Table 6-1
Soil Samples Used in the HHRA
Northwest Pipe Company, Portland, Oregon

Location ID	Sample ID	Sample Date	Upper Depth	Lower Depth	Depth Unit	Sample Type	Sample Medium	Surface Soil (0-0 ft)	Total Soil (0-10 ft)
SS-001	SS01-62105-0	21-Jun-05	0	0	ft	N1	SO	x	x
SS-002	SS02-62105-0	21-Jun-05	0	0	ft	N1	SO	x	x
SS-003	SS03-62105-0	21-Jun-05	0	0	ft	N1	SO	x	x
SS-004	SS04-62105-0	21-Jun-05	0	0	ft	N1	SO	x	x
SS-001	SS-01-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-002	SS-02-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-003	SS-03-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-004	SS-04-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-005	SS-05-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-006	SS-06-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-007	SS-07-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-008	SS-08-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-009	SS-09-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-010	SS-10-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-011	SS-11-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-012	SS-12-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-013	SS-13-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-014	SS-14-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-015	SS-15-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-016	SS-16-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-017	SS-17-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-019	SS-19-0	04-Oct-06	0	0	ft	N1	SO	x	x
SS-301	SS301-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-302	SS302-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-303	SS303-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-304	SS304-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-305	SS305-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-305	SS305-1	25-Sep-07	0	0	ft	FD1	SO	x	x
SS-306	SS306-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-307	SS307-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-308	SS308-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-309	SS309-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-310	SS310-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-312	SS312-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-313	SS313-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-314	SS314-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-315	SS315-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-315	SS315-1	25-Sep-07	0	0	ft	FD1	SO	x	x
SS-316	SS316-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-317	SS317-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-318	SS318-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-320	SS320-0	25-Sep-07	0	0	ft	N1	SO	x	x
SS-321	SS321-0	25-Sep-07	0	0	ft	N1	SO	x	x
TP-102	TP-102-1	11-Jan-08	0	0	ft	N1	SO	x	x
TP-102	TP-102-3	11-Jan-08	0	0	ft	N1	SO	x	x
TP-103	TP-103-1	11-Jan-08	0	0	ft	N1	SO	x	x
TP-103	TP-103-3	11-Jan-08	0	0	ft	N1	SO	x	x
SS-401	SS-401-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-402	SS-402-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-403	SS-403-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-404	SS-404-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-405	SS-405-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-406	SS-406-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-407	SS-407-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-408	SS-408-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-409	SS-409-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-410	SS-410-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-411	SS-411-101909-0	19-Oct-09	0	0	ft	N1	SO	x	x
SS-411	SS-411-101909-1	19-Oct-09	0	0	ft	FD1	SO	x	x
GP-302	GP302-7-8	31-May-12	7	8	ft	N1	SO	--	x

Table 6-1
Soil Samples Used in the HHRA
Northwest Pipe Company, Portland, Oregon

Location ID	Sample ID	Sample Date	Upper Depth	Lower Depth	Depth Unit	Sample Type	Sample Medium	Surface Soil (0-0 ft)	Total Soil (0-10 ft)
GP-303	GP303-9.5-10.5	31-May-12	9.5	10.5	ft	N1	SO	--	x
GP-304	GP304-9.5-10.5	31-May-12	9.5	10.5	ft	N1	SO	--	x
GP-305	GP305-9.5-10.5	31-May-12	9.5	10.5	ft	N1	SO	--	x
GP-306	GP306-10.5-11.5	31-May-12	10.5	11.5	ft	N1	SO	--	x
GP-201	GP201-9-0	26-Sep-07	9	9	ft	N1	SO	--	x
GP-202	GP202-8-0	26-Sep-07	8	8	ft	N1	SO	--	x
GP-203	GP203-8-0	26-Sep-07	8	8	ft	N1	SO	--	x
GP-203	GP203-8-1	26-Sep-07	8	8	ft	FD1	SO	--	x
GP-204	GP204-9-0	26-Sep-07	9	9	ft	N1	SO	--	x
GP-205	GP205-9-0	26-Sep-07	9	9	ft	N1	SO	--	x
GP-206	GP206-9-0	26-Sep-07	9	9	ft	N1	SO	--	x
GP-207	GP207-9-0	26-Sep-07	9	9	ft	N1	SO	--	x
GP-208	GP208-9-0	27-Sep-07	9	9	ft	N1	SO	--	x
GP-209	GP209-9-0	27-Sep-07	9	9	ft	N1	SO	--	x
GP-210	GP210-9-0	27-Sep-07	9	9	ft	N1	SO	--	x
GP-211	GP211-9-0	27-Sep-07	9	9	ft	N1	SO	--	x
GP-211	GP211-9-1	27-Sep-07	9	9	ft	FD1	SO	--	x
GP-212	GP212-9-0	27-Sep-07	9	9	ft	N1	SO	--	x
GP-213	GP213-10-0	27-Sep-07	10	10	ft	N1	SO	--	x
GP-214	GP214-10-0	27-Sep-07	10	10	ft	N1	SO	--	x
HSCS-05	HSCS-5	16-Sep-11	3	3	ft	N1	SO	--	x
HSCS-06	HSCS-6	16-Sep-11	3	3	ft	N1	SO	--	x
HSCS-07	HSCS-7	16-Sep-11	3	3	ft	N1	SO	--	x
HSCS-08	HSCS-8	16-Sep-11	3	3	ft	N1	SO	--	x
HSCS-09	HSCS-9	16-Sep-11	3	3	ft	N1	SO	--	x
HSCS-10	HSCS-10	16-Sep-11	3	3	ft	N1	SO	--	x

Table 6-2

Summary of Transmissivity and Hydraulic Conductivity Estimates for Shallow Aquifer

Northwest Pipe Company

Well ID	Depth of Screened Interval (ft)	Saturated Aquifer Thickness (ft msl)	Drawdown During Purging (ft)	Average Flow Rate During Purging (gpm)	Estimated Aquifer Transmissivity (ft2/day)	Estimated Hydraulic Conductivity (ft/day)
MW-1	14 to 24	14.21	0.1	0.19	400	28
MW-2	10.5 to 20.5	14.18	0.91	0.22	37	2.6
MW-3	14.5 to 24.5	13.99	0.77	0.21	43	3.1
MW-4	16.5 to 26.5	14.05	0.52	0.24	80	5.6
MW-5	18.5 to 28.5	14	0.15	0.2	270	19

Note:

Refer to Figure 6-5 for well locations

A storativity value of 0.15 was assumed in the estimation of transmissivity. Assuming storativity values of 0.10 and 0.20 result in less than 10% increase or decrease in the estimated value for aquifer transmissivity/conductivity

Table 6-3
Surface Soil Summary Statistics
Northwest Pipe Company, Portland, Oregon

Analyte	Detects	Sample Size	Frequency of Detection	Units	Minimum Detect	Maximum Detect	Mean	Median	Exposure Point Concentration	Basis
Aluminum	11	11	100%	mg/kg	3,160	27,000	11,001	7,040	14,412	90% Student's-t UCL
Antimony	4	11	36%	mg/kg	1.49	3.96	2.598	2.47	1.838	90% KM (t) UCL
Arsenic	11	11	100%	mg/kg	1.57	31.5	6.961	3.57	11.55	90% Adjusted Gamma UCL
Cadmium	11	11	100%	mg/kg	0.916	9.01	4.331	4.53	5.694	90% Student's-t UCL
Chromium	11	11	100%	mg/kg	30	3,620	868.6	121	2,115	90% Adjusted Gamma UCL
Copper	11	11	100%	mg/kg	27.6	255	105	75.4	139.3	90% Student's-t UCL
Lead	11	11	100%	mg/kg	6.48	195	49.48	20.9	90.88	90% Adjusted Gamma UCL
Mercury	8	11	73%	mg/kg	0.00633	0.203	0.0453	0.0123	0.0906	90% KM (Chebyshev) UCL
Nickel	11	11	100%	mg/kg	12.4	519	74.28	29.2	208.5	90% Chebyshev (Mean, Sd) UCL
Selenium	3	11	27%	mg/kg	0.696	12.1	4.912	1.94	3.357	90% KM (t) UCL
Silver	11	11	100%	mg/kg	0.117	4.01	1.441	0.922	2.028	90% Student's-t UCL
Zinc	33	33	100%	mg/kg	31.3	1390	223	135	283.8	90% H-UCL
Alpha-BHC	1	11	9%	mg/kg	0.00678	0.00678	0.00678	0.00678	0.00678	Maximum
Acenaphthene	28	32	88%	mg/kg	5.20E-04	3.72	0.373	0.0293	1.768	99% KM (Chebyshev) UCL
Acenaphthylene	28	32	88%	mg/kg	0.00281	0.34	0.0789	0.0272	0.101	90% GROS Adjusted Gamma UCL
Anthracene	30	32	94%	mg/kg	0.0104	19.2	1.474	0.178	3.397	90% KM (Chebyshev) UCL
Benzo (a) anthracene	30	32	94%	mg/kg	0.0161	54.2	5.678	1.008	8.805	90% GROS Adjusted Gamma UCL
Benzo (a) pyrene	31	32	97%	mg/kg	0.0038	38.2	3.913	0.43	6.141	90% GROS Adjusted Gamma UCL
Benzo (b) fluoranthene	32	32	100%	mg/kg	0.0033	58.2	5.347	1.167	8.567	90% Adjusted Gamma UCL
Benzo (g,h,i) perylene	31	32	97%	mg/kg	0.0036	19.1	2.354	0.584	3.535	90% GROS Adjusted Gamma UCL
Benzo (k) fluoranthene	30	32	94%	mg/kg	0.0131	36.7	3.321	0.891	7.431	90% KM (Chebyshev) UCL
Chrysene	30	32	94%	mg/kg	0.0193	57.3	6.213	1.685	9.521	90% GROS Adjusted Gamma UCL
Dibenzo (a,h) anthracene	30	32	94%	mg/kg	0.0046	6.35	0.669	0.17	0.98	90% GROS Adjusted Gamma UCL
Fluoranthene	31	32	97%	mg/kg	0.0031	166	13.5	1.68	31.66	90% KM (Chebyshev) UCL
Fluorene	28	32	88%	mg/kg	0.0012	3.07	0.349	0.0388	0.688	90% KM (Chebyshev) UCL
Indeno (1,2,3-cd) pyrene	30	32	94%	mg/kg	0.0215	19.2	2.063	0.54	3.016	90% GROS Adjusted Gamma UCL
Naphthalene	30	32	94%	mg/kg	3.40E-04	0.631	0.0857	0.0175	0.123	90% GROS Adjusted Gamma UCL
Phenanthrene	30	32	94%	mg/kg	0.0047	61	5.737	0.309	12.7	90% KM (Chebyshev) UCL
Pyrene	32	32	100%	mg/kg	0.0044	175	13.31	1.162	33.09	90% Chebyshev (Mean, Sd) UCL
Aroclor-1254	28	33	85%	mg/kg	0.025	11.1	2.055	0.5	3.302	90% KM (Chebyshev) UCL
Aroclor-1260	11	33	33%	mg/kg	0.0363	1.5	0.552	0.346	0.294	90% KM (Percentile Bootstrap) UCL
Bis(2-Ethylhexyl) Phthalate	11	11	100%	mg/kg	0.0603	2.97	0.526	0.325	0.972	90% Adjusted Gamma UCL
Butyl Benzyl Phthalate	9	11	82%	mg/kg	0.0145	0.637	0.149	0.0492	0.311	90% KM (Chebyshev) UCL
Di-n-Butyl Phthalate	1	11	9%	mg/kg	0.38	0.38	0.38	0.38	0.38	Maximum
Diesel by Dx	22	25	88%	mg/kg	6.8	594	127.3	47.3	170	90% Adjusted Gamma KM-UCL

