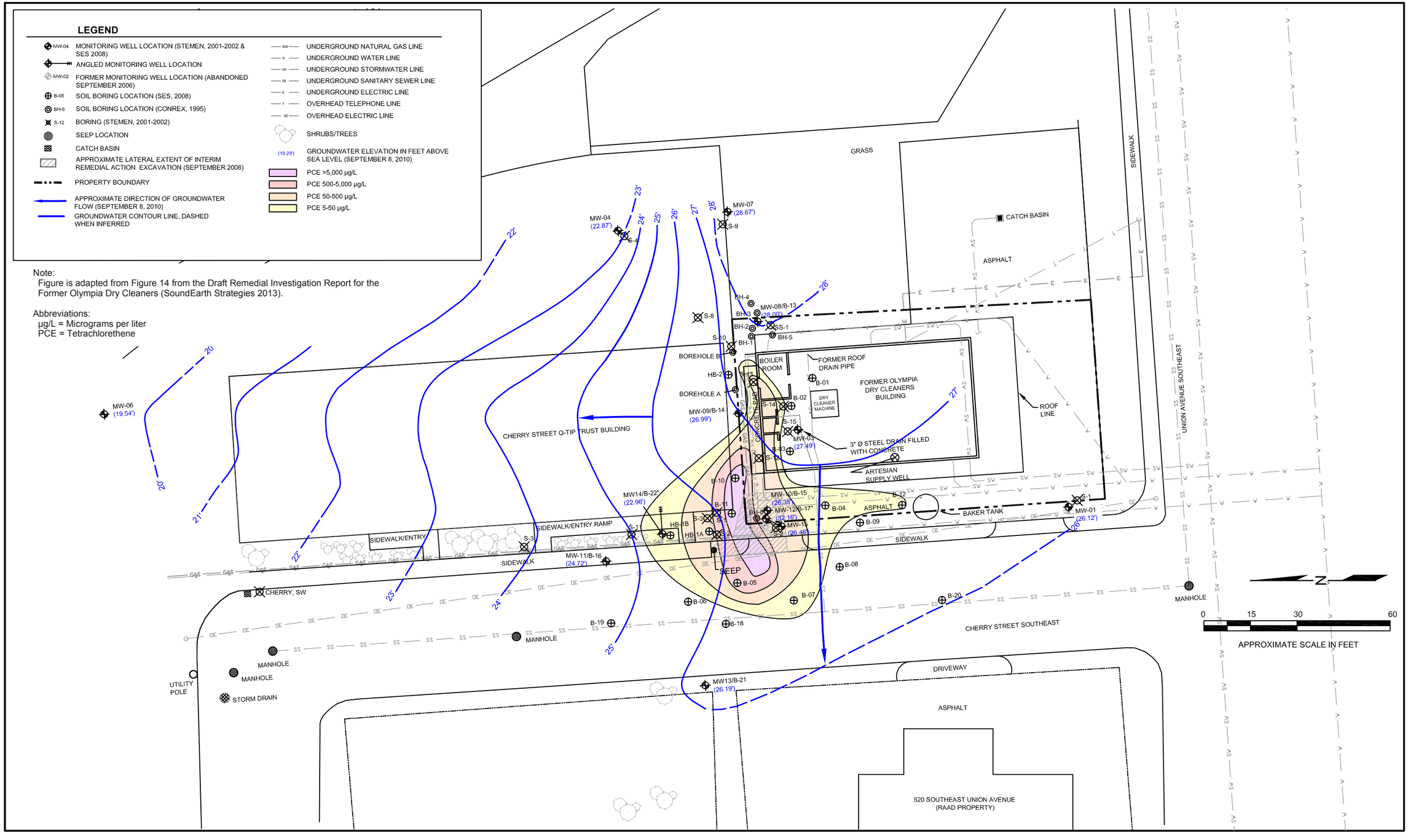
Figure 3
PCE Concentrations in Soil

LEGEND

- MW-04 — MONITORING WELL LOCATION (STEMEN, 2001-2002 & SES 2008)
- ANGLED MONITORING WELL LOCATION
- MW-02 — FORMER MONITORING WELL LOCATION (ABANDONED SEPTEMBER 2006)
- B-08 — SOIL BORING LOCATION (SES, 2008)
- BH-6 — SOIL BORING LOCATION (CONREX, 1995)
- S-12 — BORING (STEMEN, 2001-2002)
- SEEP LOCATION
- CATCH BASIN
- APPROXIMATE LATERAL EXTENT OF INTERIM REMEDIAL ACTION EXCAVATION (SEPTEMBER 2006)
- PROPERTY BOUNDARY
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW (SEPTEMBER 8, 2010)
- GROUNDWATER CONTOUR LINE, DASHED WHEN INFERRED
- UNDERGROUND NATURAL GAS LINE
- UNDERGROUND WATER LINE
- UNDERGROUND STORMWATER LINE
- UNDERGROUND SANITARY SEWER LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- SHRUBS/TREES
- (19.29') — GROUNDWATER ELEVATION IN FEET ABOVE SEA LEVEL (SEPTEMBER 8, 2010)
- PCE >5,000 µg/L
- PCE 500-5,000 µg/L
- PCE 50-500 µg/L
- PCE 5-50 µg/L

Note:
Figure is adapted from Figure 14 from the Draft Remedial Investigation Report for the Former Olympia Dry Cleaners (SoundEarth Strategies 2013).

Abbreviations:
µg/L = Micrograms per liter
PCE = Tetrachlorethene



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Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 4
PCE Isoconcentrations in Groundwater

G:Project\Clients\Floyd Snider\GTH Olympia/Remedial Action Work Plan Figure 4

LEGEND

- MW-04 — MONITORING WELL LOCATION (STEMEN, 2001-2002 & SES 2008)
- ANGLED MONITORING WELL LOCATION
- MW-04 — MONITORING WELL TO BE ABANDONED PRIOR TO CONSTRUCTION
- MW-06 — PROPOSED COMPLIANCE MONITORING WELL
- SEEP LOCATION
- CATCH BASIN
- APPROXIMATE LATERAL EXTENT OF INTERIM REMEDIAL ACTION EXCAVATION (SEPTEMBER 2006)
- PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF EXCAVATION FOR THE SELECTED CLEANUP ACTION
- UNDERGROUND NATURAL GAS LINE
- UNDERGROUND WATER LINE
- UNDERGROUND STORMWATER LINE
- UNDERGROUND SANITARY SEWER LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- SHRUBS/TREES
- PORTION OF GAS MAIN AND SERVICE TO BE REMOVED BY PUGET SOUND ENERGY
- PORTION OF WATER LINE TO BE REMOVED BY PLUMBING CONTRACTOR
- APPROXIMATE NATURAL GAS MAIN AND SERVICE RELOCATION BY PUGET SOUND ENERGY
- APPROXIMATE WATER LINE RELOCATION BY PLUMBING CONTRACTOR

Note: Figure is adapted from Figure 2 from the Revised Draft Feasibility Study Report for the Former Olympia Dry Cleaners (SoundEarth Strategies 2013).

ASPHALT

SECONDARY EXCAVATION AREA

REAR ENTRANCE

54'

MW-06

REFER TO FIGURE 7 FOR DETAIL

CHERRY STREET Q-TIP TRUST BUILDING

LANDSCAPE AREA TO BE RESTORED AFTER EXCAVATION

MW-04

MW-07

GRASS

CATCH BASIN

ASPHALT

SIDEWALK

UNION AVENUE SOUTHEAST

MW-08

FORMER ROOF DRAIN PIPE

BOILER ROOM

DRY CLEANER MACHINE

FORMER OLYMPIA DRY CLEANERS BUILDING

ROOF LINE

MW-09

NORTH ALLEY

CONCRETE PAD

MW-03

3" Ø STEEL DRAIN FILLED WITH CONCRETE

ARTESIAN SUPPLY WELL

MW-10

MW-12

MW-15

MW-01

MW14

SIDEWALK/ENTRY

SIDEWALK/ENTRY RAMP

SIDEWALK

MW-11

SEEP

MAIN EXCAVATION AREA

MANHOLE

MANHOLE

MANHOLE

STORM DRAIN

CHERRY STREET SOUTHEAST

DRIVEWAY

MW13

SIDEWALK

N

0 20 40

APPROXIMATE SCALE IN FEET

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Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 5
Conceptual Site Plan for the Selected Cleanup Action

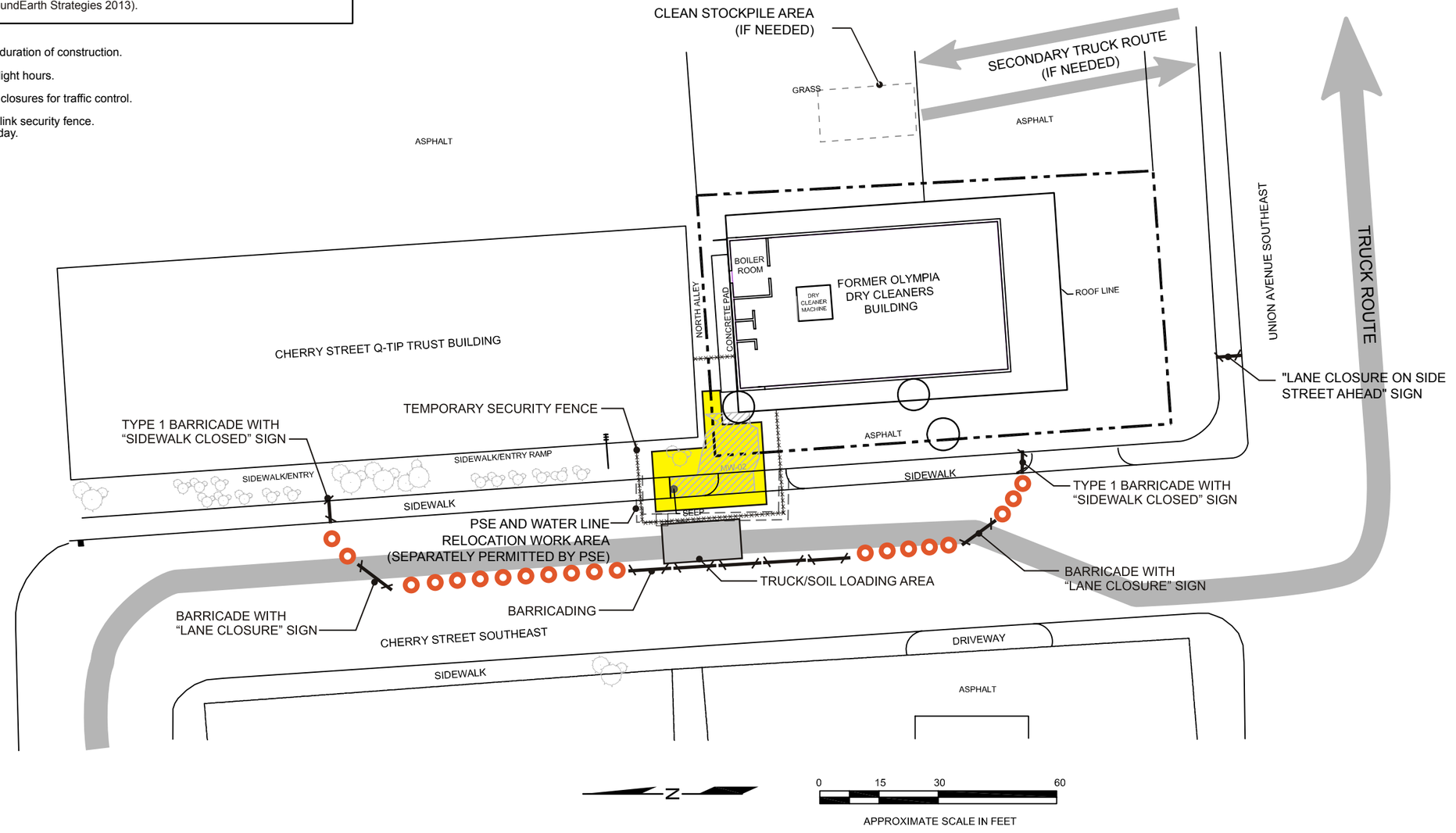
G:Project\Clients\Floyd Snider\GTH Olympia/Remedial Action Work Plan Figure 5

LEGEND

- PROPOSED EXCAVATION AREA
- TYPE 1 BARRICADE
- CHAIN-LINK SECURITY FENCE
- TRAFFIC CONE (18" MIN HEIGHT)
- PROPERTY BOUNDARY
- SHRUBS/TREES
- APPROXIMATE LATERAL EXTENT OF INTERIM REMEDIAL ACTION EXCAVATION (SEPTEMBER 2006)
- ABOVEGROUND STORAGE TANK

Figure is adapted from Figure 2 from the Revised Draft Feasibility Study Report for the Former Olympia Dry Cleaners (SoundEarth Strategies 2013).

Notes:
1. Sidewalk will remain closed throughout duration of construction.
2. Lane closure will occur daily during daylight hours.
3. Flagger must be present during all lane closures for traffic control.
4. Secure site with minimum 6' high chain link security fence. Lock all gates at the end of each work day.



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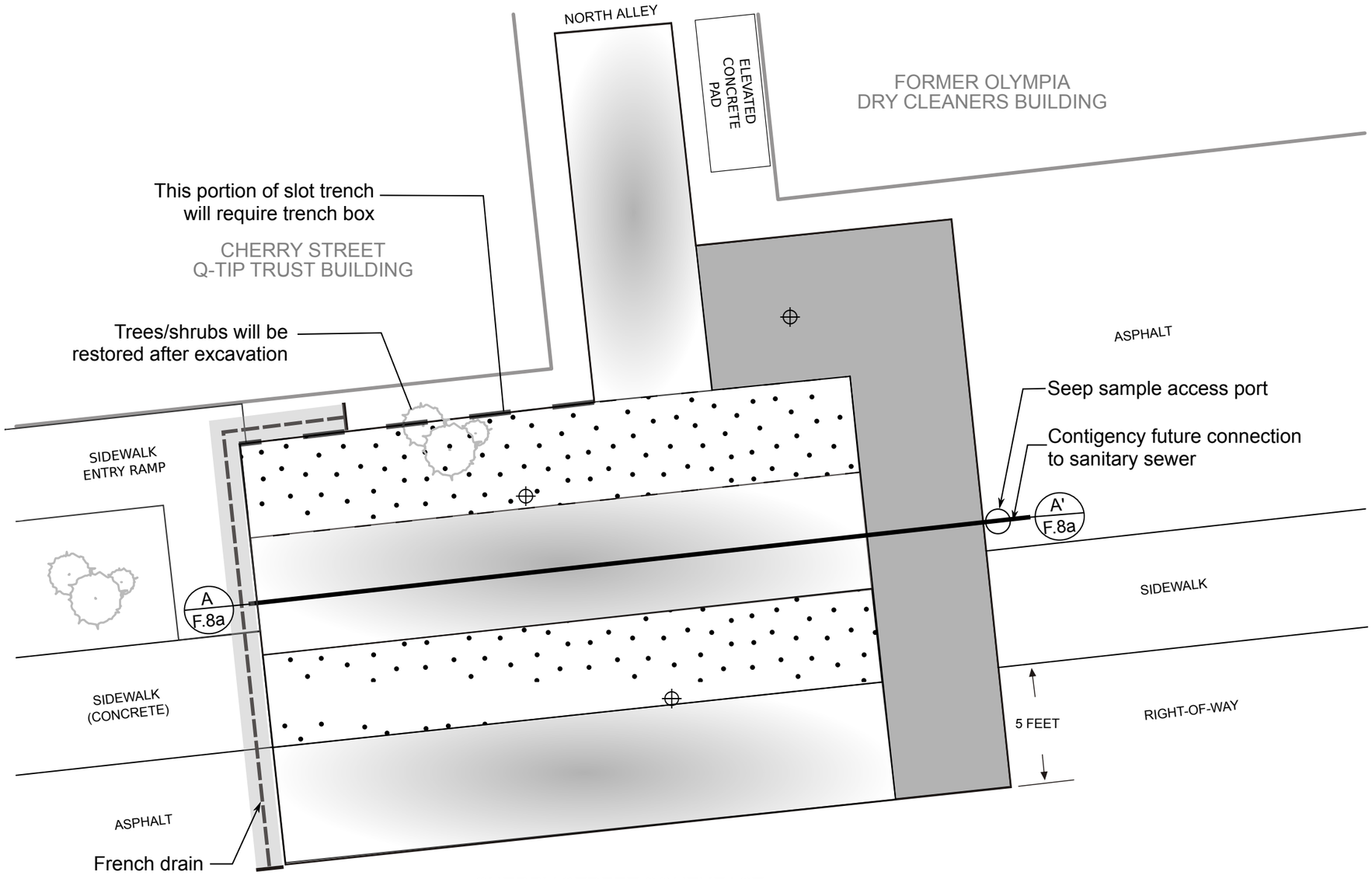
Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 6
Traffic Control Plan

G:Project\Clients\Floyd Snider\GTH Olympia/Remedial Action Work Plan Figure 6



Proposed Pre-Excavation Soil Boring

First Slot Trench to Form Barrier Wall to Artesian Well

Slot-Trenches Excavated First Using Trench Boxes

Slot Treches Excavated Second in Sequence

4" Diameter Perforated PVC Schedule 40 Pipe

4" Diameter Schedule 40 PVC Pipe

Notes:

1. Fill slot trenches with specified controlled-density fill to a depth of approximately 4 feet below ground surface.
2. Backfill top 4 feet with common borrow or approved equivalent backfill material.
3. Artesian well will be operated by contractor continuously throughout excavation activities to relieve hydrostatic pressure and to minimize water accumulation in the excavation.
4. Dewatering in trench will be completed as necessary. Pump accumulated water to on-site storage tanks for storage and treatment prior to discharge per instruction.
5. Refer to Figure 8a and 8b for french drain detail and contingency sewer connection.

