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**APPLICABILITY FOR
Design and Engineering Design Standards Documents**

Project teams shall refer to their executed project contracts for applicable document versions/revisions.

SECTION 02 61 13**EXCAVATION AND HANDLING OF CONTAMINATED SUBSTANCES**

NOTE TO DESIGNER:

SECTION 02 61 13 SHOULD ALWAYS BE USED WITH SECTION 01 35 43 HAZARDOUS AND CONTAMINATED SUBSTANCE HEALTH AND SAFETY PROGRAM AND 31 23 01 EXCAVATION SPOILS DISPOSAL. SECTION 02 61 13 MAY BE USED WITH SECTION 02 65 00 UNDERGROUND STORAGE TANK AND/OR SECTION 02 61 00 REMEDIAL ACTIONS. OVERSIGHT OF REMEDIATION AND MANAGEMENT OF CONTAMINATED SUBSTANCES AND DANGEROUS WASTE MUST BE COMPLETED BY A CONTAMINATED SUBSTANCE SUBJECT MATTER EXPERT (SME). THE CONTAMINATED SUBSTANCE SME IS A 3RD PARTY RESPONSIBLE FOR QUALITY ASSURANCE AND QUALITY CONTROL THAT REMEDIATION WAS SUFFICIENTLY COMPLETED AND CONTAMINATED SUBSTANCES AND DANGEROUS WASTE WERE PROPERTY HANDLED AND DISPOSED. THE CONTAMINATED SUBSTANCE SME HAS THE FOLLOWING RESPONSIBILITIES:

- DEVELOP INVESTIGATION PLANS AND COMPLETE INVESTIGATION TO EVALUATE THE LATERAL AND VERTICAL EXTENT OF CONTAMINATED SUBSTANCES AND DANGEROUS WASTE (IF NOT COMPLETED DURING CONTRACT DOCUMENT DEVELOPMENT STAGE)
- DEVELOP CLEANUP ACTION PLANS (IF NOT COMPLETED DURING CONTRACT DOCUMENT DEVELOPMENT STAGE)
- OBSERVATION DURING REMEDIATION OF CONTAMINATED SUBSTANCES AND HANDLING OF DANGEROUS WASTE INCLUDING DAILY FIELD REPORTS.
- OVERSEE EXCAVATION AND DEWATERING ACTIVITIES IN AREAS OF CONTAMINATED SUBSTANCES AND DANGEROUS WASTE
- COLLECT SAMPLES FOR CHEMICAL ANALYSIS DURING REMEDIAL EXCAVATION
- EVALUATE CHEMICAL ANALYTICAL RESULTS TO DETERMINE WHETHER REMEDIATION CONTINUES OR HAS ACHIEVED CLEANUP ACTION OBJECTIVES.
- EVALUATE UNKNOWN CONTAMINATED SUBSTANCES OR DANGEROUS WASTE WHICH MAY INCLUDE SAMPLE COLLECTION, CHEMICAL ANALYSIS AND OVERSEE REMEDIATION, AS NECESSARY.
- PREPARE CLEANUP ACTION REPORT TO DOCUMENT REMEDIATION.

EACH PROJECT TEAM WILL CHOOSE WHETHER THE CONSTRUCTION CONTRACTOR OR SOUND TRANSIT IS RESPONSIBLE FOR RETAINING THE CONTAMINATED SUBSTANCE SME. THIS SPECIFICATION COVERS BOTH APPROACHES AS "OPTION 1" AND "OPTION 2". THE SPECIFICATION NEEDS TO BE MODIFIED FOR THE PROJECT. "OPTION" TEXT IS ITALICIZED. NON-ITALICIZED TEXT SHOULD BE MAINTAINED IN ALL SPECIFICATIONS. THE OPTIONS INCLUDE:

- **OPTION 1** TO BE USED WHEN SOUND TRANSIT IS RESPONSIBLE FOR RETAINING THE CONTAMINATED SUBSTANCE SME UNDER A SEPARATE CONTRACT TYPICALLY AS PART OF THE CONSTRUCTION MANAGEMENT TEAM OR UNDER THE ENVIRONMENTAL DUE DILIGENCE ON-CALL. THE CONSTRUCTION CONTRACTOR IS RESPONSIBLE FOR RETAINING THE REMEDIATION CONTRACTOR WHOSE DUTIES INCLUDE GENERAL PLAN DEVELOPMENT, OPERATION OF CONSTRUCTION EQUIPMENT, CHARACTERIZATION AND SAMPLING FOR DISPOSAL, AND TRANSPORTATION AND DISPOSAL OF CONTAMINATED SUBSTANCES AND DANGEROUS WASTE. OPTION 1 IS TYPICALLY USED ON DESIGN BID BUILD AND GC/CM PROJECTS BUT CAN BE USED ON DESIGN BUILD PROJECTS.
- **OPTION 2** TO BE USED WHEN CONSTRUCTION CONTRACTOR IS RESPONSIBLE FOR RETAINING THE CONTAMINATED SUBSTANCE SME AND TO PERFORM THE CONTRACTOR-RESPONSIBLE ITEMS OF THIS SPECIFICATION. OPTION 2 TYPICALLY USED ON DESIGN BUILD PROJECTS, AND CAN BE USED ON GC/CM PROJECTS. OPTION 2 IS TYPICALLY NOT USED ON DESIGN BID BUILD PROJECTS. SOUND TRANSIT

