Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	B-SS-1 1 7/30/2004	B-SS-2 1 7/30/2004	BPA TP-1a 1 - 1.5 12/7/1999	BPA TP-1a 1.5 - 2 12/7/1999	BPA TP-1b 2 - 2.5 12/7/1999	BPA TP-1c 12 - 12.5 12/7/1999	BPA TP-2a 2.5 - 3 12/7/1999	BPA TP-2b 3 - 3.5 12/7/1999	BPA TP-2c 11.5 - 12 12/7/1999	BPA-SG2a 1.5 - 2 12/2/1999	BPA-SG2b 2 - 2.5 12/2/1999	BPA-SG11 0 - 0.5 12/2/1999
Cyanide																
Cyanide, Total	200	56000	190000	20000			0 U	0.727	0.119	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Cyanide, Total																
Cyanide, Total	200	56000	190000	20000	0.5 U	0.5 U										
Hexavalent Chromium																
Hexavalent Chromium	190	420	190000	200	2 U	2 U										
Mercury																
Mercury	10	840	190000	24	0.13	0.16										
Metal																
Antimony	27	1100	190000	410	0.64 B	1.3 B	0 U	0 U	0 U	0 U	0 U	0 U	0 U	141	1.17	1.03
Arsenic	150	53	190000	1.6	5.5	6.2	11.5	13.2	5.83	4.86	1.37	6.72	5.75	4.89	5.25	5.74
Beryllium	320	5600	190000	2000	0.52	0.63	0.595	0.478	0.564	0.453	0.348	0.826	0.655	0.296	0.563	0.623
Cadmium	38	210	190000	800	1.9	3.2	25.2	50	0 U	0.233	1.26	0.305	0 U	1.89	0.424	0.695
Chromium				1400	59.3	49	205	235	11.9	18.5	8.53	13.7	18.8	13.7	7.92	14
Copper	36000	100000	190000	41000	63.2	69.5	957	511	8.66	22.7	5.39	18.9	15.9	169	12	59.2
Hexavalent Chromium	190	420	190000	200			0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Lead	450	1000	190000	800	95.8	497	307	317	10.7	11.6	10.9	21.6	12.3	114	17	251
Mercury	10	840	190000	24			0.293	0.153	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Nickel	650	56000	190000	20000	30	12.6	49.2	57.9	5.32	12	3.27	8.9	11.4	18.1	3.61	9.57
Selenium	26	14000	190000	5100	0.57 U	0.55 B	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Silver	84	14000	190000	5100	0.28 B	0.19 B	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0.914	0 U	0 U
Thallium	14	200	190000	66	0.64 U	0.6 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Zinc	12000	190000	190000	310000	166	326	834	732	21.5	39.8	45.6	51.9	39.5	203	21.2	81.3
Polychlorinated Biphenols																
Arochlor-1016	200	200	10000	21	0.024 U	0.023 U										
Arochlor-1221	2.5	160	10000	0.62	0.024 U	0.023 U										
Arochlor-1232	2	160	10000	0.62	0.024 U	0.023 U										
Arochlor-1242	62	160	10000	0.74	0.024 U	0.023 U										
Arochlor-1248	67	44	10000	0.74	0.024 U	0.023 U										
Arochlor-1254	280	44	10000	0.74	0.59	0.023 U										
Arochlor-1260	1900	130	190000	0.74	0.024 U	0.023 U										
Arochlor-1262					0.024 U	0.023 U										
Arochlor-1268					0.024 U	0.023 U										
PCBs (Total)				0.74	0.59	0.023 U										
Semi Volatile Organic Compound																
1,2,4-Trichlorobenzene	27	10000	10000	400	0.048 U	0.046 U										
1,2-Dichlorobenzene	60	10000	10000	10000	0.48 U	0.46 U										
1,3-Dichlorobenzene	61	10000	10000		0.48 U	0.46 U										
1,4-Dichlorobenzene	10	3300	190000	13	0.48 U	0.46 U										
2,4,5-Trichlorophenol	6100	190000	190000	62000	0.48 U	0.46 U										
2,4,6-Trichlorophenol	8.9	840	190000	160	0.48 U	0.46 U										
2,4-Dichlorophenol	2	8400	190000	1800	0.48 U	0.46 U										
2,4-Dimethylphenol	200	10000	10000	12000	0.48 U	0.46 U										
2,4-Dinitrophenol	4.1	5600	190000	1200	1.9 U	1.8 U										
2,4-Dinitrotoluene	0.84	260	190000	5.5	0.097 U	0.091 U										
2,6-Dinitrotoluene	10	2800	190000	620	0.097 U	0.091 U	1.53	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
2-Chloronaphthalene	18000	190000	190000	82000	0.48 U	0.46 U										
2-Chlorophenol	4.4	920	1100	5100	0.48 U	0.46 U										
2-Methylnaphthalene	8000	10000	10000	4100	0.09 J	0.051 J	0.97	0 U	0 U	0 U	0 U	0 U	0 U	6.08	0 U	0 U
2-Methylphenol	510	10000	10000	31000	0.48 U	0.46 U										
2-Nitroaniline	0.58	160	190000	1800	0.97 U	0.91 U										

