CONTAMINATED MEDIA MANAGEMENT PLAN

Bretthauer Pacific Pride
2600 East Hancock Street
Newberg, Oregon

DEQ LUST File #36-22-0366

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1.0 INTRODUCTION

Feige & Associates, Inc. (FAI) has prepared this Contaminated Media Management Plan (CMMP) for the Bretthauer Pacific Pride, located at 2600 East Hancock Street in Newberg, Oregon (site). The CMMP is intended to facilitate proper management of petroleum contaminated soil and groundwater that may be encountered during any future construction activities at the site. The site is currently operated as a card lock petroleum fueling station and historical releases have impacted soil and groundwater at the site.

The applicable receptors and exposure pathways for the site have been evaluated by FAI and other previous consultants working on the site and have been documented in various historical reports. FAI prepared a Beneficial Water Use Determination Report for the Site dated October 13, 2023, which determined the current and reasonably likely future land and water uses at the Site (FAI, 2023b). FAI also completed a Site Summary and Closure Request Report, dated August 3, 2023 (FAI, 2023a).

The Oregon Department of Environmental Quality (DEQ) requested the preparation of a CMMP as part of their review and recommendation for closure of the site (DEQ, 2023).

1.1 Purpose

The purpose of this CMMP is to provide health and safety guidance for excavation and construction workers who may encounter contaminated soil and/or groundwater during potential redevelopment, utility maintenance, and/or other construction activities at the site. Additionally, this CMMP defines procedures for the appropriate management of soil and groundwater that may contain chemicals above risk-based screening levels. This CMMP provides the following information:

- Identification of the Locality of Facility (LOF) for the Site, indicating where contaminated soil and groundwater exceeding applicable screening levels may be encountered.
- Information needed to properly handle soil and groundwater within the identified LOF during future site activities (if any).
- Information needed to properly dispose of contaminated soil and groundwater, if encountered.
- Information needed to make informed decisions regarding the health and safety of site workers who might encounter soil or groundwater contamination.

1.2 Applicability

This CMMP defines requirements for handling soil and groundwater within the site LOF, presented on Figure 3. The LOF corresponds to the currently known extent of groundwater containing petroleum hydrocarbon constituents above the applicable screening criteria. The LOF may be revised in the future if remedial actions or additional investigations are completed. Soil and groundwater within the LOF shall be assumed to contain chemicals unless the evaluation procedures in this CMMP demonstrate that the media is suitable for unrestricted use. Additionally, while soil within the LOF may contain contamination in exceedance of regulatory limits, it is also expected that some of the soil may not contain any contamination.

1.3 Limitations

The scope of this CMMP is intended to address the identification and proper handling of soil and groundwater that does or may contain chemicals above certain screening levels. This CMMP is not intended to provide comprehensive health and safety recommendations for the protection of site workers or construction personnel. Persons involved in construction activities or operations that could result in exposure to contaminated soil or groundwater associated with the site shall be familiar with the contents of this CMMP. FAI has also developed a general Health and Safety Plan (HASP) for the site (Section 5.0). However, FAI recommends that any third parties conducting work in the LOF identified in this CMMP should also develop their own HASP specific to the work being conducted.

2.0 SITE BACKGROUND

The purpose of this section is to provide an overview of the site features including the site location, history, geology and hydrogeology, and environmental conditions.

2.1 Site Description

The site is located at 2600 East Hancock Street in Newberg, Oregon. Township 3 South, Range 2 West, Section 20, of the Willamette Meridian, Tax Lot R3220AD 00100, Yamhill County, Oregon.

The site is located on the southeast corner of the intersection of East Hancock Street and South Elliot Road in an area of commercial properties. The topography at the site is flat and lies at an elevation of approximately 194 feet above mean sea level (msl). The regional topography in the vicinity of the site slopes gently to the west-southwest. Hess Creek is located approximately 0.6 miles west and the Willamette River is located approximately 1.2 miles southwest of the site.

The site is currently operated as a card lock petroleum fueling station with associated fuel dispensers and islands located under a canopy within the central portion of the site. The site contains five (5) fuel underground storage tanks (UST). One (1) 12,000-gallon gasoline UST, one (1) 6,000-gallon gasoline UST, and one (1) 12,000-gallon diesel UST were installed in 1986 and are located within a tank nest adjacent and west of the fueling island (UST Nest #1). One (1) 12,000-gallon gasoline UST and one (1) 20,000-gallon diesel UST were installed in 1991 and are located in a nest to the northwest of the fueling island (UST Nest #2). A loading rack area is located adjacent to UST Nest #2. The remaining portions of the site are primarily asphalt paved driveways. Landscaped areas are located around the perimeter of the property.

Site location and topographic features are presented on Figure 1. A map showing site features is presented as Figure 2.

2.2 Site History

The site began operation as a card lock fueling facility in 1986. During the initial UST installation in 1986, approximately 970 gallons of gasoline were released from a damaged UST. Remedial actions conducted at the time included recovery of approximately 580 gallons of product from a recovery well, air-stripping, and re-injection. Following results of a soil and groundwater investigation conducted in 2002, DEQ issued an no further action (NFA) in October

2002. Further details regarding the environmental investigation and remediation activities may be referenced in DEQ LUST File #36-86-4004.

In 1991, a potential release of diesel was identified during installation of new UST piping within an existing pipe trench. An unknown quantity of pea gravel was excavated from the pipe trench and analyzed. Following analysis, the pea gravel was returned as backfill material within the pipe trench. Based on these results, DEQ issued an NFA in August 2001. Further details regarding these activities may be referenced in DEQ LUST File #36-91-4165.

During the facility upgrade work activities in Spring 2022, associated soil and groundwater sampling and remedial excavations were performed. Results of soil and groundwater samples collected from test pits under former dispenser locations indicated the presence of petroleum hydrocarbons in a number of samples. Results of groundwater samples collected from observation wells located adjacent to the USTs nest did not indicate the presence of petroleum hydrocarbons. Remedial excavation activities were conducted at this time and a total of 45.06 tons of petroleum contaminated soil was excavated and transported for landfill disposal. A release was reported to DEQ and the site was assigned LUST File #36-22-0366.

In June 2023, GeoEngineers conducted a soil and groundwater assessment at the site. The investigation included the installation of soil borings in and around the pump island and UST nest areas. Soil and groundwater results from the borings indicated potential free product diesel contamination in one boring, which was located adjacent and east of the pump island.

In July 2023 GeoEngineers installed 3 soil borings and collected soil and groundwater samples. In addition, 3 soil gas sampling points were installed and samples were collected. The purpose of the additional site investigation was to delineate the magnitude and extent of petroleum hydrocarbon contamination and potential free product east of the pump island area.

In August 2023, FAI submitted to DEQ a Site Summary and Closure Request Report (FAI, 2023a). The report provided a summary and analysis of data collected during the site upgrade activities in 2022 and during assessment activities conducted by GeoEngineers in 2023. FAIs report concluded that groundwater impacts from gasoline and diesel petroleum hydrocarbons have been delineated at the site, are confined to an area adjacent and within the current fueling island area and based on samples collected from borings and observation wells have not migrated off site.

The LOF is presented on Figure 3.

2.3 Regional Geology and Hydrogeology

The site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. The site is underlain by the Quaternary age Missoula Flood deposits, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (O'Connor et al., 2001). The last of these flood deposits occurred around 10,000 years ago. The deposits in the vicinity of the site generally consist of rhythmically bedded stratified silt and clay with minor sand (O'Connor et al., 2001). The Quaternary age flood deposits are underlain by the Troutdale Formation, which includes up to 480 feet of non-marine sedimentary deposits composed mostly of silt and clay with occasional beds of fine sand and gravel (Frank and Collins, 1978).

The hydrogeology in the area of the site is concentrated in the Troutdale Formation unit. Shallow groundwater is found in the upper Quaternary flood deposit unit, however this unit does not provide sufficient yield for domestic, agricultural, or industrial use.

2.4 Site Geology and Hydrogeology

Groundwater monitoring wells are not installed at or in the immediate site vicinity. Soil borings installed at the site indicate that shallow soils consist of silt and sand with various amounts of clay to the maximum explored depth of 20 feet. Groundwater was generally encountered in the borings at depths ranging from 10.8 to 17.9 feet bgs (GeoEngineers, 2023).

The local topography implies a relatively flat groundwater gradient in the vicinity of the site. Local topography and location of Hess Creek and the Willamette River to the west and southwest, respectively, imply that groundwater flow direction is to the west-southwest at the site.

A review of water well logs from within 0.5 miles of the site (FAI, 2023b), shows that the shallowest unit of the Quaternary flood deposit sediments, generally consisting of silt and clay, is about 20 to 40 feet thick. The upper flood deposit sediment is underlain by fine grained sedimentary alluvium of the Troutdale Formation, which is described to depths of greater than 340 feet. Groundwater within the Troutdale Formation is generally encountered at depths of 20 to over 100 feet below ground surface (bgs), and static water varies from approximately 1 to 90 feet bgs.

2.5 Impacted Soil

Historically, soil on the site property has been impacted by gasoline and diesel range hydrocarbons and their constituents from the onsite USTs, fuel conveyance piping, and dispensers.

Concentrations of contaminants in soil are below all of their respective DEQ-established risk-based limits. Soil analytical data are presented on Table 1.

2.6 Impacted Groundwater

Groundwater at the site has also been impacted by petroleum hydrocarbons. The magnitude and extent of impacts to groundwater have been evaluated through site characterization and groundwater sampling activities.

Groundwater samples indicate that diesel range free product may exist within a very limited area adjacent and east of the pump island area. Gasoline impacted groundwater was only observed within the west central portion of the fuel island area.

Concentrations of gasoline contaminants in groundwater exceed the DEQ-established risk-based limits for ingestion and inhalation from tap water for residential receptors and groundwater in excavation exposure. Concentrations of diesel contaminants in groundwater exceed the DEQ-established risk-based limits for ingestion and inhalation from tap water for residential receptors.

Based on a review of groundwater data, FAI has conservatively estimated the lateral extent of potential groundwater impacts at the site. Groundwater sample locations and the approximate LOF are presented on Figure 3. Groundwater analytical data are presented in Table 2.

Any work being performed within the LOF presented on Figure 3 should proceed with groundwater characterization as outlined in Section 3.2 for proper handling and disposal.

3.0 CONTAMINATED GROUNDWATER MANAGEMENT

The purpose of this section is to discuss groundwater management requirements related to contaminants of concern (COCs) that may be encountered in the LOF. Information related to health and safety considerations is discussed in Section 4. The upgraded health and safety requirements are in addition to requirements that may be imposed on construction projects under federal, state, or local regulations.

3.1 Groundwater Use

A summary of groundwater concentrations at the site is included in Table 2 and the approximate LOF is shown on Figure 3. Current and future beneficial use of groundwater was discussed in the Beneficial Land and Water Use Determination Report (FAI, 2023b). Based on the availability of municipally supplied potable water and an examination of well logs included in the Oregon Water Resources Department Well Log Database, FAI concluded that domestic use of water is not currently occurring in the LOF.

As of the current date, deed restrictions have not been implemented and groundwater use at the site is unrestricted. However, this CMMP will be revised if and or when such specific restrictions are implemented at the site. At this time, any future excavation work and/or beneficial uses of groundwater must consider the presence of contaminated groundwater, and any proposed extraction wells must consider the nature and extent of contamination to limit potential risks to human health.

Before utilizing any groundwater for beneficial uses within the LOF, representative groundwater samples must be collected in accordance with generally accepted environmental practices at the time of the work, as described below. If concentrations above applicable RBCs are detected in groundwater, the groundwater shall not be used for beneficial purposes. In addition, any groundwater generated at the site during excavation work that contains concentrations of contaminants above the applicable RBCs should be containerized and profiled for proper waste disposal.

3.2 Characterization of Groundwater

Groundwater encountered within the LOF shall be characterized for proper handling and disposition. Groundwater shall be presumed to contain petroleum hydrocarbons until testing demonstrates otherwise. Based on the COCs identified in groundwater at the Site, groundwater samples shall be analyzed for RBDM VOCs by EPA Method 8260B, gasoline range hydrocarbons by NWTPH-Gx, and diesel range hydrocarbons by NWTPH-Dx.

Once characterization results are obtained, the results shall be compared to the relevant and applicable DEQ RBCs. If the groundwater contains one or more chemicals at concentrations

above the applicable RBCs, then Section 3.3 applies. If no chemicals exceed the criteria, this plan places no additional restrictions on the groundwater handling or disposition than would ordinarily apply from applicable county, state, and federal regulations.

3.3 Handling of Groundwater

Until demonstrated otherwise, groundwater removed from the LOF shown on Figure 3 shall be presumed to contain petroleum hydrocarbons and shall be handled in accordance with the procedures in this section.

Water should first be pumped into a temporary storage tank that will be moved onto the Site and sampled. If no chemicals are detected in the groundwater at concentrations exceeding their most restrictive applicable exposure limit, this plan places no additional restrictions on the groundwater handling or disposition than would ordinarily apply from applicable state and federal regulations. Groundwater that does not meet discharge requirements may be treated until concentrations are acceptable, or groundwater may be profiled for disposal through the local sanitary sewer district and/or transported off site to a permitted disposal facility.

3.4 Unforeseen Conditions

In the event that undocumented contamination or other potentially hazardous conditions are encountered that are not addressed in this CMMP, work shall stop immediately, and the area should be isolated. The site owner or responsible party for the work shall notify DEQ in accordance to the rules and determine the appropriate course of action to assess potential unknown conditions encountered during the work.

4.0 CONTAMINATED SOIL MANAGEMENT

The purpose of this section is to discuss soil management requirements related to contaminants of concern (COCs) in soils within the LOF presented on Figure 3. Information related to health and safety considerations is discussed in Section 5. The upgraded health and safety requirements are in addition to requirements that may be imposed on construction projects under federal, state, or local regulations.

Although soil encountered within the LOF may contain COCs, it is also expected that some of the soil within the LOF has not been impacted by the release. Field observations and laboratory analysis should be used to distinguish clean and contaminated soil.

Soil management shall consist of the following steps:

1. Characterize the soil to be excavated and/or disturbed in accordance with Section 4.1.
   a) If COCs are equal to or less than criteria constituting “clean fill” under Oregon law, including Oregon Administrative Rule (OAR) 340-093, then no special handling is required (“unrestricted use”). Appendix A includes the DEQ’s Internal Management Directive for Clean Fill Determinations (dated June 17, 2019), which includes a list of concentrations that are presumed to meet the clean fill requirements (i.e., clean fill criteria). As TPH is not included in the clean fill screening criteria, the DEQ has indicated the DEQ’s most stringent RBC criteria would be applicable for unrestricted use screening. The clean fill criteria may change with time, and the most current criteria should be considered at the time of the determination.

b) If COCs are present above the unrestricted use criteria, proceed to Step 2, otherwise skip to Step 3.
2. Handle soil in accordance with the requirements in Section 4.2.
3. For final disposition of excavated soil, follow the requirements of Section 4.3.