Notes

Mean and median based on detected data only. Summary statistics calculated using ProUCL Version 5.0 (USEPA, 2013)

Table 6-4
Total Soil Summary Statistics
Northwest Pipe Company, Portland, Oregon

Analyte	Detects	Sample Size	Frequency of Detection	Units	Minimum Detect	Maximum Detect	Mean	Median	Exposure Point Concentration	Basis
Aluminum	11	11	100%	mg/kg	3,160	27,000	11,001	7,040	14,412	90% Student's-t UCL
Antimony	4	11	100%	mg/kg	1.49	3.96	2.598	2.47	1.828	90% KM (t) UCL
Arsenic	12	12	100%	mg/kg	1.57	31.5	6.591	3.245	10.53	90% Adjusted Gamma UCL
Cadmium	12	12	100%	mg/kg	0.15	9.01	3.983	3.13	5.307	90% Student's-t UCL
Chromium	12	12	100%	mg/kg	7.23	3,620	796.8	85.75	1924	90% Adjusted Gamma UCL
Copper	12	12	100%	mg/kg	8.23	255	96.9	61.15	129.9	90% Student's-t UCL
Lead	12	12	100%	mg/kg	1.76	195	45.5	18.8	85	90% Adjusted Gamma UCL
Manganese	1	1	100%	mg/kg	149	149	149	149	149	Maximum
Mercury	9	12	100%	mg/kg	0.00633	0.203	0.0421	0.014	0.0843	90% KM (Chebyshev) UCL
Nickel	12	12	100%	mg/kg	11.7	519	69.07	25.6	192.6	90% Chebyshev (Mean, Sd) UCL
Selenium	3	11	100%	mg/kg	0.696	12.1	4.912	1.94	3.357	90% KM (t) UCL
Silver	11	11	100%	mg/kg	0.117	4.01	1.441	0.922	2.028	90% Student's-t UCL
Zinc	34	34	100%	mg/kg	26.8	1,390	217.2	131	280.6	90% H-UCL
Alpha-BHC	1	11	100%	mg/kg	0.00678	0.00678	0.00678	0.00678	0.00678	Maximum
1-Methylnaphthalene	2	10	100%	mg/kg	0.00249	13.3	6.651	6.651	13.3	Maximum
2-Methylnaphthalene	3	10	100%	mg/kg	0.00323	11.2	3.736	0.00436	2.921	90% KM (t) UCL
Acenaphthene	35	51	100%	mg/kg	0.0003	904	26.13	0.024	71.34	90% KM (Chebyshev) UCL
Acenaphthylene	38	51	100%	mg/kg	0.000338	14.1	0.433	0.0161	1.154	90% KM (Chebyshev) UCL
Anthracene	41	51	100%	mg/kg	0.00038	209	6.18	0.0542	17.31	90% KM (Chebyshev) UCL
Benzo (a) anthracene	45	51	100%	mg/kg	0.000226	164	7.438	0.174	17	90% KM (Chebyshev) UCL
Benzo (a) pyrene	45	51	100%	mg/kg	0.00062	38.2	3.096	0.169	5.924	90% KM (Chebyshev) UCL
Benzo (b) fluoranthene	46	51	100%	mg/kg	0.00083	58.2	4.438	0.271	8.474	90% KM (Chebyshev) UCL
Benzo (g,h,i) perylene	44	51	100%	mg/kg	0.0008	19.1	1.674	0.219	2.173	90% GROS Approximate Gamma UCL
Benzo (k) fluoranthene	43	51	100%	mg/kg	0.000294	36.7	2.673	0.153	5.124	90% KM (Chebyshev) UCL
Chrysene	44	51	100%	mg/kg	0.00059	115	6.86	0.254	14	90% KM (Chebyshev) UCL
Dibenzo (a,h) anthracene	38	51	100%	mg/kg	0.000261	6.35	0.531	0.0586	0.589	90% GROS Approximate Gamma UCL
Fluoranthene	48	51	100%	mg/kg	0.000272	1,490	39.77	0.184	125.4	90% KM (Chebyshev) UCL
Fluorene	35	51	100%	mg/kg	0.00118	324	9.549	0.0133	25.69	90% KM (Chebyshev) UCL
Indeno (1,2,3-cd) pyrene	44	51	100%	mg/kg	0.00051	19.2	1.418	0.158	2.257	90% KM (Chebyshev) UCL
Naphthalene	43	51	100%	mg/kg	0.000205	7.41	0.242	0.0075	0.641	90% KM (Chebyshev) UCL
Phenanthrene	46	51	100%	mg/kg	0.000388	1160	28.97	0.0799	94.4	90% KM (Chebyshev) UCL
Pyrene	49	51	100%	mg/kg	0.000233	1210	33.4	0.171	103.9	90% KM (Chebyshev) UCL
Aroclor-1254	30	42	100%	mg/kg	0.025	11.1	1.941	0.484	2.65	90% KM (Chebyshev) UCL
Aroclor-1260	12	42	100%	mg/kg	0.00802	1.5	0.507	0.243	0.23	90% KM (Percentile Bootstrap) UCL
Bis(2-Ethylhexyl) Phthalate	11	11	100%	mg/kg	0.0603	2.97	0.526	0.325	0.972	90% Adjusted Gamma UCL

Table 6-4
Total Soil Summary Statistics
Northwest Pipe Company, Portland, Oregon

Analyte	Detects	Sample Size	Frequency of Detection	Units	Minimum Detect	Maximum Detect	Mean	Median	Exposure Point Concentration	Basis
Butyl Benzyl Phthalate	9	11	100%	mg/kg	0.0145	0.637	0.149	0.0492	0.311	90% KM (Chebyshev) UCL
Di-n-Butyl Phthalate	1	11	100%	mg/kg	0.38	0.38	0.38	0.38	0.38	Maximum
Diesel by Dx	40	43	100%	mg/kg	1.5	13900	505.9	16.35	1462	90% KM (Chebyshev) UCL
Gasoline by Gx	6	14	100%	mg/kg	0.042	0.094	0.0673	0.0655	0.0707	90% KM (Percentile Bootstrap) UCL
Motor Oil	4	4	100%	mg/kg	6.53	2650	676.2	24.11	1754	90% Student's-t UCL
Chlorobenzene	1	7	100%	mg/kg	0.00031	0.00031	0.00031	0.00031	0.00031	Maximum
Cis-1,2-Dichloroethene	1	7	100%	mg/kg	0.0042	0.0042	0.0042	0.0042	0.0042	Maximum
Tetrachloroethene	2	7	100%	mg/kg	0.001	0.0655	0.0333	0.0333	0.0655	Maximum
Trichloroethene	1	7	100%	mg/kg	0.00087	0.00087	0.00087	0.00087	0.00087	Maximum

Notes

Mean and median based on detected data only. Summary statistics calculated using ProUCL Version 5.0 (USEPA, 2013)

