

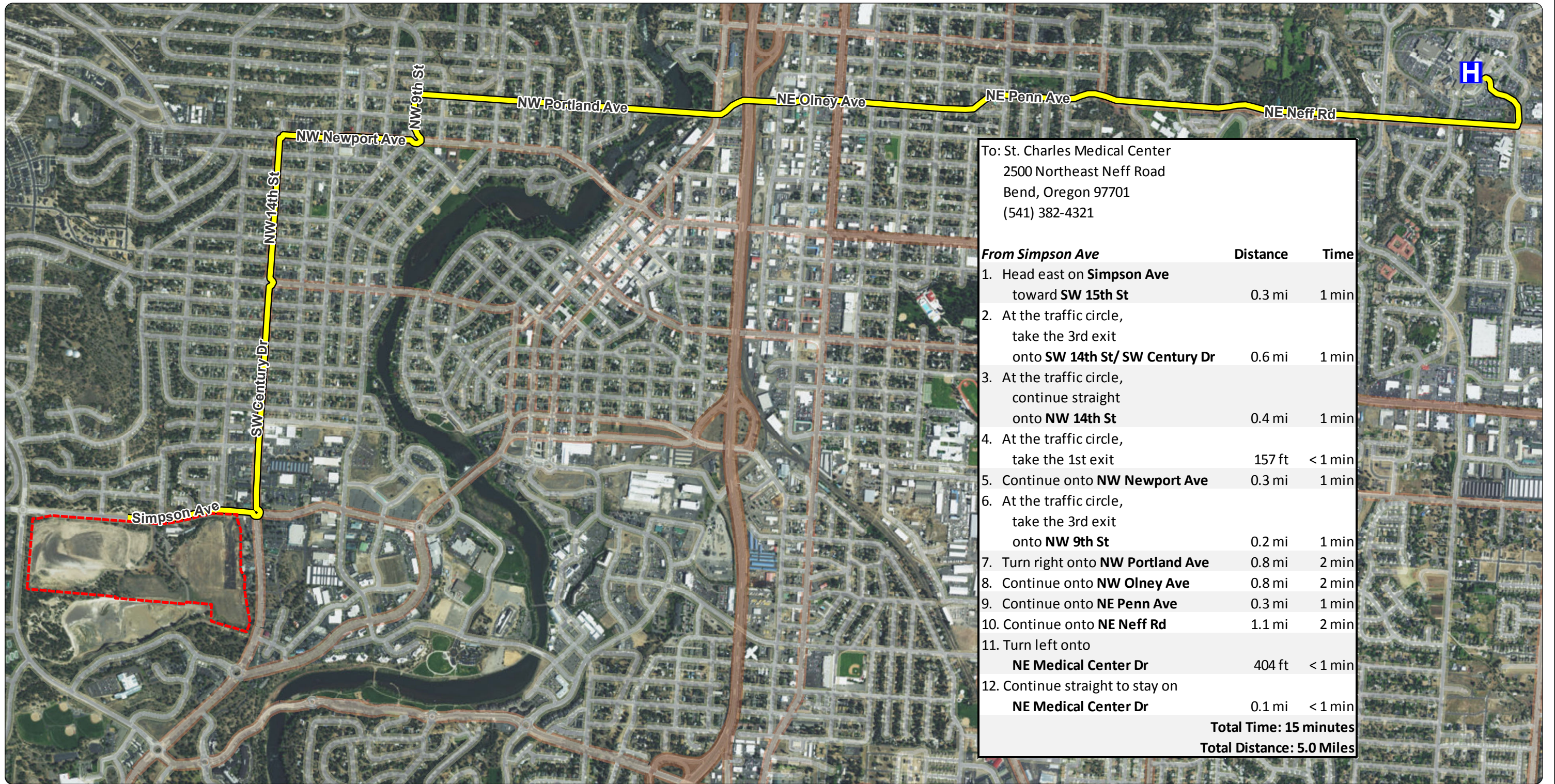
PRELIMINARY HEALTH AND SAFETY PLAN

FORMER BEND DEMOLITION LANDFILL
19755 SIMPSON AVENUE
BEND, OREGON



Prepared for
OREGON STATE UNIVERSITY-CASCADES
December 20, 2018
Project No. 1290.01.04

Prepared by
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2001 NW 19th Avenue, Suite 200, Portland OR 97209



To: St. Charles Medical Center
 2500 Northeast Neff Road
 Bend, Oregon 97701
 (541) 382-4321

From Simpson Ave	Distance	Time
1. Head east on Simpson Ave toward SW 15th St	0.3 mi	1 min
2. At the traffic circle, take the 3rd exit onto SW 14th St/ SW Century Dr	0.6 mi	1 min
3. At the traffic circle, continue straight onto NW 14th St	0.4 mi	1 min
4. At the traffic circle, take the 1st exit	157 ft	< 1 min
5. Continue onto NW Newport Ave	0.3 mi	1 min
6. At the traffic circle, take the 3rd exit onto NW 9th St	0.2 mi	1 min
7. Turn right onto NW Portland Ave	0.8 mi	2 min
8. Continue onto NW Olney Ave	0.8 mi	2 min
9. Continue onto NE Penn Ave	0.3 mi	1 min
10. Continue onto NE Neff Rd	1.1 mi	2 min
11. Turn left onto NE Medical Center Dr	404 ft	< 1 min
12. Continue straight to stay on NE Medical Center Dr	0.1 mi	< 1 min
Total Time: 15 minutes		
Total Distance: 5.0 Miles		

Source: Aerial photograph obtained from Esri, Inc. ArcGIS Online/Bing Maps; roads obtained from Esri Streetmap USA.

Disclaimer: This map and directions are for planning purposes only. You may find that closures, construction projects, traffic, weather, or other events may cause conditions to differ from the suggested route, and you should plan your route accordingly.



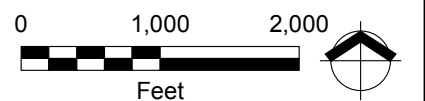
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Legend

- St. Charles Medical Center
- Project Area
- Hospital Access Route

Figure 1
Hospital Access Route

Oregon State University Cascades Campus
 Bend, Oregon

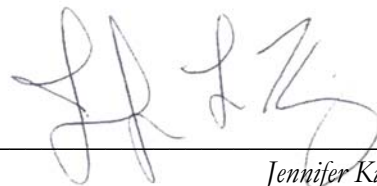


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*The material and data in this plan were prepared
under the supervision and direction of the undersigned.*



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APPENDIX D

INCIDENT REPORT FORM

1 NEAREST HOSPITAL/EMERGENCY MEDICAL CENTER

1.1 Nearest Hospital

St. Charles Medical Center—Bend
2500 NE Neff Rd, Bend, OR 97701
Phone: (541) 382-4321
Distance: 5.0 miles
Travel Time: 17 minutes

1.2 Route to Hospital from Site

See map (Figure 1) on first page of this document.

1.2.1 Driving Directions to Hospital from Site

1. Head east on Simpson toward Southwest 15th Street (0.3 mile).
2. At the traffic circle, take the third exit onto Southwest 14th Street/SW Century Drive (0.6 mile).
3. At the traffic circle, continue straight onto Northwest 14th Street (0.4 mile).
4. At the traffic circle, take the first exit (157 feet).
5. Continue onto Northwest Newport Avenue (0.3 mile).
6. At the traffic circle, take the third exit onto Northwest 9th Street (0.2 mile).
7. Turn right onto Northwest Portland Avenue (0.8 mile).
8. Continue onto Northwest Olney Avenue (0.8 mile).
9. Continue onto Northeast Penn Avenue (0.3 mile).
10. Continue onto Northeast Neff Road (1.1 miles).
11. Turn left onto Northeast Medical Center Drive (404 feet).
12. Continue straight to stay on Northeast Medical Center Drive. Destination will be on the right (0.1 mile).

1.3 Emergency Telephone Numbers

Ambulance, Police, Fire	Dial 911
Jennifer King Consent Judgment Project Lead (MFA)	Phone: 360-433-0242 Cell: 503-209-0776
Stacy Frost Engineering Project Lead (MFA)	Phone: 360-433-0250 Cell: 360-608-4783
Ted Wall Project Manager (MFA)	Phone: 503-501-5210 Cell: 503-939-4849
Steve Pitman Facilities Director (OSU-C)	Phone: 541-322-2048 Cell: 541-362-6180
Jarrod Penttila Project Manager (OSU-C)	Phone: 541-706-2163 Cell: 503-830-1027
Contractor Site Safety Officer (SSO)	To be determined
Contractor Health and Safety Coordinator (HSC)	To be determined

2 PLAN SUMMARY

This preliminary health and safety plan (HASP) was developed on behalf of Oregon State University-Cascades (OSU-C) to help inform proposing contractors about the general procedures and practices necessary to protect the health and safety of their employees conducting a pilot test and later remediation¹ involving excavation and processing of landfilled wastes at the former Demolition Landfill property (the Site). A HASP will be produced by the selected pilot test and remediation contractors that conforms with the overall approach and procedures outlined here.