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	B-SS-1 1 7/30/2004	B-SS-2 1 7/30/2004	BPA TP-1a 1 - 1.5 12/7/1999	BPA TP-1a 1.5 - 2 12/7/1999	BPA TP-1b 2 - 2.5 12/7/1999	BPA TP-1c 12 - 12.5 12/7/1999	BPA TP-2a 2.5 - 3 12/7/1999	BPA TP-2b 3 - 3.5 12/7/1999	BPA TP-2c 11.5 - 12 12/7/1999	BPA-SG2a 1.5 - 2 12/2/1999	BPA-SG2b 2 - 2.5 12/2/1999	BPA-SG11 0 - 0.5 12/2/1999
2-Nitrophenol	82	22000	190000		0.48 U	0.46 U										
3,3'-Dichlorobenzidine	32	180	190000	3.8	0.97 U	0.91 U										
3-Nitroaniline	0.58	160	190000		0.97 U	0.91 U										
4,6-Dinitro-2-Methylphenol				62	1.9 U	1.8 U										
4-Bromophenyl phenyl ether					0.48 U	0.46 U										
4-Chloro-3-Methyl-Phenol	110	14000	190000		0.48 U	0.46 U										
4-Chloroaniline	52	11000	190000	8.6	0.48 U	0.46 U										
4-Chlorodiphenyl Ether					0.48 U	0.46 U										
4-METHYLPHENOL	51	14000	190000	3100	0.13 J	0.23 J										
4-Nitroaniline	0.58	160	190000	86	0.97 U	0.91 U										
4-Nitrophenol	6	22000	190000		1.9 U	1.8 U										
Acenaphthene	4700	170000	190000	33000	0.081 J	0.03 J	3.74	0 U	0 U	0 U	0 U	0 U	0 U	24.7	0.441	0 U
Acenaphthylene	6900	170000	190000	33000	0.15 J	0.054 J	0 U	0 U	0 U	0 U	0 U	0 U	0 U	2.14	0 U	0 U
Anthracene	350	190000	190000	170000	0.25 J	0.11 J	7.66	0 U	0 U	0 U	0 U	0 U	0 U	33.8	0.899	0 U
Benzo (A) Anthracene	320	110	190000	2.1	0.76	0.37	20.7	17.2	0 U	0 U	0 U	0 U	0 U	107	2.81	0 U
Benzo (a) Pyrene	46	11	190000	0.21	0.85	0.37	17.5	21.3	0 U	0 U	0 U	0 U	0 U	89.9	2.3	0 U
Benzo (b) Fluoranthene	170	110	190000	2.1	0.73	0.39	24.6	31	0 U	0 U	0 U	0 U	0 U	115	3.16	0 U
Benzo (g,h,i) Perylene	180	170000	190000		0.37 J	0.16 J	7.09	12.5	0 U	0 U	0 U	0 U	0 U	53.8	1.37	0 U
Benzo (k) Fluoranthene	610	1100	190000	21	1	0.47	8.58	27.2	0 U	0 U	0 U	0 U	0 U	47.8	1.42	0 U
Bis(2-Chloroethoxy) Methane				1800	0.48 U	0.46 U										
Bis(2-Chloroethyl) Ether	0.055	5	5.7	0.9	0.048 U	0.046 U										
Bis(2-Chloroisopropyl) Ether	30	160	190	17	0.48 U	0.46 U										
Bis(2-Ethylhexyl) Phthalate	130	5700	10000	120	0.17 J	0.096 J										
Butylbenzylphthalate	10000	10000	10000	910	0.48 U	0.46 U										
Carbazole	83	4000	190000		0.12 J	0.044 J	7.78	0 U	0 U	0 U	0 U	0 U	0 U	98.7	2.71	0 U
Chrysene	230	11000	190000	210	0.97	0.5	19.1	18.2	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Dibenzo (a,h) Anthracene	160	11	190000	0.21	0.16	0.066	1.62	0 U	0 U	0 U	0 U	0 U	0 U	7.78	0 U	0 U
Dibenzofuran					0.058 J	0.025 J	1.61	0 U	0 U	0 U	0 U	0 U	0 U	7.8	0 U	0 U
Diethylphthalate	500	10000	10000	490000	0.48 U	0.46 U										
Dimethylphthalate					0.48 U	0.46 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	182	5.79	0 U
Di-n-Butylphthalate	4100	10000	10000	62000	0.48 U	0.46 U										
Di-n-octylphthalate	10000	10000	10000		0.48 U	0.46 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	11	0 U	0 U
Fluoranthene	3200	110000	190000	22000	1.5	0.7	46.5	42.9	0 U	0 U	0.515	0 U	0 U	22.3	0 U	0 U
Fluorene	3800	110000	190000	22000	0.066 J	0.037 J										
Hexachlorobenzene	0.96	50	190000	1.1	0.048 U	0.046 U	4.36	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Hexachlorobutadiene	1.2	560	10000	22	0.097 U	0.091 U										
Hexachlorocyclopentadiene	91	10000	10000	3700	0.48 U	0.46 U										
Hexachloroethane	0.56	2800	190000	120	0.048 U	0.046 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	59.4	1.61	0 U
Indeno (1,2,3-cd) Pyrene	28000	110	190000	2.1	0.39	0.16	0 U	13.7	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Isophorone	10	10000	10000	1800	0.48 U	0.46 U										
Naphthalene	25	56000	190000	20	0.084 J	0.042 J	0.81	0 U	0 U	0 U	0 U	0 U	0 U	6.63	0 U	0 U
Nitrobenzene	5.1	1400	10000	22	0.048 U	0.046 U										
N-Nitrosodi-N-Propylamine	0.037	11	10000	0.25	0.048 U	0.046 U										
N-Nitrosodiphenylamine	83	16000	190000	350	0.48 U	0.46 U										
