GeoDesign Inc

CONTAMINATED MEDIA MANAGEMENT PLAN

2721 - 2731 SE Belmont Street
Portland, Oregon
ECSI No. 5731

For
Oregon Department of Environmental Quality
Northwest Region
and Green Light Development

May 13, 2016
GeoDesign Project: Greenlight-3-02

GeoDesign Inc

May 13, 2016

Oregon Department of Environmental Quality
Northwest Region
700 NE Multnomah Street, Suite 600
Portland, OR 97232

Attention: Mr. Kevin Dana

Contaminated Media Management Plan
2721 - 2731 SE Belmont Street
Portland, Oregon
DEQ ECSI No. 5731
GeoDesign Project: GreenLight-3-02

GeoDesign is pleased to submit our CMMP for the former Washworld facility located at 2721 - 2731 SE Belmont in Portland, Oregon. This CMMP addresses mass excavation the during site redevelopment activities as they pertain to subsurface soil and groundwater contamination. This document is intended to be used by the excavation contractor during mass excavation activities and should be used in conjunction with the 1200C NPDES Permit and the Project Specifications pertaining to the handling, management, characterization, and disposal of HVOC (primarily PCE)-impacted soil and groundwater at the project site.

Sincerely,

GeoDesign, Inc.

Jason O'Donnell, R.G.
Principal Geologist

cc: Mr. Mark Desbrow, Green Light Development

KMC:ASB:JSO:kt
Attachments
One copy submitted
Document ID: GreenLight-3-02-051316-envr-CMMP.docx

TABLE OF CONTENTS **PAGE NO.**

1.0 INTRODUCTION

This CMMP has been prepared by GeoDesign, Inc. on behalf of Green Light Development for the former Washworld facility located at 2721 - 2731 SE Belmont Street in Portland, Oregon (project site). This CMMP is intended to assist the construction team in field identification and management of contaminated media (soil and groundwater) that could be encountered during site excavation work during site redevelopment. This CMMP includes field protocol for identification, response actions, communications, removal, temporary storage or stockpiling, transportation, and treatment and/or disposal of contaminated media. Decisions pertaining to the identification and management of contaminated media will be made by the project environmental representative (GeoDesign), Green Light Development (project owner), and DEQ.

The project site is shown relative to surrounding physical features on Figure 1. The project site layout is shown on Figure 2. Acronyms and abbreviations used herein are defined at the end of this document.

A site-specific HSP and directions to the Providence Portland Medical Center are presented in Appendix A. The attached HSP was created solely for use by GeoDesign employees. However, contractors may adopt the HSP with proper modifications, as needed, to address the type of work they will be completing at the project site.

2.0 PROJECT SITE DESCRIPTION

The project site includes Tax Lot 6900 of the northwest quarter of the northwest quarter of Section 1, Range 1 East, Township 1 South of the Willamette Meridian. The lot is approximately 11,000 square feet and is currently occupied by a vacant former dry-cleaning building and paved parking area. The project site is bound by SE Belmont Street to the south, across which are residential properties; SE 28th Avenue to the east, across which are residential properties; residential properties to north; and commercial and residential properties to the west.

3.0 PLANNED REDEVELOPMENT

It is our understanding that the proposed development could include a five-story building with slab-on-grade foundation. It is our understanding that soil will be mass balanced at the project site with the deepest excavations near street level and a fill area near the current structure. The horizontal limits of the excavation are expected to extend to the project site boundaries.

4.0 PROJECT SITE CHARACTERIZATION

The purpose of this section is to provide information pertaining to environmental conditions associated with the project site for use by the contractor.

4.1 BIBLIOGRAPHY

Information pertaining to environmental investigations of soil and groundwater and the remedial actions summarized in this section are based on several previous reports by others and recent

investigation activities completed by GeoDesign. Previous environmental reports reviewed during the preparation of this CMMP are summarized as follows:

- *Phase II Environmental Site Assessment for The Washworld Property; 2721-2731 S.E. Belmont Street; Portland, Oregon 97214,* prepared by EIS, dated February 22, 2005
- *Phase II Environmental Site Assessment (with addenda) for The Washworld Property; 2721-2731 S.E. Belmont Street; Portland, Oregon 97214,* prepared by EIS, dated February 5, 2010
- *Phase II Soil & Groundwater Environmental Site Assessment for The Washworld Property; 2721-2731 S.E. Belmont Street; Portland, Oregon 97214,* prepared by EIS, dated June 7, 2010
- *Phase II Environmental Site Assessment (Confirmation Indoor- Air Sampling) for The Washworld Property; 2721-2731 S.E. Belmont Street; Portland, Oregon 97214,* prepared by EIS, dated April 14, 2011
- *Request for Oregon DEQ "Contained-In" Determination for Remedial Excavation-Generated PerChloroEthylene (PCE)-Contaminated Soil & Related Materials Associated with the Commercial Property Located at 2721-2731 S.E. Belmont Street in Portland, Oregon,* letter prepared by Wohlers Environmental Services, Inc. (Wohlers), dated June 24, 2014
- *Submittal of Workplan in Support of Oregon DEQ Establishment of a "Contained-In" Concentration Associated with Disposal of PCE-Impacted Soil that Will be Generated During Installation of a Sub-Slab Vapor Extraction (VE) System at the Commercial Property Located at 2721-2731 S.E. Belmont Street in Portland, Oregon,* letter prepared by Wohlers, dated October 4, 2013
- *Phase II Environmental Site Assessment & Cleanup Report; Commercial Property; 2721-2731 S.E. Belmont Street; Portland, Oregon 97214,* prepared by Wohlers, dated February 25, 2015

Pertinent information relating to soil and groundwater conditions contained in these reports is summarized in the following sections.

4.2 PROJECT SITE DEVELOPMENT HISTORY

The current commercial building was reportedly constructed in the 1960s and operated as a drycleaners until 1999 when dry-cleaning activities ceased and all equipment was removed from the project site. Dry-cleaning activities resumed at the project site between 2005 and 2009.

4.3 SUBSURFACE CONDITIONS

4.3.1 Soil

Boring logs associated with subsurface environmental assessment activities completed in November 2012 indicate that near-surface soil consists of silt, silty sand, and/or clayey silt.

Environmental assessment activities completed at the project site between 2005 and 2013 indicated that HVOCs (primarily PCE) had been released to soil from historical dry-cleaning activities. Soil samples collected throughout the project site at depths up to 25 feet BGS contained PCE at varying concentrations. None of the detected concentrations exceeded DEQ RBCs for ingestion, contact, and inhalation for construction worker or excavation worker receptor scenarios. The results of a "Contained-In" determination completed in 2013 indicate project site soil may be suitable for disposal as non-hazardous waste at a RCRA Subtitle D Landfill (such as the Waste Management Hillsboro Landfill).

However, prior to excavation activities, GeoDesign will complete a project-specific "Contained-In" determination to represent soil that will require disposal during redevelopment activities. Soil samples will be collected to the depths of the anticipated excavation and submitted for chemical analysis of HVOCs. The resulting HVOC concentrations will be compared to the appropriate thresholds for disposal at a Subtitle D landfill.