This preliminary HASP, once finalized, will also be used by MFA personnel, OSU-C personnel and authorized visitors escorted by either MFA or OSU-C.

Pilot test and remedial action activities will include:

- Soil and waste excavation, grading, screening/separation, blending, placement and compaction, and
- Cover soil placement and compaction

If wastes are encountered as listed below, pilot test and remedial action activities will also include:

- Asbestos assessment and removal

¹ The pilot test and remedial actions will be contracted separately.

- Handling, characterization, and off-site transportation and disposal of wastes not suitable for disposal on site (called Unauthorized Waste)

Previous environmental investigations demonstrate the Site includes debris from lumber mills in the area (e.g., sawdust, mill ends) and items such as tires and appliances. It is possible that some forms of unpermitted waste were disposed of at the landfill without the knowledge or consent of the former owner. For the purposes of this preliminary HASP and the Contractors' HASPs, it is presumed that asbestos-containing material (ACM), polychlorinated biphenyls, petroleum hydrocarbons, heavy metals, semi-volatile organic materials, and volatile organic compounds may be present. Other potential site hazards include subsurface concentrations of methane. Pyrolysis is believed to be occurring on a portion of the Site.

This HASP describes activities, related to working in potentially contaminated areas, which must be performed consistent with Oregon Occupational Safety and Health Administration (OR-OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) provisions set forth in Chapter 437, Division 2, Subpart H of the Oregon Administrative Rules (OAR), Section 1910.120.

Contractors are required to ensure that their employees understand and adhere to the Contractor's HASP. Each day before fieldwork begins, a site safety officer (SSO) who is familiar with health and safety procedures and with the Site will be designated by the on-site personnel. Safety deficiencies should be immediately communicated to the SSO and, if necessary, the health and safety coordinator (HSC). Contractors and subcontractors have the primary responsibility for the safety of their own personnel on the Site. Personnel on the Site have "stop work" authority if they observe conditions that they believe create an imminent danger.

The Contractor's HASP will be reviewed and updated as necessary by the HSC or designee to ensure that it accurately reflects the known hazards, conditions, and requirements associated with the Site.

Personnel who will be working on the Site are required to read and understand the Contractor's HASP. Personnel entering the work area must sign the personnel acknowledgment sheet (Section 16), certifying that they have read, understand, and agree to abide by the HASP.

3 KEY PROJECT PERSONNEL

In addition to the Contractor's key personnel, project key personnel include:

Name	Responsibility
Ted Wall	Project Manager (MFA)
Stacy Frost	Engineering Project Lead (MFA)
Jennifer King	Consent Judgment Project Lead (MFA)
Jacob Faust	Engineer (MFA)

Andrew Vidourek	Health and Safety Coordinator (MFA) ²
Jarrold Penttila	Project Manager (OSU-C)
Steve Pitman	Facilities Director (OSU-C)

4 SITE DESCRIPTION AND BACKGROUND

4.1 Type of Site

The Site is currently an inactive construction and demolition waste landfill that was developed at a former pumice surface mine. The landfill consists of about 73 acres that was progressively developed in three distinct areas: Area 1, Area 2, and Area 3 (see Figure 2).

4.2 Building/Structures

There is only one building on site: a partially completed single story concrete masonry restroom building inside the fence around Area 1. The Bend Park and Recreation Maintenance Yard is located between Area 1 and Area 3. There are structures on this parcel, but the parcel is not part of the Site.

4.3 Topography

The topography at the Site is uneven. Elevation at the Site varies from 3,600 to 3,750 feet above sea level. The Site elevation is approximately 10 to 40 feet higher than that of the surrounding properties.

4.4 General Geologic/Hydrologic Setting

Geology underlying the landfill is predominantly volcanic in origin—consisting of tuffs of varying origin, overlying basalt flows. Depth to groundwater ranges from approximately 242 to 294 feet below ground surface. These data indicate that groundwater is at least 150 feet below the deepest portions of the landfill cells and is not in contact with landfill materials.

4.5 Site Status

The Site is currently being maintained as a closed landfill under a State of Oregon solid waste permit.

² Responsible for MFA personnel

5 HAZARD EVALUATION

5.1 Site Tasks and Operations

The remedial actions slated for this site are in furtherance of OSU-C's campus expansion plans. To that end, the pilot test and remedial actions will involve:

- Excavating waste.
- Screening portions of the waste.
- Blending the screened material (fines) with excess cover soils and available pumice mine soils to create Processed Engineered Fill for use as backfill.
- Placing Processed Engineered Fill in the pumice mine per site redevelopment needs.³
- Excavated tires and Unauthorized Waste will be removed and disposed of offsite. Alternately, these materials may remain onsite, if found to be acceptable to OSU and Oregon Department of Environmental Quality (DEQ).
- Materials not suitable for fill (e.g., oversize materials, materials not amenable to screening, materials that do not pass the screen) will be placed in Cell 3.

Job hazard analyses (JHAs) will be developed for specific tasks that likely could be completed on the Site. Each contractor will be responsible to develop or review and approve JHAs for tasks conducted by their employees. Maul Foster & Alongi, Inc. (MFA) has provided preliminary JHAs for MFA work in Appendix A. Planned tasks and operations at the Site are summarized below:

5.1.1 MFA Tasks and Operations

- General work near heavy equipment
- Work in and around excavations
- Collect soil samples
- Work in and near the public right-of-way (i.e., near vehicle traffic)

5.1.2 Tasks and Operations Conducted by Other Contractors

- Excavate and stockpile soil
- Excavate and relocate waste
- Grade soil and waste
- Process soil and waste (screening, stockpiling)

³ Processed Engineered Fill will not be placed in the pumice mine during the pilot test

- Blend screened material and soil to create Processed Engineered Fill
- Place and compact Processed Engineered Fill and clean backfill
- Place and compact cover soil
- Conduct asbestos assessment and removal
- Decommission monitoring wells
- Collect ambient air, soil vapor, and combustible gas samples

The control measures that field personnel must use to eliminate or minimize these hazards, such as air monitoring, personal protective equipment (PPE), and decontamination procedures, will be detailed in the JHAs and in subsequent sections of this HASP.

5.2 Chemical Hazard Evaluation

Previous environmental investigations demonstrate the Site includes debris from lumber mills in the area (e.g., sawdust, mill ends), a cabinet shop, a window shop, a mobile home manufacturer, and items such as tires and appliances. It is possible that some forms of unpermitted waste were disposed of at the landfill without the knowledge or consent of the former owner. For the purposes of this preliminary HASP and the Contractors' HASPs, it is presumed that unpermitted waste may have included polychlorinated biphenyl-containing materials, petroleum, heavy metals, semi-volatile organic materials, volatile organic compounds, and friable ACM.

In the absence of information to the contrary, site workers should presume that soil and fill materials contain chemicals of potential concern (COPCs) in concentrations that may exceed DEQ construction or excavation worker risk-based criteria (RBCs). COPCs are summarized in Appendix B. Air monitoring action levels and associated controls are specified in Appendix C based on this premise. Chemical hazard information, including Appendices A, B and C, will be updated as additional characterization data becomes available. Specific action levels and associated controls are specified in other sections of this HASP.

5.3 Physical Hazards

The specific physical hazards and associated controls for work on the Site are described in Appendix A. Site-specific hazards include uneven walking surfaces, high elevations (fall hazard), and unstable ground (cavitation hazard due to subsurface pyrolysis). Care should be taken when walking around the landfill surfaces. A combination of steep grades and loose material can make walking or standing on these surfaces difficult and potentially hazardous. Crews will avoid working in areas where the cap appears compromised or where subsidence appears present.⁴

Pyrolysis (the subsurface decomposition leading to combustion of organic material) has been occurring on a portion of the Site estimated to be a 75-foot-wide strip, 1,390 feet long on the far eastern edge of Area 1. Pyrolysis is associated with the anaerobic decomposition of wood waste in the landfill. Figure 3 depicts the current understanding of potential pyrolysis areas based on long-term site

⁴ These areas will be marked with signage, as appropriate.

knowledge provided by the landfill operator, Deschutes County, combined with surface heat mapping conducted in late 2018.

6 HEALTH AND SAFETY TRAINING

6.1 HAZWOPER Training

6.1.1 Forty-Hour HAZWOPER Training

For the purposes of this HASP, it is presumed that employees who engage in soil-disturbing work, such as excavation, trenching, and similar tasks, could be exposed to COPCs that may exceed the DEQ construction worker RBCs. These employees will have completed training consistent with the HAZWOPER provisions set forth by OAR 1910.120(e)(3)(i) unless the areas have been monitored and fully characterized, and the characterization demonstrates that worker exposures are below occupational exposure limits.

