Method	Analtye	2015 RAD BACKGROUND VALUE (metals) (mg/kg)	Decision Unit 01									Decision Unit 02								
			S2IS-DU01A		S2IS-DU01B		S2IS-DU01C					S2IS-DU02A		S2IS-DU02B		S2IS-DU02C				
			Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)
SW6010B	Aluminum	17610	7900	10	7300	10	7900	10	346.410	4.499	8284.000	8200	9.9	8700	10	8700	10	288.675	3.383	9020.000
SW6010B	Antimony	0.96	ND	2	ND	2	ND	2	0.000	0.000	2.000	ND	2	ND	2	ND	2	0.000	0.000	2.000
SW6010B	Arsenic	35/12.1	11	2.5	11	2.5	11	2.5	0.000	0.000	11.000	12	2.5	13	2.5	13	2.5	0.577	4.558	13.640
SW6010B	Barium	239.8	80	0.5	74	0.5	76	0.5	3.055	3.985	81.817	74	0.5	79	0.5	76	0.5	2.517	3.297	80.576
SW6010B	Beryllium	0.97	0.39	0.1	0.37	0.1	0.37	0.1	0.012	3.066	0.396	0.39	0.099	0.44	0.1	0.42	0.1	0.025	6.040	0.459
SW6010B	Cadmium	1.2	0.97	0.1	0.89	0.1	0.98	0.1	0.049	5.211	1.030	1	0.099	1	0.1	1	0.1	0.000	0.000	1.000
SW6010B	Chromium	19.8	14	0.5	14	0.5	15	0.5	0.577	4.028	15.307	15	0.5	15	0.5	16	0.5	0.577	3.765	16.307
SW6010B	Cobalt	5.7	4.2	0.5	3.9	0.5	4.2	0.5	0.173	4.225	4.392	4.5	0.5	4.8	0.5	4.7	0.5	0.153	3.273	4.924
SW6010B	Copper	32.4	14	0.5	13	0.5	14	0.5	0.577	4.225	14.640	14	0.5	14	0.5	14	0.5	0.000	0.000	14.000
SW6010B	Iron	15460	12000	5	12000	5	12000	5	0.000	0.000	12000.000	13000	5	13000	5	13000	5	0.000	0.000	13000.000
SW6010B	Lead	39.3	31	0.5	30	0.5	32	0.5	1.000	3.226	32.686	32	0.5	30	0.5	32	0.5	1.155	3.685	33.280
SW6010B	Manganese	698.7	360	0.5	350	0.5	360	0.5	5.774	1.619	366.400	380	0.5	390	0.5	380	0.5	5.774	1.506	393.067
SW6010B	Molybdenum	0.9	1.1	1	1.1	1	1.1	1	0.000	0.000	1.100	1.2	0.99	1.2	1	1.3	1	0.058	4.681	1.331
SW6010B	Nickel	14.5	17	0.5	16	0.5	17	0.5	0.577	3.464	17.640	18	0.5	19	0.5	19	0.5	0.577	3.093	19.640
SW6010B	Potassium	9131	2400	25	2200	25	2400	25	115.470	4.949	2528.000	2500	25	2600	25	2500	25	57.735	2.279	2630.667
SW6010B	Selenium	1.4	ND	2.5	ND	2.5	ND	2.5	0.000	0.000	2.500	ND	2.5	ND	2.5	ND	2.5	0.000	0.000	2.500
SW6010B	Silver	N/A	0.2	0.2	0.13	0.2	0.22	0.2	0.047	25.777	0.263	0.25	0.2	0.35	0.2	0.26	0.2	0.055	19.212	0.380
SW6010B	Thallium	N/A	ND	1	ND	1	ND	1	0.000	0.000	1.000	ND	0.99	ND	1	ND	1	0.006	0.579	1.006
SW6010B	Vanadium	27.94	19	0.5	19	0.5	20	0.5	0.577	2.986	20.307	20	0.5	21	0.5	22	0.5	1.000	4.762	22.686
SW6010B	Zinc	77.1	68	1	66	1	70	1	2.000	2.941	71.372	74	0.99	83	1	120	1	24.379	26.403	133.433
SW7471A	Mercury	0.05	0.027	0.01	0.027	0.01	0.03	0.01	0.002	6.186	0.031	0.029	0.01	0.039	0.01	0.032	0.01	0.005	15.395	0.042
SW8270C	1,2,4-Trichlorobenzene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	1,2-Dichlorobenzene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	1,3-Dichlorobenzene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	1,4-Dichlorobenzene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2,4,5-Trichlorophenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2,4,6-Trichlorophenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2,4-Dichlorophenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2,4-Dimethylphenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2,4-Dinitrophenol	-	ND	3.4	ND	3.3	ND	3.4	0.058	1.715	3.464	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764
SW8270C	2,4-Dinitrotoluene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2,6-Dinitrotoluene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2-Chloronaphthalene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2-Chlorophenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2-Methylnaphthalene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2-Methylphenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	2-Nitroaniline	-	ND	3.4	ND	3.3	ND	3.4	0.058	1.715	3.464	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764
SW8270C	2-Nitrophenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	3-Methylphenol & 4-Methylphenol	-	ND	6.8	ND	6.5	ND	6.7	0.153	2.291	6.924	ND	3.3	ND	3.2	ND	3.3	0.058	1.767	3.364
SW8270C	3-Nitroaniline	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	4,6-Dinitro-2-methylphenol	-	ND	3.4	ND	3.3	ND	3.4	0.058	1.715	3.464	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764
SW8270C	4-Bromophenyl phenyl ether	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	4-Chloro-3-methylphenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	4-Chlorophenyl phenyl ether	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	4-Nitroaniline	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	4-Nitrophenol	-	ND	3.4	ND	3.3	ND	3.4	0.058	1.715	3.464	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764
SW8270C	Acenaphthene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Acenaphthylene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Anthracene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Benzo[a]anthracene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Benzo[a]pyrene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Benzo[b]fluoranthene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Benzo[g,h,i]perylene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853