N

0 5 10

APPROXIMATE SCALE IN FEET

DRAFT - NOT FOR CONSTRUCTION

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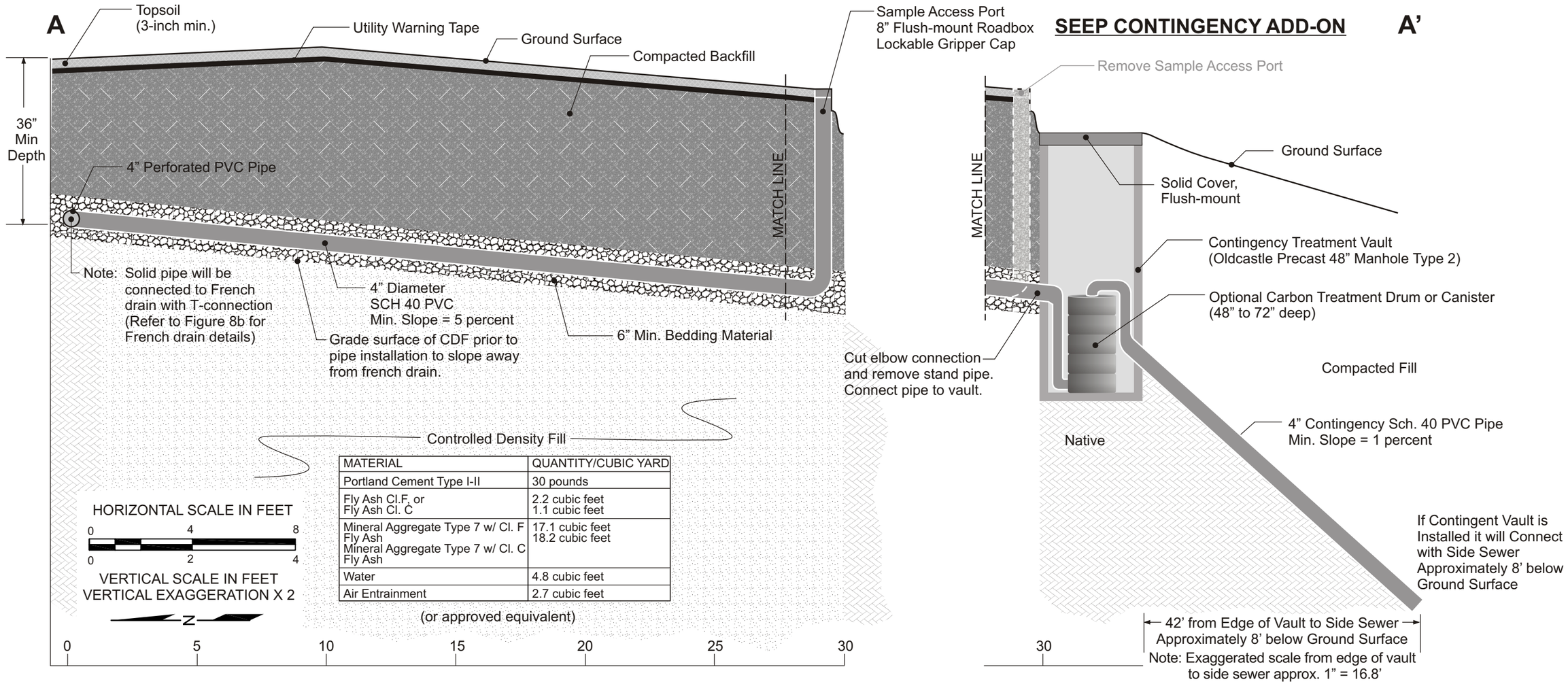
Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 7
Main Area Excavation Detail



MATERIAL	QUANTITY/CUBIC YARD
Portland Cement Type I-II	30 pounds
Fly Ash Cl.F, or Fly Ash Cl. C	2.2 cubic feet 1.1 cubic feet
Mineral Aggregate Type 7 w/ Cl. F Fly Ash Mineral Aggregate Type 7 w/ Cl. C Fly Ash	17.1 cubic feet 18.2 cubic feet
Water	4.8 cubic feet
Air Entrainment	2.7 cubic feet

Notes:

1. Excavation work shall be completed in accordance with OSHA's Excavation Standards (29 CFR 1926, Subpart P).
2. Trench bottom shall be firm, compacted soil. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc., in excess of 2 inches in size. Pipe bedding shall be drain rock or other approved equivalent.
3. Backfill trench and cover piping with suitable backfill material, which shall conform to the current WSDOT/APWA for common borrow or approved equivalent.
4. Place backfill over pipe such that uneven pipe settlement does not occur. Manually spread backfill materials around the pipe. Do not allow backfill to free-fall from heights greater than 24 inches above top of pipe.
5. Compact import backfill with vibratory plate compactor in 12-inch (max) lifts. Backfill materials shall be placed by hand and hand tamped/compacted in areas where a vibratory compactor may disturb adjacent structures or utilities. Compact bedding material until no visible settling occurs.
6. Upon backfill completion, top with a minimum of 3 inches of approved topsoil. Reseed or vegetate as necessary to match existing soil and construction materials. In the area beneath right-of-way, restore surface in accordance with City of Olympia requirements.
7. All excess soil and construction materials shall be removed and disposed of in accordance with applicable rules and regulations.
8. Ground surface grade will be regraded subsequent to excavation as approved by engineer so flush mount features are level with ground surface.

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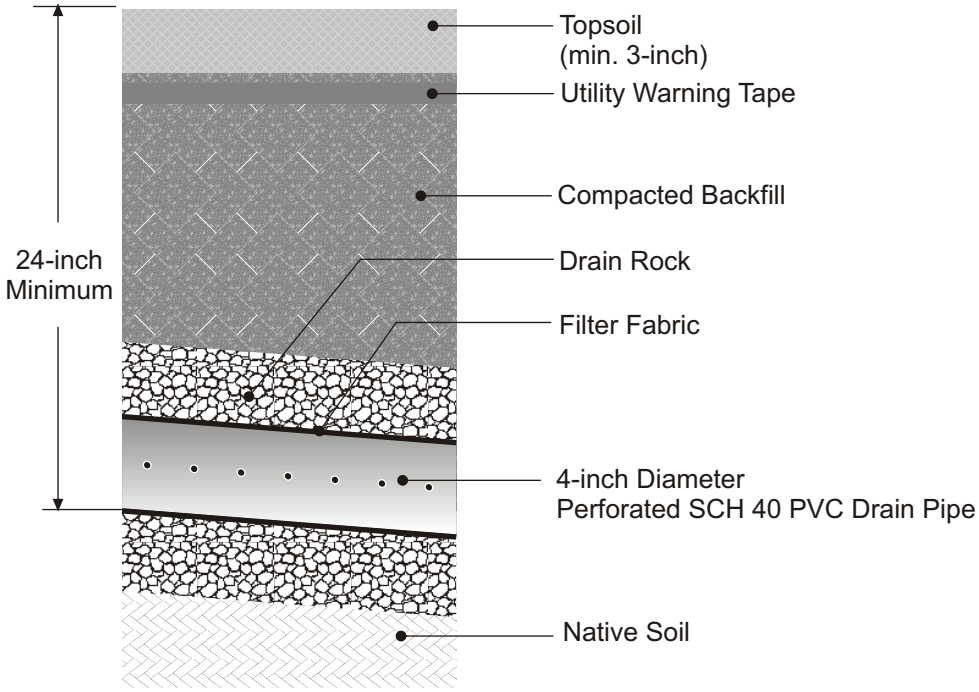
Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

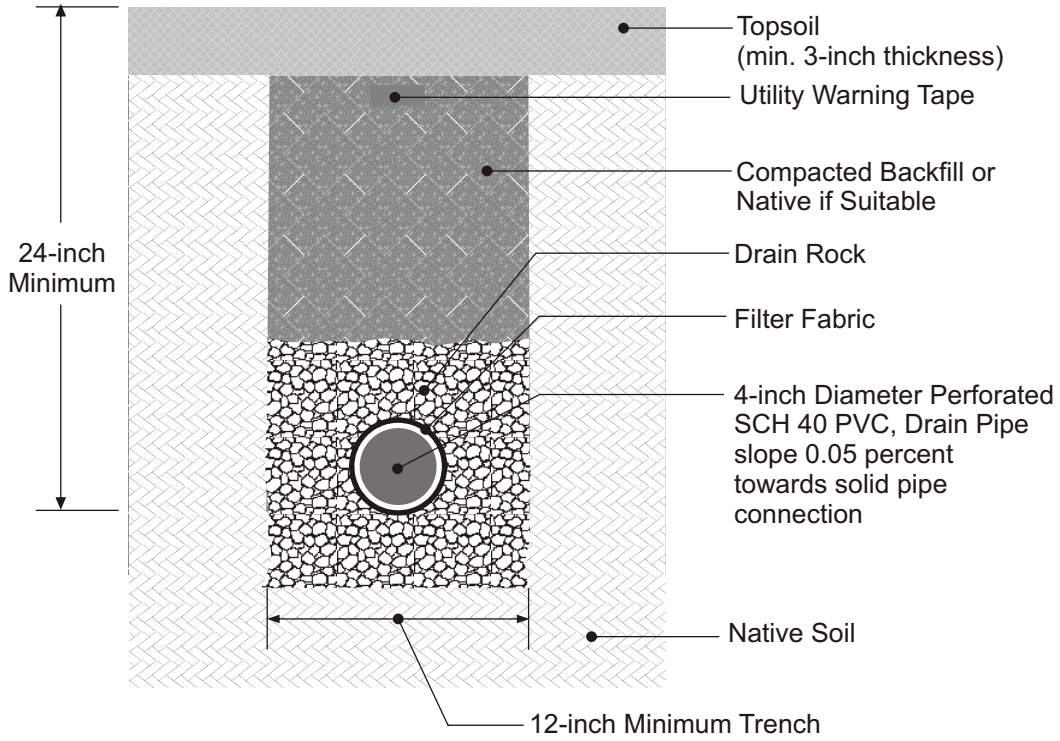
Figure 8a
French Drain Cross Section A-A'

G:Project\Clients\Floyd Snider\GTH Olympia/Remedial Action Work Plan Figure 8a

French Drain Side View



French Drain Cross Section



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Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 8b
French Drain Details

G:Project\Clients\Floyd Snider\GTH Olympia/Remedial Action Work Plan Figure 8b

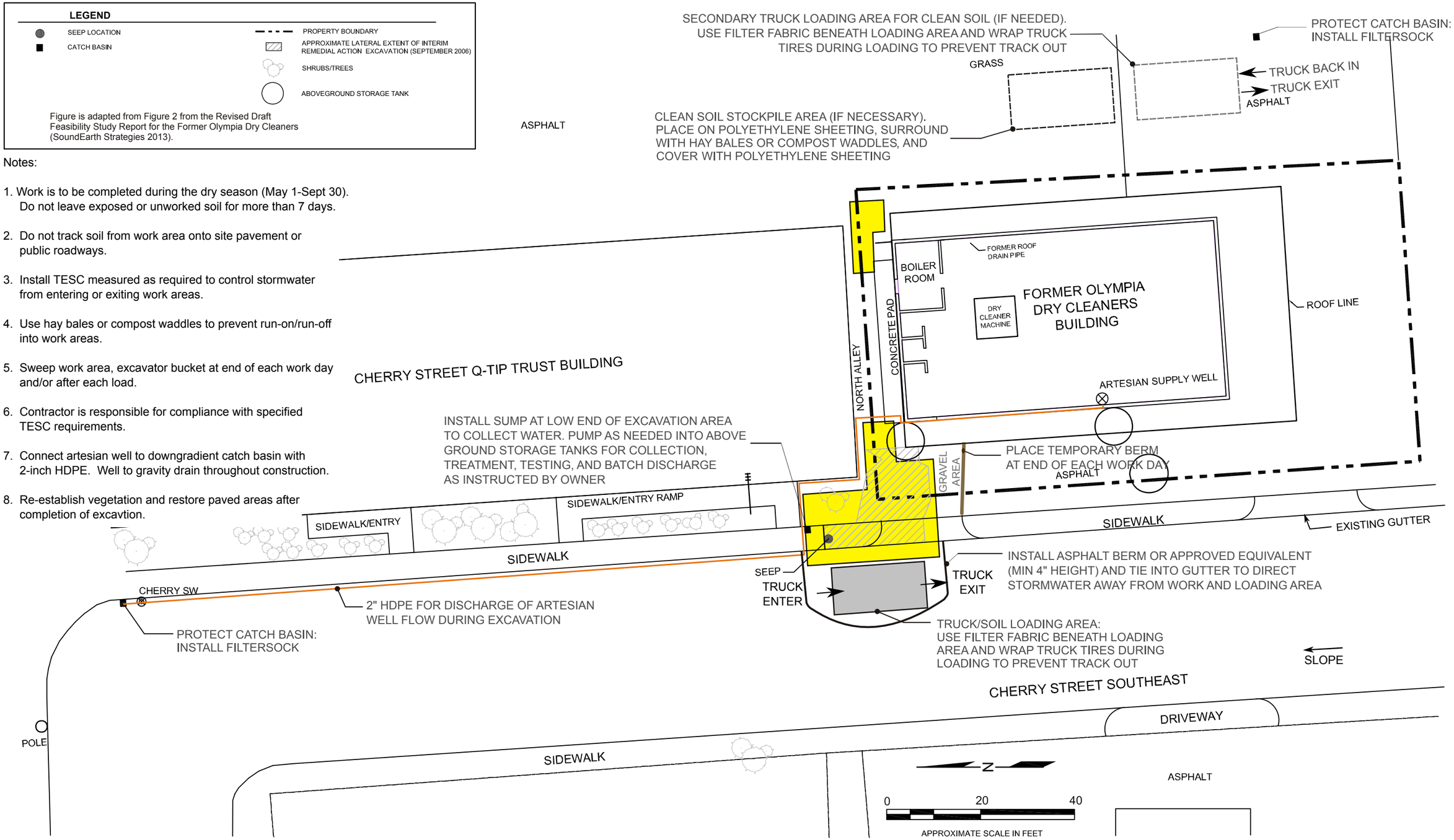
LEGEND

- SEEP LOCATION
- CATCH BASIN
- PROPERTY BOUNDARY
- APPROXIMATE LATERAL EXTENT OF INTERIM REMEDIAL ACTION EXCAVATION (SEPTEMBER 2006)
- SHRUBS/TREES
- ABOVEGROUND STORAGE TANK

Figure is adapted from Figure 2 from the Revised Draft Feasibility Study Report for the Former Olympia Dry Cleaners (SoundEarth Strategies 2013).

Notes:

1. Work is to be completed during the dry season (May 1-Sept 30). Do not leave exposed or unworked soil for more than 7 days.
2. Do not track soil from work area onto site pavement or public roadways.
3. Install TESC measured as required to control stormwater from entering or exiting work areas.
4. Use hay bales or compost waddles to prevent run-on/run-off into work areas.
5. Sweep work area, excavator bucket at end of each work day and/or after each load.
6. Contractor is responsible for compliance with specified TESC requirements.
7. Connect artesian well to downgradient catch basin with 2-inch HDPE. Well to gravity drain throughout construction.
8. Re-establish vegetation and restore paved areas after completion of excavtion.