4.1 Characterization of Soil

Soil to be disturbed by activities within the LOF presented on Figure 3 shall be characterized for proper handling and disposition. Characterization may be conducted either prior to or after the activity that disturbs the soil.

Characterization Prior to Excavation

While soil encountered within the LOF may be contaminated with petroleum constituents, it is also expected that some of the soil has not been impacted. Prior to preforming excavation activities in the LOF, the soil shall be screened for evidence of contamination (e.g., stained soil, petroleum-like sheen, detections with field instrument such as a photoionization detector [PID]). If observed, the soil with indications of contamination shall be segregated from soils not exhibiting evidence of contamination, further characterized, and managed appropriately, in accordance with Section 4.2.

Soil samples shall be collected in accordance with the most recent update of DEQ's Quality Assurance Project Plan (QAPP) for the UST Program (DEQ, 2016) at the time of construction. Based on the COCs identified in soil at the site as presented in the previous site investigation reports and in Table 1, soil samples shall be analyzed for RBDM VOCs by EPA Method 8260B, PAHs by EPA Method 8270, gasoline range hydrocarbons by NWTPH-Gx, diesel and oil range hydrocarbons by NWTPH-Dx.

If disturbed soil is to be removed from the Site and disposed of at a regulated facility, the potential disposal facility shall be contacted for any other testing that may be required for obtaining permits and acceptance for disposal.

Once characterization results are obtained, the results of the TPH analyses shall be compared to the most stringent RBCs, and the remaining analyte results shall be compared to the unrestricted use criteria (Appendix A includes applicable criteria as of June 2019; however, if updates are made to this criteria, the applicable criteria in use on the date of the soil disturbance will be used). If the soil contains one or more COCs at concentrations above the unrestricted use criteria, Sections 4.2 and 4.3 apply. If no COCs exceed the unrestricted use criteria, this plan places no additional restrictions on the soil handling or disposition than would ordinarily apply from applicable state, federal, and local laws and regulations.

Characterization after Excavation

If soil removed from the LOF is not characterized at the time of excavation, the soil shall be presumed to contain COCs until testing demonstrates otherwise. The soil shall be handled in accordance with Section 4.2. Stockpiles shall be sampled at a frequency and using procedures in accordance with the most recent update of the DEQ QAPP for the UST program at the time of the work. At a minimum, soil samples shall be sampled and analyzed at a frequency no less than one sample per 100 cubic yards of excavated material and as defined above. The potential

disposal facility shall be contacted for any other testing that may be required for acceptance for disposal.

4.2 Handling and Management of Contaminated Soil

Until demonstrated otherwise (as by the characterization methods described in Section 4.1), soil from the LOF on Figure 3 shall be presumed to contain COCs above the unrestricted soil use concentrations and shall be handled in accordance with the procedures in this section. The procedures in this section are in addition to all applicable requirements for handling soil without COCs, including any county or state requirements for erosion and sediment control. If characterization demonstrates that COC concentrations in the soil do not exceed the unrestricted land use concentrations (see Section 4.1), the special handling procedures in this section do not apply.

Soil Excavation

Excavated soil that contains COCs above unrestricted use concentrations shall be maintained within the limits of the excavation, stockpiled in accordance with this plan, or placed immediately into a waiting truck. During excavation, the soil shall be screened for evidence of contamination (e.g., stained soil, petroleum-like sheen, detections with field instrument such as a photoionization detector [PID]). If observed, the soil exhibiting evidence of contamination shall be segregated from the other soil, further characterized, and managed in accordance with Section 4.0.

Stockpiling

Excavated soil that is not removed from the site (in accordance with the requirements of Section 4.3) shall be placed in a covered roll-off box or in a covered stockpile. Stockpiles shall be maintained in a manner that prevents stormwater run-on, runoff, and erosion of the stockpiles. Stockpiles shall be placed on plastic sheeting with a berm around the perimeter of the stockpile. The berm may be constructed by laying the bottom plastic over straw bales, Jersey Barriers, ecology blocks, or by other equivalent methods. When not active, stockpiles shall be covered with plastic and secured with sandbags or equivalent. The soil shall remain in well-maintained stockpiles until testing is completed and final disposition is determined. Once sampled, no soil shall be added to a stockpile.

Loading and Hauling

Excavated soil may be loaded into trucks for hauling to a disposal facility or a temporary stockpile. During loading, care shall be taken to minimize spillage of soil on the exterior of the trucks or clean ground surface. Any soil on the truck exterior shall be removed prior to leaving the loading area. The trucks shall be covered with a tarp prior to departing from the site. Trucks shall not be allowed to leave the site if liquids are draining from the load. Excavated soil shall be transported in accordance with all applicable laws and regulations, including Oregon Department of Transportation (ODOT) regulations.

4.3 Final Disposition of Soil

The results of the characterization testing (Section 4.1) shall be used to determine the final disposition of excavated soil, as follows:

- If COC concentrations are less than unrestricted use criteria, then this plan places no restrictions on the use of the soil.
- If COC concentrations exceed the clean fill criteria, then the soil shall be properly designated and disposed of at a licensed disposal facility. The chemicals present in the soil are the result of a release of petroleum hydrocarbons. It is the responsibility of the party handling the soil to properly characterize and dispose of the soil.

4.4 Unforeseen Conditions

In the event that undocumented contamination or other potentially hazardous conditions are encountered that are not addressed in this CMMP, work shall stop immediately, and the area will be isolated pending further decision by the responsible party. The responsible party shall determine whether applicable laws and regulations require notice to DEQ or other appropriate action to assess any undocumented and potentially hazardous condition encountered during the work.

5.0 HEALTH AND SAFETY TRAINING AND PLANNING

This section addresses health and safety and training in addition to that which is normally conducted for construction activities. Any party completing any activity within the LOF as defined on Figure 3 must comply with the following requirements. FAI recommends that any third parties conducting work in the LOF identified in this CMMP should also develop their own HASP specific to the work being conducted.

5.1 Training

Employees engaged in activities that include exposure to media containing COCs above applicable risk-based health levels must be trained in accordance with 29 CFR 1910.120. Training will not be required for work areas that have been characterized (prior to the work activities) and shown not to contain COCs at concentrations above the unrestricted use criteria, or where a risk analysis demonstrates that the chemicals will not pose an unacceptable risk to the Site workers. In general, if any subsurface work occurs within the LOF shown in Figure 3, then the employees performing the work must be properly trained.

5.2 Health and Safety Plan (HASP)

The party in charge of the Site activities shall prepare and implement a HASP in accordance with Occupational Safety and Health Act (OSHA) requirements (i.e., 29 CFR 1910.120) and OARs. The HASP shall be prepared by a Certified Industrial Hygienist or qualified safety professional with a minimum of 40 hours of OSHA HAZWOPER supervisor training. The HASP shall identify and address, but not be limited to, the physical and chemical hazards of the Site and the proposed activities. The HASP content shall, at a minimum, include and describe the following:

- Basic site description
- Scope and objective of work
- Hazard evaluation, including chemical and physical hazards
- Routes of exposure (e.g., inhalation, dermal, etc.)

- Safety checklists and job safety analyses, if appropriate
- A place for the signatures of workers who have read and agree to abide by the HASP contents
- Required personal protective equipment (PPE)
- Site safety supervisor
- Action levels at which protection would be upgraded
- Controls to be used to minimize worker exposure to hazardous substances
- Exclusion, contamination reduction, and clean zones
- Personnel decontamination procedures
- Location and route to the nearest emergency medical facility
- Environmental monitoring equipment needed at the Site

Data tables from soil and groundwater investigations within and near the LOF are attached to this plan. The tables provide a guideline for the magnitudes of chemicals encountered in the LOF. If additional remedial actions or sampling is conducted, the data tables will be updated.

6.0 COMPLIANCE WITH APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

The excavation/construction contractor shall at all times comply with all applicable environmental laws, including the Cleanup Rules for Leaking Petroleum UST Systems ((Oregon Administrative Rule (OAR) 340-120-0205 through 0360)). Management and handling of contaminated media shall be conducted in accordance with Oregon Revised Statue (ORS) Chapter 459, Solid Waste Management (ORS 459.005 through 459.997), and Chapter 466, Storage, Treatment, and Disposal of Hazardous Waste and PCB (ORS 466.005 through 466.995).

Subcontracting of work does not relieve the excavation/construction contractor of any of their obligations, including their obligation to comply with all applicable environmental laws.

Any questions regarding the information presented in this CMMP are welcome and should be referred to the undersigned. Thank you for the opportunity to be of service in this matter.

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LIMITATIONS

This Contaminated Media Management Plan was prepared in a manner consistent with generally accepted professional consulting principles and practices. Opinions and recommendations contained in this plan apply to conditions existing at the time of preparation and are intended only for the client, purposes, locations, time frames, and project parameters indicated. FAI is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services.

This Contaminated Media Management Plan was prepared based on environmental assessments conducted by FAI, other consultants, and other entities. The purpose of an environmental assessment is to reasonably evaluate the potential for or actual impact of past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry in the environmental issues and an exhaustive analysis of each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which environmental assessments are conducted.

No investigation is thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such materials on the site, but rather as the result of the services performed with the scope, limitations, and cost of the work performed.

Environmental conditions may exist at the site that cannot be identified by visual observations or field methods utilized under the scope of work. Where subsurface work was performed, our professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at sampled locations. Additionally, FAI does not warrant the accuracy of information supplied by third-parties.

TABLES

Table 1
Soil Analytical Results

Sample ID	Sample Date	Sample Depth (ft)	Gasoline-Range Hydrocarbons NWTPH-Gx (mg/kg)	Diesel-Range Hydrocarbons NWTPH-Dx (mg/kg)	Oil-Range Hydrocarbons NWTPH-Dx (mg/kg)	BTEX Compounds - EPA 8260C (mg/kg)			
						Benzene	Toluene	Ethylbenzene	Xylenes
Samples Collected by 4C's*									
B1[a]	4/7/2022	3.5	**38.6**	**1,230**	<52.1	-	-	-	-
B2	4/7/2022	3.5	<6.92	<25.7	<51.3	-	-	-	-
B3[b]	4/7/2022	3.5	<7.11	**390**	<53.3	-	-	-	-
B4[a]	4/7/2022	3.5	**100**	**2,950**	<53.3	-	-	-	-
B5	4/7/2022	3.5	**106**	**1,790**	<50.1	-	-	-	-
B6	4/7/2022	3.5	<5.45	<25.0	<50.0	-	-	-	-
B7	4/7/2022	3.5	**104**	<25.0	<50.0	-	-	-	-
B8	4/7/2022	3.5	**86.7**	<25.0	<50.0	-	-	-	-
Samples Collected by FAI*									
Exc-1-6	4/15/2022	6	<5.73	<25	<50	<0.0115	<0.0573	<0.0287	<0.086
Exc-1-8	4/15/2022	8	<7.45	<26.3	<52.6	<0.0149	**0.0812**	<0.0372	**0.159**
Exc-3-6	4/15/2022	6	**36.0**	**1,780**	<50	<0.0145	<0.0723	<0.0361	<0.108
Exc-3-8	4/15/2022	8	**35.0**	**899**	<52.5	<0.0158	<0.0788	<0.0394	<0.118
Exc-4-6.5	4/15/2022	6.5	<7.59	**608**	<51.4	-	-	-	-
Exc-5-5	4/15/2022	5	<7.48	<27.5	<55	-	-	-	-
Exc-5-6.5	4/15/2022	6.5	**102**	<26.9	<53.7	-	-	-	-
Samples Collected by GeoEngineers[c]									
B-1 (9-10)	6/6/2023	9-10	<7.93	<28.0	<56.0	<0.016	<0.079	<0.040	<0.079
B-2 (10-11)	6/6/2023	10-11	<6.7	<26.2	<52.4	<0.013	<0.067	<0.034	<0.67
B-3 (17.5-18.5)	6/6/2023	17.5-18.5	<7.29	<26.4	<52.7	<0.015	<0.073	<0.036	<0.073
B-4 (11-12)	6/6/2023	11-12	**111**	<24.5	<49.0	**0.045**	<0.069	**0.0754**	**1.68**
B-5 (14-15)	6/6/2023	14-15	<5.29	**155**	<52.0	<0.011	<0.053	<0.027	<0.053
B-6 (16-17)	6/6/2023	16-17	<8.43	<26.5	<53.0	<0.017	<0.084	<0.042	<0.084
B-7 (14-15)	7/14/2023	14-15	<7.52	**49.6**	<51.8	<0.0115	<0.0752	<0.0376	<0.038
B-8 (16-17)	7/14/2023	16-17	<6.95	<24.9	<49.7	<0.0139	<0.0695	<0.0348	<0.035
B-9 (12-13)	7/14/2023	12-13	<7.54	<23.8	<47.6	<0.0151	<0.0754	<0.0377	<0.038
		RBCss(Occ)	20,000	14,000	36,000	50	88,000	250	25,000
		RBCss (Con)	9,700	4,600	11,000	380	28,000	1,700	20,000
		RBCss (Exc)	NE	NE	NE	11,000	770,000	49,000	560,000
		RBCso (Occ)	69,000	NE	NE	37	NE	NE	NE

Notes:

* - All soil samples were collected prior to cleanup excavations. Based on the anticipated depth of the excavations, we are assuming that all soil exceeding applicable RBC's was removed.

[a] - The laboratory analytical report indicated the following for the gasoline result: "Results in the Gasoline Range are impacted by the overlap of a heavier fuel hydrocarbon product."

[b] - The laboratory analytical report indicated the following for the diesel result: "The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component."

[c] - Summary of laboratory results from samples collected from borings installed at the site on 6/6/23 and 7/14/23 by GeoEngineers. See letter for summary and discussion of these investigations. See Appendix B and C for laboratory analytical reports and data summary.

< - compound was not detected at or above the laboratory method reporting limit

Bold = Compound was detected above laboratory reporting limits.

RBCss (Occ) = Oregon Department of Environmental Quality (DEQ) Risk-Based Concentration (RBC) for Ingestion, dermal contact, and inhalation with an occupational receptor (Table dated June 2023).

RBCss (Con) = DEQ RBC for ingestion, dermal contact, and inhalation with a construction worker receptor (Table dated June 2023).

RBCss (Exc) = DEQ RBC for ingestion, dermal contact, and inhalation with an excavation worker receptor (Table dated June 2023).

RBCso (Occ) = DEQ RBC for volatilization to outdoor air with an occupational receptor (Table dated June 2023).