Method	Analtye	2015 RAD BACKGROUND VALUE (metals) (mg/kg)	Decision Unit 01									Decision Unit 02								
			S2IS-DU01A		S2IS-DU01B		S2IS-DU01C					S2IS-DU02A		S2IS-DU02B		S2IS-DU02C				
			Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)
SW8270C	Benzo[k]fluoranthene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Benzyl alcohol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	bis (2-chloroisopropyl) ether	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Bis(2-chloroethoxy)methane	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Bis(2-chloroethyl)ether	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Bis(2-ethylhexyl) phthalate	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Butyl benzyl phthalate	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Carbazole	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Chrysene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Dibenz(a,h)anthracene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Dibenzofuran	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Diethyl phthalate	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Dimethyl phthalate	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Di-n-butyl phthalate	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Di-n-octyl phthalate	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Fluoranthene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Fluorene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Hexachlorobenzene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Hexachlorobutadiene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Hexachloroethane	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Indeno[1,2,3-cd]pyrene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Isophorone	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Naphthalene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Nitrobenzene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	N-Nitrosodimethylamine	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	N-Nitrosodi-n-propylamine	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	N-Nitrosodiphenylamine	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Pentachlorophenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Phenanthrene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Phenol	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8270C	Pyrene	-	ND	1.7	ND	1.6	ND	1.7	0.058	3.464	1.764	ND	0.84	ND	0.82	ND	0.84	0.012	1.386	0.853
SW8330B	1,3,5-Trinitrobenzene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	1,3-Dinitrobenzene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	2,4,6-Trinitrotoluene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	2,4-Dinitrotoluene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	2,6-Dinitrotoluene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	2-Amino-4,6-dinitrotoluene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	4-Amino-2,6-dinitrotoluene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	HMX	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	Nitrobenzene	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	Nitroglycerin	-	ND	0.25	ND	0.25	ND	0.25	0.000	0.000	0.250	ND	0.25	ND	0.25	ND	0.25	0.000	0.000	0.250
SW8330B	Nitrotoluene, m-	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	Nitrotoluene, o-	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	Nitrotoluene, p-	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	RDX	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050
SW8330B	Tetryl	-	ND	0.051	ND	0.05	ND	0.05	0.001	1.147	0.051	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050