DESIGNER TO DELETE TEXT ABOVE FOR FINAL SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Requirements for screening, excavation, dewatering, handling, stockpiling, temporarily storing, and disposing of Hazardous or Contaminated Substances, including soils, groundwater, debris, water, and/or other environmental media, which are known or that may be encountered during the Work.

1.02 REFERENCES

A. This Section incorporates by reference the latest revision of the following documents:

1. American Society for Testing and Materials International (ASTM):
 - a. ASTM D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock.
2. Code of Federal Regulations (CFR):
 - a. 29 CFR 1910 Occupational Safety and Health Standards.
 - b. 40 CFR 262 Standards Applicable to Generators of Hazardous Waste.
 - c. 40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
 - d. 40 CFR 268 Land Disposal Restrictions.
 - e. 40 CFR 280 Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST).
3. Revised Code of Washington (RCW):
 - a. RCW Chapter 70A.305 Hazardous Waste Cleanup – Model Toxics Control Act (MTCA).
4. Washington Administrative Code (WAC):
 - a. WAC 173-303 Dangerous Waste Regulations.
 - b. WAC 173-340 Model Toxics Control Act – Cleanup.
 - c. WAC 173-360A Underground Storage Tank Regulations.
 - d. WAC 296-62 General Occupational Health Standards.
 - e. WAC 296-843 Hazardous Waste Operations.
5. Washington State Department of Ecology:
 - a. Publication No. 94-49 Guidance on Sampling and Data Analysis Methods.

- b. Publication No. 97-602 Analytical Methods for Petroleum Hydrocarbons.
- c. Publication No. 10-09-057 Guidance for Remediation of Petroleum Contaminated Sites.
- d. Publication No. 16-09-057 Model Remedies for Sites with Petroleum Impacts to Groundwater.
- e. Publication No. 15-09-043 Model Remedies for Sites with Petroleum Contaminated Soils.
- f. Publication No. 09-09-047 Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action.
- g. Publication No. 19-09-101 Tacoma Smelter Plume Model Remedies Guidance, Sampling and Cleanup of Arsenic and Lead Contaminated Soils. A reference only for projects that are within the Tacoma Smelter Plume contamination.

B. Definitions:

- 1. The following definitions are required by the Contract:
 - a. Certified Industrial Hygienist (CIH).
 - b. Contaminated Groundwater.
 - c. Contaminated Soil.
 - d. Contaminated Substance.
 - e. Contaminated Water.
 - f. Dangerous Waste.
 - g. Exclusion Zone.
 - h. Hazardous Building Materials.
 - i. Hazardous or Contaminated Substances – Health and Safety Plan (HCS-HASP).
 - j. Hazardous Waste.
 - k. Solid Waste.
 - l. Site Safety and Health Officer (SSHO).
 - m. Unknown Hazardous or Contaminated Substances Screening and Handling Plan (UHCS-SHP).
- 2. Contaminated Substances Subject Matter Expert (SME): Subject matter expert (SME) with knowledge of and experience in management and remedial actions for Contaminated Substances and Dangerous Waste and associated regulatory requirements.
- 3. Contaminated Substance Handling Plan (CSHP): A work plan covering activities, excavation, staging, transport, sampling, emergency release and disposal of identified Contaminated Substances and Dangerous Waste in soil, groundwater or

other environmental media. This is a separate plan from the HCS- HASP and UHCS-SHP.

4. Dewatering: Process of capture, extract, collect and contain groundwater encountered during construction excavation activities; dewatering water may also include trench seepage and/or infiltration which could comingle with saturated zone groundwater.
5. Hazardous and Contaminated Substances: Materials classified as Hazardous Waste, Dangerous Waste, Hazardous Building Materials, and/or Contaminated Substances.
6. Photoionization Detector (PID): A field screening device to detect contaminated materials, utilizing an ultraviolet light to detect ions from volatile organic compounds emitted from a sample.
7. Suspected Contaminated Substances – Soil, groundwater, debris or other environmental media that has not been assessed yet for verification of contamination levels and:
 - a. Is in contact or close proximity to known Contaminated Groundwater, Soil or other contaminated media.
 - b. Has visual or olfactory evidence of contamination, or,
 - c. Is located in an area where Hazardous or Contaminated Substances may be present based on-site historical information or uses.