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Remedial Action Work Plan
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 9
Temporary Erosion Control and Stormwater Management

G:Project\Clients\Floyd Snider\GTH Olympia/Remedial Action Work Plan Figure 9

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix A
Health and Safety Plan

Table of Contents

List of Appendices

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
CVOC	Chlorinated volatile organic compound
DCE	Dichloroethene
EZ/CRZ	Exclusion zone/contamination reduction zone
HASP	Health and Safety Plan
HSO/SS	Health and Safety Officer/Site Supervisor
mg/kg	Milligrams per Kilogram
PCE	Tetrachloroethene
PID	Photoionization Detector

Acronym/ Abbreviation	Definition
PM	Project Manager
PPE	Personal Protective Equipment
Site	Former Olympia Dry Cleaners Site
SSO	Site Safety Officer
SZ	Support Zone
TCE	Trichloroethene
WAC	Washington Administrative Code

1.0 Plan Objectives and Applicability

This Health and Safety Plan (HASP) has been written to comply with the standards prescribed by the Occupational Safety and Health Act (OSHA) and the Washington Industrial Safety and Health Act (WISHA).

The purpose of this HASP is to establish protection standards and mandatory safe practices and procedures for all personnel involved with investigation activities including soil confirmation sample collection during soil excavation at the Former Olympia Dry Cleaners Site (Site). This HASP assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may occur during field work activities. This plan consists of site descriptions, a summary of work activities, an identification and evaluation of chemical and physical hazards, monitoring procedures, personnel responsibilities, a description of site zones, decontamination and disposal practices, emergency procedures, and administrative requirements.

The provisions and procedures outlined by this HASP apply to all Floyd|Snider personnel on-site. Contractors, subcontractors, other oversight personnel, and all other persons involved with the field work activities described herein are required to develop and comply with their own HASPs. All Floyd|Snider staff conducting field activities are required to read this HASP and indicate that they understand its contents by signing the Health and Safety Officer/Site Supervisors' (HSO/SS') copy of this plan.

It should be noted that this HASP is based on information that was available as of the date indicated on the title page. It is possible that additional hazards that are not specifically addressed by this HASP may exist at the work site, or may be created as a result of on-site activities. It is the firm belief of Floyd|Snider that active participation in health and safety procedures and acute awareness of on-site conditions by all workers is crucial to the health and safety of everyone involved. Should project personnel identify a site condition that is not addressed by this HASP and have any questions or concerns about site conditions, they should immediately notify the HSO/SS and an addendum will be provided to this HASP.

The HSO/SS has field responsibility for ensuring that the provisions outlined herein adequately protect worker health and safety and that the procedures outlined by this HASP are properly implemented. In this capacity, the HSO/SS will conduct regular site inspections to ensure that this HASP remains current with potentially changing site conditions. The HSO/SS has the authority to make health and safety decisions that may not be specifically outlined in this HASP, should site conditions warrant such actions. In the event that the HSO/SS leaves the Site while work is in progress, an alternate Site Safety Officer (SSO) will be designated. Personnel responsibilities are further described in Section 4.0.

This HASP has been reviewed by the Project Manager (PM) and the HSO/SS prior to commencement of work activities. All Floyd|Snider personnel shall review the plan and be familiar with on-site health and safety procedures. A copy of the HASP will be on-site at all times.

2.0 Background

2.1 SITE BACKGROUND

The Site is located at 606 Union Avenue Southeast in Olympia, Washington and is currently operated as Howard's Prestige Cleaners, a dry cleaning drop-off and pick-up location. It includes a portion of the property located adjacent to the north (the Cherry Street Q-Tip Trust Property) and a portion of the Cherry Street Southeast right-of-way. The Site covers approximately 3,700 square feet.

The Site has been occupied by dry cleaning operations since 1970. Historically, these dry cleaning operations used solvents including trichloroethene (TCE) and tetrachloroethene (PCE). Following the discovery of PCE contamination in site soil, an Interim Action was completed in 2006 to remove the contaminated soil. However, residual PCE concentrations as great as 96 milligrams per kilogram (mg/kg) remain in soils.

A Cleanup Action Plan to address the remaining soil contamination at the Site was completed in 2014 by the Washington State Department of Ecology. This plan includes additional excavation of the remaining accessible contaminated soil from the northwest corner of the property in the vicinity of the previous Interim Action, as well as from a shallower area in the northeast corner of the property.

2.2 SCOPE OF WORK

This HASP focuses on field activities associated with the excavation of soils contaminated with PCE and installation of a seep diversion drain from the vicinity of the excavation. This includes pre-characterization of a limited area of soils using direct push borings and well decommissioning, excavation oversight, and collection of confirmation samples from the excavation base and sidewalls.

3.0 Emergency Contacts and Information

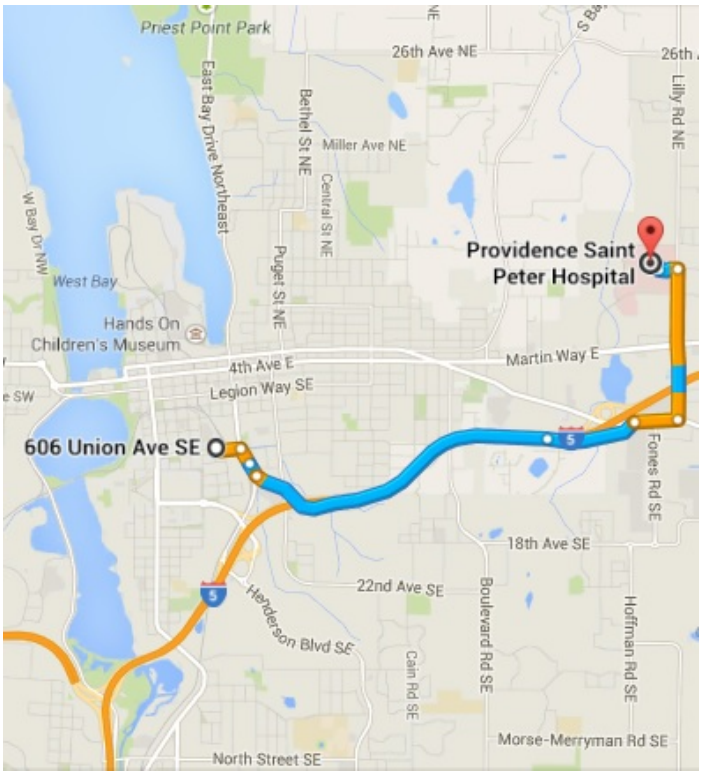
3.1 DIAL 911

In the event of an emergency, dial 911 to reach fire, police, and first aid.

3.2 HOSPITAL AND POISON CONTROL

Nearest Hospital Location and Telephone: Refer to Figure 1 below for map and directions to the hospital.	Providence Saint Peter Hospital, 413 Lilly Rd NE Olympia, WA 98506
Washington Poison Control Center:	(800) 222-1222

Figure 1
Hospital Directions



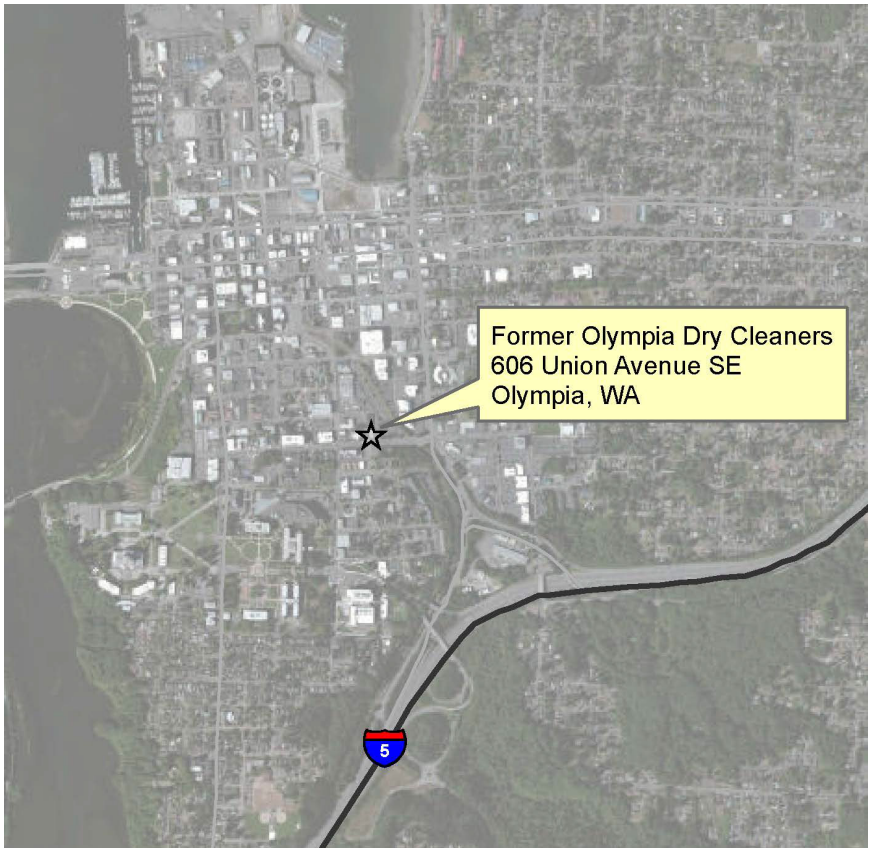
Head **east** on **Union Ave SE** toward **Plum St SE** (0.1 miles)
Turn **right** on **Plum St SE** (0.2 miles)
Merge onto **I-5 N** toward **Olympia/Seattle** (1.6 miles)
Take the **Pacific Ave** exit, **Exit 107** (0.5 miles)
Keep **right** to take the ramp toward **Lacey** (0.06 miles)
Merge onto **Pacific Ave SE** (0.2 miles)
Take the 2nd **left** onto **Lilly Rd SE** (0.7 miles)
Destination is on the **left**

3.3 PROVIDE INFORMATION TO EMERGENCY PERSONNEL

All Floyd|Snider project personnel should be prepared to give the following information:

Information to Give to Emergency Personnel	
Site Location: Refer to Figures 1 and 2 and directions above	Howard's Prestige Cleaners 606 Union Avenue Southeast Olympia, Washington 98501 **Site:** The Site is located on a city block in downtown Olympia and is accessible by both Union Ave SE and Cherry St SE
Number You are Calling from:	This information can be found on phone you are calling from.
Type of Accident or Type(s) of Injuries:	Describe accident and/or incident and numbers of personnel needing assistance.

Figure 2
Former Olympia Dry Cleaners Site Location



3.4 EMERGENCY CONTACTS

After contacting emergency response crews as necessary, contact the Floyd|Snider PM, or a Principal to report the emergency. The Floyd|Snider PM may then contact the Site owner, or direct the field staff to do so.

Floyd|Snider Emergency Contacts:

Contact	Office Phone Number	Cell Phone Number
Tom Colligan, PM	(206) 292-2078	(206) 276-8527
Kate Snider, Principal		(206) 375-0762
Teri Floyd, Principal		(206) 713-1329
Lynn Grochala, HSO/SS		(603) 491-3952

Other Emergency Contacts:

Contact	Company	Cell Phone Number
Gary Burleson (Site owner)	Site Owner	(360-463-0351
Bill Spooner	Spooner Contracting	(253) 347-3321

4.0 Primary Responsibilities and Requirements

4.1 PROJECT MANAGER

The PM will have overall responsibility for the completion of the project, including the implementation and review of this HASP. The PM will review health and safety issues as needed and as consulted, and will have authority to allocate resources and personnel to safely accomplish the field work.

The PM will direct all Floyd|Snider personnel involved in field work at the Site. If the project scope changes, the PM will notify the HSO/SS so that the appropriate addendum will be included in the HASP. The PM will ensure that all Floyd|Snider personnel on-site have received the required training, are familiar with the HASP, and understand the procedures to follow should an accident and/or incident occur on-site.

4.2 HEALTH AND SAFETY OFFICER AND SITE SUPERVISOR

The HSO/SS will approve this HASP and any amendments thereof, and will ultimately be responsible for full implementation of all elements of the HASP.

The HSO/SS will advise the PM and project personnel on all potential health and safety issues of the field investigation activities to be conducted at the Site. The HSO/SS will specify required exposure monitoring to assess site health and safety conditions, modify the Site HASP based on field assessment of health and safety accidents and/or incidents, and recommend corrective action if needed. The HSO/SS will report all accidents and/or incidents to the PM. If the HSO/SS observes unsafe working conditions by Floyd|Snider personnel or any contractor personnel, the HSO/SS will suspend all work until the hazard has been addressed.

4.3 SITE SAFETY OFFICER

The SSO may be a person dedicated to the task of assisting the HSO/SS during field work activities. The SSO will ensure that all personnel have appropriate personal protective equipment (PPE) on-site and PPE is properly used. The SSO will assist the HSO/SS in field observation of Floyd|Snider personnel safety. If a health or safety hazard is observed, the SSO shall suspend all work activity. The SSO will conduct on-site safety meetings daily before work commences and complete the Daily Tailgate Safety Meeting and Debrief Form (provided as Appendix A) after the completion of field work. All health and safety equipment will be calibrated daily and records kept in the daily field logbook. The SSO may perform exposure monitoring if needed and will ensure that equipment is properly maintained.

4.4 FLOYD|SNIDER PROJECT PERSONNEL

All Floyd|Snider project personnel involved in field work activities will take precautions to prevent accidents and/or incidents from occurring to themselves and others in the work areas. Employees will report all accidents and/or incidents or other unsafe working conditions to the

HSO/SS or SSO immediately. Employees will inform the HSO/SS or SSO of any physical conditions that could impact their ability to perform field work.

4.5 TRAINING REQUIREMENTS

All Floyd|Snider project personnel must comply with applicable regulations specified in the Washington Administrative Code (WAC) Chapter 296-843, Hazardous Waste Operations, administered by the Washington State Department of Labor and Industries. Project personnel will be 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) trained and maintain their training with an annual 8-hour refresher. Personnel with limited tasks and minimal exposure potential will be required to have 24-hour training and a site hazard briefing and be escorted by a trained employee. Personnel with defined tasks that do not include potential contact with disturbed site soils or waste, groundwater, or exposures to visible dust (e.g., surveying) are not required to have any level of hazardous waste training beyond a site emergency briefing and hazard orientation by the HSO/SS. Floyd|Snider project personnel will fulfill the medical surveillance program requirements.

At least one person on-site during field work will have current CPR/First Aid certification. All field personnel will have a minimum of 3 days of hazardous materials field experience under the direction of a skilled supervisor.

Additional site-specific training that covers on-site hazards, PPE requirements, use and limitations, decontamination procedures, and emergency response information as outlined in this HASP will be given by the HSO/SS before on-site work activities begin.

5.0 Hazard Evaluation and Risk Analysis

In general, there are three broad hazard categories that may be encountered during site work: chemical exposure hazards, fire/explosion hazards, and physical hazards. Sections 5.1 through 5.3 discuss the specific hazards that fall within each of these broad categories. Section 5.4 summarizes the hazard analysis for each specific task.

5.1 CHEMICAL EXPOSURE HAZARDS

This section describes potential chemical hazards associated with soil excavation and sampling. Based on previous site data, the chemicals of concern at the Site are chlorinated volatile organic compounds (CVOCs) including PCE, TCE, dichloroethene (DCE), and vinyl chloride. Human health hazards for these compounds are presented below:

Chemical	Greatest Detected Concentration in Site Soil	Routes of Exposure	Potential Toxic Effects
PCE	96 mg/kg	Inhalation, absorption, ingestion, contact	Eye/skin/respiratory system irritation, nausea, flushed/red skin, dizziness, lack of coordination, headache, drowsiness, liver injury
TCE	3.16 mg/kg	Inhalation, absorption, ingestion, contact	Eye/skin irritation, dizziness, headache, drowsiness, tremors, nausea, dermatitis, cardiac arrhythmia, liver injury
cis-1,2-DCE	2.3 mg/kg	Inhalation, ingestion, contact	Eye and respiratory system irritation, central nervous system depression
trans-1,2-DCE	----	Inhalation, ingestion, contact	Eye and respiratory system irritation, central nervous system depression
1,1-DCE	----	----	----
Vinyl Chloride	>1.9 mg/kg	Inhalation, contact	Abdominal pain, gastrointestinal bleeding, weakness/exhaustion, enlarged liver, pallor or cyanosis of extremities

Note:
---- Not available.

This information covers potential toxic effects that might occur if relatively significant acute and/or chronic exposure were to happen. This information does not mean that such effects will occur from the planned site activities. Potential routes of exposure include inhalation, dermal contact, and ingestion. The primary exposure route of concern during site work is ingestion or inhalation of contaminated soil or soil vapor.

