

APPENDIX A

Fort Totten Human Health Risk Assessment Tables: Fill Area

TABLE A-1 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO EXPOSURES TO TOTAL SOIL INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)

Fill Area									
Site Number:									
* RME- Incidental Ingestion of Total Soil									
Ingestion Rate = CR		100 mg/day							
Exposure Frequency = EF		350 day/yr							
Exposure Duration = ED		24 yr							
Body Weight = BW		70 kg							
Averaging Time (Noncancer) = AT		8,760 days							
Averaging Time (Cancer) = AT		2.56E+04 days							
Conversion Factor = CF		0.000001 kg/mg							
Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT)									
NCADI = Daily intake - Noncarcinogens									
CADI = Daily Intake - Carcinogens									
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD									
Risk = Cancer Risk = CADI * SF									
Chemical of Concern		EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk	
		(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)			per (mg/kg-day)	
Inorganics									
ALUMINUM		8.01E+03	1.10E-02	3.76E-03	1.00E+00	NA	1.10E-02	--	
ANTIMONY		2.69E+00	3.68E-06	1.26E-06	4.00E-04	NA	9.21E-03	--	
ARSENIC		5.89E+00	8.07E-06	2.77E-06	3.00E-04	1.50E+00	2.69E-02	4.15E-06	
BARIUM		2.08E+02	2.85E-04	9.77E-05	7.00E-02	NA	4.07E-03	--	
BERYLLIUM		3.33E-01	4.56E-07	1.56E-07	2.00E-03	NA	2.28E-04	--	
CADMIUM		9.72E-01	1.33E-06	4.57E-07	5.00E-04	NA	2.66E-03	--	
CHROMIUM		2.33E+01	3.19E-05	1.09E-05	3.00E-03	NA	1.06E-02	--	
COBALT		7.01E+00	9.60E-06	3.29E-06	6.00E-02	NA	1.60E-04	--	
COPPER		1.65E+02	2.26E-04	7.75E-05	3.70E-02	NA	6.11E-03	--	
LEAD		5.52E+02	7.56E-04	2.59E-04	NA	NA	--	--	
MANGANESE		3.16E+02	4.33E-04	1.48E-04	2.40E-02	NA	1.80E-02	--	
MERCURY		8.94E-01	1.22E-06	4.20E-07	1.00E-04	NA	1.22E-02	--	
NICKEL		2.13E+01	2.92E-05	1.00E-05	2.00E-02	NA	1.46E-03	--	
SELENIUM		5.14E-01	7.04E-07	2.41E-07	5.00E-03	NA	1.41E-04	--	
SILVER		2.81E-01	3.85E-07	1.32E-07	5.00E-03	NA	7.70E-05	--	
THALLIUM		1.32E-01	1.81E-07	6.20E-08	6.60E-05	NA	2.74E-03	--	
VANADIUM		2.53E+01	3.47E-05	1.19E-05	7.00E-03	NA	4.95E-03	--	

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	5.36E-04	1.84E-04	3.00E-01	NA	1.79E-03	--
PAHs							
ACENAPHTHENE	1.49E-01	2.04E-07	7.00E-08	6.00E-02	NA	3.40E-06	--
ACENAPHTHYLENE	5.30E-02	7.26E-08	2.49E-08	2.00E-02	NA	3.63E-06	--
ANTHRACENE	2.07E-01	2.84E-07	9.72E-08	3.00E-01	NA	9.45E-07	--
BENZ(A)ANTHRACENE	4.93E-01	6.75E-07	2.32E-07	NA	7.30E-01	--	1.69E-07
BENZO(A)PYRENE	4.68E-01	6.41E-07	2.20E-07	NA	7.30E+00	--	1.60E-06
BENZO(B)FLUORANTHENE	5.92E-01	8.11E-07	2.78E-07	NA	7.30E-01	--	2.03E-07
BENZO(G,H,I)PERYLENE	3.17E-01	4.34E-07	1.49E-07	3.00E-02	NA	1.45E-05	--
BENZO(K)FLUORANTHENE	2.32E-01	3.18E-07	1.09E-07	NA	7.30E-02	--	7.95E-09
CHRYSENE	5.27E-01	7.22E-07	2.48E-07	NA	7.30E-03	--	1.81E-09
DIBENZ(A, H)ANTHRACENE	1.33E-01	1.82E-07	6.25E-08	NA	7.30E+00	--	4.56E-07
FLUORANTHENE	8.28E-01	1.13E-06	3.89E-07	4.00E-02	NA	2.84E-05	--
FLUORENE	1.55E-01	2.12E-07	7.28E-08	4.00E-02	NA	5.31E-06	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	4.73E-07	1.62E-07	NA	7.30E-01	--	1.18E-07
2-METHYLNAPHTHALENE	8.47E-02	1.16E-07	3.98E-08	2.00E-02	NA	5.80E-06	--
NAPHTHALENE	1.03E-01	1.41E-07	4.84E-08	2.00E-02	NA	7.05E-06	--
PHENANTHRENE	1.67E+00	2.29E-06	7.84E-07	2.00E-02	NA	1.14E-04	--
PYRENE	9.62E-01	1.32E-06	4.52E-07	3.00E-02	NA	4.39E-05	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	5.10E-07	1.75E-07	2.00E-02	1.40E-02	2.55E-05	2.45E-09
BUTYLBENZYLPHTHALATE	7.80E-02	1.07E-07	3.66E-08	2.00E-01	NA	5.34E-07	--
DIBENZOFURAN	1.31E-01	1.79E-07	6.15E-08	4.00E-03	NA	4.49E-05	--
DIBUTYLPHTHALATE	2.46E-01	3.37E-07	1.16E-07	1.00E-01	NA	3.37E-06	--
Volatiles							
2-BUTANONE	1.00E-02	1.37E-08	4.70E-09	6.00E-01	NA	2.28E-08	--
ACETONE	7.00E-01	9.59E-07	3.29E-07	1.00E-01	NA	9.59E-06	--
BENZENE	4.30E-03	5.89E-09	2.02E-09	3.00E-03	5.50E-02	1.96E-06	1.11E-10
CARBON DISULFIDE	1.00E-02	1.37E-08	4.70E-09	1.00E-01	NA	1.37E-07	--
TOLUENE	2.20E-03	3.01E-09	1.03E-09	2.00E-01	NA	1.51E-08	--
TRICHLOROETHENE	3.30E-03	4.52E-09	1.55E-09	6.00E-03	1.10E-02	7.53E-07	1.70E-11
VINYL CHLORIDE	0.01	1.36986E-08	4.69667E-09	0.003	1.5	4.57E-06	7.05E-09