1.03 COORDINATION

A. Meetings:

1. The Contractor, at a minimum, must conduct the following meetings:
 - a. A preconstruction meeting with the Sound Transit Resident Engineer is required before beginning remedial action on each parcel. Attendance at these meetings is mandatory for the remediation contractor and Contaminated Substance SME performing the earthwork.
 - b. Meeting(s) with the Sound Transit Resident Engineer if suspect contaminated substances are discovered during construction.
 - c. Meeting(s) with the Sound Transit Resident Engineer to discuss chemical analytical results prior to backfill.
 - d. Meeting(s) with the Sound Transit Resident Engineer to review dewatering plans when contaminated substances are anticipated prior to starting dewatering.

1.04 SUBMITTALS

A. Submit:

1. Contaminated Substance Handling Plan (CSHP): 8 weeks prior to construction in areas of Hazardous or Contaminated Substances. Do not perform Contract Work, with the exception of site inspections and mobilization, until the Work Plan is review is complete.

- a. The CIH *[Option 2]* or a *Contaminated Substance SME* must prepare a project wide CSHP for the Work. At a minimum, the following must be included in the CSHP:
- 1) Summary of location, extent and analytical data for known and suspected Hazardous or Contaminated Substances.
 - 2) Summary of planned construction activities in area of Hazardous or Contaminated Substances.
 - 3) Schedule of activities.
 - 4) *[Option 1] Summary of plan for supplemental sampling to classify and characterize Hazardous or Contaminated Substances for disposal and/or reuse. Summary must include sampling approach and analytical methods.*

[Option 2] Summary of sampling approach and analytical methods for supplemental sampling to:
 - a) *Evaluate the sources and lateral and vertical extent of Hazardous or Contaminated Substances.*
 - b) *Classify Hazardous or Contaminated Substances for disposal and/or reuse including but not limited to characterization of Solid Waste and Dangerous Waste.*
 - c) *Confirmation sampling following excavation activities.*
 - 5) Sampling and analysis plan(s) including identification of chemical analytical methods, chemical analytical laboratories, analyte target reporting limits, field and laboratory QC samples and frequency, sample containers and preservation methods and planned sample locations.
 - 6) Methods and procedures of excavation and equipment to be used. Include methods to prevent the spread of Hazardous or Contaminated Substances.
 - 7) Methods for documenting/surveying locations of samples, stockpiles and excavations.
 - 8) Methods for field screening during excavation and dewatering in areas of Hazardous or Contaminated Substances.
 - 9) Methods for shoring or sidewall slopes. Include methods to prevent non- contaminated soil excavated during sloping sidewalls from mixing with Contaminated Substances.
 - 10) Staging and storage methods, procedures, and locations for liquid and solid Hazardous or Contaminated Substances:
 - a) Backfill material sources including chemical analytical data or plan to obtain chemical analytical data prior to use of material for backfill.
 - 11) Methods and procedures for the transportation, disposal, and off-site treatment of Hazardous or Contaminated Substances, in compliance with applicable federal, state, and local laws and

- regulations, including the identification of disposal and treatment facilities, and the use of certified, licensed transporters.
- 12) Equipment decontamination procedures to prevent cross contamination.
 - 13) Relevant additions to project-wide Spill Prevention, Control, and Countermeasures (SPCC) Plans.
 - 14) Methods for water management including groundwater, stormwater runoff, and surface water.
 - 15) Procedures for documenting and reporting encounters with and/or releases of Hazardous or Contaminated Substances.
 - 16) Lead and Arsenic Management Plans as required by Lead Rule (WAC 296-61- 07521) and Arsenic Rule (WAC 296-848).
2. Contained-in Determination Request (as necessary): 21 days prior to submittal to Ecology.
 3. *[OPTION 1] Closeout documents: Within 4 weeks of completion of removal of Hazardous or Contaminated Substances at each project parcel.*
 4. *[OPTION 2] Cleanup Action Report: Within 8 weeks of completion of removal of Hazardous or Contaminated Substances a at each project parcel.*
 5. *[OPTION 2 IF NOT COMPLETED BY SOUND TRANSIT] Site Specific Investigation Plans: 30 days prior to construction in areas of Hazardous or Contaminated Substances. Do not perform Contract Work, with the exception of site inspections and mobilization, until the Work Plan is review is complete. [Option 2]*
 - a. *The Contaminated Substance SME must prepare site-specific investigation plans in accordance with Ecology guidance and industry standards of practice describing the sampling approach and analytical methods for sampling to:*
 - 1) *Evaluate the sources and lateral and vertical extent of Hazardous or Contaminated Substances.*
 - 2) *Classify Hazardous or Contaminated Substances for disposal and/or reuse including but not limited to characterization of Solid Waste and Dangerous Waste.*
 6. *[OPTION 2 IF NOT COMPLETED BY SOUND TRANSIT] Cleanup Action Plans: Eight weeks before remediation occurs. Do not perform Contract Work, with the exception of site inspections and mobilization, until the Work Plan is review is complete. [Option 2]*
 - a. *The Contaminated Substance SME must prepare a parcel-specific Cleanup Action Plan for remediation of parcel-specific contamination and cleanup. Area-wide Cleanup Action Plans may also be required in areas of area-wide plumes (Tacoma Smelter or Everett Smelter Plumes). The Cleanup Action Plan at a minimum must contain information as required by Ecology's "Cleanup Action Plan Checklist" dated May 2016 (or the latest version) and located on Ecology's website <https://fortress.wa.gov/ecy/publications/documents/1609008.pdf>*