Employees shall have received a minimum of 40 hours of initial instruction offsite and a minimum of three days of actual field experience under direct supervision of a trained, experienced supervisor. Employees shall have received the initial 40-hour HAZWOPER training or eight hours of refresher training no more than 12 months before beginning work on the Site. The training will include:

- Identity of site safety and health personnel
- Safety and health hazards identified on the Site
- Proper use of required PPE
- Safe work practices required on the Site (e.g., fall protection, confined-space entry procedures, hot work permits, general safety rules)
- Safe use of engineering controls and equipment on the Site
- Medical surveillance requirements, including the recognition of signs and symptoms that might indicate overexposure to hazards
- The site emergency response plan/spill containment plan

6.1.2 Twenty-Four-Hour HAZWOPER Training

Employees who are on the Site occasionally for a specific limited task and who are unlikely to be exposed over permissible exposure limits will have completed training consistent with the HAZWOPER provisions set forth by OAR 1910.120(e)(3)(ii). Also, workers regularly on site who work in areas that have been monitored and for which full characterization indicates that exposures are under applicable exposure limits and that there are no health hazards or the possibility—based on the exposure level—that an emergency will develop, shall receive training consistent with OAR

1910.120(e)(3)(iii). Employees will receive a minimum of 24 hours of instruction on site, and the minimum one day of actual field experience under the direct supervision of a trained, experienced supervisor. Employees shall have received the initial HAZWOPER training or eight hours of refresher training no more than 12 months before beginning work on the Site. The training will include:

- Identity of site safety and health personnel
- Safety and health hazards identified on the Site
- Proper use of required PPE
- Safe work practices required on the Site (e.g., fall protection, confined-space entry procedures, hot work permits, general safety rules)
- Safe use of engineering controls and equipment on the Site
- Medical surveillance requirements, including the recognition of signs and symptoms that might indicate overexposure to hazards
- The site emergency response plan/spill containment plan

6.2 Asbestos-Related Training and Certification

6.2.1 General Site Workers

Employees who work in areas with potential ACM shall be trained to recognize suspected ACM so that they may cease activities which could disturb suspected asbestos and allow sampling and/or abatement. A two-hour asbestos training will satisfy this requirement. This training will be consistent with OR-OSHA 1926.1101(k)(9)(vi), Asbestos Hazard Emergency Response Act (AHERA) requirements in 40 CFR 763.92(a)(1), and OR-OSHA hazard communication requirements in OAR 1910.1200.

6.2.2 Abatement Workers

Employees who disturb and/or remove ACM shall complete 8 hours of training consistent with OR-OSHA requirements in OAR 1926.1101(k)(9)(iv), and such workers must be trained, licensed, and certified in accordance with DEQ requirements in OAR 340-248-0100 through OAR 340-248-0180, which requires five days of training for supervisors and four days of training for workers.

6.3 Hazard Communication and Site Orientation

Other covered employees on the Site, who do not fall under the above HAZWOPER or asbestos training requirements, will receive training that is consistent with the OAR 1910.1200 hazard communications requirements. The training will include:

- Identity of site safety and health personnel

- Safety and health hazards identified on the Site, including the recognition of signs and symptoms that might indicate overexposure to hazards
- Proper use of required PPE
- Safe work practices required on the Site (e.g., fall protection, confined-space entry procedures, hot work permits, general safety rules)
- The site emergency response plan/spill containment plan

6.4 Documentation

The designated HSC for each organization will oversee site-specific training for their organization's site personnel. Records of off-site training (e.g., HAZWOPER or asbestos abatement worker) will be maintained by the employer.

7 SAFETY EQUIPMENT

7.1 Personal Protective Equipment

Outside of regulated asbestos areas, PPE required on the Site is modified Level D, which consists of:

- Type 1 hard hat
- High-visibility vest
- Work boots
- Safety glasses with side shields
- Nitrile gloves or equivalent when handling known or potentially impacted media
- Work gloves (if handling materials that that might have sharp edges, protrusions, or splinters)

Work inside of regulated asbestos areas requires additional PPE, such as coveralls and respirators with P100 cartridges.

Additional PPE may be necessary for specific tasks with additional hazards. The SSO will be responsible for designating additional PPE for specific tasks. Depending on the activity, additional PPE may include:

- Hearing protection (during high-noise tasks)
- Chemical-resistant clothing (e.g., Tyvek® coveralls)
- Chemical-resistant boots
- Chemical-resistant goggles
- Chemical-resistant gloves

- Face shield
- Respiratory protection

Additional PPE may be required if workers discover unexpected contamination. Characteristics of unexpected contamination could include unusual odors, discolored media, a visible sheen, etc. The SSO and, if necessary, the HSC will be contacted as soon as possible after the discovery of unexpected contamination, and the SSO and/or the HSC will determine the need for additional controls and/or training.

PPE used at the Site must meet the requirements of recognized consensus standards (e.g., American National Standards Institute, National Institute for Occupational Safety and Health [NIOSH]), and respiratory protection shall comply with the OR-OSHA requirements set forth in OAR 1910.134.

Project personnel are not permitted to reduce the level of specified PPE without approval from the SSO or the HSC.

7.2 Safety Equipment

The SSO will be responsible for ensuring that the following safety equipment is available on site and is properly inspected and maintained:

- Soap and water for decontamination
- Caution tape, traffic cones, and/or barriers
- First-aid kit
- Fire extinguisher
- Fluids for hydration (e.g., drinking water or sports drink)

7.3 Air Monitoring Equipment

MFA will be responsible for conducting monitoring of its employees, the Contractors will be separately responsible for conducting monitoring of their employees.⁵ See Appendix C for specified action levels and follow-up actions. The following air monitoring equipment will be available to identify site conditions that may require additional controls.

- Photoionization detection (PID) instrument.
- Colorimetric indicator tubes (e.g., Drager tubes, for benzene, or alternative instrument to measure benzene in the presence of other hydrocarbons, e.g., UltraRAE PID).
- Confined-space gas monitor (e.g., for detecting oxygen, lower explosive limit [LEL], carbon monoxide, hydrogen sulfide).
- Dust meter.
- Sampling pumps and filters for asbestos fiber sampling.

⁵ Sharing and use of data may be acceptable if liability considerations are addressed in a mutually satisfactory manner.

- An instrument to measure and record weather conditions, such as wind speed and wind direction, will record data during area measurements at the boundary of asbestos regulated areas during perimeter sampling.

7.4 Communications Equipment

The SSO will have a mobile phone or a radio available in case of emergency.

8 DECONTAMINATION PROCEDURES

8.1 Asbestos Decontamination Procedures

Employees conducting asbestos abatement activities must follow the decontamination protocols established by the asbestos supervisor before leaving the regulated area. Work boots, hard hats, safety glasses, and respirators will be thoroughly cleaned prior to leaving the Site. Used coveralls, gloves, and other disposable PPE will be placed in a sealed bag and disposed of in accordance with applicable solid waste regulations.

For earthwork in areas with ACM where a negative exposure assessment has not or could not be completed and exposures exceed the permissible exposure limit, an equipment decontamination area must be established adjacent to the regulated area. All workers must enter and exit the regulated area through the equipment decontamination area. The ground surface or floor of the equipment decontamination area must be covered by an impermeable drop cloth, and the equipment decontamination area must be large enough to allow equipment cleaning and cleaning and removal of PPE without spreading airborne asbestos fibers outside of the equipment decontamination area. Cleaning methods will include HEPA-vacuuuming, wet-wiping, or similar methods approved by the asbestos supervisor.

8.2 Decontamination Procedures for Workers Who Could Contact Material in the Exclusion Zone

- Wash and rinse work boots, coveralls/raingear (if worn), and outer gloves (if worn) in containers in the contamination-reduction zone.
- Remove outer gloves and Tyvek suit (if worn) and deposit in a container labeled for disposable items.
- Remove respirator (if worn) and discard used cartridges at the frequency dictated by the SSO.
- Wash and rinse respirator in a “respirators only” decontamination container.

- Remove work boots and put on street shoes. Place work boots in a plastic bag or container for later reuse.
- Remove inner gloves (if worn) and deposit in a container labeled for disposable items.
- Wash hands and face with soap and water.
- Shower as soon after the work shift as practicable.

8.3 Decontamination for Other Site Workers

Employees are not required to follow decontamination procedures unless they work in the exclusion zone or regulated area.

As a good industrial hygiene practice, all employees should wash hands before eating, drinking, using tobacco products, or applying cosmetics. Employees should also minimize tracking of material from the Site by removing obvious debris and dirt from boots and clothing before leaving the Site.

9 MEDICAL SURVEILLANCE

Employees who meet the following criteria are enrolled in a medical surveillance program consistent with 29 CFR 1910.120(f):

- The employees are, or may be, exposed to hazardous substances or health hazards at or above established permissible exposure limits for 30 or more days per year.
- The employees are required to wear a respirator for 30 or more days per year.
- The employees exhibit signs or symptoms consistent with overexposure to site contaminants.
- The employees are members of a hazardous materials team.

Employees who are authorized to wear respirators shall be medically evaluated consistent with the respiratory protection standard OAR 1910.134. The HSC or designee (e.g., human resources manager) will maintain medical evaluation records.