NE - RBC is not established for this compound

Table 2
Groundwater Analytical Results

Sample ID	Sample Date	Gasoline-Range Hydrocarbons NWTPH-Gx (mg/L)	Diesel-Range Hydrocarbons NWTPH-Dx (mg/L)	Oil-Range Hydrocarbons NWTPH-Dx (mg/L)	BTEX Compounds - EPA 8260C (mg/L)			
					Benzene	Toluene	Ethylbenzene	Xylenes
Samples Collected by 4C's*								
DW1	4/7/2022	<0.1	<0.0784	<0.157	<0.0002	<0.001	<0.0005	<0.00150
DW2	4/7/2022	<0.1	<0.0792	<0.158	<0.0002	<0.001	<0.0005	<0.00150
Samples Collected by FAI*								
Exc-1-Water[a]	4/15/2022	<0.1	**1.18**	<0.449	<0.0002	**0.00227**	<0.0005	**0.00265**
Exc-3-Water[a]	4/15/2022	<0.1	**4.55**	<0.408	<0.0002	<0.001	<0.0005	<0.00150
Exc-5-Water[b]	4/15/2022	**55.6**	**4.66**	<0.374	**1.070**	**5.310**	**0.960**	**7.330**
Samples Collected by GeoEngineers[c]								
B-1	6/6/2023	<0.100	<0.0941	<0.188	<0.0002	<0.001	<0.0005	<0.0005
B-3	6/6/2023	<0.100	<0.0930	<0.186	<0.0002	<0.001	<0.0005	<0.0005
B-5[d]	6/6/2023	**2.38**	**312**	<35.6	<0.0002	<0.001	<0.0005	<0.0005
B-6	6/6/2023	<0.100	<0.0942	<0.16	<0.0002	<0.001	<0.0005	<0.0005
B-7[d]	7/14/2023	**0.296**	**51.6**	<3.92	<0.00025	<0.001	<0.0005	<0.0005
B-8	7/14/2023	<0.100	<24.9	<49.7	<0.00025	<0.001	<0.0005	<0.0005
B-9	7/14/2023	<0.100	**18.10**	<1.67	<0.00025	<0.001	<0.0005	<0.0005
	RBCtw	0.11	0.10	0.30	0.00046	1.1	0.0015	0.190
	RBCwe	14	NE	NE	1.8	220	4.5	23
	RBCwo	NE	NE	NE	14	NE	43	NE

Notes:

***** - All water samples were collected prior to cleanup excavations.

[a] - The laboratory analytical report indicated the following for the diesel result: "The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component."

[b] - The laboratory analytical report indicated the following for the diesel result: "Result for Diesel is Estimated due to overlap from Gasoline Range Organics or other VOCs."

[c] - Summary of laboratory results from samples collected from borings installed at the site on 6/6/23 and 7/14/23 by GeoEngineers. See letter for summary and discussion of these investigations. See Appendix B and C for laboratory analytical reports and data summary.

[d] - The laboratory analytical report indicated the following for the gasoline result: "Results in the gasoline range are impacted by the overlap of heavier fuel hydrocarbons"

< - compound was not detected at or above the laboratory method reporting limit

Bold = Compound was detected above laboratory reporting limits.

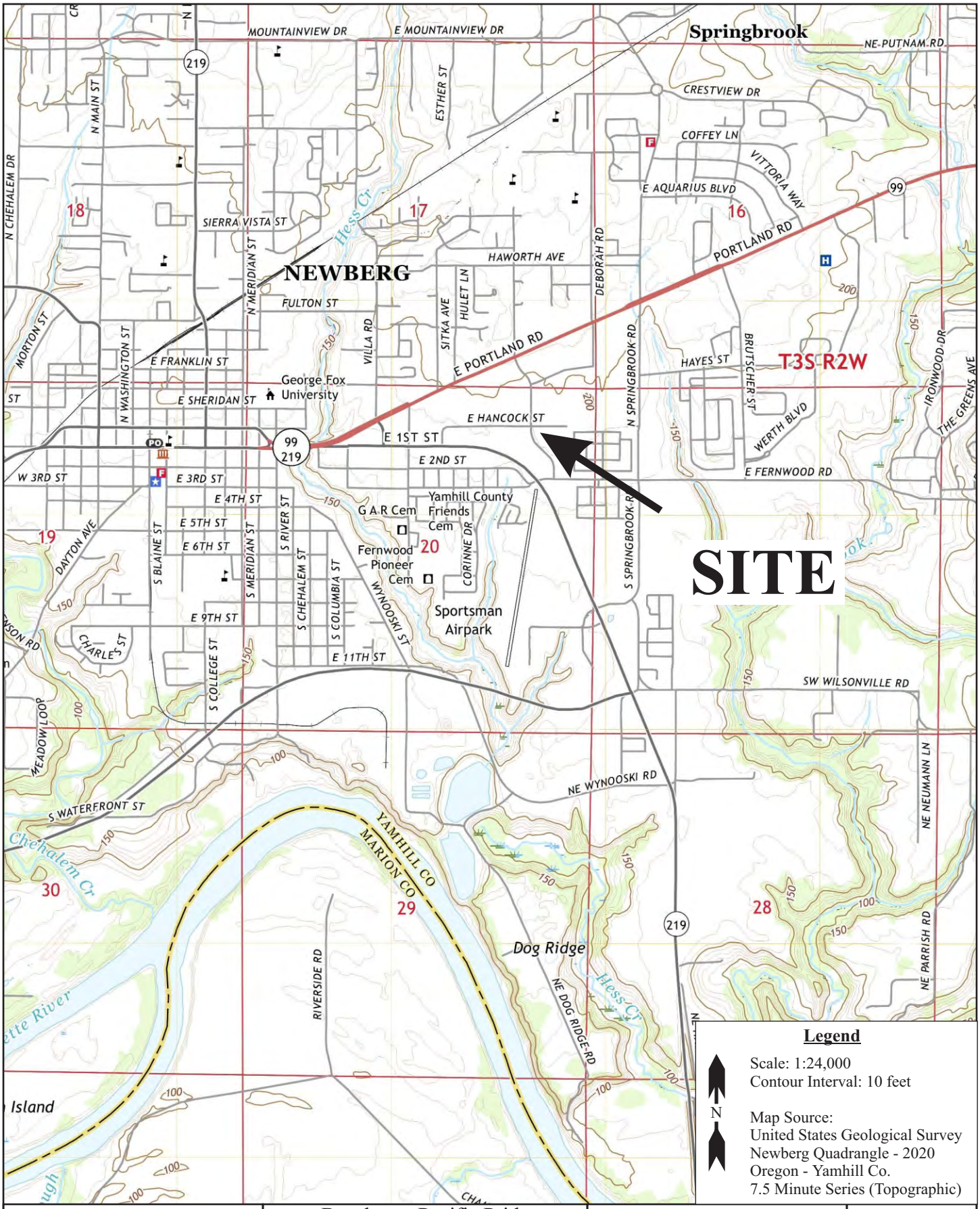
RBC_{tw} = Oregon Department of Environmental Quality (DEQ) Risk-Based Concentration (RBC) for groundwater ingestion and inhalation from tapwater (Table

RBC_{we} = DEQ RBC for groundwater in excavation (Table dated June 2023).

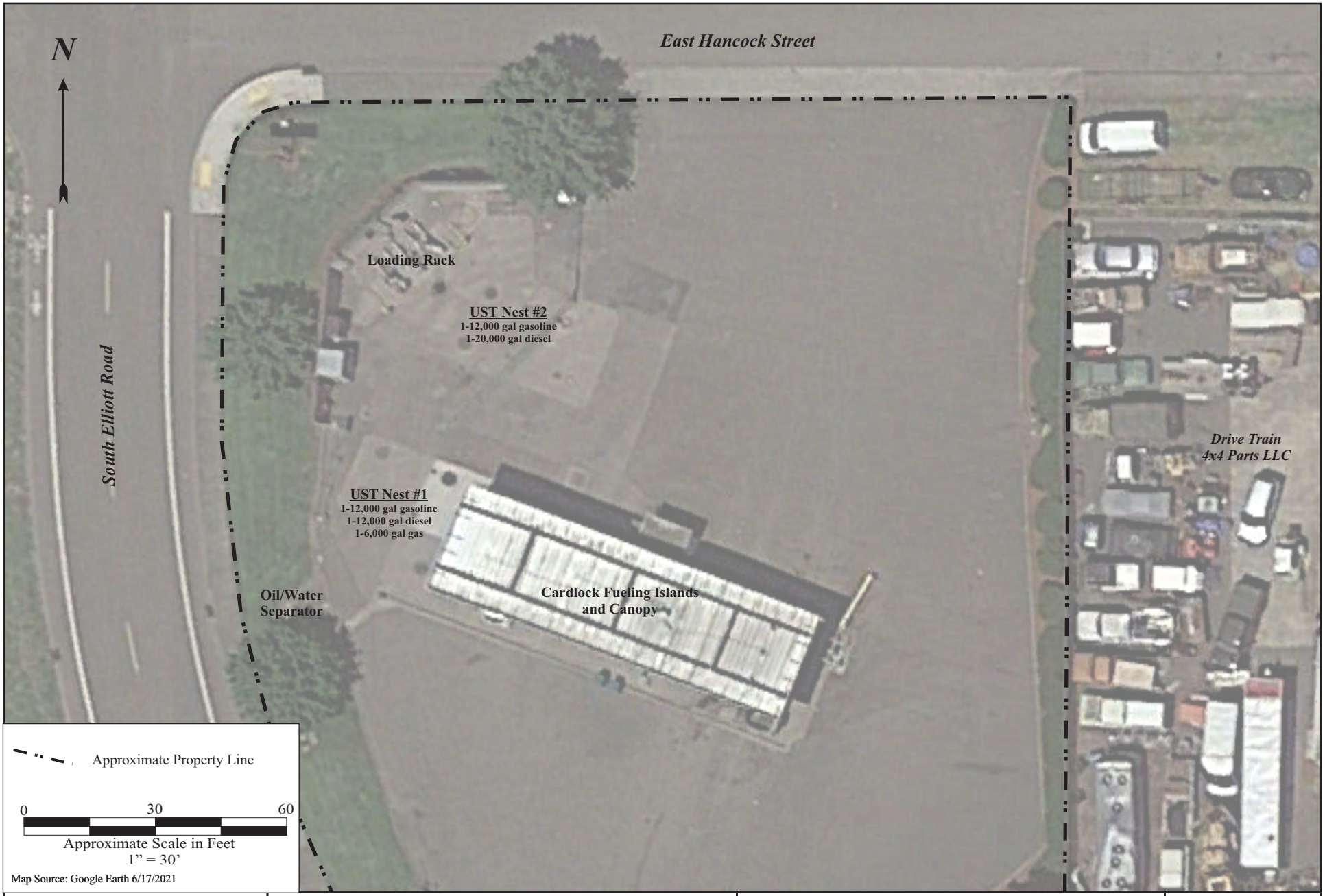
RBC_{wo} = DEQ RBC for groundwater volatilization to outdoor air with an occupational receptor (Table dated June 2023).

NE - RBC is not established for this compound

FIGURES



Feige & Associates, Inc. 27001 NW St. Helens Rd. Scappoose, Oregon 97056 Phone: (503) 543-9700 Fax: (503) 543-8757	Bretthauer Pacific Pride 2600 East Hancock Newberg, OR DEQ File# 36-22-0366	**Site Location Map**	Figure 1



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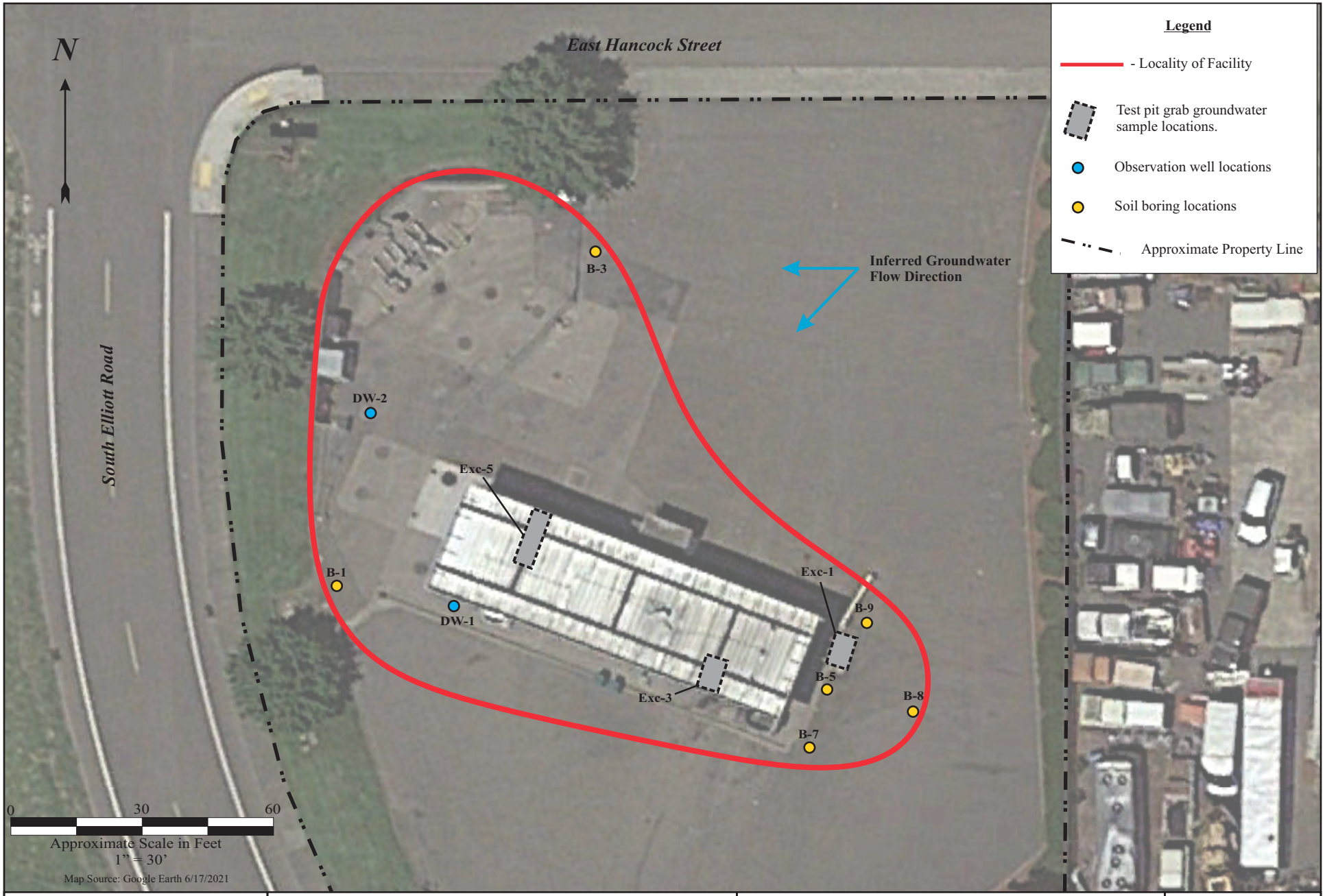
Newberg, OR
DEQ File# 36-22-0366

Site Features Map

Figure 2



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Newberg, OR
DEQ File# 36-22-0366

Locality of Facility

Figure 3

APPENDIX A

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY CLEAN FILL CRITERIA

Clean Fill Determinations

Materials Management
700 NE Multnomah St.
Suite 600
Portland, OR 97232
Phone: 503-229-5696
800-452-4011
Fax: 503-229-5850
Contact: Heather Kuoppamaki
Kuoppamaki.heather@deq.state.or.us
www.oregon.gov/DEQ

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

DEQ
State of Oregon
Department of
Environmental
Quality

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us.