Ingestion of CVOC-contaminated soil is highly preventable with the use of appropriate PPE as described in Section 7.1 and pollution prevention and decontamination procedures described in Section 9.0. In order to limit the potential for inhalation of CVOCs during site work, ambient air will be monitored with a photoionization detector (PID) during excavation as described in Section 6.0. Section 7.2 describes engineering controls that may be enacted to limit the inhalation of CVOCs.

5.2 FIRE AND EXPLOSION HAZARDS

Flammable and combustible liquid hazards may occur from fuels and lubricants brought to the property for excavation equipment. When on-site storage is necessary, such material will be stored in containers approved by the Washington State Department of Transportation in a location not exposed to strike hazards and provided with secondary containment. A minimum 2-A:20-B fire extinguisher will be located within 25 feet of the storage location and where refueling occurs. Any subcontractors bringing flammable and combustible liquid hazards to the Site are responsible for providing appropriate material for containment and spill response, and should address these containment and cleanup measures in their respective HASPs. Transferring of flammable liquids (e.g., gasoline) will occur only after making positive metal-to-metal connection between the containers, which may be achieved by using a bonding strap. Storage of ignition and combustible materials will be kept away from fueling operations.

Although there are VOCs present as contamination in site soils, these compounds are typically present in wet soils, non-flammable in nature, and at insufficient concentrations to cause fire or explosion hazards.

5.3 PHYSICAL HAZARDS

When working in or around any hazardous or potentially hazardous substances or situations, including an open excavation and vehicle traffic, all site personnel should plan all activities before starting any task. A tailgate safety meeting, in which personnel identify health and safety hazards involved with the work planned and consult with the HSO/SS as to how the task can be performed in the safest manner, and if personnel have any reasons for concern or uncertainty, shall be conducted prior to the start of work.

All field personnel will adhere to general safety rules including wearing appropriate PPE—hard hats, steel-toed boots, high-visibility vests, safety glasses, gloves, and hearing protection, as appropriate. Eating, drinking, and/or use of tobacco or cosmetics will be restricted in all work areas. Personnel will prevent splashing of liquids containing chemicals and minimize dust emissions.

The following table summarizes a variety of physical hazards that may be encountered on the Site during work activities. For convenience, these hazards have been categorized into several general groupings with recommended preventative measures.

Hazard	Cause	Prevention
Head strike	Falling and/or sharp objects, bumping hazards.	Hard hats will be worn by all personnel at all times when overhead hazards exist, such as during drilling activities.
Foot/ankle twist, crush, slip/trip/fall	Sharp objects, dropped objects, uneven and/or slippery surfaces.	Steel-toed boots must be worn at all times on-site while heavy equipment is present. Pay attention to footing on uneven or wet terrain and do not run. Keep work areas organized and free from unmarked trip hazards. Field staff will not enter the excavation to collect samples; however, the excavation area should be kept clear of foot traffic.
Hand cuts, splinters, and chemical contact	Hands or fingers pinched or crushed, chemical hazards. Cut or splinters from handling sharp/rough objects and tools.	Nitrile safety gloves will be worn to protect the hands from dust and chemicals. Leather or cotton outer gloves will be used when handling sharp-edged rough materials or equipment. Refer to preventive measures for mechanical hazards below.
Eye damage from flying materials, or splash hazards	Sharp objects, poor lighting, exposure due to flying debris or splashes.	Safety glasses will be worn at all times on-site. If a pressure washer is used to decontaminate heavy equipment, a face shield will be worn over safety glasses or goggles. Care will be taken during decontamination procedures and groundwater sampling to avoid splashing or dropping equipment into decontamination water.

Hazard	Cause	Prevention
Electrical hazards	Underground utilities, overhead utilities. Electrical cord hazards, such as well development pumps.	Utility locator service will be used prior to any investigation to locate underground utilities. Visual inspection of work areas will be conducted prior to starting work. Whenever possible, avoid working under overhead high voltage lines. Make sure that no damage to extension cords occurs. If an extension cord is used, make sure it is the proper size for the load that is being served and rated SJOW or STOW (an "-A" extension is acceptable for either) and inspected prior to use for defects. The plug connection on each end should be of good integrity. Insulation must be intact and extend to the plugs at either end of the cord. All portable power tools will be inspected for defects before use and must either be a double-insulated design or grounded with a ground-fault circuit interrupter.
Mechanical hazards	Heavy equipment such as drill rigs, excavator, service trucks, etc. Conducting work in road right of ways (on the road shoulder).	Ensure the use of competent operators, backup alarms, regular maintenance, daily mechanical checks, and proper guards. Subcontractors will supply their own HASP. All project personnel will make eye contact with operator and obtain a clear "OK" before approaching or working within swing radius of heavy equipment, staying clear of swing radius.
Traffic hazards	Vehicle traffic and hazards when working near active operations.	When working in or near the right-of-way, orange cones and/or flagging will be placed around the work area. Safety vests will be worn at all times while conducting work off-site. Multiple field staff will work together (buddy system) and spot traffic for each other. Avoid working with your back to traffic whenever possible.
Noise/ damage to hearing	Loud machinery	Wear earplugs or protective ear covers when a conversational level of speech is difficult to hear at a distance of 3 feet; when in doubt, a sound level meter may be used on-site to document noise exposure.

Hazard	Cause	Prevention
Strains from improper lifting	Injury due to improper lifting techniques, over-reaching/ overextending, lifting overly heavy objects.	Use proper lifting techniques and mechanical devices where appropriate. The proper lifting procedure first involves testing the weight of the load by tipping it. If in doubt, ask for help. Do not attempt to lift a heavy load alone. Take a good stance and plant your feet firmly with legs apart, one foot farther back than the other. Turn the forward foot and point it in the direction of the eventual movement. Make sure you stand on a level area with no slick spots or loose gravel. Use as much of your hands as possible, not just your fingers. Keep your back straight, almost vertical. Bend at the hips, holding load close to your body. Keep the weight of your body over your feet for good balance. Use large leg muscles to lift. Push up with one foot positioned in the rear as you start to lift. Avoid quick, jerky movements and twisting motions. Never try to lift more than you are accustomed to lifting.
Cold stress	Cold temperatures and related exposure.	Workers will ensure appropriate clothing, stay dry, and take breaks in a heated environment when working in cold temperatures. **Further detail on cold stress is provided in Section 5.3.1.**
Accidents due to inadequate lighting	Improper illumination.	Work will proceed during daylight hours only, or under sufficient artificial light.

5.3.1 Cold Stress

Field work is expected to be completed in early spring and exposure to cold temperatures may be possible. Exposure to moderate levels of cold can cause the body's internal temperature to drop to a dangerously low level, causing hypothermia. Symptoms of hypothermia include slow, slurred speech, mental confusion, forgetfulness, memory lapses, lack of coordination, and drowsiness.

To prevent hypothermia, site personnel will stay dry and avoid exposure. Site personnel will have access to a warm, dry area, such as a vehicle, to take breaks from the cold weather and warm up. Site personnel will be encouraged to wear sufficient clothing in layers such that outer clothing is wind- and waterproof and inner layers retain warmth (wool or polypropylene), if applicable. Site personnel will keep hands and feet well protected at all times. The signs and symptoms and treatment for hypothermia are summarized below.

Signs and Symptoms

- Mild hypothermia (body temperature of 98–90 °F)
  - Shivering
  - Lack of coordination, stumbling, fumbling hands
  - Slurred speech
  - Memory loss
  - Pale, cold skin
- Moderate hypothermia (body temperature of 90–86 °F)
  - Shivering stops
  - Unable to walk or stand
  - Confused and irrational
- Severe hypothermia (body temperature of 86–78 °F)
  - Severe muscle stiffness
  - Very sleepy or unconscious
  - Ice cold skin
  - Death

Treatment of Hypothermia—Proper Treatment Depends on the Severity of the Hypothermia

- Mild hypothermia
  - Move to warm area.
  - Stay active.
  - Remove wet clothes and replace with dry clothes or blankets and cover the head.
  - Drink warm (not hot) sugary drinks.
- Moderate hypothermia
  - All of the above, plus:
    - Call 911 for an ambulance.
    - Cover all extremities completely.
    - Place very warm objects such as hot packs or water bottles on the victim's head, neck, chest, and groin.
- Severe hypothermia
  - Call 911 for an ambulance.
  - Treat the victim very gently.
  - Do not attempt to re-warm—the victim should receive treatment in a hospital.

Frostbite

Frostbite occurs when the skin actually freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30 °F or lower, wind chill factors can allow frostbite to occur in above-freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. Frostbite symptoms include a cold, tingling, stinging, or aching feeling in the frostbitten area followed by numbness and skin discoloration from red to purple, then white or very pale skin. Should any of these symptoms be observed, wrap the area in soft cloth, do not rub the affected area, and seek medical assistance. Call 911 if the condition is severe.

***Protective* Clothing**

Wearing the right clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, on the other hand, retains its insulation even when wet. The following are recommendations for working in cold environments:

- Wear *at least three layers* of clothing.
  - An outer layer to break the wind and allow some ventilation (like Gortex or nylon).
  - A middle layer of down or wool to absorb sweat and provide insulation even when wet.
  - An inner layer of cotton or synthetic weave to allow ventilation.
- Wear a hat—up to 40 percent of body heat can be lost when the head is left exposed.
- Wear insulated boots or other footwear.
- Keep a change of dry clothing available in case work clothes become wet.
- Do not wear tight clothing—loose clothing allows better ventilation.

Work Practices

- Drinking—Drink plenty of liquids, avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather.
- Work Schedule—If possible, heavy work should be scheduled during the warmer parts of the day. Take breaks out of the cold in heated vehicles.
- Buddy System—Try to work in pairs to keep an eye on each other and watch for signs of cold stress.

5.3.2 Heat Stress

To avoid heat-related illness, current regulations in WAC 296-62-095 through 296-62-09560 will be followed during all outdoor work activities. These regulations apply to any outdoor work environment from May 1 through September 30, annually, when workers are exposed to

temperatures greater than 89 °F when wearing breathable clothing, greater than 77 °F when wearing double-layered woven clothing (such as jackets or coveralls), or greater than 52 °F when wearing non-breathing clothing such as chemical resistant suits or Tyvek. The planned work at the Site is expected to be completed prior to the beginning of the time period during which outdoor work is regulated to control heat-related illness.

5.3.3 Biohazards

Bees and other insects may be encountered during the field work tasks. Persons with allergies to bees will make the HSO/SS aware of their allergies and will avoid areas where bees are identified. Controls such as repellents, hoods, nettings, masks, or other personal protection may be used. Report any insect bites or stings to the HSO/SS and seek first aid, if necessary.

The adjacent property to the north is currently occupied by the Capital Recovery Center, a mental health services provider that also operates a needle exchange program. Although unlikely, if hypodermic needles are encountered near the work area they will be treated as contaminated and site personnel will report them to the exchange program for proper disposal.

Site personnel will maintain a safe distance from any urban wildlife encountered, including stray dogs, raccoons, and rodents, to preclude a bite from a sick or injured animal. Personnel will be gloved and will use tools to lift covers from catch basins and monitoring wells.

5.4 HAZARD ANALYSIS BY TASK

The following section identifies potential hazards associated with each task listed in Section 2.2 of this HASP. Tasks have been grouped according to the types of potential hazard associated with them.

Task	Potential Hazard
Soil Boing Installation and Well Decommissioning	Exposure to loud noise; overhead hazards; head, foot, ankle, hand, and eye hazards; electrical and mechanical hazards; lifting hazards; soil vapor and/or dust inhalation hazards; potential dermal or eye exposure to site contaminants in groundwater and soil; traffic hazards; and heat or cold exposure hazards.

Task	Potential Hazard
Excavation Oversight	Exposure to loud noise; overhead hazards; head, foot, ankle, hand, and eye hazards; electrical and mechanical hazards; lifting hazards; soil vapor and/or dust inhalation hazards; potential dermal or eye exposure to site contaminants in groundwater and soil; fall hazards; traffic hazards; and heat or cold exposure hazards.
Soil Sampling, Field Screening, and Confirmation Soil Sample Collection	Chemical hazards include potential dermal or eye exposure to site contaminants in soil. Physical hazards include slip, trip, or fall hazards; heat and cold exposure hazards; and biological hazards.

6.0 Site Monitoring

This section describes site monitoring techniques and equipment that are to be used during site field activities. The HSO/SS, or a designated alternate, is responsible for site control and monitoring activities.

Soil samples will be screened with a PID to monitor the presence of VOCs. Visual monitoring for dust will be conducted by the HSO/SS to ensure that inhalation of contaminated soil particles does not occur; however, the field activities are not expected to generate substantial dust. If visible dust is present in the work area, work will cease, and the area will be cleared of personnel until the dust settles. Water may be used to suppress any dust clouds generated during work activities. The HSO/SS will visually inspect the work site at least daily to identify any new potential hazards. If new potential hazards are identified, immediate measures will be taken to eliminate or reduce the risks associated with these hazards.

Project personnel are expected to perform field work in Level D PPE (i.e., no respiratory protection equipment required with routine air monitoring). A PID will also be used to monitor vapor concentrations in breathing air of total CVOCs in parts per million throughout excavation activities. The PID will sample the breathing space above the excavation and monitor continuously, and the following institutional controls may be enacted based on the measured CVOC concentrations. The action levels for air monitoring for CVOCs are as follows:

Monitoring Equipment	CVOC Concentration	Action
PID	Less than 10 ppmv; less than 25 ppmv (ACGIH 8-hour TWA for PCE) for no longer than 15 minutes	Continue operations in Level D PPE. Work upwind of excavation area when possible.
	Greater than 10 and less than 25 ppmv; intermittent	Leave work area and allow vapor to dissipate; use engineering controls if necessary. Monitor CVOC concentration every 5 minutes; resume work once concentrations are less than 1 ppmv for 15 minutes.
	Greater than 100 ppmv (ACGIH STEL)	Stop operations and evacuate area. Do not resume work until engineering controls able to maintain CVOC concentrations less than 1 ppmv in breathing space are in place.

Abbreviations:
ACGIH American Conference of Governmental Hygienists
ppmv Parts per million vapor
STEL Short term exposure limit
TWA Time-weighted average

Engineering controls that may be undertaken to reduce the risk of airborne CVOCs in the work area are discussed in Section 7.2.

7.0 Hazard Reduction

7.1 PERSONAL PROTECTIVE EQUIPMENT

All work will proceed in Level D PPE, which shall include hard hat, steel-toed boots, hearing protection, eye protection, gloves, and sturdy outer work clothing. Rubber or other waterproof boots must be worn inside the excavation area, as footwear must be thoroughly decontaminated in a boot wash before exiting the excavation area.

All personnel have been trained in the proper use of PPE. The level of protection may be upgraded by the HSO/SS if warranted by conditions present in the work area. As an alternative, work may be temporarily suspended in order to implement appropriate engineering controls. The HSO/SS will periodically inspect equipment such as gloves and hard hats for defects.

For all work involving potential exposure to soil or groundwater, workers will wear nitrile gloves and Level D PPE.

High visibility vests will be worn when working around heavy equipment, and off-site on road shoulders.

7.2 ENGINEERING CONTROLS

The SSO will evaluate the need for engineering controls to reduce exposures to airborne contaminants. Engineering controls may be as simple as setting up a work area upwind of the airborne contaminant source. Alternative engineered controls include the use of enhanced ventilation at a work site (e.g., the use of electric fans) to reduce contaminant concentration by dilution, if there is not sufficient circulation of ambient air. If fans are used, they will be directed away from pedestrian pathways and building entrances. Shielding may be used in some instances to protect workers from contaminants. Exposures can also be reduced by keeping contaminated soils covered when possible and backfilling the excavation as soon as possible.

8.0 Site Control and Communication

8.1 SITE CONTROL

Work area controls and decontamination areas will be provided to limit the potential for chemical exposure associated with site activities, and transfer of contaminated media from one area of the Site to another. The support zone (SZ) for the Site includes all areas outside the work area and decontamination areas. An exclusion zone/contamination reduction zone (EZ/CRZ) and SZ will be set up for work being conducted within the limits of the Site. Only authorized personnel shall be permitted access to the EZ/CRZ. Staff will decontaminate all equipment and gear, including work boots, as necessary prior to exiting the CRZ.

The Site is occupied by a dry cleaning pick-up/drop-off facility and receives customer vehicle traffic. The CRZ will be delimited with high-visibility tape or barricades to prevent customers or members of the public from entering the work area.

