APPENDIX H

RAGS Part D Table 7s

TABLE H-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADOLESCENT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADOLESCENT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(a)pyrene	0.522	mg/kg	1.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	5.6E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.1	mg/kg	7.1E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	5.0E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	3.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	7.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	8.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Aluminum	7339	mg/kg	NC		NC			3.7E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	2.523	mg/kg	NC		NC			1.3E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	6.946	mg/kg	4.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	3.5E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	252.3	mg/kg	NC		NC			1.3E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Cadmium	1.344	mg/kg	NC		NC			6.7E-07	mg/kg/day	1.0E-03	mg/kg/day	7.E-04
				Chromium	23.38	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	4.E-03
				Cobalt	6.533	mg/kg	NC		NC			3.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	155.7	mg/kg	NC		NC			7.8E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	578	mg/kg	4.1E-05	mg/kg/day	ND			2.9E-04	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			1.7E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	1.202	mg/kg	NC		NC			6.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.155	mg/kg	NC		NC			7.7E-08	mg/kg/day	1.0E-05	mg/kg/day	8.E-03
				Vanadium	25.54	mg/kg	NC		NC			1.3E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					5.E-02
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	4.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.522	mg/kg	4.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	6.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	2.4E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	5.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.1	mg/kg	2.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	1.6E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	5.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	1.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-08	3.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	3.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	8.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	4.9E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-08	3.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			2.2E-09	mg/kg/day	2.5E-05	mg/kg/day	9.E-05
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-07					1.E-03
		EXPOSURE POINT TOTAL									3.E-06					5.E-02
	EXPOSURE MEDIUM TOTAL										3.E-06					5.E-02
SOIL TOTAL											**3.E-06**					**5.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**3.E-06**
												TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA				**5.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	7.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.522	mg/kg	1.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	8.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	8.2E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-10	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.1	mg/kg	3.1E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	1.6E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	8.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	4.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	2.2E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-09	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	7339	mg/kg	NC		NC			1.1E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	2.523	mg/kg	NC		NC			3.9E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	6.946	mg/kg	2.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	252.3	mg/kg	NC		NC			3.9E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	1.344	mg/kg	NC		NC			2.1E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	23.38	mg/kg	NC		NC			3.7E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.533	mg/kg	NC		NC			1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	155.7	mg/kg	NC		NC			2.4E-05	mg/kg/day	4.0E-02	mg/kg/day	6.E-04
				Lead	578	mg/kg	1.8E-05	mg/kg/day	ND			9.0E-05	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			5.3E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.202	mg/kg	NC		NC			1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Thallium	0.155	mg/kg	NC		NC			2.4E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	25.54	mg/kg	NC		NC			4.0E-06	mg/kg/day	5.0E-03	mg/kg/day	8.E-04
			EXPOSURE ROUTE TOTAL								5.E-07					2.E-02
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	6.8E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	3.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.522	mg/kg	7.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	3.6E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	9.5E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-09	4.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	3.6E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-10	1.8E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Carbazole	0.1	mg/kg	1.1E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	5.3E-09	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	7.7E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-11	3.8E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	1.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	9.7E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	5.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	2.7E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	2.2E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			7.1E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-07					4.E-04
		EXPOSURE POINT TOTAL									6.E-07					2.E-02
	EXPOSURE MEDIUM TOTAL										6.E-07					2.E-02
SOIL TOTAL											**6.E-07**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**6.E-07**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	2.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.522	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	7.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	3.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	9.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	1.3E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	3.7E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.1	mg/kg	5.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.4E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	2.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	7.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	7.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	7339	mg/kg	NC		NC			1.0E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	2.523	mg/kg	NC		NC			3.6E-07	mg/kg/day	4.0E-04	mg/kg/day	9.E-04
				Arsenic	6.946	mg/kg	3.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.8E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	252.3	mg/kg	NC		NC			3.6E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	1.344	mg/kg	NC		NC			1.9E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	23.38	mg/kg	NC		NC			3.3E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.533	mg/kg	NC		NC			9.2E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	155.7	mg/kg	NC		NC			2.2E-05	mg/kg/day	4.0E-02	mg/kg/day	5.E-04
				Lead	578	mg/kg	2.9E-05	mg/kg/day	ND			8.1E-05	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			4.7E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.202	mg/kg	NC		NC			1.7E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Thallium	0.155	mg/kg	NC		NC			2.2E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	25.54	mg/kg	NC		NC			3.6E-06	mg/kg/day	5.0E-03	mg/kg/day	7.E-04
			EXPOSURE ROUTE TOTAL								8.E-07					1.E-02
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.522	mg/kg	2.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	3.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	8.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	1.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-10	3.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.1	mg/kg	3.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-11	9.3E-09	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	2.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	6.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	6.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.7E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	6.9E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			1.2E-09	mg/kg/day	2.5E-05	mg/kg/day	5.E-05
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-07					7.E-04
		EXPOSURE POINT TOTAL									1.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										1.E-06					2.E-02
SOIL TOTAL											**1.E-06**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.522	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	2.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	8.3E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-09	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Carbazole	0.1	mg/kg	3.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-10	8.8E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	4.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	7339	mg/kg	NC		NC			6.5E-03	mg/kg/day	1.0E+00	mg/kg/day	6.E-03
				Antimony	2.523	mg/kg	NC		NC			2.2E-06	mg/kg/day	4.0E-04	mg/kg/day	6.E-03
				Arsenic	6.946	mg/kg	2.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	6.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	252.3	mg/kg	NC		NC			2.2E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Cadmium	1.344	mg/kg	NC		NC			1.2E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	23.38	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Cobalt	6.533	mg/kg	NC		NC			5.8E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	155.7	mg/kg	NC		NC			1.4E-04	mg/kg/day	4.0E-02	mg/kg/day	3.E-03
				Lead	578	mg/kg	1.8E-04	mg/kg/day	ND			5.1E-04	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			3.0E-04	mg/kg/day	4.7E-02	mg/kg/day	6.E-03
				Mercury	1.202	mg/kg	NC		NC			1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Thallium	0.155	mg/kg	NC		NC			1.4E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	25.54	mg/kg	NC		NC			2.2E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								5.E-06					9.E-02
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.522	mg/kg	1.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	7.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-09	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Carbazole	0.1	mg/kg	2.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.8E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	3.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	4.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			7.8E-09	mg/kg/day	2.5E-05	mg/kg/day	3.E-04
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					4.E-03
		EXPOSURE POINT TOTAL									7.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										7.E-06					1.E-01

TABLE H-4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 1	DUST INHALATION	Benzo(a)anthracene	0.492	mg/kg	2.7E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	7.4E-08	ug/m3	ND		
				Benzo(a)pyrene	0.522	mg/kg	2.8E-08	ug/m3	1.1E-03	(ug/m3)-1	3.E-11	7.9E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.686	mg/kg	3.7E-08	ug/m3	1.1E-04	(ug/m3)-1	4.E-12	1.0E-07	ug/m3	ND		
				Benzo(k)fluoranthene	0.263	mg/kg	1.4E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	4.0E-08	ug/m3	ND		
				Carbazole	0.1	mg/kg	NC		NC			1.5E-08	ug/m3	ND		
				Chrysene	0.556	mg/kg	3.0E-08	ug/m3	1.1E-05	(ug/m3)-1	3.E-13	8.4E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.141	mg/kg	7.6E-09	ug/m3	1.2E-03	(ug/m3)-1	9.E-12	2.1E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	2.1E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	5.8E-08	ug/m3	ND		
				Aluminum	7339	mg/kg	NC		NC			1.1E-03	ug/m3	5.0E+00	ug/m3	2.E-04
				Antimony	2.523	mg/kg	NC		NC			3.8E-07	ug/m3	ND		
				Arsenic	6.946	mg/kg	3.7E-07	ug/m3	4.3E-03	(ug/m3)-1	2.E-09	1.0E-06	ug/m3	1.5E-02	ug/m3	7.E-05
				Barium	252.3	mg/kg	NC		NC			3.8E-05	ug/m3	5.0E-01	ug/m3	8.E-05
				Cadmium	1.344	mg/kg	7.3E-08	ug/m3	1.8E-03	(ug/m3)-1	1.E-10	2.0E-07	ug/m3	2.0E-02	ug/m3	1.E-05
				Chromium	23.38	mg/kg	1.3E-06	ug/m3	1.2E-02	(ug/m3)-1	2.E-08	3.5E-06	ug/m3	1.0E-01	ug/m3	4.E-05
				Cobalt	6.533	mg/kg	3.5E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	9.9E-07	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	155.7	mg/kg	NC		NC			2.4E-05	ug/m3	ND		
				Lead	578	mg/kg	3.1E-05	ug/m3	ND			8.7E-05	ug/m3	ND		
				Manganese	336.6	mg/kg	NC		NC			5.1E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	1.202	mg/kg	NC		NC			1.8E-07	ug/m3	3.0E-01	ug/m3	6.E-07
				Thallium	0.155	mg/kg	NC		NC			2.3E-08	ug/m3	ND		
				Vanadium	25.54	mg/kg	NC		NC			3.9E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**7.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											7.E-06					**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-5
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	8.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(a)pyrene	0.522	mg/kg	9.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	4.6E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-09	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.1	mg/kg	1.7E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	4.9E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	9.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-10	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	6.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Aluminum	7339	mg/kg	NC		NC			3.6E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	2.523	mg/kg	NC		NC			1.2E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	6.946	mg/kg	1.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	3.4E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	252.3	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Cadmium	1.344	mg/kg	NC		NC			6.6E-07	mg/kg/day	1.0E-03	mg/kg/day	7.E-04
				Chromium	23.38	mg/kg	NC		NC			1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	4.E-03
				Cobalt	6.533	mg/kg	NC		NC			3.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	155.7	mg/kg	NC		NC			7.6E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	578	mg/kg	1.0E-04	mg/kg/day	ND			2.8E-04	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			1.6E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	1.202	mg/kg	NC		NC			5.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.155	mg/kg	NC		NC			7.6E-08	mg/kg/day	1.0E-05	mg/kg/day	8.E-03
				Vanadium	25.54	mg/kg	NC		NC			1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					5.E-02
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.522	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	2.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	7.9E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-09	2.2E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Carbazole	0.1	mg/kg	2.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-10	6.5E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	4.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	4.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			8.7E-09	mg/kg/day	2.5E-05	mg/kg/day	3.E-04
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					5.E-03
		EXPOSURE POINT TOTAL									5.E-06					6.E-02
	EXPOSURE MEDIUM TOTAL										5.E-06					6.E-02
SOIL TOTAL											**5.E-06**					**6.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**5.E-06**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**6.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.6E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Benzo(a)pyrene	0.522	mg/kg	2.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	1.7E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	3.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	2.2E-06	mg/kg/day	3.0E-01	mg/kg/day	7.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	1.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-10	8.5E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Carbazole	0.1	mg/kg	4.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-11	3.2E-07	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	2.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	1.8E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	6.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	4.6E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.2E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Aluminum	7339	mg/kg	NC		NC			2.4E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	2.523	mg/kg	NC		NC			8.1E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	6.946	mg/kg	3.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	2.2E-05	mg/kg/day	3.0E-04	mg/kg/day	7.E-02
				Barium	252.3	mg/kg	NC		NC			8.1E-04	mg/kg/day	2.0E-01	mg/kg/day	4.E-03
				Cadmium	1.344	mg/kg	NC		NC			4.3E-06	mg/kg/day	5.0E-04	mg/kg/day	9.E-03
				Chromium	23.38	mg/kg	NC		NC			7.5E-05	mg/kg/day	2.0E-02	mg/kg/day	4.E-03
				Cobalt	6.533	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Copper	155.7	mg/kg	NC		NC			5.0E-04	mg/kg/day	1.0E-02	mg/kg/day	5.E-02
				Lead	578	mg/kg	2.7E-05	mg/kg/day	ND			1.9E-03	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			1.1E-03	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	1.202	mg/kg	NC		NC			3.9E-06	mg/kg/day	2.0E-03	mg/kg/day	2.E-03
				Thallium	0.155	mg/kg	NC		NC			5.0E-07	mg/kg/day	5.0E-05	mg/kg/day	1.E-02
				Vanadium	25.54	mg/kg	NC		NC			8.2E-05	mg/kg/day	1.0E-02	mg/kg/day	8.E-03
			EXPOSURE ROUTE TOTAL								8.E-07					2.E-01
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	8.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	6.2E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.522	mg/kg	9.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	6.6E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-09	8.6E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	4.7E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-10	3.3E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Carbazole	0.1	mg/kg	1.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	9.7E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-11	7.0E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	2.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	1.8E-07	mg/kg/day	3.0E-01	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	6.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	4.8E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	2.9E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-08	2.0E-06	mg/kg/day	3.0E-04	mg/kg/day	7.E-03
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			1.3E-08	mg/kg/day	1.3E-05	mg/kg/day	1.E-03
				Chromium	23.38	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					8.E-03
		EXPOSURE POINT TOTAL									9.E-07					2.E-01
	EXPOSURE MEDIUM TOTAL										9.E-07					2.E-01

TABLE H-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 1	DUST INHALATION	Benzo(a)anthracene	0.492	mg/kg	3.3E-07	ug/m3	1.1E-04	(ug/m3)-1	4.E-11	2.3E-05	ug/m3	ND		
				Benzo(a)pyrene	0.522	mg/kg	3.6E-07	ug/m3	1.1E-03	(ug/m3)-1	4.E-10	2.5E-05	ug/m3	ND		
				Benzo(b)fluoranthene	0.686	mg/kg	4.7E-07	ug/m3	1.1E-04	(ug/m3)-1	5.E-11	3.3E-05	ug/m3	ND		
				Benzo(k)fluoranthene	0.263	mg/kg	1.8E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	1.3E-05	ug/m3	ND		
				Carbazole	0.1	mg/kg	NC		NC			4.8E-06	ug/m3	ND		
				Chrysene	0.556	mg/kg	3.8E-07	ug/m3	1.1E-05	(ug/m3)-1	4.E-12	2.6E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.141	mg/kg	9.6E-08	ug/m3	1.2E-03	(ug/m3)-1	1.E-10	6.7E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	2.6E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	1.8E-05	ug/m3	ND		
				Aluminum	7339	mg/kg	NC		NC			3.5E-01	ug/m3	5.0E+00	ug/m3	7.E-02
				Antimony	2.523	mg/kg	NC		NC			1.2E-04	ug/m3	ND		
				Arsenic	6.946	mg/kg	4.7E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	3.3E-04	ug/m3	1.5E-02	ug/m3	2.E-02
				Barium	252.3	mg/kg	NC		NC			1.2E-02	ug/m3	5.0E+00	ug/m3	2.E-03
				Cadmium	1.344	mg/kg	9.2E-07	ug/m3	1.8E-03	(ug/m3)-1	2.E-09	6.4E-05	ug/m3	2.0E-02	ug/m3	3.E-03
				Chromium	23.38	mg/kg	1.6E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	1.1E-03	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	6.533	mg/kg	4.4E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	3.1E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	155.7	mg/kg	NC		NC			7.4E-03	ug/m3	ND		
				Lead	578	mg/kg	3.9E-04	ug/m3	ND			2.8E-02	ug/m3	ND		
				Manganese	336.6	mg/kg	NC		NC			1.6E-02	ug/m3	5.0E-02	ug/m3	3.E-01
				Mercury	1.202	mg/kg	NC		NC			5.7E-05	ug/m3	3.0E-01	ug/m3	2.E-04
				Thallium	0.155	mg/kg	NC		NC			7.4E-06	ug/m3	ND		
				Vanadium	25.54	mg/kg	NC		NC			1.2E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								3.E-07					7.E-01
		EXPOSURE POINT TOTAL									3.E-07					7.E-01
	EXPOSURE MEDIUM TOTAL										3.E-07					7.E-01
SOIL TOTAL											**1.E-06**					**9.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											1.E-06					**9.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	3.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	9.3E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	0.522	mg/kg	3.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	9.9E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	4.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	1.8E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	5.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.1	mg/kg	1.6E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	1.9E-07	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	3.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	9.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	2.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	7.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	7339	mg/kg	NC		NC			1.4E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	2.523	mg/kg	NC		NC			4.8E-06	mg/kg/day	4.0E-04	mg/kg/day	1.E-02
				Arsenic	6.946	mg/kg	1.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	1.3E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	252.3	mg/kg	NC		NC			4.8E-04	mg/kg/day	2.0E-01	mg/kg/day	2.E-03
				Cadmium	1.344	mg/kg	NC		NC			2.6E-06	mg/kg/day	1.0E-03	mg/kg/day	3.E-03
				Chromium	23.38	mg/kg	NC		NC			4.4E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.533	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	155.7	mg/kg	NC		NC			3.0E-04	mg/kg/day	4.0E-02	mg/kg/day	7.E-03
				Lead	578	mg/kg	9.4E-05	mg/kg/day	ND			1.1E-03	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			6.4E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.202	mg/kg	NC		NC			2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Thallium	0.155	mg/kg	NC		NC			2.9E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	25.54	mg/kg	NC		NC			4.9E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								6.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.522	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	6.5E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-09	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Carbazole	0.1	mg/kg	4.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-11	5.3E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	1.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	3.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	9.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	9.5E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			7.1E-09	mg/kg/day	2.5E-05	mg/kg/day	3.E-04
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					4.E-03
		EXPOSURE POINT TOTAL									7.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										7.E-06					2.E-01
SOIL TOTAL											**7.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**7.E-06**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	6.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.522	mg/kg	6.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	9.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	3.5E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-09	5.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.1	mg/kg	7.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.2E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	7.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	1.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	3.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	5.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	8.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	7339	mg/kg	NC		NC			1.6E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	2.523	mg/kg	NC		NC			5.5E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	6.946	mg/kg	5.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	252.3	mg/kg	NC		NC			5.5E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Cadmium	1.344	mg/kg	NC		NC			2.9E-07	mg/kg/day	1.0E-03	mg/kg/day	3.E-04
				Chromium	23.38	mg/kg	NC		NC			5.1E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.533	mg/kg	NC		NC			1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	155.7	mg/kg	NC		NC			3.4E-05	mg/kg/day	4.0E-02	mg/kg/day	9.E-04
				Lead	578	mg/kg	4.3E-05	mg/kg/day	ND			1.3E-04	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			7.4E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	1.202	mg/kg	NC		NC			2.6E-07	mg/kg/day	3.0E-04	mg/kg/day	9.E-04
				Thallium	0.155	mg/kg	NC		NC			3.4E-08	mg/kg/day	1.0E-05	mg/kg/day	3.E-03
				Vanadium	25.54	mg/kg	NC		NC			5.6E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					2.E-02
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	3.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.522	mg/kg	3.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	5.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.686	mg/kg	4.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	7.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.263	mg/kg	1.6E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	2.7E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Carbazole	0.1	mg/kg	2.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	7.8E-09	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	3.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	5.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.141	mg/kg	8.6E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	3.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	5.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-08	1.6E-07	mg/kg/day	3.0E-04	mg/kg/day	5.E-04
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			1.0E-09	mg/kg/day	2.5E-05	mg/kg/day	4.E-05
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-07					6.E-04
		EXPOSURE POINT TOTAL									2.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					2.E-02
SOIL TOTAL											**2.E-06**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**2.E-06**
											2.E-06	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-9
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	2.3E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	6.3E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(a)pyrene	0.522	mg/kg	2.4E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	6.7E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(b)fluoranthene	0.686	mg/kg	3.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	8.8E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(k)fluoranthene	0.263	mg/kg	1.2E-06	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-08	3.4E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Carbazole	0.1	mg/kg	1.1E-07	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-09	1.3E-06	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	2.6E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-08	7.1E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Dibenz(a,h)anthracene	0.141	mg/kg	6.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.8E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.9E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Aluminum	7339	mg/kg	NC		NC			9.4E-02	mg/kg/day	1.0E+00	mg/kg/day	9.E-02
				Antimony	2.523	mg/kg	NC		NC			3.2E-05	mg/kg/day	4.0E-04	mg/kg/day	8.E-02
				Arsenic	6.946	mg/kg	7.6E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-05	8.9E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Barium	252.3	mg/kg	NC		NC			3.2E-03	mg/kg/day	2.0E-01	mg/kg/day	2.E-02
				Cadmium	1.344	mg/kg	NC		NC			1.7E-05	mg/kg/day	1.0E-03	mg/kg/day	2.E-02
				Chromium	23.38	mg/kg	NC		NC			3.0E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
				Cobalt	6.533	mg/kg	NC		NC			8.4E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	155.7	mg/kg	NC		NC			2.0E-03	mg/kg/day	4.0E-02	mg/kg/day	5.E-02
				Lead	578	mg/kg	6.3E-04	mg/kg/day	ND			7.4E-03	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			4.3E-03	mg/kg/day	4.7E-02	mg/kg/day	9.E-02
				Mercury	1.202	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Thallium	0.155	mg/kg	NC		NC			2.0E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	25.54	mg/kg	NC		NC			3.3E-04	mg/kg/day	5.0E-03	mg/kg/day	6.E-02
			EXPOSURE ROUTE TOTAL								4.E-05					1.E+00
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	8.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.3E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(a)pyrene	0.522	mg/kg	8.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	1.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-07	3.2E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(k)fluoranthene	0.263	mg/kg	4.4E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-08	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Carbazole	0.1	mg/kg	3.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-10	3.6E-07	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	9.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-09	2.6E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	2.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	6.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	6.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	6.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	7.5E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			4.8E-08	mg/kg/day	2.5E-05	mg/kg/day	2.E-03
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					3.E-02
		EXPOSURE POINT TOTAL									5.E-05					1.E+00
	EXPOSURE MEDIUM TOTAL										5.E-05					1.E+00
SOIL TOTAL											**5.E-05**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**5.E-05**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-10
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.492	mg/kg	4.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	7.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.522	mg/kg	4.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	7.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	6.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	2.3E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-08	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.1	mg/kg	5.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-09	1.5E-07	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	4.9E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	8.2E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	3.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	7339	mg/kg	NC		NC			1.1E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	2.523	mg/kg	NC		NC			3.7E-06	mg/kg/day	4.0E-04	mg/kg/day	9.E-03
				Arsenic	6.946	mg/kg	3.5E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-06	1.0E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	252.3	mg/kg	NC		NC			3.7E-04	mg/kg/day	2.0E-01	mg/kg/day	2.E-03
				Cadmium	1.344	mg/kg	NC		NC			2.0E-06	mg/kg/day	1.0E-03	mg/kg/day	2.E-03
				Chromium	23.38	mg/kg	NC		NC			3.4E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.533	mg/kg	NC		NC			9.6E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	155.7	mg/kg	NC		NC			2.3E-04	mg/kg/day	4.0E-02	mg/kg/day	6.E-03
				Lead	578	mg/kg	2.9E-04	mg/kg/day	ND			8.5E-04	mg/kg/day	ND		
				Manganese	336.6	mg/kg	NC		NC			5.0E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.202	mg/kg	NC		NC			1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Thallium	0.155	mg/kg	NC		NC			2.3E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	25.54	mg/kg	NC		NC			3.8E-05	mg/kg/day	5.0E-03	mg/kg/day	7.E-03
			EXPOSURE ROUTE TOTAL								1.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	0.492	mg/kg	2.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.522	mg/kg	2.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.686	mg/kg	2.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.263	mg/kg	1.1E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-09	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Carbazole	0.1	mg/kg	1.8E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.3E-08	mg/kg/day	ND		
				Chrysene	0.556	mg/kg	2.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.141	mg/kg	5.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	9.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.385	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Aluminum	7339	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	2.523	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.946	mg/kg	3.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	252.3	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	1.344	mg/kg	NC		NC			7.1E-09	mg/kg/day	2.5E-05	mg/kg/day	3.E-04
				Chromium	23.38	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.533	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	155.7	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	578	mg/kg	--		ND			--		ND		
				Manganese	336.6	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.202	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.155	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	25.54	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					4.E-03
		EXPOSURE POINT TOTAL									1.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					2.E-01
SOIL TOTAL											**1.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**1.E-05**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-11
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	2.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.57	mg/kg	2.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	8.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	2.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.065	mg/kg	3.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-11	9.2E-09	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	2.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	6.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	3.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	9.6E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	17500	mg/kg	NC		NC			2.5E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	8.9	mg/kg	NC		NC			1.3E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	8.3	mg/kg	4.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	358	mg/kg	NC		NC			5.0E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Chromium	32	mg/kg	NC		NC			4.5E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	9.9	mg/kg	NC		NC			1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	271	mg/kg	NC		NC			3.8E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	543	mg/kg	2.7E-05	mg/kg/day	ND			7.7E-05	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			4.9E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1	mg/kg	NC		NC			1.4E-07	mg/kg/day	3.0E-04	mg/kg/day	5.E-04
				Thallium	0.13	mg/kg	NC		NC			1.8E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	31	mg/kg	NC		NC			4.4E-06	mg/kg/day	5.0E-03	mg/kg/day	9.E-04
			EXPOSURE ROUTE TOTAL								9.E-07					2.E-02
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	2.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.57	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.065	mg/kg	2.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	6.0E-09	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	1.9E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	2.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	8.2E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	2.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	8.3E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	2.3E-07	mg/kg/day	3.0E-04	mg/kg/day	8.E-04
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-07					8.E-04
		EXPOSURE POINT TOTAL									1.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										1.E-06					2.E-02
SOIL TOTAL											**1.E-06**					**2.E-02**
									TOTAL RECEPTOR RISK ACROSS ALL MEDIA		**1.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/18/2011
Checked by: BJR 10/23/2011

TABLE H-12
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.57	mg/kg	1.8E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	5.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.065	mg/kg	2.0E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.7E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	1.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	2.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	17500	mg/kg	NC		NC			1.5E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	8.9	mg/kg	NC		NC			7.8E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	8.3	mg/kg	2.6E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	7.3E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	358	mg/kg	NC		NC			3.2E-04	mg/kg/day	2.0E-01	mg/kg/day	2.E-03
				Chromium	32	mg/kg	NC		NC			2.8E-05	mg/kg/day	3.0E-03	mg/kg/day	9.E-03
				Cobalt	9.9	mg/kg	NC		NC			8.7E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	271	mg/kg	NC		NC			2.4E-04	mg/kg/day	4.0E-02	mg/kg/day	6.E-03
				Lead	543	mg/kg	1.7E-04	mg/kg/day	ND			4.8E-04	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			3.1E-04	mg/kg/day	4.7E-02	mg/kg/day	7.E-03
				Mercury	1	mg/kg	NC		NC			8.8E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.13	mg/kg	NC		NC			1.1E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	31	mg/kg	NC		NC			2.7E-05	mg/kg/day	5.0E-03	mg/kg/day	5.E-03
			EXPOSURE ROUTE TOTAL								6.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.57	mg/kg	1.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.065	mg/kg	1.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	3.8E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-10	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	1.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	5.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	5.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					5.E-03
		EXPOSURE POINT TOTAL									8.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										8.E-06					1.E-01

TABLE H-12
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 1	DUST INHALATION	Benzo(a)anthracene	0.56	mg/kg	3.0E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	8.5E-08	ug/m3	ND		
				Benzo(a)pyrene	0.57	mg/kg	3.1E-08	ug/m3	1.1E-03	(ug/m3)-1	3.E-11	8.6E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.49	mg/kg	2.6E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	7.4E-08	ug/m3	ND		
				Carbazole	0.065	mg/kg	NC		NC			9.8E-09	ug/m3	ND		
				Chrysene	0.43	mg/kg	2.3E-08	ug/m3	1.1E-05	(ug/m3)-1	3.E-13	6.5E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.068	mg/kg	3.7E-09	ug/m3	1.2E-03	(ug/m3)-1	4.E-12	1.0E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	2.5E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	7.0E-08	ug/m3	ND		
				Aluminum	17500	mg/kg	NC		NC			2.6E-03	ug/m3	5.0E+00	ug/m3	5.E-04
				Antimony	8.9	mg/kg	NC		NC			1.3E-06	ug/m3	ND		
				Arsenic	8.3	mg/kg	4.5E-07	ug/m3	4.3E-03	(ug/m3)-1	2.E-09	1.3E-06	ug/m3	1.5E-02	ug/m3	8.E-05
				Barium	358	mg/kg	NC		NC			5.4E-05	ug/m3	5.0E-01	ug/m3	1.E-04
				Chromium	32	mg/kg	1.7E-06	ug/m3	1.2E-02	(ug/m3)-1	2.E-08	4.8E-06	ug/m3	1.0E-01	ug/m3	5.E-05
				Cobalt	9.9	mg/kg	5.3E-07	ug/m3	9.0E-03	(ug/m3)-1	5.E-09	1.5E-06	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	271	mg/kg	NC		NC			4.1E-05	ug/m3	ND		
				Lead	543	mg/kg	2.9E-05	ug/m3	ND			8.2E-05	ug/m3	ND		
				Manganese	349	mg/kg	NC		NC			5.3E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	1	mg/kg	NC		NC			1.5E-07	ug/m3	3.0E-01	ug/m3	5.E-07
				Thallium	0.13	mg/kg	NC		NC			2.0E-08	ug/m3	ND		
				Vanadium	31	mg/kg	NC		NC			4.7E-06	ug/m3	1.0E-01	ug/m3	5.E-05
			EXPOSURE ROUTE TOTAL								3.E-08					2.E-03
		EXPOSURE POINT TOTAL									3.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										3.E-08					2.E-03
SOIL TOTAL											**8.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-13
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	9.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(a)pyrene	0.57	mg/kg	1.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	8.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Carbazole	0.065	mg/kg	1.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	3.2E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	7.5E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	1.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-08	3.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	8.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Aluminum	17500	mg/kg	NC		NC			8.6E-03	mg/kg/day	1.0E+00	mg/kg/day	9.E-03
				Antimony	8.9	mg/kg	NC		NC			4.4E-06	mg/kg/day	4.0E-04	mg/kg/day	1.E-02
				Arsenic	8.3	mg/kg	1.5E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	4.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	358	mg/kg	NC		NC			1.8E-04	mg/kg/day	2.0E-01	mg/kg/day	9.E-04
				Chromium	32	mg/kg	NC		NC			1.6E-05	mg/kg/day	3.0E-03	mg/kg/day	5.E-03
				Cobalt	9.9	mg/kg	NC		NC			4.8E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	271	mg/kg	NC		NC			1.3E-04	mg/kg/day	4.0E-02	mg/kg/day	3.E-03
				Lead	543	mg/kg	9.5E-05	mg/kg/day	ND			2.7E-04	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			1.7E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	1	mg/kg	NC		NC			4.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.13	mg/kg	NC		NC			6.4E-08	mg/kg/day	1.0E-05	mg/kg/day	6.E-03
				Vanadium	31	mg/kg	NC		NC			1.5E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					7.E-02
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.57	mg/kg	1.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.065	mg/kg	1.5E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	4.2E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	1.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	2.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	5.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-07	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					5.E-03
		EXPOSURE POINT TOTAL									6.E-06					8.E-02
	EXPOSURE MEDIUM TOTAL										6.E-06					8.E-02
SOIL TOTAL											**6.E-06**					**8.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											6.E-06					**8.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-14
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.8E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.57	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	1.8E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.6E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Carbazole	0.065	mg/kg	3.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	2.1E-07	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	2.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	1.4E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	3.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	2.2E-07	mg/kg/day	3.0E-01	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.5E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Aluminum	17500	mg/kg	NC		NC			5.7E-02	mg/kg/day	1.0E+00	mg/kg/day	6.E-02
				Antimony	8.9	mg/kg	NC		NC			2.9E-05	mg/kg/day	4.0E-04	mg/kg/day	7.E-02
				Arsenic	8.3	mg/kg	3.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	2.7E-05	mg/kg/day	3.0E-04	mg/kg/day	9.E-02
				Barium	358	mg/kg	NC		NC			1.2E-03	mg/kg/day	2.0E-01	mg/kg/day	6.E-03
				Chromium	32	mg/kg	NC		NC			1.0E-04	mg/kg/day	2.0E-02	mg/kg/day	5.E-03
				Cobalt	9.9	mg/kg	NC		NC			3.2E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Copper	271	mg/kg	NC		NC			8.8E-04	mg/kg/day	1.0E-02	mg/kg/day	9.E-02
				Lead	543	mg/kg	2.5E-05	mg/kg/day	ND			1.8E-03	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			1.1E-03	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	1	mg/kg	NC		NC			3.2E-06	mg/kg/day	2.0E-03	mg/kg/day	2.E-03
				Thallium	0.13	mg/kg	NC		NC			4.2E-07	mg/kg/day	5.0E-05	mg/kg/day	8.E-03
				Vanadium	31	mg/kg	NC		NC			1.0E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								8.E-07					4.E-01
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	1.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-09	7.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.57	mg/kg	1.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	7.2E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	8.8E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	6.2E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Carbazole	0.065	mg/kg	9.0E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	6.3E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	7.7E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-11	5.4E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	1.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-09	8.6E-08	mg/kg/day	3.0E-01	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	8.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	5.8E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	3.4E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-08	2.4E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					8.E-03
		EXPOSURE POINT TOTAL									1.E-06					4.E-01
	EXPOSURE MEDIUM TOTAL										1.E-06					4.E-01

TABLE H-14
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 1	DUST INHALATION	Benzo(a)anthracene	0.56	mg/kg	3.8E-07	ug/m3	1.1E-04	(ug/m3)-1	4.E-11	2.7E-05	ug/m3	ND		
				Benzo(a)pyrene	0.57	mg/kg	3.9E-07	ug/m3	1.1E-03	(ug/m3)-1	4.E-10	2.7E-05	ug/m3	ND		
				Benzo(b)fluoranthene	0.49	mg/kg	3.3E-07	ug/m3	1.1E-04	(ug/m3)-1	4.E-11	2.3E-05	ug/m3	ND		
				Carbazole	0.065	mg/kg	NC		NC			3.1E-06	ug/m3	ND		
				Chrysene	0.43	mg/kg	2.9E-07	ug/m3	1.1E-05	(ug/m3)-1	3.E-12	2.0E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.068	mg/kg	4.6E-08	ug/m3	1.2E-03	(ug/m3)-1	6.E-11	3.2E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	3.1E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	2.2E-05	ug/m3	ND		
				Aluminum	17500	mg/kg	NC		NC			8.3E-01	ug/m3	5.0E+00	ug/m3	2.E-01
				Antimony	8.9	mg/kg	NC		NC			4.2E-04	ug/m3	ND		
				Arsenic	8.3	mg/kg	5.7E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	4.0E-04	ug/m3	1.5E-02	ug/m3	3.E-02
				Barium	358	mg/kg	NC		NC			1.7E-02	ug/m3	5.0E+00	ug/m3	3.E-03
				Chromium	32	mg/kg	2.2E-05	ug/m3	1.2E-02	(ug/m3)-1	3.E-07	1.5E-03	ug/m3	5.0E-03	ug/m3	3.E-01
				Cobalt	9.9	mg/kg	6.7E-06	ug/m3	9.0E-03	(ug/m3)-1	6.E-08	4.7E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	271	mg/kg	NC		NC			1.3E-02	ug/m3	ND		
				Lead	543	mg/kg	3.7E-04	ug/m3	ND			2.6E-02	ug/m3	ND		
				Manganese	349	mg/kg	NC		NC			1.7E-02	ug/m3	5.0E-02	ug/m3	3.E-01
				Mercury	1	mg/kg	NC		NC			4.8E-05	ug/m3	3.0E-01	ug/m3	2.E-04
				Thallium	0.13	mg/kg	NC		NC			6.2E-06	ug/m3	ND		
				Vanadium	31	mg/kg	NC		NC			1.5E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								3.E-07					9.E-01
		EXPOSURE POINT TOTAL									3.E-07					9.E-01
	EXPOSURE MEDIUM TOTAL										3.E-07					9.E-01
SOIL TOTAL											**1.E-06**					**1.E+00**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**1.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BRJ 10/24/2011