Disclaimer

This directive is intended solely as guidance for DEQ employees. It does not constitute rulemaking by the Environmental Quality Commission and may not be relied upon to create an enforceable right or benefit, substantive or procedural, enforceable at law or in equity, by any person. With written managerial approval, DEQ employees may deviate from this directive. DEQ anticipates revising this directive from time to time as conditions warrant.

Document Development

Prepared By: Heather Kuoppamaki

Reviewed By: Audrey O'Brien

Approved By: _____ Date: February 21, 2019

Table of Contents

1. Intent/Purpose/Statement of Need

DEQ often receives requests to determine or confirm whether solid waste qualifies as clean fill. Oregon Administrative Rules define clean fill and allow DEQ to exempt clean fill from regulation as solid waste in many instances. It is important to note that clean fill that is mixed with solid waste is considered to be solid waste. This directive describes the screening criteria DEQ Materials Management staff uses to evaluate whether material meets DEQ's definition of clean fill for purposes of reuse or disposal.

2. Applicability

DEQ Materials Management staff are to use this Internal Management Directive to determine whether a waste material is clean fill or needs to be regulated as a solid waste.

3. Summary

This directive lays out a process and provides screening values that DEQ Materials Management staff should use to prepare and review clean fill determinations.

Section 7 of this directive describes the process that DEQ Materials Management staff will use to make clean fill determinations. Section 8 provides information on how the clean fill screening levels were determined, and information on how and when the screening levels can be updated. Tables 1 and 2 provide clean fill screening levels.

4. Background and Definitions

Clean fill – As defined in DEQ regulations, clean fill means "material consisting of soil, rock, concrete, brick, building block, tile or asphalt paving, which do not contain contaminants that could adversely impact the waters of the state or public health." Clean fill does not include "putrescible wastes, construction and demolition wastes and industrial solid wastes." [OAR 340-093-0030(18)]. This definition is clarified in the following subsections of the regulations:

> Asphalt paving means "asphalt which has been applied to the land to form a street, road, path, parking lot, highway, or similar paved surface and that is weathered, consolidated, and does not contain visual evidence of fresh oil." [OAR 340-093-0030(9)].
>
> Clean fill that has been separated from construction and demolition waste is considered clean fill [OAR 340-093-0030(26)].

Clean fill land disposal sites – DEQ's Materials Management Program does not regulate clean fill land disposal sites that are managed correctly. If solid waste is accepted at such a clean fill land disposal site, the facility is then subject to permit requirements and possible enforcement action by DEQ. This is stated in the following regulations:

> A disposal site does not include a site that is used by the owner or person in control of the premises to dispose of soil, rock, concrete or other similar non-decomposable clean fill material, unless the site is used by the public either directly or through a collection service [OAR 340-093-0030(38)].
>
> A person owning or controlling a land disposal site used exclusively for the disposal of clean fill may be exempt from DEQ solid waste permitting requirements. Clean fill still must be managed so that, when placed or disposed, it will not create an adverse impact on groundwater, surface water, or public health or safety. [OAR 340-093-0050(3)(c)].

Permit exemptions - Persons owning or controlling a land disposal site used exclusively for the disposal of clean fill, are specifically exempted from the requirements to obtain a DEQ solid waste permit. Such persons must comply with all other provisions of OAR chapter 340, divisions 93 through 97 and other applicable laws, rules, and regulations regarding solid waste disposal. The exemption does not apply if the materials have been contaminated such that the Department determines that their nature, amount or location may create an adverse impact on groundwater, surface water or public health or safety [based on OAR 340-093-0050(3)(c)]. Additional information on receiving DEQ approval at an exempt site is provided in OAR 340-093-0080:

> A person wishing to obtain an exemption from the requirement to obtain a solid waste permit for disposal of an inert waste in specified locations may submit a request to the Department. The applicant must demonstrate that the waste is substantially the same as "clean fill." The request shall include but not be limited to the following information:
>
> > (a) The exact location (including a map) at which the waste is to be disposed of and a description of the surrounding area;
> >
> > (b) The monthly rate of disposal;
> >
> > (c) A copy of the Safety Data Sheet (or equivalent, if a Safety Data Sheet is not available) for all applicable raw materials used at the facility generating the waste;
> >
> > (d) A description of the process generating the waste and how that process fits into the overall operation of the facility;
> >
> > (e) Documentation that the waste is not hazardous as defined in OAR 340, division 101. The procedure for making a hazardous waste determination is in OAR 340-102-0011;
> >
> > (f) A demonstration that the waste is inert, stable, non-putrescible, and physically similar to soil, rock, concrete, brick, building block, tile, or asphalt paving;
> >
> > (g) A demonstration that the waste will not discharge constituents which would adversely impact the waters of the state or public health.

5. Abbreviations Used in This Directive

DEQ – Oregon Department of Environmental Quality

ECO SSL – EPA Ecological Soil Screening Level

EPA – United States Environmental Protection Agency

IMD – Internal Management Directive

OAR – Oregon Administration Rule

RBC – Oregon DEQ Risk Based Concentration

RSL – EPA Regional Screening Level

USGS – United States Geological Survey

VOC – Volatile Organic Compound

6. Updates to 2014 Directive

This 2018 update makes the following changes to the clean fill IMD-

- The format is modified to meet DEQ's IMD format guidelines.
- Modifies language to reflect rule requirements.
- Clarifies and expands some of the guidance language.
- Updates the clean fill tables to:
  - include EPA groundwater protection SSLs (adjusted to reflect Oregon DEQ dilution attenuation factor),
  - remove the DEQ chemical-specific calculation for leaching to groundwater [since these are now provided by the EPA soil screening levels (SSL)],
  - incorporate updated DEQ risk based concentrations (RBCs) and EPA regional screening levels (RSLs), and
  - include screening ecological benchmarks developed by Oak Ridge National Laboratory.
- Updates links to Oregon DEQ's new web pages.

- Removes lanthanum, niobium, technetium, tellurium, titanium, and tungsten from Table 1 as they are not commonly detected in soils in Oregon, and are generally not contaminants of interest at sites investigated in Oregon.

7. Directive

7.1. Who can make clean fill determinations

7.1.a. Generator

When generators of excavated materials (or their consultants) ask how they can make their own clean fill determinations, DEQ Materials Management staff should explain that, when presented with a permit-exemption application, DEQ evaluates whether a material is clean fill according to the process outlined in this IMD.

A generator always has the option to do their own statistical analysis and make site-specific clean fill decisions based on the material generated.

7.1.b. DEQ Materials Management

DEQ Materials Management staff should encourage the generators of material (or their consultants) to make their own clean fill determination based on this IMD, including the clean fill screening levels provided in Table 1 and Table 2. If generators want to use different risk assumptions or would like DEQ to review clean fill determinations and provide approval, direct them to apply for a permit exemption (OAR 340-093-0080) and pay any associated fees.

7.1.c. DEQ Cleanup

If a generator is remediating a site under our Cleanup Program, DEQ Materials Management staff should involve DEQ's project manager for the site. Under cleanup statutes, DEQ may exempt the onsite reuse of materials from regulation under solid waste statutes, provided that substantive requirements are met. [See ORS 465.315 (3) and (4)]

7.2. Placement Locations

7.2.a. Physiographic Provinces

The clean fill values shown in Table 1 take into account naturally occurring concentrations of metals and metalloids in the various physiographic provinces within Oregon (Figure 1). These concentrations are compiled from DEQ Cleanup Program's background metals technical report[1]. Clean fill generated in one physiographic province may not qualify as clean fill in another physiographic province with lower background metals concentrations. The material must be below the clean fill screening levels in both the province in which it is generated and the province in which it is disposed.

[1] DEQ. 2013. Development of Oregon Background Metals Concentrations in Soil, Technical Report. March. https://www.oregon.gov/deq/FilterDocs/DebORbackgroundMetal.pdf

7.2.b. In-Water Locations

The clean fill determination process applies only to terrestrial (upland) reuse or disposal. The Clean Water Act and associated state water quality rules, rather than the solid waste rules, govern the filling of wetlands or waters of the state.

If generators of clean fill plan to place the material in wetlands or other waters of the state, DEQ Materials Management staff should direct them to the Army Corps of Engineers and the Oregon Department of State Lands.

7.2.c. Clean Fill Land Disposal Sites

If any solid wastes are be disposed of at a site that accepts clean fill, the site is no longer exempt from DEQ solid waste permitting requirements.

7.3. Clean Fill Evaluation

The clean fill definition in OAR 340-093-0030 refers to material type as well as the presence of contaminants that could adversely impact waters of the state and human health. Both parts of the definition must be satisfied for the material to be considered clean fill.

(1) The material type is limited to soil, rock, concrete, brick, building block, tile or asphalt paving and does not consist of putrescible wastes, construction and demolition wastes and industrial solid wastes.

(2) The contaminants may **not** adversely impact waters of the state or public health. The clean fill screening level tables are based on background concentrations (for metals) and risk screening levels published by Oregon DEQ and EPA.

The steps to conduct a clean fill determination are described below. These steps are also shown in Figure 2.

7.3.a. Material description

The first step in performing a clean fill determination is to check that the material meets the general material definition. To do this, determine whether the material:

- Consists of soil, rock, concrete, brick, building block, tile or asphalt paving; and,
- Does not include putrescible wastes, construction and demolition wastes, or industrial solid wastes

In addition, specific material attributes should be considered. Some examples:

- Asphalt paving must be used, be weathered material (not fresh asphalt) and consist of large, intact chunks. Ground up asphalt is not clean fill.
- Concrete, brick, blocks or tile must be unpainted, unless the materials have been evaluated for hazardous constituents, and concentrations of those constituents are below clean fill screening levels.

- If filler material used in the production of concrete, brick, building block, or tile has the potential to impact waters of the state or public health, the material is not clean fill.

Material that is determined to not be clean fill is solid waste. It may be disposed under a location-specific permit exemption, a solid waste letter authorization, or in a permitted landfill. The material also potentially may be reused under the authority of a Beneficial Use Determination.

7.3.b. Contaminants Evaluation

The second step in conducting a clean fill determination is to evaluate the risk from contaminants in the material. This is based on the presence of staining or odor, known hazardous substances, and laboratory analysis of the material for contaminants of potential concern.

Staining or odor

If the material appears chemically stained or has a chemical smell it is not clean fill. Chemicals that stain or produce odors indicate the material contains contaminants that could impact waters of the state or public health.

Hazardous waste

If the material contains a listed or characteristic hazardous waste it is not clean fill, even if the chemical concentrations are below clean fill table values. The generator may use alternative management methods such as "contained-in" determinations[2] to decide the ultimate disposal of the material.

Characterize the fill for chemical characterization

DEQ Materials Management staff should determine whether applicants adequately characterized the chemical quality of fill materials.

DEQ review must ensure that the applicant proposes and conducts an adequate sampling program to characterize the material. Sampling programs should be based on an understanding of the historical site use, processes that were used at the site, spatial variability of site soils, and potential chemicals that were handled, used, or stored at the site. Sampling programs should include: how samples are collected (in-situ or ex-situ), where samples are collected to obtain representative results, types of samples collected (discrete or composite), the number of samples collected, and the constituents the samples are being analyzed for. The sampling program should depend on the size, condition, spatial variability of the soils, and history of the area the generator will excavate (or has excavated).

Because designing a sampling program to collect representative data for heterogeneous materials is potentially complex, DEQ staff should refer generators to sampling guidance such as EPA

[2] DEQ, 2015. Conducting Contained-In Determinations for Environmental Media, Internal Management Directive. https://www.oregon.gov/deq/Filtered%20Library/IMDEnvMediaContainedinDet.pdf

(1986)[3], EPA (2002)[4], ITRC (2012)[5] or to an experienced consultant when asked "how many samples should I collect?" during the pre-application period.

Examples of site considerations:

An applicant would need to collect fewer samples along a long stretch of highway through a single land use (such as agricultural fields with similar crops) than in areas where land use changes frequently.

Materials from agricultural lands should be tested for metals and pesticides/herbicides at a minimum. Materials from a facility whose history is uncertain may require testing for a larger list of analytes. Historical site information may be available in an environmental site assessment conducted in accordance with standard practices (for instance, ASTM E1903)[6].

If the material is sediment that is being dredged and will be placed upland, DEQ Materials Management staff should work with DEQ Water Quality staff to determine if sampling done for the 401 water quality certification or dredging permits is sufficient to adequately characterize the sediment that will be placed upland.

7.3.c. Compare chemical concentrations to clean fill screening levels

Once an appropriate sampling and analysis program has been completed, the results should be compared to clean fill screening levels. These levels are provided in Tables 1 and 2. When reviewing the results, make sure the laboratory method detection limit (MDL) is lower than the screening table value.

If the contaminant concentrations in the material do not exceed clean fill screening levels defined in the tables, the material is clean fill, provided the other criteria described in this IMD are also met, such as absence of staining or odor.

Note that the material may be clean fill even if there are some exceedances of these screening levels. For instance, if an appropriate statistical analysis[7] demonstrates that the concentration of the contaminants are very close to clean fill screening values, DEQ may determine that the material can be considered to be clean fill in certain cases.

If a clean fill determination cannot be made, the party may contact DEQ to discuss other options, such as a permit exemption, disposal under a solid waste letter authorization, and disposal at a permitted landfill.

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[3] EPA, 1986. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Chapter 9, https://www.epa.gov/sites/production/files/2015-10/documents/chap9_0.pdf

[4] EPA, 2002. Guidance on Choosing a Sampling Design for Environmental Data Collection, EPA QA/G-5S. https://www.epa.gov/sites/production/files/2015-06/documents/g5s-final.pdf

[5] ITRC, 2012. Incremental Sampling Methodology, Technical and Regulatory Guidance. February. https://www.itrcweb.org/ism-1/pdfs/ISM-1_021512_Final.pdf

[6] ASTM, 2011. Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process, E1903-11. http://www.astm.org/Standards/E1903.htm

[7] Calculating a 90% Upper Confidence Limit is usually an appropriate statistical method. https://www.epa.gov/land-research/proucl-software

8. Derivation of clean fill screening levels

8.1. Table 1

The values in Table 1 are based on the following:

- DEQ's technical report on background metals concentrations in soil[8]
- DEQ and EPA ecological screening levels[9],[10]
- Ecological screening benchmarks developed by Oak Ridge National Laboratory[11]
- DEQ RBCs for residential soils[12]
- EPA RSLs for residential soils[13]
- Calculations based on USGS data[14]

In the case of background metals concentrations exceeding human health or ecological screening values, the background metal values are shown. Otherwise, the lowest of human or ecological screening values are used.

In the case of metals for which background concentration levels are not available, DEQ used data compiled by USGS to calculate an estimated background value. DEQ used ProUCL to calculate a nonparametric 95% Upper Prediction Limit.

The background concentration of lead for the Portland Basin appears to include anthropogenic influences (it is 79 mg/kg compared to no more than about 36 mg/kg in the rest of the state). Therefore, DEQ used the background lead concentration from the South Willamette Basin province as a background concentration for lead (28 mg/kg) for the Portland Basin.