4.3.2 Groundwater

Groundwater was encountered at depths between 15 and 27 feet BGS during previous environmental investigations completed at the project site.

Ten groundwater samples were collected from borings at the project site between 2010 and 2012. PCE was detected in groundwater at concentrations up to 4,000 µg/L, which is less than DEQ RBCs for groundwater in excavation for construction worker and excavation worker scenarios. Associated breakdown VOC constituents were also detected in several of the groundwater samples at concentrations less than DEQ RBCs for groundwater in excavation for construction worker and excavation worker scenarios.

5.0 DEQ CFSLs

There are currently no DEQ regulations requiring pre-transport testing of soil that is reasonably expected to be clean. However, DEQ has published an internal management directive, which includes CFSLs[1], to use as guidance when evaluating disposal options for soil with low levels of contamination. Soil that does not appear contaminated and contains contamination at levels less than the DEQ CFSLs can generally be re-used on site or disposed of off site without restrictions. Excavation spoils will not meet DEQ's definition of "clean fill" if field screening evidence of contamination is observed or other chemical constituents are found to be present though additional characterization during construction. For this project, contractors should assume that soil generated during construction will not qualify as clean fill, unless the results of soil testing indicate otherwise.

6.0 CONTAMINATED MEDIA MANAGEMENT PLAN

The goals of this CMMP are to (1) provide the excavation contractor with information on the preliminary spatial distribution of soil and groundwater contamination at the project site, (2) establish a decision structure to assist the earthwork contractor in the detection and management of contaminated soil and groundwater during excavation activities, and (3) prevent the exacerbation of environmental conditions.

6.1 IDENTIFICATION AND MANAGEMENT OF CONTAMINATED SOIL

HVOC-impacted soil generally does not exhibit staining or sheen, but a distinct solvent-type of odor is generally observed. Accordingly, the most reliable field screening technique for identifying HVOC-impacted soil is the use of a hand-held PID. Although not anticipated, this CMMP also describes the protocol for the identification of petroleum-related contamination as a precaution. The three primary physical indicators of petroleum-related contamination in soil

[1] DEQ's Internal Management Directive titled *Clean Fill Determinations*, dated July 23, 2014

include staining, sheens, and petroleum-like odor. During excavation activities, soil should be continuously observed for evidence of staining and sheen. Odor can be subjective, and inhalation of vapors from impacted soil is harmful to human health. Therefore, odor is considered an inadvertent field indicator and will not be used for continuous screening of soil.

Staining: Generally, soil that is contaminated with petroleum hydrocarbons exhibits gray or black staining, although other contaminants and natural conditions may also cause staining.

Sheen: Sheen is another indication of petroleum contamination. Soil with sheen may appear shiny and reflective. Sheens from heavily impacted soil may appear iridescent with rainbow-like colors. Sheens may also be observed in contaminated groundwater.

Odor: Petroleum products, solvents, and other types of contaminated soil may release vapors when exposed to the atmosphere. If concentrated enough, these vapors will be interpreted as an odor. Odors may also be present in contaminated groundwater.

If soil exhibiting evidence of contamination or other debris associated with chemical contamination is encountered during excavation work (transformers, drums, other containers, and USTs), special soil handling procedures must be initiated and GeoDesign must be contacted.

Although heavily impacted soil or groundwater may have obvious indicators of contamination, some types of soil and groundwater contamination are only detectable with the aid of specific environmental field screening equipment and laboratory testing. Therefore, soil that may appear to be clean based on the lack of staining, sheen, or odor may need to be handled as contaminated soil based of the results of field screening or chemical analytical testing. Soil that has indicators of contamination should be tested by GeoDesign prior to transport off site.

The field screening process includes the following:

- Observe soil for evidence of contamination.
- Collect samples by hand or trowel (approximately one handful) that are representative of the material being excavated. If used, the trowel will be decontaminated between sample locations.
- Retain a portion of the soil sample (approximately the size of half a sugar cube) for sheen testing that includes dropping the soil into a black pan containing water to observe the degree of soil sheen (no sheen, slight sheen, moderate sheen, or heavy sheen).
- Record the field screening evidence of contamination and a brief description of the soil type on a soil field screening log. The log will identify the location of the screened material and summarize the individual field screening results.

If soil exhibiting evidence of contamination is encountered during excavation, representatives of Green Light Development should be contacted. A representative of Green Light Development will direct soil characterization and handling activities if areas of contamination are identified during construction.

6.2 SOIL MANAGEMENT METHOD #1: ON-SITE RE-USE

Based on our knowledge of the environmental condition of the project site, soil generated during earthwork at the project site can be re-used on site without additional testing requirements, assuming (1) it is geotechnically suitable and (2) field screening evidence of contamination is not observed. Alternatively, Soil Management Method #2 (described below) can be implemented.

6.3 SOIL MANAGEMENT METHOD #2: OFF-SITE TRANSPORT AND DISPOSAL

Based on known subsurface conditions at the project site (Section 4.3), contractors should assume that soil generated during construction will not qualify as clean fill, unless the results of soil testing indicate otherwise. Soil generated during development of the project site is expected to be suitable for disposal as non-hazardous waste at a RCRA Subtitle D landfill (pending the results of a "Contained-In" determination) or a DEQ-approved disposal facility.

The excavation contractor will need to obtain a permit from the disposal facility prior to hauling the impacted soil to their facility. The earthwork contractor will likely need to provide chemical analytical laboratory data to the selected disposal facility. Copies of the permit should accompany each load transported to the selected disposal facility.

Disposal facilities often have the following requirements prior to accepting material at their facility:

- No material will be received without a completed contaminated soil profile and application form (to be completed by the earthwork contractor), an approval of credit application on file, and pre-approval from the disposal facility.
- Trucks will be permitted to weigh in as negotiated with the facility.
- Material may be sampled upon delivery by the disposal facility. Comparisons may be made between the submitted profile and on-site analysis. Soil transported to the disposal facility that is not consistent with the soil profile may be rejected.
- Exported soil must not contain any free liquids or foreign material (i.e., rebar, fittings, cans, wood, etc.). Truck loads with excessive foreign material may be reloaded and returned to the contractor or screened, sorted, and disposed of by the disposal facility for an additional fee.

Green Light Development shall be notified and approve of all off-site soil disposal locations regardless of soil quality.

6.3.1 Stockpile Management

If potentially contaminated soil is encountered within the project site that cannot be immediately transported off site for disposal, it must be temporarily stockpiled in areas designated by GeoDesign.

Soil that is placed in temporary stockpiles within the project site must be well maintained at all times. All stockpiled soil must be placed on impermeable plastic sheeting (minimum 6-mil thick) with a berm around the perimeter of the stockpile. The plastic sheeting and berm prevent the runoff of stockpiled soil contaminants to surrounding areas. The berm may be constructed with hay bales or other equivalent methods approved by GeoDesign. The bottom plastic sheeting should be lapped over the berm materials, and the soil stockpile within the berm should also be

covered with plastic sheeting to prevent erosion or leaching of contaminants from the soil stockpile impacting the underlying soil. The upper plastic sheeting covering the soil stockpile should be secured using sand bags or equivalent. The upper plastic sheeting prevents the stockpiled soil from being exposed to precipitation and wind.

