Clean Fill Determinations

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Document Development

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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

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[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

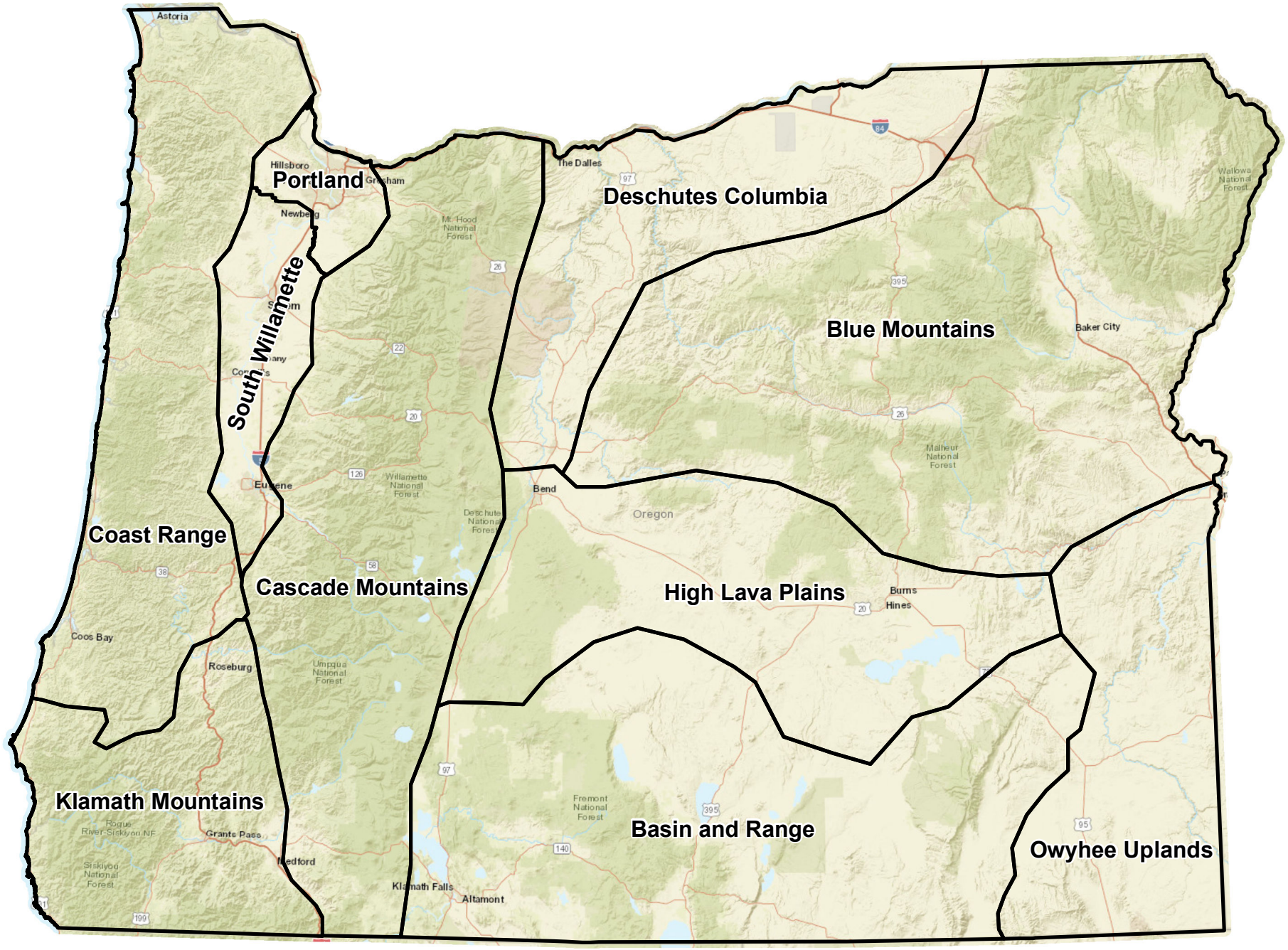
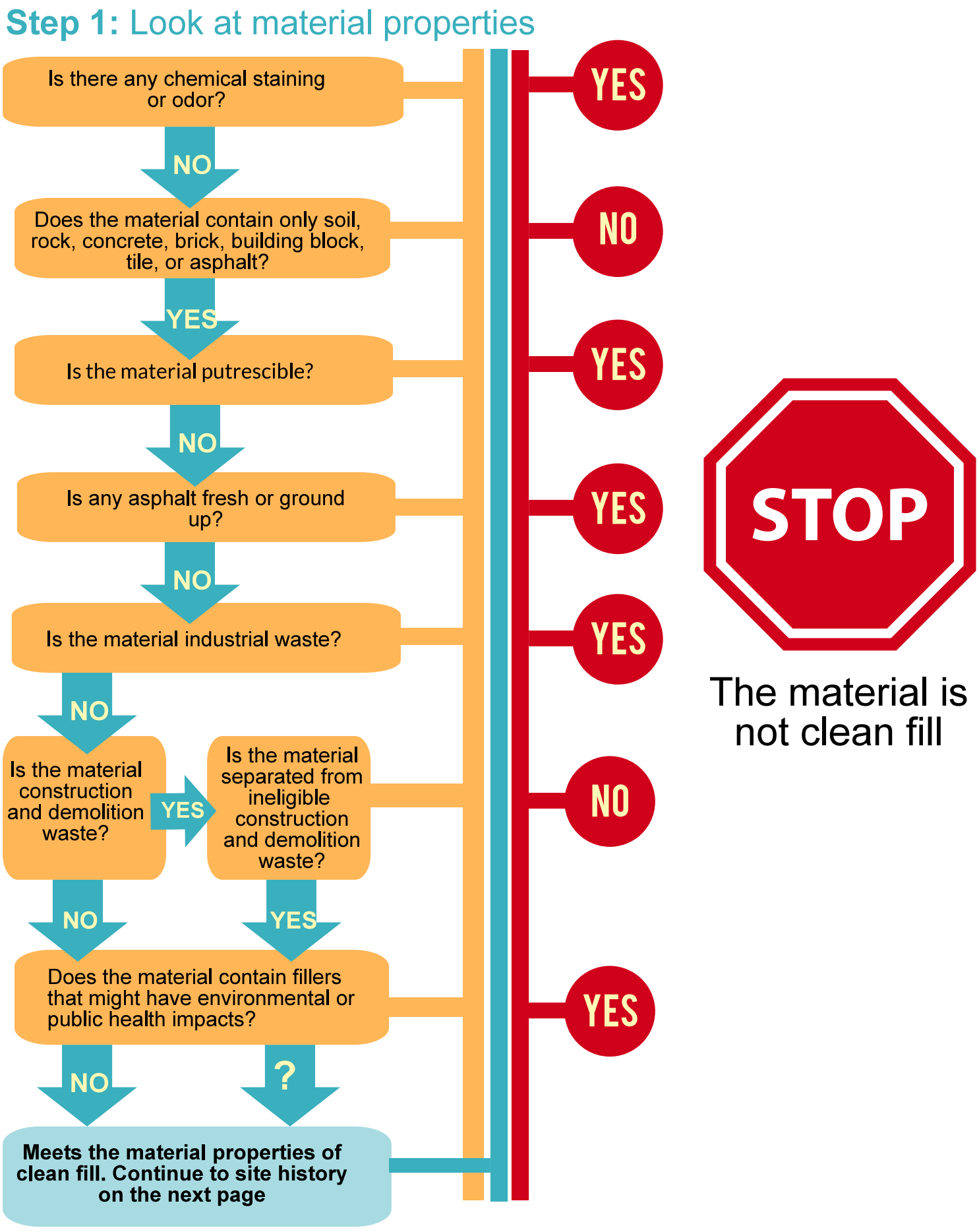


Figure 1. Physiographic Provinces of Oregon

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