8.2. Table 2

Values in Table 2 are based on the lowest of the following:

- Residential soil concentrations from DEQ's Risk-Based Decision Making table
- EPA's residential soil Regional Screening Level

---

[8] DEQ. 2013. Development of Oregon Background Metals Concentrations in Soil, Technical Report. March. https://www.oregon.gov/deq/FilterDocs/DebORbackgroundMetal.pdf

[9] DEQ, 1998. Guidance for Ecological Risk Assessment: Levels I, II, III, IV. April. https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf

[10] EPA, Interim Ecological Soil Screening Level Documents. Website accessed September 6, 2018: https://www.epa.gov/chemical-research/interim-ecological-soil-screening-level-documents

[11] Oak Ridge National Laboratory, https://www.lanl.gov/environment/protection/eco-risk-assessment.php

[12] DEQ, 2018. Risk-Based Concentrations for Individual Chemicals. May. https://www.oregon.gov/deq/FilterDocs/RBDMTable.pdf

[13] EPA, 2018. Regional Screening Levels (RSLs) – Generic Tables. May. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

[14] USGS, 2013. Geochemical and Mineralogical Data for Soils of the Conterminous United States. https://pubs.usgs.gov/ds/801/pdf/ds801.pdf

- EPA's risk-based soil screening levels (SSL) for protection of groundwater, multiplied by 60. EPA uses a dilution attenuation factor (DAF) of 1 in the calculation of their SSLs; DEQ uses a default DAF of 60. Therefore the EPA SSL is multiplied by 60 to be consistent with DEQ methodology.
- For chemicals where DEQ and EPA have both calculated a screening level for groundwater protection, the DEQ level is used.
- DEQ's Ecological Screening Level Values
- EPA's Ecological Soil Screening Levels
- Ecological screening benchmarks developed by Oak Ridge National Laboratory[15]

8.3. Modifications

If any of the references screening levels are updated and the clean fill guidance has not been updated to reflect the new screening levels, generators can calculate their own, updated, clean fill screening levels based on the methods discussed above.

9. Review Schedule

This Directive and its referenced clean fill screening tables should be reviewed and updated when DEQ or EPA risk-based screening levels change.

[15] Oak Ridge National Laboratory, https://www.lanl.gov/environment/protection/eco-risk-assessment.php

10. Record of Revisions to IMD

Revision	Date	Changes	Editor
0	07/15/2014	New document	Bill Mason
1	07/23/2014	a. Corrected URL in footnote 1 b. Corrected OAR reference on page 3	Bill Mason
2	07/12/2018	a. Incorporated new RBCs, RSLs and SSLs b. Updated formatting c. See Section 6 for all changes	Heather Kuoppamaki
3	11/7/2018	Grammatical/typographical review	Julie Miller
4	4/3/2019	Minor edits in Tables 1 and 2. Fix footnotes in Table 1, remove Chromium III from Table 2	Heather Kuoppamaki
5	6/17/2019	Minor edits in Tables 1 and 2. Add CAS numbers and BaP equivalents to Table 2.	Heather Kuoppamakirecordof

Table 1 - Clean fill screening levels for province specific and background metals. All concentrations in mg/kg

	Statewide	Province* Background / Clean Fill Value										
Elements	**Clean Fill Value**	**Basin and Range**	**Blue Mountains**	**Cascade Range**	**Coast Range**	**Deschutes-Columbia Plateau**	**High Lava Plains**	**Klamath Mountains**	**Owyhee Uplands**	**South Willamette Valley**	**Portland Basin**	**Note**
Antimony		0.86	1.3d d	0.67	0.55	1.3	0.35	0.59	1.3 d	0.39	0.56	a
Arsenic		12	14	19	12	6.8	7.2	12	17	18	8.8	a
Barium		790	950	630	840	700	790	630	970	730	790	a
Beryllium		2.4	2.6	2.1	2.8	2.6	2.6	1.4	2	2.6	2	a
Bismuth	20											c
Cadmium		0.81	0.69	0.54	0.54	0.4	0.78	0.52	N/A	1.6	0.63	a
Chromium (total)		100	190	200	240	170	140	890	120	100	76	a
Cobalt	43											b
Copper		110	120	73	100	29	62	110	50	140	34	a
Lead		29	21	34	34	18	21	36	30	28	28 **	a
Lithium	35											b
Manganese		1,600	1,800	2,100	2,100	1,300	1,500	3,000	1,200	2,900	1,800	a
Mercury		0.28	1.4	0.24	0.11	0.04	0.06	0.17	0.75	0.07	0.23	a
Molybdenum	2.1											b
Nickel		66	92	110	160	78	75	630	53	50	47	a
Selenium		0.41	0.93	0.52	1.5	0.46	0.54	0.8	0.49	0.68	0.71	a
Silver		0.42	0.51	0.17	0.41	0.82	0.68	0.16	2.2	0.33	0.82	a
Strontium (stable)	4,700											b
Thallium		0.22	N/A	2.8	5.4	4.6	0.21	0.31	N/A	5.7	5.2	a
Tin (inorganic)	50											c
Uranium	5											c
Vanadium		270	400	280	260	300	220	290	190	370	180	a
Zinc		130	160	170	140	130	140	140	120	200	180	a

Notes:

a - Table 4, Development of Oregon Background Metals Concentrations in Soil, Technical Report, DEQ (2013), https://www.oregon.gov/deq/FilterDocs/DebORbackgroundMetal.pdf. Background concentrations (a or d), when available, are used for the clean fill value. When background concentrations are not available, risk screening values are used.

b - 95% Upper Prediction Limit calculated using USGS data for Oregon, Smith, D.B., Cannon, W.F., Woodruff, L.G., Solano, Federico, Kilburn, J.E., and Fey, D.L., 2013, Geochemical and mineralogical data for soils of the conterminous United States: U.S. Geological Survey Data Series 801, 19 p., http://pubs.usgs.gov/ds/801/

c - Table 1, Guidance for Ecological Risk Assessment, Level II Screening Level Values, DEQ (2001), https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf. Only used if ecotoxicological benchmarks from Oak Ridge National Laboratory are not available.

d - Ecotoxicological screening benchmarks developed by Oak Ridge National Laboratory: https://www.lanl.gov/environment/protection/eco-risk-assessment.php

e - Regional Screening Levels, EPA (May 2018), Residential soil. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

* - Province boundaries are presented in Figure 1

** - The background concentration of lead for the Portland Basin appears to include anthropogenic influences (it is 79 mg/kg compared to no more than about 36 mg/kg in the rest of the state). Therefore, DEQ used the background lead concentration from the South Willamette Basin province as a background concentration for lead for the Portland Basin.