The contractor is responsible for restoration of all stockpiled areas to a pre-stockpile condition, which means all soil and debris should be removed from the area. Stockpile plastic debris is not to remain on the project site or any adjacent sites following stockpile soil removal. If stockpiled soil is removed for off-site disposal, completion of removal must be satisfactory to the owner and GeoDesign.

6.3.2 Composite Soil Sampling

Potentially contaminated stockpiled soil will be sampled using composite soil sampling methods and analyzed for disposal profiling. In general, composite soil sampling frequency will adhere to the following, unless an alternate sampling frequency has been accepted by the soil disposal facility:

Stockpile Soil Sampling Frequency

Stockpile Volume (cubic yards)	Number of Composite Soil Samples to Collect
0 - 10	1
11 - 50	2
51 - 100	3
101 - 500	4

Each composite soil sample will be comprised of three soil sub-samples collected from a particular area of the soil stockpile. Soil stockpiles greater than 1,000 cubic yards will be sampled at a rate of five composite soil samples for the first 500 cubic yards, plus one composite soil sample for each additional 500 cubic yards.

Stockpile soil samples will be collected by hand or the use of hand tools. Decontaminated hand tools should be used to remove the surface layer of soil and then the soil sample will be retrieved with a decontaminated stainless steel scoop or disposable gloves. Chrome-plated tools will not be used.

Soil samples will be collected using the procedure outlined below. Disposable gloves will be worn and changed between samples.

- Remove the top layer of soil to the desired sampling depth using a decontaminated hand tool.
- Conduct an initial visual screen (based on discoloration and sheen) to help identify the most appropriate sampling location.
- Mix the discrete soil samples into one composite soil sample in a decontaminated stainless steel bowl or disposable plastic bag until thoroughly homogenized.

- Transfer the composite soil sample to a labeled, laboratory-prepared sample jar using a decontaminated stainless steel or plastic laboratory spoon. Fill the jar(s) completely to minimize headspace.
- Clean the jar rim(s) before tightening the lids, and quickly and adequately seal the sample containers.
- Collect a sufficient volume of soil sample for the particular analysis. Place the labeled soil sample jar(s) in an iced cooler for temporary storage. Transport the soil samples to the chemical analytical laboratory.
- Use a field notebook to record a description of the soil that was sampled, the location of soil sample, the sample I.D., and the time of soil sample collection. Record the sample on the soil sampling field forms and chain-of-custody form. The stockpile soil sample I.D. will include a prefix identifying the stockpile (SP) number followed by a sequential numeric designation. For example, the third composite soil sample collected from stockpile SP-3 will be identified as "SP3-3".
- Decontaminate the equipment between the collection of soil samples. Decontamination will include: (1) rinse with tap water and scrub with a scrub brush until free of large particles, (2) wash with phosphate-free detergent solution, (3) rinse with tap water, and (4) rinse with distilled water.

Soil stockpile composite samples will be submitted to an analytical laboratory for analysis of one or more of the following (as required by the receiving disposal facility):

- Gasoline-range hydrocarbons by Method NWTPH-Gx
- Diesel- and oil-range hydrocarbons by Method NWTPH-Dx
- RCRA 8 metals by EPA 6000/7000 Series Methods
- PCBs by EPA Method 8082
- VOCs by EPA Method 8260B
- BTEX by EPA Method 8260B
- PAHs by EPA Method 8270C SIM

The chemical analytical results shall be used to evaluate the appropriate off-site disposal location. All soil designated for off-site disposal must be characterized and permitted in accordance with the receiving facility's requirements prior to transport and disposal.

6.3.3 Loading and Hauling

It is possible that soil that has been previously characterized and requires off-site disposal can be loaded directly into trucks for transport to the receiving facility once the appropriate profiling and permitting have been completed. The contractor must exercise care during loading of the impacted soil to help minimize spillage of the soil onto the ground surface. All trucks leaving the project site will be free of loose soil on the exterior of the trucks and may require covers. Impacted soil loaded into trucks should be covered if weather conditions could cause soil to blow out (dry, warm, or windy conditions) during transport to the disposal facility. The contractor must use care not to track soil onto roads and must routinely wash down the roads if soil is being tracked onto them. Trucks should not be allowed to leave the project site if liquids are draining from the load. Transport tracking tickets may be required, which document the haul to the approved disposal facility for each individual truck leaving the project site.

6.4 USTs

Based on a review of historical documentation, there is no evidence USTs exist at the project site. There is potential that undocumented USTs exist on the project site associated with the commercial businesses that formerly occupied the project site. In the event a UST is encountered during construction, the contractor must cease work in the area of the discovery, notify GeoDesign, and the UST must be decommissioned by a licensed UST service provider in accordance with current applicable DEQ rules and regulations.

6.5 EROSION AND DUST CONTROL

Once the asphalt is removed from the project site, the exposed soil will become susceptible to erosion by wind and water; therefore, erosion control measures should be planned carefully and be in place before construction begins. Silt fences, hay bales, and/or granular haul roads will be used as required to reduce sediment transport during construction to acceptable levels. Measures to reduce erosion should be implemented in accordance with OAR 340-41-006, OAR 340-41-455, and the City of Portland and Multnomah County regulations regarding erosion control. In general, erosion control measures must limit sediment transport to less than 1 ton per acre per year, as calculated by the Universal Soil Loss equation.

6.6 CULTURAL RESOURCES

The areas of planned excavations are not expected to contain cultural or archaeological artifacts. However, if cultural or archaeological resources are inadvertently discovered during excavation, work in the area must stop and the Legislative Commission on Indian Services shall be notified by calling (503) 986-1067. The Oregon State Historic Preservation Office should be contacted regarding discovery or potential damage to archaeological sites. DEQ should also be contacted so that modifications to the work scope may be discussed.

6.7 CONTRACTOR REPORTING REQUIREMENTS

The contractor is responsible for keeping a detailed daily record of all soil excavation, stockpiling, export, and disposal of potentially contaminated soil. This includes the purpose, origin, destination, and volume of soil that is (1) loaded and hauled to the approved off-site disposal sites, (2) re-used as fill on the project site, or (3) transported to temporary stockpile locations (within the project site). The contractor is responsible for preparing a daily field report for distribution to the owner that identifies the number of truck loads of soil transported off site and daily tonnage for each disposal location. All soil excavation, handling, and disposal activities will be documented in these daily field reports by the contractor, and soil sampling and analysis by GeoDesign will be summarized in a final report submitted by GeoDesign. The daily reports should also contain documentation of any dewatering systems as described in Section 6.4.

6.8 GROUNDWATER MANAGEMENT

Based on previous environmental investigations completed at the project site, the depth to groundwater is expected to be at a depth of between 15 and 27 feet BGS. Based on our understanding of the planned redevelopment, we do not anticipate that a significant volume of groundwater will be encountered during excavation activities. Although unanticipated, precipitation could accumulate in the excavation and/or create shallow zones of perched

groundwater at the project site. If only a limited volume of groundwater or surface water requires removal during excavation, vacuum trucks can be mobilized to remove and dispose of the accumulated water.