10.1 Asbestos

10.1.1 Initial Exposure Determination

Where asbestos exposure may occur, an initial exposure assessment will be performed consistent with OAR 1926.1101. The determination of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to asbestos over an eight-hour period and a 30-minute exposure period. If the initial monitoring reveals employee exposure is below the permissible exposure limit of 0.1 fiber per cubic centimeter (f/cc) of air over an eight-hour period and below the 30-minute excursion limit of 1.0 f/cc, the measurements do not need to be repeated.

10.1.2 Regulated Area Perimeter Sampling

Airborne fiber (asbestos) concentrations will be monitored daily during soil-disturbing activities at the boundary of regulated areas established by the asbestos remediation contractor. Samples will be collected using 25-millimeter, 0.8-micron (μm), mixed cellulose ester filter cassettes and high- or medium-volume pumps. Specific locations will be selected based on the site activities, wind direction, and other relevant conditions. The sampling time will be sufficiently long to accurately represent normal work activities on the Site (e.g., four to seven hours, or the entire duration of the soil-disturbing activities). A calibrated precision rotameter will be used to measure the airflow through the sampling devices before and after each sampling event. The cassettes will be periodically inspected throughout the shift to prevent an excessive buildup of dust on the filter. If this is observed, the sample cassette will be removed, and a new sample cassette installed.

Weather conditions, including ambient temperature, wind direction, and approximate wind velocity will be recorded to assist in evaluating the monitoring results.

10.1.3 Asbestos Analysis

The airborne fiber samples and quality control blanks will be submitted via normal chain-of-custody procedures for analysis to a laboratory that participates in a proficiency testing program, such as the American Industrial Hygiene Association Proficiency Analytical Testing rounds. The samples will be analyzed by phase contrast microscopy on a two-day turnaround basis in accordance with NIOSH Method 7400. Select samples may be reanalyzed by a laboratory certified by the National Voluntary Laboratory Accreditation Program to perform transmission electron microscopy in accordance with NIOSH Method 7402. This will be conducted only after consultation with OSU-C or their representative.

10.2 Direct-Reading Dust Monitoring

Direct-reading measurements of airborne dust levels will be routinely monitored at the Site, using a laser photometer dust monitor (PDM). The PDM can detect airborne particulates from 0.1 to 10 μm in size in a concentration range from 0.001 to 100 milligrams per cubic meter of air. The PDM will be used to screen airborne dust levels at various areas in and around the Site, including at the perimeter of regulated areas or exclusion zones.

Monitoring locations may vary from day to day, based on site activities, prevailing winds, and other relevant site-specific conditions. PDM measurements will be made routinely throughout the work shift and during unusual conditions (e.g., visible dust generation).

Weather conditions, including ambient temperature, wind direction, and approximate wind velocity will be recorded to assist in evaluating the monitoring results.

10.3 Combustible Gas Monitoring

Previous site investigations demonstrate that methane concentrations in the subsurface may exceed the LEL. Employees working on site will take measurements with an oxygen sensor and combustible-gas indicator calibrated to methane when working near known or suspected sources of explosive gases or vapors (e.g., during drilling or excavation activities). The combustible gas indicator will be set to alarm at 10 percent of the LEL. If sustained measurements exceed 10 percent of the LEL, covered employees on site will:

1. Extinguish ignition sources and shut down powered equipment in the work area.
2. Move personnel at least 100 feet away from the work area.
3. Contact the SSO and the HSC.
4. At the instruction of the HSC and after waiting 15 minutes for explosive gases to dissipate, the SSO may use the combustible gas meter to approach the worksite to measure combustible gases in the work area. The SSO shall not enter (or allow any personnel to enter) any area where the combustible gas meter readings exceed the explosivity action level, nor shall the SSO approach if there is a potential for fire or explosion.
5. The SSO may authorize personnel to reenter the work area after the source of the combustible gases has been identified and controlled.

10.4 Other Air Monitoring

Based on site conditions, other air monitoring is not anticipated; however, air monitoring equipment will be available in case workers encounter conditions that indicate the presence of unexpected contamination, such as unusual odors, discolored media, or a visible sheen. If such conditions are discovered, workers will exit the area and contact the SSO and, as needed, the HSC. If necessary, the SSO or designee will use the air monitoring equipment to evaluate the conditions and determine if

additional controls and/or training are required. Action levels and follow-up actions are provided in Appendix C.

As needed, a water truck or similar controls for minimizing dust generation may be used on the Site. If controls do not prevent significant visible dust generation, the contractor will take measurements with a real-time dust monitor and compare results to the action levels provided in Appendix C.

Air monitoring, if conducted, must be performed by individuals familiar with the calibration, use, and care of the required instruments. Measurements shall be documented, and the records should include the following information:

- The name of the person conducting the measurements
- The identity of workers, if any, who have exposure indicated by the measurement result
- Information about the instrument (e.g., type, make, model, serial number)
- The location where the measurement was taken
- The measurement date and start/stop time
- Conditions represented by the measurement, including applicable activities, work practices, weather conditions, site conditions, and controls in place
- Measurement results
- Other relevant observations or notes

10.5 Air Monitoring Action Levels

If air monitoring is conducted, the results will be compared to the action levels provided in Appendix C. The air monitoring action levels are established to comply with OR-OSHA Permissible Exposure Limits, American Conference of Governmental Industrial Hygienists threshold limit values, and NIOSH recommendations for the chemicals that may be encountered on the Site. The action levels are also adjusted for the relative response of common PID instruments to COPCs.

10.6 Instrument Calibrations

Instruments shall be calibrated consistent with manufacturers' recommendations. Calibrations shall be coordinated by the SSO. Calibration and monitoring records shall be maintained by the SSO and made available to OSU-C.

11 SITE CONTROL MEASURES

Access to the Site will be controlled as part of site preparation. Control measures may include fencing, gates, and signs limiting access to everyone except authorized personnel.

Asbestos abatement will be conducted inside regulated areas established by the abatement contractor. Oversight personnel shall not be provided access to the regulated area unless abatement activities have been halted and the observer has been cleared for entry by the asbestos supervisor.

12 EMERGENCY RESPONSE / SPILL CONTAINMENT/CONFINED SPACE

Employees on site will follow the emergency response, spill response, and confined-space procedures described in each contractor's safety plan. Incidents will be documented on the incident report form included with Appendix D.

13 PRE-ENTRY BRIEFING

Covered employees on site will conduct pre-entry briefings (e.g., tailgate meetings) before starting work on the Site and/or as the scope of work changes throughout the project to ensure that employees are familiar with, and are following, this HASP. Attendance and discussion topics will be documented on sign-in sheets, which will be maintained by the SSO.

14 PERIODIC EVALUATION

The MFA and contractor project managers or their designee will evaluate the effectiveness of the HASPs they are operating under. As part of the evaluation, each project manager or designee will track ongoing health and safety feedback from field personnel working on the project. This feedback will be reviewed and incorporated into updates of this HASP. This HASP will be reviewed and updated at least annually to ensure that it reflects the known hazards, conditions, and requirements associated with the Site. MFA and the contractors will maintain periodic evaluation records and will track HASP revisions.

15 SAFE WORK PRACTICES

The following safe work practices are provided to supplement the other information included with this HASP.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in areas with potentially contaminated materials.
2. Field personnel will, whenever practicable, remain upwind of soil-disturbing activities, open excavations, and other site-disturbing activities.
3. Subsurface work shall not be performed at any location until the area has been confirmed by a utility-locator firm to be free of underground utilities or other obstructions.

16 ACKNOWLEDGMENT

OSU-C and MFA cannot guarantee the health or safety of any person entering the Site. Because of the potentially hazardous nature of visits to active sites, it is not possible to discover, evaluate, and provide protection against all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein and the Contractors' HASPs will reduce, but not eliminate, the potential for injury and illness at the Site. The health and safety guidelines in this plan were prepared specifically for the Site and should not be used on any other site without prior evaluation by trained health and safety personnel.

Personnel who will work at the Site are to read, understand, and agree to comply with the specific practices and guidelines described in this HASP and the Contractors' HASPs, and attachments regarding field safety and health hazards.