Last updated by Heather Kuoppamaki, DEQ-NWR, on June 17, 2019

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Acenaphthene	83-32-9	0.25	g
Acenaphthylene	208-96-8	120	g
Acephate	30560-19-1	0.32	b
Acetaldehyde	75-07-0	0.031	b
Acetochlor	34256-82-1	17	b
Acetone	67-64-1	1.2	g
Acetone Cyanohydrin	75-86-5	2,800,000	a
Acetonitrile	75-05-8	1.6	b
Acetophenone	98-86-2	35	b
Acetylaminofluorene, 2-	53-96-3	0.0043	b
Acrolein (Propenal)	107-02-8	0.0005	b
Acrylamide	79-06-1	0.00066	b
Acrylic Acid	79-10-7	0.025	b
Acrylonitrile	107-13-1	0.00036	d
Adiponitrile	111-69-3	8,500,000	a
Alachlor	15972-60-8	0.052	b
Aldicarb	116-06-3	0.29	b
Aldicarb Sulfone	1646-88-4	0.26	b
Aldrin	309-00-2	0.023	d
Allyl Alcohol	107-18-6	0.0025	b
Allyl Chloride	107-05-1	0.014	b
Aluminum Phosphide	20859-73-8	31	a
Ametryn	834-12-8	9.6	b
Aminobiphenyl, 4-	92-67-1	0.0009	b
Aminophenol, m-	591-27-5	37	b
Aminophenol, o-	95-55-6	1.8	b
Aminophenol, p-	123-30-8	9	b
Amitraz	33089-61-1	160	a
Ammonium Perchlorate	7790-98-9	55	a
Ammonium polyphosphate	68333-79-9	3,800,000	a
Ammonium Sulfamate	7773-06-0	16,000	a
Amyl Alcohol, tert-	75-85-4	0.078	b
Aniline	62-53-3	0.28	b
Anthracene	120-12-7	6.8	g
Anthraquinone, 9,10-	84-65-1	0.84	b
Antimony Pentoxide	1314-60-9	39	a
Antimony Tetroxide	1332-81-6	31	a
Antimony Trioxide	1309-64-4	280,000	a
Aroclor 1016	12674-11-2	1.1	g
Aroclor 1221	11104-28-2	0.0048	b
Aroclor 1232	11141-16-5	0.0048	b
Aroclor 1242	53469-21-9	0.041	g
Aroclor 1248	12672-29-6	0.0073	g
Aroclor 1254	11097-69-1	0.041	g
Aroclor 1260	11096-82-5	0.24	a
Aroclor 5460	11126-42-4	35	a
Arsenic III	7440-38-2	10	e
Arsine	7784-42-1	0.27	a
Asulam	3337-71-1	11	b
Atrazine	1912-24-9	0.012	b
Auramine	492-80-8	0.037	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Avermectin B1	65195-55-3	25	a
Azinphos-methyl	86-50-0	1	b
Azobenzene	103-33-3	0.056	b
Azodicarbonamide	123-77-3	410	b
Benfluralin	1861-40-1	56	b
Benomyl	17804-35-2	51	b
Bensulfuron-methyl	83055-99-6	60	b
Bentazon	25057-89-0	7.2	b
Benzaldehyde	100-52-7	0.25	b
Benzene	71-43-2	0.023	d
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	0.013	b
Benzenethiol (thiophenol)	108-98-5	0.66	b
Benzidine	92-87-5	0.000038	d
Benzo(a)anthracene	56-55-3	0.73	g
Benzo(a)pyrene (BaP equivalents)	50-32-8	0.11	a
Benzo(b)fluoranthene	205-99-2	1.1	a
Benzo(g,h,i)perylene	191-24-2	25	g
Benzo(j)fluoranthene	205-82-3	0.42	a
Benzo(k)fluoranthene	207-08-9	11	a
Benzoic Acid	65-85-0	1	g
Benzotrichloride	98-07-7	0.0004	b
Benzyl Alcohol	100-51-6	29	b
Benzyl Chloride	100-44-7	0.0059	b
Bidrin (Dicrotophos)	141-66-2	0.0084	b
Bifenox	42576-02-3	46	b
Biphenthrin	82657-04-3	950	a
Biphenyl, 1,1'-	92-52-4	0.52	b
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether)	108-60-1	16	b
Bis(2-chloroethoxy)methane	111-91-1	0.78	b
Bis(2-chloroethyl)ether (dichloroethyl ether)	111-44-4	0.00019	d
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	0.02	g
Bis(chloromethyl)ether	542-88-1	0.000001	b
Bisphenol A	80-05-7	3,200	a
Boron And Borates Only	7440-42-8	0.5	e
Boron Trichloride	10294-34-5	160,000	a
Boron Trifluoride	7637-07-2	3,100	a
Bromate	15541-45-4	0.051	b
Bromine	7726-95-6	10	e
Bromo-2-chloroethane, 1-	107-04-0	0.00013	b
Bromo-3-fluorobenzene, 1-	1073-06-9	0.28	b
Bromo-4-fluorobenzene, 1-	460-00-4	0.26	b
Bromoaniline, 4-	106-40-1	100	e
Bromobenzene	108-86-1	2.5	b
Bromochloromethane	74-97-5	1.3	b
Bromodichloromethane	75-27-4	0.002	d
Bromoform (tribromomethane)	75-25-2	0.046	d
Bromomethane	74-83-9	0.083	d
Bromophos	2104-96-3	9	b
Bromopropane, 1-	106-94-5	3.8	b
Bromoxynil	1689-84-5	0.031	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Bromoxynil Octanoate	1689-99-2	0.13	b
Butadiene, 1,3-	106-99-0	0.00059	b
Butanoic acid, 4-(2,4-dichlorophenoxy)-	94-82-6	25	b
Butanol, N-	71-36-3	25	b
Butyl alcohol, sec-	78-92-2	300	b
Butyl benzyl phthlate	85-68-7	14	b
Butylate	2008-41-5	27	b
Butylated hydroxyanisole	25013-16-5	17	b
Butylated hydroxytoluene	128-37-0	6	b
Butylbenzene, n-	104-51-8	190	b
Butylbenzene, sec-	135-98-8	350	b
Butylbenzene, tert-	98-06-6	96	b
Butylphthalyl Butylglycolate	85-70-1	19,000	b
Cacodylic Acid	75-60-5	6.6	b
Calcium Cyanide	592-01-8	78	a
Calcium pyrophosphate	7790-76-3	3,800,000	a
Caprolactam	105-60-2	150	b
Captafol	2425-06-1	0.043	b
Captan	133-06-2	1.3	b
Carbaryl	63-25-2	100	b
Carbazole	86-74-8	79	g
Carbofuran	1563-66-2	2.2	b
Carbon Disulfide	75-15-0	0.81	g
Carbon Tetrachloride	56-23-5	0.013	d
Carbonyl Sulfide	463-58-1	31	b
Carbosulfan	55285-14-8	72	b
Carboxin	5234-68-4	60	b
Ceric oxide	1306-38-3	1,300,000	a
Chloral Hydrate	302-17-0	24	b
Chloramben	133-90-4	4.2	b
Chloranil	118-75-2	0.009	b
Chloraniline, 3-	108-42-9	20	e
Chlordane, alpha-	5103-71-9	0.27	g
Chlordane, gamma-	5103-74-2	2.2	g
Chlordane, technical	57-74-9	0.91	d
Chlordecone (Kepone)	143-50-0	0.0072	b
Chlorfenvinphos	470-90-6	1.9	b
Chlorimuron, Ethyl-	90982-32-4	36	b
Chlorine	7782-50-5	0.0084	b
Chlorine Dioxide	10049-04-4	2,300	a
Chlorite (Sodium Salt)	7758-19-2	2,300	a
Chloro-1,1-difluoroethane, 1-	75-68-3	3,100	b
Chloro-1,3-butadiene, 2- (Chloroprene)	126-99-8	0.00059	b
Chloro-2-methylaniline HCl, 4-	3165-93-3	0.009	b
Chloro-2-methylaniline, 4-	95-69-2	0.024	b
Chloroacetaldehyde, 2-	107-20-0	0.0035	b
Chloroacetamide	79-07-2	2	e
Chloroacetophenone, 2-	532-27-4	43,000	a
Chloroaniline, p- (4-Chloroaniline)	106-47-8	0.0096	b
Chlorobenzene	108-90-7	2.4	g
Chlorobenzene sulfonic acid, p-	98-66-8	28	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Chlorobenzilate	510-15-6	0.06	b
Chlorobenzoic Acid, p-	74-11-3	7.8	b
Chlorobenzotrifluoride, 4-	98-56-6	7.2	b
Chlorobutane, 1-	109-69-3	16	b
Chlorodibromomethane (dibromochloromethane)	124-48-1	0.0024	d
Chlorodifluoromethane	75-45-6	2,600	b
Chloroethanol, 2-	107-07-3	4.9	b
Chloroform	67-66-3	0.0034	d
Chloromethane	74-87-3	2.2	d
Chloromethyl Methyl Ether	107-30-2	0.000084	b
Chloronaphthalene, Beta-	91-58-7	230	b
Chloronitrobenzene, o-	88-73-3	0.013	b
Chloronitrobenzene, p-	100-00-5	0.066	b
Chlorophenol, 2-	95-57-8	0.39	g
Chlorophenol, 3-	108-43-0	7	e
Chlorophenol, 4-	106-48-9	50	e
Chloropicrin	76-06-2	0.015	b
Chlorothalonil	1897-45-6	3	b
Chlorotoluene, o-	95-49-8	14	b
Chlorotoluene, p-	106-43-4	14	b
Chlorozotocin	54749-90-5	0.0000043	b
Chlorpropham	101-21-3	38	b
Chlorpyrifos	2921-88-2	7.2	b
Chlorpyrifos Methyl	5598-13-0	32	b
Chlorsulfuron	64902-72-3	50	b
Chlorthal-dimethyl	1861-32-1	9	b
Chlorthiophos	60238-56-4	4.4	b
Chromium (VI)	18540-29-9	0.04	b
Chrysene	218-01-9	3.1	g
Clofentezine	74115-24-5	820	a
Copper Cyanide	544-92-3	390	a
Cresol, m- (3-Methylphenol)	108-39-4	0.69	g
Cresol, o- (2-Methylphenol)	95-48-7	0.67	g
Cresol, p-	106-44-5	90	b
Cresol, p-chloro-m-	59-50-7	100	b
Cresols	1319-77-3	78	b
Crotonaldehyde, trans-	123-73-9	0.00049	b
Cumene	98-82-8	96	d
Cupferron	135-20-6	0.037	b
Cyanazine	21725-46-2	0.0025	b
Cyanogen	460-19-5	78	a
Cyanogen Bromide	506-68-3	7,000	a
Cyanogen Chloride	506-77-4	3,900	a
Cyclohexane	110-82-7	780	b
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	0.96	b
Cyclohexanone	108-94-1	20	b
Cyclohexene	110-83-8	2.8	b
Cyclohexylamine	108-91-8	60	b
Cyfluthrin	68359-37-5	1,600	a
Cyhalothrin/karate	68085-85-8	63	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Cyromazine	66215-27-8	150	b
Dalapon	75-99-0	7.2	b
Daminozide (Alar)	1596-84-5	0.057	b
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'-(BDE-209)	1163-19-5	440	a
Demeton	8065-48-3	2.5	a
Di(2-ethylhexyl)adipate	103-23-1	280	b
Diallate	2303-16-4	0.048	b
Diammonium phosphate	7783-28-0	3,800,000	a
Diazinon	333-41-5	3.9	b
Dibenz(a,h)anthracene	53-70-3	0.11	a
Dibenzo(a,e)pyrene	192-65-4	0.042	a
Dibenzofuran	132-64-9	0.002	e
Dibenzothiophene	132-65-0	72	b
Dibromo-3-chloropropane, 1,2-	96-12-8	0.0000084	b
Dibromobenzene, 1,3-	108-36-1	0.31	b
Dibromobenzene, 1,4-	106-37-6	7.2	b
dibromoethane, 1,2- (EDB)	106-93-4	0.00012	d
Dibromomethane (Methylene Bromide)	74-95-3	0.13	b
Dibutyl phthalate (Di-n-butyl phthalate)	84-74-2	0.011	g
Dibutyltin Compounds	E1790660	19	a
Dicalcium phosphate	7757-93-9	3,800,000	a
Dicamba	1918-00-9	9	b
Dichloro-2-butene, 1,4-	764-41-0	0.00004	b
Dichloro-2-butene, cis-1,4-	1476-11-5	0.000037	b
Dichloro-2-butene, trans-1,4-	110-57-6	0.000037	b
Dichloroacetic Acid	79-43-6	0.019	b
Dichloroaniline, 2,4-	554-00-7	100	e
Dichloroaniline, 3,4-	95-76-1	10	e
Dichlorobenzene, 1,2-	95-50-1	0.92	g
Dichlorobenzene, 1,3-	541-76-1	0.74	g
Dichlorobenzene, 1,4-	106-46-7	0.057	d
Dichlorobenzidine, 3,3'-	91-94-1	0.17	d
Dichlorobenzophenone, 4,4'-	90-98-2	28	b
Dichlorodifluoromethane (Freon-12)	75-71-8	18	b
Dichlorodiphenyldichloroethane, 4,4- (DDD)	72-54-8	0.0063	g
Dichlorodiphenyldichloroethene, 4,4- (DDE)	72-55-9	0.01	e
Dichlorodiphenyltrichloroethane, 4,4- (DDT)	50-29-3	0.01	e
Dichloroethane, 1,1-	75-34-3	0.044	d
Dichloroethane, 1,2- (EDC)	107-06-2	0.0028	d
Dichloroethylene, 1,1-	75-35-4	6.7	d
Dichloroethylene, 1,2- (mixture)		2,500	e
Dichloroethylene, 1,2-cis-	156-59-2	0.63	d
Dichloroethylene, 1,2-trans-	156-60-5	7	d
Dichloromethane	75-09-2	0.14	d
Dichlorophenol, 2,4-	120-83-2	1.4	b
Dichlorophenol, 3,4-	95-77-2	20	e
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	2.3	d
Dichloropropane, 1,2-	78-87-5	0.017	b
Dichloropropane, 1,3-	142-28-9	7.8	b
Dichloropropanol, 2,3-	616-23-9	0.78	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Dichloropropene, 1,3-	542-75-6	0.01	b
Dichlorvos	62-73-7	0.0049	b
Dicyclopentadiene	77-73-6	0.13	b
Dieldrin	60-57-1	0.0045	g
Diethanolamine	111-42-2	0.49	b
Diethyl phthalate	84-66-2	100	e
Diethylene Glycol Monobutyl Ether	112-34-5	7.8	b
Diethylene glycol monoethyl ether	111-90-0	14	b
Diethylformamide	617-84-5	0.25	b
Diethylstilbestrol	56-53-1	0.0016	a
Difenzoquat	43222-48-6	5,200	a
Diflubenzuron	35367-38-5	20	b
Difluoroethane, 1,1- (DFE)	75-37-6	1,700	b
Difluoropropane, 2,2-	420-45-1	8,400	b
Dihydrosafrole	94-58-6	0.011	b
Diisopropyl ether (DIPE)	108-20-3	22	b
Diisopropyl Methylphosphonate	1445-75-6	27	b
Dimagnesium phosphate	7782-75-4	3,800,000	a
Dimethipin	55290-64-7	5.8	b
Dimethoate	60-51-5	0.59	b
Dimethoxybenzidine, 3,3'-	119-90-4	0.0035	b
Dimethyl methylphosphonate	756-79-6	0.58	b
Dimethyl phthalate	131-11-3	10	g
Dimethylamino azobenzene [p-]	60-11-7	0.0013	b
Dimethylaniline HCl, 2,4-	21436-96-4	0.0072	b
Dimethylaniline, 2,4-	95-68-1	0.013	b
Dimethylaniline, N,N-	121-69-7	0.054	b
Dimethylbenz(a)anthracene, 7,12-	57-97-6	0.00046	a
Dimethylbenzidine, 3,3'-	119-93-7	0.0026	b
Dimethylformamide	68-12-2	0.72	b
Dimethylhydrazine, 1,1-	57-14-7	0.000056	b
Dimethylhydrazine, 1,2-	540-73-8	0.00000039	b
Dimethylphenol, 2,4-	105-67-9	20	e
Dimethylphenol, 2,6-	576-26-1	0.78	b
Dimethylphenol, 3,4-	95-65-8	1.3	b
Dimethylterephthalate	120-61-6	29	b
Dimethylvinylchloride	513-37-1	0.0066	b
Di-n-hexylphthalate	84-75-3	3,100	e
Dinitrobenzene, 1,2-	528-29-0	0.11	b
Dinitrobenzene, 1,3-	99-65-0	0.072	g
Dinitrobenzene, 1,4-	100-25-4	0.11	b
Dinitro-o-cresol, 4,6-	534-52-1	0.16	b
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	46	b
Dinitrophenol, 2,4-	51-28-5	2.6	b
Dinitrotoluene Mixture, 2,4/2,6-	E1615210	0.009	b
Dinitrotoluene, 2,4-	121-14-2	0.019	b
Dinitrotoluene, 2,6-	606-20-2	0.0089	d
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	1.8	b
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	1.8	b
Dinitrotoluene, Technical grade	25321-14-6	0.0084	b
Dinoseb	88-85-7	7.8	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Di-N-propylnitrosamine (N-nitrosodi-N-propylamine)	621-64-7	0.00094	d
Dioxane, 1,4-	123-91-1	0.0023	d
Diphenamid	957-51-7	310	b
Diphenyl Ether	101-84-8	0.2	b
Diphenyl Sulfone	127-63-9	2.2	b
Diphenylamine	122-39-4	10	g
Diphenylhydrazine, 1,2-	122-66-7	0.015	b
Dipotassium phosphate	7758-11-4	3,800,000	a
Diquat	85-00-7	50	b
Direct Black 38	1937-37-7	0.076	a
Direct Blue 6	2602-46-2	0.073	a
Direct Brown 95	16071-86-6	0.081	a
Disodium phosphate	7558-79-4	3,800,000	a
Disulfoton	298-04-4	0.056	b
Dithiane, 1,4-	505-29-3	5.8	b
Diuron	330-54-1	0.9	b
Dodine	2439-10-3	130	b
Endosulfan, (alpha-beta)		0.64	g
Endothall	145-73-3	5.5	b
Endrin	72-20-8	0.0014	g
Epichlorohydrin	106-89-8	0.027	b
Epoxybutane, 1,2-	106-88-7	0.55	b
EPTC	759-94-4	24	b
Ethanol	64-17-5	4,000	e
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	9.6	b
Ethephon	16672-87-0	1.3	b
Ethion	563-12-2	0.51	b
Ethoxyethanol Acetate, 2-	111-15-9	1.5	b
Ethoxyethanol, 2-	110-80-5	4.1	b
Ethyl Acetate	141-78-6	1.9	b
Ethyl Acrylate	140-88-5	0.19	b
Ethyl Chloride (Chloroethane)	75-00-3	310	d
Ethyl Ether (Diethyl ether)	60-29-7	53	b
Ethyl Methacrylate	97-63-2	9	b
Ethylbenzene	100-41-4	0.22	d
Ethylene Cyanohydrin	109-78-4	17	b
Ethylene Diamine	107-15-3	25	b
Ethylene Glycol	107-21-1	490	b
Ethylene Glycol Monobutyl Ether	111-76-2	25	b
Ethylene Oxide	75-21-8	0.0000084	b
Ethylene Thiourea	96-45-7	0.022	b
Ethyleneimine	151-56-4	0.0000031	b
Ethylphthalyl Ethyl Glycolate	84-72-0	7,800	b
Ethyl-p-nitrophenyl phosphonate (EPN)	2104-64-5	0.17	b
Fenamiphos	22224-92-6	0.0002	e
Fenpropathrin	39515-41-8	170	b
Fenvalerate	51630-58-1	1,600	a
Fluometuron	2164-17-2	11	b
Fluoranthene	206-44-0	10	g
Fluorene	86-73-7	3.7	g