If the quantity of water encountered merits dewatering, the contractor should make arrangements to have the water generated during construction activities pumped to aboveground storage tanks for management. Containerized water will require handling and chemical analytical testing in accordance with City of Portland Bureau of Environmental Services Industrial Source Control Division Batch Discharge procedures, which are summarized in Appendix B.

If impacted groundwater is identified during construction, contingencies to address unacceptable contaminant levels in the effluent stream will be employed. A typical treatment system could include a series of 20,000-gallon storage tanks equipped with chitosan socks, carbon adsorption filters, sand filters, and/or bag filters to remove sediments and contaminants (if necessary). The excavation contractor is responsible for obtaining the necessary discharge permits; the treatment system setup, maintenance, and modification of the system; effluent testing; discharge metering; and agency reporting.

7.0 IMPORTED BACKFILL CONSIDERATIONS

All fill material imported to the project site shall consist of either a manufactured rock product (e.g., ¾-inch-minus crushed rock from a permitted rock quarry) or must be free of contaminants at concentrations exceeding DEQ's CFSLs. It is the contractor's responsibility to ensure all imported fill material meet these criteria and provide the owner with the imported material origin information and accompanying documentation demonstrating the material meets DEQ CFSLs, if not using a manufactured rock product. If the source facility or contractor cannot provide documentation demonstrating that the material meets DEQ CFSL, the material should not be used as backfill at the project site. In addition, if evidence of contamination is observed in imported fill material, the contractor should reject the imported backfill and identify an alternate source. Also, material imported as structural backfill should be evaluated and approved by the geotechnical engineer before placement on the site.

8.0 UNFORESEEN CONDITIONS

In the event that undocumented contamination or other potentially hazardous conditions are encountered that are not addressed in this CMMP, the earthwork contractor shall cease work and notify the owner and GeoDesign. The earthwork contractor will then barricade or otherwise isolate the area and avoid filling the area until authorized to do so by GeoDesign. GeoDesign will determine the appropriate course of action to assess potential unknown conditions encountered during excavation. The earthwork contractor shall not replace any known or suspected contaminated soil in any excavation area without prior approval by GeoDesign.

9.0 ASSUMPTIONS AND LIMITATIONS

This CMMP is designed to provide earthwork contractors with guidance for the proper handling and management of potentially contaminated soil. This document is intended to be used as a general overview document for the use of the excavation contractor and project development team during the earthwork portions of the project.

The prime contractor must prepare and implement during the project a site-specific HCP. The HCP fulfills "worker right to know" requirements (29 CFR 1926.59). A copy of the HCP must be submitted to the owner prior to the start of work on the project. During work on the project, the HCP must be posted at the project site. The prime contractor is responsible for notifying subcontractors of pertinent environmental conditions. Subcontractors may either adopt the prime contractor's HCP or must prepare their own HCP. This document should be used in conjunction with, not in place of, the HCP and the project specifications. Each contractor and subcontractor is responsible for the safety of its employees, including compliance with applicable OSHA regulations, and compliance with all specifications in the technical specifications manual for the project. In addition to implementation of an HCP, the prime earthwork contractor is responsible for preparation and implementation of a site-specific HSP to ensure adequate protection for their workers while on site.

♦ ♦ ♦

We appreciate the opportunity to be of service to Green Light Development. Please contact us if you have any questions regarding this CMMP.

Sincerely,

GeoDesign, Inc.

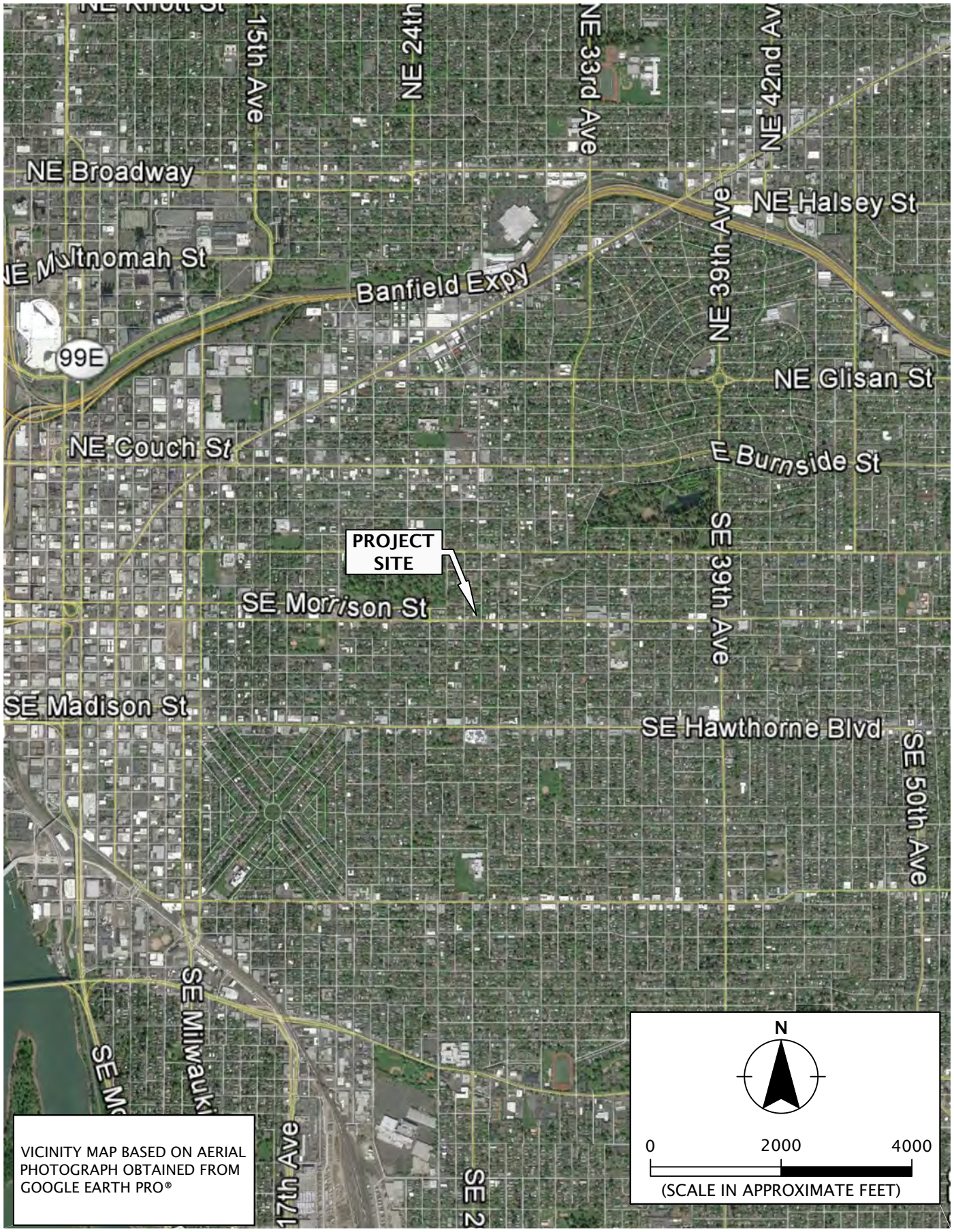
Kevin M. Cline
Environmental Staff

Andrew S. Blake, R.G.
Senior Project Geologist

Expires 06/30/2016

Jason O'Donnell, R.G.
Principal Geologist

FIGURES



GeoDesign Inc
15575 SW Sequoia Parkway - Suite 100
Portland OR 97224
Off 503.968.8787 Fax 503.968.3068