TABLE H-15
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	3.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	0.57	mg/kg	3.9E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	3.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	9.3E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	0.065	mg/kg	1.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	1.2E-07	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	2.9E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	8.2E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	4.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	3.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	8.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Aluminum	17500	mg/kg	NC		NC			3.3E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	8.9	mg/kg	NC		NC			1.7E-05	mg/kg/day	4.0E-04	mg/kg/day	4.E-02
				Arsenic	8.3	mg/kg	1.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	1.6E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	358	mg/kg	NC		NC			6.8E-04	mg/kg/day	2.0E-01	mg/kg/day	3.E-03
				Chromium	32	mg/kg	NC		NC			6.1E-05	mg/kg/day	3.0E-03	mg/kg/day	2.E-02
				Cobalt	9.9	mg/kg	NC		NC			1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	6.E-02
				Copper	271	mg/kg	NC		NC			5.1E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	543	mg/kg	8.8E-05	mg/kg/day	ND			1.0E-03	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			6.6E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1	mg/kg	NC		NC			1.9E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Thallium	0.13	mg/kg	NC		NC			2.5E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	31	mg/kg	NC		NC			5.9E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								6.E-06					3.E-01
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.57	mg/kg	1.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.065	mg/kg	3.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	3.5E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	1.1E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-10	3.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	1.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	4.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	1.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					4.E-03
		EXPOSURE POINT TOTAL									8.E-06					3.E-01
	EXPOSURE MEDIUM TOTAL										8.E-06					3.E-01
SOIL TOTAL											**8.E-06**					**3.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											8.E-06					**3.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-16
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	7.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.57	mg/kg	7.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	6.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.065	mg/kg	4.9E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.4E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	5.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	9.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	8.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	1.5E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	6.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.0E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	17500	mg/kg	NC		NC			3.8E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	8.9	mg/kg	NC		NC			2.0E-06	mg/kg/day	4.0E-04	mg/kg/day	5.E-03
				Arsenic	8.3	mg/kg	6.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-07	1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Barium	358	mg/kg	NC		NC			7.8E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Chromium	32	mg/kg	NC		NC			7.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	9.9	mg/kg	NC		NC			2.2E-06	mg/kg/day	3.0E-04	mg/kg/day	7.E-03
				Copper	271	mg/kg	NC		NC			5.9E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	543	mg/kg	4.1E-05	mg/kg/day	ND			1.2E-04	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			7.6E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	1	mg/kg	NC		NC			2.2E-07	mg/kg/day	3.0E-04	mg/kg/day	7.E-04
				Thallium	0.13	mg/kg	NC		NC			2.8E-08	mg/kg/day	1.0E-05	mg/kg/day	3.E-03
				Vanadium	31	mg/kg	NC		NC			6.8E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					3.E-02
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	3.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.57	mg/kg	3.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	5.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.49	mg/kg	3.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.065	mg/kg	1.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	5.1E-09	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	2.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	4.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.068	mg/kg	4.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	6.9E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	2.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	4.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	6.7E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-07					7.E-04
		EXPOSURE POINT TOTAL									2.E-06					3.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					3.E-02
SOIL TOTAL											**2.E-06**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-17
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	2.6E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	7.2E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(a)pyrene	0.57	mg/kg	2.6E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	7.3E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(b)fluoranthene	0.49	mg/kg	2.3E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	6.3E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Carbazole	0.065	mg/kg	7.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-09	8.3E-07	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	2.0E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-08	5.5E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Dibenz(a,h)anthracene	0.068	mg/kg	3.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	8.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	2.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	5.9E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Aluminum	17500	mg/kg	NC		NC			2.2E-01	mg/kg/day	1.0E+00	mg/kg/day	2.E-01
				Antimony	8.9	mg/kg	NC		NC			1.1E-04	mg/kg/day	4.0E-04	mg/kg/day	3.E-01
				Arsenic	8.3	mg/kg	9.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-05	1.1E-04	mg/kg/day	3.0E-04	mg/kg/day	4.E-01
				Barium	358	mg/kg	NC		NC			4.6E-03	mg/kg/day	2.0E-01	mg/kg/day	2.E-02
				Chromium	32	mg/kg	NC		NC			4.1E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
				Cobalt	9.9	mg/kg	NC		NC			1.3E-04	mg/kg/day	3.0E-04	mg/kg/day	4.E-01
				Copper	271	mg/kg	NC		NC			3.5E-03	mg/kg/day	4.0E-02	mg/kg/day	9.E-02
				Lead	543	mg/kg	6.0E-04	mg/kg/day	ND			6.9E-03	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			4.5E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	1	mg/kg	NC		NC			1.3E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Thallium	0.13	mg/kg	NC		NC			1.7E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	31	mg/kg	NC		NC			4.0E-04	mg/kg/day	5.0E-03	mg/kg/day	8.E-02
			EXPOSURE ROUTE TOTAL								4.E-05					2.E+00
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	9.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-07	2.6E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Benzo(a)pyrene	0.57	mg/kg	9.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-06	2.7E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	8.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.3E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Carbazole	0.065	mg/kg	2.0E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	2.3E-07	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	7.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-09	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	1.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	7.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	7.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	8.9E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					3.E-02
		EXPOSURE POINT TOTAL									5.E-05					2.E+00
	EXPOSURE MEDIUM TOTAL										5.E-05					2.E+00
SOIL TOTAL											**5.E-05**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											5.E-05					**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-18
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 1 - SUBSURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 1	INGESTION	Benzo(a)anthracene	0.56	mg/kg	5.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	8.3E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	0.57	mg/kg	5.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	8.4E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	4.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	7.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.065	mg/kg	3.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-10	9.6E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	3.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	6.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.0E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	4.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	17500	mg/kg	NC		NC			2.6E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	8.9	mg/kg	NC		NC			1.3E-05	mg/kg/day	4.0E-04	mg/kg/day	3.E-02
				Arsenic	8.3	mg/kg	4.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-06	1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	358	mg/kg	NC		NC			5.3E-04	mg/kg/day	2.0E-01	mg/kg/day	3.E-03
				Chromium	32	mg/kg	NC		NC			4.7E-05	mg/kg/day	3.0E-03	mg/kg/day	2.E-02
				Cobalt	9.9	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Copper	271	mg/kg	NC		NC			4.0E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	543	mg/kg	2.7E-04	mg/kg/day	ND			8.0E-04	mg/kg/day	ND		
				Manganese	349	mg/kg	NC		NC			5.1E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1	mg/kg	NC		NC			1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Thallium	0.13	mg/kg	NC		NC			1.9E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	31	mg/kg	NC		NC			4.6E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								1.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	0.56	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.57	mg/kg	2.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.49	mg/kg	2.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.065	mg/kg	1.2E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	3.4E-08	mg/kg/day	ND		
				Chrysene	0.43	mg/kg	1.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.068	mg/kg	2.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.46	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	17500	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	8.9	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.3	mg/kg	4.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	358	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	32	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	9.9	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	271	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	543	mg/kg	--		ND			--		ND		
				Manganese	349	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.13	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					4.E-03
		EXPOSURE POINT TOTAL									1.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					2.E-01
SOIL TOTAL											**1.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											1.E-05					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-19
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADOLESCENT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADOLESCENT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	9.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.431	mg/kg	9.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	5.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.0696	mg/kg	5.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	3.5E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	1.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	2.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	5.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Heptachlor epoxide	0.12	mg/kg	8.5E-09	mg/kg/day	9.1E+00	(mg/kg/day)-1	8.E-08	6.0E-08	mg/kg/day	1.3E-05	mg/kg/day	5.E-03
				Aluminum	9021	mg/kg	NC		NC			4.5E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	1.851	mg/kg	NC		NC			9.2E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	5.615	mg/kg	4.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	2.8E-06	mg/kg/day	3.0E-04	mg/kg/day	9.E-03
				Barium	119.4	mg/kg	NC		NC			5.9E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Cadmium	0.698	mg/kg	NC		NC			3.5E-07	mg/kg/day	1.0E-03	mg/kg/day	3.E-04
				Chromium	19.08	mg/kg	NC		NC			9.5E-06	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	6.114	mg/kg	NC		NC			3.0E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	2318	mg/kg	NC		NC			1.2E-03	mg/kg/day	4.0E-02	mg/kg/day	3.E-02
				Lead	279	mg/kg	2.0E-05	mg/kg/day	ND			1.4E-04	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			1.8E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	1.197	mg/kg	NC		NC			6.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.15	mg/kg	NC		NC			7.5E-08	mg/kg/day	1.0E-05	mg/kg/day	7.E-03
				Vanadium	31.89	mg/kg	NC		NC			1.6E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					8.E-02
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	3.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	9.1E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.431	mg/kg	4.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	5.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	2.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0696	mg/kg	1.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.1E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	6.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	9.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	2.2E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	4.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	4.0E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-08	2.8E-07	mg/kg/day	3.0E-04	mg/kg/day	9.E-04
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			1.1E-09	mg/kg/day	2.5E-05	mg/kg/day	5.E-05
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-07					1.E-03
		EXPOSURE POINT TOTAL									2.E-06					8.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					8.E-02
SOIL TOTAL											**2.E-06**					**8.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**8.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-20
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	1.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	6.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.431	mg/kg	1.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	6.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	9.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	7.5E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-10	3.8E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.0696	mg/kg	2.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	1.1E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	2.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	3.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	1.6E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	8.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Heptachlor epoxide	0.12	mg/kg	3.8E-09	mg/kg/day	9.1E+00	(mg/kg/day)-1	3.E-08	1.9E-08	mg/kg/day	1.3E-05	mg/kg/day	1.E-03
				Aluminum	9021	mg/kg	NC		NC			1.4E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	1.851	mg/kg	NC		NC			2.9E-07	mg/kg/day	4.0E-04	mg/kg/day	7.E-04
				Arsenic	5.615	mg/kg	1.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	8.8E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	119.4	mg/kg	NC		NC			1.9E-05	mg/kg/day	2.0E-01	mg/kg/day	9.E-05
				Cadmium	0.698	mg/kg	NC		NC			1.1E-07	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	19.08	mg/kg	NC		NC			3.0E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.114	mg/kg	NC		NC			9.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	2318	mg/kg	NC		NC			3.6E-04	mg/kg/day	4.0E-02	mg/kg/day	9.E-03
				Lead	279	mg/kg	8.7E-06	mg/kg/day	ND			4.4E-05	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			5.5E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.197	mg/kg	NC		NC			1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Thallium	0.15	mg/kg	NC		NC			2.3E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	31.89	mg/kg	NC		NC			5.0E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								5.E-07					3.E-02
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	5.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	2.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.431	mg/kg	6.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	3.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	8.5E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	4.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	3.3E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-10	1.7E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Carbazole	0.0696	mg/kg	7.4E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-11	3.7E-09	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	9.6E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-11	4.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	1.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	7.1E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	7.1E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	3.5E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	1.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	9.0E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			3.7E-10	mg/kg/day	2.5E-05	mg/kg/day	1.E-05
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-07					3.E-04
		EXPOSURE POINT TOTAL									6.E-07					3.E-02
	EXPOSURE MEDIUM TOTAL										6.E-07					3.E-02
SOIL TOTAL											**6.E-07**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											6.E-07					**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-21
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.431	mg/kg	2.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	3.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	8.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	1.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-10	3.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.0696	mg/kg	3.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-11	9.8E-09	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	3.5E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	9.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	5.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.5E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Heptachlor epoxide	0.12	mg/kg	6.0E-09	mg/kg/day	9.1E+00	(mg/kg/day)-1	5.E-08	1.7E-08	mg/kg/day	1.3E-05	mg/kg/day	1.E-03
				Aluminum	9021	mg/kg	NC		NC			1.3E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	1.851	mg/kg	NC		NC			2.6E-07	mg/kg/day	4.0E-04	mg/kg/day	7.E-04
				Arsenic	5.615	mg/kg	2.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.9E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	119.4	mg/kg	NC		NC			1.7E-05	mg/kg/day	2.0E-01	mg/kg/day	8.E-05
				Cadmium	0.698	mg/kg	NC		NC			9.8E-08	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	19.08	mg/kg	NC		NC			2.7E-06	mg/kg/day	3.0E-03	mg/kg/day	9.E-04
				Cobalt	6.114	mg/kg	NC		NC			8.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	2318	mg/kg	NC		NC			3.3E-04	mg/kg/day	4.0E-02	mg/kg/day	8.E-03
				Lead	279	mg/kg	1.4E-05	mg/kg/day	ND			3.9E-05	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			5.0E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.197	mg/kg	NC		NC			1.7E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Thallium	0.15	mg/kg	NC		NC			2.1E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	31.89	mg/kg	NC		NC			4.5E-06	mg/kg/day	5.0E-03	mg/kg/day	9.E-04
			EXPOSURE ROUTE TOTAL								7.E-07					2.E-02
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.431	mg/kg	1.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	1.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-10	2.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.0696	mg/kg	2.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	6.5E-09	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	3.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	8.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	4.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	1.2E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	2.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	5.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-08	1.6E-07	mg/kg/day	3.0E-04	mg/kg/day	5.E-04
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			6.5E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-07					6.E-04
		EXPOSURE POINT TOTAL									1.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										1.E-06					2.E-02
SOIL TOTAL											**1.E-06**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**1.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-22
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.431	mg/kg	1.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.4E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	7.6E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-09	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Carbazole	0.0696	mg/kg	2.2E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	6.1E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	2.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	6.1E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	3.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	9.1E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Heptachlor epoxide	0.12	mg/kg	3.8E-08	mg/kg/day	9.1E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	1.3E-05	mg/kg/day	8.E-03
				Aluminum	9021	mg/kg	NC		NC			7.9E-03	mg/kg/day	1.0E+00	mg/kg/day	8.E-03
				Antimony	1.851	mg/kg	NC		NC			1.6E-06	mg/kg/day	4.0E-04	mg/kg/day	4.E-03
				Arsenic	5.615	mg/kg	1.8E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	4.9E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	119.4	mg/kg	NC		NC			1.1E-04	mg/kg/day	2.0E-01	mg/kg/day	5.E-04
				Cadmium	0.698	mg/kg	NC		NC			6.1E-07	mg/kg/day	1.0E-03	mg/kg/day	6.E-04
				Chromium	19.08	mg/kg	NC		NC			1.7E-05	mg/kg/day	3.0E-03	mg/kg/day	6.E-03
				Cobalt	6.114	mg/kg	NC		NC			5.4E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	2318	mg/kg	NC		NC			2.0E-03	mg/kg/day	4.0E-02	mg/kg/day	5.E-02
				Lead	279	mg/kg	8.8E-05	mg/kg/day	ND			2.5E-04	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			3.1E-04	mg/kg/day	4.7E-02	mg/kg/day	7.E-03
				Mercury	1.197	mg/kg	NC		NC			1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Thallium	0.15	mg/kg	NC		NC			1.3E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	31.89	mg/kg	NC		NC			2.8E-05	mg/kg/day	5.0E-03	mg/kg/day	6.E-03
			EXPOSURE ROUTE TOTAL								5.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.431	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	6.5E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-09	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Carbazole	0.0696	mg/kg	1.4E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	4.0E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	1.9E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	2.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	7.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	3.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.8E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			4.1E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					4.E-03
		EXPOSURE POINT TOTAL									6.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										6.E-06					1.E-01

TABLE H-22
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 2	DUST INHALATION	Benzo(a)anthracene	0.424	mg/kg	2.3E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	6.4E-08	ug/m3	ND		
				Benzo(a)pyrene	0.431	mg/kg	2.3E-08	ug/m3	1.1E-03	(ug/m3)-1	3.E-11	6.5E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.616	mg/kg	3.3E-08	ug/m3	1.1E-04	(ug/m3)-1	4.E-12	9.3E-08	ug/m3	ND		
				Benzo(k)fluoranthene	0.241	mg/kg	1.3E-08	ug/m3	1.1E-04	(ug/m3)-1	1.E-12	3.6E-08	ug/m3	ND		
				Carbazole	0.0696	mg/kg	NC		NC			1.1E-08	ug/m3	ND		
				Chrysene	0.692	mg/kg	3.7E-08	ug/m3	1.1E-05	(ug/m3)-1	4.E-13	1.0E-07	ug/m3	ND		
				Dibenz(a,h)anthracene	0.103	mg/kg	5.6E-09	ug/m3	1.2E-03	(ug/m3)-1	7.E-12	1.6E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	2.8E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	7.7E-08	ug/m3	ND		
				Heptachlor epoxide	0.12	mg/kg	6.5E-09	ug/m3	2.6E-03	(ug/m3)-1	2.E-11	1.8E-08	ug/m3	ND		
				Aluminum	9021	mg/kg	NC		NC			1.4E-03	ug/m3	5.0E+00	ug/m3	3.E-04
				Antimony	1.851	mg/kg	NC		NC			2.8E-07	ug/m3	ND		
				Arsenic	5.615	mg/kg	3.0E-07	ug/m3	4.3E-03	(ug/m3)-1	1.E-09	8.5E-07	ug/m3	1.5E-02	ug/m3	6.E-05
				Barium	119.4	mg/kg	NC		NC			1.8E-05	ug/m3	5.0E-01	ug/m3	4.E-05
				Cadmium	0.698	mg/kg	3.8E-08	ug/m3	1.8E-03	(ug/m3)-1	7.E-11	1.1E-07	ug/m3	2.0E-02	ug/m3	5.E-06
				Chromium	19.08	mg/kg	1.0E-06	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	2.9E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	6.114	mg/kg	3.3E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	9.2E-07	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	2318	mg/kg	NC		NC			3.5E-04	ug/m3	ND		
				Lead	279	mg/kg	1.5E-05	ug/m3	ND			4.2E-05	ug/m3	ND		
				Manganese	351.5	mg/kg	NC		NC			5.3E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	1.197	mg/kg	NC		NC			1.8E-07	ug/m3	3.0E-01	ug/m3	6.E-07
				Thallium	0.15	mg/kg	NC		NC			2.3E-08	ug/m3	ND		
				Vanadium	31.89	mg/kg	NC		NC			4.8E-06	ug/m3	1.0E-01	ug/m3	5.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**6.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											6.E-06					**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-23
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	7.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.431	mg/kg	7.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	4.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-09	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.0696	mg/kg	1.2E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	3.4E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	1.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	8.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Heptachlor epoxide	0.12	mg/kg	2.1E-08	mg/kg/day	9.1E+00	(mg/kg/day)-1	2.E-07	5.9E-08	mg/kg/day	1.3E-05	mg/kg/day	5.E-03
				Aluminum	9021	mg/kg	NC		NC			4.4E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	1.851	mg/kg	NC		NC			9.1E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	5.615	mg/kg	9.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	2.7E-06	mg/kg/day	3.0E-04	mg/kg/day	9.E-03
				Barium	119.4	mg/kg	NC		NC			5.8E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Cadmium	0.698	mg/kg	NC		NC			3.4E-07	mg/kg/day	1.0E-03	mg/kg/day	3.E-04
				Chromium	19.08	mg/kg	NC		NC			9.3E-06	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	6.114	mg/kg	NC		NC			3.0E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	2318	mg/kg	NC		NC			1.1E-03	mg/kg/day	4.0E-02	mg/kg/day	3.E-02
				Lead	279	mg/kg	4.9E-05	mg/kg/day	ND			1.4E-04	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			1.7E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	1.197	mg/kg	NC		NC			5.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.15	mg/kg	NC		NC			7.3E-08	mg/kg/day	1.0E-05	mg/kg/day	7.E-03
				Vanadium	31.89	mg/kg	NC		NC			1.6E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					8.E-02
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.431	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	7.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-09	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Carbazole	0.0696	mg/kg	1.6E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	4.5E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	2.1E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	5.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	3.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	8.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	3.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			4.5E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					4.E-03
		EXPOSURE POINT TOTAL									5.E-06					8.E-02
	EXPOSURE MEDIUM TOTAL										5.E-06					8.E-02
SOIL TOTAL											**5.E-06**					**8.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**5.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**8.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-24
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	2.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.4E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Benzo(a)pyrene	0.431	mg/kg	2.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	1.4E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	2.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	2.0E-06	mg/kg/day	3.0E-01	mg/kg/day	7.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	1.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-10	7.8E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Carbazole	0.0696	mg/kg	3.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	2.2E-07	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	3.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	2.2E-06	mg/kg/day	3.0E-01	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	4.8E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	3.3E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	2.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.7E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Heptachlor epoxide	0.12	mg/kg	5.5E-09	mg/kg/day	9.1E+00	(mg/kg/day)-1	5.E-08	3.9E-07	mg/kg/day	1.3E-05	mg/kg/day	3.E-02
				Aluminum	9021	mg/kg	NC		NC			2.9E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	1.851	mg/kg	NC		NC			6.0E-06	mg/kg/day	4.0E-04	mg/kg/day	1.E-02
				Arsenic	5.615	mg/kg	2.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	1.8E-05	mg/kg/day	3.0E-04	mg/kg/day	6.E-02
				Barium	119.4	mg/kg	NC		NC			3.9E-04	mg/kg/day	2.0E-01	mg/kg/day	2.E-03
				Cadmium	0.698	mg/kg	NC		NC			2.3E-06	mg/kg/day	5.0E-04	mg/kg/day	5.E-03
				Chromium	19.08	mg/kg	NC		NC			6.2E-05	mg/kg/day	2.0E-02	mg/kg/day	3.E-03
				Cobalt	6.114	mg/kg	NC		NC			2.0E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Copper	2318	mg/kg	NC		NC			7.5E-03	mg/kg/day	1.0E-02	mg/kg/day	7.E-01
				Lead	279	mg/kg	1.3E-05	mg/kg/day	ND			9.0E-04	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			1.1E-03	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	1.197	mg/kg	NC		NC			3.9E-06	mg/kg/day	2.0E-03	mg/kg/day	2.E-03
				Thallium	0.15	mg/kg	NC		NC			4.8E-07	mg/kg/day	5.0E-05	mg/kg/day	1.E-02
				Vanadium	31.89	mg/kg	NC		NC			1.0E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								7.E-07					9.E-01
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	7.6E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	5.3E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.431	mg/kg	7.8E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	5.4E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	7.8E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	4.3E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-10	3.0E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Carbazole	0.0696	mg/kg	9.6E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	6.7E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	1.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-11	8.7E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	1.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	1.3E-07	mg/kg/day	3.0E-01	mg/kg/day	4.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	9.2E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-09	6.4E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	2.3E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			6.8E-09	mg/kg/day	1.3E-05	mg/kg/day	5.E-04
				Chromium	19.08	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-07					6.E-03
		EXPOSURE POINT TOTAL									8.E-07					1.E+00
	EXPOSURE MEDIUM TOTAL										8.E-07					1.E+00

TABLE H-24
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 2	DUST INHALATION	Benzo(a)anthracene	0.424	mg/kg	2.9E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	2.0E-05	ug/m3	ND		
				Benzo(a)pyrene	0.431	mg/kg	2.9E-07	ug/m3	1.1E-03	(ug/m3)-1	3.E-10	2.1E-05	ug/m3	ND		
				Benzo(b)fluoranthene	0.616	mg/kg	4.2E-07	ug/m3	1.1E-04	(ug/m3)-1	5.E-11	2.9E-05	ug/m3	ND		
				Benzo(k)fluoranthene	0.241	mg/kg	1.6E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	1.1E-05	ug/m3	ND		
				Carbazole	0.0696	mg/kg	NC		NC			3.3E-06	ug/m3	ND		
				Chrysene	0.692	mg/kg	4.7E-07	ug/m3	1.1E-05	(ug/m3)-1	5.E-12	3.3E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.103	mg/kg	7.0E-08	ug/m3	1.2E-03	(ug/m3)-1	8.E-11	4.9E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	3.5E-07	ug/m3	1.1E-04	(ug/m3)-1	4.E-11	2.4E-05	ug/m3	ND		
				Heptachlor epoxide	0.12	mg/kg	8.2E-08	ug/m3	2.6E-03	(ug/m3)-1	2.E-10	5.7E-06	ug/m3	ND		
				Aluminum	9021	mg/kg	NC		NC			4.3E-01	ug/m3	5.0E+00	ug/m3	9.E-02
				Antimony	1.851	mg/kg	NC		NC			8.8E-05	ug/m3	ND		
				Arsenic	5.615	mg/kg	3.8E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	2.7E-04	ug/m3	1.5E-02	ug/m3	2.E-02
				Barium	119.4	mg/kg	NC		NC			5.7E-03	ug/m3	5.0E+00	ug/m3	1.E-03
				Cadmium	0.698	mg/kg	4.8E-07	ug/m3	1.8E-03	(ug/m3)-1	9.E-10	3.3E-05	ug/m3	2.0E-02	ug/m3	2.E-03
				Chromium	19.08	mg/kg	1.3E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	9.1E-04	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	6.114	mg/kg	4.2E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	2.9E-04	ug/m3	2.0E-02	ug/m3	1.E-02
				Copper	2318	mg/kg	NC		NC			1.1E-01	ug/m3	ND		
				Lead	279	mg/kg	1.9E-04	ug/m3	ND			1.3E-02	ug/m3	ND		
				Manganese	351.5	mg/kg	NC		NC			1.7E-02	ug/m3	5.0E-02	ug/m3	3.E-01
				Mercury	1.197	mg/kg	NC		NC			5.7E-05	ug/m3	3.0E-01	ug/m3	2.E-04
				Thallium	0.15	mg/kg	NC		NC			7.1E-06	ug/m3	ND		
				Vanadium	31.89	mg/kg	NC		NC			1.5E-03	ug/m3	1.0E-01	ug/m3	2.E-02
			EXPOSURE ROUTE TOTAL								2.E-07					7.E-01
		EXPOSURE POINT TOTAL									2.E-07					7.E-01
	EXPOSURE MEDIUM TOTAL										2.E-07					7.E-01
SOIL TOTAL											**1.E-06**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											1.E-06					**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-25
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	2.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	8.1E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	0.431	mg/kg	2.9E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	8.2E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	4.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	1.6E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	4.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0696	mg/kg	1.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	1.3E-07	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	4.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	7.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	3.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	9.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Heptachlor epoxide	0.12	mg/kg	2.0E-08	mg/kg/day	9.1E+00	(mg/kg/day)-1	2.E-07	2.3E-07	mg/kg/day	1.3E-05	mg/kg/day	2.E-02
				Aluminum	9021	mg/kg	NC		NC			1.7E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	1.851	mg/kg	NC		NC			3.5E-06	mg/kg/day	4.0E-04	mg/kg/day	9.E-03
				Arsenic	5.615	mg/kg	9.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	119.4	mg/kg	NC		NC			2.3E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Cadmium	0.698	mg/kg	NC		NC			1.3E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	19.08	mg/kg	NC		NC			3.6E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.114	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	2318	mg/kg	NC		NC			4.4E-03	mg/kg/day	4.0E-02	mg/kg/day	1.E-01
				Lead	279	mg/kg	4.5E-05	mg/kg/day	ND			5.3E-04	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			6.7E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.197	mg/kg	NC		NC			2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Thallium	0.15	mg/kg	NC		NC			2.8E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	31.89	mg/kg	NC		NC			6.1E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								5.E-06					3.E-01
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.431	mg/kg	1.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	3.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	6.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Carbazole	0.0696	mg/kg	3.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	3.7E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	7.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	7.7E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	9.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			3.7E-09	mg/kg/day	2.5E-05	mg/kg/day	1.E-04
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					3.E-03
		EXPOSURE POINT TOTAL									6.E-06					3.E-01
	EXPOSURE MEDIUM TOTAL										6.E-06					3.E-01
SOIL TOTAL											**6.E-06**					**3.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**6.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**3.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-26
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	5.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	9.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.431	mg/kg	5.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	9.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	8.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	3.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	5.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0696	mg/kg	5.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.5E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	9.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-10	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	1.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	2.3E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	6.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Heptachlor epoxide	0.12	mg/kg	9.0E-09	mg/kg/day	9.1E+00	(mg/kg/day)-1	8.E-08	2.6E-08	mg/kg/day	1.3E-05	mg/kg/day	2.E-03
				Aluminum	9021	mg/kg	NC		NC			2.0E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	1.851	mg/kg	NC		NC			4.1E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	5.615	mg/kg	4.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	119.4	mg/kg	NC		NC			2.6E-05	mg/kg/day	2.0E-01	mg/kg/day	1.E-04
				Cadmium	0.698	mg/kg	NC		NC			1.5E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	19.08	mg/kg	NC		NC			4.2E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.114	mg/kg	NC		NC			1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Copper	2318	mg/kg	NC		NC			5.1E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	279	mg/kg	2.1E-05	mg/kg/day	ND			6.1E-05	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			7.7E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	1.197	mg/kg	NC		NC			2.6E-07	mg/kg/day	3.0E-04	mg/kg/day	9.E-04
				Thallium	0.15	mg/kg	NC		NC			3.3E-08	mg/kg/day	1.0E-05	mg/kg/day	3.E-03
				Vanadium	31.89	mg/kg	NC		NC			7.0E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					4.E-02
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	4.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.431	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.616	mg/kg	3.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	6.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.241	mg/kg	1.5E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	2.4E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Carbazole	0.0696	mg/kg	1.9E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	5.4E-09	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	4.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	7.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.103	mg/kg	6.3E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	3.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	4.5E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			5.5E-10	mg/kg/day	2.5E-05	mg/kg/day	2.E-05
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-07					5.E-04
		EXPOSURE POINT TOTAL									2.E-06					4.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					4.E-02
SOIL TOTAL											**2.E-06**					**4.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**2.E-06**
												TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA				**4.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-27
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	2.0E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	5.4E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(a)pyrene	0.431	mg/kg	2.0E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-05	5.5E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(b)fluoranthene	0.616	mg/kg	2.8E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	7.9E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(k)fluoranthene	0.241	mg/kg	1.1E-06	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-08	3.1E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Carbazole	0.0696	mg/kg	7.6E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-09	8.9E-07	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	3.2E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-08	8.8E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Dibenz(a,h)anthracene	0.103	mg/kg	4.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	2.4E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	6.5E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Heptachlor epoxide	0.12	mg/kg	1.3E-07	mg/kg/day	9.1E+00	(mg/kg/day)-1	1.E-06	1.5E-06	mg/kg/day	1.3E-05	mg/kg/day	1.E-01
				Aluminum	9021	mg/kg	NC		NC			1.2E-01	mg/kg/day	1.0E+00	mg/kg/day	1.E-01
				Antimony	1.851	mg/kg	NC		NC			2.4E-05	mg/kg/day	4.0E-04	mg/kg/day	6.E-02
				Arsenic	5.615	mg/kg	6.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-06	7.2E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	119.4	mg/kg	NC		NC			1.5E-03	mg/kg/day	2.0E-01	mg/kg/day	8.E-03
				Cadmium	0.698	mg/kg	NC		NC			8.9E-06	mg/kg/day	1.0E-03	mg/kg/day	9.E-03
				Chromium	19.08	mg/kg	NC		NC			2.4E-04	mg/kg/day	3.0E-03	mg/kg/day	8.E-02
				Cobalt	6.114	mg/kg	NC		NC			7.8E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	2318	mg/kg	NC		NC			3.0E-02	mg/kg/day	4.0E-02	mg/kg/day	7.E-01
				Lead	279	mg/kg	3.1E-04	mg/kg/day	ND			3.6E-03	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			4.5E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	1.197	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Thallium	0.15	mg/kg	NC		NC			1.9E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	31.89	mg/kg	NC		NC			4.1E-04	mg/kg/day	5.0E-03	mg/kg/day	8.E-02
			EXPOSURE ROUTE TOTAL								3.E-05					2.E+00
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	7.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(a)pyrene	0.431	mg/kg	7.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	1.0E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-07	2.9E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(k)fluoranthene	0.241	mg/kg	4.0E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-08	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Carbazole	0.0696	mg/kg	2.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	2.5E-07	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	1.2E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-09	3.2E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Dibenz(a,h)anthracene	0.103	mg/kg	1.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	8.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	5.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	6.0E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			2.5E-08	mg/kg/day	2.5E-05	mg/kg/day	1.E-03
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-06					2.E-02
		EXPOSURE POINT TOTAL									4.E-05					2.E+00
	EXPOSURE MEDIUM TOTAL										4.E-05					2.E+00
SOIL TOTAL											**4.E-05**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											4.E-05					**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-28
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.424	mg/kg	3.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.431	mg/kg	3.8E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	6.4E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	5.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	9.1E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	2.1E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-08	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.0696	mg/kg	3.5E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-10	1.0E-07	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	6.1E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	1.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	9.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	4.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	7.6E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Heptachlor epoxide	0.12	mg/kg	6.1E-08	mg/kg/day	9.1E+00	(mg/kg/day)-1	6.E-07	1.8E-07	mg/kg/day	1.3E-05	mg/kg/day	1.E-02
				Aluminum	9021	mg/kg	NC		NC			1.3E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	1.851	mg/kg	NC		NC			2.7E-06	mg/kg/day	4.0E-04	mg/kg/day	7.E-03
				Arsenic	5.615	mg/kg	2.8E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	8.3E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	119.4	mg/kg	NC		NC			1.8E-04	mg/kg/day	2.0E-01	mg/kg/day	9.E-04
				Cadmium	0.698	mg/kg	NC		NC			1.0E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	19.08	mg/kg	NC		NC			2.8E-05	mg/kg/day	3.0E-03	mg/kg/day	9.E-03
				Cobalt	6.114	mg/kg	NC		NC			9.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	2318	mg/kg	NC		NC			3.4E-03	mg/kg/day	4.0E-02	mg/kg/day	9.E-02
				Lead	279	mg/kg	1.4E-04	mg/kg/day	ND			4.1E-04	mg/kg/day	ND		
				Manganese	351.5	mg/kg	NC		NC			5.2E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.197	mg/kg	NC		NC			1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Thallium	0.15	mg/kg	NC		NC			2.2E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	31.89	mg/kg	NC		NC			4.7E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								9.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.424	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.431	mg/kg	1.8E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.616	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.241	mg/kg	9.9E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	7.E-09	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	0.0696	mg/kg	1.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	3.7E-08	mg/kg/day	ND		
				Chrysene	0.692	mg/kg	2.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.103	mg/kg	4.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	7.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.512	mg/kg	2.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Heptachlor epoxide	0.12	mg/kg	--		9.1E+00	(mg/kg/day)-1		--		1.3E-05	mg/kg/day	
				Aluminum	9021	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	1.851	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.615	mg/kg	3.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	8.9E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	119.4	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.698	mg/kg	NC		NC			3.7E-09	mg/kg/day	2.5E-05	mg/kg/day	1.E-04
				Chromium	19.08	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.114	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	2318	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	279	mg/kg	--		ND			--		ND		
				Manganese	351.5	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.197	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.15	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	31.89	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					3.E-03
		EXPOSURE POINT TOTAL									1.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					2.E-01
SOIL TOTAL											**1.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**1.E-05**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-29
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	7.4E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	2.1E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Benzo(a)pyrene	0.185	mg/kg	9.3E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	2.6E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Benzo(b)fluoranthene	0.261	mg/kg	1.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	3.7E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Chrysene	0.174	mg/kg	8.8E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-11	2.5E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	4.0E-09	mg/kg/day	3.0E-02	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	4.2E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	1.2E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Aluminum	10278	mg/kg	NC		NC			1.4E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	0.48	mg/kg	NC		NC			6.8E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	3.783	mg/kg	1.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	5.3E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	81.37	mg/kg	NC		NC			1.1E-05	mg/kg/day	2.0E-01	mg/kg/day	6.E-05
				Chromium	20.69	mg/kg	NC		NC			2.9E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.832	mg/kg	NC		NC			9.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	40.68	mg/kg	NC		NC			5.7E-06	mg/kg/day	4.0E-02	mg/kg/day	1.E-04
				Lead	86	mg/kg	4.3E-06	mg/kg/day	ND			1.2E-05	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			6.5E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	0.692	mg/kg	NC		NC			9.8E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Thallium	0.1	mg/kg	NC		NC			1.4E-08	mg/kg/day	1.0E-05	mg/kg/day	1.E-03
				Vanadium	24.97	mg/kg	NC		NC			3.5E-06	mg/kg/day	5.0E-03	mg/kg/day	7.E-04
			EXPOSURE ROUTE TOTAL								4.E-07					1.E-02
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	6.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	1.8E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Benzo(a)pyrene	0.185	mg/kg	8.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	2.2E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Benzo(b)fluoranthene	0.261	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	3.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Chrysene	0.174	mg/kg	7.5E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-11	2.1E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-09	3.4E-09	mg/kg/day	3.0E-02	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	3.6E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	1.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	3.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-08	1.1E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-07					4.E-04
		EXPOSURE POINT TOTAL									5.E-07					1.E-02
	EXPOSURE MEDIUM TOTAL										5.E-07					1.E-02
SOIL TOTAL											**5.E-07**					**1.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**5.E-07**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**1.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/18/2011
Checked by: BJR 10/23/2011