Pentachlorophenol	5	660	190000	9	1.9 U	1.8 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Phenanthrene	10000	190000	190000		0.91	0.41 J	43.9	27.2	0 U	0 U	0.469	0 U	0 U	146	3.47	0 U
Phenol	400	190000	190000	180000	0.48 U	0.46 U										
Pyrene	2200	84000	190000	17000	1.4	0.68	44.6	41.6	0 U	0 U	0.669	0 U	0 U	169	4.68	0 U
Total Solids																
Percent Solids																
Volatile Organic Compound																

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	B-SS-1 1 7/30/2004	B-SS-2 1 7/30/2004	BPA TP-1a 1 - 1.5 12/7/1999	BPA TP-1a 1.5 - 2 12/7/1999	BPA TP-1b 2 - 2.5 12/7/1999	BPA TP-1c 12 - 12.5 12/7/1999	BPA TP-2a 2.5 - 3 12/7/1999	BPA TP-2b 3 - 3.5 12/7/1999	BPA TP-2c 11.5 - 12 12/7/1999	BPA-SG2a 1.5 - 2 12/2/1999	BPA-SG2b 2 - 2.5 12/2/1999	BPA-SG11 0 - 0.5 12/2/1999
1,1,1,2-Tetrachloroethane	18	3100	190000	9.8	0.0071 U	0.0072 U										
1,1,1-Trichloroethane	20	10000	10000	39000	0.0071 U	0.0072 U										
1,1,2,2-Tetrachloroethane	0.03	28	33	2.9	0.0014 U	0.0014 U										
1,1,2-Trichloroethane	0.5	100	120	5.5	0.0043 U	0.0043 U										
1,1,2-Trichlorofluoromethane	200	10000	10000	3400												
1,1-Dichloroethane	11	1000	1200	17	0.0071 U	0.0072 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
1,1-Dichloroethene	0.7	33	38	1100	0.0028 U	0.0029 U										
1,2-Dibromoethane	0.005	0.93	8.6	0.17	0.0071 U	0.0072 U										
1,2-Dichloroethane	0.5	63	73	2.2	0.0028 U	0.0029 U										
1,2-Dichloropropane	0.5	160	180	4.7	0.0014 U	0.0014 U										
1,4-Dioxane	2.4	210	240	160	1.4 U	1.4 U										
2-Butanone	580	10000	10000	190000	0.0071 U	0.0072 U										
2-Chloroethyl Vinyl Ether																
2-Hexanone					0.0071 U	0.0072 U										
4-Methyl-2-Pentanone	41	4300	4900	52000	0.0071 U	0.0072 U										
Acetone	1000	10000	10000	610000	0.24	0.26 B	0.0154	0.0169	0.0234	0.0453	0.0175	0.0171	0.0122	0.015	0.0222	0.0211
Acrolein	0.012	1.1	1.2	0.68												
Acrylonitrile	0.27	24	28	1.2	0.071 U	0.072 U										
Benzene	0.5	210	240	5.6	0.0014 U	0.0014 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Bromochloromethane	9	10000	10000		0.0071 U	0.0072 U										
Bromodichloromethane	10	45	51	1.4	0.0014 U	0.0014 U										
Bromoform	10	1500	1700	220	0.0057 U	0.0058 U										
Bromomethane	1	270	300	35	0.0071 U	0.0072 U										
Carbon Disulfide	410	10000	10000	3000	0.0071 U	0.0072 U										
Carbon Tetrachloride	0.5	110	120	1.3	0.0028 U	0.0029 U										
Chlorobenzene	10	10000	10000	1500	0.0071 U	0.0072 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Chlorodibromomethane	10	61	70	3.4	0.0071 U	0.0072 U										
Chloroethane	90	10000	10000	62000	0.0071 U	0.0072 U										
Chloroform	10	17	19	1.5	0.0071 U	0.0072 U										
Chloromethane	0.3	920	1000	510	0.0071 U	0.0072 U										
cis-1,2-Dichloroethene	7	1900	2100	10000	0.0071 U	0.0024 J	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
cis-1,3-Dichloropropene	2.6	410	470	8.4	0.0071 U	0.0072 U										
Ethylbenzene	70	10000	10000	29	0.0057 U	0.0058 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Methyl tert-butyl ether	2	3200	3700	190	0.0071 U	0.0072 U										
Methylene chloride	0.5	3500	4000	54	0.0043 U	0.0043 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
Styrene	24	10000	10000	38000	0.0071 U	0.0072 U										
Tetrachloroethene	0.5	1500	3300	2.7	0.0027	0.024	0.0248	0.0393	0 U	0 U	0 U	0 U	0 U	0.0141	0 U	0.0103
Toluene	100	10000	10000	46000	0.0071 U	0.0072 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U
trans-1,2-Dichloroethene	10	3700	4300	500	0.0071 U	0.0072 U										
trans-1,3-Dichloropropene	2.6	410	470	8.4	0.0071 U	0.0072 U										
Trichloroethene	0.5	970	1100	14	0.017	0.034	0.131	0.179	0 U	0 U	0 U	0.0156	0 U	0.0286	0 U	0.0178
Vinyl Chloride	0.2	53	220	1.7	0.0071 U	0.0072 U										
Xylenes (Total)	1000	10000	10000	2600	0.0071 U	0.0072 U										