0.1127063 6.72E-06

Cumulative Risk

TABLE A-2 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO EXPOSURE TO DERMAL CONTACT WITH TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area					
* RME- Dermal Contact with Total Soil							
Surface Area for Contact = SA	5700 cm2/event						
Adherence Factor = AF	0.07 mg/cm2						
Absorption Factor = ABS	chemical-specific						
Exposure Frequency = EF	350 event/yr						
Exposure Duration = ED	24 yr						
Body Weight = BW	70 kg						
Averaging Time (Noncancer) = AT	8,760 days						
Averaging Time (Cancer) = AT	2.56E+04 days						
Conversion Factor = CF	0.000001 kg/mg						
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk
Inorganics							
ALUMINUM	8.01E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	2.69E+00	--	--	6.00E-05	NA	--	--
ARSENIC	5.89E+00	9.66E-07	3.31E-07	3.00E-04	1.50E+00	3.22E-03	4.97E-07
BARIUM	2.08E+02	--	--	4.90E-03	NA	--	--
BERYLLIUM	3.33E-01	--	--	1.40E-05	NA	--	--
CADMIUM	9.72E-01	5.31E-09	1.82E-09	1.25E-05	NA	4.25E-04	--
CHROMIUM	2.33E+01	--	--	7.50E-05	NA	--	--
COBALT	7.01E+00	--	--	6.00E-02	NA	--	--
COPPER	1.65E+02	--	--	3.70E-02	NA	--	--
LEAD	5.52E+02	--	--	NA	NA	--	--
MANGANESE	3.16E+02	--	--	9.60E-04	NA	--	--
MERCURY	8.94E-01	--	--	1.00E-04	NA	--	--
NICKEL	2.13E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.14E-01	--	--	5.00E-03	NA	--	--
SILVER	2.81E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.32E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.53E+01	--	--	1.82E-04	NA	--	--

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.49E-01	1.06E-07	3.63E-08	NA	NA	--	--
ACENAPHTHYLENE	5.30E-02	3.77E-08	1.29E-08	NA	NA	--	--
ANTHRACENE	2.07E-01	1.47E-07	5.04E-08	NA	NA	--	--
BENZ(A)ANTHRACENE	4.93E-01	3.50E-07	1.20E-07	NA	NA	--	--
BENZO(A)PYRENE	4.68E-01	3.33E-07	1.14E-07	NA	NA	--	--
BENZO(B)FLOURANTHENE	5.92E-01	4.21E-07	1.44E-07	NA	NA	--	--
BENZO(G,H)PERYLENE	3.17E-01	2.25E-07	7.72E-08	NA	NA	--	--
BENZO(K)FLOURANTHENE	2.32E-01	1.65E-07	5.65E-08	NA	NA	--	--
CHRYSENE	5.27E-01	3.74E-07	1.28E-07	NA	NA	--	--
DIBENZ(A, H)ANTHRACENE	1.33E-01	9.45E-08	3.24E-08	NA	NA	--	--
FLUORANTHENE	8.28E-01	5.88E-07	2.02E-07	NA	NA	--	--
FLUORENE	1.55E-01	1.10E-07	3.78E-08	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	2.45E-07	8.40E-08	NA	NA	--	--
2-METHYLNAPHTHALENE	8.47E-02	6.02E-08	2.06E-08	NA	NA	--	--
NAPHTHALENE	1.03E-01	7.32E-08	2.51E-08	NA	NA	--	--
PHENANTHRENE	1.67E+00	1.19E-06	4.07E-07	NA	NA	--	--
PYRENE	9.62E-01	6.84E-07	2.34E-07	NA	NA	--	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	2.03E-07	6.97E-08	2.00E-02	1.40E-02	1.02E-05	9.76E-10
BUTYLBENZYLPHTHALATE	7.80E-02	4.26E-08	1.46E-08	2.00E-01	NA	2.13E-07	--
DIBENZOFURAN	1.31E-01	7.16E-08	2.45E-08	4.00E-03	NA	1.79E-05	--
DIBUTYLPHTHALATE	2.46E-01	1.34E-07	4.61E-08	1.00E-01	NA	1.34E-06	--
4-METHYLPHENOL	7.80E-03	4.26E-09	1.46E-09	5.00E-03	NA	8.53E-07	--
Volatiles							
2-BUTANONE	1.00E-02	--	--	6.00E-01	NA	--	--
ACETONE	7.00E-01	--	--	1.00E-01	NA	--	--
BENZENE	4.30E-03	--	--	3.00E-03	5.50E-02	--	--
CARBON DISULFIDE	1.00E-02	--	--	1.00E-01	NA	--	--
TOLUENE	2.20E-03	--	--	2.00E-01	NA	--	--
TRICHLOROETHENE	3.30E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	0.01	--	--	0.003	1.5	--	--