- B. Transmit:
1. Qualifications: 21 days after Notice to Proceed.
 2. Certifications: 21 days after Notice to Proceed.
 3. Analytical testing results including field screening results: within 24 hours of receipt.
 4. Contained-in Determination (as necessary): within one week of receipt.
 5. Daily field logs during removal of Hazardous or Contaminated Substances: One week from date of activity.
 6. Surveys of stockpile, sample location(s) and excavation area boundaries and elevations: 21 days from date of activity.

1.05 QUALITY ASSURANCE

- A. Comply with local, state, and federal regulatory requirements and guidance documents included in Article 1.02 in this specification.
- B. Qualifications:
1. CIH and SSHO: As required by the Contract, Hazardous or Contaminated Substance Health and Safety Program.
 2. *[Option 2] Contaminated Substance SME: Contaminated Substance SME: To be a first-tier subcontractor to the Contractor and must not be retained by the earthwork contractor. SME must be Washington State Professional Engineer, Licensed Geologist, Licensed Hydrogeologist, or demonstrate a minimum of 12 years of experience in the management of Hazardous or Contaminated Substances.*
 3. Site supervisor:
 - a. Trained and experienced in Hazardous or Contaminated Substances handling.
 - b. Completed OSHA training requirements for working with hazardous substances including the 8-hour supervisory course.
 - c. Minimum of three (3) years of experience in managing Hazardous or Contaminated Substances projects
 4. Site personnel working with Hazardous or Contaminated Substances:
 - a. Minimum three (3) years of experience with similar work.
 5. Employees entering the Exclusion Zone for Hazardous or Contaminated Substances must have HAZWOPER training and certification. For Level D and above personal protective equipment (PPE) protection:
 - a. Completed appropriate safety training in compliance with 29 CFR 1910.120, 29 CFR 1910.134, and WAC 296843-100.
 - b. Minimum of 40 hours health and safety training.
 - c. Minimum 24 hours of "on the job" training.
 - d. Eight (8) hours annual refresher training.

- e. Respirator training and medical monitoring (as required for respirator use).
- C. Certifications:
- 1. All personnel must have respirator fit test certification (qualitative/quantitative) for the respirators they intend to use.
 - 2. Disposal sites certification for proper disposal or treatment of Hazardous or Contaminated Substances.
 - 3. The transporter is a state-licensed transporter of Hazardous or Contaminated Substances.
- D. Perform Hazardous or Contaminated Substances excavation and disposal work in compliance with applicable statutes and regulations, including the Washington State Model Toxics Control Act, chapter 70A.305 RCW ("MTCA") and associated regulations and Washington State Department of Ecology Guidance.
- E. Laboratories: Use laboratories as required by the Contract, Hazardous or Contaminated Substances Health and Safety Program.
- F. Calibrate the PID screening devices as specified in instrument user manuals. Utilize the appropriate lamp for the known or expected contaminants.
- G. Comply with the following hold points:
- 1. Contractor must modify plans included in this specification when project information changes throughout the duration of the project. Contractor must notify Resident Engineer when changes or modifications are made. Additional review and approval of such modifications will require transmittal or resubmittal as directed by the Resident Engineer.
 - 2. A clean copy of all plans and modified plan provided to Resident Engineer at least 5 days before work described in the plan can proceed.
 - 3. *[Option 1]: Backfill of an excavation at Contractor's expense until receiving confirmation from Resident Engineer that excavation is complete. Confirmation may be up to 10 days from the date of sample collection by the Resident Engineer.*

1.06 PROJECT CONDITIONS

- A. Hazardous or Contaminated Substances in soils, groundwater, and/or water are anticipated to be encountered during the Work. These conditions will require the screening, excavation, handling, stockpiling, temporary storage, profiling, transportation and off-site disposal of Hazardous or Contaminated Substances.
- B. Hazardous or Contaminated Substances that may be encountered as required by the Contract.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Obtain all required permits and notifications for removal, excavation, dewatering, storage, transportation, and disposal of Hazardous or Contaminated Substances. Obtain permits at no additional cost to Sound Transit.