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Fluoride	16984-48-8	3,100	a
Fluorine (Soluble Fluoride)	7782-41-4	30	e
Fluridone	59756-60-4	5,100	a
Flurprimidol	56425-91-3	190	b
Flusilazole	85509-19-9	130	a
Flutolanil	66332-96-5	2,500	b
Fluvalinate	69409-94-5	630	a
Folpet	133-07-3	23	b
Fomesafen	72178-02-0	9.6	b
Fonofos	944-22-9	2.8	b
Formaldehyde	50-00-0	0.002	d
Formic Acid	64-18-6	0.0078	b
Fosetyl-AL	39148-24-8	40,000	b
Furan	110-00-9	0.44	b
Furazolidone	67-45-8	0.0023	b
Furfural	98-01-1	0.49	b
Furium	531-82-8	0.0041	b
Furmecyclox	60568-05-0	0.072	b
Generic Diesel/Heating Oil		1,100	c
Generic Gasoline		31	d
Generic Mineral/Insulating Oil		2,800	c
Glufosinate, Ammonium	77182-82-2	1.6	b
Glutaraldehyde	111-30-8	24	b
Glycidyl	765-34-4	0.02	b
Glyphosate	1071-83-6	530	b
Guanidine	113-00-8	2.7	b
Guanidine Chloride	50-01-1	1,300	a
Guanidine Nitrate	506-93-4	9	b
Haloxyfop, Methyl	69806-40-2	0.5	b
Heptachlor	76-44-8	0.017	d
Heptachlor Epoxide	1024-57-3	0.0042	d
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	0.13	a
Heptanal, n-	111-71-7	0.084	b
Heptane, N-	142-82-5	1	e
Hexabromobenzene	87-82-1	14	b
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	13	a
Hexachlorobenzene	118-74-1	0.018	d
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	0.1	b
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	0.1	b
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	0.1	b
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	0.0001	b
Hexachlorobutadiene	87-68-3	0.016	b
Hexachlorocyclohexane, (technical-BHC)	608-73-1	0.009	b
Hexachlorocyclohexane, alpha- (alpha-HCH or alpha-BHC)	319-84-6	0.0063	d
Hexachlorocyclohexane, Beta- (beta-BHC)	319-85-7	0.009	b
Hexachlorocyclohexane, gamma- (gamma-BHC or Lindane)	58-89-9	0.0095	g
Hexachlorocyclopentadiene	77-47-4	0.078	b
Hexachlorodibenzo-p-dioxin, Mixture	0	0.0001	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Hexachloroethane	67-72-1	0.022	d
Hexachlorophene	70-30-4	19	a
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.016	b
Hexamethylene Diisocyanate, 1,6-	822-06-0	0.013	b
Hexamethylphosphoramide	680-31-9	0.11	b
Hexane, N-	110-54-3	600	b
Hexanedioic Acid	124-04-9	590	b
Hexanone, 2-	591-78-6	0.36	g
Hexazinone	51235-04-2	18	b
Hexythiazox	78587-05-0	30	b
Hydramethylnon	67485-29-4	1,100	a
Hydrazine	302-01-2	0.000013	b
Hydrazine Sulfate	10034-93-2	0.23	a
Hydrogen Chloride	7647-01-0	28,000,000	a
Hydrogen Cyanide	74-90-8	0.88	d
Hydrogen Fluoride	7664-39-3	3,100	a
Hydrogen Sulfide	7783-06-4	2,800,000	a
Hydroquinone	123-31-9	0.052	b
Imazalil	35554-44-0	0.9	b
Imazaquin	81335-37-7	1,400	b
Imazethapyr	81335-77-5	2,500	b
Indeno[1,2,3-cd]pyrene	193-39-5	1.1	a
Iodine	7553-56-2	4	e
Iprodione	36734-19-7	13	b
Isobutyl Alcohol	78-83-1	72	b
Isophorone	78-59-1	1.6	b
Isopropalin	33820-53-0	55	b
Isopropanol	67-63-0	5	b
Isopropyl Methyl Phosphonic Acid	1832-54-8	26	b
Isoxaben	82558-50-7	120	b
JP-7	E1737665	430,000,000	a
Lactofen	77501-63-4	280	b
Lactonitrile	78-97-7	0.049	b
Lead acetate	301-04-2	0.11	b
Lead Phosphate	7446-27-7	82	a
Lead subacetate	1335-32-6	0.12	b
Lewisite	541-25-3	0.0023	b
Linuron	330-55-2	6.6	b
Lithium Perchlorate	7791-03-9	55	a
Malathion	121-75-5	6	b
Maleic Anhydride	108-31-6	23	b
Maleic Hydrazide	123-33-1	130	b
Malononitrile	109-77-3	0.025	b
Mancozeb	8018-01-7	46	b
Maneb	12427-38-2	8.4	b
MCPA ((4-chloro-2-methylphenoxy)acetic acid)	94-74-6	0.097	d
MCPB	94-81-5	1.6	b
MCPP	93-65-2	0.28	b
Mephosfolan	950-10-7	0.16	b
Mepiquat Chloride	24307-26-4	12	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Mercaptobenzothiazole, 2-	149-30-4	1.1	b
Mercuric Chloride (and other Mercury salts)	7487-94-7	23	a
Mercury (methyl)	22967-92-6	0.0002	e
Merphos	150-50-5	2.3	a
Merphos Oxide	78-48-8	0.084	b
Metalaxyl	57837-19-1	20	b
Methacrylonitrile	126-98-7	0.026	b
Methamidophos	10265-92-6	0.013	b
Methanol	67-56-1	250	b
Methidathion	950-37-8	0.43	b
Methomyl	16752-77-5	6.6	b
Methoxy-5-nitroaniline, 2-	99-59-2	0.032	b
Methoxychlor	72-43-5	5.1	g
Methoxyethanol Acetate, 2-	110-49-6	0.025	b
Methoxyethanol, 2-	109-86-4	0.35	b
Methyl Acetate	79-20-9	250	b
Methyl Acrylate	96-33-3	0.53	b
Methyl Ethyl Ketone (2-Butanone)	78-93-3	72	b
Methyl Hydrazine	60-34-4	0.000078	b
Methyl Iodide	74-88-4	0.038	g
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	9.7	g
Methyl Isocyanate	624-83-9	0.035	b
Methyl Methacrylate	80-62-6	18	b
Methyl Methanesulfonate	66-27-3	0.0096	b
Methyl Parathion	298-00-0	0.44	b
Methyl Phosphonic Acid	993-13-5	14	b
Methyl Styrene (Mixed Isomers)	25013-15-4	2.3	b
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.11	d
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	0.22	b
Methyl-2-Pentanol, 4-	108-11-2	84	b
Methyl-5-nitroaniline, 2- (5-Nitro-o-toluidine)	99-55-8	0.28	b
Methylaniline Hydrochloride, 2-	636-21-5	0.016	b
Methylarsonic acid	124-58-3	3.5	b
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	13	a
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	5.4	a
Methylcholanthrene, 3-	56-49-5	0.0055	a
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	0.11	b
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	0.16	b
Methylenebisbenzenamine, 4,4'-	101-77-9	0.013	b
Methylenediphenyl Diisocyanate	101-68-8	850,000	a
Methylnaphthalene, 1-	90-12-0	0.36	b
Methylnaphthalene, 2-	91-57-6	11	b
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	0.00019	b
Methylstyrene, Alpha-	98-83-9	72	b
Metolachlor	51218-45-2	190	b
Metribuzin	21087-64-9	9	b
Metsulfuron-methyl	74223-64-6	110	b
Mineral oils	8012-95-1	140,000	b
Mirex	2385-85-5	0.036	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Molinate	2212-67-1	1	b
Monoaluminum phosphate	13530-50-2	3,800,000	a
Monoammonium phosphate	7722-76-1	3,800,000	a
Monocalcium phosphate	7758-23-8	3,800,000	a
Monochloramine	10599-90-3	7,800	a
Monomagnesium phosphate	7757-86-0	3,800,000	a
Monomethylaniline	100-61-8	0.84	b
Monopotassium phosphate	7778-77-0	3,800,000	a
Monosodium phosphate	7558-80-7	3,800,000	a
Myclobutanil	88671-89-0	340	b
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	19	a
Naled	300-76-5	1.1	b
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	2,300	a
Naphthalene	91-20-3	0.077	d
Naphthylamine, 2-	91-59-8	0.012	b
Napropamide	15299-99-7	780	b
Nickel Acetate	373-02-4	2.7	b
Nickel Carbonate	3333-67-3	670	a
Nickel Carbonyl	13463-39-3	820	a
Nickel Hydroxide	12054-48-7	820	a
Nickel Oxide	1313-99-1	840	a
Nickel Refinery Dust	E715532	820	a
Nickel Subsulfide	12035-72-2	0.41	a
Nickelocene	1271-28-9	670	a
Nitrate	14797-55-8	130,000	a
Nitrite	14797-65-0	7,800	a
Nitroaniline, 2-	88-74-4	4.8	b
Nitroaniline, 3-	99-09-2	70	e
Nitroaniline, 4-	100-01-6	0.096	b
Nitrobenzene	98-95-3	0.0055	b
Nitrocellulose	9004-70-0	780,000	b
Nitrofurantoin	67-20-9	37	b
Nitrofurazone	59-87-0	0.0032	b
Nitroglycerin	55-63-0	0.051	b
Nitroguanidine	556-88-7	29	b
Nitromethane	75-52-5	0.0084	b
Nitrophenol, 4-	100-02-7	7	e
Nitropropane, 2-	79-46-9	0.000032	b
Nitropyrene, 4-	57835-92-4	0.2	b
Nitrosodiethanolamine, N-	1116-54-7	0.00034	b
Nitrosodiethylamine, N-	55-18-5	0.0000037	b
Nitrosodimethylamine, N-	62-75-9	0.0000016	b
Nitroso-di-N-butylamine, N-	924-16-3	0.00033	b
Nitrosodiphenylamine, N- (Diphenylnitrosamine)	86-30-6	10	d
Nitrosomethylethylamine, N-	10595-95-6	0.000012	b
Nitrosomorpholine [N-]	59-89-2	0.00017	b
Nitroso-N-ethylurea, N-	759-73-9	0.000013	b
Nitroso-N-methylurea, N-	684-93-5	0.0000028	b
Nitrosopiperidine [N-]	100-75-4	0.00026	b
Nitrosopyrrolidine, N-	930-55-2	0.00084	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Nitrotoluene, m-	99-08-1	0.096	b
Nitrotoluene, o-	88-72-2	0.018	b
Nitrotoluene, p-	99-99-0	0.24	b
Nonane, n-	111-84-2	4.5	b
Norflurazon	27314-13-2	110	b
Octabromodiphenyl Ether	32536-52-0	190	a
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	16	g
Octamethylpyrophosphoramide	152-16-9	0.58	b
Octyl Phthalate, di-N-	117-84-0	0.91	g
Oryzalin	19044-88-3	0.9	b
Oxadiazon	19666-30-9	29	b
Oxamyl	23135-22-0	6.6	b
Oxyfluorfen	42874-03-3	2.6	b
Paclobutrazol	76738-62-0	28	b
PAHs - High Molecular Weight	0	1.1	f
PAHs - Low Molecular Weight	0	29	f
Paraquat Dichloride	1910-42-5	72	b
Parathion	56-38-2	26	b
Pebulate	1114-71-2	27	b
Pendimethalin	40487-42-1	960	b
Pentabromodiphenyl Ether	32534-81-9	100	b
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	5.2	b
Pentachlorobenzene	608-93-5	1.4	b
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	0.06	b
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	0.06	b
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	0.06	b
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	0.06	b
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	0.000018	b
Pentachloroethane	76-01-7	0.019	b
Pentachloronitrobenzene	82-68-8	0.09	b
Pentachlorophenol	87-86-5	0.066	d
Pentaerythritol tetranitrate (PETN)	78-11-5	1.7	b
Pentane, n-	109-66-0	600	b
Perchlorate and perchlorate salts	14797-73-0	55	a
Perfluorobutane sulfonic acid (PFBS)	375-73-5	7.8	b
Perfluorobutanesulfonate	45187-15-3	7.8	b
Permethrin	52645-53-1	3,200	a
Phenacetin	62-44-2	0.58	b
Phenanthrene	85-01-8	5.5	g
Phenmedipham	13684-63-4	1,300	b
Phenol	108-95-2	0.79	g
Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	1.5	b
Phenothiazine	92-84-2	0.84	b
Phenyl Isothiocyanate	103-72-0	0.1	b
Phenylenediamine, m-	108-45-2	1.9	b
Phenylenediamine, o-	95-54-5	0.01	b
Phenylenediamine, p-	106-50-3	0.32	b
Phenylmercuric Acetate	62-38-4	0.03	b
Phenylphenol, 2-	90-43-7	25	b
Phorate	298-02-2	0.2	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Phosgene	75-44-5	0.31	a
Phosmet	732-11-6	4.9	b
Phosphine	7803-51-2	23	a
Phosphoric Acid	7664-38-2	3,000,000	a
Phosphorus, White	7723-14-0	0.09	b
Phthalic Acid, P-	100-21-0	410	b
Phthalic Anhydride	85-44-9	510	b
Picloram	1918-02-1	23	b
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	0.078	b
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	5	b
Pirimiphos, Methyl	29232-93-7	0.049	b
Polybrominated biphenyls	59536-65-1	0.018	a
Polychlorinated biphenyls (Total PCBs)		0.23	c
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	850,000	a
Polyphosphoric acid	8017-16-1	3,800,000	a
Potassium Cyanide	151-50-8	160	a
Potassium Perchlorate	7778-74-7	55	a
Potassium Perfluorobutane Sulfonate	29420-49-3	1,300	a
Potassium Silver Cyanide	506-61-6	390	a
Potassium tripolyphosphate	13845-36-8	3,800,000	a
Prochloraz	67747-09-5	0.11	b
Profluralin	26399-36-0	96	b
Prometon	1610-18-0	7.2	b
Prometryn	7287-19-6	54	b
Propachlor	1918-16-7	9	b
Propanil	709-98-8	2.7	b
Propargite	2312-35-8	0.66	b
Propargyl Alcohol	107-19-7	0.49	b
Propazine	139-40-2	18	b
Propham	122-42-9	13	b
Propiconazole	60207-90-1	320	b
Propionaldehyde	123-38-6	0.2	b
Propyl benzene	103-65-1	72	b
Propylene	115-07-1	360	b
Propylene Glycol	57-55-6	4,900	b
Propylene Glycol Dinitrate	6423-43-4	390,000	a
Propylene Glycol Monomethyl Ether	107-98-2	39	b
Propylene Oxide	75-56-9	0.0034	b
Propyzamide	23950-58-5	72	b
Pyrene	129-00-0	10	g
Pyridine	110-86-1	0.41	b
Quinalphos	13593-03-8	2.6	b
Quinoline	91-22-5	0.0047	b
Quizalofop-ethyl	76578-14-8	110	b
Refractory Ceramic Fibers	E715557	43,000,000	a
Resmethrin	10453-86-8	1,900	a
Ronnel	299-84-3	220	b
Rotenone	83-79-4	250	a
Safrole	94-59-7	0.0035	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Selenious Acid	7783-00-8	390	a
Selenium Sulfide	7446-34-6	390	a
Sethoxydim	74051-80-2	840	b
Silica (crystalline, respirable)	7631-86-9	4,300,000	a
Silver Cyanide	506-64-9	7,800	a
Simazine	122-34-9	0.018	b
Sodium acid pyrophosphate	7758-16-9	3,800,000	a
Sodium Acifluorfen	62476-59-9	130	b
Sodium aluminum phosphate (acidic)	7785-88-8	3,800,000	a
Sodium aluminum phosphate (anhydrous)	10279-59-1	3,800,000	a
Sodium aluminum phosphate (tetrahydrate)	10305-76-7	3,800,000	a
Sodium Azide	26628-22-8	310	a
Sodium Cyanide	143-33-9	78	a
Sodium Diethyldithiocarbamate	148-18-5	0.011	b
Sodium Fluoride	7681-49-4	3,900	a
Sodium Fluoroacetate	62-74-8	0.0049	b
Sodium hexametaphosphate	10124-56-8	3,800,000	a
Sodium Metavanadate	13718-26-8	78	a
Sodium Perchlorate	7601-89-0	55	a
Sodium polyphosphate	68915-31-1	3,800,000	a
Sodium trimetaphosphate	7785-84-4	3,800,000	a
Sodium tripolyphosphate	7758-29-4	3,800,000	a
Sodium Tungstate	13472-45-2	63	a
Sodium Tungstate Dihydrate	10213-10-2	63	a
Stirofos (Tetrachlorovinphos)	961-11-5	0.49	b
Strychnine	57-24-9	3.9	b
Styrene	100-42-5	1.2	g
Styrene-Acrylonitrile (SAN) Trimer		190	a
Sulfolane	126-33-0	0.26	b
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	3.9	b
Sulfur Trioxide	7446-11-9	1,400,000	a
Sulfuric Acid	7664-93-9	1,400,000	a
Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	0.9	b
Tebuthiuron	34014-18-1	23	b
Temephos	3383-96-8	1,300	a
Terbacil	5902-51-2	4.5	b
Terbufos	13071-79-9	0.031	b
Terbutryn	886-50-0	1.1	b
Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	3.2	b
Tetrachloroaniline, 2,3,5,6-	3481-20-7	20	e
Tetrachlorobenzene, 1,2,3,4-	634-66-2	10	e
Tetrachlorobenzene, 1,2,4,5-	95-94-3	0.47	b
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	0.038	a
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	0.0037	b
Tetrachlorodibenzodioxin (TCDD), 2,3,7,8- (dioxin)	1746-01-6	0.00000029	g
Tetrachloroethane, 1,1,1,2-	630-20-6	0.013	b
Tetrachloroethane, 1,1,2,2-	79-34-5	0.0018	b
Tetrachloroethylene (PCE)	127-18-4	0.18	g
Tetrachlorophenol, 2,3,4,6-	58-90-2	11	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	0.00027	b
Tetraethyl Dithiopyrophosphate	3689-24-5	0.31	b
Tetraethyl lead	78-00-2	0.00028	b
Tetrafluoroethane, 1,1,1,2-	811-97-2	5,600	b
Tetrahydrofuran	109-99-9	45	b
Tetrapotassium phosphate	7320-34-5	3,800,000	a
Tetrasodium pyrophosphate	7722-88-5	3,800,000	a
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1.5	g
Thallic Oxide	1314-32-5	1.6	a
Thallium (I) Nitrate	10102-45-1	0.78	a
Thallium (Soluble Salts)	7440-28-0	0.78	a
Thallium Acetate	563-68-8	0.0025	b
Thallium Carbonate	6533-73-9	0.005	b
Thallium Chloride	7791-12-0	0.78	a
Thallium Selenite	12039-52-0	0.78	a
Thallium Sulfate	7446-18-6	1.6	a
Thifensulfuron-methyl	79277-27-3	16	b
Thiobencarb	28249-77-6	33	b
Thiocyanates	E1790664	16	a
Thiocyanic Acid	463-56-9	16	a
Thiocyanomethylthio benzothiazole, 2- (TCMTB)	21564-17-0	200	b
Thiodiglycol	111-48-8	17	b
Thiofanox	39196-18-4	0.11	b
Thiophanate, Methyl	23564-05-8	0.34	b
Thiram	137-26-8	25	b
Titanium Tetrachloride	7550-45-0	140,000	a
Toluene	108-88-3	23	g
Toluene-2,4-diisocyanate	584-84-9	0.015	b
Toluene-2,5-diamine	95-70-5	0.0078	b
Toluene-2,6-diisocyanate	91-08-7	0.016	b
Toluic Acid, p-	99-94-5	1.4	b
Toluidine, o- (Methylaniline, 2-)	95-53-4	0.12	b
Toluidine, p-	106-49-0	0.066	b
Total Petroleum Hydrocarbons (Aliphatic High)	E1790670	140,000	b
Total Petroleum Hydrocarbons (Aliphatic Low)	E1790666	520	a
Total Petroleum Hydrocarbons (Aliphatic Medium)	E1790668	90	b
Total Petroleum Hydrocarbons (Aromatic High)	E1790676	2,500	a
Total Petroleum Hydrocarbons (Aromatic Low)	E1790672	1	b
Total Petroleum Hydrocarbons (Aromatic Medium)	E1790674	1.4	b
Toxaphene	8001-35-2	0.36	d
Tralomethrin	66841-25-6	470	a
Triacetin	102-76-1	27,000	b
Triadimefon	43121-43-3	30	b
Triallate	2303-17-5	0.06	b
Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	3,800,000	a
Triasulfuron	82097-50-5	13	b
Tribenuron-methyl	101200-48-0	3.7	b