GREENLIGHT-3-02	**VICINITY MAP**	
MAY 2016	2721 - 2731 SE BELMONT STREET PORTLAND, OR	**FIGURE 1**

Printed By: aday | Print Date: 5/13/2016 8:46:31 AM
File Name: J:\E-L\greenlight\greenlight-3\greenlight-3-02\Figures\CAD\GreenLight-3-02-VM01.dwg | Layout: FIGURE 1

LEGEND:

PROJECT SITE BOUNDARY

N

0 40 80

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®, JULY 28, 2015

GeoDesign Inc
15575 SW Sequoia Parkway - Suite 100
Portland OR 97224
Off 503.968.8787 Fax 503.968.3068

GREENLIGHT-3-02	**SITE PLAN**	
MAY 2016	2721 - 2731 SE BELMONT STREET PORTLAND, OR	**FIGURE 2**

Printed By: aday | Print Date: 5/13/2016 8:46:36 AM
File Name: J:\E-L\greenlight\greenlight-3\greenlight-3-02\Figures\CAD\GreenLight-3-02-VM01-DEQ.dwg | Layout: FIGURE 2

APPENDIX A

APPENDIX A

SITE-SPECIFIC HEALTH AND SAFETY PLAN

INTRODUCTION

This HSP is intended solely for the use of GeoDesign employees while providing on-site observation, monitoring, and sampling; is provided in this document for reference only; and is not a replacement for each contractor's specific HSP. Each contractor conducting work at the project site is individually responsible for the health and safety of their employees. This includes the implementation of any training requirements, HSPs, monitoring, and any other specific requirements for the type of work being completed by the contractor. This HSP should be available to employees who will be working at the project site and can be used to assist the contractor in preparation of their employee hazard communication and health and safety program for the project site. Contractors may adopt this HSP with the proper modifications to address the type of work they will be completing at the project site.

This HSP establishes the policies and procedure that will help minimize risk to on-site workers, visitors, and the public. The procedures and guidelines contained herein are based on the current available information at the time of this HSP's preparation. Specific requirements will be revised when new information is received or conditions change.

PROJECT SITE BACKGROUND

A summary the environmental history and background of the project site is presented in Section 4.0 of the CMMP.

PROJECT SITE LOCATION

Address: 2721 - 2731 SE Belmont Street
Portland, Oregon

Description: Project site is currently a vacant commercial structure with asphalt-paved parking area.

Contracting Company or Agency: Green Light Development

SCOPE OF WORK

Objectives: Observe soil conditions, excavation activities, and/or construction; provide field screening of soil if excavated from excavation; collect samples as necessary, document site activities

Duration of Work: To be determined

ON-SITE ORGANIZATION AND COORDINATION

The following personnel are designated to carry out the stated job functions on site. (Note: One person may carry out more than one job function.)

Project Manager:	Andrew Blake
SSO:	To be determined
Site Supervisor:	To be determined
Field Personnel:	To be determined
Subcontractor(s):	NA
Client Contact:	Mark Desbrow

The Project Manager has overall responsibility for all activities on site, including implementation of the site safety plan. The Project Manager may delegate this function to the SSO.

The SSO is responsible for helping to ensure that work crews comply with all site safety and health requirements.

All other site personnel are responsible for understanding and complying with all site safety and health requirements.

PROJECT SITE CONTROL

If encountered, areas of contamination should be delineated by stakes, ground paint, or flagging. Excavations deeper than 4 feet BGS should be properly shored and fenced to prevent excavation collapse and falls into the excavation.

EMPLOYEE TRAINING

All site personnel working in contaminated portions of the project site and that might come in contact with contaminated media or vapors will have received 24 or 40 hours of OSHA training on safe work practices for hazardous waste sites. In addition, personnel are required to receive eight hours of OSHA refresher training annually. Managers and supervisors are required to receive eight hours of OSHA training for safe management of hazardous waste site operations. All training will comply with 29 CFR 1910.120. Site-specific training will be held at the beginning of the project. Daily site safety meetings will be held on site and a record kept.

MEDICAL SURVEILLANCE

Pre-employment and periodic medical examinations are required for personnel working at hazardous waste sites. The medical examination must be completed within the prior 12-month period. A statement deeming the worker fit-for-duty is required from a licensed physician. Medical records are accessible by workers.

HAZARD/RISK ASSESSMENT

This section discusses chemical, physical, and environmental hazards to workers on the project site. The table below lists major hazards associated with these tasks and methods to mitigate the hazards. During excavation in areas with contaminated groundwater, field personnel have the potential to be exposed to both contaminated groundwater and contaminants in the vapor phase. Risk of contamination from the operation and maintenance of the groundwater treatment system and site assessment activities comes mainly from contaminants in the vapor phase. The table below discusses physical hazards identified with this project site, including those associated with fire, use of heavy equipment, slip/trip/fall, lifting, tool and equipment, and heat stress.

Daily tailgate safety meetings will be held at the start of each workday to discuss potential chemical, physical, and environmental hazards and preventative safety measures. Attendance will be mandatory for all employees and a Tailgate Safety Meeting Form (Attachment 1) will be completed. Task hazard analyses have been developed for each major field activity/work phase and are presented in the table below. The following sections describe the specific hazards anticipated in more detail and the control measures to be implemented to minimize or eliminate each hazard. This information will be used to augment daily safety meetings intended to heighten safety and hazard awareness on the job.

HAZARDS ASSOCIATED WITH TASKS

Due to the limited area of the construction site, the presence of large excavations, and the presence of contaminated soil and groundwater, the main hazards are struck-by; inhalation, contact, and ingestion of organic vapors; and contact with HVOC-contaminated soil and groundwater. Other hazards associated with onsite tasks are analyzed as detailed in the table below.

Hazard Sources and Mitigation During Field Activities and Hazard Project Tasks Mitigation Methods

Hazard	Project Tasks	Mitigation Methods
Slip/trip/fall	All tasks	Maintain good housekeeping. Limit work area with boundary marking tape and signs. Slip/trip/fall hazards will be addressed through an ongoing proactive housekeeping program that eliminates elements in the work area that have potential for causing loss of footing.
Struck-by	All tasks	Maintain a safe distance from any heavy equipment. Workers should not stand within the swing radius or reach of heavy equipment.
Flying particulate	Installation of extraction wells	All site personnel will wear hard hats and safety glasses with side shields during drilling.