TABLE 6-5
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2007
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	GP-201		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-202		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.001	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.001	U						0.001	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.001	U						0.001	U					
1,1-Dichloroethene	mg/L		>S		340	43	0.001	U						0.001	U					
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.001	U						0.001	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.001	U						0.001	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		0.001	U						0.001	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.001	U						0.001	U					
Acenaphthene	mg/L		>S		>S	>S														
Acetone	mg/L		>S		>S		0.001	U						0.001	U					
Anthracene	mg/L		>S		>S	>S														
Benzene	mg/L	14	1200	2.8	240	1.7	0.001	U						0.001	U					
Benzo (a) anthracene	mg/L					0.0091														
Chlorobenzene	mg/L		>S		>S	10	0.001	U						0.001	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.001	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.001	U					
Cis-1,2-Dichloroethene	mg/L		>S			>S	24	0.001	U					0.00031	J					No
Ethylbenzene	mg/L	41	>S	7.4		>S	4.4	0.001	U					0.001	U					
Fluorene	mg/L		>S			>S	>S													
m+p-Xylenes	mg/L		>S			>S	23	0.001	U					0.001	U					
Naphthalene	mg/L	16	>S	10		>S	0.5	0.001	U					0.001	U					
n-Propylbenzene	mg/L		>S			>S	>S	8E-05	J				No	0.001	U					
o-Xylene	mg/L		>S			>S	23	0.001	U					0.001	U					
Tetrachloroethene	mg/L	>S	>S	32		>S	5.4	0.00032	J	0.00001	No		No	0.00037	J	0.00001	No			No
Toluene	mg/L		>S			>S	210	0.001	U					0.001	U					
Trans-1,2-Dichloroethene	mg/L		1800		350		14	0.001	U					0.001	U					
Trichloroethene	mg/L	19	1100	3.3	190		0.48	0.001	U					0.001	U					
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.001	U						0.00016	J	0.0002	No			No
Sum of Individual Ratios (Rij)											0E+00							0E+00		
Cumulative ELCR									1E-11							2E-10				

References:

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-5
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2007
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	GP-203		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-204		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-205		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.001	U						0.001	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.001	U						0.001	U						0.001	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.0002	J	1.25E-05	No			No	0.001	U						0.001	U					
1,1-Dichloroethene	mg/L		>S		340	43	0.001	U						0.001	U						0.001	U					
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.000375	J					No	0.001	U						0.001	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U						0.001	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.00285	=					No	0.001	U						0.001	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		0.001	U						0.001	U						0.001	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.001	U						0.001	U						0.001	U					
Acenaphthene	mg/L		>S		>S	>S																					
Acetone	mg/L		>S		>S		0.001	U						0.001	U						0.001	U					
Anthracene	mg/L		>S		>S	>S																					
Benzene	mg/L	14	1200	2.8	240	1.7	0.00056	J	0.0002	No	2.33E-06	No	No	0.001	U						0.001	U					
Benzo (a) anthracene	mg/L					0.0091																					
Chlorobenzene	mg/L		>S		>S	10	0.001	U						0.001	U						0.001	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.001	U						0.001	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.001	U						0.001	U					
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.001	U						0.00056	J					No	0.00014	J					No
Ethylbenzene	mg/L	41	>S	7.4	>S	4.4	0.000595	J	8.04E-05	No			No	0.001	U						0.001	U					
Fluorene	mg/L		>S		>S	>S																					
m+p-Xylenes	mg/L		>S		>S	23	0.0014	=					No	0.001	U						0.001	U					
Naphthalene	mg/L	16	>S	10	>S	0.5	0.00012	J	1.2E-05	No			No	0.001	U						0.001	U					
n-Propylbenzene	mg/L		>S		>S	>S	0.03575	=					No	8E-05	J					No	0.001	U					No
o-Xylene	mg/L		>S		>S	23	0.00011	J					No	0.001	U						0.001	U					
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.00026	J	0.00001	No			No	0.00024	J	0.00001	No			No	0.00017	J	0.00001	No			No
Toluene	mg/L		>S		>S	210	0.000385	J					No	0.001	U						0.001	U					
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.001	U						0.001	U						0.001	U					
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.001	U						0.001	U						0.001	U					
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.001	U						0.0015	=	0.0016	No			No	0.00038	J	0.0004	No			No
Sum of Individual Ratios (Rij)									2E-06							0E+00							0E+00				
Cumulative ELCR									3E-10							2E-09							4E-10				

References:

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>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

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nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-5
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Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	GP-206		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-207		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-208		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.001	U						0.001	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.001	U						0.001	U						0.001	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.001	U						0.001	U						0.0016	=	0.0001	No			No
1,1-Dichloroethene	mg/L		>S		340	43	0.001	U						0.001	U						0.001	U					
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.001	U						0.0022	=					No	0.001	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U						0.001	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.001	U						0.00072	J					No	0.001	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		7E-05	J	1.2E-05	No			No	0.001	U						0.001	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.00027	J	4.7E-05	No			No	0.00078	J	0.00014	No			No	0.001	U					
Acenaphthene	mg/L		>S		>S	>S																					
Acetone	mg/L		>S		>S		0.001	U						0.001	U						0.001	U					
Anthracene	mg/L		>S		>S	>S																					
Benzene	mg/L	14	1200	2.8	240	1.7	0.001	U						0.0001	J	3.6E-05	No	4.2E-07	No	No	0.001	U					
Benzo (a) anthracene	mg/L					0.0091																					
Chlorobenzene	mg/L		>S		>S	10	0.001	U						0.001	U						0.001	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.001	U						0.001	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.00019	J			5.9E-07	No	No	0.00035	J			1E-06	No	No
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.00034	J					No	0.00071	J					No	0.0005	J					No
Ethylbenzene	mg/L	41	>S	7.4	>S	4.4	0.001	U						0.00017	J	2.3E-05	No			No	0.001	U					
Fluorene	mg/L		>S		>S	>S																					
m+p-Xylenes	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
Naphthalene	mg/L	16	>S	10	>S	0.5	0.001	U						0.0119	=	0.00119	No			No	0.001	U					
n-Propylbenzene	mg/L		>S		>S	>S	0.001	U						0.00096	J					No	0.001	U					
o-Xylene	mg/L		>S		>S	23	0.001	U						9E-05	J					No	0.001	U					
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.00014	J	0.000004	No			No	0.0003	J	0.000009	No			No	0.001	U					
Toluene	mg/L		>S		>S	210	0.001	U						0.00022	J					No	0.001	U					
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.001	U						0.001	U						0.001	U					
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.001	U						0.00022	J	0.00007	No	0.000001	No	No	0.001	U					
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.00068	J	0.0007	No			No	0.00031	J	0.0003	No			No	0.00019	J	0.0002	No			No
Sum of Individual Ratios (Rij)											0E+00							2E-06						1E-06		
Cumulative ELCR									8E-10							2E-09							3E-10			

References:

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COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-5
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2007
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	GP-209		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-210		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-211		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.001	U						0.001	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.001	U						0.001	U						0.001	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.00015	J	9.4E-06	No			No	0.00063	J	3.9E-05	No			No	0.001	U					
1,1-Dichloroethene	mg/L		>S		340	43	0.001	U						0.001	U						0.001	U					
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.001	U						0.001	U						0.001	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U						0.001	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		0.00042	J	7.4E-05	No			No	0.001	U						0.001	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.0048	=	0.00084	No			No	0.001	U						0.001	U					
Acenaphthene	mg/L		>S		>S	>S																					
Acetone	mg/L		>S		>S		0.001	U						0.001	U						0.001	U					
Anthracene	mg/L		>S		>S	>S																					
Benzene	mg/L	14	1200	2.8	240	1.7	0.001	U						0.001	U						0.001	U					
Benzo (a) anthracene	mg/L					0.0091																					
Chlorobenzene	mg/L		>S		>S	10	0.0032	=					No	0.001	U						0.001	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.001	U						0.001	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.00047	J			1E-06	No	No	0.001	U					
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.00024	J					No	0.00062	J					No	0.001	U					
Ethylbenzene	mg/L	41	>S	7.4	>S	4.4	0.001	U						0.001	U						0.001	U					
Fluorene	mg/L		>S		>S	>S																					
m+p-Xylenes	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
Naphthalene	mg/L	16	>S	10	>S	0.5	0.001	U						0.001	U						0.001	U					
n-Propylbenzene	mg/L		>S		>S	>S	0.001	U						0.001	U						0.001	U					
o-Xylene	mg/L		>S		>S	23	0.0001	J					No	0.001	U						0.001	U					
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.001	U						0.00011	J	0.000003	No			No	0.001	U					
Toluene	mg/L		>S		>S	210	0.00013	J					No	0.001	U						0.001	U					
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.001	U						0.001	U						0.001	U					
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.001	U						0.00014	J	0.00004	No	0.000001	No	No	0.001	U					
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.00058	J	0.0006	No			No	0.00067	J	0.0007	No			No	0.001	U					
Sum of Individual Ratios (Rij)											0E+00							2E-06							0E+00		
Cumulative ELCR									2E-09							8E-10							0E+00			

References:

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COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-5
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2007
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	GP-212		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-213		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	GP-214		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.001	U						0.001	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.00015	J	1.7E-05	No			No	0.001	U						0.001	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.001	U						0.001	U						0.001	U					
1,1-Dichloroethene	mg/L		>S		340	43	0.001	U						0.001	U						0.001	U					
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.001	U						0.001	U						0.001	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U						0.001	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		0.001	U						0.001	U						0.001	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.001	U						0.001	U						0.001	U					
Acenaphthene	mg/L		>S		>S	>S																					
Acetone	mg/L		>S		>S		0.001	U						0.001	U						0.001	U					
Anthracene	mg/L		>S		>S	>S																					
Benzene	mg/L	14	1200	2.8	240	1.7	0.001	U						0.001	U						0.001	U					
Benzo (a) anthracene	mg/L					0.0091																					
Chlorobenzene	mg/L		>S		>S	10	0.001	U						0.001	U						0.001	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.001	U						0.001	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.001	U						0.001	U					
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.0066	=					No	0.0048	=					No	0.00041	J					No
Ethylbenzene	mg/L	41	>S	7.4	>S	4.4	0.001	U						0.001	U						0.001	U					
Fluorene	mg/L		>S		>S	>S																					
m+p-Xylenes	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
Naphthalene	mg/L	16	>S	10	>S	0.5	0.00081	J	8.1E-05	No			No	0.001	U						0.001	U					
n-Propylbenzene	mg/L		>S		>S	>S	0.0131	=					No	0.001	U						0.001	U					
o-Xylene	mg/L		>S		>S	23	0.00015	J					No	0.001	U						0.001	U					
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.00034	J	0.00001	No			No	0.0014	=	0.00004	No			No	0.0006	J	0.0004	No			No
Toluene	mg/L		>S		>S	210	0.00014	J					No	0.001	U						0.001	U					
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.00036	J			1E-06	No	No	0.001	U						0.001	U					
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.001	U						0.00094	J	0.00028	No	0.000005	No	No	0.00072	J	0.0048	No	0.000004	No	No
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.0034	=	0.0037	No			No	0.001	U						0.001	U					
Sum of Individual Ratios (Rj)											1E-06							5E-06							4E-06		
Cumulative ELCR									4E-09							3E-10							5E-09				

References:

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ca = cancer.
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COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

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Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2007
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	MW-01		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-02		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-03		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.001	U						0.001	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.001	U						0.001	U						0.001	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.001	U						0.001	U						0.00012	J	7.5E-06	No			No
1,1-Dichloroethene	mg/L		>S		340	43	0.0013	=					No	0.001	U						0.001	U					
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.001	U						0.001	U						0.001	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U						0.001	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		0.001	U						0.001	U						0.001	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.001	U						0.001	U						0.001	U					
Acenaphthene	mg/L		>S		>S	>S	1.33E-06	U						1.6E-06	J					No	1.27E-06	U					
Acetone	mg/L		>S		>S		0.001	U						0.001	U						0.001	U					
Anthracene	mg/L		>S		>S	>S	3E-06	J					No	3.7E-06	J					No	3.5E-06	J					No
Benzene	mg/L	14	1200	2.8	240	1.7	0.00011	J	3.9E-05	No	4.6E-07	No	No	0.001	U						0.001	U					
Benzo (a) anthracene	mg/L					0.0091	0.0000017	J					No	0.0000014	J					No	0.0000013	U					
Chlorobenzene	mg/L		>S		>S	10	0.001	U						0.001	U						0.001	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.001	U						0.001	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.001	U						0.001	U					
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.386	D					No	0.00037	J					No	0.0017	=					No
Ethylbenzene	mg/L	41	>S	7.4	>S	4.4	0.001	U						0.001	U						0.001	U					
Fluorene	mg/L		>S		>S	>S	1.35E-06	U						1.3E-06	J					No	1.29E-06	U					
m+p-Xylenes	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
Naphthalene	mg/L	16	>S	10	>S	0.5	4.5E-06	J	4.5E-07	No			No	4.8E-06	J	4.8E-07	No			No	3.8E-06	J	3.8E-07	No			No
n-Propylbenzene	mg/L		>S		>S	>S	0.001	U						0.001	U						0.001	U					
o-Xylene	mg/L		>S		>S	23	0.001	U						0.001	U						0.001	U					
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.146	D	0.005	No			No	0.00034	J	0.000011	No			No	0.0156	=	0.0005	No			No
Toluene	mg/L		>S		>S	210	0.001	U						0.001	U						0.001	U					
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.0031	=			9E-06	No	No	0.001	U						0.001	U					
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.0147	=	0.004	No	0.00008	No	No	0.001	U						0.003	=	0.0009	No	0.00002	No	No
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.0066	=	0.007	No			No	0.001	U						0.001	U					
Sum of Individual Ratios (Rj)											9E-05							0E+00						2E-05			
Cumulative ELCR									2E-08							1E-11							1E-09				

References:

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-5
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2007
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	MW-04		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-05		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-06		Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1,1-Trichloroethane	mg/L		>S		>S	1100	0.001	U						0.00015	J					No	0.005	U					
1,1,2-Trichloroethane	mg/L	19	>S	8.8	>S	0.049	0.001	U						0.001	U						0.005	U					
1,1-Dichloroethane	mg/L	73	>S	16	>S	10	0.001	U						0.001	U						0.005	U					
1,1-Dichloroethene	mg/L		>S		340	43	0.00032	J					No	0.00098	J					No	0.0024	J					No
1,2,4-Trimethylbenzene	mg/L		>S		>S	1.7	0.001	U						0.001	U						0.005	U					
1,2-Dichloroethene	mg/L		>S		>S	14	0.001	U						0.001	U						0.005	U					
1,3,5-Trimethylbenzene	mg/L		>S		>S	23	0.001	U						0.001	U						0.005	U					
1,3-Dichlorobenzene	mg/L	20	>S	5.7	>S		0.001	U						0.001	U						0.005	U					
1,4-Dichlorobenzene	mg/L	20	>S	5.7	>S	1.5	0.001	U						0.001	U						0.005	U					
Acenaphthene	mg/L		>S		>S	>S	1.27E-06	U						1.35E-06	U						1.34E-06	U					
Acetone	mg/L		>S		>S		0.001	U						0.001	U						0.005	U					
Anthracene	mg/L		>S		>S	>S	4.2E-06	J					No	3.9E-06	J					No	6E-06	J					No
Benzene	mg/L	14	1200	2.8	240	1.7	0.0001	J	3.6E-05	No	4.2E-07	No	No	0.0002	J	7.1E-05	No	8.3E-07	No	No	0.005	U					
Benzo (a) anthracene	mg/L					0.0091	0.0000012	U						0.0000013	U						0.0000013	U					
Chlorobenzene	mg/L		>S		>S	10	0.001	U						0.001	U						0.005	U					
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001	U						0.00033	J	0.0003	No	3.4E-07	No	No	0.005	U					
Chloromethane	mg/L	2100	2100	320	320	22	0.001	U						0.001	U						0.005	U					
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.0498	=					No	0.337	D					No	0.638	D					
Ethylbenzene	mg/L	41	>S	7.4	>S	4.4	0.001	U						0.001	U						0.005	U					No
Fluorene	mg/L		>S		>S	>S	1.29E-06	U						1.38E-06	U						1.37E-06	U					
m+p-Xylenes	mg/L		>S		>S	23	0.001	U						0.001	U						0.005	U					
Naphthalene	mg/L	16	>S	10	>S	0.5	4.5E-06	J	4.5E-07	No			No	7.2E-06	J	7.2E-07	No			No	5.7E-06	J	5.7E-07	No			No
n-Propylbenzene	mg/L		>S		>S	>S	0.001	U						0.001	U						0.005	U					
o-Xylene	mg/L		>S		>S	23	0.001	U						0.001	U						0.005	U					
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.147	D	0.005	No			No	1.42	D	0.044	No			No	1.21	D	0.038	No			No
Toluene	mg/L		>S		>S	210	0.001	U						0.001	U						0.005	U					
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.00097	J			3E-06	No	No	0.0023	=			7E-06	No	No	0.0042	J			1E-05	No	No
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.0438	=	0.01	No	0.0002	No	No	0.0782	=	0.024	No	0.0004	No	No	0.466	=	0.141	No	0.002	No	No
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.0209	=	0.0230	No			No	0.00028	J	0.00031	No			No	0.0031	J	0.003	No			No
Sum of Individual Ratios (Rj)											2E-04							4E-04							2E-03		
Cumulative ELCR									4E-08							7E-08							2E-07			

References:

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-6
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	PW1W	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-01	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethene	mg/L		>S		340	43	0.0017					No	0.00397			1.2E-05	No	No
1,2-Dichloroethene	mg/L		>S		>S	14	0.001											
Acetone	mg/L		>S		>S	>S												
Chloroform	mg/L	5.5	>S	1.2	970	0.72	0.001											
Cis-1,2-Dichloroethene	mg/L		>S		>S	24							1.24					No
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	0.0038					No	0.787	0.02	No			No
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.001						0.00667			1.9E-05	No	No
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.001						0.0486	0.01	No	0.0003	No	No
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2	0.001						0.0058	0.006	No			No
Sum of Individual Ratios (Rj)										0E+00						3E-04		
Cumulative ELCR								0E+00						5E-08				

References:

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-6
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	MW-02	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-03	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-04	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethene	mg/L		>S		340	43													0.00056			1.6E-06	No	No
1,2-Dichloroethene	mg/L		>S		>S	14							0.001					No	0.203					No
Acetone	mg/L		>S		>S	>S	0.00857					No	0.007785					No						
Chloroform	mg/L	5.5	>S	1.2	970	0.72																		
Cis-1,2-Dichloroethene	mg/L		>S		>S	24							0.001					No	0.21					No
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4							0.0202	0.0006	No			No	0.185	0.006	No			No
Trans-1,2-Dichloroethene	mg/L		1800		350	14													0.00189			5.4E-06	No	No
Trichloroethene	mg/L	19	1100	3.3	190	0.48							0.001925	0.0006	No	0.00001	No	No	0.0384	0.01	No	0.0002	No	No
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2													0.0721	0.079	No			No
Sum of Individual Ratios (Rij)										0E+00						1E-05						2E-04		
Cumulative ELCR								0E+00						1E-09						1E-07				

References:

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-6
Human Health Risk Screening for Onsite Volatile Organic Compounds Detected in 2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	Ground water in Excavation	MW-05	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	MW-06	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethene	mg/L		>S		340	43							0.00618			1.8E-05	No	No
1,2-Dichloroethene	mg/L		>S		>S	14	0.146					No	1.64					No
Acetone	mg/L		>S		>S	>S	0.00372					No	0.001715					No
Chloroform	mg/L	5.5	>S	1.2	970	0.72							0.001625	0.0014	No	1.7E-06	No	No
Cis-1,2-Dichloroethene	mg/L		>S		>S	24	0.161					No	1.74					No
Tetrachloroethene	mg/L	>S	>S	32	>S	5.4	1.23	0.04	No			No	2.77	0.09	No			No
Trans-1,2-Dichloroethene	mg/L		1800		350	14	0.00093			2.7E-06	No	No	0.0119			3.4E-05	No	No
Trichloroethene	mg/L	19	1100	3.3	190	0.48	0.0722	0.02	No	0.0004	No	No	**1.9299999**	0.6	No	0.01	No	No
Vinyl Chloride	mg/L	6.8	>S	0.91	>S	1.2							0.00672	0.007	No			
Sum of Individual Ratios (Rj)										4E-04						1E-02		
Cumulative ELCR								6E-08						7E-07				

References:

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW01s	Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW02s	Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S							0.017000001					No
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S												
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S												
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S												
Toluene	mg/L	1.5		>S		>S	0.0001					No	0.00092					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						0E+00		
Cumulative ELCR								0E+00						0E+00				

References:

DEQ. 2013. *Default Background Concentrations for Metals Memorandum*. Oregon Department of Environmental Quality. (4/17/13 Revision).
DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.
ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW03s	Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW04s	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340	0.00037			1.1E-06	No	No						
1,2,4-Trimethylbenzene	mg/L	---		>S		>S	0.002						0.0031					No
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970	0.00048	0.0004	No	4.9E-07	No	No						
cis-1,2-Dichloroethene	mg/L	1		>S		>S	0.089000002											
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S							0.00029	3.9E-05	No			No
m+p-Xylenes	mg/L	---		>S		>S							0.0015					No
Naphthalene	mg/L	---	16	>S	10	>S							0.0016	0.00016	No			No
n-Propylbenzene	mg/L	---		>S		>S							0.00034					No
o-Xylene	mg/L	---		>S		>S							0.00076					No
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S	**0.014**	0.0004	No			No						
Toluene	mg/L	1.5		>S		>S	0.00048						0.00036					No
trans-1,2-Dichloroethene	mg/L	1		1800		350	0.00078			2.2E-06	No	No						
Trichloroethene	mg/L	0.003	19	1100	3.3	190	**0.0035**	0.001	No	1.8E-05	No	No						
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S	**0.0054**	0.0059341	No			No						
Sum of Individual Ratios (Rj)										2E-05						0E+00		
Cumulative ELCR								8E-09						2E-10				

References:

DEQ. 2013. *Default Background Concentrations for Metals Memorandum*. Oregon Department of Environmental Quality. (4/17/13 Revision).
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ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW07	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW08	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S												
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S												
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S												
Toluene	mg/L	1.5		>S		>S	0.00013					No	0.00011					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						0E+00		
Cumulative ELCR								0E+00						0E+00				

References:

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ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW09	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW10	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S							0.00019	1.1875E-05	No			No
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S							0.00019					No
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S							0.00036					No
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S							0.00017					No
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S	0.00015	4.7E-06	No			No	**0.00051**	1.6E-05	No			No
Toluene	mg/L	1.5		>S		>S	0.00026					No	0.00037					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190							0.0005	1.5E-04	No	2.6E-06	No	No
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						3E-06		
Cumulative ELCR								5E-12						2E-10				

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ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW11	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW12	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S												
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S												
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S	**0.0005**	1.6E-05	No			No						
Toluene	mg/L	1.5		>S		>S	0.0002					No						
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						0E+00		
Cumulative ELCR								2E-11						0E+00				

References:

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nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW13	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW14	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S							0.0002					
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S							0.00012	2.10526E-05	No			
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S							0.00034					
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S							0.00014					No
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S												
Toluene	mg/L	1.5		>S		>S	0.00013					No	0.00031					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						0E+00		
Cumulative ELCR								0E+00						2E-11				

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bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW15	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW16	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S							0.0014	0.0002	No			No
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970							0.0044	0.004	No	4.5E-06	No	No
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S							0.00036					No
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S							0.00015					No
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S												
Toluene	mg/L	1.5		>S		>S	0.00013					No	0.0009					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						5E-06		
Cumulative ELCR								0E+00						4E-09				

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mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
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Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW17	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW18	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S	0.00012	2.1E-05	No			No						
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S												
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S												
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S	0.00021	6.6E-06	No			No						
Toluene	mg/L	1.5		>S		>S	0.0013					No	0.0013					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						0E+00		
Cumulative ELCR								3E-11						0E+00				

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bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

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Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW19	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW20	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S												
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S												
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S												
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S												
Toluene	mg/L	1.5		>S		>S	0.00025					No	0.00019					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190												
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S												
Sum of Individual Ratios (Rj)										0E+00						0E+00		
Cumulative ELCR								0E+00						0E+00				

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COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

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Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW21	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW22	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340							0.0011			3.2E-06	No	No
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S							0.048999999					
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S												
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S												
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S							**0.034000002**	0.001	No			No
Toluene	mg/L	1.5		>S		>S	0.00015					No	0.00011					No
trans-1,2-Dichloroethene	mg/L	1		1800		350							0.0012					No
Trichloroethene	mg/L	0.003	19	1100	3.3	190							**0.082999997**	0.03	No	0.0004	No	No
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S							**0.00097**	0.0011	No			No
Sum of Individual Ratios (Rj)										0E+00						4E-04		
Cumulative ELCR								0E+00						3E-08				

References:

DEQ. 2013. *Default Background Concentrations for Metals Memorandum*. Oregon Department of Environmental Quality. (4/17/13 Revision).
DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.
ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-7
Human Health Risk Screening for Offsite Volatile Organic Compounds Detected in 2004-2005
Northwest Pipe Company, Portland, Oregon

Analyte	Units	2004 NRWQC (175 g/day consumption rate)	Cancer Volatilization to Outdoor Air	Noncancer Volatilization to Outdoor Air	Cancer Vapor Intrusion into Buildings	Noncancer Vapor Intrusion into Buildings	T4S1MW23	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?	T4S1MW24	Cancer Individual Ratio for Vapor Intrusion (Rij)	>1? ca	Noncancer Individual Ratio for Vapor Intrusion (Rij)	>0.1? nc	COPC?
1,1-Dichloroethane	mg/L	---	73	>S	16	>S												
1,1-Dichloroethene	mg/L	---		>S		340												
1,2,4-Trimethylbenzene	mg/L	---		>S		>S												
1,3-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S	0.00021	3.7E-05	No			No						
1,4-Dichlorobenzene	mg/L	0.096	20	>S	5.7	>S												
Acetone	mg/L	---		>S		>S												
Chloroform	mg/L	0.047	5.5	>S	1.2	970												
cis-1,2-Dichloroethene	mg/L	1		>S		>S	0.016000001					No						
Ethylbenzene	mg/L	0.21	41	>S	7.4	>S												
m+p-Xylenes	mg/L	---		>S		>S							0.00025					No
Naphthalene	mg/L	---	16	>S	10	>S												
n-Propylbenzene	mg/L	---		>S		>S												
o-Xylene	mg/L	---		>S		>S							0.00012					No
Tetrachloroethene	mg/L	0.00033	>S	>S	32	>S	**0.008**	0.00025	No			No						
Toluene	mg/L	1.5		>S		>S	0.00016					No	0.00061					No
trans-1,2-Dichloroethene	mg/L	1		1800		350												
Trichloroethene	mg/L	0.003	19	1100	3.3	190	**0.0062**	0.0019	No	0.00003	No	No						
Vinyl Chloride	mg/L	0.00024	6.8	>S	0.91	>S	**0.00048**	0.00053	No			No						
Sum of Individual Ratios (Rj)										3E-05						0E+00		
Cumulative ELCR								3E-09						0E+00				

References:

DEQ. 2013. *Default Background Concentrations for Metals Memorandum*. Oregon Department of Environmental Quality. (4/17/13 Revision).
DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.
ca = cancer.
nc = noncancer.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.
COPC = chemical of potential concern.
L = The RBC values for lead reported in this table are based on blood lead levels.
mg/L = milligrams per liter.

Surrogates used = 1,4-Dichlorobenzene for 1,3-Dichlorobenzene.
Xylenes for m+p-Xylenes and o-Xylene.