- B. Utilize a PID to perform screening for Hazardous or Contaminated Substance. Use a PID that is able to perform headspace analysis and is able to detect the contaminants of concern.
- C. Colorimetric Field Screening Kit: A field testing kit (such as a “Hanby kit” or “RemediAid kit”) may be used in addition to the PID to screen for aromatic compounds, including BTEX, gasoline, and diesel. This screening method includes the extraction of aromatic compounds from the sample and provides a colorimetric indication of the concentration and type of contaminants present.
- D. Immunoassay Test Kit: An immunoassay test kit may be used in addition to the PID/FID and OVA to screen petroleum compounds, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs). This screening method depends on the ability of antibodies (analytes) to specifically bind to an antigen (compound); test results are measured visually or by a special instrument.

2.02 MATERIALS

- A. Backfill Material: As required by the Contract.
- B. Spill Response Materials:
 - 1. As required and described in the Contaminated Substances Handling Plan.
 - 2. Containers, adsorbents, shovels, and personnel protective equipment.
 - 3. Available at all times in which Hazardous or Contaminated Substances are being handled or transported.
 - 4. Compatible with the type of materials and contaminants being handled.
- C. Staging Material:
 - 1. Plastic liner or material cover:
 - a. Chemical resistant.
 - b. Minimum 6 mil thickness.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

[OPTION 1]

Assist the Resident Engineer in the performance of duties during general excavation and site remediation activities. Such assistance includes providing access for the Resident Engineer to document site activities and to collect soil and water samples. Such assistance may also include collecting soil samples with Contractor excavation equipment at the direction of the Resident Engineer.

- A. *During sampling activities the Contractor is responsible for maintaining safe excavation sidewalls to ensure the Resident Engineer can safely access the excavations*
- B. *Anticipate a delay of up to five (5) days between the collection of confirmation samples and the completion of chemical laboratory analyses and secure and maintain excavation areas during that time.*

- C. *Characterize Hazardous or Contaminated Substances for disposal purposes in accordance with applicable regulations, Ecology guidance and industry standards of practice. Media to be characterized may include sediment in utilities, soil, groundwater, and/or other water.*
- D. *Notify the Resident Engineer immediately if Hazardous or Contaminated Substances are discovered which had not been previously identified, or if other discrepancies between data provided and actual field conditions are discovered.*
- E. *Identify specific Hold Points in the Construction Work Plan. The Sound Transit Resident Engineer may add Hold Points at the Sound Transit Resident Engineer's discretion.*

[OPTION 2]

- A. *Complete site characterization, site remediation and soil management activities, including documenting site activities, removing and properly disposing of Hazardous or Contaminated Substances, and collecting soil and groundwater samples to confirm limits of Hazardous or Contaminated Substances in accordance with applicable regulations, Ecology guidance and standards of practice.*
- B. *During sampling activities the Contractor is responsible for maintaining safe excavation sidewalls to ensure the Resident Engineer can safely access the excavations.*
- C. *Characterize Hazardous or Contaminated Substances for disposal purposes in accordance with applicable regulations, Ecology guidance and industry standards of practice. Media to be characterized may include sediment in utilities, soil, groundwater, and/or other water.*
- D. *Anticipate a delay between the collection of confirmation samples and the completion of chemical laboratory analyses and secure and maintain excavation areas during that time.*
- E. *Notify the Resident Engineer immediately if Hazardous or Contaminated Substances are discovered, which had not been previously identified, or if other discrepancies between data provided and actual field conditions are discovered.*
- F. *Identify specific Hold Points in the Construction Work Plan. The Sound Transit Resident Engineer may add Hold Points at the Sound Transit Resident Engineer's discretion.*

3.02 HAZARDOUS OR CONTAMINATED SUBSTANCE REMOVAL

- A. Give notification to the Resident Engineer at least seven (7) days prior to the start of excavation of known Hazardous or Contaminated Substances.
- B. Implement environmental controls as required by the Contract prior to the start of excavation.
- C. Strip and stockpile noncontaminated soil separately from Hazardous or Contaminated Substances, for areas that are considered to be below Cleanup Levels based on field screening and chemical analytical data. The Contractor is responsible for staging and protecting this material from becoming contaminated. Dispose of such soil that becomes contaminated or characterized as Dangerous Waste as a result of work activities at the Contractor's expense.
- D. Excavate areas of contamination as required by the Contract, in compliance with the CSHP. Limit the potential for Hazardous or Contaminated Substances to be mixed with uncontaminated material during excavation. Dispose of such mixed soil that becomes contaminated and/or Dangerous Waste as a result of work activities at Contractor's own expense.