Cumulative Risk 0.003675 4.98E-07

TABLE A-3 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO INHALATION OF PARTICULATES FROM TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Fill Area									
* RME- Inhalation of Particles from Total Soil									
Inhalation Rate = IR	0.833 m3/hr								
Exposure Time = ET	24 hr/day								
Exposure Frequency = EF	350 day/yr								
Exposure Duration = ED	24 yr								
Body Weight = BW	70 kg								
Averaging Time (Noncancer) = AT	8,760 days								
Averaging Time (Cancer) = AT	25,550 days								
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)									
NCADI = Daily intake - Noncarcinogens									
CADI = Daily Intake - Carcinogens									
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD									
Risk = Cancer Risk = CADI * SF									
Chemical of Concern	EPC (mg/m3)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk		
per (mg/kg-day)									
Inorganics									
ALUMINUM	6.07E-06	1.66E-06	5.70E-07	1.40E-03	NA	1.19E-03	--		
ANTIMONY	2.04E-09	5.58E-10	1.91E-10	NA	NA	--	--		
ARSENIC	4.46E-09	1.22E-09	4.19E-10	NA	1.50E+01	--	6.28E-09		
BARIUM	1.58E-07	4.32E-08	1.48E-08	1.40E-04	NA	3.08E-04	--		
BERYLLIUM	2.52E-10	6.91E-11	2.37E-11	5.70E-06	8.40E+00	1.21E-05	1.99E-10		
CADMIUM	7.36E-10	2.02E-10	6.91E-11	NA	6.30E+00	--	4.36E-10		
CHROMIUM	1.77E-08	4.83E-09	1.66E-09	NA	2.90E+02	--	4.81E-07		
COBALT	5.31E-09	1.45E-09	4.99E-10	NA	NA	--	--		
COPPER	1.25E-07	3.42E-08	1.17E-08	NA	NA	--	--		
LEAD	4.18E-07	1.15E-07	3.93E-08	NA	NA	--	--		
MANGANESE	2.39E-07	6.56E-08	2.25E-08	1.40E-05	NA	4.68E-03	--		
MERCURY	6.77E-10	1.85E-10	6.36E-11	NA	NA	--	--		
NICKEL	1.61E-08	4.42E-09	1.52E-09	NA	NA	--	--		
SELENIUM	3.89E-10	1.07E-10	3.66E-11	NA	NA	--	--		
SILVER	2.13E-10	5.83E-11	2.00E-11	NA	NA	--	--		
THALLIUM	1.00E-10	2.74E-11	9.39E-12	NA	NA	--	--		
VANADIUM	1.92E-08	5.25E-09	1.80E-09	NA	NA	--	--		

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	2.96E-07	8.11E-08	2.78E-08	NA	NA	--	--
PAHs							
ACENAPHTHENE	1.13E-10	3.09E-11	1.06E-11	6.00E-02	NA	5.15E-10	--
ACENAPHTHYLENE	4.02E-11	1.10E-11	3.77E-12	8.60E-04	NA	1.28E-08	--
ANTHRACENE	1.57E-10	4.29E-11	1.47E-11	3.00E-01	NA	1.43E-10	--
BENZ(A)ANTHRACENE	3.73E-10	1.02E-10	3.51E-11	NA	3.10E-01	--	1.09E-11
BENZO(A)PYRENE	3.55E-10	9.71E-11	3.33E-11	NA	3.10E+00	--	1.03E-10
BENZO(B)FLOURANTHENE	4.48E-10	1.23E-10	4.21E-11	NA	3.10E-01	--	1.31E-11
BENZO(G,H,I)PERYLENE	2.40E-10	6.58E-11	2.25E-11	3.00E-02	NA	2.19E-09	--
BENZO(K)FLOURANTHENE	1.76E-10	4.81E-11	1.65E-11	NA	3.10E-02	--	5.12E-13
CHRYSENE	3.99E-10	1.09E-10	3.75E-11	NA	3.10E-03	--	1.16E-13
DIBENZ(A,H)ANTHRACENE	1.01E-10	2.76E-11	9.46E-12	NA	3.10E+00	--	2.93E-11
FLUORANTHENE	6.27E-10	1.72E-10	5.89E-11	4.00E-02	NA	4.29E-09	--
FLUORENE	1.17E-10	3.22E-11	1.10E-11	4.00E-02	NA	8.04E-10	--
INDENO(1,2,3-CD)PYRENE	2.61E-10	7.16E-11	2.45E-11	NA	3.10E-01	--	7.61E-12
2-METHYLNAPHTHALENE	6.42E-11	1.76E-11	6.02E-12	NA	NA	--	--
NAPHTHALENE	7.80E-11	2.14E-11	7.33E-12	8.60E-04	NA	2.48E-08	--
PHENANTHRENE	1.27E-09	3.46E-10	1.19E-10	8.60E-04	NA	4.03E-07	--
PYRENE	7.29E-10	2.00E-10	6.84E-11	3.00E-02	NA	6.65E-09	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.82E-10	7.72E-11	2.65E-11	2.20E-02	NA	3.51E-09	--
BUTYLBENZYLPHTHALATE	5.91E-11	1.62E-11	5.55E-12	2.00E-01	NA	8.09E-11	--
DIBENZOFURAN	9.92E-11	2.72E-11	9.32E-12	4.00E-03	NA	6.79E-09	--
DIBUTYLPHTHALATE	1.86E-10	5.10E-11	1.75E-11	1.00E-01	NA	5.10E-10	--
4-METHYLPHENOL	5.91E-12	1.62E-12	5.55E-13	5.00E-03	NA	3.24E-10	--
Volatiles							
2-BUTANONE	7.58E-12	2.07E-12	7.11E-13	2.90E-01	NA	7.15E-12	--
ACETONE	5.30E-10	1.45E-10	4.98E-11	1.00E-01	NA	1.45E-09	--
BENZENE	3.26E-12	8.92E-13	3.06E-13	1.70E-03	2.70E-02	5.25E-10	8.26E-15
CARBON DISULFIDE	7.58E-12	2.07E-12	7.11E-13	2.00E-01	NA	1.04E-11	--
TOLUENE	1.67E-12	4.56E-13	1.56E-13	1.10E-01	NA	4.15E-12	--
TRICHLOROETHENE	2.50E-12	6.85E-13	2.35E-13	6.00E-03	6.00E-03	1.14E-10	1.41E-15
VINYL CHLORIDE	7.57576E-12	2.07472E-12	7.11333E-13	0.029	0.031	7.15E-11	2.21E-14

TABLE A-4 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND
NONCANCER RISKS FOR CHILD RESIDENTS DUE TO EXPOSURES TO TOTAL SOIL INGESTION -- REASONABLE
MAXIMUM SCENARIO (RME)