I have read and I understand this HASP and all attachments, and agree to comply with the requirements described herein:

Name	Title	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

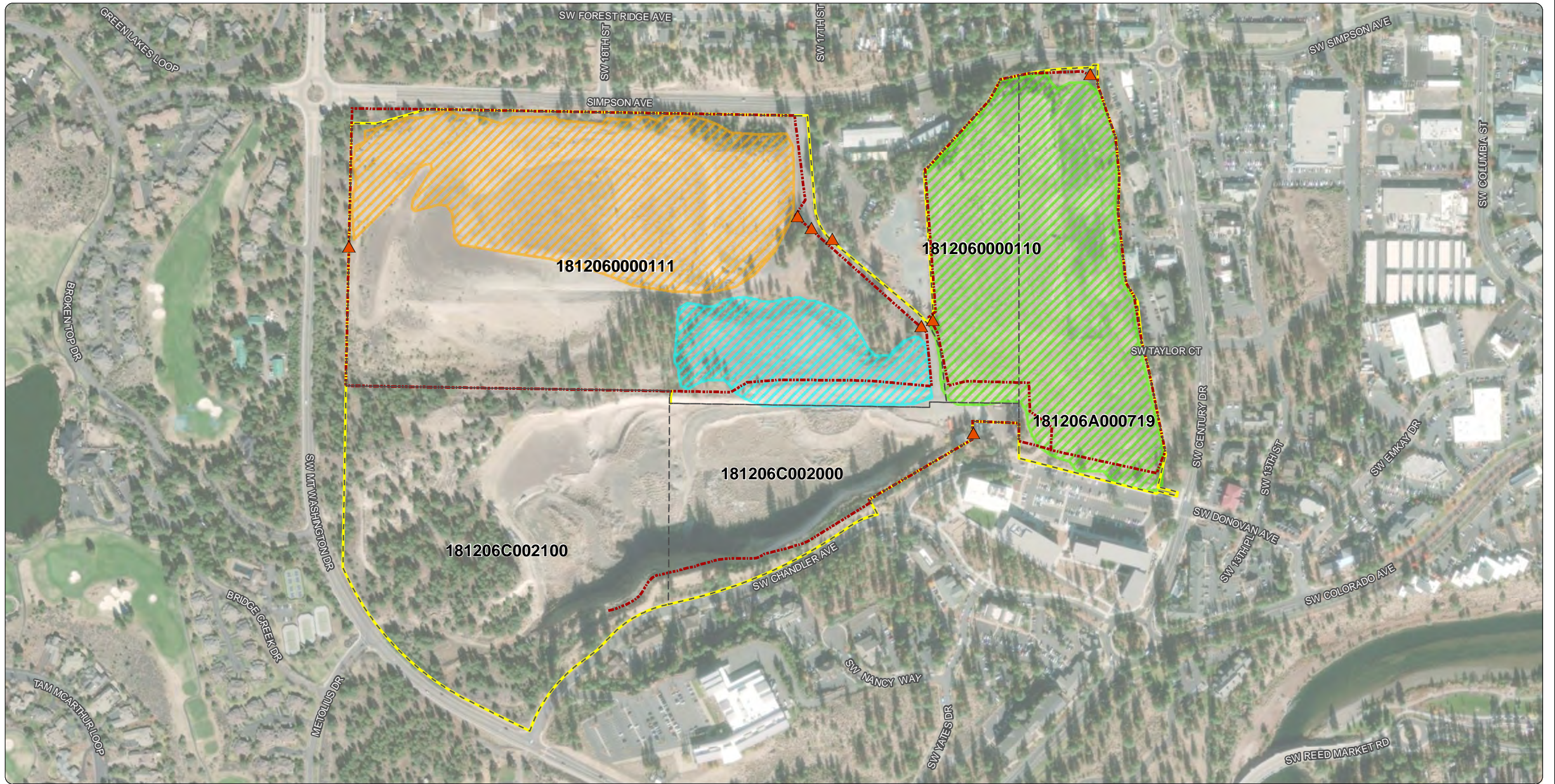
Name

Title

Date

FIGURES





Oregon State University Cascades Campus, Bend, Oregon
 Source: US Geological Survey (1986) 7.5-minute topographic
 quadrangle: Bend Section 6, Township 18 South, Range 12 East

Note:
 The tax lot boundaries as shown are based on data obtained from
 Deschutes County and are current as of 6/21/2017. The
 property boundary is based on survey data provided by
 Sun Country Engineering & Surveying on 04/06/2018.



This product is for informational purposes and may not have been prepared for, or be suitable
 for legal, engineering, or surveying purposes. Users of this information should review or
 consult the primary data and information sources to ascertain the usability of the information.

Landfill Cell

-  Cell 1
-  Cell 2
-  Cell 3

Legend





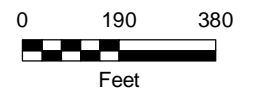
-  Gate (approximate)
-  Fence (approximate)
-  Site Boundary (approximate)
-  Taxlot

Figure 2
Site Overview

Oregon State University Cascades Campus
 Bend, Oregon



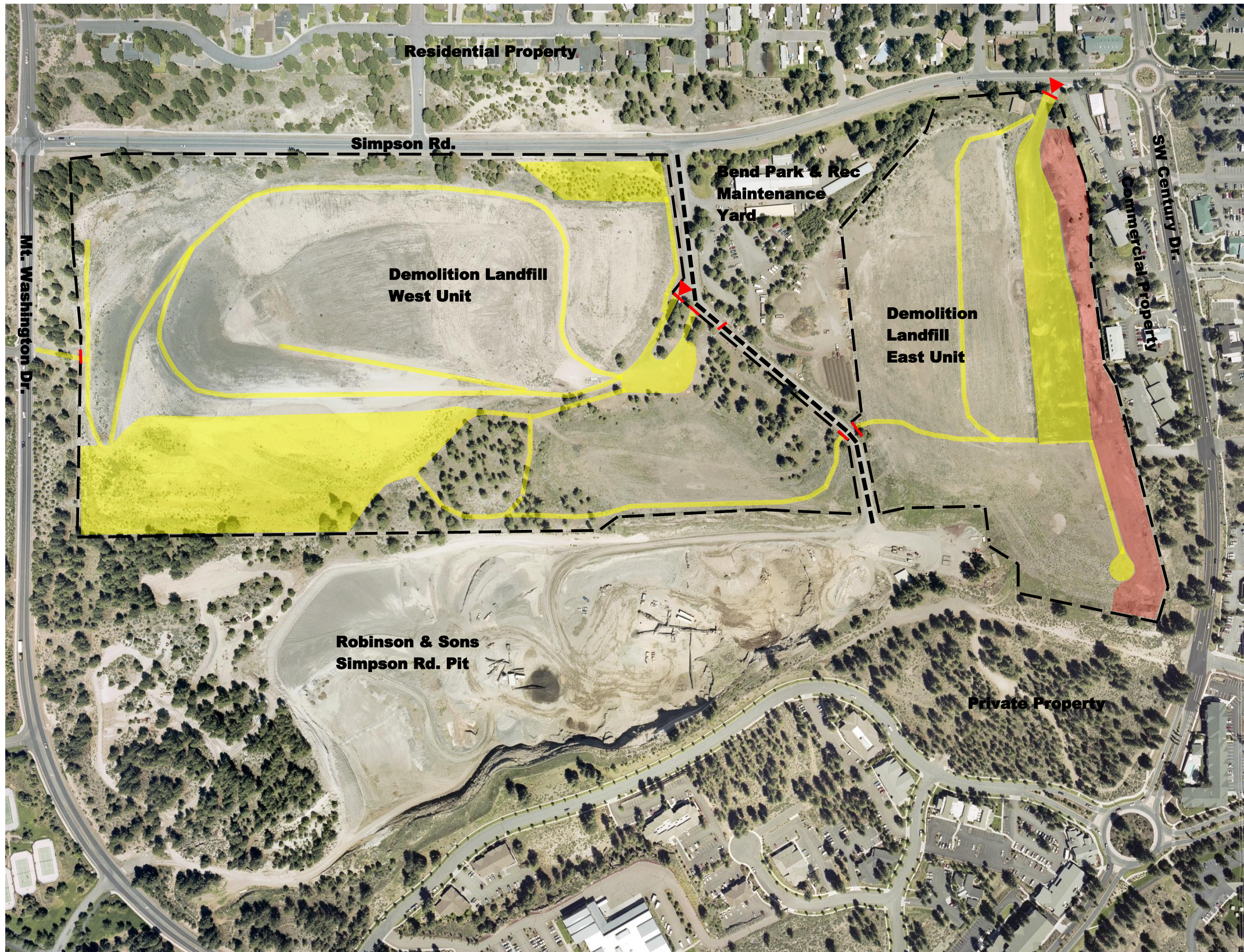



FIGURE 3.
Bend Demolition Landfill
Site Access Plan



LEGEND

 **High Hazard Area**
 Area subject to sudden surface failure, sinkhole formation, settlement cracking. Foot and vehicle travel not advised

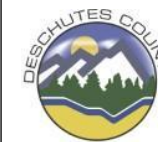
 **Safe Vehicle Travel Roads & Areas**
 NOTE: While these roads and areas are identified for safe vehicle travel, caution must be exercised at all times when on the Demolition Landfill site.