TABLE H-30
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	4.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.185	mg/kg	5.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	8.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Chrysene	0.174	mg/kg	5.5E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	8.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	2.5E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10278	mg/kg	NC		NC			9.1E-03	mg/kg/day	1.0E+00	mg/kg/day	9.E-03
				Antimony	0.48	mg/kg	NC		NC			4.2E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	3.783	mg/kg	1.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	3.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	81.37	mg/kg	NC		NC			7.2E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Chromium	20.69	mg/kg	NC		NC			1.8E-05	mg/kg/day	3.0E-03	mg/kg/day	6.E-03
				Cobalt	6.832	mg/kg	NC		NC			6.0E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	40.68	mg/kg	NC		NC			3.6E-05	mg/kg/day	4.0E-02	mg/kg/day	9.E-04
				Lead	86	mg/kg	2.7E-05	mg/kg/day	ND			7.6E-05	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			4.0E-04	mg/kg/day	4.7E-02	mg/kg/day	9.E-03
				Mercury	0.692	mg/kg	NC		NC			6.1E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.1	mg/kg	NC		NC			8.8E-08	mg/kg/day	1.0E-05	mg/kg/day	9.E-03
				Vanadium	24.97	mg/kg	NC		NC			2.2E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					7.E-02
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	4.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.185	mg/kg	5.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	7.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Chrysene	0.174	mg/kg	4.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	7.6E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	2.1E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	2.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	6.6E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-07					2.E-03
		EXPOSURE POINT TOTAL									3.E-06					7.E-02
	EXPOSURE MEDIUM TOTAL										3.E-06					7.E-02

TABLE H-30
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 2	DUST INHALATION	Benzo(a)anthracene	0.147	mg/kg	7.9E-09	ug/m3	1.1E-04	(ug/m3)-1	9.E-13	2.2E-08	ug/m3	ND		
				Benzo(a)pyrene	0.185	mg/kg	1.0E-08	ug/m3	1.1E-03	(ug/m3)-1	1.E-11	2.8E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.261	mg/kg	1.4E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	3.9E-08	ug/m3	ND		
				Chrysene	0.174	mg/kg	9.4E-09	ug/m3	1.1E-05	(ug/m3)-1	1.E-13	2.6E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.5E-09	ug/m3	1.2E-03	(ug/m3)-1	2.E-12	4.3E-09	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	4.5E-09	ug/m3	1.1E-04	(ug/m3)-1	5.E-13	1.3E-08	ug/m3	ND		
				Aluminum	10278	mg/kg	NC		NC			1.6E-03	ug/m3	5.0E+00	ug/m3	3.E-04
				Antimony	0.48	mg/kg	NC		NC			7.3E-08	ug/m3	ND		
				Arsenic	3.783	mg/kg	2.0E-07	ug/m3	4.3E-03	(ug/m3)-1	9.E-10	5.7E-07	ug/m3	1.5E-02	ug/m3	4.E-05
				Barium	81.37	mg/kg	NC		NC			1.2E-05	ug/m3	5.0E-01	ug/m3	2.E-05
				Chromium	20.69	mg/kg	1.1E-06	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	3.1E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	6.832	mg/kg	3.7E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	1.0E-06	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	40.68	mg/kg	NC		NC			6.1E-06	ug/m3	ND		
				Lead	86	mg/kg	4.6E-06	ug/m3	ND			1.3E-05	ug/m3	ND		
				Manganese	458.4	mg/kg	NC		NC			6.9E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	0.692	mg/kg	NC		NC			1.0E-07	ug/m3	3.0E-01	ug/m3	3.E-07
				Thallium	0.1	mg/kg	NC		NC			1.5E-08	ug/m3	ND		
				Vanadium	24.97	mg/kg	NC		NC			3.8E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**3.E-06**					**8.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**8.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-31
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.185	mg/kg	3.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	9.1E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	4.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Chrysene	0.174	mg/kg	3.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	8.5E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	4.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	10278	mg/kg	NC		NC			5.0E-03	mg/kg/day	1.0E+00	mg/kg/day	5.E-03
				Antimony	0.48	mg/kg	NC		NC			2.3E-07	mg/kg/day	4.0E-04	mg/kg/day	6.E-04
				Arsenic	3.783	mg/kg	6.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	1.9E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Barium	81.37	mg/kg	NC		NC			4.0E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Chromium	20.69	mg/kg	NC		NC			1.0E-05	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	6.832	mg/kg	NC		NC			3.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	40.68	mg/kg	NC		NC			2.0E-05	mg/kg/day	4.0E-02	mg/kg/day	5.E-04
				Lead	86	mg/kg	1.5E-05	mg/kg/day	ND			4.2E-05	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			2.2E-04	mg/kg/day	4.7E-02	mg/kg/day	5.E-03
				Mercury	0.692	mg/kg	NC		NC			3.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.1	mg/kg	NC		NC			4.9E-08	mg/kg/day	1.0E-05	mg/kg/day	5.E-03
				Vanadium	24.97	mg/kg	NC		NC			1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					4.E-02
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	4.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.185	mg/kg	5.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	7.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.2E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Chrysene	0.174	mg/kg	5.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	8.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	2.4E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	2.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	2.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.3E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					2.E-03
		EXPOSURE POINT TOTAL									2.E-06					4.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					4.E-02
SOIL TOTAL											**2.E-06**					**4.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**2.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**4.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-32
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	6.8E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	4.7E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.185	mg/kg	8.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	6.0E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-09	8.4E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Chrysene	0.174	mg/kg	8.0E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-11	5.6E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.3E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	9.1E-08	mg/kg/day	3.0E-01	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	3.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	2.7E-07	mg/kg/day	3.0E-01	mg/kg/day	9.E-07
				Aluminum	10278	mg/kg	NC		NC			3.3E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	0.48	mg/kg	NC		NC			1.5E-06	mg/kg/day	4.0E-04	mg/kg/day	4.E-03
				Arsenic	3.783	mg/kg	1.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	81.37	mg/kg	NC		NC			2.6E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Chromium	20.69	mg/kg	NC		NC			6.7E-05	mg/kg/day	2.0E-02	mg/kg/day	3.E-03
				Cobalt	6.832	mg/kg	NC		NC			2.2E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Copper	40.68	mg/kg	NC		NC			1.3E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
				Lead	86	mg/kg	4.0E-06	mg/kg/day	ND			2.8E-04	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			1.5E-03	mg/kg/day	4.7E-02	mg/kg/day	3.E-02
				Mercury	0.692	mg/kg	NC		NC			2.2E-06	mg/kg/day	2.0E-03	mg/kg/day	1.E-03
				Thallium	0.1	mg/kg	NC		NC			3.2E-07	mg/kg/day	5.0E-05	mg/kg/day	6.E-03
				Vanadium	24.97	mg/kg	NC		NC			8.1E-05	mg/kg/day	1.0E-02	mg/kg/day	8.E-03
			EXPOSURE ROUTE TOTAL								4.E-07					2.E-01
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	2.6E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-09	1.9E-07	mg/kg/day	3.0E-01	mg/kg/day	6.E-07
				Benzo(a)pyrene	0.185	mg/kg	3.3E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	2.3E-07	mg/kg/day	3.0E-01	mg/kg/day	8.E-07
				Benzo(b)fluoranthene	0.261	mg/kg	4.7E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	3.3E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Chrysene	0.174	mg/kg	3.1E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-11	2.2E-07	mg/kg/day	3.0E-01	mg/kg/day	7.E-07
				Dibenz(a,h)anthracene	0.0283	mg/kg	5.1E-10	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-09	3.6E-08	mg/kg/day	3.0E-01	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	1.5E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-09	1.1E-07	mg/kg/day	3.0E-01	mg/kg/day	4.E-07
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	1.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-08	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-08					4.E-03
		EXPOSURE POINT TOTAL									4.E-07					2.E-01
	EXPOSURE MEDIUM TOTAL										4.E-07					2.E-01

TABLE H-32
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 2	DUST INHALATION	Benzo(a)anthracene	0.147	mg/kg	1.0E-07	ug/m3	1.1E-04	(ug/m3)-1	1.E-11	7.0E-06	ug/m3	ND		
				Benzo(a)pyrene	0.185	mg/kg	1.3E-07	ug/m3	1.1E-03	(ug/m3)-1	1.E-10	8.8E-06	ug/m3	ND		
				Benzo(b)fluoranthene	0.261	mg/kg	1.8E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	1.2E-05	ug/m3	ND		
				Chrysene	0.174	mg/kg	1.2E-07	ug/m3	1.1E-05	(ug/m3)-1	1.E-12	8.3E-06	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.9E-08	ug/m3	1.2E-03	(ug/m3)-1	2.E-11	1.3E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	5.7E-08	ug/m3	1.1E-04	(ug/m3)-1	6.E-12	4.0E-06	ug/m3	ND		
				Aluminum	10278	mg/kg	NC		NC			4.9E-01	ug/m3	5.0E+00	ug/m3	1.E-01
				Antimony	0.48	mg/kg	NC		NC			2.3E-05	ug/m3	ND		
				Arsenic	3.783	mg/kg	2.6E-06	ug/m3	4.3E-03	(ug/m3)-1	1.E-08	1.8E-04	ug/m3	1.5E-02	ug/m3	1.E-02
				Barium	81.37	mg/kg	NC		NC			3.9E-03	ug/m3	5.0E+00	ug/m3	8.E-04
				Chromium	20.69	mg/kg	1.4E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	9.9E-04	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	6.832	mg/kg	4.7E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	3.3E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	40.68	mg/kg	NC		NC			1.9E-03	ug/m3	ND		
				Lead	86	mg/kg	5.9E-05	ug/m3	ND			4.1E-03	ug/m3	ND		
				Manganese	458.4	mg/kg	NC		NC			2.2E-02	ug/m3	5.0E-02	ug/m3	4.E-01
				Mercury	0.692	mg/kg	NC		NC			3.3E-05	ug/m3	3.0E-01	ug/m3	1.E-04
				Thallium	0.1	mg/kg	NC		NC			4.8E-06	ug/m3	ND		
				Vanadium	24.97	mg/kg	NC		NC			1.2E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-07					8.E-01
		EXPOSURE POINT TOTAL									2.E-07					8.E-01
	EXPOSURE MEDIUM TOTAL										2.E-07					8.E-01
SOIL TOTAL											**6.E-07**					**9.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											6.E-07					**9.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-33
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(a)pyrene	0.185	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.261	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Chrysene	0.174	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	5.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	5.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Aluminum	10278	mg/kg	NC		NC			2.0E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.48	mg/kg	NC		NC			9.1E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	3.783	mg/kg	6.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-07	7.2E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	81.37	mg/kg	NC		NC			1.5E-04	mg/kg/day	2.0E-01	mg/kg/day	8.E-04
				Chromium	20.69	mg/kg	NC		NC			3.9E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.832	mg/kg	NC		NC			1.3E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	40.68	mg/kg	NC		NC			7.7E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	86	mg/kg	1.4E-05	mg/kg/day	ND			1.6E-04	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			8.7E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	0.692	mg/kg	NC		NC			1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Thallium	0.1	mg/kg	NC		NC			1.9E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	24.97	mg/kg	NC		NC			4.7E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	3.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.0E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.185	mg/kg	4.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	6.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Chrysene	0.174	mg/kg	4.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	7.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	5.2E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-08	6.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-07					2.E-03
		EXPOSURE POINT TOTAL									3.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										3.E-06					2.E-01
SOIL TOTAL											**3.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**3.E-06**
												TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA				**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-34
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	3.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.185	mg/kg	2.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	3.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Chrysene	0.174	mg/kg	2.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	3.8E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	3.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	6.2E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	1.8E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Aluminum	10278	mg/kg	NC		NC			2.3E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.48	mg/kg	NC		NC			1.1E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	3.783	mg/kg	2.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	8.3E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	81.37	mg/kg	NC		NC			1.8E-05	mg/kg/day	2.0E-01	mg/kg/day	9.E-05
				Chromium	20.69	mg/kg	NC		NC			4.5E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.832	mg/kg	NC		NC			1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	40.68	mg/kg	NC		NC			8.9E-06	mg/kg/day	4.0E-02	mg/kg/day	2.E-04
				Lead	86	mg/kg	6.5E-06	mg/kg/day	ND			1.9E-05	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			1.0E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	0.692	mg/kg	NC		NC			1.5E-07	mg/kg/day	3.0E-04	mg/kg/day	5.E-04
				Thallium	0.1	mg/kg	NC		NC			2.2E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	24.97	mg/kg	NC		NC			5.5E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								7.E-07					2.E-02
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	9.0E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-09	1.5E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Benzo(a)pyrene	0.185	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Benzo(b)fluoranthene	0.261	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	2.7E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Chrysene	0.174	mg/kg	1.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-11	1.8E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	2.9E-09	mg/kg/day	3.0E-02	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	5.1E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	8.5E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	3.0E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-08	8.9E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					3.E-04
		EXPOSURE POINT TOTAL									8.E-07					2.E-02
	EXPOSURE MEDIUM TOTAL										8.E-07					2.E-02
SOIL TOTAL											**8.E-07**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**8.E-07**
												TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA				**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-35
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	6.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.9E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(a)pyrene	0.185	mg/kg	8.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	0.261	mg/kg	1.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-07	3.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Chrysene	0.174	mg/kg	8.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-09	2.2E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	3.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Aluminum	10278	mg/kg	NC		NC			1.3E-01	mg/kg/day	1.0E+00	mg/kg/day	1.E-01
				Antimony	0.48	mg/kg	NC		NC			6.1E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	3.783	mg/kg	4.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-06	4.8E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	81.37	mg/kg	NC		NC			1.0E-03	mg/kg/day	2.0E-01	mg/kg/day	5.E-03
				Chromium	20.69	mg/kg	NC		NC			2.6E-04	mg/kg/day	3.0E-03	mg/kg/day	9.E-02
				Cobalt	6.832	mg/kg	NC		NC			8.7E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	40.68	mg/kg	NC		NC			5.2E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	86	mg/kg	9.4E-05	mg/kg/day	ND			1.1E-03	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			5.9E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	0.692	mg/kg	NC		NC			8.8E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Thallium	0.1	mg/kg	NC		NC			1.3E-06	mg/kg/day	1.0E-05	mg/kg/day	1.E-01
				Vanadium	24.97	mg/kg	NC		NC			3.2E-04	mg/kg/day	5.0E-03	mg/kg/day	6.E-02
			EXPOSURE ROUTE TOTAL								2.E-05					1.E+00
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.185	mg/kg	3.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	8.6E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.261	mg/kg	4.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Chrysene	0.174	mg/kg	2.9E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	8.1E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.0283	mg/kg	4.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	3.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	4.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-06					1.E-02
		EXPOSURE POINT TOTAL									2.E-05					1.E+00
	EXPOSURE MEDIUM TOTAL										2.E-05					1.E+00
SOIL TOTAL											**2.E-05**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-36
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 2 - SUBSURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 2	INGESTION	Benzo(a)anthracene	0.147	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	2.2E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.185	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Chrysene	0.174	mg/kg	1.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	7.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Aluminum	10278	mg/kg	NC		NC			1.5E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.48	mg/kg	NC		NC			7.1E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	3.783	mg/kg	1.9E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	5.6E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	81.37	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Chromium	20.69	mg/kg	NC		NC			3.1E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.832	mg/kg	NC		NC			1.0E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	40.68	mg/kg	NC		NC			6.0E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	86	mg/kg	4.3E-05	mg/kg/day	ND			1.3E-04	mg/kg/day	ND		
				Manganese	458.4	mg/kg	NC		NC			6.8E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	0.692	mg/kg	NC		NC			1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.1	mg/kg	NC		NC			1.5E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	24.97	mg/kg	NC		NC			3.7E-05	mg/kg/day	5.0E-03	mg/kg/day	7.E-03
			EXPOSURE ROUTE TOTAL								5.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.147	mg/kg	6.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.0E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.185	mg/kg	7.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.261	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Chrysene	0.174	mg/kg	7.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0283	mg/kg	1.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.084	mg/kg	3.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10278	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.48	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	3.783	mg/kg	2.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	6.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	81.37	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.69	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.832	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	40.68	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	86	mg/kg	--		ND			--		ND		
				Manganese	458.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.692	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.1	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.97	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					2.E-03
		EXPOSURE POINT TOTAL									6.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										6.E-06					1.E-01
SOIL TOTAL											**6.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**6.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-37
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADOLESCENT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADOLESCENT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	9.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(a)pyrene	0.487	mg/kg	1.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	4.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-09	9.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Carbazole	0.104	mg/kg	7.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	5.2E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	2.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	7.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Aluminum	12265	mg/kg	NC		NC			6.1E-03	mg/kg/day	1.0E+00	mg/kg/day	6.E-03
				Antimony	0.634	mg/kg	NC		NC			3.2E-07	mg/kg/day	4.0E-04	mg/kg/day	8.E-04
				Arsenic	32.46	mg/kg	2.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	1.6E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	80.92	mg/kg	NC		NC			4.0E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.731	mg/kg	NC		NC			3.6E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	32.15	mg/kg	NC		NC			1.6E-05	mg/kg/day	3.0E-03	mg/kg/day	5.E-03
				Cobalt	6.977	mg/kg	NC		NC			3.5E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	80.33	mg/kg	NC		NC			4.0E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	213	mg/kg	1.5E-05	mg/kg/day	ND			1.1E-04	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			1.7E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	1.654	mg/kg	NC		NC			8.2E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.153	mg/kg	NC		NC			7.6E-08	mg/kg/day	1.0E-05	mg/kg/day	8.E-03
				Vanadium	43.48	mg/kg	NC		NC			2.2E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								5.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	4.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	9.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.487	mg/kg	4.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.0E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	7.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	1.7E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	4.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.104	mg/kg	2.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	1.7E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	5.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	9.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	2.1E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	3.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	2.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			1.2E-09	mg/kg/day	2.5E-05	mg/kg/day	5.E-05
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
			EXPOSURE ROUTE TOTAL								8.E-07					5.E-03
		EXPOSURE POINT TOTAL									5.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										5.E-06					1.E-01
SOIL TOTAL											**5.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**5.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-38
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	1.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	7.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.487	mg/kg	1.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	7.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	2.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	5.9E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-10	3.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.104	mg/kg	3.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-11	1.6E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	8.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	3.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	1.5E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	5.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	12265	mg/kg	NC		NC			1.9E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.634	mg/kg	NC		NC			9.9E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	32.46	mg/kg	1.0E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	5.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			1.3E-05	mg/kg/day	2.0E-01	mg/kg/day	6.E-05
				Cadmium	0.731	mg/kg	NC		NC			1.1E-07	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	32.15	mg/kg	NC		NC			5.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.977	mg/kg	NC		NC			1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Copper	80.33	mg/kg	NC		NC			1.3E-05	mg/kg/day	4.0E-02	mg/kg/day	3.E-04
				Lead	213	mg/kg	6.7E-06	mg/kg/day	ND			3.3E-05	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			5.2E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.654	mg/kg	NC		NC			2.6E-07	mg/kg/day	3.0E-04	mg/kg/day	9.E-04
				Thallium	0.153	mg/kg	NC		NC			2.4E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	43.48	mg/kg	NC		NC			6.8E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					3.E-02
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	6.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	3.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.487	mg/kg	6.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	3.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	5.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	2.6E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-10	1.3E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Carbazole	0.104	mg/kg	1.1E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	5.5E-09	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	7.7E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-11	3.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	1.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	6.8E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	5.0E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	2.5E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	1.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	5.2E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			3.9E-10	mg/kg/day	2.5E-05	mg/kg/day	2.E-05
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					2.E-03
		EXPOSURE POINT TOTAL									2.E-06					3.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					3.E-02
SOIL TOTAL											**2.E-06**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**2.E-06**
											TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA					**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-39
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.487	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	3.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	9.5E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	7.E-10	2.7E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Carbazole	0.104	mg/kg	5.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.5E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	2.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	7.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	4.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	12265	mg/kg	NC		NC			1.7E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.634	mg/kg	NC		NC			8.9E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	32.46	mg/kg	1.6E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	4.6E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			1.1E-05	mg/kg/day	2.0E-01	mg/kg/day	6.E-05
				Cadmium	0.731	mg/kg	NC		NC			1.0E-07	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	32.15	mg/kg	NC		NC			4.5E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.977	mg/kg	NC		NC			9.8E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	80.33	mg/kg	NC		NC			1.1E-05	mg/kg/day	4.0E-02	mg/kg/day	3.E-04
				Lead	213	mg/kg	1.1E-05	mg/kg/day	ND			3.0E-05	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			4.7E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.654	mg/kg	NC		NC			2.3E-07	mg/kg/day	3.0E-04	mg/kg/day	8.E-04
				Thallium	0.153	mg/kg	NC		NC			2.2E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	43.48	mg/kg	NC		NC			6.1E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					3.E-02
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	2.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.487	mg/kg	2.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	5.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	3.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	9.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	8.2E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-10	2.3E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Carbazole	0.104	mg/kg	3.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-11	9.7E-09	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	2.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	6.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	4.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	1.2E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	3.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			6.8E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-07					3.E-03
		EXPOSURE POINT TOTAL									3.E-06					3.E-02
	EXPOSURE MEDIUM TOTAL										3.E-06					3.E-02
SOIL TOTAL											**3.E-06**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**3.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-40
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.487	mg/kg	1.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	2.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	5.9E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Carbazole	0.104	mg/kg	3.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-10	9.2E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	3.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	8.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	12265	mg/kg	NC		NC			1.1E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.634	mg/kg	NC		NC			5.6E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	32.46	mg/kg	1.0E-05	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-05	2.9E-05	mg/kg/day	3.0E-04	mg/kg/day	1.E-01
				Barium	80.92	mg/kg	NC		NC			7.1E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Cadmium	0.731	mg/kg	NC		NC			6.4E-07	mg/kg/day	1.0E-03	mg/kg/day	6.E-04
				Chromium	32.15	mg/kg	NC		NC			2.8E-05	mg/kg/day	3.0E-03	mg/kg/day	9.E-03
				Cobalt	6.977	mg/kg	NC		NC			6.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	80.33	mg/kg	NC		NC			7.1E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	213	mg/kg	6.7E-05	mg/kg/day	ND			1.9E-04	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			2.9E-04	mg/kg/day	4.7E-02	mg/kg/day	6.E-03
				Mercury	1.654	mg/kg	NC		NC			1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Thallium	0.153	mg/kg	NC		NC			1.3E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	43.48	mg/kg	NC		NC			3.8E-05	mg/kg/day	5.0E-03	mg/kg/day	8.E-03
			EXPOSURE ROUTE TOTAL								2.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.487	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	2.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	5.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	0.104	mg/kg	2.2E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	6.0E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	7.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	9.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	2.0E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	5.7E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			4.2E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-06					2.E-02
		EXPOSURE POINT TOTAL									2.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										2.E-05					2.E-01

TABLE H-40
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 3	DUST INHALATION	Benzo(a)anthracene	0.456	mg/kg	2.5E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	6.9E-08	ug/m3	ND		
				Benzo(a)pyrene	0.487	mg/kg	2.6E-08	ug/m3	1.1E-03	(ug/m3)-1	3.E-11	7.4E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.768	mg/kg	4.1E-08	ug/m3	1.1E-04	(ug/m3)-1	5.E-12	1.2E-07	ug/m3	ND		
				Benzo(k)fluoranthene	0.189	mg/kg	1.0E-08	ug/m3	1.1E-04	(ug/m3)-1	1.E-12	2.9E-08	ug/m3	ND		
				Carbazole	0.104	mg/kg	NC		NC			1.6E-08	ug/m3	ND		
				Chrysene	0.559	mg/kg	3.0E-08	ug/m3	1.1E-05	(ug/m3)-1	3.E-13	8.4E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0981	mg/kg	5.3E-09	ug/m3	1.2E-03	(ug/m3)-1	6.E-12	1.5E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.9E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	5.4E-08	ug/m3	ND		
				Aluminum	12265	mg/kg	NC		NC			1.9E-03	ug/m3	5.0E+00	ug/m3	4.E-04
				Antimony	0.634	mg/kg	NC		NC			9.6E-08	ug/m3	ND		
				Arsenic	32.46	mg/kg	1.8E-06	ug/m3	4.3E-03	(ug/m3)-1	8.E-09	4.9E-06	ug/m3	1.5E-02	ug/m3	3.E-04
				Barium	80.92	mg/kg	NC		NC			1.2E-05	ug/m3	5.0E-01	ug/m3	2.E-05
				Cadmium	0.731	mg/kg	3.9E-08	ug/m3	1.8E-03	(ug/m3)-1	7.E-11	1.1E-07	ug/m3	2.0E-02	ug/m3	6.E-06
				Chromium	32.15	mg/kg	1.7E-06	ug/m3	1.2E-02	(ug/m3)-1	2.E-08	4.9E-06	ug/m3	1.0E-01	ug/m3	5.E-05
				Cobalt	6.977	mg/kg	3.8E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	1.1E-06	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	80.33	mg/kg	NC		NC			1.2E-05	ug/m3	ND		
				Lead	213	mg/kg	1.1E-05	ug/m3	ND			3.2E-05	ug/m3	ND		
				Manganese	332.1	mg/kg	NC		NC			5.0E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	1.654	mg/kg	NC		NC			2.5E-07	ug/m3	3.0E-01	ug/m3	8.E-07
				Thallium	0.153	mg/kg	NC		NC			2.3E-08	ug/m3	ND		
				Vanadium	43.48	mg/kg	NC		NC			6.6E-06	ug/m3	1.0E-01	ug/m3	7.E-05
			EXPOSURE ROUTE TOTAL								3.E-08					2.E-03
		EXPOSURE POINT TOTAL									3.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										3.E-08					2.E-03
SOIL TOTAL											**2.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-05					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-41
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	8.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.2E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.487	mg/kg	8.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	3.3E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	9.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Carbazole	0.104	mg/kg	1.8E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.1E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	9.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-10	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	1.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	4.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	6.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Aluminum	12265	mg/kg	NC		NC			6.0E-03	mg/kg/day	1.0E+00	mg/kg/day	6.E-03
				Antimony	0.634	mg/kg	NC		NC			3.1E-07	mg/kg/day	4.0E-04	mg/kg/day	8.E-04
				Arsenic	32.46	mg/kg	5.7E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-06	1.6E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	80.92	mg/kg	NC		NC			4.0E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.731	mg/kg	NC		NC			3.6E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	32.15	mg/kg	NC		NC			1.6E-05	mg/kg/day	3.0E-03	mg/kg/day	5.E-03
				Cobalt	6.977	mg/kg	NC		NC			3.4E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	80.33	mg/kg	NC		NC			3.9E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	213	mg/kg	3.7E-05	mg/kg/day	ND			1.0E-04	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			1.6E-04	mg/kg/day	4.7E-02	mg/kg/day	3.E-03
				Mercury	1.654	mg/kg	NC		NC			8.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.153	mg/kg	NC		NC			7.5E-08	mg/kg/day	1.0E-05	mg/kg/day	7.E-03
				Vanadium	43.48	mg/kg	NC		NC			2.1E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								9.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.487	mg/kg	1.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.4E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	5.7E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	0.104	mg/kg	2.4E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-10	6.7E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	2.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	8.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	2.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	6.3E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			4.7E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-06					2.E-02
		EXPOSURE POINT TOTAL									1.E-05					1.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					1.E-01
SOIL TOTAL											**1.E-05**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**1.E-05**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-42
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.5E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Benzo(a)pyrene	0.487	mg/kg	2.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	1.6E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	3.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	2.5E-06	mg/kg/day	3.0E-01	mg/kg/day	8.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	8.7E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-10	6.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Carbazole	0.104	mg/kg	4.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	3.4E-07	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	2.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	1.8E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	4.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	3.2E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.2E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Aluminum	12265	mg/kg	NC		NC			4.0E-02	mg/kg/day	1.0E+00	mg/kg/day	4.E-02
				Antimony	0.634	mg/kg	NC		NC			2.0E-06	mg/kg/day	4.0E-04	mg/kg/day	5.E-03
				Arsenic	32.46	mg/kg	1.5E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	1.0E-04	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Barium	80.92	mg/kg	NC		NC			2.6E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Cadmium	0.731	mg/kg	NC		NC			2.4E-06	mg/kg/day	5.0E-04	mg/kg/day	5.E-03
				Chromium	32.15	mg/kg	NC		NC			1.0E-04	mg/kg/day	2.0E-02	mg/kg/day	5.E-03
				Cobalt	6.977	mg/kg	NC		NC			2.3E-05	mg/kg/day	3.0E-03	mg/kg/day	8.E-03
				Copper	80.33	mg/kg	NC		NC			2.6E-04	mg/kg/day	1.0E-02	mg/kg/day	3.E-02
				Lead	213	mg/kg	9.8E-06	mg/kg/day	ND			6.9E-04	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			1.1E-03	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	1.654	mg/kg	NC		NC			5.3E-06	mg/kg/day	2.0E-03	mg/kg/day	3.E-03
				Thallium	0.153	mg/kg	NC		NC			4.9E-07	mg/kg/day	5.0E-05	mg/kg/day	1.E-02
				Vanadium	43.48	mg/kg	NC		NC			1.4E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-06					5.E-01
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	8.2E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	5.7E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.487	mg/kg	8.8E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	6.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	1.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	9.7E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	3.4E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-10	2.4E-07	mg/kg/day	3.0E-01	mg/kg/day	8.E-07
				Carbazole	0.104	mg/kg	1.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.0E-07	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-11	7.0E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	1.8E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	1.2E-07	mg/kg/day	3.0E-01	mg/kg/day	4.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	6.5E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	4.5E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	1.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	9.4E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			7.1E-09	mg/kg/day	1.3E-05	mg/kg/day	6.E-04
				Chromium	32.15	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-07					3.E-02
		EXPOSURE POINT TOTAL									3.E-06					5.E-01
	EXPOSURE MEDIUM TOTAL										3.E-06					5.E-01