TABLE 6-8
Comparison of Detected Chemicals of Interest (COI) Concentrations at Perimeter Groundwater Sampling Locations with Surface Water Screening Benchmarks
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Level II Screening Levels Aquatic	Level II Screening Levels Birds	Level II Screening Levels Mammals	2004 NRWQC (175 g/day consumption rate)	2012 DEQ RBC groundwater in Excavation	PW1W		GP-201		GP-202		GP-203		T4S1MW01s		T4S1MW03s							
						Sample Date	9/7/2001		9/26/2007		9/26/2007		9/26/2007		4/21/2004		4/21/2004		8/30/2004		1/31/2005		5/5/2005	
1,1-Dichloroethane	mg/L	0.047	---	---	---	10	0.0017	=	0.001	U	0.001	U	0.0002	J	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
1,1-Dichloroethene	mg/L	0.025	---	230	---	43	0.001	U	0.001	U	0.001	U	0.001	U	0.0005	U	0.0005	U	0.00037	J	0.0005	U	0.0005	U
1,2,4-Trimethylbenzene	mg/L	---	---	---	---	1.7	0.001	U	0.001	U	0.001	U	0.000375	J	0.002	U	0.002	U	0.002	U	0.002	=	0.002	UJ
1,3,5-Trimethylbenzene	mg/L	---	---	---	---	23	0.001	U	0.001	U	0.001	U	0.00285	=										
Benzene	mg/L	0.13	---	200	0.0051	1.7	0.001	U	0.001	U	0.001	U	0.00056	J	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Chloroform	mg/L	1.24	---	115	0.047	0.72	0.001	U	0.001	U	0.001	U	0.001	U	0.0005	U	0.00023	J	0.0005	U	0.00019	J	0.00048	J
Cis-1,2-Dichloroethene	mg/L	0.59	---	180	1	24	0.0108	=	0.001	U	0.00031	J	0.001	U	0.0005	U	0.0023	=	0.089	=	0.015	=	0.0076	=
Diesel	mg/L	---	---	---	---	---			0.0665	=	0.0996	=	1.016	=										
Ethylbenzene	mg/L	0.0073	---	---	0.21	4.4	0.001	U	0.001	U	0.001	U	0.000595	J	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Gasoline by Gx	mg/L	---	---	---	---	14			0.0314	J	0.0273	J	0.7165	=										
Isopropylbenzene	mg/L	---	---	---	---	---	0.001	U	0.001	U	0.001	U	0.024	=	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
m+p-Xylenes	mg/L	0.013	---	8	---	23	0.002	U	0.001	U	0.001	U	0.0014	=	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Naphthalene	mg/L	0.62	---	284	---	0.5	0.001	U	0.001	U	0.001	U	0.00012	J	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
n-Butylbenzene	mg/L	---	---	---	---	---			0.001	U	0.001	U	0.0156	=	0.002	U	0.002	U	0.002	U	0.002	=	0.002	UJ
n-Propylbenzene	mg/L	---	---	---	---	---			0.00008	J	0.001	U	0.03575	=	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
o-Xylene	mg/L	---	---	---	---	23	0.001	U	0.001	U	0.001	U	0.00011	J	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Sec-Butylbenzene	mg/L	---	---	---	---	---			0.001	U	0.001	U	0.00345	=	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Tetrachloroethene	mg/L	0.84	---	6	0.00033	5.4	**0.0038**	**=**	0.00032	J	0.00037	J	0.00026	J	0.0005	U	0.00077	=	0.0018	=	**0.014**	**=**	0.0019	=
Toluene	mg/L	0.0098	---	104	1.5	210	0.001	U	0.001	U	0.001	U	0.000385	J	0.0001	J	0.00023	J	0.0005	U	0.00048	J	0.00012	J
Trans-1,2-Dichloroethene	mg/L	0.59	---	180	1	14	0.001	U	0.001	U	0.001	U	0.001	U	0.0005	U	0.0005	U	0.00078	=	0.0005	U	0.0002	J
Trichloroethene	mg/L	21.9	---	3	0.003	430	0.001	U	0.001	U	0.001	U	0.001	U	0.0005	U	0.00029	J	0.0013	=	**0.0035**	=	0.00042	J
Vinyl Chloride	mg/L	---	---	1.3	0.00024	1.2	0.001	U	0.001	U	0.00016	J	0.001	U	0.0005	U	0.0005	U	**0.0054**	**=**	**0.0013**	=	0.0005	U
Zinc	mg/L	0.12	105	1230	2.6	--			0.0064	=	0.0066	=	0.0056	=										

mg/L = milligrams per liter.
MCL = MCL is based on benzo(a)pyrene.
NRWQC = National Recommended Water Quality Criteria.
PRG = preliminary remediation goals.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.

Notes:

Carcinogenic-based fish consumption screening values are based on excess lifetime cancer risk of $1x10^{-6}$.

Comparisons assume no attenuation of groundwater prior to exposures.

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

None of the COIs in this comparison are considered bioaccumulative compounds per DEQ and EPA guidance (DEQ, 2007 and EPA, 2000).

TABLE 6-8
Comparison of Detected Chemicals of Interest (COI) Concentrations at Perimeter Groundwater Sampling Locations
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Level II Screening Levels Aquatic	Level II Screening Levels Birds	Level II Screening Levels Mammals	2004 NRWQC (175 g/day consumption rate)	2012 DEQ RBC groundwater in Excavation	T4S1MW07				T4S1MW08				T4S1MW09			
						Sample Date	4/20/2004	8/27/2004	2/2/2005	5/4/2005	4/21/2004	8/30/2004	2/3/2005	5/4/2005	4/20/2004	9/1/2004	2/9/2005	5/9/2005
1,1-Dichloroethane	mg/L	0.047	---	---	---	10	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00011 U
1,1-Dichloroethene	mg/L	0.025	---	230	---	43	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 UJ	0.00013 U
1,2,4-Trimethylbenzene	mg/L	---	---	---	---	1.7	0.002 U	0.002 U	0.002 U	0.002 UJ	0.002 U	0.002 U	0.002 U	0.002 UJ	0.002 U	0.002 U	0.002 U	0.00015 UJ
1,3,5-Trimethylbenzene	mg/L	---	---	---	---	23												
Benzene	mg/L	0.13	---	200	0.0051	1.7	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00014 U
Chloroform	mg/L	1.24	---	115	0.047	0.72	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00014 U
Cis-1,2-Dichloroethene	mg/L	0.59	---	180	1	24	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00012 U
Diesel	mg/L	---	---	---	---	---												
Ethylbenzene	mg/L	0.0073	---	---	0.21	4.4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00013 U
Gasoline by Gx	mg/L	---	---	---	---	14												
Isopropylbenzene	mg/L	---	---	---	---	---	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00011 U
m+p-Xylenes	mg/L	0.013	---	8	---	23	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00022 U
Naphthalene	mg/L	0.62	---	284	---	0.5	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00029 U
n-Butylbenzene	mg/L	---	---	---	---	---	0.002 U	0.002 U	0.002 U	0.002 UJ	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 =	0.00023 UJ
n-Propylbenzene	mg/L	---	---	---	---	---	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.000098 U
o-Xylene	mg/L	---	---	---	---	23	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00011 U
Sec-Butylbenzene	mg/L	---	---	---	---	---	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00013 U
Tetrachloroethene	mg/L	0.84	---	6	0.00033	5.4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00015 =	0.0005 U	0.0005 U	0.00013 U
Toluene	mg/L	0.0098	---	104	1.5	210	0.00013 J	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00011 J	0.0005 U	0.0005 U	0.0005 U	0.00026 J
Trans-1,2-Dichloroethene	mg/L	0.59	---	180	1	14	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00015 U
Trichloroethene	mg/L	21.9	---	3	0.003	430	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00014 U
Vinyl Chloride	mg/L	---	---	1.3	0.00024	1.2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.00022 U
Zinc	mg/L	0.12	105	1230	2.6	--												

mg/L = milligrams per liter.
MCL = MCL is based on benzo(a)pyrene.
NRWQC = National Recommended Water Quality Criteria.
PRG = preliminary remediation goals.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.

Notes:

Carcinogenic-based fish consumption screening values are based on excess lifetime cancer risk of $1x10^{-6}$.

Comparisons assume no attenuation of groundwater prior to exposures.

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

None of the COIs in this comparison are considered bioaccumulative compounds per DEQ and EPA guidance (DEQ, 2007 and EPA, 2000).

TABLE 6-8
Comparison of Detected Chemicals of Interest (COI) Concentrations at Perimeter Groundwater Sampling Locations
Northwest Pipe Company, Portland, Oregon

Analyte	Units	Level II Screening Levels Aquatic	Level II Screening Levels Birds	Level II Screening Levels Mammals	2004 NRWQC (175 g/day consumption rate)	2012 DEQ RBC groundwater in Excavation	T4S1MW10							
						Sample Date	4/19/2004		9/1/2004		2/4/2005		5/9/2005	
1,1-Dichloroethane	mg/L	0.047	---	---	---	10	0.0001	J	0.00018	J	0.00019	J	0.00017	J
1,1-Dichloroethene	mg/L	0.025	---	230	---	43	0.0005	U	0.0005	U	0.0005	U	0.00013	U
1,2,4-Trimethylbenzene	mg/L	---	---	---	---	1.7	0.002	U	0.002	U	0.002	U	0.00015	UJ
1,3,5-Trimethylbenzene	mg/L	---	---	---	---	23								
Benzene	mg/L	0.13	---	200	0.0051	1.7	0.0005	U	0.0005	U	0.0005	U	0.00014	U
Chloroform	mg/L	1.24	---	115	0.047	0.72	0.0005	U	0.0005	U	0.0005	U	0.00014	U
Cis-1,2-Dichloroethene	mg/L	0.59	---	180	1	24	0.00019	J	0.00013	J	0.0005	U	0.00014	J
Diesel	mg/L	---	---	---	---	---								
Ethylbenzene	mg/L	0.0073	---	---	0.21	4.4	0.0005	U	0.0005	U	0.0005	U	0.00013	U
Gasoline by Gx	mg/L	---	---	---	---	14								
Isopropylbenzene	mg/L	---	---	---	---	---	0.002	U	0.002	U	0.002	U	0.00011	U
m+p-Xylenes	mg/L	0.013	---	8	---	23	0.0005	U	0.0005	U	0.0005	U	0.00036	J
Naphthalene	mg/L	0.62	---	284	---	0.5	0.002	U	0.002	U	0.002	U	0.00029	U
n-Butylbenzene	mg/L	---	---	---	---	---	0.002	U	0.002	U	0.002	U	0.00023	UJ
n-Propylbenzene	mg/L	---	---	---	---	---	0.002	U	0.002	U	0.002	U	0.000098	U
o-Xylene	mg/L	---	---	---	---	23	0.0005	U	0.0005	U	0.0005	U	0.00017	J
Sec-Butylbenzene	mg/L	---	---	---	---	---	0.002	U	0.002	U	0.002	U	0.00013	U
Tetrachloroethene	mg/L	0.84	---	6	0.00033	5.4	0.00024	=	0.00033	J	0.00051	=	0.00041	J
Toluene	mg/L	0.0098	---	104	1.5	210	0.00022	J	0.0005	U	0.0005	U	0.00037	J
Trans-1,2-Dichloroethene	mg/L	0.59	---	180	1	14	0.0005	U	0.0005	U	0.0005	U	0.00015	U
Trichloroethene	mg/L	21.9	---	3	0.003	430	0.00019	J	0.00021	J	0.0005	J	0.00024	J
Vinyl Chloride	mg/L	---	---	1.3	0.00024	1.2	0.0005	U	0.0005	U	0.0005	U	0.00022	U
Zinc	mg/L	0.12	105	1230	2.6	--								