Site Number:		Fill Area									
* RME- Incidental Ingestion of Total Soil											
Ingestion Rate = CR		200 mg/day									
Exposure Frequency = EF		350 day/yr									
Exposure Duration = ED		6 yr									
Body Weight = BW		15 kg									
Averaging Time (Noncancer) = AT		2,190 days									
Averaging Time (Cancer) = AT		2.56E+04 days									
Conversion Factor = CF		1.00E-06 kg/mg									
Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT)											
NCADI = Daily intake - Noncarcinogens											
CADI = Daily Intake - Carcinogens											
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD											
Risk = Cancer Risk = CADI * SF											
Chemical of Concern		EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk			
		(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)		per (mg/kg-day)				
Inorganics											
ALUMINUM	8.01E+03	1.02E-01	8.78E-03	1.00E+00	NA	1.02E-01	--				
ANTIMONY	2.69E+00	3.44E-05	2.95E-06	4.00E-04	NA	8.60E-02	--				
ARSENIC	5.89E+00	7.53E-05	6.45E-06	3.00E-04	1.50E+00	2.51E-01	9.68E-06				
BARIUM	2.08E+02	2.66E-03	2.28E-04	7.00E-02	NA	3.80E-02	--				
BERYLLIUM	3.33E-01	4.26E-06	3.65E-07	2.00E-03	NA	2.13E-03	--				
CADMIUM	9.72E-01	1.24E-05	1.07E-06	5.00E-04	NA	2.49E-02	--				
CHROMIUM	2.33E+01	2.98E-04	2.55E-05	3.00E-03	NA	9.93E-02	--				
COBALT	7.01E+00	8.96E-05	7.68E-06	6.00E-02	NA	1.49E-03	--				
COPPER	1.65E+02	2.11E-03	1.81E-04	3.70E-02	NA	5.70E-02	--				
LEAD	5.52E+02	7.06E-03	6.05E-04	NA	NA	--	--				
MANGANESE	3.16E+02	4.04E-03	3.46E-04	2.40E-02	NA	1.68E-01	--				
MERCURY	8.94E-01	1.14E-05	9.80E-07	1.00E-04	NA	1.14E-01	--				
NICKEL	2.13E+01	2.72E-04	2.33E-05	2.00E-02	NA	1.36E-02	--				
SELENIUM	5.14E-01	6.57E-06	5.63E-07	5.00E-03	NA	1.31E-03	--				
SILVER	2.81E-01	3.59E-06	3.08E-07	5.00E-03	NA	7.19E-04	--				
THALLIUM	1.32E-01	1.69E-06	1.45E-07	6.60E-05	NA	2.56E-02	--				
VANADIUM	2.53E+01	3.23E-04	2.77E-05	7.00E-03	NA	4.62E-02	--				

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	5.00E-03	4.28E-04	3.00E-01	NA	1.67E-02	--
PAHs							
ACENAPHTHENE	1.49E-01	1.91E-06	1.63E-07	6.00E-02	NA	3.18E-05	--
ACENAPHTHYLENE	5.30E-02	6.78E-07	5.81E-08	2.00E-02	NA	3.39E-05	--
ANTHRACENE	2.07E-01	2.65E-06	2.27E-07	3.00E-01	NA	8.82E-06	--
BENZO(A)ANTHRACENE	4.93E-01	6.30E-06	5.40E-07	NA	7.30E-01	--	3.94E-07
BENZO(A)PYRENE	4.68E-01	5.98E-06	5.13E-07	NA	7.30E+00	--	3.74E-06
BENZO(B)FLOURANTHENE	5.92E-01	7.57E-06	6.49E-07	NA	7.30E-01	--	4.74E-07
BENZO(G,H,I)PERYLENE	3.17E-01	4.05E-06	3.47E-07	3.00E-02	NA	1.35E-04	--
BENZO(K)FLOURANTHENE	2.32E-01	2.97E-06	2.54E-07	NA	7.30E-02	--	1.86E-08
CHRYSENE	5.27E-01	6.74E-06	5.78E-07	NA	7.30E-03	--	4.22E-09
DIBENZ(A, H)ANTHRACENE	1.33E-01	1.70E-06	1.46E-07	NA	7.30E+00	--	1.06E-06
FLOURANTHENE	8.28E-01	1.06E-05	9.07E-07	4.00E-02	NA	2.65E-04	--
FLUORENE	1.55E-01	1.98E-06	1.70E-07	4.00E-02	NA	4.95E-05	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	4.41E-06	3.78E-07	NA	7.30E-01	--	2.76E-07
2-METHYLNAPHTHALENE	8.47E-02	1.08E-06	9.28E-08	2.00E-02	NA	5.41E-05	--
NAPHTHALENE	1.03E-01	1.32E-06	1.13E-07	2.00E-02	NA	6.58E-05	--
PHENANTHRENE	1.67E+00	2.14E-05	1.83E-06	2.00E-02	NA	1.07E-03	--
PYRENE	9.62E-01	1.23E-05	1.05E-06	3.00E-02	NA	4.10E-04	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	4.76E-06	4.08E-07	2.00E-02	1.40E-02	2.38E-04	5.71E-09
BUTYLBENZYLPHTHALATE	7.80E-02	9.97E-07	8.55E-08	2.00E-01	NA	4.99E-06	--
DIBENZOFURAN	1.31E-01	1.67E-06	1.44E-07	4.00E-03	NA	4.19E-04	--
DIBUTYLPHTHALATE	2.46E-01	3.15E-06	2.70E-07	1.00E-01	NA	3.15E-05	--
Volatiles							
2-BUTANONE	1.00E-02	1.28E-07	1.10E-08	6.00E-01	NA	2.13E-07	--
ACETONE	7.00E-01	8.95E-06	7.67E-07	1.00E-01	NA	8.95E-05	--
BENZENE	4.30E-03	5.50E-08	4.71E-09	3.00E-03	5.50E-02	1.83E-05	2.59E-10
CARBON DISULFIDE	1.00E-02	1.28E-07	1.10E-08	1.00E-01	NA	1.28E-06	--
CHLOROFORM	0.00E+00	0.00E+00	0.00E+00	1.00E-02	6.10E-03	0.00E+00	0.00E+00
TOLUENE	2.20E-03	2.81E-08	2.41E-09	2.00E-01	NA	1.41E-07	--
TRICHLOROETHENE	3.30E-03	4.22E-08	3.62E-09	6.00E-03	1.10E-02	7.03E-06	3.98E-11
VINYL CHLORIDE	0.01	1.27854E-07	1.09589E-08	0.003	1.5	4.26E-05	1.64E-08
Cumulative Risk						1.05192584	1.56794E-05