 **Paved Road**

 **Fence**

 **Gate**

 **BFD Padlock**



Deschutes County Dept. of Solid Waste
 61050 SE 27th Street
 Bend, Oregon 97702
 (541) 317-3163
www.deschutes.org/Solid-Waste.aspx

APPENDIX A

JOB HAZARD ANALYSES



Job Hazard Analysis (JHA)

Task/Operation: Work Near Traffic		
Project Number: 1290.01.04	Location/Site where Task/Operation Performed: Former Bend Demolition Landfill	
Date Prepared: 9/21/2018	Employee Preparing this JHA: Bill Beadie, CIH	
Date Reviewed: TBD	Employee Reviewing and Certifying this JHA: TBD	
Job/Task Description		
Employees will conduct oversight during remedial design and remedial action work on the Site. This will require occasionally working vehicle traffic areas on the Site.		
Physical Hazards		
Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Bodily injury	Vehicles moving on or around site.	Wear a reflective safety vest for enhanced visibility. Use cones and/or barriers to designate traffic patterns.
Eye injury	Debris (e.g., soil) contacting eyes due to vehicle movement.	Wear eye protection with side shields.
Head injury	Vehicles moving on or around site.	Wear a hard hat.
Foot injury	Vehicles moving on or around site.	Wear boots with safety-toes.
Hearing loss	Noise generated by vehicles moving on or around site.	Wear hearing protection such as ear plugs or ear muffs.
Biological and Chemical Hazards		
Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
None	None specific to this JHA. Chemical hazards related to the Site are described in the Chemical Hazards Summary Table.	None
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified.		
General Safe-Work Practices and Guidance: Personnel will stay upwind and out of heavy traffic areas, if feasible. Cones, signage, barrier tape, or other equivalent methods will be used to establish traffic-control patterns, if feasible. Personnel should monitor traffic hazards before entering locations with potential vehicle movement.		
Personal Protective Equipment: Hard hat, steel-toe work boots, high-visibility safety vest or outer garment, safety glasses with side shields, nitrile gloves, and hearing protection, i.e., ear plugs or ear muffs.		

Job Hazard Analysis (JHA)

Task/Operation: Working around Excavations		
Project Number: 1290.01.04	Location/Site where Task/Operation Performed: Former Bend Demolition Landfill	
Date Prepared: 9/21/2018	Employee Preparing this JHA: Bill Beadie, CIH	
Date Reviewed: TBD	Employee Reviewing and Certifying this JHA: TBD	
Job/Task Description		
Employees will conduct oversight during remedial design and remedial action work on the Site. This will require occasionally working near excavations.		
Physical Hazards		
Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Bodily harm or death	Possible to fall into open excavation from heights.	Stay a safe distance from excavation area. Signs, cones, barrier tape, or other equivalent methods will be used to mark open excavations.
Eye injury	Construction debris (e.g., soil) coming into contact with eyes.	Wear eye protection with side shields.
Head injury	Possible to fall into open excavation from heights.	Stay a safe distance from excavation area. Signs, cones, barrier tape, or other equivalent methods will be used to mark open excavations.
Biological and Chemical Hazards		
Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Chemical	None specific to this JHA, unless contact made with contaminated materials.	If necessary, see Chemical Hazards Summary Table for applicable chemical hazards.
Biological	No unique source of biological hazards warranting specific controls.	None
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified.		
General Safe-Work Practices and Guidance: MFA personnel will stay out of excavations. If heavy equipment is being operated, the JHA for working around heavy equipment will be referenced. Signs, cones, barrier tape, or other equivalent methods will be used to mark open excavations, if feasible. Work that must be conducted near excavations will be conducted using a buddy system. Do not place loose material within 2 feet of the edge of an excavation unless there's a restraint system to prevent the material from falling into the excavation.		
Personal Protective Equipment: Hard hat, work boots, high-visibility vest, safety glasses with side shields, hearing protection—i.e., ear plugs or ear muffs—and nitrile gloves if handling potentially impacted media.		

Job Hazard Analysis (JHA)

Task/Operation: Soil Sampling		
Project Number: 1290.01.04	Location/Site where Task/Operation Performed: Former Bend Demolition Landfill	
Date Prepared: 9/21/2018	Employee Preparing this JHA: Bill Beadie, CIH	
Date Reviewed: TBD	Employee Reviewing and Certifying this JHA: TBD	
Job/Task Description		
Employees may conduct work such as collecting soil samples from surface soils or from borings, excavations, and other locations (e.g., soil stockpiles).		
Physical Hazards		
Physical Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Eye injury	Construction debris and splashes (e.g., soil, water) coming into contact with eyes.	Wear eye protection with side shields.
Injuries caused by improper lifting	Equipment, core sampler, sample coolers.	Use proper bending/lifting techniques by bending and lifting with legs and not with back. Do not twist at the waist when turning the core sampler. Use buddy system for heavy objects.
Accidents with equipment/tools	Sample-collection equipment/tools.	Verify you have the appropriate equipment/tools for tasks. Use equipment/tools only as intended by the manufacturer. Stow all tools in vehicle properly; use appropriate cases and bags. Secure equipment in vehicle with netting or straps—do not leave loose.
Falls/cave-ins	Open excavation.	Stay a safe distance from excavation area. Signs, cones, barrier tape, or other equivalent methods will be used to mark open excavations.
Biological/Chemical Hazards		
Biological/Chemical Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Biological—Animals	Stinging insects, spiders, and snakes.	Use bug repellent and sunscreen as necessary. Use snake chaps or shin guards when grass is above the ankle. Use a bar to clear out objects and/or vegetation, as well as spiders and/or snakes (do not use your hands or feet).

Task/Operation: Soil Sampling		
Chemical	Personnel performing tasks may come into direct contact with contaminated materials in the soil.	If necessary, see Chemical Hazards Summary Table for applicable chemical hazards. Wear the appropriate PPE, including nitrile gloves, during sampling to prevent direct contact with contaminants in soil. If appropriate, use of a half-face respirator may be necessary.
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified.		
General Safe-Work Practices and Guidance:		
<ul style="list-style-type: none"> • Triple-rinse sampling equipment using distilled or deionized water andalconox for first rinse and distilled water for second and third rinses. • Always clean materials between locations at the Site to avoid cross-contamination. • Do not bring equipment back to the office without proper decontamination. 		
Personal Protective Equipment: Hard hat, work boots, high-visibility vest, safety glasses with side shields, nitrile gloves, hearing protection if sampling using a drill-rig, and respiratory protection if necessary.		

Job Hazard Analysis (JHA)

Task/Operation: Working Near Heavy Equipment		
Project Number: 1290.01.04	Location/Site where Task/Operation Performed: Former Bend Demolition Landfill	
Date Prepared: 9/21/2018	Employee Preparing this JHA: Bill Beadie, CIH	
Date Reviewed: TBD	Employee Reviewing and Certifying this JHA: TBD	
Job/Task Description		
Employees will conduct oversight during remedial design and remedial action work on the Site. This will require occasionally working near excavators, drill rigs, dump trucks, and other heavy equipment.		
Physical Hazards		
Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Bodily harm or death	Heavy equipment operating on site creates a potential for site workers to be struck, crushed, or impacted by moving parts.	Stay a safe distance from equipment and maintain eye contact with equipment operators. Wear a safety vest for enhanced visibility.
Eye injury	Construction debris (e.g., soil) coming into contact with eyes.	Wear eye protection with side shields.
Head injury	Heavy equipment and/or tools impacting the head.	Wear a hard hat.
Penetration of feet	Sharp objects that could be stepped on; large objects falling on feet.	Wear boots with safety toes.
Hearing loss	Noise generated by heavy equipment/machinery.	Wear hearing protection such as ear plugs or ear muffs.
Injury to bystanders	Pedestrians in the locality of work.	Use cones and caution tape to cordon off the immediate work area. Watch for and escort pedestrians away from work area. Pause work if necessary.
Hand injury	Pinch points.	Wear protective gloves whenever possible. Avoid placing hands near operating equipment.
Biological and Chemical Hazards		
Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
None	None specific to this JHA. Chemical hazards related to the Site are described in the Chemical Hazards Summary Table.	None
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified.		

Task/Operation: Working Near Heavy Equipment

General Safe-Work Practices and Guidance: Personnel should stay upwind and out of the impact area of the heavy equipment, if feasible. Cones, barrier tape, or other equivalent methods will be used to establish the impact area, if feasible. Work conducted in the impact area must be coordinated with the equipment operator using pre-established methods of communication, such as direct eye contact, hand signals, and/or verbal communication.

Personal Protective Equipment: Hard hat, work boots with safety toes, high-visibility safety vest or outer garment, safety glasses with side shields, nitrile gloves, and hearing protection, i.e., ear plugs or ear muffs.