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	BPA-SG73 0 - 0.5 12/2/1999	BPA-SG74a 1.5 - 2 12/2/1999	BPA-SG74b 2.5 - 3 12/2/1999	BPA-SG75a 1.5 - 2 12/2/1999	BPA-SG75b 3 - 3.5 12/2/1999	ERB-14 13.5 - 14 4/18/2002	ERB-15 14 - 14.5 4/19/2002	ERB-16 18 - 18.5 4/18/2002	ERB-17 18 - 18.5 4/18/2002	ERB-18 16 - 16.5 4/19/2002	ERB-19 16 - 16.5 4/19/2002	ERB-20 13 - 13.5 4/18/2002	ERB-21 5 - 5.5 4/24/2002
Cyanide																	
Cyanide, Total	200	56000	190000	20000	0.858	0 U	0 U	1.08	0.193								
Cyanide, Total																	
Cyanide, Total	200	56000	190000	20000						0.3 U	0.28 U	0.29 U	0.3 U	0.3	0.27 U	0.27 U	0.32 U
Hexavalent Chromium																	
Hexavalent Chromium	190	420	190000	200													
Mercury																	
Mercury	10	840	190000	24						0.055 U	0.055 U	0.056 U	0.059 U	0.056	0.053 U	0.053 U	0.06 U
Metal																	
Antimony	27	1100	190000	410	0 U	7.49	0 U	42.1	0 U	1.1 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1 U	1.3 U
Arsenic	150	53	190000	1.6	16.6	21.6	6.95	8.87	6.77	3.2	7.6	5.6	6.3	2.3	2.1 U	8.2	6.4
Beryllium	320	5600	190000	2000	0.918	0.39	0.671	0.507	0.685	1.1 U	1.1 U	1.1 U	1 U	1.1	1 U	1 U	1.3 U
Cadmium	38	210	190000	800	0.936	14.8	0.576	164	0.394	0.54 U	0.54 U	0.56 U	0.52 U	0.57 U	0.53 U	0.51 U	0.64 U
Chromium				1400	14	312	21.9	4200	14.3	20	25	21	19	29	11	23	27
Copper	36000	100000	190000	41000	39.1	590	15	541	14.2	17	14	17	15	11	6.3	17	23
Hexavalent Chromium	190	420	190000	200	0 U	17.7	0 U	41	0 U								
Lead	450	1000	190000	800	21.2	428	20	6230	18	11	14	12	12	13	9.5	14	15
Mercury	10	840	190000	24	0 U	4.68	0 U	5.98	0 U								
Nickel	650	56000	190000	20000	30.5	742	13.2	125	10.6	17	14	17	13	11	6.3	13	17
Selenium	26	14000	190000	5100	0 U	0 U	0 U	0 U	0 U	2.2 U	2.2 U	2.2 U	2.1 U	2.3 U	2.1 U	2.1 U	2.6 U
Silver	84	14000	190000	5100	0 U	0 U	0 U	0 U	0 U	0.54 U	0.54 U	0.56 U	0.52 U	0.57 U	0.53 U	0.51 U	0.64 U
Thallium	14	200	190000	66	0 U	0 U	0 U	0 U	0 U	3.2 U	3.2 U	3.4	3.1	3.4	3.2 U	3.1 U	3.8 U
Zinc	12000	190000	190000	310000	89.9	3160	73	3430	42.1	54	42	47	41	29	23	47	51
Polychlorinated Biphenols																	
Arochlor-1016	200	200	10000	21													
Arochlor-1221	2.5	160	10000	0.62													
Arochlor-1232	2	160	10000	0.62													
Arochlor-1242	62	160	10000	0.74													
Arochlor-1248	67	44	10000	0.74													
Arochlor-1254	280	44	10000	0.74													
Arochlor-1260	1900	130	190000	0.74													
Arochlor-1262																	
Arochlor-1268																	
PCBs (Total)				0.74													
Semi Volatile Organic Compound																	
1,2,4-Trichlorobenzene	27	10000	10000	400													
1,2-Dichlorobenzene	60	10000	10000	10000													
1,3-Dichlorobenzene	61	10000	10000														
1,4-Dichlorobenzene	10	3300	190000	13													
2,4,5-Trichlorophenol	6100	190000	190000	62000													
2,4,6-Trichlorophenol	8.9	840	190000	160													
2,4-Dichlorophenol	2	8400	190000	1800													
2,4-Dimethylphenol	200	10000	10000	12000													
2,4-Dinitrophenol	4.1	5600	190000	1200													
2,4-Dinitrotoluene	0.84	260	190000	5.5													
2,6-Dinitrotoluene	10	2800	190000	620	0 U	0 U	0 U	0 U	0 U								
2-Chloronaphthalene	18000	190000	190000	82000													
2-Chlorophenol	4.4	920	1100	5100													
2-Methylnaphthalene	8000	10000	10000	4100	0 U	0 U	0 U	0 U	0 U								
2-Methylphenol	510	10000	10000	31000													
2-Nitroaniline	0.58	160	190000	1800													

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	BPA-SG73 0 - 0.5 12/2/1999	BPA-SG74a 1.5 - 2 12/2/1999	BPA-SG74b 2.5 - 3 12/2/1999	BPA-SG75a 1.5 - 2 12/2/1999	BPA-SG75b 3 - 3.5 12/2/1999	ERB-14 13.5 - 14 4/18/2002	ERB-15 14 - 14.5 4/19/2002	ERB-16 18 - 18.5 4/18/2002	ERB-17 18 - 18.5 4/18/2002	ERB-18 16 - 16.5 4/19/2002	ERB-19 16 - 16.5 4/19/2002	ERB-20 13 - 13.5 4/18/2002	ERB-21 5 - 5.5 4/24/2002