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Tribromobenzene, 1,2,4-	615-54-3	3.8	b
Tribromophenol, 2,4,6-	118-79-6	13	b
Tributyl Phosphate	126-73-8	1.5	b
Tributyltin Compounds	E1790678	19	a
Tributyltin oxide (TBTO)	56-35-9	19	a
Tricalcium phosphate	7758-87-4	3,800,000	a
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	76-13-1	1,600	b
Trichloroacetic Acid	76-03-9	0.013	b
Trichloroaniline HCl, 2,4,6-	33663-50-2	0.44	b
Trichloroaniline, 2,4,5-	636-30-6	20	e
Trichloroaniline, 2,4,6-	634-93-5	0.22	b
Trichlorobenzene, 1,2,3-	87-61-6	1.3	b
Trichlorobenzene, 1,2,4-	120-82-1	0.2	b
Trichloroethane, 1,1,1-	71-55-6	190	d
Trichloroethane, 1,1,2-	79-00-5	0.0063	d
Trichloroethylene (TCE)	79-01-6	0.013	d
Trichlorofluoromethane (Freon 11)	75-69-4	52	g
Trichlorophenol, 2,4,5-	95-95-4	4	e
Trichlorophenol, 2,4,6-	88-06-2	2.4	d
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	4.1	b
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	3.7	b
Trichloropropane, 1,1,2-	598-77-6	2.1	b
Trichloropropane, 1,2,3-	96-18-4	0.000019	b
Trichloropropene, 1,2,3-	96-19-5	0.019	b
Tricresyl Phosphate (TCP)	1330-78-5	900	b
Tridiphane	58138-08-2	7.8	b
Triethylamine	121-44-8	0.26	b
Triethylene Glycol	112-27-6	530	b
Trifluoroethane, 1,1,1-	420-46-2	7,800	b
Trifluralin	1582-09-8	5	b
Trimagnesium phosphate	7757-87-1	3,800,000	a
Trimethyl Phosphate	512-56-1	0.052	b
Trimethylbenzene, 1,2,3-	526-73-8	4.9	b
Trimethylbenzene, 1,2,4-	95-63-6	10	d
Trimethylbenzene, 1,3,5-	108-67-8	11	d
Trimethylpentene, 2,4,4-	25167-70-8	13	b
Tri-n-butyltin	688-73-3	4.9	b
Trinitrobenzene, 1,3,5-	99-35-4	10	g
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	0.9	b
Triphenylphosphine Oxide	791-28-6	90	b
Tripotassium phosphate	7778-53-2	3,800,000	a
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	480	b
Tris(1-chloro-2-propyl)phosphate	13674-84-5	39	b
Tris(2,3-dibromopropyl)phosphate	126-72-7	0.0078	b
Tris(2-chloroethyl)phosphate	115-96-8	0.23	b
Tris(2-ethylhexyl)phosphate	78-42-2	170	a
Trisodium phosphate	7601-54-9	3,800,000	a
Uranium (Soluble Salts)	E715565	5	e
Urethane (Ethyl carbamate)	51-79-6	0.00034	b
Vanadium Pentoxide	1314-62-1	460	a

Table 2 - Clean fill screening levels for organics and other selected constituents. All concentrations in mg/kg

Chemical Name	CAS	Clean Fill Value	Note
Vernolate	1929-77-7	0.53	b
Vinclozolin	50471-44-8	0.96	b
Vinyl Acetate	108-05-4	5.2	b
Vinyl Bromide	593-60-2	0.0031	b
Vinyl Chloride	75-01-4	0.00057	d
Warfarin	81-81-2	0.35	b
Xylene, m-	108-38-3	11	b
Xylene, o-	95-47-6	1	e
Xylene, P-	106-42-3	11	b
Xylenes	1330-20-7	1.4	g
Zinc Cyanide	557-21-1	3,900	a
Zinc Phosphide	1314-84-7	23	a
Zineb	12122-67-7	170	b
Zirconium	7440-67-7	6.3	a

Notes:

a - Regional Screening Levels, EPA (May 2018), Residential soil. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

b - Regional Screening Levels, EPA (May 2018), groundwater protection (x60 to convert to Oregon dilution attenuation factor).

c - Risk Based Concentrations, DEQ (May 2018), Residential soil. https://www.oregon.gov/deq/FilterDocs/RBDMTable.pdf

d - Risk Based Concentrations, DEQ (May 2018), Leaching to groundwater.

e - Table 1, Guidance for Ecological Risk Assessment, Level II Screening Level Values, DEQ (2001), https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf

f - Ecological Soil Screening Levels, EPA (2005, 2007), http://www.epa.gov/ecotox/ecossl/

g - Ecotoxicological screening benchmarks developed by Oak Ridge National Laboratory: https://www.lanl.gov/environment/protection/eco-risk-assessment.php

Last updated by Heather Kuoppamaki, DEQ-NWR, on June 17, 2019

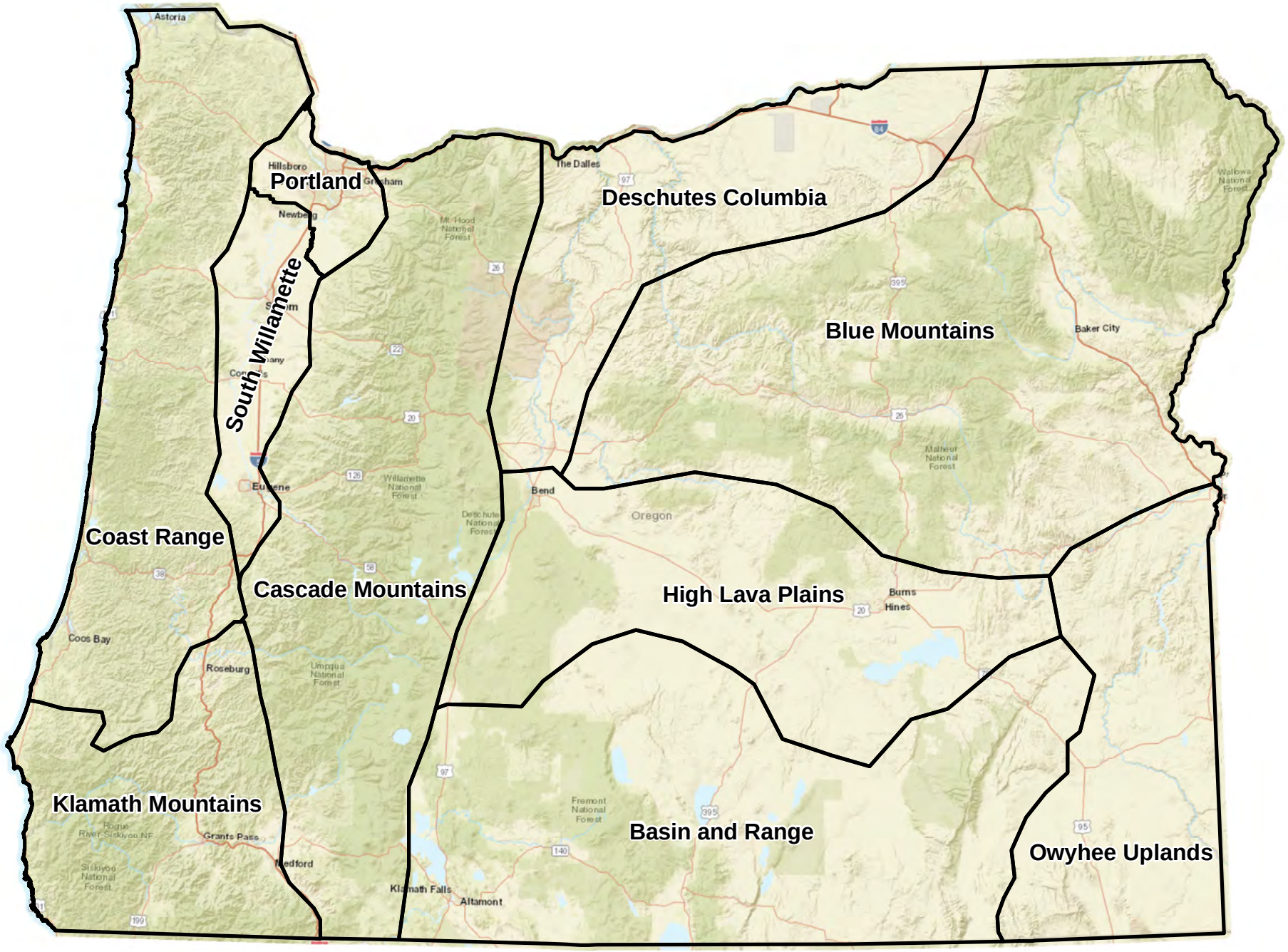
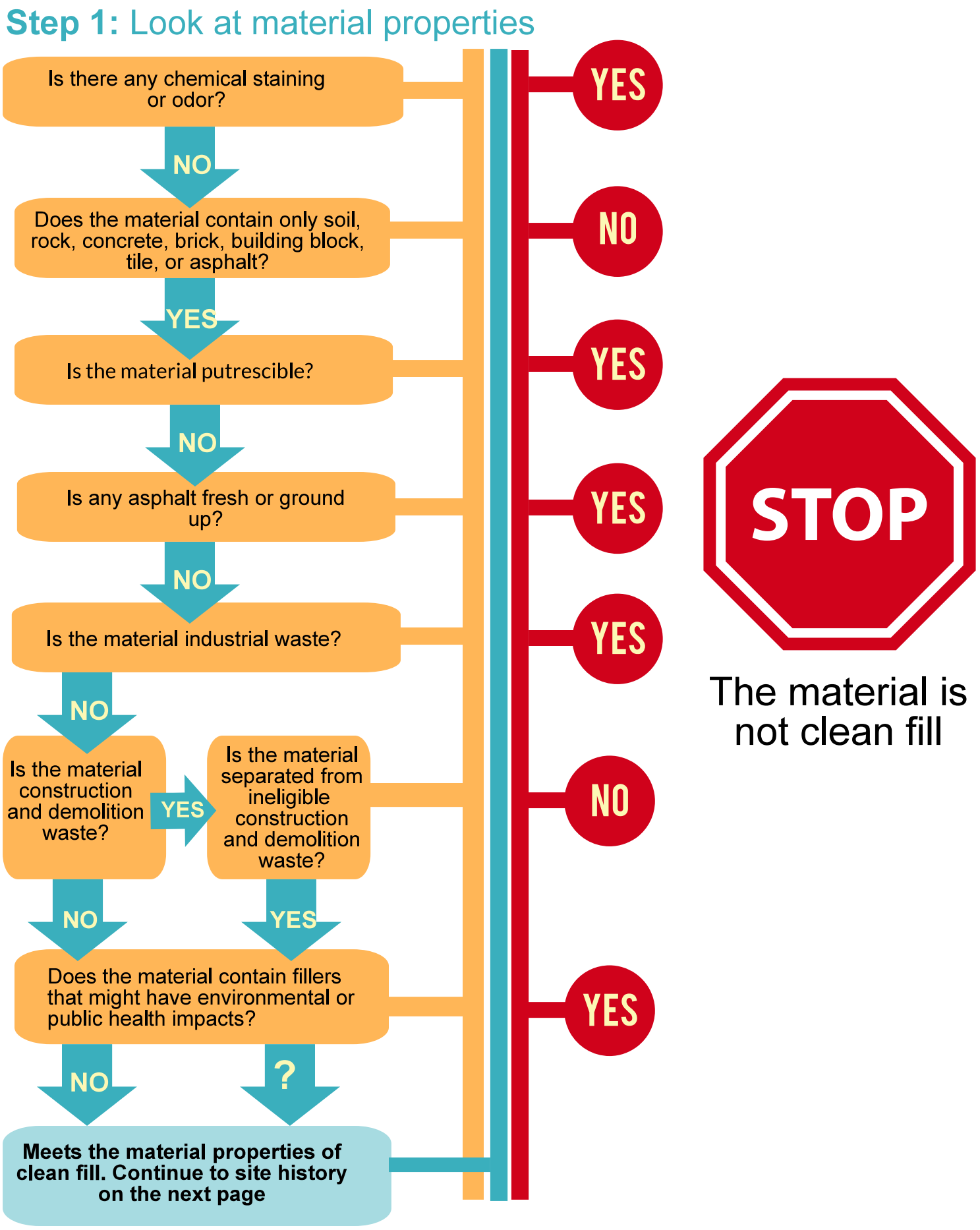


Figure 1. Physiographic Provinces of Oregon

Figure 2 - Clean Fill Evaluation Flow Chart



Step 2: Review site history

Does the material contain a listed or characteristic hazardous wastes?

YES

STOP

The material is not clean fill

NO

?

Does the material contain contaminants that could adversely impact waters of the state?

YES

? to at least one of the above

NO

Step 3: Conduct Sampling
See Section 7 for details

Does the material contain a chemical that exceeds clean fill screening levels?

YES

Do a statistical analysis. See Section 7 for details. Does the statistical analysis show concentrations above clean fill screening levels?

NO

The material is clean fill

YES

STOP

The material is not clean fill