TABLE H-42
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 3	DUST INHALATION	Benzo(a)anthracene	0.456	mg/kg	3.1E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	2.2E-05	ug/m3	ND		
				Benzo(a)pyrene	0.487	mg/kg	3.3E-07	ug/m3	1.1E-03	(ug/m3)-1	4.E-10	2.3E-05	ug/m3	ND		
				Benzo(b)fluoranthene	0.768	mg/kg	5.2E-07	ug/m3	1.1E-04	(ug/m3)-1	6.E-11	3.7E-05	ug/m3	ND		
				Benzo(k)fluoranthene	0.189	mg/kg	1.3E-07	ug/m3	1.1E-04	(ug/m3)-1	1.E-11	9.0E-06	ug/m3	ND		
				Carbazole	0.104	mg/kg	NC		NC			5.0E-06	ug/m3	ND		
				Chrysene	0.559	mg/kg	3.8E-07	ug/m3	1.1E-05	(ug/m3)-1	4.E-12	2.7E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0981	mg/kg	6.7E-08	ug/m3	1.2E-03	(ug/m3)-1	8.E-11	4.7E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	2.4E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	1.7E-05	ug/m3	ND		
				Aluminum	12265	mg/kg	NC		NC			5.8E-01	ug/m3	5.0E+00	ug/m3	1.E-01
				Antimony	0.634	mg/kg	NC		NC			3.0E-05	ug/m3	ND		
				Arsenic	32.46	mg/kg	2.2E-05	ug/m3	4.3E-03	(ug/m3)-1	1.E-07	1.5E-03	ug/m3	1.5E-02	ug/m3	1.E-01
				Barium	80.92	mg/kg	NC		NC			3.9E-03	ug/m3	5.0E+00	ug/m3	8.E-04
				Cadmium	0.731	mg/kg	5.0E-07	ug/m3	1.8E-03	(ug/m3)-1	9.E-10	3.5E-05	ug/m3	2.0E-02	ug/m3	2.E-03
				Chromium	32.15	mg/kg	2.2E-05	ug/m3	1.2E-02	(ug/m3)-1	3.E-07	1.5E-03	ug/m3	5.0E-03	ug/m3	3.E-01
				Cobalt	6.977	mg/kg	4.8E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	3.3E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	80.33	mg/kg	NC		NC			3.8E-03	ug/m3	ND		
				Lead	213	mg/kg	1.5E-04	ug/m3	ND			1.0E-02	ug/m3	ND		
				Manganese	332.1	mg/kg	NC		NC			1.6E-02	ug/m3	5.0E-02	ug/m3	3.E-01
				Mercury	1.654	mg/kg	NC		NC			7.9E-05	ug/m3	3.0E-01	ug/m3	3.E-04
				Thallium	0.153	mg/kg	NC		NC			7.3E-06	ug/m3	ND		
				Vanadium	43.48	mg/kg	NC		NC			2.1E-03	ug/m3	1.0E-01	ug/m3	2.E-02
			EXPOSURE ROUTE TOTAL								4.E-07					9.E-01
		EXPOSURE POINT TOTAL									4.E-07					9.E-01
	EXPOSURE MEDIUM TOTAL										4.E-07					9.E-01
SOIL TOTAL											**3.E-06**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-43
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - CURRENT - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	3.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	8.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	0.487	mg/kg	3.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	9.3E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	5.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	1.3E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-09	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.104	mg/kg	1.7E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	2.0E-07	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	3.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	6.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	12265	mg/kg	NC		NC			2.3E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.634	mg/kg	NC		NC			1.2E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	32.46	mg/kg	5.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-06	6.2E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	80.92	mg/kg	NC		NC			1.5E-04	mg/kg/day	2.0E-01	mg/kg/day	8.E-04
				Cadmium	0.731	mg/kg	NC		NC			1.4E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	32.15	mg/kg	NC		NC			6.1E-05	mg/kg/day	3.0E-03	mg/kg/day	2.E-02
				Cobalt	6.977	mg/kg	NC		NC			1.3E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	80.33	mg/kg	NC		NC			1.5E-04	mg/kg/day	4.0E-02	mg/kg/day	4.E-03
				Lead	213	mg/kg	3.5E-05	mg/kg/day	ND			4.0E-04	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			6.3E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.654	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Thallium	0.153	mg/kg	NC		NC			2.9E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	43.48	mg/kg	NC		NC			8.3E-05	mg/kg/day	5.0E-03	mg/kg/day	2.E-02
			EXPOSURE ROUTE TOTAL								1.E-05					4.E-01
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.487	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	4.7E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-09	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.104	mg/kg	4.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-11	5.5E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	1.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	2.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	8.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	4.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	5.2E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			3.9E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					2.E-02
		EXPOSURE POINT TOTAL									1.E-05					4.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					4.E-01
SOIL TOTAL											**1.E-05**					**4.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**1.E-05**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**4.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-44
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	6.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.0E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.487	mg/kg	6.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	2.5E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.104	mg/kg	7.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.3E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	7.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	1.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-08	2.2E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	4.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	7.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	12265	mg/kg	NC		NC			2.7E-03	mg/kg/day	1.0E+00	mg/kg/day	3.E-03
				Antimony	0.634	mg/kg	NC		NC			1.4E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	32.46	mg/kg	2.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	7.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			1.8E-05	mg/kg/day	2.0E-01	mg/kg/day	9.E-05
				Cadmium	0.731	mg/kg	NC		NC			1.6E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	32.15	mg/kg	NC		NC			7.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.977	mg/kg	NC		NC			1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	80.33	mg/kg	NC		NC			1.8E-05	mg/kg/day	4.0E-02	mg/kg/day	4.E-04
				Lead	213	mg/kg	1.6E-05	mg/kg/day	ND			4.7E-05	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			7.3E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	1.654	mg/kg	NC		NC			3.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.153	mg/kg	NC		NC			3.4E-08	mg/kg/day	1.0E-05	mg/kg/day	3.E-03
				Vanadium	43.48	mg/kg	NC		NC			9.5E-06	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								4.E-06					4.E-02
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	2.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	4.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.487	mg/kg	3.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.768	mg/kg	4.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	7.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(k)fluoranthene	0.189	mg/kg	1.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-10	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Carbazole	0.104	mg/kg	2.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	8.1E-09	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	3.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.0981	mg/kg	6.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	2.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	3.6E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	2.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			5.7E-10	mg/kg/day	2.5E-05	mg/kg/day	2.E-05
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-07					3.E-03
		EXPOSURE POINT TOTAL									5.E-06					5.E-02
	EXPOSURE MEDIUM TOTAL										5.E-06					5.E-02
SOIL TOTAL											**5.E-06**					**5.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**5.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**5.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-45
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - CURRENT - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	2.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	5.8E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(a)pyrene	0.487	mg/kg	2.2E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	6.2E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(b)fluoranthene	0.768	mg/kg	3.5E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	9.8E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(k)fluoranthene	0.189	mg/kg	8.7E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-08	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Carbazole	0.104	mg/kg	1.1E-07	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-09	1.3E-06	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	2.6E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-08	7.1E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Dibenz(a,h)anthracene	0.0981	mg/kg	4.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.7E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.6E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Aluminum	12265	mg/kg	NC		NC			1.6E-01	mg/kg/day	1.0E+00	mg/kg/day	2.E-01
				Antimony	0.634	mg/kg	NC		NC			8.1E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	32.46	mg/kg	3.6E-05	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-05	4.2E-04	mg/kg/day	3.0E-04	mg/kg/day	1.E+00
				Barium	80.92	mg/kg	NC		NC			1.0E-03	mg/kg/day	2.0E-01	mg/kg/day	5.E-03
				Cadmium	0.731	mg/kg	NC		NC			9.3E-06	mg/kg/day	1.0E-03	mg/kg/day	9.E-03
				Chromium	32.15	mg/kg	NC		NC			4.1E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
				Cobalt	6.977	mg/kg	NC		NC			8.9E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	80.33	mg/kg	NC		NC			1.0E-03	mg/kg/day	4.0E-02	mg/kg/day	3.E-02
				Lead	213	mg/kg	2.3E-04	mg/kg/day	ND			2.7E-03	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			4.2E-03	mg/kg/day	4.7E-02	mg/kg/day	9.E-02
				Mercury	1.654	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-04	mg/kg/day	7.E-02
				Thallium	0.153	mg/kg	NC		NC			2.0E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	43.48	mg/kg	NC		NC			5.6E-04	mg/kg/day	5.0E-03	mg/kg/day	1.E-01
			EXPOSURE ROUTE TOTAL								8.E-05					3.E+00
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	7.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(a)pyrene	0.487	mg/kg	8.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	2.3E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	1.3E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-07	3.6E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(k)fluoranthene	0.189	mg/kg	3.2E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-08	8.8E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	0.104	mg/kg	3.2E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-10	3.7E-07	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	9.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-09	2.6E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	6.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	3.0E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	3.5E-05	mg/kg/day	3.0E-04	mg/kg/day	1.E-01
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			2.6E-08	mg/kg/day	2.5E-05	mg/kg/day	1.E-03
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					1.E-01
		EXPOSURE POINT TOTAL									9.E-05					3.E+00
	EXPOSURE MEDIUM TOTAL										9.E-05					3.E+00
SOIL TOTAL											**9.E-05**					**3.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**9.E-05**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**3.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-46
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.456	mg/kg	4.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.487	mg/kg	4.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	7.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	6.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	1.7E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Carbazole	0.104	mg/kg	5.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-09	1.5E-07	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	4.9E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	8.2E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	8.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	3.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	12265	mg/kg	NC		NC			1.8E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.634	mg/kg	NC		NC			9.4E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	32.46	mg/kg	1.6E-05	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-05	4.8E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	80.92	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Cadmium	0.731	mg/kg	NC		NC			1.1E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	32.15	mg/kg	NC		NC			4.7E-05	mg/kg/day	3.0E-03	mg/kg/day	2.E-02
				Cobalt	6.977	mg/kg	NC		NC			1.0E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	80.33	mg/kg	NC		NC			1.2E-04	mg/kg/day	4.0E-02	mg/kg/day	3.E-03
				Lead	213	mg/kg	1.1E-04	mg/kg/day	ND			3.1E-04	mg/kg/day	ND		
				Manganese	332.1	mg/kg	NC		NC			4.9E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.654	mg/kg	NC		NC			2.4E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Thallium	0.153	mg/kg	NC		NC			2.3E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	43.48	mg/kg	NC		NC			6.4E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								3.E-05					3.E-01
			DERMAL	Benzo(a)anthracene	0.456	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.487	mg/kg	2.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.768	mg/kg	3.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.189	mg/kg	7.8E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-09	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.104	mg/kg	1.9E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.5E-08	mg/kg/day	ND		
				Chrysene	0.559	mg/kg	2.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.0981	mg/kg	4.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	6.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.359	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Aluminum	12265	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.634	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	32.46	mg/kg	1.8E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	5.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	80.92	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.731	mg/kg	NC		NC			3.8E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	32.15	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.977	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	80.33	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	213	mg/kg	--		ND			--		ND		
				Manganese	332.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.654	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.153	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	43.48	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-06					2.E-02
		EXPOSURE POINT TOTAL									3.E-05					3.E-01
	EXPOSURE MEDIUM TOTAL										3.E-05					3.E-01
SOIL TOTAL											**3.E-05**					**3.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**3.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-47
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	3.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	8.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.593	mg/kg	3.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	8.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.915	mg/kg	4.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.04	mg/kg	2.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	5.6E-09	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	2.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	7.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	7.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	2.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	11248	mg/kg	NC		NC			1.6E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.435	mg/kg	NC		NC			6.1E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	8.423	mg/kg	4.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	61.79	mg/kg	NC		NC			8.7E-06	mg/kg/day	2.0E-01	mg/kg/day	4.E-05
				Chromium	20.62	mg/kg	NC		NC			2.9E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.37	mg/kg	NC		NC			9.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	688.4	mg/kg	NC		NC			9.7E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	96	mg/kg	4.8E-06	mg/kg/day	ND			1.4E-05	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			4.2E-05	mg/kg/day	4.7E-02	mg/kg/day	9.E-04
				Mercury	1.775	mg/kg	NC		NC			2.5E-07	mg/kg/day	3.0E-04	mg/kg/day	8.E-04
				Thallium	0.162	mg/kg	NC		NC			2.3E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	28.49	mg/kg	NC		NC			4.0E-06	mg/kg/day	5.0E-03	mg/kg/day	8.E-04
			EXPOSURE ROUTE TOTAL								1.E-06					2.E-02
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.593	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	7.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.915	mg/kg	4.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.04	mg/kg	1.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	3.7E-09	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	2.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	6.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	6.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.7E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	8.4E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	2.3E-07	mg/kg/day	3.0E-04	mg/kg/day	8.E-04
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-07					8.E-04
		EXPOSURE POINT TOTAL									1.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										1.E-06					2.E-02
SOIL TOTAL											**1.E-06**					**2.E-02**
									TOTAL RECEPTOR RISK ACROSS ALL MEDIA		**1.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/18/2011
Checked by: BJR 10/24/2011

TABLE H-48
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.593	mg/kg	1.9E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	2.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	8.1E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	0.04	mg/kg	1.3E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	3.5E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	1.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	4.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	11248	mg/kg	NC		NC			9.9E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.435	mg/kg	NC		NC			3.8E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	8.423	mg/kg	2.6E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	7.4E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	61.79	mg/kg	NC		NC			5.4E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Chromium	20.62	mg/kg	NC		NC			1.8E-05	mg/kg/day	3.0E-03	mg/kg/day	6.E-03
				Cobalt	6.37	mg/kg	NC		NC			5.6E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	688.4	mg/kg	NC		NC			6.1E-04	mg/kg/day	4.0E-02	mg/kg/day	2.E-02
				Lead	96.26	mg/kg	3.0E-05	mg/kg/day	ND			8.5E-05	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			2.6E-04	mg/kg/day	4.7E-02	mg/kg/day	6.E-03
				Mercury	1.775	mg/kg	NC		NC			1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Thallium	0.162	mg/kg	NC		NC			1.4E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	28.49	mg/kg	NC		NC			2.5E-05	mg/kg/day	5.0E-03	mg/kg/day	5.E-03
			EXPOSURE ROUTE TOTAL								6.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.593	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.04	mg/kg	8.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.3E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	1.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	3.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	5.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					5.E-03
		EXPOSURE POINT TOTAL									9.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										9.E-06					1.E-01

TABLE H-48
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 3	DUST INHALATION	Benzo(a)anthracene	0.593	mg/kg	3.2E-08	ug/m3	1.1E-04	(ug/m3)-1	4.E-12	9.0E-08	ug/m3	ND		
				Benzo(a)pyrene	0.593	mg/kg	3.2E-08	ug/m3	1.1E-03	(ug/m3)-1	4.E-11	9.0E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.915	mg/kg	4.9E-08	ug/m3	1.1E-04	(ug/m3)-1	5.E-12	1.4E-07	ug/m3	ND		
				Carbazole	0.04	mg/kg	NC		NC			6.0E-09	ug/m3	ND		
				Chrysene	0.56	mg/kg	3.0E-08	ug/m3	1.1E-05	(ug/m3)-1	3.E-13	8.5E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.142	mg/kg	7.7E-09	ug/m3	1.2E-03	(ug/m3)-1	9.E-12	2.1E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	2.2E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	6.1E-08	ug/m3	ND		
				Aluminum	11248	mg/kg	NC		NC			1.7E-03	ug/m3	5.0E+00	ug/m3	3.E-04
				Antimony	0.435	mg/kg	NC		NC			6.6E-08	ug/m3	ND		
				Arsenic	8.423	mg/kg	4.5E-07	ug/m3	4.3E-03	(ug/m3)-1	2.E-09	1.3E-06	ug/m3	1.5E-02	ug/m3	8.E-05
				Barium	61.79	mg/kg	NC		NC			9.3E-06	ug/m3	5.0E-01	ug/m3	2.E-05
				Chromium	20.62	mg/kg	1.1E-06	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	3.1E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	6.37	mg/kg	3.4E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	9.6E-07	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	688.4	mg/kg	NC		NC			1.0E-04	ug/m3	ND		
				Lead	96.26	mg/kg	5.2E-06	ug/m3	ND			1.5E-05	ug/m3	ND		
				Manganese	299.8	mg/kg	NC		NC			4.5E-05	ug/m3	5.0E-02	ug/m3	9.E-04
				Mercury	1.775	mg/kg	NC		NC			2.7E-07	ug/m3	3.0E-01	ug/m3	9.E-07
				Thallium	0.162	mg/kg	NC		NC			2.4E-08	ug/m3	ND		
				Vanadium	28.49	mg/kg	NC		NC			4.3E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**9.E-06**					**1.E-01**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**9.E-06**			**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-49
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.593	mg/kg	1.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.04	mg/kg	7.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	2.0E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	9.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-10	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	7.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Aluminum	11248	mg/kg	NC		NC			5.5E-03	mg/kg/day	1.0E+00	mg/kg/day	6.E-03
				Antimony	0.435	mg/kg	NC		NC			2.1E-07	mg/kg/day	4.0E-04	mg/kg/day	5.E-04
				Arsenic	8.423	mg/kg	1.5E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	4.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	61.79	mg/kg	NC		NC			3.0E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Chromium	20.62	mg/kg	NC		NC			1.0E-05	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	6.37	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	688.4	mg/kg	NC		NC			3.4E-04	mg/kg/day	4.0E-02	mg/kg/day	8.E-03
				Lead	96.26	mg/kg	1.7E-05	mg/kg/day	ND			4.7E-05	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			1.5E-04	mg/kg/day	4.7E-02	mg/kg/day	3.E-03
				Mercury	1.775	mg/kg	NC		NC			8.7E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.162	mg/kg	NC		NC			7.9E-08	mg/kg/day	1.0E-05	mg/kg/day	8.E-03
				Vanadium	28.49	mg/kg	NC		NC			1.4E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					6.E-02
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.593	mg/kg	1.8E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	5.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	2.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	7.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	0.04	mg/kg	9.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.6E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	4.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	5.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-07	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					6.E-03
		EXPOSURE POINT TOTAL									6.E-06					6.E-02
	EXPOSURE MEDIUM TOTAL										6.E-06					6.E-02
SOIL TOTAL											**6.E-06**					**6.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**6.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-50
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.9E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.593	mg/kg	2.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	1.9E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.915	mg/kg	4.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	3.0E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Carbazole	0.04	mg/kg	1.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	1.3E-07	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	2.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	1.8E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	6.6E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	4.6E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.3E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Aluminum	11248	mg/kg	NC		NC			3.6E-02	mg/kg/day	1.0E+00	mg/kg/day	4.E-02
				Antimony	0.435	mg/kg	NC		NC			1.4E-06	mg/kg/day	4.0E-04	mg/kg/day	4.E-03
				Arsenic	8.423	mg/kg	3.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	2.7E-05	mg/kg/day	3.0E-04	mg/kg/day	9.E-02
				Barium	61.79	mg/kg	NC		NC			2.0E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Chromium	20.62	mg/kg	NC		NC			6.7E-05	mg/kg/day	2.0E-02	mg/kg/day	3.E-03
				Cobalt	6.37	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Copper	688.4	mg/kg	NC		NC			2.2E-03	mg/kg/day	1.0E-02	mg/kg/day	2.E-01
				Lead	96.26	mg/kg	4.4E-06	mg/kg/day	ND			3.1E-04	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			9.7E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	1.775	mg/kg	NC		NC			5.7E-06	mg/kg/day	2.0E-03	mg/kg/day	3.E-03
				Thallium	0.162	mg/kg	NC		NC			5.2E-07	mg/kg/day	5.0E-05	mg/kg/day	1.E-02
				Vanadium	28.49	mg/kg	NC		NC			9.2E-05	mg/kg/day	1.0E-02	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								9.E-07					4.E-01
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	7.5E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.593	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	7.5E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.915	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.2E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Carbazole	0.04	mg/kg	5.5E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-11	3.9E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	1.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-11	7.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	2.6E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	1.8E-07	mg/kg/day	3.0E-01	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	7.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	5.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	3.5E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-08	2.4E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					8.E-03
		EXPOSURE POINT TOTAL									1.E-06					4.E-01
	EXPOSURE MEDIUM TOTAL										1.E-06					4.E-01

TABLE H-50
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 3	DUST INHALATION	Benzo(a)anthracene	0.593	mg/kg	4.0E-07	ug/m3	1.1E-04	(ug/m3)-1	4.E-11	2.8E-05	ug/m3	ND		
				Benzo(a)pyrene	0.593	mg/kg	4.0E-07	ug/m3	1.1E-03	(ug/m3)-1	4.E-10	2.8E-05	ug/m3	ND		
				Benzo(b)fluoranthene	0.915	mg/kg	6.2E-07	ug/m3	1.1E-04	(ug/m3)-1	7.E-11	4.4E-05	ug/m3	ND		
				Carbazole	0.04	mg/kg	NC		NC			1.9E-06	ug/m3	ND		
				Chrysene	0.56	mg/kg	3.8E-07	ug/m3	1.1E-05	(ug/m3)-1	4.E-12	2.7E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.142	mg/kg	9.7E-08	ug/m3	1.2E-03	(ug/m3)-1	1.E-10	6.8E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	2.8E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	1.9E-05	ug/m3	ND		
				Aluminum	11248	mg/kg	NC		NC			5.4E-01	ug/m3	5.0E+00	ug/m3	1.E-01
				Antimony	0.435	mg/kg	NC		NC			2.1E-05	ug/m3	ND		
				Arsenic	8.423	mg/kg	5.7E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	4.0E-04	ug/m3	1.5E-02	ug/m3	3.E-02
				Barium	61.79	mg/kg	NC		NC			2.9E-03	ug/m3	5.0E+00	ug/m3	6.E-04
				Chromium	20.62	mg/kg	1.4E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	9.8E-04	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	6.37	mg/kg	4.3E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	3.0E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	688.4	mg/kg	NC		NC			3.3E-02	ug/m3	ND		
				Lead	96.26	mg/kg	6.6E-05	ug/m3	ND			4.6E-03	ug/m3	ND		
				Manganese	299.8	mg/kg	NC		NC			1.4E-02	ug/m3	5.0E-02	ug/m3	3.E-01
				Mercury	1.775	mg/kg	NC		NC			8.5E-05	ug/m3	3.0E-01	ug/m3	3.E-04
				Thallium	0.162	mg/kg	NC		NC			7.7E-06	ug/m3	ND		
				Vanadium	28.49	mg/kg	NC		NC			1.4E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-07					6.E-01
		EXPOSURE POINT TOTAL									2.E-07					6.E-01
	EXPOSURE MEDIUM TOTAL										2.E-07					6.E-01
SOIL TOTAL											**1.E-06**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-51
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - CURRENT - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	4.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	0.593	mg/kg	4.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	6.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Carbazole	0.04	mg/kg	6.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	7.6E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	3.8E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	9.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	2.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	7.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Aluminum	11248	mg/kg	NC		NC			2.1E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.435	mg/kg	NC		NC			8.3E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	8.423	mg/kg	1.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	1.6E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	61.79	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Chromium	20.62	mg/kg	NC		NC			3.9E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.37	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	688.4	mg/kg	NC		NC			1.3E-03	mg/kg/day	4.0E-02	mg/kg/day	3.E-02
				Lead	96.26	mg/kg	1.6E-05	mg/kg/day	ND			1.8E-04	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			5.7E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	1.775	mg/kg	NC		NC			3.4E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Thallium	0.162	mg/kg	NC		NC			3.1E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	28.49	mg/kg	NC		NC			5.4E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								7.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.593	mg/kg	1.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.04	mg/kg	1.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	2.1E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	1.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	3.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	1.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					5.E-03
		EXPOSURE POINT TOTAL									9.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										9.E-06					2.E-01
SOIL TOTAL											**9.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-52
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	7.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.593	mg/kg	7.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.915	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Carbazole	0.04	mg/kg	3.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-11	8.8E-09	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	7.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	1.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	3.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	5.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	8.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	11248	mg/kg	NC		NC			2.5E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.435	mg/kg	NC		NC			9.5E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	8.423	mg/kg	6.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-07	1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Barium	61.79	mg/kg	NC		NC			1.4E-05	mg/kg/day	2.0E-01	mg/kg/day	7.E-05
				Chromium	20.62	mg/kg	NC		NC			4.5E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.37	mg/kg	NC		NC			1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	688.4	mg/kg	NC		NC			1.5E-04	mg/kg/day	4.0E-02	mg/kg/day	4.E-03
				Lead	96.26	mg/kg	7.2E-06	mg/kg/day	ND			2.1E-05	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			6.6E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	1.775	mg/kg	NC		NC			3.9E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.162	mg/kg	NC		NC			3.6E-08	mg/kg/day	1.0E-05	mg/kg/day	4.E-03
				Vanadium	28.49	mg/kg	NC		NC			6.2E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					3.E-02
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	3.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.593	mg/kg	3.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.915	mg/kg	5.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	9.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Carbazole	0.04	mg/kg	1.1E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	3.1E-09	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	3.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	5.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.142	mg/kg	8.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	2.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	6.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	2.0E-07	mg/kg/day	3.0E-04	mg/kg/day	7.E-04
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-07					7.E-04
		EXPOSURE POINT TOTAL									2.E-06					3.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					3.E-02
SOIL TOTAL											**2.E-06**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-53
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	2.7E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	7.6E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(a)pyrene	0.593	mg/kg	2.7E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	7.6E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(b)fluoranthene	0.915	mg/kg	4.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	1.2E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Carbazole	0.04	mg/kg	4.4E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-10	5.1E-07	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	2.6E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-08	7.2E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Dibenz(a,h)anthracene	0.142	mg/kg	6.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.9E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	5.2E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Aluminum	11248	mg/kg	NC		NC			1.4E-01	mg/kg/day	1.0E+00	mg/kg/day	1.E-01
				Antimony	0.435	mg/kg	NC		NC			5.6E-06	mg/kg/day	4.0E-04	mg/kg/day	1.E-02
				Arsenic	8.423	mg/kg	9.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-05	1.1E-04	mg/kg/day	3.0E-04	mg/kg/day	4.E-01
				Barium	61.79	mg/kg	NC		NC			7.9E-04	mg/kg/day	2.0E-01	mg/kg/day	4.E-03
				Chromium	20.62	mg/kg	NC		NC			2.6E-04	mg/kg/day	3.0E-03	mg/kg/day	9.E-02
				Cobalt	6.37	mg/kg	NC		NC			8.1E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	688.4	mg/kg	NC		NC			8.8E-03	mg/kg/day	4.0E-02	mg/kg/day	2.E-01
				Lead	96.26	mg/kg	1.1E-04	mg/kg/day	ND			1.2E-03	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			3.8E-03	mg/kg/day	4.7E-02	mg/kg/day	8.E-02
				Mercury	1.775	mg/kg	NC		NC			2.3E-05	mg/kg/day	3.0E-04	mg/kg/day	8.E-02
				Thallium	0.162	mg/kg	NC		NC			2.1E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	28.49	mg/kg	NC		NC			3.6E-04	mg/kg/day	5.0E-03	mg/kg/day	7.E-02
			EXPOSURE ROUTE TOTAL								4.E-05					2.E+00
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	9.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-07	2.8E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Benzo(a)pyrene	0.593	mg/kg	9.9E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-06	2.8E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	1.5E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Carbazole	0.04	mg/kg	1.2E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	1.4E-07	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	9.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-09	2.6E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	2.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	6.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	6.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.9E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	7.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	9.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					3.E-02
		EXPOSURE POINT TOTAL									6.E-05					2.E+00
	EXPOSURE MEDIUM TOTAL										6.E-05					2.E+00
SOIL TOTAL											**6.E-05**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-54
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 3 - SUBSURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 3	INGESTION	Benzo(a)anthracene	0.593	mg/kg	5.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	8.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	0.593	mg/kg	5.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	8.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	8.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Carbazole	0.04	mg/kg	2.0E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.9E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	5.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	8.3E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	3.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	11248	mg/kg	NC		NC			1.7E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.435	mg/kg	NC		NC			6.4E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	8.423	mg/kg	4.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-06	1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	61.79	mg/kg	NC		NC			9.1E-05	mg/kg/day	2.0E-01	mg/kg/day	5.E-04
				Chromium	20.62	mg/kg	NC		NC			3.0E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.37	mg/kg	NC		NC			9.4E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	688.4	mg/kg	NC		NC			1.0E-03	mg/kg/day	4.0E-02	mg/kg/day	3.E-02
				Lead	96.26	mg/kg	4.9E-05	mg/kg/day	ND			1.4E-04	mg/kg/day	ND		
				Manganese	299.8	mg/kg	NC		NC			4.4E-04	mg/kg/day	4.7E-02	mg/kg/day	9.E-03
				Mercury	1.775	mg/kg	NC		NC			2.6E-06	mg/kg/day	3.0E-04	mg/kg/day	9.E-03
				Thallium	0.162	mg/kg	NC		NC			2.4E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	28.49	mg/kg	NC		NC			4.2E-05	mg/kg/day	5.0E-03	mg/kg/day	8.E-03
			EXPOSURE ROUTE TOTAL								1.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	0.593	mg/kg	2.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.593	mg/kg	2.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.915	mg/kg	3.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.04	mg/kg	7.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	2.1E-08	mg/kg/day	ND		
				Chrysene	0.56	mg/kg	2.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.142	mg/kg	5.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	9.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.405	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Aluminum	11248	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.435	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	8.423	mg/kg	4.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	61.79	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	20.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.37	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	688.4	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	96.26	mg/kg	--		ND			--		ND		
				Manganese	299.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	1.775	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.162	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	28.49	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					5.E-03
		EXPOSURE POINT TOTAL									2.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										2.E-05					2.E-01
SOIL TOTAL											**2.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-55
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADOLESCENT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADOLESCENT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	5.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	3.033	mg/kg	6.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	5.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	1.4E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	152.9	mg/kg	1.1E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-07	7.6E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	5.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	1.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	4.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Aluminum	9363	mg/kg	NC		NC			4.7E-03	mg/kg/day	1.0E+00	mg/kg/day	5.E-03
				Antimony	0.721	mg/kg	NC		NC			3.6E-07	mg/kg/day	4.0E-04	mg/kg/day	9.E-04
				Arsenic	6.539	mg/kg	4.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	3.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	90.6	mg/kg	NC		NC			4.5E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.439	mg/kg	NC		NC			2.2E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	19.79	mg/kg	NC		NC			9.9E-06	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	6.323	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	30.74	mg/kg	NC		NC			1.5E-05	mg/kg/day	4.0E-02	mg/kg/day	4.E-04
				Lead	163	mg/kg	1.2E-05	mg/kg/day	ND			8.1E-05	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			1.9E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	0.35	mg/kg	NC		NC			1.7E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Thallium	0.164	mg/kg	NC		NC			8.2E-08	mg/kg/day	1.0E-05	mg/kg/day	8.E-03
				Vanadium	29.05	mg/kg	NC		NC			1.4E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								8.E-06					5.E-02
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	2.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.1E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	3.033	mg/kg	2.8E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	6.5E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	6.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-09	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	152.9	mg/kg	3.6E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-08	2.5E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	2.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	7.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	2.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	4.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-08	3.2E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			7.2E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-06					1.E-03
		EXPOSURE POINT TOTAL									1.E-05					5.E-02
	EXPOSURE MEDIUM TOTAL										1.E-05					5.E-02
SOIL TOTAL											**1.E-05**					**5.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**1.E-05**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**5.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-56
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	7.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	3.033	mg/kg	9.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	8.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	2.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	152.9	mg/kg	4.8E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-07	2.4E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	7.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	6.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	9363	mg/kg	NC		NC			1.5E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	0.721	mg/kg	NC		NC			1.1E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	6.539	mg/kg	2.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	90.6	mg/kg	NC		NC			1.4E-05	mg/kg/day	2.0E-01	mg/kg/day	7.E-05
				Cadmium	0.439	mg/kg	NC		NC			6.9E-08	mg/kg/day	1.0E-03	mg/kg/day	7.E-05
				Chromium	19.79	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.323	mg/kg	NC		NC			9.9E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	30.74	mg/kg	NC		NC			4.8E-06	mg/kg/day	4.0E-02	mg/kg/day	1.E-04
				Lead	163	mg/kg	5.1E-06	mg/kg/day	ND			2.6E-05	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			6.1E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	0.35	mg/kg	NC		NC			5.5E-08	mg/kg/day	3.0E-04	mg/kg/day	2.E-04
				Thallium	0.164	mg/kg	NC		NC			2.6E-08	mg/kg/day	1.0E-05	mg/kg/day	3.E-03
				Vanadium	29.05	mg/kg	NC		NC			4.5E-06	mg/kg/day	5.0E-03	mg/kg/day	9.E-04
			EXPOSURE ROUTE TOTAL								1.E-06					1.E-02
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	3.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(a)pyrene	3.033	mg/kg	4.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(b)fluoranthene	2.721	mg/kg	3.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(k)fluoranthene	0.675	mg/kg	9.3E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	7.E-10	4.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	152.9	mg/kg	1.6E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-08	8.1E-06	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	3.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.806	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	5.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	3.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	2.1E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	1.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			2.3E-10	mg/kg/day	2.5E-05	mg/kg/day	9.E-06
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-07					4.E-04
		EXPOSURE POINT TOTAL									2.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					2.E-02
SOIL TOTAL											**2.E-06**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-57
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	3.033	mg/kg	1.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	3.4E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	9.5E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Carbazole	152.9	mg/kg	7.7E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-07	2.2E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	4.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	9363	mg/kg	NC		NC			1.3E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	0.721	mg/kg	NC		NC			1.0E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	6.539	mg/kg	3.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.2E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	90.6	mg/kg	NC		NC			1.3E-05	mg/kg/day	2.0E-01	mg/kg/day	6.E-05
				Cadmium	0.439	mg/kg	NC		NC			6.2E-08	mg/kg/day	1.0E-03	mg/kg/day	6.E-05
				Chromium	19.79	mg/kg	NC		NC			2.8E-06	mg/kg/day	3.0E-03	mg/kg/day	9.E-04
				Cobalt	6.323	mg/kg	NC		NC			8.9E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	30.74	mg/kg	NC		NC			4.3E-06	mg/kg/day	4.0E-02	mg/kg/day	1.E-04
				Lead	163	mg/kg	8.2E-06	mg/kg/day	ND			2.3E-05	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			5.5E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	0.35	mg/kg	NC		NC			4.9E-08	mg/kg/day	3.0E-04	mg/kg/day	2.E-04
				Thallium	0.164	mg/kg	NC		NC			2.3E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	29.05	mg/kg	NC		NC			4.1E-06	mg/kg/day	5.0E-03	mg/kg/day	8.E-04
			EXPOSURE ROUTE TOTAL								2.E-06					1.E-02
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	3.033	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	2.9E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	8.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Carbazole	152.9	mg/kg	5.1E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-07	1.4E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	1.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-10	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	3.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	9.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	6.5E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	1.8E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			4.1E-10	mg/kg/day	2.5E-05	mg/kg/day	2.E-05
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					7.E-04
		EXPOSURE POINT TOTAL									4.E-06					1.E-02
	EXPOSURE MEDIUM TOTAL										4.E-06					1.E-02
SOIL TOTAL											**4.E-06**					**1.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**4.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**1.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-58
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	7.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(a)pyrene	3.033	mg/kg	9.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-06	2.7E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	8.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	2.1E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-08	5.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	152.9	mg/kg	4.8E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-06	1.3E-04	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	7.6E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-09	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	2.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	7.1E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	7.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Aluminum	9363	mg/kg	NC		NC			8.2E-03	mg/kg/day	1.0E+00	mg/kg/day	8.E-03
				Antimony	0.721	mg/kg	NC		NC			6.3E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	6.539	mg/kg	2.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	5.8E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	90.6	mg/kg	NC		NC			8.0E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Cadmium	0.439	mg/kg	NC		NC			3.9E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	19.79	mg/kg	NC		NC			1.7E-05	mg/kg/day	3.0E-03	mg/kg/day	6.E-03
				Cobalt	6.323	mg/kg	NC		NC			5.6E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	30.74	mg/kg	NC		NC			2.7E-05	mg/kg/day	4.0E-02	mg/kg/day	7.E-04
				Lead	163	mg/kg	5.1E-05	mg/kg/day	ND			1.4E-04	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			3.4E-04	mg/kg/day	4.7E-02	mg/kg/day	7.E-03
				Mercury	0.35	mg/kg	NC		NC			3.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.164	mg/kg	NC		NC			1.4E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	29.05	mg/kg	NC		NC			2.6E-05	mg/kg/day	5.0E-03	mg/kg/day	5.E-03
			EXPOSURE ROUTE TOTAL								1.E-05					8.E-02
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	6.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(a)pyrene	3.033	mg/kg	8.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	2.3E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	7.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	1.8E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	5.1E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	152.9	mg/kg	3.2E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-07	8.9E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	6.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-09	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	2.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	6.1E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	6.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	4.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			2.6E-09	mg/kg/day	2.5E-05	mg/kg/day	1.E-04
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					4.E-03
		EXPOSURE POINT TOTAL									2.E-05					9.E-02
	EXPOSURE MEDIUM TOTAL										2.E-05					9.E-02