8.2 COMMUNICATION

All site work will occur in teams and the primary means of communication on-site and with off-site contacts will be via cell phones. An agreed-upon system of alerting via air horns and/or vehicle horns may be used around heavy equipment to signal an emergency if shouting is ineffective.

9.0 Decontamination and Waste Disposal

9.1 CONTAMINATION PREVENTION

To avoid personal contact with contaminants, personnel will adhere to the following guidelines:

- Do not walk through areas of known contamination.
- Do not directly handle or touch contaminated materials.
- Make sure all PPE is intact and in good working condition prior to donning.
- Take particular care to protect any skin injuries.
- Stay upwind of airborne contaminants.
- Do not carry cigarettes, gum, or similar items into contaminated areas.

To avoid spreading equipment and sample contamination, personnel will do the following:

- Take care to limit contact with heavy equipment and vehicles.
- If contaminated tools are to be placed on non-contaminated equipment/vehicles for transport to a decontamination area, use plastic to keep the non-contaminated equipment clean.
- Bag sample containers prior to emplacement of sample material.

9.2 DECONTAMINATION

The majority of field activities and sampling are expected to be conducted using Level D PPE. Decontamination procedures for both PPE and field equipment will be strictly followed to prevent off-site spread of contaminated soil or water. The HSO/SS will assess the effectiveness of decontamination procedures by visual inspection. Hands must be thoroughly washed before leaving the Site to eat, drink, or use tobacco.

Vehicle and large equipment decontamination generally requires construction of a temporary decontamination station. A simple containment may be built of heavy-gauge polyethylene sheeting to form a decontamination pad. After equipment cleaning, decontamination solutions from the temporary pad will be pumped into the on-site storage tanks. If small amounts are generated, the water may be mixed with the excavated soil that will be transported off-site for disposal. Equipment and vehicle decontamination generally consists of sweeping (if dry) and/or pressure washing with detergent solution followed by a potable water rinse.

9.3 WASTE DISPOSAL

Floyd|Snider and its subcontractors will employ safe and prudent waste collection and housekeeping practices to minimize the spread of contamination beyond the work zone and the amount of investigation-derived wastes. The Floyd|Snider HSO/SS will work with site personnel

to ensure the proper collection, packaging, and identification of waste materials so that waste materials will be properly disposed of.

Waste soils left over from sample processing, and decontamination waste water will be disposed of in accordance with the established procedures for the removal and hauling of excavated site soil.

10.0 Emergency Response and Contingency Plan

This section defines the emergency action plan for the Site. It will be rehearsed with all site personnel and reviewed whenever the plan is modified or the HSO/SS believes that site personnel are unclear about the appropriate emergency actions.

A muster point of refuge (that is clear of adjacent hazards and not located downwind of site investigation activities) will be identified by the HSO/SS and communicated to the field team each day. In an emergency, all site personnel and visitors will evacuate to the muster point for roll call. It is important that each person on-site understand their role in an emergency, and that they remain calm and act efficiently to ensure everyone's safety.

After each emergency is resolved, the entire project team will meet and debrief on the incident—the purpose is not to fix blame, but to improve the planning and response to future emergencies. The debriefing will review the sequence of events, what was done well, and what can be improved. The debriefing will be documented in a written format and communicated to the PM. Modifications to the emergency plan will be approved by the PM.

Reasonably foreseeable emergency situations include medical emergencies, accidental release of hazardous materials (such as gasoline or diesel) or hazardous waste, and general emergencies such as vehicle accident, fire, thunderstorm, and earthquake. Expected actions for each potential incident are outlined below.

10.1 MEDICAL EMERGENCIES

General emergency procedures that are applicable to almost every activity are presented below.

In the event of a medical emergency, the following procedures should be used:

- Stop any imminent hazard if you can safely do so.
- Remove ill, injured, or exposed person(s) from immediate danger if moving them will clearly not cause them harm and no hazards exist to the rescuers.
- Evacuate other on-site personnel to a safe place in an upwind or cross-wind direction until it is safe for work to resume.

In the event of a chemical exposure, use the following procedures:

- Skin Contact. Flush the area with copious quantities of cold water for at least 15 minutes. Do not let contamination spread to other personnel. Seek medical attention. If injuries are severe, summon an ambulance as described below.
- Eye Contact. Wash/rinse affected area for at least 15 minutes. An emergency eye wash system will be present on-site. Seek medical attention.

- Inhalation. Remove the person from further exposure. Summon an ambulance and contact the hospital as described below, and be prepared to provide respiratory support if the person has difficulty breathing.
- Ingestion. Dilute the material with large quantities of water. Summon an ambulance and contact the hospital or poison control center immediately for further instructions.
- If serious injury or a life-threatening condition exists, call **911** for paramedics, fire department, and police.

  Clearly describe the location, injury, and conditions to the dispatcher. Designate a person to go to the site entrance and direct emergency equipment to the injured person(s). Provide the responders with a copy of this HASP to alert them to chemicals of potential concern.
- Trained personnel may provide first aid/cardiopulmonary resuscitation if it is necessary and safe to do so. Remove contaminated clothing and PPE only if this can be done without endangering the injured person.
- Call the PM and HSO/SS.
- Immediately implement steps to prevent recurrence of the accident.

Refer to Section 3.2 for a map showing the nearest hospital location (Figure 1) as well as a hospital phone number and address.

10.2 ACCIDENTAL RELEASE OF CONTAMINATED MATERIALS OR WASTES

The procedures for handling and notification of spills are provided in the Spill Prevention and Countermeasure Control Plan (refer to Appendix C of the Remedial Action Work Plan). In the event of a spill, the SSO will evacuate all on-site personnel to a safe place in an upwind direction until the HSO/SS determines that it is safe for work to resume. The SSO will also contact the PM and confirm a response.

10.3 GENERAL EMERGENCIES

In the case of fire, explosion, earthquake, or imminent hazards, work shall be halted and all on-site personnel will be immediately evacuated to a safe place. The local police/fire department shall be notified if the emergency poses a continuing hazard by calling 911.

In the event of a thunderstorm, outdoor work will be discontinued until the threat of lightning has abated. During the incipient phase of a fire, the available fire extinguisher(s) may be used by persons trained in putting out fires, if it is safe for them to do so. Contact the fire department as soon as feasible.

10.4 EMERGENCY COMMUNICATIONS

In the case of an emergency, an air horn will be used as needed to signal the emergency. One long (5-second) blast will be given as the emergency/stop work signal. If the air horn is not working, a vehicle horn and/or overhead waving of arms will be used to signal the emergency. In any emergency, all personnel will evacuate to the designated refuge area and await further instruction.

10.5 EMERGENCY EQUIPMENT

The following minimum emergency equipment will be readily available on-site and functional at all times:

- First Aid Kit—contents approved by the HSO/SS, including two blood borne pathogen barriers and an emergency eye wash station
- Spill kit
- Portable fire extinguisher (2-A:10 B/C min)
- A copy of the current HASP

11.0 Administrative

11.1 MEDICAL SURVEILLANCE

Floyd|Snider personnel involved with field activities must be covered under Floyd|Snider's medical surveillance program that includes biennial physical examinations. These medical monitoring programs must be in compliance with all applicable worker health and safety regulations.

11.2 RECORDKEEPING

The HSO/SS, or a designated alternate, will be responsible for keeping documentation of site activities including: attendance lists of personnel present at site health and safety meetings, accident reports, and signatures of all personnel who have read this HASP.

12.0 Approvals

Project Manager	Date
Project Health & Safety Officer	Date

13.0 Signature Page

I have read this Health and Safety Plan and understand its contents. I agree to abide by its provisions and will immediately notify the HSO/SS if site conditions or hazards not specifically designated herein are encountered.

Name (Print)	Signature	Date	Company/Affiliation

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix A
Health and Safety Plan

Attachment 1
Daily Tailgate Safety Meeting and Debrief Form

DAILY TAILGATE SAFETY MEETING AND DEBRIEF FORM

Instructions

To be completed by supervisor prior to beginning of work each day, when changes in work procedures occur, or when additional hazards are present. Please maintain a copy of this form with the site-specific HASP for the record.

PROJECT NAME AND ADDRESS:	**WORK COMPLETED/TOOLS USED:**

TOPICS/HAZARDS DISCUSSED:

Chemicals of concern:
Slip, trip, fall:
Heat or cold stress:
Required PPE:
Other Potential Hazards:
• **Environmental:**
• **Physical:**
• **Biological:**
• **Other:**

INFORMAL TRAINING CONDUCTED (Name, topics):

NAMES OF EMPLOYEES:

ADDITIONAL HAZARDS IDENTIFIED AT END OF WORK DAY:

Near Misses/Incidents? If so proceed to Page 2 Near Miss and Incident Reporting Form

Supervisors Signature/Date: _____

NEAR MISS AND INCIDENT REPORTING FORM

INCIDENTS:

INJURIES:

NEAR MISSES:

CORRECTIVE ACTIONS:

Supervisors Signature/Date: _____

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix B
Sampling and Analysis Plan/ Quality Assurance Project Plan

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List of Tables

List of Abbreviations and Acronyms

Acronym/ Abbreviation	Definition
bgs	Below ground surface
COC	Chemical of concern
DCE	Dichloroethene
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
LCS	Laboratory control sample
MS	Matrix spike
MSD	Matrix spike duplicate
PCE	Tetrachloroethene
PID	Photoionization detector
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
RAWP	Remedial Action Work Plan
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan

Acronym/ Abbreviation	Definition
Site	Olympia Dry Cleaners Site
TCE	Trichloroethene
USEPA	U.S. Environmental Protection Agency
VOC	Volatile organic compound

1.0 Project Description

The Former Olympia Dry Cleaners Site (the Site) is located at 606 Union Avenue Southeast in Olympia, Washington and is currently operated as Howard's Prestige Cleaners, a dry cleaning location. It includes a portion of the property located adjacent to the north (the Cherry Street Q-Tip Trust Property), and a portion of the Cherry Street Southeast right-of-way. The Site covers approximately 3,700 square feet.

The Site has been occupied by dry cleaning operations since 1970. Historically, these dry cleaning operations used solvents including trichloroethene (TCE) and tetrachloroethene (PCE) for stain removal. In 2006, following the discovery of PCE contamination in site soil, an interim action was completed to remove the contaminated soil. However, residual PCE concentrations as great as 96 milligrams per kilogram remain in soils. Groundwater seeping to the surface was also discovered during the Interim Action, and a Seep Collection and Treatment system was installed at the Site to prevent this seep of contaminated water from entering stormwater drains.

A Cleanup Action Plan to address the remaining soil contamination at the Site was completed in June 2014 under direction by the Washington State Department of Ecology (Ecology). This plan includes additional excavation of the remaining accessible contaminated soil from the northwest corner of the property in the vicinity of the previous Interim Action, as well as from a shallower area in the northeast corner of the property. The surface water seep may also be eliminated or diverted from the contaminated area via a French drain that will be installed during the remedial action.

The Remedial Action Work Plan (RAWP) describes general construction and field activities to be performed as part of the Remedial Action including collection of pre-excavation soil sampling for characterization, post-excavation confirmation soil samples and soil stockpile samples, if needed. This Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) presents the specific field protocols and field and laboratory quality assurance/quality control (QA/QC) procedures associated with the Remedial Action at the Site.

2.0 Project Organization and Responsibility

The various management responsibilities of key project personnel are defined below.

2.1 MANAGEMENT RESPONSIBILITIES

Tom Colligan/Lynn Grochala—Floyd|Snider Project Managers

The Project Managers will have overall responsibility for project implementation and be responsible for maintaining QA on this project and ensuring that the RAWP objectives are met. The Project Managers will perform the following:

- Approve the SAP/QAPP.
- Coordinate access for field activities.
- Coordinate permitting and pre-construction contractor requirements.
- Monitor project activity and quality.
- Provide overview of field activities to Ecology.
- Manage the disposal of excavated soils.
- Prepare and review the draft Remedial Action Completion Report.
- Provide technical representation of project activities at meetings.

2.2 QUALITY ASSURANCE RESPONSIBILITIES

Chell Black—Floyd|Snider Data Manager

The Data Manager will be responsible for the data validation of all sample results from the analytical laboratories and entering the data into a database. Additional responsibilities include the following:

- Reviewing laboratory reports.
- Loading analytical data to Ecology's Environmental Information Management (EIM) database.
- Advising on data corrective action procedures.
- QA/QC on analytical data reports.
- Database management and queries.

2.3 LABORATORY RESPONSIBILITIES

Fremont Analytical of Seattle Washington, an Ecology-accredited laboratory will perform all analytical services in support of the RAWP work activities.

Laboratory Project Manager

Michael Ridgeway, the Laboratory Project Manager will be responsible for the following:

- Coordinating laboratory analyses with Floyd|Snider.
- Reviewing and approving final analytical reports.
- Scheduling sample analyses.
- Overseeing data review.

2.4 FIELD RESPONSIBILITIES

Kristin Andersen—Floyd|Snider Field Lead

The Field Lead will be responsible for leading and coordinating the day-to-day activities in the field. The Field Lead will report directly to the Floyd|Snider Project Manager.

Specific responsibilities include the following:

- Coordinating with the Floyd|Snider Project Manager.
- Coordinating and managing field and laboratory responsibilities, including sampling.
- Documenting and reviewing field data including field measurement data.
- Adhering to the work schedule.
- Coordinating and overseeing subcontractors.
- Preparing the Remedial Action Completion Report.

3.0 Laboratory Quality Assurance Objectives

The objective of this section is to clarify laboratory data QA objectives for field sampling and laboratory analyses. Specific procedures for sampling, chain of custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal QC, audits, preventative maintenance of field/laboratory equipment, and corrective action are described in subsequent sections of this SAP/QAPP.

3.1 LABORATORY QUALITY ASSURANCE OBJECTIVES

The quality of analytical data generated is assessed by the frequency and type of internal QC checks developed for analysis type. Laboratory results will be evaluated against QA objectives by reviewing results for analysis of method blanks, matrix spikes (MS), duplicate samples, laboratory control samples (LCS), calibrations, performance evaluation samples, and interference checks as specified by the specific analytical methods. Data quality objectives are summarized in Table B.1.

3.2 PRECISION

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, precision is a quantitative measure of the variability of a group of measurements compared to their average values. Analytical precision is measured through MS/matrix spike duplicate (MSD) samples for organic analysis and through laboratory duplicate samples for inorganic analyses.

Analytical precision measurements will be carried out on project-specific samples at a minimum laboratory duplicate frequency of 1 per laboratory analysis group or 1 in 20 samples, whichever is more frequent per matrix analyzed, as practical. Laboratory precision will be evaluated against quantitative relative percent difference (RPD) performance criteria.

Field precision will be evaluated by the collection of blind field duplicates at a minimum frequency of 1 per laboratory analysis group or 1 in 20 samples. Currently, no performance criteria have been established for field duplicates. Field duplicate precision will, therefore, be screened against a RPD of 75 percent for all samples. However, no data will be qualified based solely on field duplicate precision.

Precision measurements can be affected by the nearness of a chemical concentration to the method detection limit, where the percent error (expressed as RPD) increases. The equations used to express precision are as follows:

$$RPD = \frac{(C_1 - C_2) \times 100\%}{(C_1 + C_2)/2}$$

Where:

RPD = relative percent difference

C_1 = larger of the two observed values

C_2 = smaller of the two observed values

3.3 ACCURACY

Accuracy is an expression of the degree to which a measured or computed value represents the true value. Analytical accuracy may be assessed by analyzing "spiked" samples with known standards (surrogates, LCSs, and/or MS) and measuring the percent recovery. Accuracy measurements on MS samples will be carried out at a minimum frequency of 1 in 20 samples per matrix analyzed. Because MS/MSDs measure the effects of potential matrix interferences of a specific matrix, the laboratory will perform MS/MSDs only on samples from this investigation and not from other projects. Surrogate recoveries will be determined for every sample analyzed for organics.

Laboratory accuracy will be evaluated against quantitative LCS, MS/MSDs, and surrogate spike recoveries using limits for each applicable analyte. Accuracy can be expressed as a percentage of the true or reference value, or as a percent recovery in those analyses where reference materials are not available and spiked samples are analyzed. The equation used to express accuracy is as follows:

$$\%R = 100\% \times (S-U)/C_{sa}$$

Where:

%R = percent recovery
S = measured concentration in the spiked aliquot
U = measured concentration in the unspiked aliquot
C_{sa} = actual concentration of spike added

3.4 REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Care will be taken in the design of the sampling program to ensure sample locations are properly selected, sufficient numbers of samples are collected to accurately reflect conditions at the location(s), and samples are representative of the sampling location(s). A sufficient volume of sample will be collected at each sampling location to minimize bias or errors associated with sample particle size and heterogeneity.