mg/L = milligrams per liter.
MCL = MCL is based on benzo(a)pyrene.
NRWQC = National Recommended Water Quality Criteria.
PRG = preliminary remediation goals.
bold = exceeds 2004 NRWQC 175 g/day consumption rate.

Notes:

Carcinogenic-based fish consumption screening values are based on excess lifetime cancer risk of $1x10^{-6}$.

Comparisons assume no attenuation of groundwater prior to exposures.

DEQ. 2012. Risk Based Concentrations for Individual Chemicals. June 7, 2012.

None of the COIs in this comparison are considered bioaccumulative compounds per DEQ and EPA guidance (DEQ, 2007 and EPA, 2000).

TABLE 6-9

Risk Estimates for Exposure to Surface Soil

Human Health Risk Assessment

Northwest Pipe Company, Portland, Oregon

Analyte	Minimum Detected Concentration mg/kg	Maximum Detected Concentration mg/kg	Background Concentration [1] mg/kg	Maximum Detected Concentration Exceeds Background Value?	Maximum Detected Concentration Exceeds RBC?	EPC [2] mg/kg	Basis	ODEQ Cancer Occupational RBC mg/kg	ODEQ Noncancer Occupational RBC mg/kg	ODEQ Lowest Occupational RBC mg/kg	Occupational Cancer Risk Estimate [3,4]	Percent Contribution to Total Cancer Risk Estimate	Occupational Noncancer HQ Estimate [3,4]	Percent Contribution to HI Estimate
Polycyclic Aromatic Hydrocarbons														
Acenaphthene	5.2E-04	3.7E+00	NA	NA	No	--		NA	6.1E+04	6.1E+04	--	--	--	--
Acenaphthylene	2.8E-03	3.4E-01	NA	NA	No	--		NA	6.1E+04	6.1E+04	--	--	--	--
Anthracene	1.0E-02	1.9E+01	NA	NA	No	--		NA	3.1E+05	3.1E+05	--	--	--	--
Benzo(a)anthracene	1.6E-02	5.4E+01	NA	NA	Yes	8.8E+00	90% GROS Adjusted Gamma UCL	2.7E+00	NA	2.7E+00	3.3E-06	0.76	--	--
Benzo(a)pyrene	3.8E-03	3.8E+01	NA	NA	Yes	6.1E+00	90% GROS Adjusted Gamma UCL	2.7E-01	NA	2.7E-01	2.3E-05	5.31	--	--
Benzo(b)fluoranthene	3.3E-03	5.8E+01	NA	NA	Yes	8.6E+00	90% Adjusted Gamma UCL	2.7E+00	NA	2.7E+00	3.2E-06	0.74	--	--
Benzo(g,h,i)perylene	3.6E-03	1.9E+01	NA	NA	No	--		NA	2.1E+04	2.1E+04	--	--	--	--
Benzo(k)fluoranthene	1.3E-02	3.7E+01	NA	NA	Yes	7.4E+00	90% KM (Chebyshev) UCL	2.7E+01	NA	2.7E+01	2.8E-07	0.06	--	--
Chrysene	1.9E-02	5.7E+01	NA	NA	No	--		2.5E+02	NA	2.5E+02	--	--	--	--
Dibenz(a,h)anthracene	4.6E-03	6.3E+00	NA	NA	Yes	1.1E+00	95% GROS Adjusted Gamma UCL	2.7E-01	NA	2.7E-01	4.2E-06	0.97	--	--
Fluoranthene	3.1E-03	1.7E+02	NA	NA	No	--		NA	2.9E+04	2.9E+04	--	--	--	--
Fluorene	1.2E-03	3.1E+00	NA	NA	No	--		NA	4.1E+04	4.1E+04	--	--	--	--
Indeno(1,2,3-cd)pyrene	2.2E-02	1.9E+01	NA	NA	Yes	9.8E-01	90% GROS Adjusted Gamma UCL	2.7E+00	NA	2.7E+00	3.6E-07	0.08	--	--
Naphthalene	3.4E-04	6.3E-01	NA	NA	No	--		2.3E+01	NA	2.3E+01	--	--	--	--
Phenanthrene	4.7E-03	6.1E+01	NA	NA	No	--		NA	2.1E+04	2.1E+04	--	--	--	--
Pyrene	4.4E-03	1.8E+02	NA	NA	No	--		NA	2.1E+04	2.1E+04	--	--	--	--
Metals														
Aluminum	3.2E+03	2.7E+04	NA	NA	No	--		NA	9.9E+05	9.9E+05	--	--	--	--
Antimony	1.5E+00	4.0E+00	5.6E-01	Yes	No	--		NA	4.1E+02	4.1E+02	--	--	--	--
Arsenic	1.6E+00	3.2E+01	8.8E+00	Yes	Yes	1.2E+01	90% Adjusted Gamma UCL	1.7E+00	NA	1.7E+00	6.8E-06	1.59	--	--
Cadmium	9.2E-01	9.0E+00	6.3E-01	Yes	No	--		NA	5.1E+02	5.1E+02	--	--	--	--
Chromium	3.0E+01	3.6E+03	7.6E+01	Yes	Yes	2.1E+03	90% Adjusted Gamma UCL	5.5E+00	NA	5.5E+00	3.8E-04	89.83	--	--
Copper	2.8E+01	2.6E+02	3.4E+01	Yes	No	--		NA	4.1E+04	4.1E+04	--	--	--	--
Lead [5]	6.5E+00	2.0E+02	7.9E+01	Yes	NA	--		NA	NA	NA	--	--	--	--
Mercury	6.3E-03	2.0E-01	2.3E-01	No	No	--		NA	3.1E+02	3.1E+02	--	--	--	--
Nickel	1.2E+01	5.2E+02	4.7E+01	Yes	No	--		NA	2.0E+04	2.0E+04	--	--	--	--
Selenium	7.0E-01	1.2E+01	7.1E-01	Yes	No	--		NA	5.1E+03	5.1E+03	--	--	--	--
Silver	1.2E-01	4.0E+00	8.2E-01	Yes	No	--		NA	5.1E+03	5.1E+03	--	--	--	--
Zinc	3.1E+01	1.4E+03	1.8E+02	Yes	No	--		NA	3.1E+05	3.1E+05	--	--	--	--
Pesticides														
alpha-BHC	6.8E-03	6.8E-03	NA	NA	No	--		3.1E-01	NA	3.1E-01	--	--	--	--
Polychlorinated Biphenyls														
Aroclor 1254	2.5E-02	1.1E+01	NA	NA	Yes	3.3E+00	90% KM (Chebyshev) UCL	1.3E+00	NA	1.3E+00	2.5E-06	0.59	--	--
Aroclor 1260	3.6E-02	1.5E+00	NA	NA	Yes	2.9E-01	90% KM (Percentile Bootstrap) UCL	1.3E+00	NA	1.3E+00	2.3E-07	0.05	--	--
Phthalates														
Bis(2-ethylhexyl)phthalate	6.0E-02	3.0E+00	NA	NA	No	--		1.5E+02	NA	1.5E+02	--	--	--	--
Butyl benzyl phthalate	1.4E-02	6.4E-01	NA	NA	No	--		1.5E+03	NA	1.5E+03	--	--	--	--
Di-n-butyl phthalate	3.8E-01	3.8E-01	NA	NA	No	--		NA	1.0E+05	1.0E+05	--	--	--	--
Total											4.E-04		NC	

Notes:

NC= not calculated

[1] Development of Oregon Background Metals Concentrations in Soil (2013)

[2] The maximum detected concentration was initially used as exposure point concentration (EPC). When the risk estimates based on maximum detect exceeds ELCR of 1x10-6 and/or target organ-specific Hazard Index (HI) of 1, upper confidence limit (UCL) on mean is used as EPC for surface soil.

[3] Risk estimates were calculated for chemicals whose maximum detected concentration exceeds the RBC.

[4] Noncarcinogenic hazard quotient and ELCR are estimated using the ratio of RBC and EPC.