TABLE H-58
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 4	DUST INHALATION	Benzo(a)anthracene	2.399	mg/kg	1.3E-07	ug/m3	1.1E-04	(ug/m3)-1	1.E-11	3.6E-07	ug/m3	ND		
				Benzo(a)pyrene	3.033	mg/kg	1.6E-07	ug/m3	1.1E-03	(ug/m3)-1	2.E-10	4.6E-07	ug/m3	ND		
				Benzo(b)fluoranthene	2.721	mg/kg	1.5E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	4.1E-07	ug/m3	ND		
				Benzo(k)fluoranthene	0.675	mg/kg	3.6E-08	ug/m3	1.1E-04	(ug/m3)-1	4.E-12	1.0E-07	ug/m3	ND		
				Carbazole	152.9	mg/kg	NC		NC			2.3E-05	ug/m3	ND		
				Chrysene	2.422	mg/kg	1.3E-07	ug/m3	1.1E-05	(ug/m3)-1	1.E-12	3.7E-07	ug/m3	ND		
				Dibenz(a,h)anthracene	0.806	mg/kg	4.3E-08	ug/m3	1.2E-03	(ug/m3)-1	5.E-11	1.2E-07	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.2E-07	ug/m3	1.1E-04	(ug/m3)-1	1.E-11	3.3E-07	ug/m3	ND		
				Aluminum	9363	mg/kg	NC		NC			1.4E-03	ug/m3	5.0E+00	ug/m3	3.E-04
				Antimony	0.721	mg/kg	NC		NC			1.1E-07	ug/m3	ND		
				Arsenic	6.539	mg/kg	3.5E-07	ug/m3	4.3E-03	(ug/m3)-1	2.E-09	9.9E-07	ug/m3	1.5E-02	ug/m3	7.E-05
				Barium	90.6	mg/kg	NC		NC			1.4E-05	ug/m3	5.0E-01	ug/m3	3.E-05
				Cadmium	0.439	mg/kg	2.4E-08	ug/m3	1.8E-03	(ug/m3)-1	4.E-11	6.6E-08	ug/m3	2.0E-02	ug/m3	3.E-06
				Chromium	19.79	mg/kg	1.1E-06	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	3.0E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	6.323	mg/kg	3.4E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	9.6E-07	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	30.74	mg/kg	NC		NC			4.6E-06	ug/m3	ND		
				Lead	163	mg/kg	8.8E-06	ug/m3	ND			2.5E-05	ug/m3	ND		
				Manganese	388.8	mg/kg	NC		NC			5.9E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	0.35	mg/kg	NC		NC			5.3E-08	ug/m3	3.0E-01	ug/m3	2.E-07
				Thallium	0.164	mg/kg	NC		NC			2.5E-08	ug/m3	ND		
				Vanadium	29.05	mg/kg	NC		NC			4.4E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**2.E-05**					**9.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-05					**9.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-59
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	4.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	3.033	mg/kg	5.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	4.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	1.2E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-09	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	152.9	mg/kg	2.7E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-07	7.5E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	4.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	1.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	3.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Aluminum	9363	mg/kg	NC		NC			4.6E-03	mg/kg/day	1.0E+00	mg/kg/day	5.E-03
				Antimony	0.721	mg/kg	NC		NC			3.5E-07	mg/kg/day	4.0E-04	mg/kg/day	9.E-04
				Arsenic	6.539	mg/kg	1.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	3.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	90.6	mg/kg	NC		NC			4.4E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.439	mg/kg	NC		NC			2.1E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	19.79	mg/kg	NC		NC			9.7E-06	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	6.323	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	30.74	mg/kg	NC		NC			1.5E-05	mg/kg/day	4.0E-02	mg/kg/day	4.E-04
				Lead	163	mg/kg	2.8E-05	mg/kg/day	ND			8.0E-05	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			1.9E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	0.35	mg/kg	NC		NC			1.7E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Thallium	0.164	mg/kg	NC		NC			8.0E-08	mg/kg/day	1.0E-05	mg/kg/day	8.E-03
				Vanadium	29.05	mg/kg	NC		NC			1.4E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								8.E-06					5.E-02
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	7.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(a)pyrene	3.033	mg/kg	9.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-06	2.5E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	8.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.3E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	2.0E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	5.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	152.9	mg/kg	3.5E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-07	9.9E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	7.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-09	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	2.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	6.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	6.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.9E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	4.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			2.8E-09	mg/kg/day	2.5E-05	mg/kg/day	1.E-04
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					5.E-03
		EXPOSURE POINT TOTAL									2.E-05					5.E-02
	EXPOSURE MEDIUM TOTAL										2.E-05					5.E-02
SOIL TOTAL											**2.E-05**					**5.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**2.E-05**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**5.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-60
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	7.7E-06	mg/kg/day	3.0E-01	mg/kg/day	3.E-05
				Benzo(a)pyrene	3.033	mg/kg	1.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	9.8E-06	mg/kg/day	3.0E-01	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	8.8E-06	mg/kg/day	3.0E-01	mg/kg/day	3.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	3.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	2.2E-06	mg/kg/day	3.0E-01	mg/kg/day	7.E-06
				Carbazole	152.9	mg/kg	7.1E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-07	4.9E-04	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	1.1E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-10	7.8E-06	mg/kg/day	3.0E-01	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	3.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	2.6E-06	mg/kg/day	3.0E-01	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	7.2E-06	mg/kg/day	3.0E-01	mg/kg/day	2.E-05
				Aluminum	9363	mg/kg	NC		NC			3.0E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	0.721	mg/kg	NC		NC			2.3E-06	mg/kg/day	4.0E-04	mg/kg/day	6.E-03
				Arsenic	6.539	mg/kg	3.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	2.1E-05	mg/kg/day	3.0E-04	mg/kg/day	7.E-02
				Barium	90.6	mg/kg	NC		NC			2.9E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Cadmium	0.439	mg/kg	NC		NC			1.4E-06	mg/kg/day	5.0E-04	mg/kg/day	3.E-03
				Chromium	19.79	mg/kg	NC		NC			6.4E-05	mg/kg/day	2.0E-02	mg/kg/day	3.E-03
				Cobalt	6.323	mg/kg	NC		NC			2.0E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Copper	30.74	mg/kg	NC		NC			9.9E-05	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
				Lead	163	mg/kg	7.5E-06	mg/kg/day	ND			5.3E-04	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			1.3E-03	mg/kg/day	4.7E-02	mg/kg/day	3.E-02
				Mercury	0.35	mg/kg	NC		NC			1.1E-06	mg/kg/day	2.0E-03	mg/kg/day	6.E-04
				Thallium	0.164	mg/kg	NC		NC			5.3E-07	mg/kg/day	5.0E-05	mg/kg/day	1.E-02
				Vanadium	29.05	mg/kg	NC		NC			9.4E-05	mg/kg/day	1.0E-02	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	4.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	3.0E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Benzo(a)pyrene	3.033	mg/kg	5.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	3.8E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	4.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	3.4E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	1.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-10	8.5E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Carbazole	152.9	mg/kg	2.1E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-08	1.5E-04	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	4.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	3.1E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	1.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	1.0E-06	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	4.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	2.8E-06	mg/kg/day	3.0E-01	mg/kg/day	9.E-06
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	2.7E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-08	1.9E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			4.3E-09	mg/kg/day	1.3E-05	mg/kg/day	3.E-04
				Chromium	19.79	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-07					7.E-03
		EXPOSURE POINT TOTAL									3.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										3.E-06					2.E-01

TABLE H-60
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 4	DUST INHALATION	Benzo(a)anthracene	2.399	mg/kg	1.6E-06	ug/m3	1.1E-04	(ug/m3)-1	2.E-10	1.1E-04	ug/m3	ND		
				Benzo(a)pyrene	3.033	mg/kg	2.1E-06	ug/m3	1.1E-03	(ug/m3)-1	2.E-09	1.4E-04	ug/m3	ND		
				Benzo(b)fluoranthene	2.721	mg/kg	1.9E-06	ug/m3	1.1E-04	(ug/m3)-1	2.E-10	1.3E-04	ug/m3	ND		
				Benzo(k)fluoranthene	0.675	mg/kg	4.6E-07	ug/m3	1.1E-04	(ug/m3)-1	5.E-11	3.2E-05	ug/m3	ND		
				Carbazole	152.9	mg/kg	NC		NC			7.3E-03	ug/m3	ND		
				Chrysene	2.422	mg/kg	1.6E-06	ug/m3	1.1E-05	(ug/m3)-1	2.E-11	1.2E-04	ug/m3	ND		
				Dibenz(a,h)anthracene	0.806	mg/kg	5.5E-07	ug/m3	1.2E-03	(ug/m3)-1	7.E-10	3.8E-05	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.5E-06	ug/m3	1.1E-04	(ug/m3)-1	2.E-10	1.1E-04	ug/m3	ND		
				Aluminum	9363	mg/kg	NC		NC			4.5E-01	ug/m3	5.0E+00	ug/m3	9.E-02
				Antimony	0.721	mg/kg	NC		NC			3.4E-05	ug/m3	ND		
				Arsenic	6.539	mg/kg	4.5E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	3.1E-04	ug/m3	1.5E-02	ug/m3	2.E-02
				Barium	90.6	mg/kg	NC		NC			4.3E-03	ug/m3	5.0E+00	ug/m3	9.E-04
				Cadmium	0.439	mg/kg	3.0E-07	ug/m3	1.8E-03	(ug/m3)-1	5.E-10	2.1E-05	ug/m3	2.0E-02	ug/m3	1.E-03
				Chromium	19.79	mg/kg	1.3E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	9.4E-04	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	6.323	mg/kg	4.3E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	3.0E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	30.74	mg/kg	NC		NC			1.5E-03	ug/m3	ND		
				Lead	163	mg/kg	1.1E-04	ug/m3	ND			7.8E-03	ug/m3	ND		
				Manganese	388.8	mg/kg	NC		NC			1.9E-02	ug/m3	5.0E-02	ug/m3	4.E-01
				Mercury	0.35	mg/kg	NC		NC			1.7E-05	ug/m3	3.0E-01	ug/m3	6.E-05
				Thallium	0.164	mg/kg	NC		NC			7.8E-06	ug/m3	ND		
				Vanadium	29.05	mg/kg	NC		NC			1.4E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-07					7.E-01
		EXPOSURE POINT TOTAL									2.E-07					7.E-01
	EXPOSURE MEDIUM TOTAL										2.E-07					7.E-01
SOIL TOTAL											**3.E-06**					**9.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**9.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-61
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	1.6E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.6E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(a)pyrene	3.033	mg/kg	2.1E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	5.8E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(b)fluoranthene	2.721	mg/kg	1.9E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	5.2E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(k)fluoranthene	0.675	mg/kg	4.6E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-08	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Carbazole	152.9	mg/kg	2.5E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-07	2.9E-04	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	1.7E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-08	4.6E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Dibenz(a,h)anthracene	0.806	mg/kg	5.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.5E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.2E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Aluminum	9363	mg/kg	NC		NC			1.8E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.721	mg/kg	NC		NC			1.4E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	6.539	mg/kg	1.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	90.6	mg/kg	NC		NC			1.7E-04	mg/kg/day	2.0E-01	mg/kg/day	9.E-04
				Cadmium	0.439	mg/kg	NC		NC			8.3E-07	mg/kg/day	1.0E-03	mg/kg/day	8.E-04
				Chromium	19.79	mg/kg	NC		NC			3.8E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.323	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	30.74	mg/kg	NC		NC			5.8E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	163	mg/kg	2.7E-05	mg/kg/day	ND			3.1E-04	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			7.4E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	0.35	mg/kg	NC		NC			6.6E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.164	mg/kg	NC		NC			3.1E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	29.05	mg/kg	NC		NC			5.5E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	6.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(a)pyrene	3.033	mg/kg	7.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	6.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.9E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	1.7E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	4.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	152.9	mg/kg	7.0E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-07	8.1E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	6.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	2.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	5.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	5.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	8.9E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			2.3E-09	mg/kg/day	2.5E-05	mg/kg/day	9.E-05
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-06					4.E-03
		EXPOSURE POINT TOTAL									3.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										3.E-05					2.E-01
SOIL TOTAL											**3.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**3.E-05**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-62
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	3.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	3.033	mg/kg	4.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	6.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	3.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	8.9E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	6.E-09	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	152.9	mg/kg	1.1E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-07	3.4E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	3.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	5.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	1.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	2.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	9363	mg/kg	NC		NC			2.1E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.721	mg/kg	NC		NC			1.6E-07	mg/kg/day	4.0E-04	mg/kg/day	4.E-04
				Arsenic	6.539	mg/kg	4.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	90.6	mg/kg	NC		NC			2.0E-05	mg/kg/day	2.0E-01	mg/kg/day	1.E-04
				Cadmium	0.439	mg/kg	NC		NC			9.6E-08	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	19.79	mg/kg	NC		NC			4.3E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.323	mg/kg	NC		NC			1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	30.74	mg/kg	NC		NC			6.7E-06	mg/kg/day	4.0E-02	mg/kg/day	2.E-04
				Lead	163	mg/kg	1.2E-05	mg/kg/day	ND			3.6E-05	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			8.5E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	0.35	mg/kg	NC		NC			7.7E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Thallium	0.164	mg/kg	NC		NC			3.6E-08	mg/kg/day	1.0E-05	mg/kg/day	4.E-03
				Vanadium	29.05	mg/kg	NC		NC			6.4E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								5.E-06					2.E-02
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(a)pyrene	3.033	mg/kg	1.8E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(k)fluoranthene	0.675	mg/kg	4.1E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-09	6.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	152.9	mg/kg	4.1E-06	mg/kg/day	2.0E-02	(mg/kg/day)-1	8.E-08	1.2E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	1.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Dibenz(a,h)anthracene	0.806	mg/kg	4.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	8.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.2E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	5.3E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-08	1.5E-07	mg/kg/day	3.0E-04	mg/kg/day	5.E-04
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			3.4E-10	mg/kg/day	2.5E-05	mg/kg/day	1.E-05
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-06					6.E-04
		EXPOSURE POINT TOTAL									8.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										8.E-06					2.E-02
SOIL TOTAL											**8.E-06**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**8.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-63
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	1.1E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-06	3.1E-05	mg/kg/day	3.0E-02	mg/kg/day	1.E-03
				Benzo(a)pyrene	3.033	mg/kg	1.4E-05	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-04	3.9E-05	mg/kg/day	3.0E-02	mg/kg/day	1.E-03
				Benzo(b)fluoranthene	2.721	mg/kg	1.3E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-06	3.5E-05	mg/kg/day	3.0E-02	mg/kg/day	1.E-03
				Benzo(k)fluoranthene	0.675	mg/kg	3.1E-06	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-07	8.6E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Carbazole	152.9	mg/kg	1.7E-04	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-06	2.0E-03	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	1.1E-05	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-08	3.1E-05	mg/kg/day	3.0E-02	mg/kg/day	1.E-03
				Dibenz(a,h)anthracene	0.806	mg/kg	3.7E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-05	1.0E-05	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	1.0E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-06	2.8E-05	mg/kg/day	3.0E-02	mg/kg/day	9.E-04
				Aluminum	9363	mg/kg	NC		NC			1.2E-01	mg/kg/day	1.0E+00	mg/kg/day	1.E-01
				Antimony	0.721	mg/kg	NC		NC			9.2E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	6.539	mg/kg	7.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-05	8.4E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Barium	90.6	mg/kg	NC		NC			1.2E-03	mg/kg/day	2.0E-01	mg/kg/day	6.E-03
				Cadmium	0.439	mg/kg	NC		NC			5.6E-06	mg/kg/day	1.0E-03	mg/kg/day	6.E-03
				Chromium	19.79	mg/kg	NC		NC			2.5E-04	mg/kg/day	3.0E-03	mg/kg/day	8.E-02
				Cobalt	6.323	mg/kg	NC		NC			8.1E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	30.74	mg/kg	NC		NC			3.9E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	163	mg/kg	1.8E-04	mg/kg/day	ND			2.1E-03	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			5.0E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	0.35	mg/kg	NC		NC			4.5E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Thallium	0.164	mg/kg	NC		NC			2.1E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	29.05	mg/kg	NC		NC			3.7E-04	mg/kg/day	5.0E-03	mg/kg/day	7.E-02
			EXPOSURE ROUTE TOTAL								2.E-04					1.E+00
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	4.0E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	1.1E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Benzo(a)pyrene	3.033	mg/kg	5.1E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-05	1.4E-05	mg/kg/day	3.0E-02	mg/kg/day	5.E-04
				Benzo(b)fluoranthene	2.721	mg/kg	4.6E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	1.3E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Benzo(k)fluoranthene	0.675	mg/kg	1.1E-06	mg/kg/day	7.3E-02	(mg/kg/day)-1	8.E-08	3.1E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Carbazole	152.9	mg/kg	4.7E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-07	5.5E-04	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	4.1E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-08	1.1E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Dibenz(a,h)anthracene	0.806	mg/kg	1.4E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-05	3.8E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	3.7E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	1.0E-05	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	6.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-07	7.0E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			1.6E-08	mg/kg/day	2.5E-05	mg/kg/day	6.E-04
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-05					3.E-02
		EXPOSURE POINT TOTAL									2.E-04					1.E+00
	EXPOSURE MEDIUM TOTAL										2.E-04					1.E+00
SOIL TOTAL											**2.E-04**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**2.E-04**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-64
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	2.399	mg/kg	2.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	3.5E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(a)pyrene	3.033	mg/kg	2.7E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	4.5E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(b)fluoranthene	2.721	mg/kg	2.4E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	4.0E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(k)fluoranthene	0.675	mg/kg	6.0E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-08	1.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	152.9	mg/kg	7.7E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-06	2.3E-04	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	2.1E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-08	3.6E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Dibenz(a,h)anthracene	0.806	mg/kg	7.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	2.0E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	3.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Aluminum	9363	mg/kg	NC		NC			1.4E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.721	mg/kg	NC		NC			1.1E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	6.539	mg/kg	3.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-06	9.6E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	90.6	mg/kg	NC		NC			1.3E-04	mg/kg/day	2.0E-01	mg/kg/day	7.E-04
				Cadmium	0.439	mg/kg	NC		NC			6.5E-07	mg/kg/day	1.0E-03	mg/kg/day	6.E-04
				Chromium	19.79	mg/kg	NC		NC			2.9E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.323	mg/kg	NC		NC			9.3E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	30.74	mg/kg	NC		NC			4.5E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	163	mg/kg	8.2E-05	mg/kg/day	ND			2.4E-04	mg/kg/day	ND		
				Manganese	388.8	mg/kg	NC		NC			5.7E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	0.35	mg/kg	NC		NC			5.2E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.164	mg/kg	NC		NC			2.4E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	29.05	mg/kg	NC		NC			4.3E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								4.E-05					1.E-01
			DERMAL	Benzo(a)anthracene	2.399	mg/kg	9.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-07	1.6E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(a)pyrene	3.033	mg/kg	1.2E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-06	2.1E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Benzo(b)fluoranthene	2.721	mg/kg	1.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-07	1.9E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(k)fluoranthene	0.675	mg/kg	2.8E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-08	4.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	152.9	mg/kg	2.8E-05	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-07	8.0E-05	mg/kg/day	ND		
				Chrysene	2.422	mg/kg	9.9E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-09	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Dibenz(a,h)anthracene	0.806	mg/kg	3.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	5.5E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	2.215	mg/kg	9.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-07	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Aluminum	9363	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.721	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	6.539	mg/kg	3.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	90.6	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.439	mg/kg	NC		NC			2.3E-09	mg/kg/day	2.5E-05	mg/kg/day	9.E-05
				Chromium	19.79	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.323	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	30.74	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	163	mg/kg	--		ND			--		ND		
				Manganese	388.8	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.35	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.164	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.05	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-05					4.E-03
		EXPOSURE POINT TOTAL									5.E-05					1.E-01
	EXPOSURE MEDIUM TOTAL										5.E-05					1.E-01
SOIL TOTAL											**5.E-05**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**5.E-05**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-65
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	4.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	1.993	mg/kg	1.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(b)fluoranthene	2.895	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.028	mg/kg	1.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	3.9E-09	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	8.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Dibenz(a,h)anthracene	0.385	mg/kg	1.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	5.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	7.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Aluminum	17797	mg/kg	NC		NC			2.5E-03	mg/kg/day	1.0E+00	mg/kg/day	3.E-03
				Antimony	0.84	mg/kg	NC		NC			1.2E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	4.434	mg/kg	2.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	6.2E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	100.9	mg/kg	NC		NC			1.4E-05	mg/kg/day	2.0E-01	mg/kg/day	7.E-05
				Chromium	29.17	mg/kg	NC		NC			4.1E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	10.58	mg/kg	NC		NC			1.5E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	31.37	mg/kg	NC		NC			4.4E-06	mg/kg/day	4.0E-02	mg/kg/day	1.E-04
				Lead	118	mg/kg	5.9E-06	mg/kg/day	ND			1.7E-05	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			6.7E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	0.442	mg/kg	NC		NC			6.2E-08	mg/kg/day	3.0E-04	mg/kg/day	2.E-04
				Thallium	0.236	mg/kg	NC		NC			3.3E-08	mg/kg/day	1.0E-05	mg/kg/day	3.E-03
				Vanadium	35.46	mg/kg	NC		NC			5.0E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					2.E-02
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	3.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	1.993	mg/kg	8.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(b)fluoranthene	2.895	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.028	mg/kg	9.3E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	2.6E-09	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	7.4E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.385	mg/kg	1.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	4.7E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	6.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	4.4E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-08	1.2E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					4.E-04
		EXPOSURE POINT TOTAL									2.E-06					2.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					2.E-02
SOIL TOTAL											**2.E-06**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/18/2011
Checked by: BJR 10/24/2011

TABLE H-66
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	2.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	7.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	1.993	mg/kg	6.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	9.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-07	2.5E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Carbazole	0.028	mg/kg	8.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.5E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	5.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	4.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Aluminum	17797	mg/kg	NC		NC			1.6E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.84	mg/kg	NC		NC			7.4E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	4.434	mg/kg	1.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	3.9E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	100.9	mg/kg	NC		NC			8.9E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Chromium	29.17	mg/kg	NC		NC			2.6E-05	mg/kg/day	3.0E-03	mg/kg/day	9.E-03
				Cobalt	10.58	mg/kg	NC		NC			9.3E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	31.37	mg/kg	NC		NC			2.8E-05	mg/kg/day	4.0E-02	mg/kg/day	7.E-04
				Lead	118	mg/kg	3.7E-05	mg/kg/day	ND			1.0E-04	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			4.2E-04	mg/kg/day	4.7E-02	mg/kg/day	9.E-03
				Mercury	0.442	mg/kg	NC		NC			3.9E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.236	mg/kg	NC		NC			2.1E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	35.46	mg/kg	NC		NC			3.1E-05	mg/kg/day	5.0E-03	mg/kg/day	6.E-03
			EXPOSURE ROUTE TOTAL								9.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	2.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	1.993	mg/kg	5.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	7.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.2E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Carbazole	0.028	mg/kg	5.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.6E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	4.6E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	1.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	3.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	2.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.7E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-06					3.E-03
		EXPOSURE POINT TOTAL									1.E-05					1.E-01
	EXPOSURE MEDIUM TOTAL										1.E-05					1.E-01

TABLE H-66
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	AIR	DUST AT AREA 4	DUST INHALATION	Benzo(a)anthracene	0.873	mg/kg	4.7E-08	ug/m3	1.1E-04	(ug/m3)-1	5.E-12	1.3E-07	ug/m3	ND		
				Benzo(a)pyrene	1.993	mg/kg	1.1E-07	ug/m3	1.1E-03	(ug/m3)-1	1.E-10	3.0E-07	ug/m3	ND		
				Benzo(b)fluoranthene	2.895	mg/kg	1.6E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	4.4E-07	ug/m3	ND		
				Carbazole	0.028	mg/kg	NC		NC			4.2E-09	ug/m3	ND		
				Chrysene	1.716	mg/kg	9.3E-08	ug/m3	1.1E-05	(ug/m3)-1	1.E-12	2.6E-07	ug/m3	ND		
				Dibenz(a,h)anthracene	0.385	mg/kg	2.1E-08	ug/m3	1.2E-03	(ug/m3)-1	2.E-11	5.8E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	7.5E-08	ug/m3	1.1E-04	(ug/m3)-1	8.E-12	2.1E-07	ug/m3	ND		
				Aluminum	17797	mg/kg	NC		NC			2.7E-03	ug/m3	5.0E+00	ug/m3	5.E-04
				Antimony	0.84	mg/kg	NC		NC			1.3E-07	ug/m3	ND		
				Arsenic	4.434	mg/kg	2.4E-07	ug/m3	4.3E-03	(ug/m3)-1	1.E-09	6.7E-07	ug/m3	1.5E-02	ug/m3	4.E-05
				Barium	100.9	mg/kg	NC		NC			1.5E-05	ug/m3	5.0E-01	ug/m3	3.E-05
				Chromium	29.17	mg/kg	1.6E-06	ug/m3	1.2E-02	(ug/m3)-1	2.E-08	4.4E-06	ug/m3	1.0E-01	ug/m3	4.E-05
				Cobalt	10.58	mg/kg	5.7E-07	ug/m3	9.0E-03	(ug/m3)-1	5.E-09	1.6E-06	ug/m3	6.0E-03	ug/m3	3.E-04
				Copper	31.37	mg/kg	NC		NC			4.7E-06	ug/m3	ND		
				Lead	118	mg/kg	6.4E-06	ug/m3	ND			1.8E-05	ug/m3	ND		
				Manganese	473.1	mg/kg	NC		NC			7.1E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	0.442	mg/kg	NC		NC			6.7E-08	ug/m3	3.0E-01	ug/m3	2.E-07
				Thallium	0.236	mg/kg	NC		NC			3.6E-08	ug/m3	ND		
				Vanadium	35.46	mg/kg	NC		NC			5.4E-06	ug/m3	1.0E-01	ug/m3	5.E-05
			EXPOSURE ROUTE TOTAL								3.E-08					2.E-03
		EXPOSURE POINT TOTAL									3.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										3.E-08					2.E-03
SOIL TOTAL											**1.E-05**					**1.E-01**
									TOTAL RECEPTOR RISK ACROSS ALL MEDIA		**1.E-05**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-67
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	1.993	mg/kg	3.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	9.8E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	5.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Carbazole	0.028	mg/kg	4.9E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.4E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	3.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	8.4E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	6.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	2.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.8E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	17797	mg/kg	NC		NC			8.7E-03	mg/kg/day	1.0E+00	mg/kg/day	9.E-03
				Antimony	0.84	mg/kg	NC		NC			4.1E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	4.434	mg/kg	7.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	2.2E-06	mg/kg/day	3.0E-04	mg/kg/day	7.E-03
				Barium	100.9	mg/kg	NC		NC			4.9E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Chromium	29.17	mg/kg	NC		NC			1.4E-05	mg/kg/day	3.0E-03	mg/kg/day	5.E-03
				Cobalt	10.58	mg/kg	NC		NC			5.2E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	31.37	mg/kg	NC		NC			1.5E-05	mg/kg/day	4.0E-02	mg/kg/day	4.E-04
				Lead	118	mg/kg	2.1E-05	mg/kg/day	ND			5.8E-05	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			2.3E-04	mg/kg/day	4.7E-02	mg/kg/day	5.E-03
				Mercury	0.442	mg/kg	NC		NC			2.2E-07	mg/kg/day	3.0E-04	mg/kg/day	7.E-04
				Thallium	0.236	mg/kg	NC		NC			1.2E-07	mg/kg/day	1.0E-05	mg/kg/day	1.E-02
				Vanadium	35.46	mg/kg	NC		NC			1.7E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								5.E-06					6.E-02
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	2.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	7.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	1.993	mg/kg	6.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	8.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Carbazole	0.028	mg/kg	6.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.8E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	5.1E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	3.2E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	4.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	3.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	8.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-06					3.E-03
		EXPOSURE POINT TOTAL									1.E-05					6.E-02
	EXPOSURE MEDIUM TOTAL										1.E-05					6.E-02
SOIL TOTAL											**1.E-05**					**6.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**6.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-68
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	4.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	2.8E-06	mg/kg/day	3.0E-01	mg/kg/day	9.E-06
				Benzo(a)pyrene	1.993	mg/kg	9.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	6.4E-06	mg/kg/day	3.0E-01	mg/kg/day	2.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	1.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	9.3E-06	mg/kg/day	3.0E-01	mg/kg/day	3.E-05
				Carbazole	0.028	mg/kg	1.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	9.0E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	7.9E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	5.5E-06	mg/kg/day	3.0E-01	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	1.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	1.2E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	6.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	4.5E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Aluminum	17797	mg/kg	NC		NC			5.7E-02	mg/kg/day	1.0E+00	mg/kg/day	6.E-02
				Antimony	0.84	mg/kg	NC		NC			2.7E-06	mg/kg/day	4.0E-04	mg/kg/day	7.E-03
				Arsenic	4.434	mg/kg	2.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.4E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	100.9	mg/kg	NC		NC			3.3E-04	mg/kg/day	2.0E-01	mg/kg/day	2.E-03
				Chromium	29.17	mg/kg	NC		NC			9.4E-05	mg/kg/day	2.0E-02	mg/kg/day	5.E-03
				Cobalt	10.58	mg/kg	NC		NC			3.4E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Copper	31.37	mg/kg	NC		NC			1.0E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
				Lead	118	mg/kg	5.4E-06	mg/kg/day	ND			3.8E-04	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			1.5E-03	mg/kg/day	4.7E-02	mg/kg/day	3.E-02
				Mercury	0.442	mg/kg	NC		NC			1.4E-06	mg/kg/day	2.0E-03	mg/kg/day	7.E-04
				Thallium	0.236	mg/kg	NC		NC			7.6E-07	mg/kg/day	5.0E-05	mg/kg/day	2.E-02
				Vanadium	35.46	mg/kg	NC		NC			1.1E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								1.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.1E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Benzo(a)pyrene	1.993	mg/kg	3.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	2.5E-06	mg/kg/day	3.0E-01	mg/kg/day	8.E-06
				Benzo(b)fluoranthene	2.895	mg/kg	5.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	3.6E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Carbazole	0.028	mg/kg	3.9E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	8.E-12	2.7E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	3.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	2.2E-06	mg/kg/day	3.0E-01	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.385	mg/kg	6.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	4.8E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	2.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.7E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	1.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-07					4.E-03
		EXPOSURE POINT TOTAL									2.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										2.E-06					2.E-01