Method	Analtye	2015 RAD BACKGROUND VALUE (metals) (mg/kg)	Decision Unit 03									Decision Unit 04								
			S2IS-DU03A		S2IS-DU03B		S2IS-DU03C					S2IS-DU04A		S2IS-DU04B		S2IS-DU04C				
			Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)
SW6010B	Aluminum	17610	8500	10	8700	10	8300	9.9	200.000	2.353	8837.173	11000	10	11000	10	11000	10	0.000	0.000	11000.000
SW6010B	Antimony	0.96	ND	2	ND	2	ND	2	0.000	0.000	2.000	ND	2	ND	2	ND	2	0.000	0.000	2.000
SW6010B	Arsenic	35/12.1	11	2.5	12	2.5	11	2.5	0.577	5.094	12.307	8.8	2.5	9.1	2.5	8.8	2.5	0.173	1.946	9.192
SW6010B	Barium	239.8	65	0.5	66	0.5	64	0.5	1.000	1.538	66.686	150	0.5	150	0.5	160	0.5	5.774	3.765	163.067
SW6010B	Beryllium	0.97	0.46	0.1	0.44	0.1	0.44	0.099	0.012	2.585	0.466	0.51	0.1	0.52	0.1	0.53	0.1	0.010	1.923	0.537
SW6010B	Cadmium	1.2	0.93	0.1	0.98	0.1	0.93	0.099	0.029	3.049	0.995	1.1	0.1	1.1	0.1	1.1	0.1	0.000	0.000	1.100
SW6010B	Chromium	19.8	16	0.5	16	0.5	16	0.5	0.000	0.000	16.000	16	0.5	16	0.5	16	0.5	0.000	0.000	16.000
SW6010B	Cobalt	5.7	5	0.5	5.1	0.5	4.7	0.5	0.208	4.220	5.284	4.8	0.5	4.8	0.5	4.8	0.5	0.000	0.000	4.800
SW6010B	Copper	32.4	12	0.5	12	0.5	12	0.5	0.000	0.000	12.000	18	0.5	17	0.5	18	0.5	0.577	3.268	18.640
SW6010B	Iron	15460	13000	5	13000	5	13000	5	0.000	0.000	13000.000	12000	5	13000	5	13000	5	577.350	4.558	13640.000
SW6010B	Lead	39.3	24	0.5	26	0.5	25	0.5	1.000	4.000	26.686	41	0.5	39	0.5	41	0.5	1.155	2.863	42.280
SW6010B	Manganese	698.7	370	0.5	360	0.5	350	0.5	10.000	2.778	376.859	550	0.5	530	0.5	560	0.5	15.275	2.794	572.419
SW6010B	Molybdenum	0.9	1.2	1	1.3	1	1.2	0.99	0.058	4.681	1.331	0.92	1	0.8	1	0.9	1	0.064	7.362	0.982
SW6010B	Nickel	14.5	20	0.5	21	0.5	19	0.5	1.000	5.000	21.686	16	0.5	16	0.5	16	0.5	0.000	0.000	16.000
SW6010B	Potassium	9131	1800	25	1900	25	1800	25	57.735	3.149	1930.667	4100	25	4200	25	4000	25	100.000	2.439	4268.586
SW6010B	Selenium	1.4	ND	2.5	ND	2.5	ND	2.5	0.000	0.000	2.500	ND	2.5	ND	2.5	ND	2.5	0.000	0.000	2.500
SW6010B	Silver	N/A	0.11	0.2	0.12	0.2	ND	0.2	0.049	34.415	0.226	0.22	0.2	0.17	0.2	0.12	0.2	0.050	29.412	0.254
SW6010B	Thallium	N/A	ND	1	ND	1	ND	0.99	0.006	0.579	1.006	ND	1	ND	1	ND	1	0.000	0.000	1.000
SW6010B	Vanadium	27.94	21	0.5	22	0.5	21	0.5	0.577	2.706	22.307	21	0.5	21	0.5	21	0.5	0.000	0.000	21.000
SW6010B	Zinc	77.1	67	1	71	1	67	0.99	2.309	3.380	72.227	80	1	78	1	78	1	1.155	1.468	80.613
SW7471A	Mercury	0.05	0.031	0.01	0.029	0.01	0.029	0.01	0.001	3.892	0.032	0.028	0.01	0.026	0.01	0.043	0.01	0.009	28.737	0.048
SW8270C	1,2,4-Trichlorobenzene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	1,2-Dichlorobenzene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	1,3-Dichlorobenzene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	1,4-Dichlorobenzene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2,4,5-Trichlorophenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2,4,6-Trichlorophenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2,4-Dichlorophenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2,4-Dimethylphenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2,4-Dinitrophenol	-	ND	1.7	ND	1.7	ND	1.7	0.000	0.000	1.700	-	-	-	-	-	-	-	-	-
SW8270C	2,4-Dinitrotoluene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2,6-Dinitrotoluene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2-Chloronaphthalene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2-Chlorophenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2-Methylnaphthalene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2-Methylphenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	2-Nitroaniline	-	ND	1.7	ND	1.7	ND	1.7	0.000	0.000	1.700	-	-	-	-	-	-	-	-	-
SW8270C	2-Nitrophenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	3-Methylphenol & 4-Methylphenol	-	ND	3.3	ND	3.3	ND	3.4	0.058	1.732	3.431	-	-	-	-	-	-	-	-	-
SW8270C	3-Nitroaniline	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	4,6-Dinitro-2-methylphenol	-	ND	1.7	ND	1.7	ND	1.7	0.000	0.000	1.700	-	-	-	-	-	-	-	-	-
SW8270C	4-Bromophenyl phenyl ether	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	4-Chloro-3-methylphenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	4-Chlorophenyl phenyl ether	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	4-Nitroaniline	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	4-Nitrophenol	-	ND	1.7	ND	1.7	ND	1.7	0.000	0.000	1.700	-	-	-	-	-	-	-	-	-
SW8270C	Acenaphthene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Acenaphthylene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Anthracene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Benzo[a]anthracene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Benzo[a]pyrene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Benzo[b]fluoranthene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Benzo[g,h,i]perylene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-