2-Nitrophenol	82	22000	190000														
3,3'-Dichlorobenzidine	32	180	190000	3.8													
3-Nitroaniline	0.58	160	190000														
4,6-Dinitro-2-Methylphenol				62													
4-Bromophenyl phenyl ether																	
4-Chloro-3-Methyl-Phenol	110	14000	190000														
4-Chloroaniline	52	11000	190000	8.6													
4-Chlorodiphenyl Ether																	
4-METHYLPHENOL	51	14000	190000	3100													
4-Nitroaniline	0.58	160	190000	86													
4-Nitrophenol	6	22000	190000														
Acenaphthene	4700	170000	190000	33000	0 U	0 U	0 U	0 U	0 U								
Acenaphthylene	6900	170000	190000	33000	0 U	0 U	0 U	0 U	0 U								
Anthracene	350	190000	190000	170000	0 U	0 U	0 U	0 U	0 U								
Benzo (A) Anthracene	320	110	190000	2.1	0 U	0 U	0 U	0 U	0 U								
Benzo (a) Pyrene	46	11	190000	0.21	0 U	0 U	0 U	0 U	0 U								
Benzo (b) Fluoranthene	170	110	190000	2.1	0 U	0.716	0 U	0.732	0 U								
Benzo (g,h,i) Perylene	180	170000	190000		0 U	0.541	0 U	0 U	0 U								
Benzo (k) Fluoranthene	610	1100	190000	21	0 U	0 U	0 U	0 U	0 U								
Bis(2-Chloroethoxy) Methane				1800													
Bis(2-Chloroethyl) Ether	0.055	5	5.7	0.9													
Bis(2-Chloroisopropyl) Ether	30	160	190	17													
Bis(2-Ethylhexyl) Phthalate	130	5700	10000	120													
Butylbenzylphthalate	10000	10000	10000	910													
Carbazole	83	4000	190000		0 U	0 U	0 U	0 U	0 U								
Chrysene	230	11000	190000	210	0 U	0 U	0 U	0 U	0 U								
Dibenzo (a,h) Anthracene	160	11	190000	0.21	0 U	0 U	0 U	0 U	0 U								
Dibenzofuran					0 U	0 U	0 U	0 U	0 U								
Diethylphthalate	500	10000	10000	490000													
Dimethylphthalate					0 U	0.866	0 U	0.863	0 U								
Di-n-Butylphthalate	4100	10000	10000	62000													
Di-n-octylphthalate	10000	10000	10000		0 U	0 U	0 U	0 U	0 U								
Fluoranthene	3200	110000	190000	22000	0 U	0 U	0 U	0 U	0 U								
Fluorene	3800	110000	190000	22000													
Hexachlorobenzene	0.96	50	190000	1.1	0 U	0 U	0 U	0 U	0 U								
Hexachlorobutadiene	1.2	560	10000	22													
Hexachlorocyclopentadiene	91	10000	10000	3700													
Hexachloroethane	0.56	2800	190000	120	0 U	0 U	0 U	0 U	0 U								
Indeno (1,2,3-cd) Pyrene	28000	110	190000	2.1	0 U	0 U	0 U	0 U	0 U								
Isophorone	10	10000	10000	1800													
Naphthalene	25	56000	190000	20	0 U	0 U	0 U	0 U	0 U								
Nitrobenzene	5.1	1400	10000	22													
N-Nitrosodi-N-Propylamine	0.037	11	10000	0.25													
N-Nitrosodiphenylamine	83	16000	190000	350													
Pentachlorophenol	5	660	190000	9	0 U	77.2	0 U	0 U	0 U								
Phenanthrene	10000	190000	190000		0 U	0 U	0 U	0 U	0 U								
Phenol	400	190000	190000	180000													
Pyrene	2200	84000	190000	17000	0 U	0.702	0 U	0 U	0 U								
Total Solids																	
Percent Solids										83.60%	90.80%	86.40%	82.60%	82.80%	0.91%	91.60%	78.10%
Volatile Organic Compound																	

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	BPA-SG73 0 - 0.5 12/2/1999	BPA-SG74a 1.5 - 2 12/2/1999	BPA-SG74b 2.5 - 3 12/2/1999	BPA-SG75a 1.5 - 2 12/2/1999	BPA-SG75b 3 - 3.5 12/2/1999	ERB-14 13.5 - 14 4/18/2002	ERB-15 14 - 14.5 4/19/2002	ERB-16 18 - 18.5 4/18/2002	ERB-17 18 - 18.5 4/18/2002	ERB-18 16 - 16.5 4/19/2002	ERB-19 16 - 16.5 4/19/2002	ERB-20 13 - 13.5 4/18/2002	ERB-21 5 - 5.5 4/24/2002
1,1,1,2-Tetrachloroethane	18	3100	190000	9.8													
1,1,1-Trichloroethane	20	10000	10000	39000						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,1,2,2-Tetrachloroethane	0.03	28	33	2.9						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,1,2-Trichloroethane	0.5	100	120	5.5						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,1,2-Trichlorofluoromethane	200	10000	10000	3400						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,1-Dichloroethane	11	1000	1200	17	0 U	0 U	0 U	0 U	0 U	0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,1-Dichloroethene	0.7	33	38	1100						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,2-Dibromoethane	0.005	0.93	8.6	0.17													