APPENDIX B

CHEMICALS OF POTENTIAL CONCERN



**Table
Chemical Hazards
Bend Demolition Landfill Reclamation Site
Bend, Oregon**

	OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH	LEL (%)	IP (eV)	Other Hazard
TPH						
Gasoline-Range Organics (TPH-G)	NA	300 ppm	NA	1.4	NA	C, E, F, P
Diesel-Range Organics (TPH-D)	NA	100 mg/m ³	NA	NA	NA	E, F, P
Residual-Range Organics (TPH-O)	NA	NA	NA	NA	NA	E, F, P
VOCs						
1,1,1,2-Tetrachloroethane	NE	NE	NE	NA	NA	P
1,1,1-Trichloroethane	350 ppm	350 ppm	700 ppm	7.5	11.00	P
1,1,2,2-Tetrachloroethane	5 ppm	1 ppm	100 ppm	NA	11.10	P
1,1,2-Trichloroethane	10 ppm	10 ppm	100 ppm	6	11.00	--
1,1,2-Trichlorotrifluoroethane	1000 ppm	1000 ppm	2000 ppm	NA	11.99	--
1,1-Dichloroethane	100 ppm	100 ppm	3000 ppm	5.4	11.06	F
1,1-Dichloroethene	NE	5 ppm	NE	6.5	10.00	F
1,1-Dichloropropene	NE	NE	NE	NE	NE	--
1,2,3-Trichlorobenzene	NE	NE	NE	NE	NE	P
1,2,3-Trichloropropane	50 ppm	0.005 ppm	100 ppm	3.2	NE	P
1,2,3-Trimethylbenzene	NE	NE	NE	0.8	8.48	F
1,2,4-Trichlorobenzene	NE	NE	NE	2.5	NA	P
1,2,4-Trimethylbenzene	NE	NE	NE	0.9	8.27	--
1,2-Dibromo-3-chloropropane	0.001 ppm	NE	NE	NA	NA	F, P
1,2-Dibromoethane	20 ppm	NE	100 ppm	NA	9.45	--
1,2-Dichlorobenzene	50 ppm (Ce)	25 ppm	200 ppm	NA	NA	--
1,2-Dichloroethane	50 ppm	NE	50 ppm	6.2	11.05	--
1,2-Dichloropropane	75 ppm	NE	400 ppm	3.4	10.87	F
1,3,5-Trimethylbenzene	NE	NE	NE	NA	8.39	--
1,3-Dichlorobenzene	NE	NE	NE	NE	NE	P
1,3-Dichloropropane	NE	NE	NE	NE	NE	F
1,4-Dichlorobenzene	75 ppm	10 ppm	150 ppm	2.5	8.98	P
1,4-Dioxane	100 ppm	20 ppm	500 ppm	2	9.13	F, C, P, R
2,2-Dichloropropane	NE	NE	NE	NE	NE	--
2-Butanone (MEK)	200 ppm	200 ppm	3000 ppm	1.4	9.54	F
2-Chlorotoluene	NE	50 ppm	NE	NA	8.83	F
4-Chlorotoluene	NE	NE	NE	NE	NE	--
4-Methyl-2-pentanone (MIBK)	100 ppm	20 ppm	500 ppm	1.2	9.30	F
Acetone	1000 ppm	250 ppm	2500 ppm	2.5	9.69	F
Acrylonitrile	2 ppm	2 ppm	85 ppm	3	10.91	F
Benzene	1 ppm	0.5 ppm	500 ppm	1.2	9.24	F, C, P, R
Bromobenzene	NE	NE	NE	NE	NE	F
Bromodichloromethane	NE	NE	NE	NE	NE	P
Bromoform	0.5 ppm	0.5 ppm	850 ppm	NA	10.48	P
Bromomethane	20 ppm (Ce)	1 ppm	250 ppm	10	10.54	P
Carbon tetrachloride	10 ppm	5 ppm	200 ppm	NA	11.47	P
Chlorobenzene	75 ppm	10 ppm	1000 ppm	1.3	9.07	F
Chlorodibromomethane	NE	NE	NE	NE	NE	P
Chloroethane	1000 ppm	100 ppm	3800 ppm	3.8	10.97	F
Chloroform	50 ppm (Ce)	10 ppm	500 ppm	NA	11.42	SC, P
Chloromethane	100 ppm	50 ppm	2000 ppm	8.1	11.28	F
cis-1,2-Dichloroethene	200 ppm	NE	1000 ppm	5.6	9.32	P
cis-1,3-Dichloropropene	NE	NE	NE	NE	NE	F
Dibromomethane	NE	NE	NE	NE	NE	P
Dichlorodifluoromethane	1000 ppm	1000 ppm	15000 ppm	NA	11.75	--
Diisopropyl ether	500	250 ppm	1400 ppm	1.4	9.20	F

Table
Chemical Hazards
Bend Demolition Landfill Reclamation Site
Bend, Oregon

	OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH	LEL (%)	IP (eV)	Other Hazard
Ethylbenzene	100 ppm	20 ppm	800 ppm	0.8	8.76	F, P
Hexachloro-1,3-butadiene	NE	0.02 ppm	NE	NA	NA	P
Hexane	500 ppm	50 ppm	1100 ppm	10	10.18	F
Isopropyl benzene	50 ppm	50 ppm	900 ppm	0.9	8.75	F
Methyl tert-butyl ether	NE	50 ppm	NE	NE	NE	F
Methylene Chloride	25 ppm	50 ppm	2300 ppm	13	11.32	SC
Naphthalene	10 ppm	10 ppm	250 ppm	0.9	8.12	F
n-Butylbenzene	NE	NE	NE	NE	NE	F
n-Propylbenzene	NE	NE	NE	NE	NE	F
p-Isopropyltoluene	NE	NE	NE	NE	NE	F
sec-Butylbenzene	NE	NE	NE	NE	NE	--
Styrene	100 ppm	20 ppm	700 ppm	0.9	8.40	F
tert-Butylbenzene	NE	NE	NE	NE	NE	--
Tetrachloroethene	100 ppm	25 ppm	150 ppm	NA	9.32	C
Toluene	200 ppm	20 ppm	500 ppm	1.1	8.82	E, F, P, R
trans-1,2-Dichloroethene	NE	200 ppm	NE	NE	NE	F
trans-1,3-Dichloropropene	NE	NE	NE	NE	NE	F
Trichloroethene	100 ppm	10 ppm	1000 ppm	8	9.45	P
Trichloroethylene	100 ppm	10 ppm	1000 ppm	NA	9.45	C, P
Trichlorofluoromethane	1000 ppm	NE	2000 ppm	NA	11.77	--
Vinyl chloride	1 ppm	1 ppm	NA	3.6	9.99	C, F
Xylenes	100 ppm	100 ppm	900 ppm	0.9	8.44-8.56	F, P
SVOCs						
1,2,4-Trichlorobenzene	NE	NE	NE	2.5	NA	P
1-Methylnaphthalene	NE	0.5 ppm	NE	NA	NA	SC, E, F, P
2,4,6-Trichlorophenol	NE	NE	NE	NE	NE	P
2,4-Dichlorophenol	NE	NE	NE	NE	NE	P
2,4-Dimethylphenol	NE	NE	NE	NE	NE	P
2,4-Dinitrophenol	NE	NE	NE	NE	NE	F, D
2,4-Dinitrotoluene	NE	NE	NE	NE	NE	E, P
2,6-Dinitrotoluene	NE	NE	NE	NE	NE	E, P
2-Chloronaphthalene	NE	NE	NE	NE	NE	--
2-Chlorophenol	NE	NE	NE	NE	NE	P
2-Methylnaphthalene	NE	0.5 ppm	NE	NA	NA	SC, E, F, P
2-Nitrophenol	NE	NE	NE	NE	NE	P
3,3-Dichlorobenzidine	NE	NE	NE	NA	NA	--
4,6-Dinitro-2-methylphenol	0.2 mg/m ³	0.2 mg/m ³	5 mg/m ³	NA	NA	P
4-Bromophenyl-phenyl ether	NE	NE	NE	NE	NE	--
4-Chloro-3-methylphenol	NE	NE	NE	NE	NE	P
4-Chlorophenyl-phenyl ether	NE	NE	NE	NE	NE	--
4-Nitrophenol	NE	NE	NE	NE	NE	P
Acenaphthene	NE	NE	NE	0.6	NA	F, P
Acenaphthylene	NE	NE	NE	NA	NA	F, P
Anthracene	0.2 mg/m ³	0.2 mg/m ³	80 mg/m ³	0.6	NA	F, P
Benzidine	NE	NE	NE	NA	NA	P
Benzo(a)anthracene	NE	NE	NE	NA	NA	C, P
Benzo(a)pyrene	0.2 mg/m ³	0.2 mg/m ³	80 mg/m ³	NA	NA	C, P
Benzo(b)fluoranthene	NE	NE	NE	NA	NA	C, P
Benzo(g,h,i)perylene	NE	NE	NE	NA	NA	P
Benzo(k)fluoranthene	NE	NE	NE	NA	NA	C, P
Benzyl butyl phthalate	NE	NE	NE	NE	NE	--
Bis(2-chloroethoxy)methane	NE	NE	NE	NE	NE	P