TABLE A-5 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO EXPOSURE TO DERMAL CONTACT WITH TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area					
* RME- Dermal Contact with Total Soil							
Surface Area for Contact = SA	2800 cm2/event						
Adherence Factor = AF	0.2 mg/cm2						
Absorption Factor = ABS	chemical specific						
Exposure Frequency = EF	350 event/yr						
Exposure Duration = ED	6 yr						
Body Weight = BW	15 kg						
Averaging Time (Noncancer) = AT	2,190 days						
Averaging Time (Cancer) = AT	2.56E+04 days						
Conversion Factor = CF	0.000001 kg/mg						
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk
Inorganics							
ALUMINUM	8.01E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	2.69E+00	--	--	6.00E-05	NA	--	--
ARSENIC	5.89E+00	6.33E-06	5.42E-07	3.00E-04	1.50E+00	2.11E-02	8.13E-07
BARIUM	2.08E+02	--	--	4.90E-03	NA	--	--
BERYLLIUM	3.33E-01	--	--	1.40E-05	NA	--	--
CADMIUM	9.72E-01	3.48E-08	2.98E-09	1.25E-05	NA	2.78E-03	--
CHROMIUM	2.33E+01	--	--	7.50E-05	NA	--	--
COBALT	7.01E+00	--	--	6.00E-02	NA	--	--
COPPER	1.65E+02	--	--	3.70E-02	NA	--	--
LEAD	5.52E+02	--	--	NA	NA	--	--
MANGANESE	3.16E+02	--	--	9.60E-04	NA	--	--
MERCURY	8.94E-01	--	--	1.00E-04	NA	--	--
NICKEL	2.13E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.14E-01	--	--	5.00E-03	NA	--	--
SILVER	2.81E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.32E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.53E+01	--	--	1.82E-04	NA	--	--

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.49E-01	6.93E-07	5.94E-08	NA	NA	--	--
ACENAPHTHYLENE	5.30E-02	2.47E-07	2.11E-08	NA	NA	--	--
ANTHRACENE	2.07E-01	9.63E-07	8.26E-08	NA	NA	--	--
BENZ(A)ANTHRACENE	4.93E-01	2.29E-06	1.97E-07	NA	NA	--	--
BENZO(A)PYRENE	4.68E-01	2.18E-06	1.87E-07	NA	NA	--	--
BENZO(B)FLOURANTHENE	5.92E-01	2.76E-06	2.36E-07	NA	NA	--	--
BENZO(G,H,I)PERYLENE	3.17E-01	1.48E-06	1.26E-07	NA	NA	--	--
BENZO(K)FLOURANTHENE	2.32E-01	1.08E-06	9.25E-08	NA	NA	--	--
CHRYSENE	5.27E-01	2.45E-06	2.10E-07	NA	NA	--	--
DIBENZ(A, H)ANTHRACENE	1.33E-01	6.19E-07	5.31E-08	NA	NA	--	--
FLUORANTHENE	8.28E-01	3.85E-06	3.30E-07	NA	NA	--	--
FLUORENE	1.55E-01	7.21E-07	6.18E-08	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	1.61E-06	1.38E-07	NA	NA	--	--
2-METHYLNAPHTHALENE	8.47E-02	3.94E-07	3.38E-08	NA	NA	--	--
NAPHTHALENE	1.03E-01	4.79E-07	4.11E-08	NA	NA	--	--
PHENANTHRENE	1.67E+00	7.77E-06	6.66E-07	NA	NA	--	--
PYRENE	9.62E-01	4.48E-06	3.84E-07	NA	NA	--	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	1.33E-06	1.14E-07	2.00E-02	1.40E-02	6.66E-05	1.60E-09
BUTYLBENZYL PHTHALATE	7.80E-02	2.79E-07	2.39E-08	2.00E-01	NA	1.40E-06	--
DIBENZOFURAN	1.31E-01	4.69E-07	4.02E-08	4.00E-03	NA	1.17E-04	--
DIBUTYL PHTHALATE	2.46E-01	8.81E-07	7.55E-08	1.00E-01	NA	8.81E-06	--
4-METHYLPHENOL	7.80E-03	2.79E-08	2.39E-09	5.00E-03	NA	5.58E-06	--
Volatiles							
2-BUTANONE	1.00E-02	--	--	6.00E-01	NA	--	--
ACETONE	7.00E-01	--	--	1.00E-01	NA	--	--
BENZENE	4.30E-03	--	--	3.00E-03	5.50E-02	--	--
CARBON DISULFIDE	1.00E-02	--	--	1.00E-01	NA	--	--
TOLUENE	2.20E-03	--	--	2.00E-01	NA	--	--
TRICHLOROETHENE	3.30E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	0.01	--	--	0.003	1.5	--	--
Cumulative Risk						0.024069	8.15E-07