Method	Analtye	2015 RAD BACKGROUND VALUE (metals) (mg/kg)	Decision Unit 03									Decision Unit 04								
			S2IS-DU03A		S2IS-DU03B		S2IS-DU03C					S2IS-DU04A		S2IS-DU04B		S2IS-DU04C				
			Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	Result (mg/Kg)	LOD (mg/Kg)	sdev	%RSD	95% UCL (mg/Kg)
SW8270C	Benzo[k]fluoranthene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Benzyl alcohol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	bis (2-chloroisopropyl) ether	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Bis(2-chloroethoxy)methane	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Bis(2-chloroethyl)ether	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Bis(2-ethylhexyl) phthalate	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Butyl benzyl phthalate	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Carbazole	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Chrysene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Dibenz(a,h)anthracene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Dibenzofuran	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Diethyl phthalate	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Dimethyl phthalate	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Di-n-butyl phthalate	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Di-n-octyl phthalate	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Fluoranthene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Fluorene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Hexachlorobenzene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Hexachlorobutadiene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Hexachloroethane	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Indeno[1,2,3-cd]pyrene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Isophorone	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Naphthalene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Nitrobenzene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	N-Nitrosodimethylamine	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	N-Nitrosodi-n-propylamine	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	N-Nitrosodiphenylamine	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Pentachlorophenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Phenanthrene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Phenol	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8270C	Pyrene	-	ND	0.84	ND	0.83	ND	0.86	0.015	1.811	0.869	-	-	-	-	-	-	-	-	-
SW8330B	1,3,5-Trinitrobenzene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	1,3-Dinitrobenzene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	2,4,6-Trinitrotoluene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	2,4-Dinitrotoluene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	2,6-Dinitrotoluene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	2-Amino-4,6-dinitrotoluene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	4-Amino-2,6-dinitrotoluene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	HMX	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	Nitrobenzene	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	Nitroglycerin	-	ND	0.25	ND	0.25	ND	0.25	0.000	0.000	0.250	-	-	-	-	-	-	-	-	-
SW8330B	Nitrotoluene, m-	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	Nitrotoluene, o-	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	Nitrotoluene, p-	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	RDX	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-
SW8330B	Tetryl	-	ND	0.05	ND	0.05	ND	0.05	0.000	0.000	0.050	-	-	-	-	-	-	-	-	-

Title: Incremental Sampling Methodology of Soils and Sediments

Approvals (Signature/Date):

Elizabeth Nguyen Technical Manager	6/27/12 Date
Joe Schairer Health & Safety Manager / Coordinator	6/27/12 Date
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1. SCOPE AND APPLICATION

1.1. The purpose of this procedure is to obtain sub-samples from client provided samples which represent the concentration of material in the entire parent sample.