1,2-Dichloroethane	0.5	63	73	2.2						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,2-Dichloropropane	0.5	160	180	4.7						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
1,4-Dioxane	2.4	210	240	160													
2-Butanone	580	10000	10000	190000													
2-Chloroethyl Vinyl Ether										0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
2-Hexanone																	
4-Methyl-2-Pentanone	41	4300	4900	52000													
Acetone	1000	10000	10000	610000	0.0139	0.0775	0.0684	0.0846	0.0697								
Acrolein	0.012	1.1	1.2	0.68						0.57 U	0.48 U	0.52 U	0.52 U	0.52 U	0.47 U	0.54 U	0.61 U
Acrylonitrile	0.27	24	28	1.2						0.23 U	0.19 U	0.21 U	0.21 U	0.21 U	0.19 U	0.22 U	0.25 U
Benzene	0.5	210	240	5.6	0 U	0 U	0 U	0 U	0 U	0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Bromochloromethane	9	10000	10000														
Bromodichloromethane	10	45	51	1.4						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Bromoform	10	1500	1700	220						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Bromomethane	1	270	300	35						0.11 U	0.096 U	0.1 U	0.1 U	0.1 U	0.095 U	0.1 U	0.12 U
Carbon Disulfide	410	10000	10000	3000													
Carbon Tetrachloride	0.5	110	120	1.3						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Chlorobenzene	10	10000	10000	1500	0 U	0 U	0 U	0 U	0 U	0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Chlorodibromomethane	10	61	70	3.4						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Chloroethane	90	10000	10000	62000						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Chloroform	10	17	19	1.5						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Chloromethane	0.3	920	1000	510						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
cis-1,2-Dichloroethene	7	1900	2100	10000	0 U	0 U	0.0516	0 U	0 U	0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
cis-1,3-Dichloropropene	2.6	410	470	8.4						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Ethylbenzene	70	10000	10000	29	0 U	0 U	0 U	0 U	0 U	0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.0098 J	0.054 U	0.061 U
Methyl tert-butyl ether	2	3200	3700	190													
Methylene chloride	0.5	3500	4000	54	0 U	0 U	0 U	0 U	0 U	0.11 U	0.096 U	0.1 U	0.1 U	0.1 U	0.095 U	0.017 J	0.12 U
Styrene	24	10000	10000	38000													
Tetrachloroethene	0.5	1500	3300	2.7	0 U	3.04	2.81	1.08	0.638	0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.041 J
Toluene	100	10000	10000	46000	0 U	0 U	0 U	0 U	0 U	0.057 U	0.0086 J	0.052 U	0.052 U	0.012 J	0.024 J	0.054 U	0.061 U
trans-1,2-Dichloroethene	10	3700	4300	500						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
trans-1,3-Dichloropropene	2.6	410	470	8.4						0.057 U	0.048 U	0.052 U	0.052 U	0.052 U	0.047 U	0.054 U	0.061 U
Trichloroethene	0.5	970	1100	14	0.00831	1.5	1.73	1.06	0.633	0.057 U	0.048 U	0.025 J	0.052 U	0.052 U	0.047 U	0.054 U	0.064
Vinyl Chloride	0.2	53	220	1.7						0.11 U	0.096 U	0.1 U	0.1 U	0.1 U	0.095 U	0.11 U	0.12 U
Xylenes (Total)	1000	10000	10000	2600													

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	ERB-21 Dup 5 - 5.5 4/24/2002	ERB-22 7 - 7.5 4/24/2002	ERB-23 9 - 9.5 4/24/2002	ERB-24 3 - 3.5 4/24/2002
Cyanide								
Cyanide, Total	200	56000	190000	20000	0 U			
Cyanide, Total								
Cyanide, Total	200	56000	190000	20000		0.32 U	0.3 U	0.3 U
Hexavalent Chromium								
Hexavalent Chromium	190	420	190000	200				
Mercury								
Mercury	10	840	190000	24		0.063 U	0.055 U	0.058 U
Metal								
Antimony	27	1100	190000	410	0 U	1.2 U	1.1 U	1.2 U
Arsenic	150	53	190000	1.6	7.1	7.2	5.5	4.8
Beryllium	320	5600	190000	2000	0 U	1.2 U	1.1 U	1.2 U