**Table
Chemical Hazards
Bend Demolition Landfill Reclamation Site
Bend, Oregon**

	OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH	LEL (%)	IP (eV)	Other Hazard
Bis(2-chloroethyl)ether	15 ppm (Ce)	5 ppm	100 ppm	2.7	NA	F, P
Bis(2-chloroisopropyl)ether	NE	NE	NE	NE	NE	P
Bis(2-ethylhexyl)phthalate	5 mg/m ³	5 mg/m ³	5,000 mg/m ³	2	NA	SC, P, F
Chrysene	0.2 mg/m ³	0.2 mg/m ³	80 mg/m ³	NA	7.59	C, P
Dibenz(a,h)anthracene	NE	NE	NE	NA	NA	C, P
Diethyl phthalate	NE	5 mg/m ³	NA	0.7	NA	--
Dimethyl phthalate	5 mg/m ³	5 mg/m ³	2000 mg/m ³	0.9	9.64	--
Di-n-butyl phthalate	5 mg/m ³	5 mg/m ³	4000 mg/m ³	0.5	NA	--
Di-n-octyl phthalate	NE	NE	NE	NE	NE	--
Fluoranthene	NE	NE	NE	NA	NA	SC, P
Fluorene	NE	NE	NE	NA	NA	--
Hexachloro-1,3-butadiene	NE	0.02 ppm	NA	NA	NA	P
Hexachlorobenzene	NE	0.002 mg/m ³	NE	NE	NE	P
Hexachlorocyclopentadiene	0.1 ppm	0.01 ppm	NA	NA	NA	P
Hexachloroethane	1 ppm	1 ppm	300 ppm	NA	11.22	--
Indeno(1,2,3-cd)pyrene	NE	NE	NE	NA	NA	SC
Isophorone	25 ppm	NE	200 ppm	0.8	9.07	F
Naphthalene	10 ppm	10 ppm	250 ppm	0.9	8.12	SC, E, F, P
Nitrobenzene	1 ppm	1 ppm	200 ppm	1.8	9.92	P
N-Nitrosodimethylamine	NE	NE	NA	NA	8.69	--
N-Nitrosodi-n-propylamine	NE	NE	NE	NE	NE	--
N-Nitrosodiphenylamine	NE	NE	NE	NE	NE	--
Pentachlorophenol	0.5 mg/m ³	0.5 mg/m ³	2.5 mg/m ³	NA	NA	C, P
Phenanthrene	0.2 mg/m ³	0.2 mg/m ³	80 mg/m ³	NA	NA	--
Phenol	5 ppm	5 ppm	250 ppm	1.8	8.50	P
Pyrene	0.2 mg/m ³	0.2 mg/m ³	80 mg/m ³	NA	NA	P
Metals						
Antimony	0.5 mg/m ³	0.5 mg/m ³	50 mg/m ³	NA	NA	--
Arsenic	0.01 mg/m ³	0.01 mg/m ³	5 mg/m ³	NA	NA	C, P
Barium	0.5 mg/m ³	0.5 mg/m ³	NE	NA	NA	R, P
Beryllium	0.002 mg/m ³	0.00005 mg/m ³	4 mg/m ³	NA	NA	C
Cadmium	0.0050 mg/m ³	0.002 mg/m ³	9 mg/m ³	NA	NA	C
Chromium	1 mg/m ³	0.5 mg/m ³	250 mg/m ³	NA	NA	R, P
Chromium (VI)	0.001 mg/m ³	0.0002 mg/m ³	15 mg/m ³	NA	NA	R, C
Copper	1 mg/m ³	0.2 mg/m ³	100 mg/m ³	NA	NA	--
Lead	0.05 mg/m ³	0.05 mg/m ³	100 mg/m ³	NA	NA	C, P
Manganese	5 mg/m ³ (Ce)	0.02 mg/m ³	500 mg/m ³	NA	NA	NA
Mercury	0.1 mg/m ³ (Ce)	0.01 mg/m ³	2 mg/m ³	NA	NA	R, P
Nickel	0.1 mg/m ³	0.1 mg/m ³	10 mg/m ³	NA	NA	C
Selenium	0.2 mg/m ³	0.2 mg/m ³	1 mg/m ³	NA	NA	R, P
Silver	0.01 mg/m ³	0.1 mg/m ³	10 mg/m ³	NA	NA	R, P
Zinc	5 mg/m ³	2 mg/m ³	500 mg/m ³	NA	NA	--
Additional						
Asbestos	0.1 fiber / cc	0.1 fiber / cc	NE	NA	NA	C
Chromic Acid	0.1 mg/m ³	NE	15 mg/m ³	NA	NA	R
Cyanide	5 mg/m ³	NE	25 mg/m ³	NA	NA	--
Hydrogen Sulfide	20 ppm (Ce)	1 ppm	100 ppm	0.9	10.46	E, F, P
Methane	NE	NE	NE	5	None	F, P
Polychlorinated biphenyls	0.5 mg/m ³	1 mg/m ³	5 mg/m ³	NA	NA	C

Table
Chemical Hazards
Bend Demolition Landfill Reclamation Site
Bend, Oregon

NOTES:

ACGIH = American Conference of Governmental Industrial Hygienists.®

C = carcinogen.

Ce = ceiling concentration.

E = explosive.

F = flammable.

IDLH = immediately dangerous to life and health.

IP (eV) = ionization potential.

LEL = lower explosive limit.

mg/m³ = milligrams per cubic meter.

SVOCs

NE = not established.

NIOSH = National Institute for Occupational Safety and Health.

OSHA = Occupational Safety and Health Administration.

P = poison.

PAH = polycyclic aromatic hydrocarbon.

PEL = permissible exposure level.

ppm = parts per million.

R = reactive.

SC = suspected carcinogen.

TLV = threshold limit value.

TPH = total petroleum hydrocarbons.

TWA = time-weighted average.

VOC = volatile organic compound.

APPENDIX C

AIR MONITORING ACTION LEVELS



Air Monitoring Action Levels

Instrument	Action Level	Initial Action	Follow-up Action
PID ^a	Detection of 1 ppm (above ambient) or greater in breathing zone sustained for two minutes.	If gasoline-like odors are detected or if there is potential exposure to benzene, then conduct Dräger tube test for benzene. If 1 ppm benzene detected with Dräger tube, upgrade to Level C.	Ventilate area, always work upwind.
Dräger tube test (benzene)	Over 1 ppm benzene sustained in breathing zone.	After upgrade to Level C, continue to monitor breathing zone with Dräger tube. If 10 ppm or greater benzene, leave exclusion zone. Return only if levels decrease to below 10 ppm.	Ventilate area, always work upwind.
PID ^a	Detection of 10 ppm (above ambient) in breathing zone and determined not to be benzene.	Upgrade to Level C and continue to monitor breathing zone with Dräger tube. If 50 ppm, leave exclusion zone. Return only if levels decrease to below 50 ppm.	Ventilate area, always work upwind.
CGI ^b	At or above 10% of the LEL.	Stop activities, turn off all potential sources of ignition. Evacuate.	Determine source of flammable vapors.
Dust meter	1.5 mg/m ³ of air.	Dust suppression, e.g., misting.	Adjust operations.
Visual monitoring	Persistent visible dust generation.	Dust suppression, e.g., misting. Measure concentrations with the dust meter.	Adjust operations.
Asbestos	> 0.01 f/cc as measured by PCM at the regulated area boundary.	Reinforce compliance with approved work methods and engineering controls.	Adjust operations. Consider additional dust control.
	> 0.05 f/cc as measured by PCM at the regulated area boundary.	Reinforce compliance with approved work methods and engineering controls.	Adjust operations. Consider additional dust control. Reanalyze sample using TEM.
	>0.1 f/cc as measured by PCM at the regulated area boundary.	Stop work activities until improved controls are implemented.	Reanalyze sample using TEM.

NOTES:

CGI = combustible-gas indicator.

f/cc = fibers per cubic centimeter

LEL = lower explosive limit.

mg/m³ = milligrams per cubic meter.

PCM = phase contrast microscopy.

PID = photoionization detector.

ppm = parts per million.

TEM = transmission electron microscopy.

^aSome PIDs do not work in high (e.g., greater than 90%) humidity or rainy weather. Under these atmospheric conditions, only PIDs certified for use in high humidity should be used.

^bSee Section 10.2 for combustible gas monitoring procedures.

APPENDIX D

INCIDENT REPORT FORM





MAUL FOSTER & ALONGI, INC. HEALTH & SAFETY INCIDENT REPORT

**THIS REPORT MUST BE COMPLETED IN FULL AND SUBMITTED
WITHIN 24 HOURS TO THE MFA HEALTH AND SAFETY COORDINATOR**

Project Name: _____

Project Number: _____

Date of Incident: _____

Time of Incident: _____

Location: _____

Type of Incident (Check all applicable items)

- | | | |
|--------------------------------------------------|-----------------------------------------------------|---------------------------------------------|
| <input type="checkbox"/> Illness | <input type="checkbox"/> Health & Safety Infraction | <input type="checkbox"/> Vehicular Accident |
| <input type="checkbox"/> Injury | <input type="checkbox"/> Fire, Explosion, Flash | <input type="checkbox"/> Electric Shock |
| <input type="checkbox"/> Property Damage | <input type="checkbox"/> Unexpected Exposure | <input type="checkbox"/> Near Miss |
| <input type="checkbox"/> Other (describe): _____ | | |

DESCRIPTION OF INCIDENT

(Describe what happened and the possible cause of the incident. Identify individual(s) involved, witnesses, and their affiliations. Describe emergency or corrective action taken. Attach additional sheets, drawings, or photographs as needed.)

INCIDENT REPORTER

_____	_____	_____
PRINT NAME	SIGNATURE	DATE

Site Safety Officer must deliver this report to the Health & Safety Coordinator within 24 hours. Reviewed by:

_____	_____	_____
PRINT NAME	SIGNATURE	DATE
MFA Health & Safety Coordinator	MFA Health & Safety Coordinator	