1.2. This SOP describes the procedures for laboratory staff to follow during the preparation of samples for the incremental sampling methodology (ISM) procedure. These are guidelines for the preparation and sub sampling of soil/solid/sediment samples to be analyzed for routine organic and inorganic analyses.

1.3. The incremental sampling methodology sub sampling procedures are not applicable to volatile soil samples collected on Encore® samples for Method 5035. These are discrete samples and the entire sample is used for analysis.

2. SUMMARY OF METHOD

2.1. Samples received from the field may require processing including drying, removal of extraneous material, and sieving to be performed for different analyses so that a representative concentration can be determined. An entire client sample is first processed and the sample is then sub sampled using a incremental sampling methodology approach.

2.2. Care should be taken to ensure that these subsamples are representative of the component samples and are properly prepared and stored in accordance with the appropriate method of analysis.

3. DEFINITIONS

3.1. Definitions of terms used in this SOP may be found in the glossary of the Quality Assurance Manual (QAM).

3.2. Data qualifiers are defined on each data report. Commonly used data qualifiers are defined in the QAM.

4. INTERFERENCES

4.1. If the samples are to be analyzed for metals testing, check the QAS and with the PM to find out if the brass sieves (nylon screens are an alternative) and the aluminum foil (butcher paper is an alternative) used to spread samples out for drying are going to be problematic to the client.

4.2. Some clients require the use of Teflon® coated spatulas instead of the regular tongue depressors due to the possibility of contamination. These Teflon® spatulas should be washed and decontaminated as per method requirements of the tests in question.

4.3. Interferences can occur when using scoops or spatulas. All scoops or spatulas should be used for only one sample and then disposed, or thoroughly cleaned between samples. Material that may be acceptable for one analysis may cause contamination for another analysis. All plastic should be avoided if organic parameters are requested.

4.4. On rare occasions a client may ask for ISM processing for volatile samples. Please confirm with project manager that the request is correct. If so, then follow these guidelines. Volatile analytes may be lost during subsampling from non-Encore containers. Subsampling for volatile analyses should be done from a previously unopened container to the end of tube (where possible), and subsampling should be done as quickly as possible to avoid analyte loss.

4.5. Volatile and light semi-volatile analytes may be lost during the sample drying and grinding procedure. Consult the appropriate analytical SOP and QAS for guidance on the required drying and grinding procedure for the samples.

5. SAFETY

Employees must abide by the policies and procedures in the Corporate Environmental Health and Safety Manual (CW-E-M-001), the West Sacramento Addendum to the Corporate EH&S Manual (WS-PEHS-002) and this document. This procedure may involve hazardous material, operations and equipment. This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toed, nonabsorbent shoes are a minimum.

5.1. Specific Safety Concerns or Requirements

5.1.1. Extensive homogenization, subsampling, and/or compositing of soil/solid/waste or liquid samples presents an extreme risk of repetitive motion injuries for the individual performing the operation. No single employee will homogenize, subsample, or composite these types of samples for longer than one hour continuously without taking a five-minute break away from this type of work and stretching his/her hands, wrists and arms. If the manager/supervisor and the employee involved identify at the start of the process that the work will take longer than one hour, the employee should take mini-breaks of 2-3 minutes every 25-30 minutes. If there is extensive homogenization, subsampling, and/or compositing that must be performed, or if it is extremely time sensitive, managers/supervisors must assign additional personnel to the effort, or rotate different staff members through the job in order to prevent injury to any employee.

5.1.2. If sediment/soil samples have been frozen in glass jars, the freezing process may have cracked the jars when the sample expanded while freezing. After the

samples have thawed, wear cut protective gloves while handling the jars until it can be confirmed that they have not cracked.