3.5 COMPARABILITY

Comparability is a qualitative parameter expressing the confidence with which one dataset can be compared to another. In order to insure results are comparable, samples will be analyzed using standard U.S. Environmental Protection Agency (USEPA) methods and protocols. Calibration and reference standards will be traceable to certified standards and standard data reporting formats will be employed. Data will also be reviewed to verify that precision and accuracy criteria were achieved and, if not, that data were appropriately qualified.

3.6 COMPLETENESS

Completeness is a measure of the amount of data that is determined to be valid in proportion to the amount of data collected. Completeness will be calculated as follows:

$$C = \frac{\text{(Number of acceptable data points)} \times 100}{\text{(Total number of data points)}}$$

The data quality objective for completeness for all components of this project is 95 percent. Data that were qualified as estimated because the QC criteria were not met will be considered valid for the purpose of assessing completeness. Data that were qualified as rejected will not be considered valid for the purpose of assessing completeness.

3.7 QUALITY CONTROL PROCEDURES

QC samples will be collected and analyzed as described in this section.

3.7.1 Field Quality Control Procedures

Trip blanks will be included in each cooler containing samples being analyzed for volatile organic compounds (VOCs) to ensure the sample containers do not contribute to any detected analyte concentrations and to identify any artifacts of improper sample handling, storage, or shipping. A rinsate blank QC sample will also be collected on the non-dedicated field equipment (i.e., stainless steel bowl and spoon) to ensure field decontamination procedures are effective. All field QC samples will be documented in the field logbook and verified by the QA Manager or designee. A blind field duplicate will be collected at a frequency of 1 in 20 samples to evaluate the efficiency of field decontamination procedures, variability from sample handling, and site heterogeneity.

3.7.2 Laboratory Quality Control Procedures

Laboratory Quality Control Criteria. Certain samples will be spiked and the recoveries of spiked compounds compared to the QC criteria. Results of the laboratory QC samples from each sample group will be reviewed by the analyst immediately after a sample group has been analyzed. The QC sample results will then be evaluated to determine whether control limits were exceeded. If control limits are exceeded in the sample group, corrective action (e.g., method modifications followed by reprocessing the affected samples) will be initiated prior to processing a subsequent group of samples.

All primary chemical standards and standard solutions used in this project will be traceable to documented and reliable commercial sources. Standards will be validated to determine their accuracy by comparison with an independent standard. Any impurities identified in the standard will be documented.

The following paragraphs summarize the procedures that will be used to assess data quality throughout sample analysis.

Laboratory Duplicates. Analytical duplicates provide information on the precision of the analysis and are useful in assessing potential sample heterogeneity and matrix effects. Analytical duplicates are subsamples of the original sample that are prepared and analyzed as a separate sample. A minimum of 1 duplicate will be analyzed per sample group or 1 for every 20 samples, whichever is more frequent.

Matrix Spikes and Matrix Spike Duplicates. Analysis of MS samples provides information on the extraction efficiency of the method on the sample matrix. By performing MSD analyses, information on the precision of the method is also provided for organic analyses. A minimum of 1 MS/MSD will be analyzed for every sample group or 1 for every 20 samples, whichever is more frequent. MS/MSD analyses will be performed on project-specific samples (i.e., batch QC using samples from other projects is not permitted).

Laboratory Control Samples. A LCS is a method blank sample carried throughout the same process as the samples to be analyzed, with a known amount of standard added. The blank spike compound recovery assesses analytical accuracy in the absence of any sample heterogeneity or matrix effects.

Surrogate Spikes. All project samples analyzed for organic compounds will be spiked with appropriate surrogate compounds as defined in the analytical methods. Surrogate recoveries will be reported by the laboratories; however, no sample result will be corrected for recovery using these values.

Method Blanks. Method blanks are analyzed to assess possible laboratory contamination at all stages of sample preparation and analysis. A minimum of 1 method blank will be analyzed for every extraction batch or 1 for every 20 samples, whichever is more frequent.

4.0 Sample Handling and Custody Documentation

Sample possession and handling must be traceable from the time of sample collection, through laboratory and data analysis, to the time sample results are reported. Field logbook entries will be completed for each sample collected.

4.1 SAMPLE HANDLING

To control the integrity of the samples during transit to the laboratory and during hold prior to analysis, established preservation and storage measures will be taken. Sample containers will be labeled with the location name/number, sample number, sampling date and time, and required analyses. Field personnel will check all container labels, custody form entries, and logbook entries for completeness and accuracy at the end of each sampling day.

4.2 SAMPLE CHAIN-OF-CUSTODY

Sample labeling and custody documentation will be performed as described in this document. Custody procedures will be used for all samples at all stages in the analytical or transfer process and for all data and data documentation whether in hardcopy or electronic format.

4.3 SAMPLE PRESERVATION

Samples requiring field preservation (i.e., VOCs) will be placed into pre-preserved sample jars containing methanol that are supplied by the laboratory (EPA Method 5035). Immediately after the sample jars are filled with each media, they will be placed in the appropriate cooler with a sufficient number of ice packs (or crushed ice) to keep them cool through the completion of that day's sampling and transport to the laboratory.

4.4 SAMPLE SHIPMENT

Field personnel will be responsible for all sample tracking and custody procedures in the field and checking the final sample inventory and maintaining sample custody documentation. At the end of each day, and prior to transfer, custody form entries will be made for all samples. Each shipment of coolers will be accompanied by custody forms; the forms will be signed at each point of transfer and will include sample numbers and requested analyses. Copies of all forms will be retained as appropriate and included as appendices to QA/QC reports to management.

Prior to shipping, sample containers will be wrapped and securely packed inside the cooler with ice packs or crushed ice by the field technician or designee. The original, signed custody forms will be transferred with the cooler. The cooler will be secured and appropriately sealed and labeled for immediate shipping or transport via vehicle. Samples will be picked up by the laboratory at the Floyd|Snider office or delivered to the laboratory under custody following completion of sampling activities.

4.5 SAMPLE RECEIPT

The designated sample custodian at the laboratory will accept custody of the samples and verify that the chain-of-custody form matches the samples received. The laboratory Project Manager will ensure that the custody forms are properly signed upon receipt of the samples and will note questions or observations concerning sample integrity on the custody forms. The laboratory will contact the QA Manager immediately if discrepancies are discovered between the custody forms and the sample shipment upon receipt. The Laboratory Project Manager, or designee, will specifically note any coolers that do not contain ice packs or are not sufficiently cold upon receipt.

5.0 Data Reduction, Validation, and Reporting

Initial data reduction, evaluation, and reporting at the laboratory will be carried out as described in the appropriate analytical protocols and the laboratory's QA Manual. QC data resulting from methods and procedures described in this document will also be reported.

5.1 DATA REDUCTION AND REPORTING

The laboratory will be responsible for internal checks on data reporting and will correct errors identified during the QA review. Close contact will be maintained with the laboratories to resolve any QC problems in a timely manner. The analytical laboratories will be required, where applicable, to report the following:

- **Project Narrative.** This summary, in the form of a cover letter, will discuss problems, if any, encountered during any aspect of analysis. This summary should discuss, but not be limited to, QC, sample shipment, sample storage, and analytical difficulties. Any problems encountered (actual or perceived) and their resolutions will be documented in as much detail as necessary.
- **Sample Identification Numbers (IDs).** Records will be produced that clearly match all blind duplicate QA samples with laboratory sample IDs.
- **Chain-of-Custody Records.** Legible copies of the custody forms will be provided as part of the data package. This documentation will include the time of receipt and condition of each sample received by the laboratory. Additional internal tracking of sample custody by the laboratory will also be documented.
- **Sample Results.** The data package will summarize the results for each sample analyzed. The summary will include the following information when applicable:
    - Field sample identification code and the corresponding laboratory identification code:
        - Sample matrix.
        - Date of sample extraction.
        - Date and time of analysis.
        - Weight and/or volume used for analysis.
        - Final dilution volumes or concentration factor for the sample.
        - Percent moisture in solid samples.
        - Identification of the instrument used for analysis.
        - Method reporting and quantitation limits.
    - Analytical results reported with reporting units identified.
    - All data qualifiers and their definitions.
    - Electronic data deliverables.

- **Quality Assurance/Quality Control Summaries.** This section will contain the results of all QA/QC procedures. Each QA/QC sample analysis will be documented with the same information required for the sample results (refer above). No recovery or blank corrections will be made by the laboratory. The required summaries are listed below; additional information may be requested.
- **Method Blank Analysis.** The method blank analyses associated with each sample and the concentration of all compounds of interest identified in these blanks will be reported.
- **Surrogate Spike Recovery.** All surrogate spike recovery data for organic compounds will be reported. The name and concentration of all compounds added, percent recoveries, and range of recoveries will be listed.
- **Matrix Spike Recovery.** All MS recovery data for metals and organic compounds will be reported. The name and concentration of all compounds added, percent recoveries, and range of recoveries will be listed. The RPD for all duplicate analyses will be reported.
- **Matrix Duplicate.** The RPD for all matrix duplicate analyses will be reported.
- **Blind Duplicates.** Blind duplicates will be reported in the same format as any other sample. RPDs will be calculated for duplicate samples and evaluated as part of the data quality review.

5.2 DATA VALIDATION

Once data are received from the laboratory, a number of QC procedures will be followed to provide an accurate evaluation of the data quality. Specific procedures will be followed to assess data precision, accuracy, and completeness.

A data quality review of the analytical data will follow USEPA National Functional Guidelines in accordance with the QAPP limits (USEPA 2013a and b). All chemical data will be reviewed with regard to the following:

- Chain of custody/documentation
- Sample preservation and holding times
- Instrument performance (calibration, tuning, sensitivity)
- Method blanks
- Reporting limits
- Surrogate recoveries
- MS/MSD recoveries
- LCS recoveries
- Laboratory and field duplicate RPDs

The data validation summary report will be presented as an appendix to the data reports. Validated data will be entered into the project database and uploaded to Ecology's EIM system.

6.0 Corrective Actions

Corrective action procedures are described in this section.

6.1 CORRECTIVE ACTION FOR FIELD SAMPLING

Field personnel will be responsible for correcting field errors in sampling or documenting equipment malfunctions during the field sampling effort and will be responsible for resolving situations in the field that may result in non-compliance with the SAP/QAPP. All corrective measures will be immediately documented in the field logbook. Substantial deviations from the RAWP will be reported immediately to the Floyd|Snider Project Manager(s), who will then report the deviation to Ecology.

6.2 CORRECTIVE ACTION FOR LABORATORY ANALYSES

The laboratory is required to comply with their Standard Operating Procedures. The Laboratory Project Manager will be responsible for ensuring that appropriate corrective actions are initiated as required for conformance with this SAP/QAPP. All laboratory personnel will be responsible for reporting problems that may compromise the quality of the data.

If any QC sample exceeds the project-specified control limits, the analyst will identify and correct the anomaly before continuing with the sample analysis. The analyst will document the corrective action taken in a memorandum submitted to the Floyd|Snider Data Manager. A narrative describing the anomaly, the steps taken to identify and correct the anomaly, and the treatment of the relevant sample batch (i.e., recalculation, reanalysis, and/or re-extraction) will be submitted with the data package.

7.0 Field Investigation Procedures

This section describes the specific protocols that will be used to collect samples during the Remedial Action.

7.1 SOIL SAMPLING PROTOCOL

Soil samples will be collected from Geoprobes prior to excavation activities for waste profiling; from the bottom of the slot trench excavation and possibly from any soil that is stockpiled.

7.1.1 Pre-Excavation Soil Characterization

Soil samples will be collected from a total of four soil borings (three in the main excavation area and one in the secondary excavation area) using a direct-push drilling method with lined 5-foot sample cores. Soil borings in the main excavation area will be advanced to a maximum of 15 feet below ground surface (bgs) and the soil boring in the secondary excavation area will be advanced to a maximum of 5 feet bgs. Refer to Figure 7 of the RAWP for the proposed soil boring locations in the main excavation area. Each of the main excavation area borings will be co-located with previous sample locations (refer to Section 3.1.6 of the RAWP) and soil samples will be collected from the 5- to 10-foot interval for the Site chemicals of concern (COCs) using U.S. Environmental Protection Agency (USEPA) Method 8260B and preserved using USEPA Method 5035. In addition, Toxicity Characteristic Leachate Procedure analysis for PCE and TCE will be completed on each of these samples. Soil samples will additionally be collected from the three main excavation soil borings from the 10- to 15-foot interval (ideally from 10 to 12 feet) to confirm the maximum depth of the excavation. These additional samples will also be analyzed for the Site COCs using USEPA Methods 8260B and 5035. One soil sample will be collected from the soil boring from the secondary excavation for analysis of the Site COCs using USEPA Methods 8260B and 5035.

7.1.2 Soil Verification Sample Collection Procedure

Post-excavation soil verification samples will be collected to document post-construction conditions. The excavation areas are shown on Figure 5 of the RAWP, with slot trench excavation detail of the main excavation area included as Figure 7.

Within the main excavation area on the Site, soil screening samples will be collected at a minimum of one and up to two bottom locations within each trench segment. Samples will be field screened with a photoionization detector (PID) to confirm that the contaminated soil has been removed from the bottom of the excavation. Additional soil samples may also be collected as feasible along the vertical ends of the slot trenches to confirm the removal of contaminated soil or to document the remaining PCE concentrations in soil that will be considered inaccessible. However, sidewall sampling along the length of each trench will not be possible due to the use of the trench boxes. Soil samples collected from the main excavation area will be submitted for laboratory analysis of the Site COCs using USEPA Method 8260B (using USEPA Method 5035 for sample preparation).

Soil verification sampling will also be performed in the secondary excavation area to confirm the removal of contaminated soil or to document remaining in-place soil conditions. Soil samples will be collected from the bottom of the excavation at a frequency of one for approximately every 5 lineal feet of excavation. If feasible, one soil sample per sidewall will also be collected. A minimum of one to two bottom samples and a minimum of one sidewall sample will be selected for laboratory analysis based on the results of PID field screening. The remaining sidewall samples will be archived, pending results of the initial sample(s).

Excavation verification samples will be collected according to the following procedures:

1. Field staff will verify the depth of the excavation using a tape measure. Once the target excavation depth has been reached, a soil sample will be collected from the excavator bucket using a stainless steel spoon or trowel. Soil samples will be scraped directly into a stainless steel bowl, avoiding material that is touching the walls of the excavator bucket. Field staff will not enter the excavation to collect samples.
2. The soil screening samples will be placed into re-sealable (i.e., Ziplock) bags and the headspace inside the bag will be screened for organic vapors using a PID. Soil samples for laboratory analysis will be collected using USEPA Method 5035A for VOCs. This preservation method uses a Teflon corer to collect a sample that is then placed inside VOA vials with methanol to minimize loss of volatiles during sampling and transport.
3. All labeled, filled sample jars will be placed in a field cooler packed with ice.
4. After the individual slot trench excavation has been completed, one to two samples with the greatest VOC concentrations as measured by the PID will be identified for laboratory analysis. Standard chain-of-custody procedures will be implemented for all samples selected for analysis. Sample material not selected for analysis will be combined with the excavated soils for handling and disposal.
5. Samples selected for laboratory analysis from the secondary excavation and the initial samples selected for laboratory analysis from the primary excavation will be submitted with a rush turnaround at the laboratory (24- to 48-hour turnaround time).

7.1.3 Contingency Stockpile Sampling Procedure

Soil from the previously excavated portions of the main excavation area are presumed to be clean and may be segregated and stockpiled on polyethylene sheeting for reuse as backfill above the CDF. If this occurs, a minimum of one grab sample per 25 cubic yards will be collected with a decontaminated shovel or trowel from the stockpile prior to reuse as backfill and analyzed for the constituents listed in Table B.1. A PID will be used to identify a location within the stockpile for sampling. Samples will be collected from soil lying a minimum of one foot deep within the stockpile. The stockpile will not be reused for backfill if the cleanup levels listed in Table 1 of the RAWP are exceeded.

7.1.4 Soil Sample Nomenclature and Handling Procedures

A unique sample naming format will be used for soil verification samples to ensure that every soil sample collected will have a unique location identifier. The two excavation areas will be designated as Main ("M") and Secondary ("Sec"). Each soil sample will be numbered sequentially for each excavation (i.e. ss1, ss2, etc.). In general, the sample scheme will be "excavation area-sample number-slot number/sidewall or bottom-direction/reference-feet bgs". Sample labels will include the date, time of collection, and initials of sampler on the bottle label.