TABLE H-68
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 4	DUST INHALATION	Benzo(a)anthracene	0.873	mg/kg	5.9E-07	ug/m3	1.1E-04	(ug/m3)-1	7.E-11	4.2E-05	ug/m3	ND		
				Benzo(a)pyrene	1.993	mg/kg	1.4E-06	ug/m3	1.1E-03	(ug/m3)-1	1.E-09	9.5E-05	ug/m3	ND		
				Benzo(b)fluoranthene	2.895	mg/kg	2.0E-06	ug/m3	1.1E-04	(ug/m3)-1	2.E-10	1.4E-04	ug/m3	ND		
				Carbazole	0.028	mg/kg	NC		NC			1.3E-06	ug/m3	ND		
				Chrysene	1.716	mg/kg	1.2E-06	ug/m3	1.1E-05	(ug/m3)-1	1.E-11	8.2E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.385	mg/kg	2.6E-07	ug/m3	1.2E-03	(ug/m3)-1	3.E-10	1.8E-05	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	9.4E-07	ug/m3	1.1E-04	(ug/m3)-1	1.E-10	6.6E-05	ug/m3	ND		
				Aluminum	17797	mg/kg	NC		NC			8.5E-01	ug/m3	5.0E+00	ug/m3	2.E-01
				Antimony	0.84	mg/kg	NC		NC			4.0E-05	ug/m3	ND		
				Arsenic	4.434	mg/kg	3.0E-06	ug/m3	4.3E-03	(ug/m3)-1	1.E-08	2.1E-04	ug/m3	1.5E-02	ug/m3	1.E-02
				Barium	100.9	mg/kg	NC		NC			4.8E-03	ug/m3	5.0E+00	ug/m3	1.E-03
				Chromium	29.17	mg/kg	2.0E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	1.4E-03	ug/m3	5.0E-03	ug/m3	3.E-01
				Cobalt	10.58	mg/kg	7.2E-06	ug/m3	9.0E-03	(ug/m3)-1	6.E-08	5.0E-04	ug/m3	2.0E-02	ug/m3	3.E-02
				Copper	31.37	mg/kg	NC		NC			1.5E-03	ug/m3	ND		
				Lead	118	mg/kg	8.0E-05	ug/m3	ND			5.6E-03	ug/m3	ND		
				Manganese	473.1	mg/kg	NC		NC			2.3E-02	ug/m3	5.0E-02	ug/m3	5.E-01
				Mercury	0.442	mg/kg	NC		NC			2.1E-05	ug/m3	3.0E-01	ug/m3	7.E-05
				Thallium	0.236	mg/kg	NC		NC			1.1E-05	ug/m3	ND		
				Vanadium	35.46	mg/kg	NC		NC			1.7E-03	ug/m3	1.0E-01	ug/m3	2.E-02
			EXPOSURE ROUTE TOTAL								3.E-07					1.E+00
		EXPOSURE POINT TOTAL									3.E-07					1.E+00
	EXPOSURE MEDIUM TOTAL										3.E-07					1.E+00
SOIL TOTAL											**2.E-06**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-69
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	6.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Benzo(a)pyrene	1.993	mg/kg	1.4E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-05	3.8E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(b)fluoranthene	2.895	mg/kg	2.0E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	5.5E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Carbazole	0.028	mg/kg	4.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-11	5.3E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	1.2E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-09	3.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Dibenz(a,h)anthracene	0.385	mg/kg	2.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	7.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	9.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-07	2.6E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Aluminum	17797	mg/kg	NC		NC			3.4E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	0.84	mg/kg	NC		NC			1.6E-06	mg/kg/day	4.0E-04	mg/kg/day	4.E-03
				Arsenic	4.434	mg/kg	7.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	8.4E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	100.9	mg/kg	NC		NC			1.9E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Chromium	29.17	mg/kg	NC		NC			5.5E-05	mg/kg/day	3.0E-03	mg/kg/day	2.E-02
				Cobalt	10.58	mg/kg	NC		NC			2.0E-05	mg/kg/day	3.0E-04	mg/kg/day	7.E-02
				Copper	31.37	mg/kg	NC		NC			6.0E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	118	mg/kg	1.9E-05	mg/kg/day	ND			2.2E-04	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			9.0E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	0.442	mg/kg	NC		NC			8.4E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.236	mg/kg	NC		NC			4.5E-07	mg/kg/day	1.0E-05	mg/kg/day	4.E-02
				Vanadium	35.46	mg/kg	NC		NC			6.7E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	2.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	1.993	mg/kg	5.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-06	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	7.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Carbazole	0.028	mg/kg	1.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.5E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	4.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	9.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.7E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	3.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	9.6E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	6.1E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-08	7.1E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-06					3.E-03
		EXPOSURE POINT TOTAL									2.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										2.E-05					2.E-01
SOIL TOTAL											**2.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-05					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-70
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(a)pyrene	1.993	mg/kg	2.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	4.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	3.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.028	mg/kg	2.1E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-11	6.1E-09	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	2.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	5.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	8.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	3.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	17797	mg/kg	NC		NC			3.9E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	0.84	mg/kg	NC		NC			1.8E-07	mg/kg/day	4.0E-04	mg/kg/day	5.E-04
				Arsenic	4.434	mg/kg	3.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.7E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	100.9	mg/kg	NC		NC			2.2E-05	mg/kg/day	2.0E-01	mg/kg/day	1.E-04
				Chromium	29.17	mg/kg	NC		NC			6.4E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	10.58	mg/kg	NC		NC			2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Copper	31.37	mg/kg	NC		NC			6.9E-06	mg/kg/day	4.0E-02	mg/kg/day	2.E-04
				Lead	118	mg/kg	8.9E-06	mg/kg/day	ND			2.6E-05	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			1.0E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	0.442	mg/kg	NC		NC			9.7E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Thallium	0.236	mg/kg	NC		NC			5.2E-08	mg/kg/day	1.0E-05	mg/kg/day	5.E-03
				Vanadium	35.46	mg/kg	NC		NC			7.8E-06	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					3.E-02
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	5.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	8.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(a)pyrene	1.993	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(b)fluoranthene	2.895	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.028	mg/kg	7.5E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-11	2.2E-09	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	1.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-10	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.385	mg/kg	2.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	3.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	8.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	3.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-08	1.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					4.E-04
		EXPOSURE POINT TOTAL									5.E-06					3.E-02
	EXPOSURE MEDIUM TOTAL										5.E-06					3.E-02
SOIL TOTAL											**5.E-06**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											5.E-06					**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-71
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	4.0E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	1.1E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Benzo(a)pyrene	1.993	mg/kg	9.2E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-05	2.5E-05	mg/kg/day	3.0E-02	mg/kg/day	8.E-04
				Benzo(b)fluoranthene	2.895	mg/kg	1.3E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-05	3.7E-05	mg/kg/day	3.0E-02	mg/kg/day	1.E-03
				Carbazole	0.028	mg/kg	3.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	6.E-10	3.6E-07	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	7.9E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-08	2.2E-05	mg/kg/day	3.0E-02	mg/kg/day	7.E-04
				Dibenz(a,h)anthracene	0.385	mg/kg	1.8E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-05	4.9E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	6.4E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-06	1.8E-05	mg/kg/day	3.0E-02	mg/kg/day	6.E-04
				Aluminum	17797	mg/kg	NC		NC			2.3E-01	mg/kg/day	1.0E+00	mg/kg/day	2.E-01
				Antimony	0.84	mg/kg	NC		NC			1.1E-05	mg/kg/day	4.0E-04	mg/kg/day	3.E-02
				Arsenic	4.434	mg/kg	4.9E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-06	5.7E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	100.9	mg/kg	NC		NC			1.3E-03	mg/kg/day	2.0E-01	mg/kg/day	6.E-03
				Chromium	29.17	mg/kg	NC		NC			3.7E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
				Cobalt	10.58	mg/kg	NC		NC			1.4E-04	mg/kg/day	3.0E-04	mg/kg/day	5.E-01
				Copper	31.37	mg/kg	NC		NC			4.0E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	118	mg/kg	1.3E-04	mg/kg/day	ND			1.5E-03	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			6.0E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	0.442	mg/kg	NC		NC			5.7E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Thallium	0.236	mg/kg	NC		NC			3.0E-06	mg/kg/day	1.0E-05	mg/kg/day	3.E-01
				Vanadium	35.46	mg/kg	NC		NC			4.5E-04	mg/kg/day	5.0E-03	mg/kg/day	9.E-02
			EXPOSURE ROUTE TOTAL								1.E-04					2.E+00
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	1.5E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.1E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(a)pyrene	1.993	mg/kg	3.3E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	9.3E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(b)fluoranthene	2.895	mg/kg	4.9E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-06	1.3E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Carbazole	0.028	mg/kg	8.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	1.0E-07	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	2.9E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-08	8.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Dibenz(a,h)anthracene	0.385	mg/kg	6.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-06	1.8E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	2.3E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	6.4E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	4.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	4.8E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-05					2.E-02
		EXPOSURE POINT TOTAL									1.E-04					2.E+00
	EXPOSURE MEDIUM TOTAL										1.E-04					2.E+00
SOIL TOTAL											**1.E-04**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											1.E-04					**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-72
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 4 - SUBSURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 4	INGESTION	Benzo(a)anthracene	0.873	mg/kg	7.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-07	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	1.993	mg/kg	1.8E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-05	2.9E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(b)fluoranthene	2.895	mg/kg	2.6E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	4.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Carbazole	0.028	mg/kg	1.4E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	4.1E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	1.5E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-08	2.5E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	3.4E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-06	5.7E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	1.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-07	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Aluminum	17797	mg/kg	NC		NC			2.6E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	0.84	mg/kg	NC		NC			1.2E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	4.434	mg/kg	2.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	6.5E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	100.9	mg/kg	NC		NC			1.5E-04	mg/kg/day	2.0E-01	mg/kg/day	7.E-04
				Chromium	29.17	mg/kg	NC		NC			4.3E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	10.58	mg/kg	NC		NC			1.6E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Copper	31.37	mg/kg	NC		NC			4.6E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	118	mg/kg	6.0E-05	mg/kg/day	ND			1.7E-04	mg/kg/day	ND		
				Manganese	473.1	mg/kg	NC		NC			7.0E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	0.442	mg/kg	NC		NC			6.5E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.236	mg/kg	NC		NC			3.5E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	35.46	mg/kg	NC		NC			5.2E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-05					2.E-01
			DERMAL	Benzo(a)anthracene	0.873	mg/kg	3.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	6.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	1.993	mg/kg	8.2E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(b)fluoranthene	2.895	mg/kg	1.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-07	2.0E-06	mg/kg/day	3.0E-02	mg/kg/day	7.E-05
				Carbazole	0.028	mg/kg	5.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.5E-08	mg/kg/day	ND		
				Chrysene	1.716	mg/kg	7.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-09	1.2E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.385	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	1.385	mg/kg	5.7E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	9.5E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Aluminum	17797	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.84	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.434	mg/kg	2.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	100.9	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	29.17	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	10.58	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	31.37	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	118	mg/kg	--		ND			--		ND		
				Manganese	473.1	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.442	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.236	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	35.46	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-06					3.E-03
		EXPOSURE POINT TOTAL									3.E-05					2.E-01
	EXPOSURE MEDIUM TOTAL										3.E-05					2.E-01
SOIL TOTAL											**3.E-05**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-05					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-73
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADOLESCENT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADOLESCENT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			3.0E-03	mg/kg/day	1.0E+00	mg/kg/day	3.E-03
				Antimony	0.685	mg/kg	NC		NC			3.4E-07	mg/kg/day	4.0E-04	mg/kg/day	9.E-04
				Arsenic	5.732	mg/kg	4.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	2.9E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	62.27	mg/kg	NC		NC			3.1E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.826	mg/kg	NC		NC			4.1E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	16.71	mg/kg	NC		NC			8.3E-06	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	16.68	mg/kg	NC		NC			8.3E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	120.3	mg/kg	NC		NC			6.0E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	255	mg/kg	1.8E-05	mg/kg/day	ND			1.3E-04	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			1.1E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	4.8	mg/kg	NC		NC			2.4E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Thallium	0.012	mg/kg	NC		NC			6.0E-09	mg/kg/day	1.0E-05	mg/kg/day	6.E-04
				Vanadium	24.91	mg/kg	NC		NC			1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								6.E-07					6.E-02
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	4.0E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-08	2.8E-07	mg/kg/day	3.0E-04	mg/kg/day	9.E-04
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			1.4E-09	mg/kg/day	2.5E-05	mg/kg/day	5.E-05
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-08					1.E-03
		EXPOSURE POINT TOTAL									7.E-07					6.E-02
	EXPOSURE MEDIUM TOTAL										7.E-07					6.E-02
SOIL TOTAL											**7.E-07**					**6.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**7.E-07**				**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**6.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-74
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			9.3E-04	mg/kg/day	1.0E+00	mg/kg/day	9.E-04
				Antimony	0.685	mg/kg	NC		NC			1.1E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	5.732	mg/kg	1.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	9.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	62.27	mg/kg	NC		NC			9.7E-06	mg/kg/day	2.0E-01	mg/kg/day	5.E-05
				Cadmium	0.826	mg/kg	NC		NC			1.3E-07	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	16.71	mg/kg	NC		NC			2.6E-06	mg/kg/day	3.0E-03	mg/kg/day	9.E-04
				Cobalt	16.68	mg/kg	NC		NC			2.6E-06	mg/kg/day	3.0E-04	mg/kg/day	9.E-03
				Copper	120.3	mg/kg	NC		NC			1.9E-05	mg/kg/day	4.0E-02	mg/kg/day	5.E-04
				Lead	255	mg/kg	8.0E-06	mg/kg/day	ND			4.0E-05	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			3.4E-05	mg/kg/day	4.7E-02	mg/kg/day	7.E-04
				Mercury	4.8	mg/kg	NC		NC			7.5E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.012	mg/kg	NC		NC			1.9E-09	mg/kg/day	1.0E-05	mg/kg/day	2.E-04
				Vanadium	24.91	mg/kg	NC		NC			3.9E-06	mg/kg/day	5.0E-03	mg/kg/day	8.E-04
			EXPOSURE ROUTE TOTAL								3.E-07					2.E-02
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	1.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	9.1E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			4.4E-10	mg/kg/day	2.5E-05	mg/kg/day	2.E-05
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-08					3.E-04
		EXPOSURE POINT TOTAL									3.E-07					2.E-02
	EXPOSURE MEDIUM TOTAL										3.E-07					2.E-02
SOIL TOTAL											**3.E-07**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**3.E-07**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-75
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			8.4E-04	mg/kg/day	1.0E+00	mg/kg/day	8.E-04
				Antimony	0.685	mg/kg	NC		NC			9.7E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	5.732	mg/kg	2.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	8.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	62.27	mg/kg	NC		NC			8.8E-06	mg/kg/day	2.0E-01	mg/kg/day	4.E-05
				Cadmium	0.826	mg/kg	NC		NC			1.2E-07	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	16.71	mg/kg	NC		NC			2.4E-06	mg/kg/day	3.0E-03	mg/kg/day	8.E-04
				Cobalt	16.68	mg/kg	NC		NC			2.4E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Copper	120.3	mg/kg	NC		NC			1.7E-05	mg/kg/day	4.0E-02	mg/kg/day	4.E-04
				Lead	255	mg/kg	1.3E-05	mg/kg/day	ND			3.6E-05	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			3.1E-05	mg/kg/day	4.7E-02	mg/kg/day	7.E-04
				Mercury	4.8	mg/kg	NC		NC			6.8E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.012	mg/kg	NC		NC			1.7E-09	mg/kg/day	1.0E-05	mg/kg/day	2.E-04
				Vanadium	24.91	mg/kg	NC		NC			3.5E-06	mg/kg/day	5.0E-03	mg/kg/day	7.E-04
			EXPOSURE ROUTE TOTAL								4.E-07					2.E-02
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	5.7E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-08	1.6E-07	mg/kg/day	3.0E-04	mg/kg/day	5.E-04
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			7.7E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-08					6.E-04
		EXPOSURE POINT TOTAL									5.E-07					2.E-02
	EXPOSURE MEDIUM TOTAL										5.E-07					2.E-02
SOIL TOTAL											**5.E-07**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											5.E-07					**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-76
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			5.2E-03	mg/kg/day	1.0E+00	mg/kg/day	5.E-03
				Antimony	0.685	mg/kg	NC		NC			6.0E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	5.732	mg/kg	1.8E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	5.0E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	62.27	mg/kg	NC		NC			5.5E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Cadmium	0.826	mg/kg	NC		NC			7.3E-07	mg/kg/day	1.0E-03	mg/kg/day	7.E-04
				Chromium	16.71	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-03	mg/kg/day	5.E-03
				Cobalt	16.68	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Copper	120.3	mg/kg	NC		NC			1.1E-04	mg/kg/day	4.0E-02	mg/kg/day	3.E-03
				Lead	255	mg/kg	8.0E-05	mg/kg/day	ND			2.2E-04	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			1.9E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	4.8	mg/kg	NC		NC			4.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Thallium	0.012	mg/kg	NC		NC			1.1E-08	mg/kg/day	1.0E-05	mg/kg/day	1.E-03
				Vanadium	24.91	mg/kg	NC		NC			2.2E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					1.E-01
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	3.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			4.8E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-07					4.E-03
		EXPOSURE POINT TOTAL									3.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										3.E-06					1.E-01
	AIR	DUST AT AREA 5	DUST INHALATION	Aluminum	5946	mg/kg	NC		NC			9.0E-04	ug/m3	5.0E+00	ug/m3	2.E-04
				Antimony	0.685	mg/kg	NC		NC			1.0E-07	ug/m3	ND		
				Arsenic	5.732	mg/kg	3.1E-07	ug/m3	4.3E-03	(ug/m3)-1	1.E-09	8.7E-07	ug/m3	1.5E-02	ug/m3	6.E-05
				Barium	62.27	mg/kg	NC		NC			9.4E-06	ug/m3	5.0E-01	ug/m3	2.E-05
				Cadmium	0.826	mg/kg	4.5E-08	ug/m3	1.8E-03	(ug/m3)-1	8.E-11	1.2E-07	ug/m3	2.0E-02	ug/m3	6.E-06
				Chromium	16.71	mg/kg	9.0E-07	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	2.5E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	16.68	mg/kg	9.0E-07	ug/m3	9.0E-03	(ug/m3)-1	8.E-09	2.5E-06	ug/m3	6.0E-03	ug/m3	4.E-04
				Copper	120.3	mg/kg	NC		NC			1.8E-05	ug/m3	ND		
				Lead	255	mg/kg	1.4E-05	ug/m3	ND			3.9E-05	ug/m3	ND		
				Manganese	218	mg/kg	NC		NC			3.3E-05	ug/m3	5.0E-02	ug/m3	7.E-04
				Mercury	4.8	mg/kg	NC		NC			7.3E-07	ug/m3	3.0E-01	ug/m3	2.E-06
				Thallium	0.012	mg/kg	NC		NC			1.8E-09	ug/m3	ND		
				Vanadium	24.91	mg/kg	NC		NC			3.8E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					1.E-03
		EXPOSURE POINT TOTAL									2.E-08					1.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					1.E-03
SOIL TOTAL											**3.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-77
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			2.9E-03	mg/kg/day	1.0E+00	mg/kg/day	3.E-03
				Antimony	0.685	mg/kg	NC		NC			3.4E-07	mg/kg/day	4.0E-04	mg/kg/day	8.E-04
				Arsenic	5.732	mg/kg	1.0E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	2.8E-06	mg/kg/day	3.0E-04	mg/kg/day	9.E-03
				Barium	62.27	mg/kg	NC		NC			3.0E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.826	mg/kg	NC		NC			4.0E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	16.71	mg/kg	NC		NC			8.2E-06	mg/kg/day	3.0E-03	mg/kg/day	3.E-03
				Cobalt	16.68	mg/kg	NC		NC			8.2E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	120.3	mg/kg	NC		NC			5.9E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	255	mg/kg	4.5E-05	mg/kg/day	ND			1.2E-04	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			1.1E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	4.8	mg/kg	NC		NC			2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Thallium	0.012	mg/kg	NC		NC			5.9E-09	mg/kg/day	1.0E-05	mg/kg/day	6.E-04
				Vanadium	24.91	mg/kg	NC		NC			1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					6.E-02
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	4.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			5.3E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-07					4.E-03
		EXPOSURE POINT TOTAL									2.E-06					6.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					6.E-02
SOIL TOTAL											**2.E-06**					**6.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**2.E-06**				**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**6.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-78
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			1.9E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.685	mg/kg	NC		NC			2.2E-06	mg/kg/day	4.0E-04	mg/kg/day	6.E-03
				Arsenic	5.732	mg/kg	2.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	6.E-02
				Barium	62.27	mg/kg	NC		NC			2.0E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Cadmium	0.826	mg/kg	NC		NC			2.7E-06	mg/kg/day	5.0E-04	mg/kg/day	5.E-03
				Chromium	16.71	mg/kg	NC		NC			5.4E-05	mg/kg/day	2.0E-02	mg/kg/day	3.E-03
				Cobalt	16.68	mg/kg	NC		NC			5.4E-05	mg/kg/day	3.0E-03	mg/kg/day	2.E-02
				Copper	120.3	mg/kg	NC		NC			3.9E-04	mg/kg/day	1.0E-02	mg/kg/day	4.E-02
				Lead	255	mg/kg	1.2E-05	mg/kg/day	ND			8.2E-04	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			7.0E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	4.8	mg/kg	NC		NC			1.5E-05	mg/kg/day	2.0E-03	mg/kg/day	8.E-03
				Thallium	0.012	mg/kg	NC		NC			3.9E-08	mg/kg/day	5.0E-05	mg/kg/day	8.E-04
				Vanadium	24.91	mg/kg	NC		NC			8.0E-05	mg/kg/day	1.0E-02	mg/kg/day	8.E-03
			EXPOSURE ROUTE TOTAL								4.E-07					2.E-01
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	2.4E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-08	1.7E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			8.0E-09	mg/kg/day	1.3E-05	mg/kg/day	6.E-04
				Chromium	16.71	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-08					6.E-03
		EXPOSURE POINT TOTAL									4.E-07					2.E-01
	EXPOSURE MEDIUM TOTAL										4.E-07					2.E-01
	AIR	DUST AT AREA 5	DUST INHALATION	Aluminum	5946	mg/kg	NC		NC			2.8E-01	ug/m3	5.0E+00	ug/m3	6.E-02
				Antimony	0.685	mg/kg	NC		NC			3.3E-05	ug/m3	ND		
				Arsenic	5.732	mg/kg	3.9E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	2.7E-04	ug/m3	1.5E-02	ug/m3	2.E-02
				Barium	62.27	mg/kg	NC		NC			3.0E-03	ug/m3	5.0E+00	ug/m3	6.E-04
				Cadmium	0.826	mg/kg	5.6E-07	ug/m3	1.8E-03	(ug/m3)-1	1.E-09	3.9E-05	ug/m3	2.0E-02	ug/m3	2.E-03
				Chromium	16.71	mg/kg	1.1E-05	ug/m3	1.2E-02	(ug/m3)-1	1.E-07	8.0E-04	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	16.68	mg/kg	1.1E-05	ug/m3	9.0E-03	(ug/m3)-1	1.E-07	7.9E-04	ug/m3	2.0E-02	ug/m3	4.E-02
				Copper	120.3	mg/kg	NC		NC			5.7E-03	ug/m3	ND		
				Lead	255	mg/kg	1.7E-04	ug/m3	ND			1.2E-02	ug/m3	ND		
				Manganese	218	mg/kg	NC		NC			1.0E-02	ug/m3	5.0E-02	ug/m3	2.E-01
				Mercury	4.8	mg/kg	NC		NC			2.3E-04	ug/m3	3.0E-01	ug/m3	8.E-04
				Thallium	0.012	mg/kg	NC		NC			5.7E-07	ug/m3	ND		
				Vanadium	24.91	mg/kg	NC		NC			1.2E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								3.E-07					5.E-01
		EXPOSURE POINT TOTAL									3.E-07					5.E-01
	EXPOSURE MEDIUM TOTAL										3.E-07					5.E-01
SOIL TOTAL											**7.E-07**					**7.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											7.E-07					**7.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-79
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			1.1E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.685	mg/kg	NC		NC			1.3E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	5.732	mg/kg	9.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	62.27	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Cadmium	0.826	mg/kg	NC		NC			1.6E-06	mg/kg/day	1.0E-03	mg/kg/day	2.E-03
				Chromium	16.71	mg/kg	NC		NC			3.2E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	16.68	mg/kg	NC		NC			3.2E-05	mg/kg/day	3.0E-04	mg/kg/day	1.E-01
				Copper	120.3	mg/kg	NC		NC			2.3E-04	mg/kg/day	4.0E-02	mg/kg/day	6.E-03
				Lead	255	mg/kg	4.2E-05	mg/kg/day	ND			4.8E-04	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			4.1E-04	mg/kg/day	4.7E-02	mg/kg/day	9.E-03
				Mercury	4.8	mg/kg	NC		NC			9.1E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Thallium	0.012	mg/kg	NC		NC			2.3E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	24.91	mg/kg	NC		NC			4.7E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					2.E-01
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	7.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	9.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			4.4E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-07					3.E-03
		EXPOSURE POINT TOTAL									2.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										2.E-06					2.E-01
SOIL TOTAL											**2.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-80
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			1.3E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	0.685	mg/kg	NC		NC			1.5E-07	mg/kg/day	4.0E-04	mg/kg/day	4.E-04
				Arsenic	5.732	mg/kg	4.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	62.27	mg/kg	NC		NC			1.4E-05	mg/kg/day	2.0E-01	mg/kg/day	7.E-05
				Cadmium	0.826	mg/kg	NC		NC			1.8E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	16.71	mg/kg	NC		NC			3.7E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	16.68	mg/kg	NC		NC			3.7E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	120.3	mg/kg	NC		NC			2.6E-05	mg/kg/day	4.0E-02	mg/kg/day	7.E-04
				Lead	255	mg/kg	1.9E-05	mg/kg/day	ND			5.6E-05	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			4.8E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	4.8	mg/kg	NC		NC			1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Thallium	0.012	mg/kg	NC		NC			2.6E-09	mg/kg/day	1.0E-05	mg/kg/day	3.E-04
				Vanadium	24.91	mg/kg	NC		NC			5.5E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								6.E-07					3.E-02
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	4.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			6.5E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-08					5.E-04
		EXPOSURE POINT TOTAL									7.E-07					3.E-02
	EXPOSURE MEDIUM TOTAL										7.E-07					3.E-02
SOIL TOTAL											**7.E-07**					**3.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**7.E-07**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**3.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-81
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			7.6E-02	mg/kg/day	1.0E+00	mg/kg/day	8.E-02
				Antimony	0.685	mg/kg	NC		NC			8.8E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	5.732	mg/kg	6.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-06	7.3E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	62.27	mg/kg	NC		NC			8.0E-04	mg/kg/day	2.0E-01	mg/kg/day	4.E-03
				Cadmium	0.826	mg/kg	NC		NC			1.1E-05	mg/kg/day	1.0E-03	mg/kg/day	1.E-02
				Chromium	16.71	mg/kg	NC		NC			2.1E-04	mg/kg/day	3.0E-03	mg/kg/day	7.E-02
				Cobalt	16.68	mg/kg	NC		NC			2.1E-04	mg/kg/day	3.0E-04	mg/kg/day	7.E-01
				Copper	120.3	mg/kg	NC		NC			1.5E-03	mg/kg/day	4.0E-02	mg/kg/day	4.E-02
				Lead	255	mg/kg	2.8E-04	mg/kg/day	ND			3.3E-03	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			2.8E-03	mg/kg/day	4.7E-02	mg/kg/day	6.E-02
				Mercury	4.8	mg/kg	NC		NC			6.1E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Thallium	0.012	mg/kg	NC		NC			1.5E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	24.91	mg/kg	NC		NC			3.2E-04	mg/kg/day	5.0E-03	mg/kg/day	6.E-02
			EXPOSURE ROUTE TOTAL								9.E-06					2.E+00
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	5.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	6.2E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			3.0E-08	mg/kg/day	2.5E-05	mg/kg/day	1.E-03
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								8.E-07					2.E-02
		EXPOSURE POINT TOTAL									1.E-05					2.E+00
	EXPOSURE MEDIUM TOTAL										1.E-05					2.E+00
SOIL TOTAL											**1.E-05**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**1.E-05**				**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-82
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	AREA 5	INGESTION	Aluminum	5946	mg/kg	NC		NC			8.8E-03	mg/kg/day	1.0E+00	mg/kg/day	9.E-03
				Antimony	0.685	mg/kg	NC		NC			1.0E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	5.732	mg/kg	2.9E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	8.5E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	62.27	mg/kg	NC		NC			9.2E-05	mg/kg/day	2.0E-01	mg/kg/day	5.E-04
				Cadmium	0.826	mg/kg	NC		NC			1.2E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	16.71	mg/kg	NC		NC			2.5E-05	mg/kg/day	3.0E-03	mg/kg/day	8.E-03
				Cobalt	16.68	mg/kg	NC		NC			2.5E-05	mg/kg/day	3.0E-04	mg/kg/day	8.E-02
				Copper	120.3	mg/kg	NC		NC			1.8E-04	mg/kg/day	4.0E-02	mg/kg/day	4.E-03
				Lead	255	mg/kg	1.3E-04	mg/kg/day	ND			3.8E-04	mg/kg/day	ND		
				Manganese	218	mg/kg	NC		NC			3.2E-04	mg/kg/day	4.7E-02	mg/kg/day	7.E-03
				Mercury	4.8	mg/kg	NC		NC			7.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Thallium	0.012	mg/kg	NC		NC			1.8E-08	mg/kg/day	1.0E-05	mg/kg/day	2.E-03
				Vanadium	24.91	mg/kg	NC		NC			3.7E-05	mg/kg/day	5.0E-03	mg/kg/day	7.E-03
			EXPOSURE ROUTE TOTAL								4.E-06					2.E-01
			DERMAL	Aluminum	5946	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.685	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	5.732	mg/kg	3.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	62.27	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.826	mg/kg	NC		NC			4.3E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	16.71	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	16.68	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	120.3	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	255	mg/kg	--		ND			--		ND		
				Manganese	218	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	4.8	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.012	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	24.91	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-07					3.E-03
		EXPOSURE POINT TOTAL									5.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										5.E-06					2.E-01
SOIL TOTAL											**5.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**5.E-06**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-83
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	1.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	3.8E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.23	mg/kg	1.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	3.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Chrysene	0.29	mg/kg	1.5E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	3.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-09	9.3E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Aluminum	8838	mg/kg	NC		NC			1.2E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-03
				Antimony	0.536	mg/kg	NC		NC			7.6E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	2.765	mg/kg	1.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	3.9E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Barium	62.5	mg/kg	NC		NC			8.8E-06	mg/kg/day	2.0E-01	mg/kg/day	4.E-05
				Chromium	21.94	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	8.075	mg/kg	NC		NC			1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Copper	25.92	mg/kg	NC		NC			3.7E-06	mg/kg/day	4.0E-02	mg/kg/day	9.E-05
				Lead	43	mg/kg	2.2E-06	mg/kg/day	ND			6.1E-06	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			4.2E-05	mg/kg/day	4.7E-02	mg/kg/day	9.E-04
				Mercury	5.286	mg/kg	NC		NC			7.4E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Vanadium	24.99	mg/kg	NC		NC			3.5E-06	mg/kg/day	5.0E-03	mg/kg/day	7.E-04
			EXPOSURE ROUTE TOTAL								3.E-07					1.E-02
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-09	3.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.23	mg/kg	9.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	2.8E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Benzo(b)fluoranthene	0.37	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.5E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Chrysene	0.29	mg/kg	1.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-11	3.5E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	2.8E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-09	8.0E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	2.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-08	7.7E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-07					3.E-04
		EXPOSURE POINT TOTAL									5.E-07					1.E-02
	EXPOSURE MEDIUM TOTAL										5.E-07					1.E-02
SOIL TOTAL											**5.E-07**					**1.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**5.E-07**				**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**1.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/18/2011
Checked by: BJR 10/24/2011

TABLE H-84
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	8.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(a)pyrene	0.23	mg/kg	7.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Chrysene	0.29	mg/kg	9.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-10	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	2.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.8E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	8838	mg/kg	NC		NC			7.8E-03	mg/kg/day	1.0E+00	mg/kg/day	8.E-03
				Antimony	0.536	mg/kg	NC		NC			4.7E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	2.765	mg/kg	8.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	2.4E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Barium	62.5	mg/kg	NC		NC			5.5E-05	mg/kg/day	2.0E-01	mg/kg/day	3.E-04
				Chromium	21.94	mg/kg	NC		NC			1.9E-05	mg/kg/day	3.0E-03	mg/kg/day	6.E-03
				Cobalt	8.075	mg/kg	NC		NC			7.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	25.92	mg/kg	NC		NC			2.3E-05	mg/kg/day	4.0E-02	mg/kg/day	6.E-04
				Lead	43	mg/kg	1.4E-05	mg/kg/day	ND			3.8E-05	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			2.6E-04	mg/kg/day	4.7E-02	mg/kg/day	6.E-03
				Mercury	5.286	mg/kg	NC		NC			4.7E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Vanadium	24.99	mg/kg	NC		NC			2.2E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					7.E-02
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	7.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.23	mg/kg	6.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Chrysene	0.29	mg/kg	7.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	2.2E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	1.7E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	4.8E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-07					2.E-03
		EXPOSURE POINT TOTAL									3.E-06					8.E-02
	EXPOSURE MEDIUM TOTAL										3.E-06					8.E-02

TABLE H-84
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 5	DUST INHALATION	Benzo(a)anthracene	0.27	mg/kg	1.5E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	4.1E-08	ug/m3	ND		
				Benzo(a)pyrene	0.23	mg/kg	1.2E-08	ug/m3	1.1E-03	(ug/m3)-1	1.E-11	3.5E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.37	mg/kg	2.0E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	5.6E-08	ug/m3	ND		
				Chrysene	0.29	mg/kg	1.6E-08	ug/m3	1.1E-05	(ug/m3)-1	2.E-13	4.4E-08	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	3.6E-09	ug/m3	1.1E-04	(ug/m3)-1	4.E-13	1.0E-08	ug/m3	ND		
				Aluminum	8838	mg/kg	NC		NC			1.3E-03	ug/m3	5.0E+00	ug/m3	3.E-04
				Antimony	0.536	mg/kg	NC		NC			8.1E-08	ug/m3	ND		
				Arsenic	2.765	mg/kg	1.5E-07	ug/m3	4.3E-03	(ug/m3)-1	6.E-10	4.2E-07	ug/m3	1.5E-02	ug/m3	3.E-05
				Barium	62.5	mg/kg	NC		NC			9.4E-06	ug/m3	5.0E-01	ug/m3	2.E-05
				Chromium	21.94	mg/kg	1.2E-06	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	3.3E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	8.075	mg/kg	4.4E-07	ug/m3	9.0E-03	(ug/m3)-1	4.E-09	1.2E-06	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	25.92	mg/kg	NC		NC			3.9E-06	ug/m3	ND		
				Lead	43	mg/kg	2.3E-06	ug/m3	ND			6.5E-06	ug/m3	ND		
				Manganese	298.3	mg/kg	NC		NC			4.5E-05	ug/m3	5.0E-02	ug/m3	9.E-04
				Mercury	5.286	mg/kg	NC		NC			8.0E-07	ug/m3	3.0E-01	ug/m3	3.E-06
				Vanadium	24.99	mg/kg	NC		NC			3.8E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					1.E-03
		EXPOSURE POINT TOTAL									2.E-08					1.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					1.E-03
SOIL TOTAL											**3.E-06**					**8.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**8.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-85
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	4.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.23	mg/kg	4.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	6.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Chrysene	0.29	mg/kg	5.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	3.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	8838	mg/kg	NC		NC			4.3E-03	mg/kg/day	1.0E+00	mg/kg/day	4.E-03
				Antimony	0.536	mg/kg	NC		NC			2.6E-07	mg/kg/day	4.0E-04	mg/kg/day	7.E-04
				Arsenic	2.765	mg/kg	4.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	62.5	mg/kg	NC		NC			3.1E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Chromium	21.94	mg/kg	NC		NC			1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	4.E-03
				Cobalt	8.075	mg/kg	NC		NC			4.0E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	25.92	mg/kg	NC		NC			1.3E-05	mg/kg/day	4.0E-02	mg/kg/day	3.E-04
				Lead	43	mg/kg	7.5E-06	mg/kg/day	ND			2.1E-05	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			1.5E-04	mg/kg/day	4.7E-02	mg/kg/day	3.E-03
				Mercury	5.286	mg/kg	NC		NC			2.6E-06	mg/kg/day	3.0E-04	mg/kg/day	9.E-03
				Vanadium	24.99	mg/kg	NC		NC			1.2E-05	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					4.E-02
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	8.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(a)pyrene	0.23	mg/kg	6.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Chrysene	0.29	mg/kg	8.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	2.4E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	2.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	1.9E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	5.4E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								9.E-07					2.E-03
		EXPOSURE POINT TOTAL									2.E-06					4.E-02
	EXPOSURE MEDIUM TOTAL										2.E-06					4.E-02
SOIL TOTAL											**2.E-06**					**4.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-06					**4.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-86
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-09	8.7E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.23	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	7.4E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.2E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Chrysene	0.29	mg/kg	1.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	9.4E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	3.0E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-09	2.1E-07	mg/kg/day	3.0E-01	mg/kg/day	7.E-07
				Aluminum	8838	mg/kg	NC		NC			2.9E-02	mg/kg/day	1.0E+00	mg/kg/day	3.E-02
				Antimony	0.536	mg/kg	NC		NC			1.7E-06	mg/kg/day	4.0E-04	mg/kg/day	4.E-03
				Arsenic	2.765	mg/kg	1.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	8.9E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	62.5	mg/kg	NC		NC			2.0E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Chromium	21.94	mg/kg	NC		NC			7.1E-05	mg/kg/day	2.0E-02	mg/kg/day	4.E-03
				Cobalt	8.075	mg/kg	NC		NC			2.6E-05	mg/kg/day	3.0E-03	mg/kg/day	9.E-03
				Copper	25.92	mg/kg	NC		NC			8.4E-05	mg/kg/day	1.0E-02	mg/kg/day	8.E-03
				Lead	43	mg/kg	2.0E-06	mg/kg/day	ND			1.4E-04	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			9.6E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	5.286	mg/kg	NC		NC			1.7E-05	mg/kg/day	2.0E-03	mg/kg/day	9.E-03
				Vanadium	24.99	mg/kg	NC		NC			8.1E-05	mg/kg/day	1.0E-02	mg/kg/day	8.E-03
			EXPOSURE ROUTE TOTAL								3.E-07					1.E-01
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	4.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	3.4E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.23	mg/kg	4.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	2.9E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	6.7E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	4.7E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Chrysene	0.29	mg/kg	5.2E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-11	3.7E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	1.2E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-10	8.3E-08	mg/kg/day	3.0E-01	mg/kg/day	3.E-07
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	1.1E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-08	8.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-08					3.E-03
		EXPOSURE POINT TOTAL									3.E-07					1.E-01
	EXPOSURE MEDIUM TOTAL										3.E-07					1.E-01

TABLE H-86
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT AREA 5	DUST INHALATION	Benzo(a)anthracene	0.27	mg/kg	1.8E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	1.3E-05	ug/m3	ND		
				Benzo(a)pyrene	0.23	mg/kg	1.6E-07	ug/m3	1.1E-03	(ug/m3)-1	2.E-10	1.1E-05	ug/m3	ND		
				Benzo(b)fluoranthene	0.37	mg/kg	2.5E-07	ug/m3	1.1E-04	(ug/m3)-1	3.E-11	1.8E-05	ug/m3	ND		
				Chrysene	0.29	mg/kg	2.0E-07	ug/m3	1.1E-05	(ug/m3)-1	2.E-12	1.4E-05	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	4.5E-08	ug/m3	1.1E-04	(ug/m3)-1	5.E-12	3.1E-06	ug/m3	ND		
				Aluminum	8838	mg/kg	NC		NC			4.2E-01	ug/m3	5.0E+00	ug/m3	8.E-02
				Antimony	0.536	mg/kg	NC		NC			2.6E-05	ug/m3	ND		
				Arsenic	2.765	mg/kg	1.9E-06	ug/m3	4.3E-03	(ug/m3)-1	8.E-09	1.3E-04	ug/m3	1.5E-02	ug/m3	9.E-03
				Barium	62.5	mg/kg	NC		NC			3.0E-03	ug/m3	5.0E+00	ug/m3	6.E-04
				Chromium	21.94	mg/kg	1.5E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	1.0E-03	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	8.075	mg/kg	5.5E-06	ug/m3	9.0E-03	(ug/m3)-1	5.E-08	3.8E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	25.92	mg/kg	NC		NC			1.2E-03	ug/m3	ND		
				Lead	43	mg/kg	2.9E-05	ug/m3	ND			2.0E-03	ug/m3	ND		
				Manganese	298.3	mg/kg	NC		NC			1.4E-02	ug/m3	5.0E-02	ug/m3	3.E-01
				Mercury	5.286	mg/kg	NC		NC			2.5E-04	ug/m3	3.0E-01	ug/m3	8.E-04
				Vanadium	24.99	mg/kg	NC		NC			1.2E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-07					6.E-01
		EXPOSURE POINT TOTAL									2.E-07					6.E-01
	EXPOSURE MEDIUM TOTAL										2.E-07					6.E-01
SOIL TOTAL											**6.E-07**					**7.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**6.E-07**				**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**7.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-87
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.1E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.23	mg/kg	1.6E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	4.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.37	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	7.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Chrysene	0.29	mg/kg	2.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	5.5E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	4.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Aluminum	8838	mg/kg	NC		NC			1.7E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.536	mg/kg	NC		NC			1.0E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	2.765	mg/kg	4.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	5.3E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	62.5	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Chromium	21.94	mg/kg	NC		NC			4.2E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	8.075	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Copper	25.92	mg/kg	NC		NC			4.9E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	43	mg/kg	7.0E-06	mg/kg/day	ND			8.2E-05	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			5.7E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	5.286	mg/kg	NC		NC			1.0E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Vanadium	24.99	mg/kg	NC		NC			4.7E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	7.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.9E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.23	mg/kg	6.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Chrysene	0.29	mg/kg	8.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.6E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	3.8E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-08	4.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-07					1.E-03
		EXPOSURE POINT TOTAL									3.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										3.E-06					2.E-01
SOIL TOTAL											**3.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-88
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	3.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	5.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.23	mg/kg	3.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	4.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	8.1E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Chrysene	0.29	mg/kg	3.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	6.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	8.7E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Aluminum	8838	mg/kg	NC		NC			1.9E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.536	mg/kg	NC		NC			1.2E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	2.765	mg/kg	2.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	6.1E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Barium	62.5	mg/kg	NC		NC			1.4E-05	mg/kg/day	2.0E-01	mg/kg/day	7.E-05
				Chromium	21.94	mg/kg	NC		NC			4.8E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	8.075	mg/kg	NC		NC			1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Copper	25.92	mg/kg	NC		NC			5.7E-06	mg/kg/day	4.0E-02	mg/kg/day	1.E-04
				Lead	43	mg/kg	3.2E-06	mg/kg/day	ND			9.4E-06	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			6.5E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	5.286	mg/kg	NC		NC			1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Vanadium	24.99	mg/kg	NC		NC			5.5E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								6.E-07					2.E-02
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	2.7E-08	mg/kg/day	3.0E-02	mg/kg/day	9.E-07
				Benzo(a)pyrene	0.23	mg/kg	1.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	2.3E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Benzo(b)fluoranthene	0.37	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	3.8E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Chrysene	0.29	mg/kg	1.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	2.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	4.0E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	6.7E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	2.2E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	6.5E-08	mg/kg/day	3.0E-04	mg/kg/day	2.E-04
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					2.E-04
		EXPOSURE POINT TOTAL									8.E-07					2.E-02
	EXPOSURE MEDIUM TOTAL										8.E-07					2.E-02
SOIL TOTAL											**8.E-07**					**2.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											8.E-07					**2.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-89
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	1.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-07	3.5E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(a)pyrene	0.23	mg/kg	1.1E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-06	2.9E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(b)fluoranthene	0.37	mg/kg	1.7E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.7E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Chrysene	0.29	mg/kg	1.3E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-08	3.7E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	3.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	8.4E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Aluminum	8838	mg/kg	NC		NC			1.1E-01	mg/kg/day	1.0E+00	mg/kg/day	1.E-01
				Antimony	0.536	mg/kg	NC		NC			6.9E-06	mg/kg/day	4.0E-04	mg/kg/day	2.E-02
				Arsenic	2.765	mg/kg	3.0E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-06	3.5E-05	mg/kg/day	3.0E-04	mg/kg/day	1.E-01
				Barium	62.5	mg/kg	NC		NC			8.0E-04	mg/kg/day	2.0E-01	mg/kg/day	4.E-03
				Chromium	21.94	mg/kg	NC		NC			2.8E-04	mg/kg/day	3.0E-03	mg/kg/day	9.E-02
				Cobalt	8.075	mg/kg	NC		NC			1.0E-04	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	25.92	mg/kg	NC		NC			3.3E-04	mg/kg/day	4.0E-02	mg/kg/day	8.E-03
				Lead	43	mg/kg	4.7E-05	mg/kg/day	ND			5.5E-04	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			3.8E-03	mg/kg/day	4.7E-02	mg/kg/day	8.E-02
				Mercury	5.286	mg/kg	NC		NC			6.8E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Vanadium	24.99	mg/kg	NC		NC			3.2E-04	mg/kg/day	5.0E-03	mg/kg/day	6.E-02
			EXPOSURE ROUTE TOTAL								1.E-05					1.E+00
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	5.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	0.23	mg/kg	4.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(b)fluoranthene	0.37	mg/kg	6.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.7E-06	mg/kg/day	3.0E-02	mg/kg/day	6.E-05
				Chrysene	0.29	mg/kg	5.4E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-09	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	2.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	3.0E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								4.E-06					1.E-02
		EXPOSURE POINT TOTAL									2.E-05					1.E+00
	EXPOSURE MEDIUM TOTAL										2.E-05					1.E+00
SOIL TOTAL											**2.E-05**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											2.E-05					**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-90
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - AREA 5 - SUBSURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	AREA 5	INGESTION	Benzo(a)anthracene	0.27	mg/kg	2.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.23	mg/kg	2.0E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.37	mg/kg	3.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	5.5E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Chrysene	0.29	mg/kg	2.6E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	4.3E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	5.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	9.7E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	8838	mg/kg	NC		NC			1.3E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.536	mg/kg	NC		NC			7.9E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	2.765	mg/kg	1.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	4.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	62.5	mg/kg	NC		NC			9.2E-05	mg/kg/day	2.0E-01	mg/kg/day	5.E-04
				Chromium	21.94	mg/kg	NC		NC			3.2E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	8.075	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	25.92	mg/kg	NC		NC			3.8E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	43	mg/kg	2.2E-05	mg/kg/day	ND			6.3E-05	mg/kg/day	ND		
				Manganese	298.3	mg/kg	NC		NC			4.4E-04	mg/kg/day	4.7E-02	mg/kg/day	9.E-03
				Mercury	5.286	mg/kg	NC		NC			7.8E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Vanadium	24.99	mg/kg	NC		NC			3.7E-05	mg/kg/day	5.0E-03	mg/kg/day	7.E-03
			EXPOSURE ROUTE TOTAL								4.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.27	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.23	mg/kg	9.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.37	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Chrysene	0.29	mg/kg	1.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Indeno(1,2,3-cd)pyrene	0.066	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	4.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	8838	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.536	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	2.765	mg/kg	1.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	4.4E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Barium	62.5	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	21.94	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	25.92	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	43	mg/kg	--		ND			--		ND		
				Manganese	298.3	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	5.286	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Vanadium	24.99	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					1.E-03
		EXPOSURE POINT TOTAL									5.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										5.E-06					1.E-01
SOIL TOTAL											**5.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											5.E-06					**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/24/2011