5.1.3. Any alternative procedures requested by a client must be reviewed by EH&S before they are put into practice.

5.1.4. Eye protection that satisfies ANSI Z87.1, laboratory coat, and chemically resistant gloves must be worn while samples, standards, solvents, and reagents are being handled. Latex, vinyl and nitrile gloves all provide sufficient protection when handling closed sample containers and most typical samples. Unusual or heavily contaminated samples must be evaluated to determine if there are any hazards for which a particular type of glove will not be appropriate.

5.1.5. Exposure to chemicals must be maintained as low as reasonably achievable, therefore all samples must be opened, transferred, sub sampled, and prepared in a fume hood. Solvent and waste containers will be kept closed unless transfers are being made.

5.1.6. Laboratory procedures such as repetitive use of pipets, repetitive transferring of extracts, moving heavy shipping containers, unloading shipping containers, manipulation of filled separatory funnels and other glassware represent a significant potential for repetitive motion or other ergonomic injuries. Laboratory associates performing these procedures are in the best position to realize when they are at risk for these types of injuries. Whenever a situation is found in which an employee is performing the same repetitive motion, the employee shall immediately bring this to the attention of their supervisor, manager, and the EH&S staff. The task will be analyzed to determine a better means of accomplishing it.

5.2. Primary Materials Used

There are no materials used in th8is method, which would have a serious or significant hazard rating.

6. EQUIPMENT AND SUPPLIES

6.1. Metal trays (or other appropriate material).

6.2. Aluminum foil or other inert tray cover material such as butcher paper.

6.3. Sieves, various sizes, including 2mm (#10 sieve).

6.4. Teflon® coated disposable wooden spatulas.

6.5. Analytical balance.

6.6. Mortar and pestle (manual and automated).

6.7. Sample containers, various sizes, glass and poly.

6.8. Fume hood.

Note: *Some samples such as biological tissues and pulp and paper products may require pre-preparation before subsampling or compositing. See the appropriate SOP for matrix specific procedures.*

6.9. Pulverizing Mill (ring and puck), ESSA model LM2-P or equivalent - for the grinding of soils per method 8330B

6.9.1. The grinding bowl and puck are cleaned after each use by washing with soap and water, rinsing with hot tap water, rinsing with DI water, and then rinsing with acetonitrile. A final wipe down of the bowl and puck while still wet with acetonitrile is done with a Kimwipe (TNT in particular is reported to be prone to adhering to steel surface). In addition, sand blanks are used to monitor potential carry-over for each batch of samples.

7. REAGENTS AND STANDARDS

Reagents used for rinsing equipment are indicated in method SOPs.

8. SAMPLE COLLECTION, PRESERVATION AND STORAGE

All component, subsamples, and composites will be stored in compliance with the analytical method under which they will be analyzed.

9. QUALITY CONTROL

Samples used for Matrix Spike and Matrix Spike Duplicates should be homogenized and sub sampled using the same procedure as all batch samples.

10. CALIBRATION

10.1. Balances used for subsampling or compositing for analysis and preparation should be calibrated as per SOP WS-QA-0041.

10.2. Balances used for non-analytical subsampling, i.e., for trans-shipment, do not require calibration as the weight is a rough value only.

11. PROCEDURE

11.1. Procedural Variations

Procedural variations are allowed only if deemed necessary in the professional judgment of the supervisor to accommodate variation in sample matrix, radioactivity,

chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Nonconformance memo and approved by a supervisor and QA/QC manager. If contractually required, the client will be notified. The Nonconformance memo will be filed in the project file.

Any deviations from this procedure identified after the work has been completed must be documented as a nonconformance, with a cause and corrective action described. A Nonconformance memo shall be used for this documentation.

11.2. This method is dependent on the client project provided Data Quality Objectives. Depending on the nature of the project, samples may need to be dried, extraneous material may need to be removed and replicates man need to be run per sample or per batch of samples. It is important that the analyst confirm with the Project Manager prior to performing this procedure. Any project specific changes or modifications to the procedure should be noted in the form of a client specific amendment to the SOP or in the Quality Assurance Summary (QAS). The procedures documented below incorporate the commonly performed procedure. There are two primary procedures to consider, sample prep and subsampling.

11.3. Any unauthorized deviations from this procedure must also be documented as a nonconformance, with a cause and corrective action described.