TABLE A-6 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO INHALATION OF PARTICULATES FROM TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Fill Area									
* RME- Inhalation of Particles from Total Soil									
Inhalation Rate = IR	0.417 m3/hr								
Exposure Time = ET	24 hr/day								
Exposure Frequency = EF	350 day/yr								
Exposure Duration = ED	6 yr								
Body Weight = BW	15 kg								
Averaging Time (Noncancer) = AT	2,190 days								
Averaging Time (Cancer) = AT	25,550 days								
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)									
NCADI = Daily Intake - Noncarcinogens									
CADI = Daily Intake - Carcinogens									
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD									
Risk = Cancer Risk = CADI * SF									
Chemical of Concern	EPC (mg/m3)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk		
Inorganics									
ALUMINUM	6.07E-06	3.88E-06	3.33E-07	1.40E-03	NA	2.77E-03	NA	--	--
ANTIMONY	2.04E-09	1.30E-09	1.12E-10	NA	NA	--	NA	--	--
ARSENIC	4.46E-09	2.85E-09	2.45E-10	NA	1.50E+01	--	1.50E+01	3.67E-09	--
BARIUM	1.58E-07	1.01E-07	8.64E-09	1.40E-04	NA	7.20E-04	NA	--	--
BERYLLIUM	2.52E-10	1.61E-10	1.38E-11	5.70E-06	8.40E+00	2.83E-05	8.40E+00	1.16E-10	1.16E-10
CADMIUM	7.36E-10	4.71E-10	4.04E-11	NA	6.30E+00	--	6.30E+00	2.54E-10	2.54E-10
CHROMIUM	1.77E-08	1.13E-08	9.68E-10	NA	2.90E+02	--	2.90E+02	2.81E-07	--
COBALT	5.31E-09	3.40E-09	2.91E-10	NA	NA	--	NA	--	--
COPPER	1.25E-07	8.00E-08	6.85E-09	NA	NA	--	NA	--	--
LEAD	4.18E-07	2.68E-07	2.29E-08	NA	NA	--	NA	--	--
MANGANESE	2.39E-07	1.53E-07	1.31E-08	1.40E-05	NA	1.09E-02	NA	--	--
MERCURY	6.77E-10	4.33E-10	3.71E-11	NA	NA	--	NA	--	--
NICKEL	1.61E-08	1.03E-08	8.85E-10	NA	NA	--	NA	--	--
SELENIUM	3.89E-10	2.49E-10	2.14E-11	NA	NA	--	NA	--	--
SILVER	2.13E-10	1.36E-10	1.17E-11	NA	NA	--	NA	--	--
THALLIUM	1.00E-10	6.40E-11	5.48E-12	NA	NA	--	NA	--	--

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
VANADIUM	1.92E-08	1.23E-08	1.05E-09	NA	NA	--	--
ZINC	2.96E-07	1.90E-07	1.62E-08	NA	NA	--	--
PAHs							
ACENAPHTHENE	1.13E-10	7.22E-11	6.19E-12	6.00E-02	NA	1.20E-09	--
ACENAPHTHYLENE	4.02E-11	2.57E-11	2.20E-12	8.60E-04	NA	2.99E-08	--
ANTHRACENE	1.57E-10	1.00E-10	8.60E-12	3.00E-01	NA	3.34E-10	--
BENZ(A)ANTHRACENE	3.73E-10	2.39E-10	2.05E-11	NA	3.10E-01	--	6.35E-12
BENZO(A)PYRENE	3.55E-10	2.27E-10	1.94E-11	NA	3.10E+00	--	6.03E-11
BENZO(B)FLOURANTHENE	4.48E-10	2.87E-10	2.46E-11	NA	3.10E-01	--	7.62E-12
BENZO(G,H,I)PERYLENE	2.40E-10	1.54E-10	1.32E-11	3.00E-02	NA	5.12E-09	--
BENZO(K)FLOURANTHENE	1.76E-10	1.12E-10	9.64E-12	NA	3.10E-02	--	2.99E-13
CHRYSENE	3.99E-10	2.55E-10	2.19E-11	NA	3.10E-03	--	6.79E-14
DIBENZ(A, H)ANTHRACENE	1.01E-10	6.45E-11	5.53E-12	NA	3.10E+00	--	1.71E-11
FLUORANTHENE	6.27E-10	4.01E-10	3.44E-11	4.00E-02	NA	1.00E-08	--
FLUORENE	1.17E-10	7.51E-11	6.44E-12	4.00E-02	NA	1.88E-09	--
INDENO(1,2,3-CD)PYRENE	2.61E-10	1.67E-10	1.43E-11	NA	3.10E-01	--	4.44E-12
2-METHYLNAPHTHALENE	6.42E-11	4.11E-11	3.52E-12	NA	NA	--	--
NAPHTHALENE	7.80E-11	4.99E-11	4.28E-12	8.60E-04	NA	5.80E-08	--
PHENANTHRENE	1.27E-09	8.09E-10	6.94E-11	8.60E-04	NA	9.41E-07	--
PYRENE	7.29E-10	4.66E-10	4.00E-11	3.00E-02	NA	1.55E-08	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.82E-10	1.80E-10	1.55E-11	2.20E-02	NA	8.20E-09	--
BUTYLBENZYLPHTHALATE	5.91E-11	3.78E-11	3.24E-12	2.00E-01	NA	1.89E-10	--
DIBENZOFURAN	9.92E-11	6.35E-11	5.44E-12	4.00E-03	NA	1.59E-08	--
DIBUTYLPHTHALATE	1.86E-10	1.19E-10	1.02E-11	1.00E-01	NA	1.19E-09	--
Volatiles							
2-BUTANONE	7.58E-12	4.85E-12	4.15E-13	2.90E-01	NA	1.67E-11	--
ACETONE	5.30E-10	3.39E-10	2.91E-11	1.00E-01	NA	3.39E-09	--
BENZENE	3.26E-12	2.08E-12	1.79E-13	1.70E-03	2.70E-02	1.23E-09	4.82E-15
CARBON DISULFIDE	7.58E-12	4.85E-12	4.15E-13	2.00E-01	NA	2.42E-11	--
TOLUENE	1.67E-12	1.07E-12	9.14E-14	1.10E-01	NA	9.69E-12	--
TRICHLOROETHENE	2.5E-12	1.59945E-12	1.37096E-13	0.006	0.006	2.67E-10	8.23E-16
VINYL CHLORIDE	7.57576E-12	4.84682E-12	4.15442E-13	0.029	0.031	1.671E-10	1.28787E-14
Cumulative Risk						0.0144626	2.84851E-07