- HQ = EPC / Noncarcinogenic RSL (based on HQ=1)
- ELCR = EPC x 1x10-6 / Carcinogenic RSL (based on ELCR=1x10-6)

[5] The maximum concentration of lead is less than the industrial RBC of 800 mg/kg

TABLE 6-10

Risk Estimates for Exposure to Total Soil

Human Health Risk Assessment

Northwest Pipe Company, Portland, Oregon

Analyte	Minimum Detected Concentration mg/kg	Maximum Detected Concentration mg/kg	Background Concentration [1] mg/kg	Maximum Detected Concentration Exceeds Background Value?	Maximum Detected Concentration Exceeds RBC?	EPC [2] mg/kg	Basis	ODEQ Cancer Occupational RBC mg/kg	ODEQ Noncancer Occupational RBC mg/kg	ODEQ Lowest Occupational RBC mg/kg	Occupational Cancer Risk Estimate [3,4]	Percent Contribution to Total Cancer Risk Estimate	Occupational Noncancer HQ Estimate [3,4]	Percent Contribution to HI Estimate
Polycyclic Aromatic Hydrocarbons														
1-Methylnaphthalene	2.5E-03	1.3E+01	NA	NA	No	--		9.9E+01	NA	9.9E+01	--	--	--	--
2-Methylnaphthalene	3.2E-03	1.1E+01	NA	NA	No	--		NA	4.1E+03	4.1E+03	--	--	--	--
Acenaphthene	3.0E-04	9.0E+02	NA	NA	No	--		NA	6.1E+04	6.1E+04	--	--	--	--
Acenaphthylene	3.4E-04	1.4E+01	NA	NA	No	--		NA	6.1E+04	6.1E+04	--	--	--	--
Anthracene	3.8E-04	2.1E+02	NA	NA	No	--		NA	3.1E+05	3.1E+05	--	--	--	--
Benzo(a)anthracene	2.3E-04	1.6E+02	NA	NA	Yes	1.7E+01	90% KM (Chebyshev) UCL	2.7E+00	NA	2.7E+00	6.3E-06	14.32	--	--
Benzo(a)pyrene	6.2E-04	3.8E+01	NA	NA	Yes	5.9E+00	90% KM (Chebyshev) UCL	2.7E-01	NA	2.7E-01	2.2E-05	49.91	--	--
Benzo(b)fluoranthene	8.3E-04	5.8E+01	NA	NA	Yes	8.5E+00	90% KM (Chebyshev) UCL	2.7E+00	NA	2.7E+00	3.1E-06	7.14	--	--
Benzo(g,h,i)perylene	8.0E-04	1.9E+01	NA	NA	No	--		NA	2.1E+04	2.1E+04	--	--	--	--
Benzo(k)fluoranthene	2.9E-04	3.7E+01	NA	NA	Yes	5.1E+00	90% KM (Chebyshev) UCL	2.7E+01	NA	2.7E+01	1.9E-07	0.43	--	--
Chrysene	5.9E-04	1.2E+02	NA	NA	No	--		2.5E+02	NA	2.5E+02	--	--	--	--
Dibenz(a,h)anthracene	2.6E-04	6.4E+00	NA	NA	Yes	5.9E-01	90% GROS Approximate Gamma UCL	2.7E-01	NA	2.7E-01	2.2E-06	4.96	--	--
Fluoranthene	2.7E-04	1.5E+03	NA	NA	No	--		NA	2.9E+04	2.9E+04	--	--	--	--
Fluorene	1.2E-03	3.2E+02	NA	NA	No	--		NA	4.1E+04	4.1E+04	--	--	--	--
Indeno(1,2,3-cd)pyrene	5.1E-04	1.9E+01	NA	NA	Yes	2.3E+00	90% KM (Chebyshev) UCL	2.7E+00	NA	2.7E+00	8.4E-07	1.90	--	--
Naphthalene	2.0E-04	7.4E+00	NA	NA	No	--		2.3E+01	NA	2.3E+01	--	--	--	--
Phenanthrene	3.9E-04	1.2E+03	NA	NA	No	--		NA	2.1E+04	2.1E+04	--	--	--	--
Pyrene	2.3E-04	1.2E+03	NA	NA	No	--		NA	2.1E+04	2.1E+04	--	--	--	--
Metals														
Aluminum	3.2E+03	2.7E+04	NA	NA	No	--		NA	9.9E+05	9.9E+05	--	--	--	--
Antimony	1.5E+00	4.0E+00	5.6E-01	Yes	No	--		NA	4.1E+02	4.1E+02	--	--	--	--
Arsenic	1.6E+00	3.2E+01	8.8E+00	Yes	Yes	1.1E+01	90% Adjusted Gamma UCL	1.7E+00	NA	1.7E+00	6.2E-06	14.09	--	--
Cadmium	1.5E-01	9.0E+00	6.3E-01	Yes	No	--		NA	5.1E+02	5.1E+02	--	--	--	--
Chromium	7.2E+00	3.6E+03	7.6E+01	Yes	Yes	5.3E+00	90% Adjusted Gamma UCL	5.5E+00	NA	5.5E+00	9.6E-07	2.20	--	--
Copper	8.2E+00	2.6E+02	3.4E+01	Yes	No	--		NA	4.1E+04	4.1E+04	--	--	--	--
Lead [5]	1.8E+00	2.0E+02	7.9E+01	Yes	NA	--		NA	NA	NA	--	--	--	--
Manganese	1.5E+02	1.5E+02	1.8E+03	No	No	--		NA	2.3E+04	2.3E+04	--	--	--	--
Mercury	6.3E-03	2.0E-01	2.3E-01	No	No	--		NA	3.1E+02	3.1E+02	--	--	--	--
Nickel	1.2E+01	5.2E+02	4.7E+01	Yes	No	--		NA	2.0E+04	2.0E+04	--	--	--	--
Selenium	7.0E-01	1.2E+01	7.1E-01	Yes	No	--		NA	5.1E+03	5.1E+03	--	--	--	--
Silver	1.2E-01	4.0E+00	8.2E-01	Yes	No	--		NA	5.1E+03	5.1E+03	--	--	--	--
Zinc	2.7E+01	1.4E+03	1.8E+02	Yes	No	--		NA	3.1E+05	3.1E+05	--	--	--	--
Pesticides														
alpha-BHC	6.8E-03	6.8E-03	NA	NA	No	--		3.1E-01	NA	3.1E-01	--	--	--	--
Polychlorinated Biphenyls														
Aroclor 1254	2.5E-02	1.1E+01	NA	NA	Yes	2.7E+00	90% KM (Chebyshev) UCL	1.3E+00	NA	1.3E+00	2.0E-06	4.64	--	--
Aroclor 1260	8.0E-03	1.5E+00	NA	NA	Yes	2.3E-01	90% KM (Percentile Bootstrap) UCL	1.3E+00	NA	1.3E+00	1.8E-07	0.40	--	--
Phthalates														
Bis(2-ethylhexyl)phthalate	6.0E-02	3.0E+00	NA	NA	No	--		1.5E+02	NA	1.5E+02	--	--	--	--
Butyl benzyl phthalate	1.5E-02	6.4E-01	NA	NA	No	--		1.5E+03	NA	1.5E+03	--	--	--	--
Di-n-butyl phthalate	3.8E-01	3.8E-01	NA	NA	No	--		NA	1.0E+05	1.0E+05	--	--	--	--
Volatile Organic Compounds														
Chlorobenzene	3.1E-04	3.1E-04	NA	NA	No	--		NA	8.3E+03	8.3E+03	--	--	--	--
cis-1,2-Dichlorobenzene	4.2E-03	4.2E-03	NA	NA	No	--		NA	2.0E+03	2.0E+03	--	--	--	--
Tetrachloroethene	1.0E-03	6.6E-02	NA	NA	No	--		9.4E+02	NA	9.4E+02	--	--	--	--
Trichloroethene	8.7E-04	8.7E-04	NA	NA	No	--		4.6E+01	NA	4.6E+01	--	--	--	--
Total											4.4E-05		NC	

Notes:

NC= not calculated

[1] Development of Oregon Background Metals Concentrations in Soil (2013)

[2] The maximum detected concentration was initially used as exposure point concentration (EPC). When the risk estimates based on maximum detect exceeds ELCR of 1x10-6 and/or target organ-specific Hazard Index (HI) of 1, upper confidence limit (UCL) on mean is used as EPC for surface soil.

[3] Risk estimates were calculated for chemicals whose maximum detected concentration exceeds the RBC.

[4] Noncarcinogenic hazard quotient and ELCR are estimated using the ratio of RBC and EPC.

- HQ = EPC / Noncarcinogenic RSL (based on HQ=1)
- ELCR = EPC x 1x10-6 / Carcinogenic RSL (based on ELCR=1x10-6)

[5] The maximum concentration of lead is less than the industrial RBC of 800 mg/kg

TABLE 6-11
Assessment Endpoints and Measurement Endpoints
Northwest Pipe—Portland, Oregon

Assessment Endpoint Functional Group	Assessment Endpoint	Representative Endpoint Species	Measure of Exposure	Measure of Effect
Aquatic Resources	Survival and health of aquatic organisms using the Terminal 4 Slip 1 and Schnitzer slip, and potentially exposed to constituents in surface water.	Fish and invertebrates	Measured concentrations in groundwater at and downgradient of the Northwest Pipe property.	DEQ Level II Surface Water Screening Values for Aquatic Organisms
Wildlife (Birds and Mammals)	Survival and health of birds and mammals using the offsite Willamette River, and potentially exposed to constituents in surface water.	Raccoon, heron, ducks, belted kingfisher, etc.	Measured concentrations in groundwater at and downgradient of the Northwest Pipe property.	DEQ Level II Surface Water Screening Values for birds and mammals