Cadmium	38	210	190000	800	0 U	0.61 U	0.55 U	0.6 U
Chromium				1400	27	30	20	13
Copper	36000	100000	190000	41000	25	25	19	7
Hexavalent Chromium	190	420	190000	200				
Lead	450	1000	190000	800	13	15	9.9	9.4
Mercury	10	840	190000	24	0 U			
Nickel	650	56000	190000	20000	18	18	16	4.8
Selenium	26	14000	190000	5100	0 U	2.4 U	2.1 U	2.4 U
Silver	84	14000	190000	5100	1.2	0.61 U	0.55 U	0.6 U
Thallium	14	200	190000	66	0 U	3.7 U	3.3 U	3.6 U
Zinc	12000	190000	190000	310000	52	57	48	18
Polychlorinated Biphenols								
Arochlor-1016	200	200	10000	21				
Arochlor-1221	2.5	160	10000	0.62				
Arochlor-1232	2	160	10000	0.62				
Arochlor-1242	62	160	10000	0.74				
Arochlor-1248	67	44	10000	0.74				
Arochlor-1254	280	44	10000	0.74				
Arochlor-1260	1900	130	190000	0.74				
Arochlor-1262								
Arochlor-1268								
PCBs (Total)				0.74				
Semi Volatile Organic Compound								
1,2,4-Trichlorobenzene	27	10000	10000	400				
1,2-Dichlorobenzene	60	10000	10000	10000				
1,3-Dichlorobenzene	61	10000	10000					
1,4-Dichlorobenzene	10	3300	190000	13				
2,4,5-Trichlorophenol	6100	190000	190000	62000				
2,4,6-Trichlorophenol	8.9	840	190000	160				
2,4-Dichlorophenol	2	8400	190000	1800				
2,4-Dimethylphenol	200	10000	10000	12000				
2,4-Dinitrophenol	4.1	5600	190000	1200				
2,4-Dinitrotoluene	0.84	260	190000	5.5				
2,6-Dinitrotoluene	10	2800	190000	620				
2-Chloronaphthalene	18000	190000	190000	82000				
2-Chlorophenol	4.4	920	1100	5100				
2-Methylnaphthalene	8000	10000	10000	4100				
2-Methylphenol	510	10000	10000	31000				
2-Nitroaniline	0.58	160	190000	1800				

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	ERB-21 Dup 5 - 5.5 4/24/2002	ERB-22 7 - 7.5 4/24/2002	ERB-23 9 - 9.5 4/24/2002	ERB-24 3 - 3.5 4/24/2002
2-Nitrophenol	82	22000	190000					
3,3'-Dichlorobenzidine	32	180	190000	3.8				
3-Nitroaniline	0.58	160	190000					
4,6-Dinitro-2-Methylphenol				62				
4-Bromophenyl phenyl ether								
4-Chloro-3-Methyl-Phenol	110	14000	190000					
4-Chloroaniline	52	11000	190000	8.6				
4-Chlorodiphenyl Ether								
4-METHYLPHENOL	51	14000	190000	3100				
4-Nitroaniline	0.58	160	190000	86				
4-Nitrophenol	6	22000	190000					
Acenaphthene	4700	170000	190000	33000				
Acenaphthylene	6900	170000	190000	33000				
Anthracene	350	190000	190000	170000				
Benzo (A) Anthracene	320	110	190000	2.1				
Benzo (a) Pyrene	46	11	190000	0.21				
Benzo (b) Fluoranthene	170	110	190000	2.1				
Benzo (g,h,i) Perylene	180	170000	190000					
Benzo (k) Fluoranthene	610	1100	190000	21				
Bis(2-Chloroethoxy) Methane				1800				
Bis(2-Chloroethyl) Ether	0.055	5	5.7	0.9				
Bis(2-Chloroisopropyl) Ether	30	160	190	17				
Bis(2-Ethylhexyl) Phthalate	130	5700	10000	120				
Butylbenzylphthalate	10000	10000	10000	910				
Carbazole	83	4000	190000					
Chrysene	230	11000	190000	210				
Dibenzo (a,h) Anthracene	160	11	190000	0.21				
Dibenzofuran								
Diethylphthalate	500	10000	10000	490000				
Dimethylphthalate								
Di-n-Butylphthalate	4100	10000	10000	62000				
Di-n-octylphthalate	10000	10000	10000					
Fluoranthene	3200	110000	190000	22000				
Fluorene	3800	110000	190000	22000				
Hexachlorobenzene	0.96	50	190000	1.1				
Hexachlorobutadiene	1.2	560	10000	22				
Hexachlorocyclopentadiene	91	10000	10000	3700				
Hexachloroethane	0.56	2800	190000	120				
Indeno (1,2,3-cd) Pyrene	28000	110	190000	2.1				
Isophorone	10	10000	10000	1800				
Naphthalene	25	56000	190000	20				
Nitrobenzene	5.1	1400	10000	22				
N-Nitrosodi-N-Propylamine	0.037	11	10000	0.25				
N-Nitrosodiphenylamine	83	16000	190000	350				
Pentachlorophenol	5	660	190000	9				
Phenanthrene	10000	190000	190000					
Phenol	400	190000	190000	180000				
Pyrene	2200	84000	190000	17000				
Total Solids								
Percent Solids						79.20%	83.80%	84%
Volatile Organic Compound								

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.