TABLE H-91
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - CURRENT - TRESPASSER/RECREATIONAL RECEPTOR - ADOLESCENT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESPASSER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADOLESCENT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	5.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.197	mg/kg	4.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.8E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	7.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	1.6E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	3.6E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.0324	mg/kg	2.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	1.6E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	4.0E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	9.4E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	4.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.1E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	10949	mg/kg	NC		NC			5.5E-03	mg/kg/day	1.0E+00	mg/kg/day	5.E-03
				Antimony	0.815	mg/kg	NC		NC			4.1E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	7.377	mg/kg	5.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	3.7E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	79.74	mg/kg	NC		NC			4.0E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.882	mg/kg	NC		NC			4.4E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	23.62	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	4.E-03
				Cobalt	6.429	mg/kg	NC		NC			3.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	50.46	mg/kg	NC		NC			2.5E-05	mg/kg/day	4.0E-02	mg/kg/day	6.E-04
				Lead	368	mg/kg	2.6E-05	mg/kg/day	ND			1.8E-04	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			1.9E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	0.579	mg/kg	NC		NC			2.9E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	1.4	mg/kg	NC		NC			7.0E-07	mg/kg/day	1.0E-05	mg/kg/day	7.E-02
				Vanadium	36.59	mg/kg	NC		NC			1.8E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	2.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.197	mg/kg	1.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	4.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	3.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	6.7E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-10	1.6E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Carbazole	0.0324	mg/kg	7.6E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	5.3E-09	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	1.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	4.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	2.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	4.9E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	7.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-09	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	5.2E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-08	3.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			1.5E-09	mg/kg/day	2.5E-05	mg/kg/day	6.E-05
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								3.E-07					1.E-03
		EXPOSURE POINT TOTAL									2.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										2.E-06					1.E-01
SOIL TOTAL											**2.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**2.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-92
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - CURRENT - TRESSPASER/RECREATIONAL RECEPTOR - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: TRESSPASER/RECREATIONAL RECEPTOR
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	7.4E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	3.7E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.197	mg/kg	6.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	3.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	1.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	2.3E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-10	1.1E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Carbazole	0.0324	mg/kg	1.0E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	5.1E-09	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.9E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-11	3.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	7.2E-10	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-09	3.6E-09	mg/kg/day	3.0E-02	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.7E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-09	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Aluminum	10949	mg/kg	NC		NC			1.7E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.815	mg/kg	NC		NC			1.3E-07	mg/kg/day	4.0E-04	mg/kg/day	3.E-04
				Arsenic	7.377	mg/kg	2.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	79.74	mg/kg	NC		NC			1.2E-05	mg/kg/day	2.0E-01	mg/kg/day	6.E-05
				Cadmium	0.882	mg/kg	NC		NC			1.4E-07	mg/kg/day	1.0E-03	mg/kg/day	1.E-04
				Chromium	23.62	mg/kg	NC		NC			3.7E-06	mg/kg/day	3.0E-03	mg/kg/day	1.E-03
				Cobalt	6.429	mg/kg	NC		NC			1.0E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Copper	50.46	mg/kg	NC		NC			7.9E-06	mg/kg/day	4.0E-02	mg/kg/day	2.E-04
				Lead	368	mg/kg	1.2E-05	mg/kg/day	ND			5.8E-05	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			6.1E-05	mg/kg/day	4.7E-02	mg/kg/day	1.E-03
				Mercury	0.579	mg/kg	NC		NC			9.1E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Thallium	1.4	mg/kg	NC		NC			2.2E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	36.59	mg/kg	NC		NC			5.7E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								4.E-07					4.E-02
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	3.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-09	1.6E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Benzo(a)pyrene	0.197	mg/kg	2.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Benzo(b)fluoranthene	0.333	mg/kg	4.6E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	2.3E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Benzo(k)fluoranthene	0.073	mg/kg	1.0E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	7.E-11	5.0E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Carbazole	0.0324	mg/kg	3.4E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-12	1.7E-09	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	2.6E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-11	1.3E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Dibenz(a,h)anthracene	0.0229	mg/kg	3.2E-10	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-09	1.6E-09	mg/kg/day	3.0E-02	mg/kg/day	5.E-08
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	1.2E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-10	6.0E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	2.4E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-08	1.2E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			4.7E-10	mg/kg/day	2.5E-05	mg/kg/day	2.E-05
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								6.E-08					4.E-04
		EXPOSURE POINT TOTAL									5.E-07					4.E-02
	EXPOSURE MEDIUM TOTAL										5.E-07					4.E-02
SOIL TOTAL											**5.E-07**					**4.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**5.E-07**
												TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA				**4.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/2012
Checked by: KJC 2/15/2012

TABLE H-93
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	7.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.197	mg/kg	6.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.073	mg/kg	2.3E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	6.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	1.0E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.9E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.9E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	7.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	10949	mg/kg	NC		NC			9.6E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.815	mg/kg	NC		NC			7.2E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	7.377	mg/kg	2.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	6.5E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	79.74	mg/kg	NC		NC			7.0E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Cadmium	0.882	mg/kg	NC		NC			7.8E-07	mg/kg/day	1.0E-03	mg/kg/day	8.E-04
				Chromium	23.62	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Cobalt	6.429	mg/kg	NC		NC			5.7E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	50.46	mg/kg	NC		NC			4.4E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	368	mg/kg	1.2E-04	mg/kg/day	ND			3.2E-04	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			3.4E-04	mg/kg/day	4.7E-02	mg/kg/day	7.E-03
				Mercury	0.579	mg/kg	NC		NC			5.1E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	1.4	mg/kg	NC		NC			1.2E-06	mg/kg/day	1.0E-05	mg/kg/day	1.E-01
				Vanadium	36.59	mg/kg	NC		NC			3.2E-05	mg/kg/day	5.0E-03	mg/kg/day	6.E-03
			EXPOSURE ROUTE TOTAL								4.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	6.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.197	mg/kg	5.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	9.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	2.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	5.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	6.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.9E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	6.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.7E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	4.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			5.1E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					5.E-03
		EXPOSURE POINT TOTAL									5.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										5.E-06					2.E-01
SOIL TOTAL											**5.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**5.E-06**		**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**		**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: 40841

TABLE H-94
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	7.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.197	mg/kg	6.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(k)fluoranthene	0.073	mg/kg	2.3E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	6.4E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	1.0E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.9E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.9E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	7.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	10949	mg/kg	NC		NC			9.6E-03	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.815	mg/kg	NC		NC			7.2E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	7.377	mg/kg	2.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-06	6.5E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	79.74	mg/kg	NC		NC			7.0E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Cadmium	0.882	mg/kg	NC		NC			7.8E-07	mg/kg/day	1.0E-03	mg/kg/day	8.E-04
				Chromium	23.62	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Cobalt	6.429	mg/kg	NC		NC			5.7E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	50.46	mg/kg	NC		NC			4.4E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	368	mg/kg	1.2E-04	mg/kg/day	ND			3.2E-04	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			3.4E-04	mg/kg/day	4.7E-02	mg/kg/day	7.E-03
				Mercury	0.579	mg/kg	NC		NC			5.1E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	1.4	mg/kg	NC		NC			1.2E-06	mg/kg/day	1.0E-05	mg/kg/day	1.E-01
				Vanadium	36.59	mg/kg	NC		NC			3.2E-05	mg/kg/day	5.0E-03	mg/kg/day	6.E-03
			EXPOSURE ROUTE TOTAL								4.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	6.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.197	mg/kg	5.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.5E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	9.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.5E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	2.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	5.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	6.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.9E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	6.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.7E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.5E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	4.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	1.3E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			5.1E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					5.E-03
		EXPOSURE POINT TOTAL									5.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										5.E-06					2.E-01

TABLE H-94
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT BACKGROUND	DUST INHALATION	Benzo(a)anthracene	0.236	mg/kg	1.3E-08	ug/m3	1.1E-04	(ug/m3)-1	1.E-12	3.6E-08	ug/m3	ND		
				Benzo(a)pyrene	0.197	mg/kg	1.1E-08	ug/m3	1.1E-03	(ug/m3)-1	1.E-11	3.0E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.333	mg/kg	1.8E-08	ug/m3	1.1E-04	(ug/m3)-1	2.E-12	5.0E-08	ug/m3	ND		
				Benzo(k)fluoranthene	0.073	mg/kg	3.9E-09	ug/m3	1.1E-04	(ug/m3)-1	4.E-13	1.1E-08	ug/m3	ND		
				Carbazole	0.0324	mg/kg	NC		NC			4.9E-09	ug/m3	ND		
				Chrysene	0.189	mg/kg	1.0E-08	ug/m3	1.1E-05	(ug/m3)-1	1.E-13	2.9E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0229	mg/kg	1.2E-09	ug/m3	1.2E-03	(ug/m3)-1	1.E-12	3.5E-09	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	4.7E-09	ug/m3	1.1E-04	(ug/m3)-1	5.E-13	1.3E-08	ug/m3	ND		
				Aluminum	10949	mg/kg	NC		NC			1.7E-03	ug/m3	5.0E+00	ug/m3	3.E-04
				Antimony	0.815	mg/kg	NC		NC			1.2E-07	ug/m3	ND		
				Arsenic	7.377	mg/kg	4.0E-07	ug/m3	4.3E-03	(ug/m3)-1	2.E-09	1.1E-06	ug/m3	1.5E-02	ug/m3	7.E-05
				Barium	79.74	mg/kg	NC		NC			1.2E-05	ug/m3	5.0E-01	ug/m3	2.E-05
				Cadmium	0.882	mg/kg	4.8E-08	ug/m3	1.8E-03	(ug/m3)-1	9.E-11	1.3E-07	ug/m3	2.0E-02	ug/m3	7.E-06
				Chromium	23.62	mg/kg	1.3E-06	ug/m3	1.2E-02	(ug/m3)-1	2.E-08	3.6E-06	ug/m3	1.0E-01	ug/m3	4.E-05
				Cobalt	6.429	mg/kg	3.5E-07	ug/m3	9.0E-03	(ug/m3)-1	3.E-09	9.7E-07	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	50.46	mg/kg	NC		NC			7.6E-06	ug/m3	ND		
				Lead	368	mg/kg	2.0E-05	ug/m3	ND			5.6E-05	ug/m3	ND		
				Manganese	391.4	mg/kg	NC		NC			5.9E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	0.579	mg/kg	NC		NC			8.7E-08	ug/m3	3.0E-01	ug/m3	3.E-07
				Thallium	1.4	mg/kg	NC		NC			2.1E-07	ug/m3	ND		
				Vanadium	36.59	mg/kg	NC		NC			5.5E-06	ug/m3	1.0E-01	ug/m3	6.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**5.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											5.E-06					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-95
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	4.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.197	mg/kg	3.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.6E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	5.8E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	1.3E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	9.E-10	3.6E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Carbazole	0.0324	mg/kg	5.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.6E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	3.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	9.2E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	4.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	1.1E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	4.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Aluminum	10949	mg/kg	NC		NC			5.4E-03	mg/kg/day	1.0E+00	mg/kg/day	5.E-03
				Antimony	0.815	mg/kg	NC		NC			4.0E-07	mg/kg/day	4.0E-04	mg/kg/day	1.E-03
				Arsenic	7.377	mg/kg	1.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	3.6E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	79.74	mg/kg	NC		NC			3.9E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Cadmium	0.882	mg/kg	NC		NC			4.3E-07	mg/kg/day	1.0E-03	mg/kg/day	4.E-04
				Chromium	23.62	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	4.E-03
				Cobalt	6.429	mg/kg	NC		NC			3.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	50.46	mg/kg	NC		NC			2.5E-05	mg/kg/day	4.0E-02	mg/kg/day	6.E-04
				Lead	368	mg/kg	6.4E-05	mg/kg/day	ND			1.8E-04	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			1.9E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	0.579	mg/kg	NC		NC			2.8E-07	mg/kg/day	3.0E-04	mg/kg/day	9.E-04
				Thallium	1.4	mg/kg	NC		NC			6.8E-07	mg/kg/day	1.0E-05	mg/kg/day	7.E-02
				Vanadium	36.59	mg/kg	NC		NC			1.8E-05	mg/kg/day	5.0E-03	mg/kg/day	4.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	7.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Benzo(a)pyrene	0.197	mg/kg	5.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	2.2E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	6.1E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	7.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	2.1E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	6.9E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	5.1E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			5.7E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					5.E-03
		EXPOSURE POINT TOTAL									4.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										4.E-06					1.E-01
SOIL TOTAL											**4.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**4.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-96
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	7.6E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Benzo(a)pyrene	0.197	mg/kg	9.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	6.4E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.1E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	3.4E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-10	2.4E-07	mg/kg/day	3.0E-01	mg/kg/day	8.E-07
				Carbazole	0.0324	mg/kg	1.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.0E-07	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	8.7E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-11	6.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	1.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-09	7.4E-08	mg/kg/day	3.0E-01	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	4.0E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	2.8E-07	mg/kg/day	3.0E-01	mg/kg/day	9.E-07
				Aluminum	10949	mg/kg	NC		NC			3.5E-02	mg/kg/day	1.0E+00	mg/kg/day	4.E-02
				Antimony	0.815	mg/kg	NC		NC			2.6E-06	mg/kg/day	4.0E-04	mg/kg/day	7.E-03
				Arsenic	7.377	mg/kg	3.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	2.4E-05	mg/kg/day	3.0E-04	mg/kg/day	8.E-02
				Barium	79.74	mg/kg	NC		NC			2.6E-04	mg/kg/day	2.0E-01	mg/kg/day	1.E-03
				Cadmium	0.882	mg/kg	NC		NC			2.8E-06	mg/kg/day	5.0E-04	mg/kg/day	6.E-03
				Chromium	23.62	mg/kg	NC		NC			7.6E-05	mg/kg/day	2.0E-02	mg/kg/day	4.E-03
				Cobalt	6.429	mg/kg	NC		NC			2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Copper	50.46	mg/kg	NC		NC			1.6E-04	mg/kg/day	1.0E-02	mg/kg/day	2.E-02
				Lead	368	mg/kg	1.7E-05	mg/kg/day	ND			1.2E-03	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			1.3E-03	mg/kg/day	4.7E-02	mg/kg/day	3.E-02
				Mercury	0.579	mg/kg	NC		NC			1.9E-06	mg/kg/day	2.0E-03	mg/kg/day	9.E-04
				Thallium	1.4	mg/kg	NC		NC			4.5E-06	mg/kg/day	5.0E-05	mg/kg/day	9.E-02
				Vanadium	36.59	mg/kg	NC		NC			1.2E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								6.E-07					3.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	4.2E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-09	3.0E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Benzo(a)pyrene	0.197	mg/kg	3.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	2.5E-07	mg/kg/day	3.0E-01	mg/kg/day	8.E-07
				Benzo(b)fluoranthene	0.333	mg/kg	6.0E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	4.2E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	1.3E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-10	9.2E-08	mg/kg/day	3.0E-01	mg/kg/day	3.E-07
				Carbazole	0.0324	mg/kg	4.5E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	9.E-12	3.1E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	3.4E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-11	2.4E-07	mg/kg/day	3.0E-01	mg/kg/day	8.E-07
				Dibenz(a,h)anthracene	0.0229	mg/kg	4.1E-10	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-09	2.9E-08	mg/kg/day	3.0E-01	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	1.6E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-09	1.1E-07	mg/kg/day	3.0E-01	mg/kg/day	4.E-07
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	3.1E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-08	2.1E-06	mg/kg/day	3.0E-04	mg/kg/day	7.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			8.5E-09	mg/kg/day	1.3E-05	mg/kg/day	7.E-04
				Chromium	23.62	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								8.E-08					8.E-03
		EXPOSURE POINT TOTAL									7.E-07					3.E-01
	EXPOSURE MEDIUM TOTAL										7.E-07					3.E-01

TABLE H-96
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT BACKGROUND	DUST INHALATION	Benzo(a)anthracene	0.236	mg/kg	1.6E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	1.1E-05	ug/m3	ND		
				Benzo(a)pyrene	0.197	mg/kg	1.3E-07	ug/m3	1.1E-03	(ug/m3)-1	1.E-10	9.4E-06	ug/m3	ND		
				Benzo(b)fluoranthene	0.333	mg/kg	2.3E-07	ug/m3	1.1E-04	(ug/m3)-1	2.E-11	1.6E-05	ug/m3	ND		
				Benzo(k)fluoranthene	0.073	mg/kg	5.0E-08	ug/m3	1.1E-04	(ug/m3)-1	5.E-12	3.5E-06	ug/m3	ND		
				Carbazole	0.0324	mg/kg	NC		NC			1.5E-06	ug/m3	ND		
				Chrysene	0.189	mg/kg	1.3E-07	ug/m3	1.1E-05	(ug/m3)-1	1.E-12	9.0E-06	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0229	mg/kg	1.6E-08	ug/m3	1.2E-03	(ug/m3)-1	2.E-11	1.1E-06	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	5.9E-08	ug/m3	1.1E-04	(ug/m3)-1	6.E-12	4.1E-06	ug/m3	ND		
				Aluminum	10949	mg/kg	NC		NC			5.2E-01	ug/m3	5.0E+00	ug/m3	1.E-01
				Antimony	0.815	mg/kg	NC		NC			3.9E-05	ug/m3	ND		
				Arsenic	7.377	mg/kg	5.0E-06	ug/m3	4.3E-03	(ug/m3)-1	2.E-08	3.5E-04	ug/m3	1.5E-02	ug/m3	2.E-02
				Barium	79.74	mg/kg	NC		NC			3.8E-03	ug/m3	5.0E+00	ug/m3	8.E-04
				Cadmium	0.882	mg/kg	6.0E-07	ug/m3	1.8E-03	(ug/m3)-1	1.E-09	4.2E-05	ug/m3	2.0E-02	ug/m3	2.E-03
				Chromium	23.62	mg/kg	1.6E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	1.1E-03	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	6.429	mg/kg	4.4E-06	ug/m3	9.0E-03	(ug/m3)-1	4.E-08	3.1E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	50.46	mg/kg	NC		NC			2.4E-03	ug/m3	ND		
				Lead	368	mg/kg	2.5E-04	ug/m3	ND			1.8E-02	ug/m3	ND		
				Manganese	391.4	mg/kg	NC		NC			1.9E-02	ug/m3	5.0E-02	ug/m3	4.E-01
				Mercury	0.579	mg/kg	NC		NC			2.8E-05	ug/m3	3.0E-01	ug/m3	9.E-05
				Thallium	1.4	mg/kg	NC		NC			6.7E-05	ug/m3	ND		
				Vanadium	36.59	mg/kg	NC		NC			1.7E-03	ug/m3	1.0E-01	ug/m3	2.E-02
			EXPOSURE ROUTE TOTAL								3.E-07					8.E-01
		EXPOSURE POINT TOTAL									3.E-07					8.E-01
	EXPOSURE MEDIUM TOTAL										3.E-07					8.E-01
SOIL TOTAL											**9.E-07**					**1.E+00**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**9.E-07**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-97
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.197	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.333	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.073	mg/kg	5.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	4.E-09	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	0.0324	mg/kg	5.3E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	6.2E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	1.3E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	9.E-10	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.0229	mg/kg	1.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	4.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	5.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Aluminum	10949	mg/kg	NC		NC			2.1E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.815	mg/kg	NC		NC			1.5E-06	mg/kg/day	4.0E-04	mg/kg/day	4.E-03
				Arsenic	7.377	mg/kg	1.2E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	1.4E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	79.74	mg/kg	NC		NC			1.5E-04	mg/kg/day	2.0E-01	mg/kg/day	8.E-04
				Cadmium	0.882	mg/kg	NC		NC			1.7E-06	mg/kg/day	1.0E-03	mg/kg/day	2.E-03
				Chromium	23.62	mg/kg	NC		NC			4.5E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.429	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	50.46	mg/kg	NC		NC			9.6E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	368	mg/kg	6.0E-05	mg/kg/day	ND			7.0E-04	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			7.4E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	0.579	mg/kg	NC		NC			1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Thallium	1.4	mg/kg	NC		NC			2.7E-06	mg/kg/day	1.0E-05	mg/kg/day	3.E-01
				Vanadium	36.59	mg/kg	NC		NC			7.0E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								3.E-06					4.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	6.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(a)pyrene	0.197	mg/kg	5.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	9.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	2.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-09	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	1.5E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.7E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	5.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	4.E-10	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	6.3E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.6E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	2.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	1.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			4.7E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								7.E-07					4.E-03
		EXPOSURE POINT TOTAL									4.E-06					4.E-01
	EXPOSURE MEDIUM TOTAL										4.E-06					4.E-01
SOIL TOTAL											**4.E-06**					**4.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**4.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-98
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	3.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.197	mg/kg	2.6E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.3E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	4.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	7.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	9.6E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	7.E-10	1.6E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Carbazole	0.0324	mg/kg	2.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	7.1E-09	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	2.5E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	4.1E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	3.0E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	5.0E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Aluminum	10949	mg/kg	NC		NC			2.4E-03	mg/kg/day	1.0E+00	mg/kg/day	2.E-03
				Antimony	0.815	mg/kg	NC		NC			1.8E-07	mg/kg/day	4.0E-04	mg/kg/day	4.E-04
				Arsenic	7.377	mg/kg	5.5E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-07	1.6E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	79.74	mg/kg	NC		NC			1.7E-05	mg/kg/day	2.0E-01	mg/kg/day	9.E-05
				Cadmium	0.882	mg/kg	NC		NC			1.9E-07	mg/kg/day	1.0E-03	mg/kg/day	2.E-04
				Chromium	23.62	mg/kg	NC		NC			5.2E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	6.429	mg/kg	NC		NC			1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Copper	50.46	mg/kg	NC		NC			1.1E-05	mg/kg/day	4.0E-02	mg/kg/day	3.E-04
				Lead	368	mg/kg	2.8E-05	mg/kg/day	ND			8.1E-05	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			8.6E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	0.579	mg/kg	NC		NC			1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Thallium	1.4	mg/kg	NC		NC			3.1E-07	mg/kg/day	1.0E-05	mg/kg/day	3.E-02
				Vanadium	36.59	mg/kg	NC		NC			8.0E-06	mg/kg/day	5.0E-03	mg/kg/day	2.E-03
			EXPOSURE ROUTE TOTAL								1.E-06					5.E-02
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	1.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	2.4E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Benzo(a)pyrene	0.197	mg/kg	1.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-08	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	7.E-07
				Benzo(b)fluoranthene	0.333	mg/kg	2.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	3.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	4.4E-09	mg/kg/day	7.3E-02	(mg/kg/day)-1	3.E-10	7.4E-09	mg/kg/day	3.0E-02	mg/kg/day	2.E-07
				Carbazole	0.0324	mg/kg	8.7E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	2.5E-09	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	1.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-11	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Dibenz(a,h)anthracene	0.0229	mg/kg	1.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-08	2.3E-09	mg/kg/day	3.0E-02	mg/kg/day	8.E-08
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	5.3E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	8.8E-09	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	5.9E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	9.E-08	1.7E-07	mg/kg/day	3.0E-04	mg/kg/day	6.E-04
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			6.9E-10	mg/kg/day	2.5E-05	mg/kg/day	3.E-05
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					6.E-04
		EXPOSURE POINT TOTAL									1.E-06					5.E-02
	EXPOSURE MEDIUM TOTAL										1.E-06					5.E-02
SOIL TOTAL											**1.E-06**					**5.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**1.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**5.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-99
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	1.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-07	3.0E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(a)pyrene	0.197	mg/kg	9.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-06	2.5E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	0.333	mg/kg	1.5E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	4.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Benzo(k)fluoranthene	0.073	mg/kg	3.4E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-08	9.3E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	0.0324	mg/kg	3.6E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	7.E-10	4.1E-07	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	8.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-09	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Dibenz(a,h)anthracene	0.0229	mg/kg	1.1E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-07	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	4.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Aluminum	10949	mg/kg	NC		NC			1.4E-01	mg/kg/day	1.0E+00	mg/kg/day	1.E-01
				Antimony	0.815	mg/kg	NC		NC			1.0E-05	mg/kg/day	4.0E-04	mg/kg/day	3.E-02
				Arsenic	7.377	mg/kg	8.1E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-05	9.4E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Barium	79.74	mg/kg	NC		NC			1.0E-03	mg/kg/day	2.0E-01	mg/kg/day	5.E-03
				Cadmium	0.882	mg/kg	NC		NC			1.1E-05	mg/kg/day	1.0E-03	mg/kg/day	1.E-02
				Chromium	23.62	mg/kg	NC		NC			3.0E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
				Cobalt	6.429	mg/kg	NC		NC			8.2E-05	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	50.46	mg/kg	NC		NC			6.5E-04	mg/kg/day	4.0E-02	mg/kg/day	2.E-02
				Lead	368	mg/kg	4.0E-04	mg/kg/day	ND			4.7E-03	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			5.0E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	0.579	mg/kg	NC		NC			7.4E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Thallium	1.4	mg/kg	NC		NC			1.8E-05	mg/kg/day	1.0E-05	mg/kg/day	2.E+00
				Vanadium	36.59	mg/kg	NC		NC			4.7E-04	mg/kg/day	5.0E-03	mg/kg/day	9.E-02
			EXPOSURE ROUTE TOTAL								2.E-05					3.E+00
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	4.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	0.197	mg/kg	3.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	9.2E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.333	mg/kg	6.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.5E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Benzo(k)fluoranthene	0.073	mg/kg	1.4E-07	mg/kg/day	7.3E-02	(mg/kg/day)-1	1.E-08	3.4E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.0324	mg/kg	9.9E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	1.2E-07	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	3.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	8.8E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Dibenz(a,h)anthracene	0.0229	mg/kg	4.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	6.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	7.9E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			3.2E-08	mg/kg/day	2.5E-05	mg/kg/day	1.E-03
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-06					3.E-02
		EXPOSURE POINT TOTAL									3.E-05					3.E+00
	EXPOSURE MEDIUM TOTAL										3.E-05					3.E+00
SOIL TOTAL											**3.E-05**					**3.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**3.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-100
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.236	mg/kg	2.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.197	mg/kg	1.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.333	mg/kg	2.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(k)fluoranthene	0.073	mg/kg	6.5E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	5.E-09	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Carbazole	0.0324	mg/kg	1.6E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-10	4.8E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	2.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	3.4E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	7.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Aluminum	10949	mg/kg	NC		NC			1.6E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.815	mg/kg	NC		NC			1.2E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	7.377	mg/kg	3.7E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Barium	79.74	mg/kg	NC		NC			1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.E-04
				Cadmium	0.882	mg/kg	NC		NC			1.3E-06	mg/kg/day	1.0E-03	mg/kg/day	1.E-03
				Chromium	23.62	mg/kg	NC		NC			3.5E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	6.429	mg/kg	NC		NC			9.5E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Copper	50.46	mg/kg	NC		NC			7.4E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	368	mg/kg	1.9E-04	mg/kg/day	ND			5.4E-04	mg/kg/day	ND		
				Manganese	391.4	mg/kg	NC		NC			5.8E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	0.579	mg/kg	NC		NC			8.5E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	1.4	mg/kg	NC		NC			2.1E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	36.59	mg/kg	NC		NC			5.4E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								7.E-06					3.E-01
			DERMAL	Benzo(a)anthracene	0.236	mg/kg	9.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(a)pyrene	0.197	mg/kg	8.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.333	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	2.3E-07	mg/kg/day	3.0E-02	mg/kg/day	8.E-06
				Benzo(k)fluoranthene	0.073	mg/kg	3.0E-08	mg/kg/day	7.3E-02	(mg/kg/day)-1	2.E-09	5.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0324	mg/kg	5.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.7E-08	mg/kg/day	ND		
				Chrysene	0.189	mg/kg	7.8E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0229	mg/kg	9.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-08	1.6E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.0866	mg/kg	3.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	5.9E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	10949	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.815	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	7.377	mg/kg	4.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	79.74	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Cadmium	0.882	mg/kg	NC		NC			4.6E-09	mg/kg/day	2.5E-05	mg/kg/day	2.E-04
				Chromium	23.62	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	6.429	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	50.46	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	368	mg/kg	--		ND			--		ND		
				Manganese	391.4	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.579	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	1.4	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	36.59	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					4.E-03
		EXPOSURE POINT TOTAL									9.E-06					3.E-01
	EXPOSURE MEDIUM TOTAL										9.E-06					3.E-01
SOIL TOTAL											**9.E-06**					**3.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**9.E-06**
																TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA	**3.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-101
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - CURRENT - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: CURRENT
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.19	mg/kg	6.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	2.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	1.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	3.1E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	7.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	6.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.8E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	3.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	9.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	11809	mg/kg	NC		NC			1.0E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.414	mg/kg	NC		NC			3.6E-07	mg/kg/day	4.0E-04	mg/kg/day	9.E-04
				Arsenic	4.803	mg/kg	1.5E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	4.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	93.86	mg/kg	NC		NC			8.3E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Chromium	22.66	mg/kg	NC		NC			2.0E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Cobalt	8.075	mg/kg	NC		NC			7.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	33.41	mg/kg	NC		NC			2.9E-05	mg/kg/day	4.0E-02	mg/kg/day	7.E-04
				Lead	79	mg/kg	2.5E-05	mg/kg/day	ND			7.0E-05	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			3.5E-04	mg/kg/day	4.7E-02	mg/kg/day	8.E-03
				Mercury	0.4	mg/kg	NC		NC			3.5E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.801	mg/kg	NC		NC			7.1E-07	mg/kg/day	1.0E-05	mg/kg/day	7.E-02
				Vanadium	29.78	mg/kg	NC		NC			2.6E-05	mg/kg/day	5.0E-03	mg/kg/day	5.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.19	mg/kg	5.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.4E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	7.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	2.1E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	6.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	5.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.5E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	2.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	8.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	3.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	8.4E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					3.E-03
		EXPOSURE POINT TOTAL									4.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										4.E-06					1.E-01
SOIL TOTAL											**4.E-06**					**1.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											4.E-06					**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-102
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.2E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.19	mg/kg	6.0E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	2.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.3E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	1.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	3.1E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	7.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	6.E-10	2.1E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	6.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-08	1.8E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	3.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	9.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	11809	mg/kg	NC		NC			1.0E-02	mg/kg/day	1.0E+00	mg/kg/day	1.E-02
				Antimony	0.414	mg/kg	NC		NC			3.6E-07	mg/kg/day	4.0E-04	mg/kg/day	9.E-04
				Arsenic	4.803	mg/kg	1.5E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	2.E-06	4.2E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Barium	93.86	mg/kg	NC		NC			8.3E-05	mg/kg/day	2.0E-01	mg/kg/day	4.E-04
				Chromium	22.66	mg/kg	NC		NC			2.0E-05	mg/kg/day	3.0E-03	mg/kg/day	7.E-03
				Cobalt	8.075	mg/kg	NC		NC			7.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Copper	33.41	mg/kg	NC		NC			2.9E-05	mg/kg/day	4.0E-02	mg/kg/day	7.E-04
				Lead	79	mg/kg	2.5E-05	mg/kg/day	ND			7.0E-05	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			3.5E-04	mg/kg/day	4.7E-02	mg/kg/day	8.E-03
				Mercury	0.4	mg/kg	NC		NC			3.5E-07	mg/kg/day	3.0E-04	mg/kg/day	1.E-03
				Thallium	0.801	mg/kg	NC		NC			7.1E-07	mg/kg/day	1.0E-05	mg/kg/day	7.E-02
				Vanadium	29.78	mg/kg	NC		NC			2.6E-05	mg/kg/day	5.0E-03	mg/kg/day	5.E-03
			EXPOSURE ROUTE TOTAL								3.E-06					1.E-01
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.19	mg/kg	5.1E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.4E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	1.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	5.4E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	7.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	2.1E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	6.6E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.8E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	5.5E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.5E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	2.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	8.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	3.0E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	8.4E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					3.E-03
		EXPOSURE POINT TOTAL									4.E-06					1.E-01
	EXPOSURE MEDIUM TOTAL										4.E-06					1.E-01