For the main excavation area, each slot trench will be identified with a numbering scheme prior to excavation (i.e., Slot 1, Slot 4) and an arbitrary grid will be created using a known reference point (i.e. start at 0 and grid every 5 feet). In addition, directions (N, S, E, or W) should be used to identify direction within the slot trench. For example, the first sample collected in Slot 1, at 5 feet from a known reference point (as established by the grid) on the north side of the slot trench, with a bottom depth of 11 feet bgs would be identified as M-ss1-Slot1-5N-11'.

For the secondary excavation, which is much smaller in extent and depth, S will be used to designate sidewall samples and B will be used to refer to bottom. The depth in feet will be used to identify where the sample was collected along the sidewall or the bottom depth. In addition, directions (N, S, E, or W) should be used to identify direction within the excavation. For example, the second sidewall sample collected at 3 feet bgs on the northeast side of the excavation would be identified as Sec-ss2-S-NE-5'.

The limits of the excavation used to establish the soil verification sampling grid will be collected using a handheld Global Positioning System device, and/or will be triangulated from existing surveyed site features. The excavation limits will be located relative to the Washington State Plane South horizontal datum.

The samples will be held on ice at approximately 4 °C until samples for laboratory analysis have been selected, or until the end of the work week. Samples will be transported to the laboratory under chain-of-custody procedures, ensuring that analytical holding times specified in Table B.1 are met.

7.1.5 Laboratory Analysis

Soil samples will be analyzed for the Site COCs by USEPA Method 8260B. Site COCs include PCE, TCE, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, 1,1-DCE, and vinyl chloride.

7.2 EQUIPMENT DECONTAMINATION

The excavation and water storage equipment used during this project (bucket, tools, holding tanks, etc.) must be cleaned and decontaminated after the project.

Field sampling equipment, such as stainless steel bowls, spoons, and trowels, will be decontaminated between uses. Equipment for reuse will be decontaminated according to the procedure below, before each sample is collected.

1. Water will be sprayed over equipment to dislodge and remove any remaining sediments.
2. Surfaces of equipment contacting sample material will be scrubbed with brushes using an Alconox solution.
3. Equipment will be rinsed with clean water.
4. Equipment will undergo a final spray rinse of deionized water.

Small quantities of decontamination water will be mixed with soil sent off site for disposal. Larger quantities of water will be containerized in the existing tanks, treated, and tested prior to disposal in accordance with the current seep water disposal plan/permit.

8.0 References

U.S. Environmental Protection Agency (USEPA). 2013a. *National Functional Guidelines for Inorganic Superfund Data Review*. EPA-540-R-013-001. October.

——.2013b. *National Functional Guidelines for Superfund Organic Data Review.* EPA-540-R-014-002. October.

8.0 References

U.S. Environmental Protection Agency (USEPA). 2013a. *National Functional Guidelines for Inorganic Superfund Data Review*. EPA-540-R-013-001. October.

——.2013b. *National Functional Guidelines for Superfund Organic Data Review.* EPA-540-R-014-002. October.

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix B
Sampling and Analysis Plan/ Quality Assurance Project Plan

Table

Table B.1
Soil Sample Analysis Criteria

<table>
<tr><th>Parameter</th><th>Method</th><th colspan="4">Data Quality Assurance Criteria</th></tr>
<tr><td colspan="6">Volatile Organic Compounds</td></tr>
<tr><td rowspan="8">PCE
TCE
cis-1,2-DCE
trans-1,2-DCE
1,1-DCE
Vinyl chloride</td><td rowspan="8">USEPA Method 8260B
Sample collection via USEPA Method 5035</td><td rowspan="2">Precision (Relative Percent Difference)</td><td colspan="3">Accuracy (Percent Difference from Standard)</td><td rowspan="2">Completeness (Percentage of Data Validated)</td></tr>
<tr><td>Laboratory Control Samples</td><td>Surrogate Spike Samples</td><td>Matrix Spike Samples</td></tr>
<tr><td>0–20%</td><td>± 50%</td><td>± 50%</td><td>± 50%</td><td>95%</td></tr>
<tr><td colspan="5">Analytical Requirements</td></tr>
<tr><td>Bottle Type</td><td colspan="3">Preservative</td><td>Holding Time</td></tr>
<tr><td>(3) Glass VOA vials with PTFE Septum[1]</td><td colspan="3">Methanol and cool to ≤6°C or none and cool to ≤6°C</td><td>14 days to analyze with methanol preservation
or
if none, 2 days at ≤6°C, 14 days at ≤-7°C</td></tr>
<tr><td colspan="5">Detection and Reporting Limits</td></tr>
<tr><td>Unit</td><td colspan="3">Detection Limit</td><td>Reporting Limit/PQL</td></tr>
<tr><td>µg/kg</td><td colspan="3">0.4–0.7</td><td>5</td></tr>
</table>

Note:

1 An additional 6 glass VOA vials with PTFE septum will be collected for laboratory matrix spike samples.

Abbreviations:

°C Degrees Celsius
DCE Dichloroethene
PCE Tetrachloroethene
PQL Practical quantitation limit
TCE Trichloroethene
µg/kg Micrograms per kilogram
USEPA U.S. Environmental Protection Agency
VOA Volatile organic analysis

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix C
Spill Prevention and Countermeasure Control Plan

Table of Contents

List of Attachments

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
CFR	Code of Federal Regulations
Ecology	Washington State Department of Ecology
HAZWOPER	Hazardous Waste Operations and Emergency Response
RAWP	Remedial Action Work Plan
Site	Olympia Dry Cleaners Site
SPCC	Spill Prevention Control and Countermeasures

Management Review

The anticipated duration of the project is approximately 2 to 3 weeks. Contaminated soil will be removed and disposed of, and the area will be restored

Review Date	Signature	Amendment Required? (Yes/No)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Contact Information

RESPONSIBLE PERSONNEL

Contact Name	Work Phone	Home Phone	Cell Phone
Tom Colligan	206-292-2078	206-276-8527	206-276-8527
Lynn Grochala	206-292-2078	603-491-3952	603-491-3952
Kristin Anderson	206-292-2078	206-552-4241	206-552-4241
Bill Spooner	253-347-3321	253-347-3321	253-347-3321
Gary Burleson	NA	NA	360-463-0351

SPILL REPORTING

Spills into waters of the State (including ponds, ditches, seasonally dry streams, and wetlands)
Immediately call all of the following:
The National Response Center (NRC) 1-800-424-8802
Southwest Regional Office 1-360-407-6300
Spill to Soil (Including encounters of pre-existing contamination)
Report immediately if threatening to health or environment (i.e., explosive, flammable, toxic vapors, shallow groundwater, nearby creek), otherwise within 90 days
Southwest Regional Office - 1-360-407-6300
Notify public works department if spill enters sanitary sewer. Call the spill hotline if spills enter the stormwater system, streets, ditches, streams, and/or wetlands.
City of Olympia Public Works – 360-753-8588 and/or Spill Hotline 360-753-8533
Underground Storage Tank
Report within 24 hours if confirmed release of material
Southwest Regional Office 1-360-407-6300
Washington Emergency Management Division 1-800-258-5990 or 1-800-OILS-911

1.0 Introduction

1.1 PURPOSE

This Spill Prevention Control and Countermeasure (SPCC) Plan has been prepared for the Remedial Action to be completed at the Olympia Dry Cleaners Site (Site), which includes excavation of contaminated soil at a former dry cleaning facility. The purpose of this SPCC Plan is to prevent spills from occurring, and to perform safe, efficient, and timely response in the event of a spill or leak (both referred to as "spills" herein). Although the scope of the cleanup action does not meet the definition of a "facility" under 40 Code of Federal Regulations [CFR] 112.2 because there is no above ground oil storage capacity of more than 1,320 US gallons, this plan was prepared to be consistent with the substantive requirements of 40 CFR 112 but does not need certification.

This SPCC Plan should be a working document to be used during the Remedial Action. The plan should be used frequently in the following ways:

- As a reference for oil storage and containment system information
- As a reference for contractors performing work at the Site
- As a guide for site inspections
- As a resource during an emergency response

Additionally, in the event that the project is extended beyond the estimated schedule, this SPCC Plan must be reviewed at least once every month. Revisions to the plan, if any, must be made within 6 months of the review.

1.2 FACILITY DESCRIPTION

Facility Name	Former Olympia Dry Cleaners Site
Facility Location	606 Union Avenue SE, Olympia, WA
Facility Type	Environmental Cleanup Site/Dry Cleaning Pickup and Drop-off Business
Date of Initial Operation	Spring/Early Summer 2015 (expected)
Designated Site Environmental Coordinator	Steve Teel, Washington State Department of Ecology (Ecology), 360-407-6247

A. Scope of Work: Relocation of a buried natural gas line; excavation of contaminated soil and soil verification sampling; backfilling and grading excavated areas; installation of a French drain to divert groundwater seep; trucking and off-site disposal of contaminated soil.

B. Site Address: 606 Union Avenue Southeast, Olympia, WA

C. Tax Description: T = 18 N - R = 2 W - S = 23

D. Drainage Pathways: Storm drains and street runoff along topography, immediate work area slopes to the north, surrounding area slopes westward toward Capitol Lake

E. Nearby Waterways: Capitol Lake (0.6 miles to the west), Budd Inlet (part of Puget Sound; 0.8 miles to the north), Indian and Moxlie Creeks (0.8 miles to the south)

1.2.1 General Facility Layout

A Site Features plan is provided on Figure 2 of the Remedial Action Work Plan (RAWP) and a Site Plan for the Selected Cleanup Action is included as Figure 5 of the RAWP.

1.2.2 Stormwater

The Site is located on a developed urban block within the City of Olympia. There are no streams or other surface drainage features that enter the Site.

2.0 Potential Spill Sources and Spill Prevention Control and Countermeasure Features

This section addresses the operation and fueling of construction equipment, during which the materials of concern are diesel and hydraulic fluid.

2.1 UNDERGROUND STORAGE TANKS

There are no known underground storage tanks in the immediate project vicinity.

2.2 DISCHARGE PREVENTION

The only use of oil during the project will be diesel fuel used to power machinery and hydraulic oil used in the excavation equipment. The total oil to be stored onsite is less than 100 gallons.

2.2.1 Spill Prevention Control and Countermeasure Features and Operating Procedures

Floyd|Snider's employees are trained to implement spill prevention practices for work with and around oil sources. Floyd|Snider's personnel use common sense and rely on spill prevention practices to minimize the potential for a release of oil.

2.2.2 Tests and Inspections

The contractor is responsible for performing maintenance of the equipment and equipment fueling systems to keep it performing in an efficient and environmentally sound manner. Floyd|Snider employees will observe the equipment to ensure that no leaks are occurring.

Floyd|Snider personnel periodically observe the equipment during operating hours. These results are recorded on the Visual Inspection Checklist, included in Attachment C.1. A spill response kit will be kept on the construction support truck at all times and will be restocked as necessary. Inspections include observations of the exterior of the equipment for signs of deterioration or spills (leaks), and inventory of spill response kit materials.

2.2.3 Training

Floyd|Snider personnel have been trained in Hazardous Waste Operations and Emergency Response (HAZWOPER) and are knowledgeable in the operation and maintenance of oil pollution prevention equipment and pollution control laws and regulations. The contractor is also knowledgeable in the operation and maintenance of oil pollution prevention equipment.

2.2.4 Site Security

The Site will be protected by visual monitoring of equipment and surroundings. The work area will be secured with a chain link fence and the sidewalk and a portion of the road will be closed to the public during portions of this project.

2.3 SPILL RESPONSE PROCEDURES

It is essential to prevent petroleum products, toxic chemicals, and all other non-stormwater discharges from spreading. Releases of petroleum products or toxic chemicals during the proposed excavation will warrant immediate response and cleanup.

Spill response and notification procedures for spills, leaks, or uncontrolled releases of hazardous materials (i.e., oils or wastewater) during proposed construction are provided in Attachment C.2. Floyd|Snider personnel responsible for the handling, storage, and disposal of oil or chemicals are trained in these methods and procedures. A copy of the spill response and notification procedures is kept with each spill response kit.

Because the level of spill notification under the SPCC Rules is dependent on the volume of the material released, spills are defined below.

For this project:

- All measurable spills shall be reported.

The Project Manager, Field Lead, or designate is responsible for completing the Spill Notification Form (Attachment C.3) and notifying the relevant external agencies (refer to Contact Information section above). Completed spill notification forms will be kept by the Site Environmental Coordinator.

If spills meet any of the following conditions, the U.S. Environmental Protection Agency Regional Administrator will be notified:

- Discharge from a single oil spill event exceeding 1,000 gallons
- Discharge from two spill events within a 12-month period greater than 42 gallons

2.4 SPILL RESPONSE KITS

Because the work area is small (approximately 100 feet by 100 feet) there will be one spill kit available on the job site, stored on the excavator fueling truck. This spill kit will contain the following:

- Oil-absorbent blankets
- Oil-resistant gloves
- Compact first-aid kit

Spill kits can be used for initial control of spills from equipment reservoir failures, or incidental spill/leaks associated with the storing/handling of containerized oil and lubricants. The spill kit will be located at the designated equipment fueling location, described below.

In the event of a release greater than 42-gallon from any storage tank or vehicle, the emphasis of initial spill response is isolation and containment with diking materials and drain covers until a response contractor can be summoned.

2.5 FUELING PROCEDURES

Fuel will be brought to the site on a portable fueling truck or filled directly from a tank on the contractor's pickup truck using a hand pump and 40-foot long hose. The contractor will maintain a spill kit on the truck and will continually monitor our fueling operations. In the event that a spill occurs, Floyd|Snider will follow the spill handling, cleanup, and reporting procedures as outlined herein.

2.6 OPERATIONAL SPILL PROCEDURES

If a spill occurs during operational procedures associated with this project (i.e., excavation activities), Floyd|Snider and the contractor will stop working and employ best management practices to stop the leak source, contain the leak, and proceed with cleanup and reporting protocols outlined in this SPCC Plan. The contractor will maintain a spill kit on-site and the materials identified herein will be used to stop, contain, and clean up leaks or spills.

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix C
Spill Prevention and Countermeasure Control Plan

Attachment C.1
Weekly Visual Inspection Checklist

Attachment C.1
Weekly Visual Inspection Checklist

Pollution Sources or Oil-Filled Operational Equipment	**Structural Integrity** (Note visible cracks, holes, excessive rust, pitting in exterior surface or supports)	**Visible Leaks/ Spills/Petroleum Sheens** (Yes/No)
Excavator		

Spill Kit Location	**Spill Kit Contents**	**Date Checked**
Mobile Excavator Fueling Truck	___ Oil-Absorbent Blankets ___ Pair of Nitrile Gloves ___ First Aid Kit	

Additional Comments:_____

_____

_____

_____

_____

Inspected By: _____ Date: _____ Time: _____

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix C
Spill Prevention and Countermeasure Control Plan

Attachment C.2
Spill Response Procedures

ATTACHMENT C.2
SPILL RESPONSE PROCEDURES

PERSONNEL SAFETY

When an uncontrolled release of a hazardous substances occurs (associated with proposed construction), address the safety of all personnel and the public. Until the spilled material has been identified and controlled:

- Ensure that no one is smoking in or near the area.
- Evacuate all non-essential personnel.
- If a fire is involved or appears imminent, call for fire department assistance: 911.
- Wear the appropriate level of personal protective equipment (oil-resistant gloves, goggles, rubber boots and/or Tyvek coveralls) when responding to spills.

SPILLS

Aboveground Storage Tanks and Containerized Oil/Lubricant

- Quickly contain spilled fuel/oil as close to source as possible using absorbent booms and blankets provided in spill kit located inside the loading/unloading area.
- Prevent the spilled fuel/oil from entering the stormwater catch basins by placing oil-absorbent booms around threatened inlets until all spilled fuel/oil can be cleaned up. If necessary, cover the threatened inlets with the rubber drain covers found in the spill kit.
- Place barricades, cones, or flagging a safe distance around the area. Post a watch (Floyd|Snider employee or construction flagger) at the scene (upwind) to prevent entry to the area.
- Contact the Site Environmental Coordinator or designate (refer below) to inform them of the situation within 15 minutes of any spill greater than 10 gallons.
- Once the spilled oil has been contained, quickly clean up the spilled liquid using the absorbent blankets or granules found in the spill kit.
- Collect spent absorbent material in sealed plastic garbage bags and place in nearby Dumpster. Keep Dumpster lid closed except when adding waste materials into the receptacle.
- In the event an oil spill enters one of the stormwater catch basins, remove metal grate and insert absorbent boom and/or blankets and notify the Site Environmental Coordinator.