Hazard Sources and Mitigation During Field Activities and Hazard Project Tasks Mitigation Methods (continued)

Hazard	Project Tasks	Mitigation Methods
Explosion/fire	All tasks	Smoking is not permitted in the work zones. Any free-phase petroleum or gasoline will be stored in appropriate containers. Signs indicating flammable liquids should be posted where appropriate. Appropriate fire extinguishers will be available to site personnel during field activities. Open-flame ignition sources will be restricted from the work area (smoking, etc.)
Inhalation, contact and ingestion of organic vapors	Mass excavation, excavation sampling and monitoring	Level D PPE is typically adequate. If conditions require upgrading to air-purifying respirations (Level C PPE), an addendum to this HSP will be submitted for review and approval. Remain upwind whenever possible. Wear disposable gloves and safety glasses with side shields when handling soil and sampling waters. Avoid smoking at all times during the mass excavation activities. Chewing tobacco and eating should also be avoided during excavation work to prevent ingestion of site contaminants.
Contact with HVOC-contaminated soil and groundwater	Mass excavation, excavation sampling and monitoring	Level D PPE is typically adequate. Wear appropriate coveralls, gloves, and protective eyewear. No eating, smoking, or drinking on site.
Weather extremes	All tasks	Use dress consistent with weather conditions. Implement worker rotation and rest period schedules. Adjust work day to avoid exposure.

HAZARD ANALYSIS

Chemical(s)	HVOCs
Heavy Equipment	Yes
Confined Space	No
Flammability	NA
Reactivity	NA
Heat	Occasional warm periods
Cold	Occasional cold periods
Flammability	
Reactivity	NA
Drums	NA

Terrain	Potential excavation with steep sidewalls		
Oxygen Deficient	NA		
Electrical	NA		
Corrosivity	NA		
Noise	Construction equipment noise will be present during the entire work period		
Altitude	NA		
Radiation	NA		
Wildlife	NA		
Ergonomic	NA	Drilling	NA
Excavation	NA	Biological Agent	NA
Explosives	NA		
Vehicles	Cars, pickups, construction vehicles		

AIR MONITORING

PELs are OSHA PELs for airborne concentrations of toxic substances measured as an eight-hour TWA. The OSHA PELs are the recognized levels to which the site monitoring will adhere. STELs are OSHA short-term limits measured as a 15-minute TWA. OSHA requires that controls be implemented when employee exposure exceeds these limits. The TLVs are health and safety guidelines recommended by the American Conference of Governmental Industrial Hygienists. If contaminant levels exceed 50 percent of the TLV or PEL and persist for greater than ten minutes, engineering and/or administrative control measures will be implemented.

If necessary, background air monitoring will be conducted at the project site by the environmental representative on an hourly basis while the environmental representative is on site. Air monitoring will be conducted using a hand-held PID calibrated with a 100 ppm mixture of isobutylene. The action levels will be based on the total sum of all VOCs with an ionization potential range within the PID bulb's readable range. Based on the information identifying a release of HVOCs at the project site, air monitoring action levels will be based on information obtained from the National Institute for Occupational Safety and Health for HVOCs.

The TWA maximum exposure for an 8-hour day for a 40-hour week is 100 ppm. The STEL for a maximum of 15 minutes is 100 ppm. These levels are not anticipated based on recent field screening results. However, if the breathing area within the work area exceeds 25 ppm, monitoring frequency will be increased to five-minute intervals. If concentration of 25 ppm or greater persist for more than ten minutes, workers should exit the excavation and take measures to ventilate the excavation or upgrade PPE to half-face respirators. Only workers trained and certified to wear respirators shall be permitted to wear them.

PERSONAL PROTECTIVE EQUIPMENT

Based on the evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas or tasks:

Location	Job Function	Levels of Protection
Exclusion Zone	**All Tasks**	**D**
		A B C D Other
		A B C D Other
		A B C D Other
Contamination Reduction Zone	**All Tasks**	**D**
		A B C D Other
		A B C D Other

Specific protective equipment for each level of protection is as follows:

Level A

Level B

Other

Level C

Level D Hard hat, safety vest, steel toed boots, eye protection and ear protection if construction equipment is operating.

DOWNGRADING CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER.

DECONTAMINATION PROCEDURE

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. The standard level **NA** decontamination protocol shall be used with the following decontamination stations:

(1) (2)
(3) (4)
(5) (6)
(7) (8)
(9) (10)

The decontamination station will be located immediately adjacent to the Exclusion Zone. The decontamination solution will be **NA**.

Emergency decontamination will include the following stations: **Soap and Water – Rinse Water**

Equipment decontamination will be as follows:

EMERGENCIES

Closest Hospital	**Providence Portland Medical Center**	
Address	**4805 NE Glisan St., Portland, OR**	Phone **503-215-1111**
Distance	**1.9 miles – see attached map.**	
Ambulance		Phone **911**
Police		Phone **911**
Fire		Phone **911**
GeoDesign, Inc.	Office Phone: **503-968-8787**	
Andrew Blake	Cell Phone: **971-409-6980**	

Emergency Equipment is available on-site at the following locations:

First Aid Kit	**In Vehicle**
Eye Wash	**In Vehicle**
Fire Extinguisher	**On Site**
Other	

The following standard emergency procedures will be used by on-site personnel. The SSO shall be notified of any on-site emergencies and will be responsible for helping ensure that the appropriate procedures are followed.

Personnel Injury in the Exclusion Zone: Upon notification of an injury in the Exclusion Zone, the designated emergency signal of three horn blasts shall be sounded. All site personnel will assemble at the decontamination line. The rescue team will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The SSO will evaluate the nature of the injury, and the impacted person should be decontaminated to the extent possible prior to movement to the Support Zone. Appropriate first aid and arrangement for an ambulance will be made with the designated medical facility (if required). No persons will re-enter the Exclusion Zone until the cause of the injury or symptoms is determined.

Personnel Injury in the Support Zone: Upon notification of an injury in the Support Zone, the SSO will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue with the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal of three horn blasts will be sounded and all site personnel shall move to the decontamination line for further instructions. Activities on site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal of three horn blasts will be sounded and all site personnel will assemble at the decontamination line. The fire department will be alerted and all personnel will move to a safe distance from the involved area.

PPE Failure: If any site worker experiences a failure or alteration of PPE that affects the protection factor, that person and his buddy will immediately leave the Exclusion Zone. Re-entry will not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Site Supervisor will be notified and then determine the effect of the failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of project objectives, all personnel will leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

Emergency Escape Routes: The following routes are designated for use in situations where egress from the Exclusion Zone cannot occur through the decontamination line: (describe alternate routes to leave the area in emergencies)

To be determined upon arrival on site

In all situations, when an on-site emergency results in evacuation of the Exclusion Zone, personnel will not re-enter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been re-assessed.
3. The Site Safety Plan has been reviewed.
4. Site personnel have been briefed on any changes to the Site Safety Plan.

ATTACHMENT 1
CHEMICAL HAZARDS

NAME	CONCENTRATION	TLV/PEL	ROUTES OF EXPOSURE	SIGNS OF EXPOSURE	FIRST AID
PCE	Variable	25/100 ppm	Skin absorption, inhalation	Irritation of skin, eyes and throat	Hospital

If additional chemical hazards are identified during site work, document the conditions and contact the Project Manager.