- E. Maintain a log of the materials and visible indications of contamination encountered during excavation for each area of excavation. Prepare excavation logs in accordance with ASTM D 5434.
- F. Install sheeting, bracing, or shoring in the absence of adequate side slopes if there is a need for workers to enter the excavated area, in accordance with WAC 296-62 and as required by the Contract.
- G. Divert water to prevent entry into the excavation. Minimize infiltration of water that enters excavation. Dispose of such water that enters excavation as a result of work activities at Contractor's own expense. Limit dewatering to ensure adequate access, a safe excavation, and to ensure that compaction requirements can be met.
- H. Contain water generated during dewatering until collection and analysis of samples in accordance with applicable federal, state, and local disposal regulations until analytical results are obtained.
- I. Perform field surveys immediately prior to and after excavations of Hazardous or Contaminated Substances. Develop cross-sections on 30-foot intervals and at obvious break points for excavated areas. Survey all sample locations. Perform field surveys of stockpiled soil in order to estimate the volume of the stockpile if tonnage cannot be verified through weight tickets.
- J. Provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests, and associated disposal notices and notifications, necessary for accomplishment of the Work.

3.03 HAZARDOUS OR CONTAMINATED SUBSTANCE STAGING

- A. For known or suspected Hazardous or Contaminated Substance, place material in a staging unit immediately after excavation while awaiting test results. Use staging units that are in good condition and constructed of materials that are compatible with the material or liquid to be staged. If multiple staging units are required, clearly label each unit with an identification number and keep a written log to track the source of Hazardous or Contaminated Substance in each staging unit.
- B. Isolate known and/or suspected Hazardous or Contaminated Substance from the surrounding environment.
- C. Staging units may include stockpiles placed on minimum 6 mils thick plastic sheeting, water-tight barrels, water-tight portable tanks, or water-tight roll-off units lined with 6 mils thick plastic sheeting.
- D. Staging units with known and suspected Hazardous or Contaminated Substances must be clearly labeled with the source, date generated, and type of material. Keep a written log to track the source of Hazardous or Contaminated Substances in each staging unit.
- E. Place an impermeable cover over the units to prevent precipitation from contacting the stored material. Remove and store liquid that collects inside the units.
- F. Additional requirements may be necessary for Dangerous Waste in accordance with WAC 173-303.

3.04 BACKFILL

- A. Backfill excavations only after Hazardous or Contaminated Substances removal is complete.

- B. Consider Contaminated Soil removal to be complete after the bottom and sidewalls of the excavation are determined to have contaminant levels below applicable Cleanup Levels, as required by the Contract and/or the direction of the Resident Engineer.
- C. All non-contaminated soil removed during the removal of Contaminated Soil must be stockpiled material, sampled and tested prior to backfill.
- D. The testing for backfill must conform to the requirements of Reuse Criteria as required by the Contract and local, state and federal regulations.
- E. Transmit soil chemical analytical results for material used as backfill to the Resident Engineer prior to placement of backfill.
- F. Place and compact backfill in as required by the Contract.

3.05 OFF-SITE DISPOSAL

- A. Transport and dispose of excavated material with Hazardous or Contaminated Substances as required by the Contract and local, state, and federal requirements including but not limited to WAC 173-303 and WAC 173-350 and Department of Transportation (DOT) Hazardous Material Regulations.
- B. Transmit to Resident Engineer documentation of off-site disposal facilities' acceptance criteria and associated soil sample chemical analytical data for soil to be disposed that meet acceptance criteria prior to transport of soil to facility.
- C. Contractor is responsible obtaining a contained in determination from Ecology for listed waste.
- D. Sound Transit's Hazardous Sound Transit's Environmental Compliance Manager or an individual delegated with such authority by Sound Transit Environmental Compliance Manager must sign the waste profile as the generator. The Contractor is responsible for coordinating with Sound Transit and providing sufficient chemical analytical data and information for Sound Transit Environmental Compliance Manager to verify waste characterization.
- E. For disposal of all Dangerous Waste, with the exception of those wastes resulting from the release of Hazardous or Contaminated Substances negligently disturbed, removed, or handled by Contractor, its employees, agents, officers, or Subcontractors, or any other persons for whom the Contractor may be contractually or legally responsible, ensure that the Generator's Certification portion of the Uniform Hazardous Waste Manifest is signed only by Sound Transit's Environmental Compliance Manager or by an individual delegated with such authority by Sound Transit.
- F. Cover each load with tarpaulin prior to leaving the Site.