Note: *Drying, sieving or subsampling for volatile analyses may lead to loss of analytes or contamination from common laboratory solvents. Any incremental sampling methodology procedures for volatiles should be performed in a solvent-free area and the mixing should be minimized to reduce the loss of volatile analytes. The potential for loss of volatile analytes should be discussed with the client before initiation of the program.*

11.4. Samples that require ring and puck grinding

11.4.1. Decontamination should occur prior to and after grinding of samples.

11.4.1.1. Wash bowl (ring) and puck with laboratory-grade detergent (such as Liquinox) and water using steel wool pad on large surfaces and a wire brush in grooves, corners, etc. Rinse bowl and puck well with hot water and then rinse with DI water. Next, rinse with Acetonitrile and wipe down with a large Kim Wipe or paper towel. If sample residue is visible on Kim Wipe after wiping bowl and puck, further washing may be needed (there may be a reddish residue from rust or a grayish residue from the metal objects which does not require further washing).

11.4.2. Grinding samples

11.4.2.1. Prior to grinding samples, a grinding blank must be created using 200g of Ottawa Sand. A grinding blank must also be created in between each sample.

11.4.2.2. To grind, add sample to the bowl and pulse six times in one minute intervals. To begin pulsing, close lid, open compressed air valve to 80psi, and start the mill. Some samples may need to be ground in separate fractions if the entire sample does not fit in the bowl.

11.4.2.3. Place the ground sample into appropriate container, decontaminate ring and puck, and create another grinding blank before moving on to the next sample.

11.5. Sample Preparation

11.5.1. Soils, solids or wastes: If only the solid material is to be tested, decant off the freestanding liquid. Document in NCM. If the liquid and solid components are to be analyzed together, mix the sample. If samples do not require drying as noted in the QAS, remove and discard any large sticks, rocks, or other materials that cannot be homogenized, unless specifically requested otherwise. Document (via benchsheet) the removal of liquid and foreign matter from the sample and proceed with subsampling. Perform the subsampling as quickly as possible to reduce the loss of sample moisture during the process.

11.5.2. Sediment samples: Remove the samples from the freezer and allow them to thaw for a minimum of two hours before homogenizing. Mix all free-standing water into the sediments unless otherwise specified. If samples do not require drying as noted in the QAS, remove and discard any large sticks, rock or other matter from the sample and proceed with subsampling. Perform the subsampling as quickly as possible to reduce the loss of sample moisture during the process.

WARNING: If sediment/soil samples have been frozen in glass jars, the freezing process may have cracked the jars when the sample expanded while freezing. Wear cut protective gloves while handling the jars until it can be confirmed that they have not cracked.

11.5.3. When drying is needed, spread the entire sample evenly on a tray coated with aluminum foil or other inert material that is free from any analytes of interest or interferences. Perform the processing in a fume hood to minimize exposure to dust. Moist samples should be placed on baker's racks or another location which allows for proper ventilation, and allowed to air-dry for a minimum of 24 hours.

NOTE: To avoid contaminating the sample by contact with lab-coat sleeves, tape lab-coat sleeve around wrist while performing incremental sampling methodology.

11.5.4. When the samples have become dry, remove any obvious organic materials such as leaves and twigs. Carefully sieve the sample from the metal tray using a 2mm sieve, or the appropriate size as designated in the method SOP or QAS. Break up any soil aggregate material with a clean object such as a pestle. Employ de-aggregation techniques if needed. In some cases a smaller mesh size sieve may need to be used following 2mm sieve. Clients may ask to weigh the individual portions for particle size analysis. Record all observation on the appropriate laboratory benchsheet. Be certain to adequately decontaminate sieves, pestles, scoops etc. by brushing and washing with soap and water and rinsing with the appropriate solvent or reagent as outlined in the analytical procedure.

11.5.5. Transfer the materials with particle size greater than the designated particle size (sieve mesh) into a second container, or dispose of as outlined in Section 15 if the client does not want to save the material. The portion of the sample that has been prepared for grinding or sub-sampling is now ready for processing. Refer to the grinding procedure for specific information on the appropriate grinding procedure.