ATTACHMENT 2
HAZARD ANALYSIS

HAZARD	PREVENTION	TREATMENT
Traffic to and from site	Defensive driving	Call 911 and insurance company
Hot weather	Wear sunscreen, drink water	Re-hydrate
Slips, trips, falls, cuts	Caution	Antibiotic ointment
Construction equipment	Eye contact with operator, personal protection equipment, caution	Call 911
Soil sampling	Use protective PPE	Call 911 or on-site assistance

If additional physical hazards are identified during site work, document the conditions and contact the Project Manager.

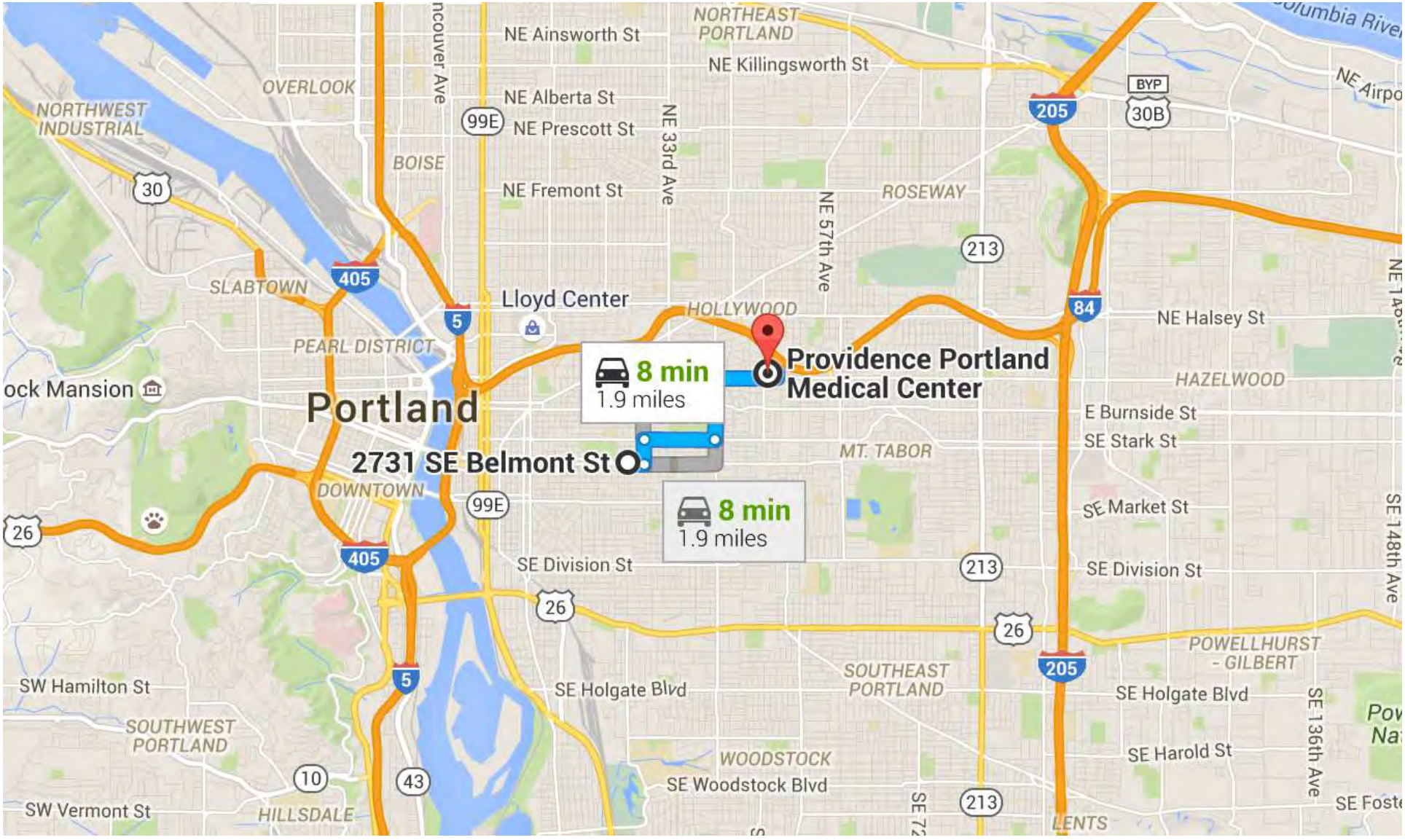
ATTACHMENT 3
SITE SAFETY PLAN ACKNOWLEDGMENT

All site personnel have read the above plan and are familiar with its provisions.

Name	Company	Date
Site Safety Officer		
Project Manager		
Site Personnel		

Visitors

Directions from 2731 SE Belmont St to Providence Portland Medical Center



2731 SE Belmont St

Portland, OR 97214

Head east on SE Belmont St toward SE 28th Ave

0.1 mi

Turn left at the 3rd cross street onto SE 30th Ave

0.2 mi

Turn right onto SE Stark St

0.6 mi

Turn left onto SE 39th Ave/SE Cesar E Chavez Blvd/SE Cesar Estrada Chavez Blvd

0.5 mi

At the traffic circle, take the 1st exit onto NE Glisan St

0.5 mi

Turn left onto NE 49th Ave

203 ft

Turn left

233 ft

Providence Portland Medical Center
4805 Northeast Glisan Street, Portland, OR 97213

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

APPENDIX B

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory

6543 N Burlington Avenue, Bldg 217, Portland, Oregon 97203 ▪ Nick Fish, Commissioner ▪ James Hagerman, Interim Director

Industrial Source Control Division

BATCH DISCHARGE REQUEST PROCEDURE

The following procedures are to be followed when requesting a batch discharge of industrial wastewater to the City of Portland (hereafter the City) sanitary sewer system, regardless of the volume of the discharge.

All industrial users of the City sewer system are to be aware that it is unlawful to discharge industrial waste into the City sewer system in excess of the limitations established in City code, Section 17.34.030 and 17.34.040, and Industrial Source Control Division Administrative Rules (Table 1).

Batch discharges to the sanitary sewer must take place during **DRY WEATHER ONLY**. Dry weather is defined by the Oregon Department of Environmental Quality as a time it is not raining and it has not rained in the Portland metropolitan area during the previous eight (8) hours. Melting ice and snow, even though there has been no precipitation for the previous eight hours, shall be considered wet weather.

- The discharger may be liable for penalties incurred by the City if the discharge exacerbates a combined sewer overflow (CSO) on a wet day.

- The discharger may be liable for penalties incurred by the City if the discharge causes a CSO on a dry day.

The normal discharge rate allowed for a batch discharge is 50 gallons/minute (gpm). Greater flow rates must be approved by the BES's Maintenance Engineering. Maintenance Engineering may:

- Limit the discharge rate due to sewer conditions, location of sewer diversions, etc.

- Require discharger's personnel be available to monitor the discharge and to be in contact with City personnel monitoring the flow.

All batch discharges may be subject to the appropriate fees (Table 2), which will be invoiced after discharge is completed.

Please read the following conditions and instructions carefully to ensure a correct and quick response to each batch discharge request.

Batch discharges are not allowed without written permission. To obtain permission for a discharge, submit a written request to the Industrial Source Control Division for each batch discharge requested. A Batch Discharge Request form (attached) shall be used. A non-refundable application fee may be required with the request (Table 2). At the City's discretion, the application fee may be invoiced for payment.