TABLE H-102
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - OUTDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: OUTDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT BACKGROUND	DUST INHALATION	Benzo(a)anthracene	0.589	mg/kg	3.2E-08	ug/m3	1.1E-04	(ug/m3)-1	3.E-12	8.9E-08	ug/m3	ND		
				Benzo(a)pyrene	0.19	mg/kg	1.0E-08	ug/m3	1.1E-03	(ug/m3)-1	1.E-11	2.9E-08	ug/m3	ND		
				Benzo(b)fluoranthene	0.71	mg/kg	3.8E-08	ug/m3	1.1E-04	(ug/m3)-1	4.E-12	1.1E-07	ug/m3	ND		
				Carbazole	0.0357	mg/kg	NC		NC			5.4E-09	ug/m3	ND		
				Chrysene	0.243	mg/kg	1.3E-08	ug/m3	1.1E-05	(ug/m3)-1	1.E-13	3.7E-08	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0205	mg/kg	1.1E-09	ug/m3	1.2E-03	(ug/m3)-1	1.E-12	3.1E-09	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	5.7E-09	ug/m3	1.1E-04	(ug/m3)-1	6.E-13	1.6E-08	ug/m3	ND		
				Aluminum	11809	mg/kg	NC		NC			1.8E-03	ug/m3	5.0E+00	ug/m3	4.E-04
				Antimony	0.414	mg/kg	NC		NC			6.3E-08	ug/m3	ND		
				Arsenic	4.803	mg/kg	2.6E-07	ug/m3	4.3E-03	(ug/m3)-1	1.E-09	7.3E-07	ug/m3	1.5E-02	ug/m3	5.E-05
				Barium	93.86	mg/kg	NC		NC			1.4E-05	ug/m3	5.0E-01	ug/m3	3.E-05
				Chromium	22.66	mg/kg	1.2E-06	ug/m3	1.2E-02	(ug/m3)-1	1.E-08	3.4E-06	ug/m3	1.0E-01	ug/m3	3.E-05
				Cobalt	8.075	mg/kg	4.4E-07	ug/m3	9.0E-03	(ug/m3)-1	4.E-09	1.2E-06	ug/m3	6.0E-03	ug/m3	2.E-04
				Copper	33.41	mg/kg	NC		NC			5.0E-06	ug/m3	ND		
				Lead	79	mg/kg	4.3E-06	ug/m3	ND			1.2E-05	ug/m3	ND		
				Manganese	401.7	mg/kg	NC		NC			6.1E-05	ug/m3	5.0E-02	ug/m3	1.E-03
				Mercury	0.4	mg/kg	NC		NC			6.0E-08	ug/m3	3.0E-01	ug/m3	2.E-07
				Thallium	0.801	mg/kg	NC		NC			1.2E-07	ug/m3	ND		
				Vanadium	29.78	mg/kg	NC		NC			4.5E-06	ug/m3	1.0E-01	ug/m3	4.E-05
			EXPOSURE ROUTE TOTAL								2.E-08					2.E-03
		EXPOSURE POINT TOTAL									2.E-08					2.E-03
	EXPOSURE MEDIUM TOTAL										2.E-08					2.E-03
SOIL TOTAL											**4.E-06**					**1.E-01**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**4.E-06**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**1.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-103
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - INDOOR WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: INDOOR WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	1.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-08	2.9E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.19	mg/kg	3.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	9.3E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-08	3.5E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Carbazole	0.0357	mg/kg	6.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.7E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	4.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-10	1.2E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	3.6E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-08	1.0E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	5.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	11809	mg/kg	NC		NC			5.8E-03	mg/kg/day	1.0E+00	mg/kg/day	6.E-03
				Antimony	0.414	mg/kg	NC		NC			2.0E-07	mg/kg/day	4.0E-04	mg/kg/day	5.E-04
				Arsenic	4.803	mg/kg	8.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	8.E-03
				Barium	93.86	mg/kg	NC		NC			4.6E-05	mg/kg/day	2.0E-01	mg/kg/day	2.E-04
				Chromium	22.66	mg/kg	NC		NC			1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	4.E-03
				Cobalt	8.075	mg/kg	NC		NC			4.0E-06	mg/kg/day	3.0E-04	mg/kg/day	1.E-02
				Copper	33.41	mg/kg	NC		NC			1.6E-05	mg/kg/day	4.0E-02	mg/kg/day	4.E-04
				Lead	79	mg/kg	1.4E-05	mg/kg/day	ND			3.9E-05	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			2.0E-04	mg/kg/day	4.7E-02	mg/kg/day	4.E-03
				Mercury	0.4	mg/kg	NC		NC			2.0E-07	mg/kg/day	3.0E-04	mg/kg/day	7.E-04
				Thallium	0.801	mg/kg	NC		NC			3.9E-07	mg/kg/day	1.0E-05	mg/kg/day	4.E-02
				Vanadium	29.78	mg/kg	NC		NC			1.5E-05	mg/kg/day	5.0E-03	mg/kg/day	3.E-03
			EXPOSURE ROUTE TOTAL								2.E-06					8.E-02
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	1.8E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Benzo(a)pyrene	0.19	mg/kg	5.7E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	2.1E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	6.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	8.2E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	2.3E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	7.3E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	6.1E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.7E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	3.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	8.9E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	3.3E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	9.3E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					3.E-03
		EXPOSURE POINT TOTAL									3.E-06					8.E-02
	EXPOSURE MEDIUM TOTAL										3.E-06					8.E-02
SOIL TOTAL											**3.E-06**					**8.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-06					**8.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-104
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	1.9E-06	mg/kg/day	3.0E-01	mg/kg/day	6.E-06
				Benzo(a)pyrene	0.19	mg/kg	8.8E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	6.1E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	3.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	2.3E-06	mg/kg/day	3.0E-01	mg/kg/day	8.E-06
				Carbazole	0.0357	mg/kg	1.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.2E-07	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	1.1E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-11	7.8E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	9.5E-10	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-09	6.6E-08	mg/kg/day	3.0E-01	mg/kg/day	2.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	4.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-09	3.4E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Aluminum	11809	mg/kg	NC		NC			3.8E-02	mg/kg/day	1.0E+00	mg/kg/day	4.E-02
				Antimony	0.414	mg/kg	NC		NC			1.3E-06	mg/kg/day	4.0E-04	mg/kg/day	3.E-03
				Arsenic	4.803	mg/kg	2.2E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-07	1.6E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Barium	93.86	mg/kg	NC		NC			3.0E-04	mg/kg/day	2.0E-01	mg/kg/day	2.E-03
				Chromium	22.66	mg/kg	NC		NC			7.3E-05	mg/kg/day	2.0E-02	mg/kg/day	4.E-03
				Cobalt	8.075	mg/kg	NC		NC			2.6E-05	mg/kg/day	3.0E-03	mg/kg/day	9.E-03
				Copper	33.41	mg/kg	NC		NC			1.1E-04	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
				Lead	79	mg/kg	3.6E-06	mg/kg/day	ND			2.6E-04	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			1.3E-03	mg/kg/day	4.7E-02	mg/kg/day	3.E-02
				Mercury	0.4	mg/kg	NC		NC			1.3E-06	mg/kg/day	2.0E-03	mg/kg/day	6.E-04
				Thallium	0.801	mg/kg	NC		NC			2.6E-06	mg/kg/day	5.0E-05	mg/kg/day	5.E-02
				Vanadium	29.78	mg/kg	NC		NC			9.6E-05	mg/kg/day	1.0E-02	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								5.E-07					2.E-01
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-09	7.4E-07	mg/kg/day	3.0E-01	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.19	mg/kg	3.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	2.4E-07	mg/kg/day	3.0E-01	mg/kg/day	8.E-07
				Benzo(b)fluoranthene	0.71	mg/kg	1.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-09	8.9E-07	mg/kg/day	3.0E-01	mg/kg/day	3.E-06
				Carbazole	0.0357	mg/kg	4.9E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-11	3.5E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	4.4E-09	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-11	3.1E-07	mg/kg/day	3.0E-01	mg/kg/day	1.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	3.7E-10	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-09	2.6E-08	mg/kg/day	3.0E-01	mg/kg/day	9.E-08
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	1.9E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-09	1.3E-07	mg/kg/day	3.0E-01	mg/kg/day	4.E-07
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	2.0E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	3.E-08	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	5.E-03
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		5.0E-04	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-03	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		1.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		1.4E-04	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		5.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		2.6E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								8.E-08					5.E-03
		EXPOSURE POINT TOTAL									5.E-07					2.E-01
	EXPOSURE MEDIUM TOTAL										5.E-07					2.E-01

TABLE H-104
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
SOIL	AIR	DUST AT BACKGROUND	DUST INHALATION	Benzo(a)anthracene	0.589	mg/kg	4.0E-07	ug/m3	1.1E-04	(ug/m3)-1	4.E-11	2.8E-05	ug/m3	ND		
				Benzo(a)pyrene	0.19	mg/kg	1.3E-07	ug/m3	1.1E-03	(ug/m3)-1	1.E-10	9.1E-06	ug/m3	ND		
				Benzo(b)fluoranthene	0.71	mg/kg	4.8E-07	ug/m3	1.1E-04	(ug/m3)-1	5.E-11	3.4E-05	ug/m3	ND		
				Carbazole	0.0357	mg/kg	NC		NC			1.7E-06	ug/m3	ND		
				Chrysene	0.243	mg/kg	1.7E-07	ug/m3	1.1E-05	(ug/m3)-1	2.E-12	1.2E-05	ug/m3	ND		
				Dibenz(a,h)anthracene	0.0205	mg/kg	1.4E-08	ug/m3	1.2E-03	(ug/m3)-1	2.E-11	9.8E-07	ug/m3	ND		
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	7.2E-08	ug/m3	1.1E-04	(ug/m3)-1	8.E-12	5.1E-06	ug/m3	ND		
				Aluminum	11809	mg/kg	NC		NC			5.6E-01	ug/m3	5.0E+00	ug/m3	1.E-01
				Antimony	0.414	mg/kg	NC		NC			2.0E-05	ug/m3	ND		
				Arsenic	4.803	mg/kg	3.3E-06	ug/m3	4.3E-03	(ug/m3)-1	1.E-08	2.3E-04	ug/m3	1.5E-02	ug/m3	2.E-02
				Barium	93.86	mg/kg	NC		NC			4.5E-03	ug/m3	5.0E+00	ug/m3	9.E-04
				Chromium	22.66	mg/kg	1.5E-05	ug/m3	1.2E-02	(ug/m3)-1	2.E-07	1.1E-03	ug/m3	5.0E-03	ug/m3	2.E-01
				Cobalt	8.075	mg/kg	5.5E-06	ug/m3	9.0E-03	(ug/m3)-1	5.E-08	3.8E-04	ug/m3	2.0E-02	ug/m3	2.E-02
				Copper	33.41	mg/kg	NC		NC			1.6E-03	ug/m3	ND		
				Lead	79	mg/kg	5.4E-05	ug/m3	ND			3.8E-03	ug/m3	ND		
				Manganese	401.7	mg/kg	NC		NC			1.9E-02	ug/m3	5.0E-02	ug/m3	4.E-01
				Mercury	0.4	mg/kg	NC		NC			1.9E-05	ug/m3	3.0E-01	ug/m3	6.E-05
				Thallium	0.801	mg/kg	NC		NC			3.8E-05	ug/m3	ND		
				Vanadium	29.78	mg/kg	NC		NC			1.4E-03	ug/m3	1.0E-01	ug/m3	1.E-02
			EXPOSURE ROUTE TOTAL								2.E-07					8.E-01
		EXPOSURE POINT TOTAL									2.E-07					8.E-01
	EXPOSURE MEDIUM TOTAL										2.E-07					8.E-01
SOIL TOTAL											**8.E-07**					**1.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											8.E-07					**1.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-105
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - RECREATIONAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	4.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-07	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Benzo(a)pyrene	0.19	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-07	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(b)fluoranthene	0.71	mg/kg	4.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Carbazole	0.0357	mg/kg	5.8E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	6.8E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	1.7E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-09	4.6E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Dibenz(a,h)anthracene	0.0205	mg/kg	1.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	3.9E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	7.2E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-08	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	7.E-06
				Aluminum	11809	mg/kg	NC		NC			2.2E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.414	mg/kg	NC		NC			7.9E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	4.803	mg/kg	7.8E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-06	9.1E-06	mg/kg/day	3.0E-04	mg/kg/day	3.E-02
				Barium	93.86	mg/kg	NC		NC			1.8E-04	mg/kg/day	2.0E-01	mg/kg/day	9.E-04
				Chromium	22.66	mg/kg	NC		NC			4.3E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	8.075	mg/kg	NC		NC			1.5E-05	mg/kg/day	3.0E-04	mg/kg/day	5.E-02
				Copper	33.41	mg/kg	NC		NC			6.3E-05	mg/kg/day	4.0E-02	mg/kg/day	2.E-03
				Lead	79	mg/kg	1.3E-05	mg/kg/day	ND			1.5E-04	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			7.6E-04	mg/kg/day	4.7E-02	mg/kg/day	2.E-02
				Mercury	0.4	mg/kg	NC		NC			7.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Thallium	0.801	mg/kg	NC		NC			1.5E-06	mg/kg/day	1.0E-05	mg/kg/day	2.E-01
				Vanadium	29.78	mg/kg	NC		NC			5.7E-05	mg/kg/day	5.0E-03	mg/kg/day	1.E-02
			EXPOSURE ROUTE TOTAL								3.E-06					3.E-01
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	1.6E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.1E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.19	mg/kg	5.3E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	2.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	1.6E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	3.E-11	1.9E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	6.7E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	5.E-10	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	5.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	2.9E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	7.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	6.6E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	1.E-07	7.7E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								8.E-07					3.E-03
		EXPOSURE POINT TOTAL									4.E-06					3.E-01
	EXPOSURE MEDIUM TOTAL										4.E-06					3.E-01
SOIL TOTAL											**4.E-06**					**3.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											4.E-06					**3.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-106
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - RECREATIONAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RECREATIONAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	7.7E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	6.E-08	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.19	mg/kg	2.5E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	4.2E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	9.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Carbazole	0.0357	mg/kg	2.7E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	5.E-11	7.8E-09	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	3.2E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-10	5.3E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	2.7E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-08	4.5E-09	mg/kg/day	3.0E-02	mg/kg/day	1.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	1.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	2.3E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Aluminum	11809	mg/kg	NC		NC			2.6E-03	mg/kg/day	1.0E+00	mg/kg/day	3.E-03
				Antimony	0.414	mg/kg	NC		NC			9.1E-08	mg/kg/day	4.0E-04	mg/kg/day	2.E-04
				Arsenic	4.803	mg/kg	3.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	5.E-07	1.1E-06	mg/kg/day	3.0E-04	mg/kg/day	4.E-03
				Barium	93.86	mg/kg	NC		NC			2.1E-05	mg/kg/day	2.0E-01	mg/kg/day	1.E-04
				Chromium	22.66	mg/kg	NC		NC			5.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.E-03
				Cobalt	8.075	mg/kg	NC		NC			1.8E-06	mg/kg/day	3.0E-04	mg/kg/day	6.E-03
				Copper	33.41	mg/kg	NC		NC			7.3E-06	mg/kg/day	4.0E-02	mg/kg/day	2.E-04
				Lead	79	mg/kg	5.9E-06	mg/kg/day	ND			1.7E-05	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			8.8E-05	mg/kg/day	4.7E-02	mg/kg/day	2.E-03
				Mercury	0.4	mg/kg	NC		NC			8.8E-08	mg/kg/day	3.0E-04	mg/kg/day	3.E-04
				Thallium	0.801	mg/kg	NC		NC			1.8E-07	mg/kg/day	1.0E-05	mg/kg/day	2.E-02
				Vanadium	29.78	mg/kg	NC		NC			6.5E-06	mg/kg/day	5.0E-03	mg/kg/day	1.E-03
			EXPOSURE ROUTE TOTAL								9.E-07					4.E-02
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	3.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	6.0E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Benzo(a)pyrene	0.19	mg/kg	1.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	8.E-08	1.9E-08	mg/kg/day	3.0E-02	mg/kg/day	6.E-07
				Benzo(b)fluoranthene	0.71	mg/kg	4.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	7.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Carbazole	0.0357	mg/kg	9.6E-10	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-11	2.8E-09	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	1.5E-08	mg/kg/day	7.3E-03	(mg/kg/day)-1	1.E-10	2.5E-08	mg/kg/day	3.0E-02	mg/kg/day	8.E-07
				Dibenz(a,h)anthracene	0.0205	mg/kg	1.2E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	9.E-09	2.1E-09	mg/kg/day	3.0E-02	mg/kg/day	7.E-08
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	6.5E-09	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-09	1.1E-08	mg/kg/day	3.0E-02	mg/kg/day	4.E-07
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	3.9E-08	mg/kg/day	1.5E+00	(mg/kg/day)-1	6.E-08	1.1E-07	mg/kg/day	3.0E-04	mg/kg/day	4.E-04
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								2.E-07					4.E-04
		EXPOSURE POINT TOTAL									1.E-06					4.E-02
	EXPOSURE MEDIUM TOTAL										1.E-06					4.E-02
SOIL TOTAL											**1.E-06**					**4.E-02**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											1.E-06					**4.E-02**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-107
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	2.7E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	7.5E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Benzo(a)pyrene	0.19	mg/kg	8.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-06	2.4E-06	mg/kg/day	3.0E-02	mg/kg/day	8.E-05
				Benzo(b)fluoranthene	0.71	mg/kg	3.3E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-06	9.1E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Carbazole	0.0357	mg/kg	3.9E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	8.E-10	4.6E-07	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	1.1E-06	mg/kg/day	7.3E-03	(mg/kg/day)-1	8.E-09	3.1E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Dibenz(a,h)anthracene	0.0205	mg/kg	9.4E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	7.E-07	2.6E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	4.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	5.E-05
				Aluminum	11809	mg/kg	NC		NC			1.5E-01	mg/kg/day	1.0E+00	mg/kg/day	2.E-01
				Antimony	0.414	mg/kg	NC		NC			5.3E-06	mg/kg/day	4.0E-04	mg/kg/day	1.E-02
				Arsenic	4.803	mg/kg	5.3E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	8.E-06	6.1E-05	mg/kg/day	3.0E-04	mg/kg/day	2.E-01
				Barium	93.86	mg/kg	NC		NC			1.2E-03	mg/kg/day	2.0E-01	mg/kg/day	6.E-03
				Chromium	22.66	mg/kg	NC		NC			2.9E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
				Cobalt	8.075	mg/kg	NC		NC			1.0E-04	mg/kg/day	3.0E-04	mg/kg/day	3.E-01
				Copper	33.41	mg/kg	NC		NC			4.3E-04	mg/kg/day	4.0E-02	mg/kg/day	1.E-02
				Lead	79	mg/kg	8.7E-05	mg/kg/day	ND			1.0E-03	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			5.1E-03	mg/kg/day	4.7E-02	mg/kg/day	1.E-01
				Mercury	0.4	mg/kg	NC		NC			5.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Thallium	0.801	mg/kg	NC		NC			1.0E-05	mg/kg/day	1.0E-05	mg/kg/day	1.E+00
				Vanadium	29.78	mg/kg	NC		NC			3.8E-04	mg/kg/day	5.0E-03	mg/kg/day	8.E-02
			EXPOSURE ROUTE TOTAL								2.E-05					2.E+00
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	1.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-07	2.7E-06	mg/kg/day	3.0E-02	mg/kg/day	9.E-05
				Benzo(a)pyrene	0.19	mg/kg	3.5E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-06	8.8E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(b)fluoranthene	0.71	mg/kg	1.3E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-06	3.3E-06	mg/kg/day	3.0E-02	mg/kg/day	1.E-04
				Carbazole	0.0357	mg/kg	1.1E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	2.E-10	1.3E-07	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	4.5E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	3.E-09	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	4.E-05
				Dibenz(a,h)anthracene	0.0205	mg/kg	3.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-07	9.5E-08	mg/kg/day	3.0E-02	mg/kg/day	3.E-06
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	2.0E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	4.4E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	7.E-07	5.2E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								5.E-06					2.E-02
		EXPOSURE POINT TOTAL									3.E-05					2.E+00
	EXPOSURE MEDIUM TOTAL										3.E-05					2.E+00
SOIL TOTAL											**3.E-05**					**2.E+00**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											3.E-05					**2.E+00**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-108
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - BACKGROUND - SUBSURFACE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC		CANCER RISK CALCULATIONS					NON-CANCER HAZARD CALCULATIONS				
					VALUE	UNITS	INTAKE/EXPOSURE CONCENTRATION		CSF/UNIT RISK		CANCER RISK	INTAKE/EXPOSURE CONCENTRATION		RfD/RfC (1)		HAZARD QUOTIENT
							VALUE	UNITS	VALUE	UNITS		VALUE	UNITS	VALUE	UNITS	
SOIL	SUBSURFACE SOIL	BACKGROUND	INGESTION	Benzo(a)anthracene	0.589	mg/kg	5.2E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-07	8.7E-07	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Benzo(a)pyrene	0.19	mg/kg	1.7E-07	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-06	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	6.3E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-07	1.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-05
				Carbazole	0.0357	mg/kg	1.8E-08	mg/kg/day	2.0E-02	(mg/kg/day)-1	4.E-10	5.3E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	2.2E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	2.E-09	3.6E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Dibenz(a,h)anthracene	0.0205	mg/kg	1.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-07	3.0E-08	mg/kg/day	3.0E-02	mg/kg/day	1.E-06
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	9.4E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-08	1.6E-07	mg/kg/day	3.0E-02	mg/kg/day	5.E-06
				Aluminum	11809	mg/kg	NC		NC			1.7E-02	mg/kg/day	1.0E+00	mg/kg/day	2.E-02
				Antimony	0.414	mg/kg	NC		NC			6.1E-07	mg/kg/day	4.0E-04	mg/kg/day	2.E-03
				Arsenic	4.803	mg/kg	2.4E-06	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-06	7.1E-06	mg/kg/day	3.0E-04	mg/kg/day	2.E-02
				Barium	93.86	mg/kg	NC		NC			1.4E-04	mg/kg/day	2.0E-01	mg/kg/day	7.E-04
				Chromium	22.66	mg/kg	NC		NC			3.3E-05	mg/kg/day	3.0E-03	mg/kg/day	1.E-02
				Cobalt	8.075	mg/kg	NC		NC			1.2E-05	mg/kg/day	3.0E-04	mg/kg/day	4.E-02
				Copper	33.41	mg/kg	NC		NC			4.9E-05	mg/kg/day	4.0E-02	mg/kg/day	1.E-03
				Lead	79	mg/kg	4.0E-05	mg/kg/day	ND			1.2E-04	mg/kg/day	ND		
				Manganese	401.7	mg/kg	NC		NC			5.9E-04	mg/kg/day	4.7E-02	mg/kg/day	1.E-02
				Mercury	0.4	mg/kg	NC		NC			5.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.E-03
				Thallium	0.801	mg/kg	NC		NC			1.2E-06	mg/kg/day	1.0E-05	mg/kg/day	1.E-01
				Vanadium	29.78	mg/kg	NC		NC			4.4E-05	mg/kg/day	5.0E-03	mg/kg/day	9.E-03
			EXPOSURE ROUTE TOTAL								6.E-06					2.E-01
			DERMAL	Benzo(a)anthracene	0.589	mg/kg	2.4E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.E-05
				Benzo(a)pyrene	0.19	mg/kg	7.8E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-07	1.3E-07	mg/kg/day	3.0E-02	mg/kg/day	4.E-06
				Benzo(b)fluoranthene	0.71	mg/kg	2.9E-07	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-07	4.9E-07	mg/kg/day	3.0E-02	mg/kg/day	2.E-05
				Carbazole	0.0357	mg/kg	6.4E-09	mg/kg/day	2.0E-02	(mg/kg/day)-1	1.E-10	1.9E-08	mg/kg/day	ND		
				Chrysene	0.243	mg/kg	1.0E-07	mg/kg/day	7.3E-03	(mg/kg/day)-1	7.E-10	1.7E-07	mg/kg/day	3.0E-02	mg/kg/day	6.E-06
				Dibenz(a,h)anthracene	0.0205	mg/kg	8.4E-09	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-08	1.4E-08	mg/kg/day	3.0E-02	mg/kg/day	5.E-07
				Indeno(1,2,3-cd)pyrene	0.106	mg/kg	4.3E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	7.2E-08	mg/kg/day	3.0E-02	mg/kg/day	2.E-06
				Aluminum	11809	mg/kg	NC		NC			--		1.0E+00	mg/kg/day	
				Antimony	0.414	mg/kg	NC		NC			--		6.0E-05	mg/kg/day	
				Arsenic	4.803	mg/kg	2.6E-07	mg/kg/day	1.5E+00	(mg/kg/day)-1	4.E-07	7.6E-07	mg/kg/day	3.0E-04	mg/kg/day	3.E-03
				Barium	93.86	mg/kg	NC		NC			--		1.4E-02	mg/kg/day	
				Chromium	22.66	mg/kg	NC		NC			--		7.5E-05	mg/kg/day	
				Cobalt	8.075	mg/kg	NC		NC			--		3.0E-04	mg/kg/day	
				Copper	33.41	mg/kg	NC		NC			--		4.0E-02	mg/kg/day	
				Lead	79	mg/kg	--		ND			--		ND		
				Manganese	401.7	mg/kg	NC		NC			--		1.9E-03	mg/kg/day	
				Mercury	0.4	mg/kg	NC		NC			--		2.1E-05	mg/kg/day	
				Thallium	0.801	mg/kg	NC		NC			--		1.0E-05	mg/kg/day	
				Vanadium	29.78	mg/kg	NC		NC			--		1.3E-04	mg/kg/day	
												--				
			EXPOSURE ROUTE TOTAL								1.E-06					3.E-03
		EXPOSURE POINT TOTAL									7.E-06					2.E-01
	EXPOSURE MEDIUM TOTAL										7.E-06					2.E-01
SOIL TOTAL											**7.E-06**					**2.E-01**
											TOTAL RECEPTOR RISK ACROSS ALL MEDIA					**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**
											7.E-06					**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/25/2011

TABLE H-109
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - GROUNDWATER - FUTURE - CONSTRUCTION WORKER - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: CONSTRUCTION WORKER
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
GROUND WATER	GROUNDWATER	GROUNDWATER	DERMAL	Chloroform	0.014	mg/l	7.2E-09	mg/kg/day	3.1E-02	(mg/kg/day)-1	2.E-10	5.0E-07	mg/kg/day	1.0E-01	mg/kg/day	5.E-06
				Benzo(a)anthracene	0.00022	mg/l	1.6E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-08	1.1E-06	mg/kg/day	3.0E-01	mg/kg/day	4.E-06
				Benzo(a)pyrene	0.00018	mg/l	2.2E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-07	1.5E-06	mg/kg/day	3.0E-01	mg/kg/day	5.E-06
				Benzo(b)fluoranthene	0.00024	mg/l	3.0E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	2.E-08	2.1E-06	mg/kg/day	3.0E-01	mg/kg/day	7.E-06
				Dibenz(a,h)anthracene	0.00026	mg/l	4.9E-08	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-07	3.5E-06	mg/kg/day	3.0E-01	mg/kg/day	1.E-05
				Indeno(1,2,3-cd)pyrene	0.00027	mg/l	3.5E-08	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-08	2.4E-06	mg/kg/day	3.0E-01	mg/kg/day	8.E-06
				Chromium	0.0059	mg/l	NC		NC			3.2E-08	mg/kg/day	5.0E-04	mg/kg/day	6.E-05
			EXPOSURE ROUTE TOTAL								6.E-07					1.E-04
		EXPOSURE POINT TOTAL									6.E-07					1.E-04
	EXPOSURE MEDIUM TOTAL										6.E-07					1.E-04
GROUNDWATER TOTAL											**6.E-07**					**1.E-04**
										TOTAL RECEPTOR RISK ACROSS ALL MEDIA	**6.E-07**				**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**	**1.E-04**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: EYM 10/17/2011
Checked by: BJR 10/23/2011

TABLE H-110
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - FUTURE - RESIDENTIAL - CHILD (AGES 1-7)
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: CHILD (AGES 1-7)

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	CSF/UNIT RISK VALUE	CSF UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE UNITS	RfD/RfC (1) VALUE	RfD/RfC UNITS	HAZARD QUOTIENT
GROUND WATER	GROUND WATER	SITE	INGESTION	Chloroform	0.014	mg/l	7.7E-05	mg/kg/day	3.1E-02	(mg/kg/day)-1	2.E-06	8.9E-04	mg/kg/day	1.0E-02	mg/kg/day	9.E-02
				Benzo(a)anthracene	0.00022	mg/l	5.1E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-06	1.4E-05	mg/kg/day	3.0E-02	mg/kg/day	5.E-04
				Benzo(a)pyrene	0.00018	mg/l	4.1E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-05	1.2E-05	mg/kg/day	3.0E-02	mg/kg/day	4.E-04
				Benzo(b)fluoranthene	0.00024	mg/l	5.5E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-06	1.5E-05	mg/kg/day	3.0E-02	mg/kg/day	5.E-04
				Dibenz(a,h)anthracene	0.00026	mg/l	6.0E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	4.E-05	1.7E-05	mg/kg/day	3.0E-02	mg/kg/day	6.E-04
				Indeno(1,2,3-cd)pyrene	0.00027	mg/l	6.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-06	1.7E-05	mg/kg/day	3.0E-02	mg/kg/day	6.E-04
				Chromium	0.0059	mg/l	NC		NC			3.8E-04	mg/kg/day	3.0E-03	mg/kg/day	1.E-01
			EXPOSURE ROUTE TOTAL								9.E-05					2.E-01
			DERMAL	Chloroform	0.014	mg/l	6.7E-06	mg/kg/day	3.1E-02	(mg/kg/day)-1	2.E-07	7.9E-05	mg/kg/day	1.0E-02	mg/kg/day	8.E-03
				Benzo(a)anthracene	0.00022	mg/l	6.2E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	5.E-05	1.7E-04	mg/kg/day	3.0E-02	mg/kg/day	6.E-03
				Benzo(a)pyrene	0.00018	mg/l	8.7E-05	mg/kg/day	7.3E+00	(mg/kg/day)-1	6.E-04	2.4E-04	mg/kg/day	3.0E-02	mg/kg/day	8.E-03
				Benzo(b)fluoranthene	0.00024	mg/l	1.2E-04	mg/kg/day	7.3E-01	(mg/kg/day)-1	9.E-05	3.3E-04	mg/kg/day	3.0E-02	mg/kg/day	1.E-02
				Dibenz(a,h)anthracene	0.00026	mg/l	1.9E-04	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-03	5.4E-04	mg/kg/day	3.0E-02	mg/kg/day	2.E-02
				Indeno(1,2,3-cd)pyrene	0.00027	mg/l	1.4E-04	mg/kg/day	7.3E-01	(mg/kg/day)-1	1.E-04	3.8E-04	mg/kg/day	3.0E-02	mg/kg/day	1.E-02
				Chromium	0.0059	mg/l	NC		NC			5.0E-06	mg/kg/day	7.5E-05	mg/kg/day	7.E-02
			EXPOSURE ROUTE TOTAL								2.E-03					1.E-01
		EXPOSURE POINT TOTAL									2.E-03					3.E-01
	EXPOSURE MEDIUM TOTAL										2.E-03					3.E-01
TOTAL RECEPTOR RISK ACROSS ALL MEDIA											**2.E-03**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**3.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/12
Checked by: INITIALS DATE

TABLE H-111
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS -- REASONABLE MAXIMUM EXPOSURE - FUTURE - RESIDENTIAL - ADULT
SUPPLEMENTAL REMEDIAL INVESTIGATION
FT. TOTTEN COAST GUARD STATION
QUEENS, NEW YORK

SCENARIO TIMEFRAME: FUTURE
RECEPTOR POPULATION: RESIDENTIAL
RECEPTOR AGE: ADULT

MEDIUM	EXPOSURE MEDIUM	EXPOSURE POINT	EXPOSURE ROUTE	CHEMICAL	EPC VALUE	EPC UNITS	CANCER RISK CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	CSF/UNIT RISK VALUE	CSF/UNIT RISK UNITS	CANCER RISK	NON-CANCER HAZARD CALCULATIONS: INTAKE/EXPOSURE CONCENTRATION VALUE	INTAKE/EXPOSURE CONCENTRATION UNITS	RfD/RfC (1) VALUE	RfD/RfC (1) UNITS	HAZARD QUOTIENT
GROUND WATER	GROUND WATER	SITE	INGESTION	Chloroform	0.014	mg/l	1.4E-04	mg/kg/day	3.1E-02	(mg/kg/day)-1	4.E-06	4.1E-04	mg/kg/day	1.0E-02	mg/kg/day	4.E-02
				Benzo(a)anthracene	0.00022	mg/l	3.9E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	6.5E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(a)pyrene	0.00018	mg/l	3.2E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	2.E-05	5.3E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Benzo(b)fluoranthene	0.00024	mg/l	4.2E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	7.1E-06	mg/kg/day	3.0E-02	mg/kg/day	2.E-04
				Dibenz(a,h)anthracene	0.00026	mg/l	4.6E-06	mg/kg/day	7.3E+00	(mg/kg/day)-1	3.E-05	7.7E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Indeno(1,2,3-cd)pyrene	0.00027	mg/l	4.8E-06	mg/kg/day	7.3E-01	(mg/kg/day)-1	3.E-06	8.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.E-04
				Chromium	0.0059	mg/l	NC		NC			1.7E-04	mg/kg/day	3.0E-03	mg/kg/day	6.E-02
			EXPOSURE ROUTE TOTAL								7.E-05					1.E-01
			DERMAL	Chloroform	0.014	mg/l	1.3E-05	mg/kg/day	3.1E-02	(mg/kg/day)-1	4.E-07	3.8E-05	mg/kg/day	1.0E-02	mg/kg/day	4.E-03
				Benzo(a)anthracene	0.00022	mg/l	5.0E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	4.E-05	8.3E-05	mg/kg/day	3.0E-02	mg/kg/day	3.E-03
				Benzo(a)pyrene	0.00018	mg/l	6.9E-05	mg/kg/day	7.3E+00	(mg/kg/day)-1	5.E-04	1.2E-04	mg/kg/day	3.0E-02	mg/kg/day	4.E-03
				Benzo(b)fluoranthene	0.00024	mg/l	9.4E-05	mg/kg/day	7.3E-01	(mg/kg/day)-1	7.E-05	1.6E-04	mg/kg/day	3.0E-02	mg/kg/day	5.E-03
				Dibenz(a,h)anthracene	0.00026	mg/l	1.6E-04	mg/kg/day	7.3E+00	(mg/kg/day)-1	1.E-03	2.6E-04	mg/kg/day	3.0E-02	mg/kg/day	9.E-03
				Indeno(1,2,3-cd)pyrene	0.00027	mg/l	1.1E-04	mg/kg/day	7.3E-01	(mg/kg/day)-1	8.E-05	1.8E-04	mg/kg/day	3.0E-02	mg/kg/day	6.E-03
				Chromium	0.0059	mg/l	NC		NC			1.8E-06	mg/kg/day	7.5E-05	mg/kg/day	2.E-02
			EXPOSURE ROUTE TOTAL								2.E-03					5.E-02
		EXPOSURE POINT TOTAL									2.E-03					2.E-01
	EXPOSURE MEDIUM TOTAL										2.E-03					2.E-01
TOTAL RECEPTOR RISK ACROSS ALL MEDIA											**2.E-03**	**TOTAL RECEPTOR HAZARD ACROSS ALL MEDIA**				**2.E-01**

NOTES:
(1) - Blank cells indicate that an RfD or RfC is not avalailable from the sources used to obtain dose-response data for this risk assessment.
NC - Not carcinogenic by this exposure route.
NA - Not applicable; exposure route not applicable for this chemical/exposure medium.
NV - Not volatile; exposure route not complete for this chemical.
-- - Not calculated; dose-response data and/or dermal absorption values are not available.

Prepared by: BJR 2/14/12
Checked by: INITIALS DATE