TABLE A-7 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND
NONCANCER RISKS FOR RECREATIONAL USERS DUE TO EXPOSURES TO SURFACE SOIL INGESTION --
REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area									
* RME- Incidental Ingestion of Surface Soil											
Ingestion Rate = CR	200 mg/day										
Exposure Frequency = EF	141 day/yr										
Exposure Duration = ED	9 yr										
Body Weight = BW	36 kg										
Averaging Time (Noncancer) = AT	3,285 days										
Averaging Time (Cancer) = AT	2.56E+04 days										
Conversion Factor = CF	0.000001 kg/mg										
Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT)											
NCADI = Daily intake - Noncarcinogens											
CADI = Daily Intake - Carcinogens											
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD											
Risk = Cancer Risk = CADI * SF											
Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk				
per (mg/kg-day)											
Inorganics											
ALUMINUM	8.01E+03	1.72E-02	2.21E-03	1.00E+00	NA	1.72E-02	--				
ANTIMONY	2.69E+00	5.77E-06	7.42E-07	4.00E-04	NA	1.44E-02	--				
ARSENIC	5.89E+00	1.26E-05	1.63E-06	3.00E-04	1.50E+00	4.21E-02	2.44E-06				
BARIUM	2.08E+02	4.46E-04	5.74E-05	7.00E-02	NA	6.38E-03	--				
BERYLLIUM	3.33E-01	7.15E-07	9.19E-08	2.00E-03	NA	3.57E-04	--				
CADMIUM	9.72E-01	2.09E-06	2.68E-07	5.00E-04	NA	4.17E-03	--				
CHROMIUM	2.33E+01	5.00E-05	6.43E-06	3.00E-03	NA	1.67E-02	--				
COBALT	7.01E+00	1.50E-05	1.93E-06	6.00E-02	NA	2.51E-04	--				
MANGANESE	3.16E+02	6.78E-04	8.72E-05	2.40E-02	NA	2.83E-02	--				
MERCURY	8.94E-01	1.92E-06	2.47E-07	1.00E-04	NA	1.92E-02	--				
NICKEL	2.13E+01	4.57E-05	5.88E-06	2.00E-02	NA	2.29E-03	--				
SELENIUM	5.14E-01	1.10E-06	1.42E-07	5.00E-03	NA	2.21E-04	--				
SILVER	2.81E-01	6.03E-07	7.75E-08	5.00E-03	NA	1.21E-04	--				
THALLIUM	1.32E-01	2.83E-07	3.64E-08	6.60E-05	NA	4.29E-03	--				
VANADIUM	2.53E+01	5.43E-05	6.98E-06	7.00E-03	NA	7.76E-03	--				

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	8.39E-04	1.08E-04	3.00E-01	NA	2.80E-03	--
PAHs							
ACENAPHTHENE	1.49E-01	3.20E-07	4.11E-08	6.00E-02	NA	5.33E-06	--
ACENAPHTHYLENE	5.30E-02	1.14E-07	1.46E-08	2.00E-02	NA	5.69E-06	--
ANTHRACENE	2.07E-01	4.44E-07	5.71E-08	3.00E-01	NA	1.48E-06	--
BENZ(A)ANTHRACENE	4.93E-01	1.06E-06	1.36E-07	NA	7.30E-01	--	9.93E-08
BENZO(A)PYRENE	4.68E-01	1.00E-06	1.29E-07	NA	7.30E+00	--	9.43E-07
BENZO(B)FLOURANTHENE	5.92E-01	1.27E-06	1.63E-07	NA	7.30E-01	--	1.19E-07
BENZO(G,H,I)PERYLENE	3.17E-01	6.80E-07	8.75E-08	3.00E-02	NA	2.27E-05	--
BENZO(K)FLOURANTHENE	2.32E-01	4.98E-07	6.40E-08	NA	7.30E-02	--	4.67E-09
CHRYSENE	5.27E-01	1.13E-06	1.45E-07	NA	7.30E-03	--	1.06E-09
DIBENZ(A, H)ANTHRACENE	1.33E-01	2.85E-07	3.67E-08	NA	7.30E+00	--	2.68E-07
FLUORANTHENE	8.28E-01	1.78E-06	2.28E-07	4.00E-02	NA	4.44E-05	--
FLUORENE	1.55E-01	3.33E-07	4.28E-08	4.00E-02	NA	8.32E-06	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	7.40E-07	9.52E-08	NA	7.30E-01	--	6.95E-08
2-METHYLNAPHTHALENE	8.47E-02	1.82E-07	2.34E-08	2.00E-02	NA	9.09E-06	--
NAPHTHALENE	1.03E-01	2.21E-07	2.84E-08	2.00E-02	NA	1.11E-05	--
PHENANTHRENE	1.67E+00	3.58E-06	4.61E-07	2.00E-02	NA	1.79E-04	--
PYRENE	9.62E-01	2.06E-06	2.65E-07	3.00E-02	NA	6.88E-05	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	7.98E-07	1.03E-07	2.00E-02	1.40E-02	3.99E-05	1.44E-09
BUTYLBENZYLPHTHALATE	7.80E-02	1.67E-07	2.15E-08	2.00E-01	NA	8.37E-07	--
DIBENZOFURAN	1.31E-01	2.81E-07	3.61E-08	4.00E-03	NA	7.03E-05	--
DIBUTYLPHTHALATE	2.46E-01	5.28E-07	6.79E-08	1.00E-01	NA	5.28E-06	--
Volatiles							
2-BUTANONE	1.00E-02	2.15E-08	2.76E-09	6.00E-01	NA	3.58E-08	--
ACETONE	7.00E-01	1.50E-06	1.93E-07	1.00E-01	NA	1.50E-05	--
BENZENE	4.30E-03	9.23E-09	1.19E-09	3.00E-03	5.50E-02	3.08E-06	6.53E-11
CARBON DISULFIDE	1.00E-02	2.15E-08	2.76E-09	1.00E-01	NA	2.15E-07	--
TOLUENE	2.20E-03	4.72E-09	6.07E-10	2.00E-01	NA	2.36E-08	--
TRICHLOROETHENE	3.30E-03	7.08E-09	9.11E-10	6.00E-03	1.10E-02	1.18E-06	1.00E-11
VINYL CHLORIDE	0.01	2.1461E-08	2.7593E-09	0.003	1.5	7.15E-06	4.14E-09
Cumulative Risk						0.176573266	3.94785E-06