1. Upon receipt of the Batch Discharge Request form, the Industrial Source Control Division will review the request. Additional sampling and analysis may be required to aid the review process.

2. If wastewater samples fail to meet discharge limitations set forth in Chapter 17.34 or the Administrative Rules, additional pretreatment and sampling shall be required and requests shall be resubmitted for additional review.

3. All discharges will be approved by the City in writing. Prior to discharging, the industrial user shall sign an agreement issued by the Industrial Source Control Division to ensure compliance with conditions applicable to a specific discharge.

4. Discharges that require additional sampling, special analysis, or exceed the biochemical oxygen demand (BOD_5) and/or total suspended solids (TSS) concentrations defined in Section 17.36.060(a) of the City code, may be subject to extra-strength sewage charges and administrative fees (Table 2).

5. After written approval to discharge has been obtained from the City, and prior to discharge of any industrial wastewater, the discharger shall return the acknowledgment of terms to the Industrial Source Control Division prior to any wastewater discharge.

   As part of the terms for discharge, the Industrial Source Control Division may schedule City sampling.

6. After permission is granted, the discharger shall maintain a written log of all batch discharges to the sewer system. At a minimum, the log shall record the date, time, volume, and weather conditions for each batch discharge to the City sewer. In addition, all sample analysis data shall be recorded and maintained with the log. These records shall be available for review by City personnel upon request.

7. The *Batch Discharge Report* issued with the approval letter shall be returned to the Industrial Source Control Division within thirty (30) days of completion of the discharge.

The City reserves the right to revoke this special authorization at any time. If you have any questions or comments, please contact Ann O'Roke at 503-823-7230 (telephone) or Daryll Hughes at 503-823-7026, 503-823-5559 (facsimile) or batchdischarge@portlandoregon.gov.

Table 1. **WASTEWATER DISCHARGE LIMITATIONS**
(Effective 26 October 1998)

Applicable Regulations: Chapter 17.34 of the Code of the City of Portland

Pollutant	City Discharge Limit (mg/liter)	Screening Values (mg/liter)	Prohibited Discharge (> MDL)
arsenic (total)	0.2		
cadmium (total)	0.7		
chromium (total)	5.0		
copper (total)	3.7		
lead (total)	0.7		
mercury (total)	0.010		
molybdenum (total)	1.4		
nickel (total)	2.8		
selenium (total)	0.6		
silver (total)	0.4		
zinc (total)	3.7		
ammonia	BMP		
closed-cup flashpoint	< 140°F prohibited		
cyanide (total)	1.2		
fluoride	BMP		
oil and grease: non-polar	110		
oil and grease: polar	BMP		
pH	5.0 - 11.5 SU		
sulfate	BMP		
sulfide: dissolved	4.0		
1,2-dichloroethane	0.50		
2,4-dinitrotoluene	0.13		
acrylonitrile	1.00		
chlordane	0.03		
chlorobenzene	0.20		
chloroform	0.20		
nitrobenzene	2.00		
pentachlorophenol	0.04		
trichloroethene (tce)	0.20		
1,1,1-trichloroethane		1.60	
1,1,2,2-tetrachloroethane		0.40	
1,1-dichloroethane		2.30	
1,2-dichloroethene (trans)		0.30	
1,2-dichloropropane		3.60	
1,3-dichloropropene (trans)		0.10	
2,4,6-trichlorophenol		0.60	
2-methyl-4,6-dinitrophenol		3.50	
acrolein		0.10	
aldrin		0.40	
benzene		0.14	
benzo(a)pyrene		10.0	
carbon tetrachloride		0.03	
chrysene		4.70	
ethyl benzene		1.60	
hexachloroethane		0.10	
methylene chloride		2.10	
naphthalene		2.70	
tetrachloroethene		0.30	
toluene		1.40	

Table 1. **WASTEWATER DISCHARGE LIMITATIONS**
(Effective 26 October 1998)

Pollutant	City Discharge Limit (mg/liter)	Screening Values (mg/liter)	Prohibited Discharge (> MDL)
1,1,1,2-tetrachloroethane			0.010
1,1,2-trichloroethane			0.005
1,1-dichloroethene			0.005
1,2,4-trichlorobenzene			0.005
1,2-dichlorobenzene			0.005
1,2-diphenylhydrazine			0.005
1,3-dichlorobenzene			0.005
1,4-dichlorobenzene			0.005
2,3,7,8-tcdd			0.005
2,6-dinitrotoluene			0.005
4,4'-ddd (p,p'-tde)			0.001
4,4'-dde (p,p'-ddx)			0.001
4,4'-ddt			0.001
4-bromophenyl phenyl ether			0.005
bhc-alpha			0.001
bhc-beta			0.001
bhc-delta			0.001
bhc-gamma (lindane)			0.001
bis(2-chloroethoxy) methane			0.010
bis(2-chloroisopropyl) ether			0.010
bromodichloromethane			0.005
bromoform			0.005
bromomethane			0.010
chloroethane			0.050
chloromethane			0.005
dibromochloromethane			0.005
dieldrin			0.001
endosulfan I			0.001
endosulfan II			0.001
endosulfan sulfate			0.001
endrin			0.001
endrin aldehyde			0.001
heptachlor			0.001
heptachlor epoxide			0.001
hexachlorobenzene			0.005
hexachlorobutadiene			0.005
hexachlorocyclopentadiene			0.005
n-nitroso-di-n-propylamine			0.005
pcb 1016			0.001
pcb 1221			0.001
pcb 1232			0.001
pcb 1242			0.001
pcb 1248			0.001
pcb 1254			0.001
pcb 1260			0.001
toxaphene			0.001
vinyl chloride			0.050

Analyses for compounds listed as “prohibited discharge” should have method detection limits (MDLs) equal to or better than those listed above.

Table 2. **APPLICABLE FEES**

Application Fee (non-refundable)	*Effective 1 July 2014*	$ 67.00
Sewer Charges		*(effective 1 July 2014)*
Sanitary sewage volume charge		$ 9.057/ccf
Clean Water to Separated Storm Sewer		$ 0.924/ccf
Biochemical oxygen demand	> 300 mg/liter	$ 0.622/pound/ccf
Total suspended solids	> 350 mg/liter	$ 0.770/pound/ccf
Approximate Hourly Rates	Costs for personnel and equipment will depend upon number required to monitor flow, etc.	

1

1 Revised on July 11, 2012 PAT

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

BGS	below the ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CFR	Code of Federal Regulations
CFSL	Clean Fill Screening Level
CMMP	Contaminated Media Management Plan
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EIS	Environmental Inspection Services
HCP	Hazard Communication Plan
HSP	Health and Safety Plan
HVOC	halogenated volatile organic compound
I.D.	identification
NA	not applicable
NPDES	National Pollutant Discharge Elimination System
OAR	Oregon Administrative Rule
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PEL	permissible exposure limit
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
SSO	site safety officer
STEL	short-term exposure limit
TLV	threshold limit value
TWA	time-weighted average
µg/L	micrograms per liter
UST	underground storage tank
VOC	volatile organic compound