Table 3.5-1
Soils Data Summary - Burn Pile Area (BPA)
Former York Naval Ordnance Plant - York, PA

Location/ID Depth (ft.) Sample Date Parameter	MSC Soil to GW Used Aquifer (mg/kg)	MSC Direct Contact 0 - 2 ft (mg/kg)	MSC Direct Contact 2 - 15 ft (mg/kg)	EPA RSL Industrial Soil (mg/kg)	ERB-21 Dup 5 - 5.5 4/24/2002	ERB-22 7 - 7.5 4/24/2002	ERB-23 9 - 9.5 4/24/2002	ERB-24 3 - 3.5 4/24/2002
1,1,1,2-Tetrachloroethane	18	3100	190000	9.8				
1,1,1-Trichloroethane	20	10000	10000	39000		0.055 U	0.056 U	0.053 U
1,1,2,2-Tetrachloroethane	0.03	28	33	2.9		0.055 U	0.056 U	0.053 U
1,1,2-Trichloroethane	0.5	100	120	5.5		0.055 U	0.056 U	0.053 U
1,1,2-Trichlorofluoromethane	200	10000	10000	3400		0.055 U	0.056 U	0.053 U
1,1-Dichloroethane	11	1000	1200	17	0 U	0.055 U	0.056 U	0.053 U
1,1-Dichloroethene	0.7	33	38	1100		0.055 U	0.056 U	0.053 U
1,2-Dibromoethane	0.005	0.93	8.6	0.17				
1,2-Dichloroethane	0.5	63	73	2.2		0.055 U	0.056 U	0.053 U
1,2-Dichloropropane	0.5	160	180	4.7		0.055 U	0.056 U	0.053 U
1,4-Dioxane	2.4	210	240	160				
2-Butanone	580	10000	10000	190000				
2-Chloroethyl Vinyl Ether						0.055 U	0.056 U	0.053 U
2-Hexanone								
4-Methyl-2-Pentanone	41	4300	4900	52000				
Acetone	1000	10000	10000	610000	0 U			
Acrolein	0.012	1.1	1.2	0.68		0.55 U	0.56 U	0.53 U
Acrylonitrile	0.27	24	28	1.2		0.22 U	0.22 U	0.21 U
Benzene	0.5	210	240	5.6	0 U	0.055 U	0.056 U	0.053 U
Bromochloromethane	9	10000	10000					
Bromodichloromethane	10	45	51	1.4		0.055 U	0.056 U	0.053 U
Bromoform	10	1500	1700	220		0.055 U	0.056 U	0.053 U
Bromomethane	1	270	300	35		0.11 U	0.11 U	0.11 U
Carbon Disulfide	410	10000	10000	3000				
Carbon Tetrachloride	0.5	110	120	1.3		0.055 U	0.056 U	0.053 U
Chlorobenzene	10	10000	10000	1500	0 U	0.055 U	0.056 U	0.053 U
Chlorodibromomethane	10	61	70	3.4		0.055 U	0.056 U	0.053 U
Chloroethane	90	10000	10000	62000		0.055 U	0.056 U	0.053 U
Chloroform	10	17	19	1.5		0.055 U	0.056 U	0.053 U
Chloromethane	0.3	920	1000	510		0.055 U	0.056 U	0.053 U
cis-1,2-Dichloroethene	7	1900	2100	10000	0 U	0.055 U	0.056 U	0.053 U
cis-1,3-Dichloropropene	2.6	410	470	8.4		0.055 U	0.056 U	0.053 U
Ethylbenzene	70	10000	10000	29	0 U	0.055 U	0.056 U	0.053 U
Methyl tert-butyl ether	2	3200	3700	190				
Methylene chloride	0.5	3500	4000	54	0 U	0.11 U	0.11 U	0.11 U
Styrene	24	10000	10000	38000				
Tetrachloroethene	0.5	1500	3300	2.7	0.053 J	0.055 U	0.056 U	0.053 U
Toluene	100	10000	10000	46000	0 U	0.055 U	0.056 U	0.053 U
trans-1,2-Dichloroethene	10	3700	4300	500		0.055 U	0.056 U	0.053 U
trans-1,3-Dichloropropene	2.6	410	470	8.4		0.055 U	0.056 U	0.053 U
Trichloroethene	0.5	970	1100	14	0.034 J	0.055 U	0.056 U	0.035 J
Vinyl Chloride	0.2	53	220	1.7		0.11 U	0.11 U	0.11 U
Xylenes (Total)	1000	10000	10000	2600				

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference. * = excavated location.