3.06 LOGS, REPORTS AND RECORDKEEPING

- A. Maintain field reports covering the implementation of the CSHP.
- B. Include in Daily Field Report when working in areas of Hazardous or Contaminated Substances, at a minimum, the following:
 1. Date and time of day during which work was performed.
 2. Weather conditions (temperature, precipitation).
 3. Area (site specific) were work occurred.
 4. Employees in particular area and regulators observing the work.

5. Equipment and monitoring instruments utilized in the course of the work.
6. Any substantive deviations from the specifications, plans or submittals as it relates to the daily work performed.
7. Activities completed including, but not limited to:
 - a. Text and visual summary of activities including but not limited to drilling, excavation, backfill, dewatering, soil types encountered, groundwater conditions encountered, subsurface features encountered if any.
 - b. Field screened sample locations and results.
 - c. Map with locations, coordinates and identification of samples collected.
 - d. Copies of chains of custody.
 - e. Estimated quantities of soil or groundwater excavated and/or contained or disposed.
 - f. Summary of disposal activities include quantity disposed and disposal locations.
 - g. Mapped location and surveyed volume of stockpiles generated.
 - h. Representative photographs of daily work performed.

3.07 FIELD QUALITY CONTROL

A. *[Option 1] Sampling, Screening, and Analysis:*

1. *Sampling and Analysis:*

- a. *Have the independent testing agency and laboratory employed by the Contractor perform required sampling and chemical analyses relating to generation, use, release, and disposal of contaminated substances in the course of Contractor operations, including but not limited to spills and releases in accordance with the CSHP.*
- b. *Complete screening of all excavated material per CSHP. Transmit results of all screening testing to the Resident Engineer. For screening of material adjacent to the public right-of-way or private property, transmit an extra copy of test results for transmittal to the authority having jurisdiction.*
- c. *Have the independent testing agency employed by the Contractor perform required characterization sampling and associated chemical analysis to determine disposal methods relating to Hazardous or Contaminated Substance. Do not dispose of material until directed to do so by the Resident Engineer.*
- d. *The Resident Engineer will collect samples for chemical analysis if Unknown Hazardous or Contaminated Substances are encountered during excavation activities. Be aware and anticipate that up to five (5) days may be required between the collection of samples and the completion of chemical laboratory analyses.*
- e. *The Resident Engineer will inspect the removal of known Hazardous or Contaminated Substances. Notify the Resident Engineer at least 7 days prior to start of excavation and when sampling and analysis will be required on a project parcel. After known Hazardous or Contaminated*

Substances are removed, confirmation samples from the excavation will be collected and analyzed by the Resident Engineer. Be aware and anticipate that up to five (5) days may be required between the collection of samples and the completion of chemical laboratory analyses. Based on test results, proceed with additional excavation that may be required to remove material that is contaminated above Cleanup Levels, as directed by the Resident Engineer. Mark locations of all samples in the field and document on the surveys. Survey excavation and stockpiles. Transmit survey to Resident Engineer.

2. *Screening Procedures for Hazardous or Contaminated Substances:*
 - a. *Visually inspect all excavated soil for staining, debris, slag, or sheen. Note unusual odors to evaluate the presence of contamination. Notify Resident Engineer immediately per the UHCS-SHP if suspected Contaminated Substances are encountered.*
 - b. *Screen samples collected from the material excavated in the areas of suspected Hazardous or Contaminated Substances with a water sheen test and headspace measurements for the presence of volatile organic compounds and petroleum hydrocarbons. Screening must be conducted by collecting measurements in the vicinity of the suspect soil in place, as excavation is being conducted. Conduct headspace analysis by placing suspect material into an inert sealable container, such as a glass jar or "Ziploc" bag, allowing the material to come to room temperature, and collecting measurements of the air within the container.*

3.08 [OPTION 2] SAMPLING, SCREENING, AND ANALYSIS

A. Sampling and Analysis:

1. *Have the independent Contaminated Substance SME and laboratory employed by the Contractor perform required sampling and chemical analyses relating to generation, use, release, and disposal of contaminated substances in the course of Contractor operations, in accordance with the CSHP.*
2. *Have the Contaminated Substance SME and laboratory employed by the Contractor perform required characterization sampling and associated chemical analysis to determine disposal methods relating to known Contaminated Substances. Characterize and dispose of material as required in this specification and the Contract.*
3. *Have the Contaminated Substance SME employed by the Contractor inspect the removal of existing Contaminated Substances from each area of Hazardous or Contaminated Substances. The Contaminated Substance SME must complete field screening during excavation. After suspected Hazardous or Contaminated Substance is removed, the Contaminated Substance SME must sample the limits of excavation in accordance with the Ecology required frequency of one sample per 400 square feet of exposed base, and one sample every 20 feet horizontally and one sample vertically of sidewalls. Samples must be collected in areas where contamination is likely to be present (for example same depth as known Contaminated Soil, areas where field screening indicate Contaminated Soil is present, near groundwater table etc.). Investigation samples are not acceptable to be used to define limits of excavation.*
4. *Have laboratory retained by the Contractor perform chemical analysis of collected samples with testing per the chemicals of concern and methods as required by the Contract and WAC 173-340 Table 830-1 Required Testing for Petroleum Releases. Based on test results, proceed with additional excavation that may be*

required to remove material that is contaminated above Cleanup Levels. Resident Engineer must approve removal of Contaminated Substance beyond what is required in the Contract. Mark locations of all samples in the field and document on the surveys. Survey excavation extent and stockpiles.