11.5.6. Label the appropriate sized sample container for the sub sample with the laboratory sample ID.

11.6. Subsampling for Soils/Solids and Sediments

11.6.1. Incremental Sampling Methodology: Evenly distribute prepared materials onto a tray covered with aluminum foil, butcher paper or other inert cover. The sample layer should have a depth of approximately one-half inch or less to allow for sampling throughout the entire depth of the sample layer.

11.6.2. For inorganic metals digestion, use a wooden spatula to sub sample an aliquot size of approximately 1 g or more (0.6 g are typically used for mercury analysis) and store in a pre-cleaned container. For organic extraction, use a wooden spatula to obtain an aliquot size or at least 10 to 30 g or larger, dependent upon the analytical method, into a glass jar.

NOTE: Client may request use of Teflon® coated spatulas rather than wooden spatulas.

11.6.3. Perform the subsampling by forming an imaginary 6x5 grid to visualize 30 squares in the sampling tray. Take one scoop from each square ensuring the aliquot is from the top to the bottom of the soil. Each aliquot should contain approximately $1/30^{th}$ of the desired target mass. Collect the aliquot fractions in the appropriate containers (snap caps for dioxins and metals, centrifuge tubes for Hg, small french squares for organic tests)
Note: Sediment samples may require the extraction of a larger sample size to

correct for moisture content.

11.6.3.1. In some cases with a smaller sample size, a 6x5 grid is not possible. Create a similar grid and subsample 30 times as evenly as possible.

11.6.3.2. If the final amount is less than the targeted amount, subsample from random locations until the targeted amount is obtained.

11.6.3.3. If the final amount is substantially greater than the targeted amount, pour the sample back and re-sample.

11.6.4. Store the sub samples in the proper location for the test being conducted until they are ready for further preparation.

12. CALCULATIONS/DATA REDUCTION

This section is not applicable to this procedure.

13. METHOD PERFORMANCE

13.1. The group/team leader has the responsibility to ensure that this procedure is performed by an associate who has been properly trained in its use and has the required expertise.

14. POLLUTION CONTROL

It is TestAmerica's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in Section 13 of the Corporate Environmental Health and Safety Manual (CW-E-M-001) for "Waste Management and Pollution Prevention."

15. WASTE MANAGEMENT

Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to SOP WS-EHS-0001. The following waste streams are produced when this method is carried out.

15.1. Contaminated disposable materials such as plastic vials, pipettes, empty sample containers, unused/excess sample matrix, and disposable spatulas. Dump the solid waste into a contaminated lab trash bucket. When the bucket is full, tie the plastic bag liner shut and put the lab trash into the steel collection drum in the H3 closet. When the drum is full or after no more than 75 days, move it to the waste collection area for shipment.

16. REFERENCES/CROSS REFERENCES

16.1. Work Instruction: WS-WI-0031 “Homogenization and Multi-Incremental Sub-Sampling (Bureau of Reclamation Procedure 10/5/2009).

16.2. STL White Paper “Representative Sub-sampling Techniques for Inorganic Analytes”, February 23, 2004.

16.3. “Guidance for Obtaining Representative Laboratory Analytical Sub samples from Particulate Laboratory Samples,“ USEPA, November 2003.

16.4. “Standard Guide for Laboratory Subsampling of Media Related to Waste Management Activities” ASTM D 6323-98 (Reapproved 2003)

16.5. EPA SW-846 Method 8330B. Nitroaromatics, Nitramines, and Nitrate esters By High performance Liquid Chromatography (HPLC). Revision 2, October 2006.

17. METHOD MODIFICATIONS

17.1. There are no deviations from the method unless otherwise specified by the QAS and checked with the group/team lead.

18. ATTACHMENTS

18.1. No attachments are present.

19. REVISION HISTORY

19.1. WS-QA-0028, Revision 3.2, Effective 05/11/2012

19.1.1. Section 11.5.3 – Updated incremental sampling procedure.

19.1.2. Editorial changes.

19.2. WS-QA-0028, Revision 3.1, Effective 03/15/2011

19.2.1. Replaced all references to multi-incremental subsampling (MIS) with incremental sampling methodology (ISM).

19.2.2. Editorial changes.

19.3. WS-QA-0028k Revision 3, Effective 03/01/2009

19.3.1. Editorial changes.