- The Site Environmental Coordinator or designate is responsible for making the required notifications (refer to Notification Requirements).

NOTIFICATION PROCEDURES

In case of either a minor spill (i.e., greater than 10 gallons and less than 42 gallons) or major spill (greater than 42 gallons) of oil or other hazardous substance, immediately contact one of the following (in preferred order):

Contact Name	Work Phone	Home Phone	Cell Phone
Tom Colligan	206-292-2078	206-276-8527	206-276-8527
Lynn Grochala	206-292-2078	603-491-3952	603-491-3952
Kristin Anderson	206-292-2078	206-552-4241	206-552-4241
Bill Spooner	253-347-3321	253-347-3321	253-347-3321
Gary Burleson	N/A	N/A	360-463-0351

One of these persons shall be available for spill emergencies at the facility either by being at the Site (during business hours) or available on an on-call basis (after business hours). These persons are responsible for coordinating all of the emergency response measures detailed in this plan. Contact information for additional Agencies required to be notified of spills to waters of the state or soils, or confirmed releases from underground storage tanks, are provided in the Contact Information section of Appendix C.

Site Environmental Coordinator/Designate

Regulatory Agency/Spill Response Contractor	Normal Business Hours Phone
Steve Teel, Ecology	360-407-6247

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix C
Spill Prevention and Countermeasure Control Plan

Attachment C.3
Spill Notification Form

ATTACHMENT C.3
SPILL NOTIFICATION FORM

Part A: Basic Spill Data	
Type of Spilled Substance:	Notification Person
Quantity Released:	Spill Date and Time:
Location of Spill:	Discovery Date and Time:
	Spill Duration:
Facility Name and Location:	Release to: [ ] Outdoor Pavement [ ] Stormwater Catch Basin [ ] Soil [ ] Containment [ ] Other: _____
Nature of spill and any environmental or health effects: [ ] Injuries [ ] Fatalities	

Part B: Notification Checklist		
Spill Type:	Notification Date and Time:	Name of Person that Received Call:
For this project: All measurable spills shall be reported		
Ecology:		
Spill enters the sanitary sewer		
City of Olympia		
National Response Center 1-800-424-8802		

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix D
Temporary Erosion and Sediment Control and Stormwater Management Plan

Table of Contents

INTRODUCTION

This Temporary Erosion and Sediment Control (TESC) and Stormwater Management Plan (SWMP) has been prepared in conjunction with and is appended to the Remedial Action Work Plan (RAWP), which describes remedial actions that will be completed at the Olympia Dry Cleaners Site (the Site). The remedial action construction activities will include the excavation of approximately 400 tons of contaminated soil at a former dry cleaning facility, as described in the RAWP.

The purpose of this TESC and SWMP is to describe the proposed construction activities and the TESC and stormwater control measures that will be implemented during the proposed remedial actions at the Site. The objectives of the TESC and SWMP are to identify the Best Management Practices (BMPs) that will be implemented to prevent erosion and sedimentation, and to identify, reduce, eliminate, or prevent stormwater contamination and water pollution from construction activity. The estimated timeframe for the completion of the proposed construction and excavation activities is approximately 3 weeks.

Floyd|Snider personnel will be responsible for providing oversight during the remedial action construction activities. In addition, oversight personnel will also be designated as the TESC Supervisor for the project and will be responsible for inspecting TESC measures and ensuring that the implemented BMPs are effective in preventing sediment runoff from work areas. Specifically, Kristin Anderson and/or Lynn Grochala of Floyd|Snider will act as the TESC Supervisor for this project. Although not a specific requirement for this project, both Ms. Anderson and Ms. Grochala are Certified Erosion and Sedimentation Control Lead (CESCL) certified in the State of Washington.

SITE DESCRIPTION

The Former Olympia Dry Cleaners property is located at 606 Union Avenue Southeast in Olympia, Washington (Figure 1 of the RAWP). The property is currently in operation as Howard's Prestige Cleaners, a dry cleaner located at the intersection of Union Avenue Southeast and Cherry Street Southeast. Improvements to this property include the one-story, slab-on-grade Former Olympia Dry Cleaners Building (2,584 square feet in area) and asphalt-paved areas, which serve as parking, along the west and south perimeters. An unpaved alley (the North Alley), approximately 6 feet in width, borders the north side of the Former Olympia Dry Cleaners Building. A dry cleaning drop-off and pick-up facility currently operates in this building; however, it does not perform dry cleaning activities or use tetrachloroethylene (PCE) as a cleaning solvent. Refer to Figure 2 of the RAWP for site features.

The Site is defined by the lateral and vertical extent of contamination that has resulted from the operation of a former dry cleaning facility on the Former Olympia Dry Cleaners Property. Based on the extent of contamination, the Site includes a portion of the Former Olympia Dry Cleaners Property, a portion of the property located adjacent to the north (the Cherry Street Q-Tip Trust Property), and a portion of the Cherry Street Southeast right-of-way (Figure 2). The Site covers approximately 3,700 square feet, based on the extent of PCE in affected soil and groundwater.

The Site is located on a developed urban block within the City of Olympia. There are no streams or other surface drainage features that enter the Site. Storm drains and street runoff follow Site topography. The immediate work area slopes to the north down Cherry Street Southeast, and the surrounding area slopes westward toward Capitol Lake. The closest water bodies to the Site include Capitol Lake (0.6 miles to the west), Budd Inlet (part of Puget Sound; 0.8 miles to the north), and Indian and Moxlie Creeks (0.8 miles to the south).

A shallow groundwater-bearing zone is present at the SIte from approximately 0 to 15 feet below ground surface. Potentiometric surface data indicate that shallow groundwater flows to the north and west. A groundwater seep (referred to as the Seep) is located approximately 13 feet west of the southwest corner of the Cherry Street Q-Tip Trust Building (Figure 2 of the RAWP) and is located within the main excavation area. In addition, artesian conditions have been observed at the Site.

BEST MANAGEMENT PRACTICES

TESC and stormwater management BMPs will be implemented for this project to minimize the disturbance to the Site and surrounding areas associated with proposed remedial construction and excavation activities at the Site. The BMPs listed below, which were designed to fit the Site topography and drainage patterns, will be implemented to minimize erosion, manage stormwater, prevent sediment runoff, and protect surrounding stormwater collection infrastructure (i.e., catch basin) before the start of construction, including relocation of the Puget Sound Energy natural gas line. Refer to Figure 9 of the RAWP for a depiction of the work areas and associated BMPs. Site remedial action BMPs include the following:

- The extent and duration of the exposed excavation areas will be minimized to the extent practical.
- Construction access or activities occurring on unpaved areas shall be minimized, and access points shall be controlled to minimize the tracking of sediment onto public roads. Filter fabric will be used to line the access/loading area and truck wheels will be wrapped during loading to minimize track-in/track-out. Any sediment that is tracked onto pavement shall be removed by shoveling or by broom sweeping. Cleaning shall not be accomplished by hosing or rinsing down pavement. The sediment collected by sweeping shall be managed as contaminated soil.
- In order to protect the properties and waterways downstream of the Site, stormwater discharges from the Site will be controlled. The specific BMPs for flow control that shall be used on this project include:
    - An asphalt curb shall be installed around the perimeter of the work area and truck loading area (minimum of 3 inches high) to divert stormwater around the work area.
    - The downstream catch basin shall be protected to prevent unfiltered water from entering the stormwater conveyance system. This will be completed with the

installation of a filter fabric sock or other approved catch basin insert into the downstream catch basin at the base of Cherry Street Southeast.

- A dewatering sump will be installed in the low spot, downslope portion of the excavation for dewatering and will also collect any stormwater that falls within the excavation area. This water will be routed to the on-site holding tanks and will be batch treated as needed prior to discharge.
- All stormwater runoff from disturbed areas shall pass through compost waddles, if needed, on the downslope side of the excavation.

- Exposed soils shall be stabilized with the application of the following BMPs to prevent erosion:
  - A dewatering sump will be installed in the low spot, downslope portion of the excavation to minimize water accumulation in the excavation and to collect any stormwater that falls within the excavation area.
  - The existing artesian well will be operated continuously during excavation activities to minimize water accumulation in the excavation area.
  - Excavated slot trenches will be stabilized by backfilling with controlled density fill as soon as possible and soil stockpiles (if necessary, not anticipated) will be temporarily placed on and covered with plastic sheeting. Stockpiled soils shall be stabilized from erosion, and located away from storm drain inlets.
- All waste materials and demolition debris (includes concrete and asphalt) shall be handled and disposed of in a manner that does not cause stormwater contamination. If temporary on-site storage is necessary, this material will be placed on and covered with polyethylene sheeting. Good housekeeping and preventative measures will be taken to ensure that the work area will be kept clean, organized, and free of debris.
- All temporary erosion and sediment control BMPs shall be maintained and replaced or repaired as needed to assure continued performance of their intended function throughout the duration of construction (estimated to be 3 weeks). Visual monitoring of the BMPs will be conducted at the end of each working day and within 24 hours of a storm event.
- All temporary erosion and sediment control BMPs shall be removed after the completion of excavation and restoration activities or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on-site. Disturbed soil resulting from removal of BMPs or vegetation shall be permanently stabilized.

In addition to the above project-specific BMPs, the following BMPs adapted from the Stormwater Management Manual for Western Washington (August 2012) will also be considered as relevant and appropriate: BMP C120 Temporary and Permanent Seeding; BMP C121 Mulching; BMP C123 Plastic Covering; BMP C125 Topsoiling/Composting; BMP C140 Dust Control; BMP C150 Materials on Hand; BMP C151 Concrete Handling; BMP C152 Sawcutting and Surfacing Pollution Prevention; BMP C153 Material Delivery, Storage, and Containment; BMP C154 Concrete

Washout Area; BMP C220 Storm Drain Inlet Protection; BMP C232 Gravel Filter Berm; and BMP C235 Wattles.

PROJECT SCHEDULE

The proposed Remedial Action is expected to occur in 2015, subject to issuance of City of Olympia permits and Washington State Department of Ecology review and approval of the RAWP. Based on current information, the likely construction schedule is as follows:

Activity	Anticipated Schedule
Contractor mobilization, installation of TESC BMPs, and delineation of work areas	Spring/Early Summer 2015
Relocation of Puget Sound Energy natural gas line	Within 7 days of mobilization and installation of TESC BMPs
Completion of secondary excavation	Within one-week of mobilization
Initiation of main excavation	Following Secondary Excavation
Completion main excavation	2 to 3 week Duration
Removal of TESC BMPs	Within 7 days of excavation completion
Site restoration, including repaving and restoring vegetation areas	Within 30 days of excavation completion
Final inspection	Within 10 days of Site Restoration

Former Olympia Dry Cleaners Site

Remedial Action Work Plan

Appendix E
Unanticipated Discovery Plan

Table of Contents

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
DAHP	Washington State Department of Archaeology and Historic Preservation
RAWP	Remedial Action Work Plan
RCW	Revised Code of Washington
Site	Olympia Dry Cleaners Site
UDP	Unanticipated Discovery Plan

1.0 Introduction

This Unanticipated Discovery Plan (UDP) has been prepared in conjunction with and is appended to the Remedial Action Work Plan (RAWP), which describes remedial actions that will be completed at the former Olympia Dry Cleaners Site (the Site) located at 606 Union Avenue Southeast in Olympia, Washington. The remedial action construction activities will include the excavation of approximately 400 tons of contaminated soil at a former dry cleaning facility, as described in the RAWP. As a precaution, a records search was completed through the Washington State Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data database. The database contains no recorded archaeological sites on or near the Site. The closest register-listed properties include the downtown historic district northwest of the Site.

This UDP details the procedures for the unanticipated discovery of human remains or archaeological resources, in accordance with state and federal laws. If archaeological materials or human remains are discovered within the excavation area during the planned Remedial Action at the Site. All site personnel on the project will be familiar with this UDP and be able to carry out the obligations of this Plan and be present or immediately available whenever there is any work that is anticipated to include disturbance of soils.

2.0 Identification and Discovery of Archaeological Resources

There are many types of archaeological resources. Archaeological resources could be prehistoric or historic-period and may consist of, but not be limited to, the following examples:

- An area of charcoal or charcoal-stained soil in association with historic-period or prehistoric remains such as shell middens, stone tools, or flakes
- A projectile point, stone tool, or stone flakes.
- A historic bottle, old glass fragments, square nails, “hole in top” lead-soldered cans, etc.
- Accumulation of bones, shells, and burned rocks in association with stone tools or flakes.
- A cluster of tin cans or bottles, logging, or agricultural equipment older than 50 years.

2.1 PROCEDURE FOR DISCOVERY OF ARCHAEOLOGICAL MATERIALS

If apparent archaeological materials as described above are encountered, the following procedure will be followed:

1. The Floyd|Snider Site representative will immediately stop work and contact the Floyd|Snider Project Manager. Floyd|Snider will be responsible for securing and protecting the integrity of the resource. Vehicles, equipment, and unauthorized personnel will not be permitted in the work area. Work in the immediate area will not resume until treatment of the discovery and all appropriate consultations have been completed.
2. The Floyd|Snider Project Manager will engage a qualified professional archaeologist to examine the find to determine if it is archaeological.
    a. If it is determined not to be archaeological, work may proceed with no further delay.
    b. If it is determined to be archaeological, the Floyd|Snider Project Manager will continue with notification.
    c. If the find may be human remains or funerary objects, the Floyd|Snider Project Manager will ensure that a qualified physical anthropologist examines the find. If it is determined to be human remains, the procedure described in Section 3.0 will be followed.
3. If the find is determined to be archaeological, the Floyd|Snider Project Manager will notify the Washington State Department of Ecology, the DAHP, and the Squaxin Island Tribe. All parties will be invited to attend an on-site inspection with a professional archaeologist.

4. The archaeologist will document the discovery in a report submitted to DAHP so that they may control access to information regarding potential sensitive-site locations, in accordance with Chapter 27.53 of the Revised Code of Washington (RCW); the report will be referenced, but not included, in the Remedial Action Completion Report.

The contact list is included in Section 4.0.

3.0 Inadvertent Discovery of Human Remains

If any site personnel believe that they have made an inadvertent discovery of human skeletal remains and/or associated or unassociated funerary objects, sacred objects, or items of cultural patrimony, the Floyd|Snider Site representative will immediately stop work and notify the Floyd|Snider Project Manager. The apparent remains will be covered and secured against further disturbance.

All site personnel will take reasonable steps to ensure that any human remains that are discovered are treated with dignity and respect and in accordance with the law. The area of work stoppage will be large enough for Floyd|Snider to provide for the security, protection, and integrity of the remains. Vehicles, equipment, and individuals not authorized by Floyd|Snider will not be permitted to traverse, alter, or destroy the discovery site.

3.1 PROCEDURE FOR THE DISCOVERY OF HUMAN REMAINS

Floyd|Snider will comply with applicable state and federal laws and notification procedure as described below.

1. The Floyd|Snider Site representative will immediately notify the Floyd|Snider Project Manager.
2. The Floyd|Snider Project Manager, will immediately notify the property owner, the City of Olympia Police Department, and the Coroner's Office. The coroner (with assistance of law enforcement personnel) will determine if the remains are human, and whether the discovery site constitutes a crime scene.
3. DAHP and the authorized tribal representative from the Squaxin Island Tribe will be notified. Per RCW 27.53.030, RCW 68.50, and RCW 68.60, DAHP will have jurisdiction over non-forensic human remains. The owner's representative will participate in consultation.
4. Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in RCW 27.53.030, RCW 68.50, and RCW 68.60.
5. When consultation and documentation activities are complete, construction in the discovery area may resume.

The contact list is included in Section 4.0

4.0 Contact List for Unanticipated Discovery Plan

Tom Colligan, Project Manager
Floyd|Snider
Two Union Square
600 Union Street, Suite 601
Seattle, WA 98121
(206) 292-2078 – office
(206) 276-8527 - cell

Steve Teel, Toxics Cleanup Program
Washington State Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia, WA 98503
(360) 407-6247

Allyson Brooks, State Historic Preservation Officer
Washington Department of Archaeology & Historic Preservation
PO Box 48343
Olympia, WA 98504-8384
(360) 586-3066

Rhonda Foster, Cultural Resource Director, THPO
Squaxin Island Tribe
SE 10 Squaxin Lane
Shelton, WA 98584
(360)432-3850

Coroner, Gary Warnock
Thurston County Coroner's Office
2925 37th Ave SW
Tumwater, WA 98512
(360) 867-2140

City of Olympia Police Department
601 4th Ave East
Olympia, WA 98501
Non-Emergency: (360) 704-2740
Main Business Line: (360) 753-8300