B. Screening Procedures for Hazardous or Contaminated Substances:

1. *Visually inspect all excavated soil for staining, debris, slag, or sheen. Note unusual odors to evaluate the presence of contamination. Notify Resident Engineer immediately per the UHCS-SHP if suspected Hazardous or Contaminated Substances are encountered.*
2. *Screen samples collected from the material excavated in the areas of suspected Hazardous or Contaminated Substance, as identified above, with a water sheen test and headspace measurements for the presence of volatile organic compounds and petroleum hydrocarbons. Screening must be conducted by collecting measurements in the vicinity of the suspect soil as excavation is completed. Conduct headspace analysis by placing suspect material into an inert sealable container, such as a glass jar or "Ziploc" bag, allowing the material to come to room temperature, and collecting measurements of the air within the container.*

C. Action and Cleanup Levels:

1. Site-specific Cleanup Levels have been established for this project as required by the Contract and per MTCA requirements.
2. The Contractor is required to establish Action Levels as required by the Contract for worker safety.
3. If significant staining, sheen, odor, debris, or other evidence of Hazardous or Contaminated Substances is observed in areas where Hazardous or Contaminated Substances were not anticipated, cease all work in the area. Do not continue work in the area until potential risks are evaluated and as directed by the Resident Engineer.

3.09 CLOSEOUT ACTIVITIES

A. OPTION 1] Closeout Documentation:

1. *Prepare and submit closeout documents related to the removal of Hazardous or Contaminated Substances at each project parcel. The closeout documentation must include sufficient information for the Resident Engineer to develop the Cleanup Action Report:*
 - a. *Summary of excavation and backfill activities, sampling (if completed), and disposal.*
 - b. *Documentation prepared for Ecology, local fire, planning or health department, including permits, notices, and closure checklists.*
 - c. *Information on who transported and accepted wastes encountered, including copies of manifests, waste profile sheets, land disposal restriction, notification and certification forms, disposal ticket and receipts, Bills of Lading, certificates of disposal, and other pertinent documentation signed by the responsible disposal facility official.*
 - d. *Surveys of sample locations, stockpiles and excavation area(s) including cross-sections of areas of excavation.*

- e. *Analytical laboratory test results and chains-of-custody for imported backfill and other samples collected.*

B. [OPTION 2] Cleanup Action Report:

1. *Prepare and submit a Cleanup Action Report to document completion of removal of Hazardous or Contaminated Substances at each project parcel. The Cleanup Action Reports must be completed by the Contaminated Substance SME and meet the standard of care for similar Voluntary Cleanup Program (VCP) or Independent Cleanups done in the area at the time the work is performed. At a minimum, include the following in the Cleanup Action Reports:*
 - a. *Summary of site conditions (pre and post construction) including land use.*
 - b. *History of Site and sources of contamination including summary of previous sampling and locations of results.*
 - c. *Summary of sampling completed by Contaminated Substance SME.*
 - d. *Summary of conceptual site model (CSM) describing the source(s) and location(s) of Contaminated Substances.*
 - e. *Summary of Cleanup Levels.*
 - f. *Summary of cleanup methods and activities including dates and personnel involved.*
 - g. *Summary of samples collected and field screening results.*
 - h. *Location of remedial excavation and samples collected during excavation as per survey relative to previous sampling results.*
 - i. *Table summarizing chemical analytical results of historical and current samples collected on the parcel. The table must compare chemical analytical results to appropriate Cleanup Levels and include laboratory detection limits when a chemical is not detected.*
 - j. *Water and soil chemical analytical results used for offsite disposal characterization.*
 - k. *Summary and chemical analytical results for backfill material.*
 - l. *Laboratory package of chemical analytical results with USEPA Level 2a laboratory QA/QC, chains of custody, petroleum hydrocarbon chromatograms and electronic data deliverables.*
 - m. *Information on who transported and accepted wastes encountered, including copies of manifests, waste profile sheets, land disposal restriction, notification and certification forms, disposal ticket and receipts, Bills of Lading, certificates of disposal, and other pertinent documentation signed by the responsible disposal facility official.*

END OF SECTION