TABLE A-8 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR RECREATIONAL USERS DUE TO EXPOSURE TO DERMAL CONTACT WITH SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Fill Area									
* RME- Dermal Contact with Surface Soil									
Surface Area for Contact = SA	2900	cm ² /event							
Adherence Factor = AF	1	mg/cm ²							
Absorption Factor = ABS	chemical-specific								
Exposure Frequency = EF	0	event/yr							
Exposure Duration = ED	9	yr							
Body Weight = BW	36	kg							
Averaging Time (Noncancer) = AT	3,285	days							
Averaging Time (Cancer) = AT	2,56E+04	days							
Conversion Factor = CF	0.000001	kg/mg							
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)									
NCADI = Daily intake - Noncarcinogens									
CADI = Daily Intake - Carcinogens									
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD									
Risk = Cancer Risk = CADI * SF									
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk		
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)			per (mg/kg-day)		
Inorganics									
ALUMINUM	8.01E+03	--	--	1.00E+00	NA	--	--	--	--
ANTIMONY	2.69E+00	--	--	6.00E-05	NA	--	--	--	--
ARSENIC	5.89E+00	1.17E-08	1.50E-09	3.00E-04	1.50E+00	3.90E-05	2.26E-09		
BARIUM	2.08E+02	--	--	4.90E-03	NA	--	--	--	--
BERYLLIUM	3.33E-01	--	--	1.40E-05	NA	--	--	--	--
CADMIUM	9.72E-01	6.44E-11	8.27E-12	1.25E-05	NA	5.15E-06			
CHROMIUM	2.33E+01	--	--	7.50E-05	NA	--	--	--	--
COBALT	7.01E+00	--	--	6.00E-02	NA	--	--	--	--
COPPER	1.65E+02	--	--	3.70E-02	NA	--	--	--	--
LEAD	5.52E+02	--	--	NA	NA	--	--	--	--
MANGANESE	3.16E+02	--	--	9.60E-04	NA	--	--	--	--
MERCURY	8.94E-01	--	--	1.00E-04	NA	--	--	--	--
NICKEL	2.13E+01	--	--	8.00E-04	NA	--	--	--	--
SELENIUM	5.14E-01	--	--	5.00E-03	NA	--	--	--	--
SILVER	2.81E-01	--	--	2.00E-04	NA	--	--	--	--
THALLIUM	1.32E-01	--	--	6.60E-05	NA	--	--	--	--
VANADIUM	2.53E+01	--	--	1.82E-04	NA	--	--	--	--

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.49E-01	1.28E-09	1.65E-10	NA	NA	--	--
ACENAPHTHYLENE	5.30E-02	4.56E-10	5.87E-11	NA	NA	--	--
ANTHRACENE	2.07E-01	1.78E-09	2.29E-10	NA	NA	--	--
BENZ(A)ANTHRACENE	4.93E-01	4.24E-09	5.46E-10	NA	NA	--	--
BENZO(A)PYRENE	4.68E-01	4.03E-09	5.18E-10	NA	NA	--	--
BENZO(B)FLUORANTHENE	5.92E-01	5.10E-09	6.55E-10	NA	NA	--	--
BENZO(G,H,I)PERYLENE	3.17E-01	2.73E-09	3.51E-10	NA	NA	--	--
BENZO(K)FLUORANTHENE	2.32E-01	2.00E-09	2.57E-10	NA	NA	--	--
CHRYSENE	5.27E-01	4.54E-09	5.83E-10	NA	NA	--	--
DIBENZ(A,H)ANTHRACENE	1.33E-01	1.14E-09	1.47E-10	NA	NA	--	--
FLUORANTHENE	8.28E-01	7.13E-09	9.16E-10	NA	NA	--	--
FLUORENE	1.55E-01	1.33E-09	1.72E-10	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	2.97E-09	3.82E-10	NA	NA	--	--
2-METHYLNAPHTHALENE	8.47E-02	7.29E-10	9.37E-11	NA	NA	--	--
NAPHTHALENE	1.03E-01	8.87E-10	1.14E-10	NA	NA	--	--
PHENANTHRENE	1.67E+00	1.44E-08	1.85E-09	NA	NA	--	--
PYRENE	9.62E-01	8.28E-09	1.06E-09	NA	NA	--	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	2.46E-09	3.17E-10	2.00E-02	1.40E-02	1.23E-07	4.43E-12
BUTYLBENZYLPHTHALATE	7.80E-02	5.16E-10	6.64E-11	2.00E-01	NA	2.58E-09	--
DIBENZOFURAN	1.31E-01	8.67E-10	1.12E-10	4.00E-03	NA	2.17E-07	--
DIBUTYLPHTHALATE	2.46E-01	1.63E-09	2.09E-10	1.00E-01	NA	1.63E-08	--
Volatiles							
2-BUTANONE	1.00E-02	--	--	6.00E-01	NA	--	--
ACETONE	7.00E-01	--	--	1.00E-01	NA	--	--
BENZENE	4.30E-03	--	--	3.00E-03	5.50E-02	--	--
CARBON DISULFIDE	1.00E-02	--	--	1.00E-01	NA	--	--
TOLUENE	2.20E-03	--	--	2.00E-01	NA	--	--
TRICHLOROETHENE	3.30E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	0.01	--	--	0.003	1.5	--	--
Cumulative Risk						4.45154E-05	2.26073E-09

TABLE A-9 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR RECREATIONAL USERS DUE TO INHALATION OF
PARTICULATES FROM SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Fill Area											
* RME- Inhalation of Particles from Surface Soil											
Inhalation Rate = IR	0.833 m3/hr										
Exposure Time = ET	10 hr/day										
Exposure Frequency = EF	141 day/yr										
Exposure Duration = ED	9 yr										
Body Weight = BW	36 kg										
Averaging Time (Noncancer) = AT	2,190 days										
Averaging Time (Cancer) = AT	25,550 days										
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)											
NCADI = Daily intake - Noncarcinogens											
CADI = Daily Intake - Carcinogens											
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD											
Risk = Cancer Risk = CADI * SF											
Chemical of Concern	EPC (mg/m3)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk				
Inorganics											
ALUMINUM	6.07E-06	8.14E-07	6.97E-08	1.40E-03	NA	5.81E-04	--				
ANTIMONY	2.04E-09	2.73E-10	2.34E-11	NA	NA	--	--				
ARSENIC	4.46E-09	5.98E-10	5.13E-11	NA	1.50E+01	--	7.69E-10				
BARIUM	1.58E-07	2.11E-08	1.81E-09	1.40E-04	NA	1.51E-04	--				
BERYLLIUM	2.52E-10	3.38E-11	2.90E-12	5.70E-06	8.40E+00	5.93E-06	2.44E-11				
CADMIUM	7.36E-10	9.87E-11	8.46E-12	NA	6.30E+00	--	5.33E-11				
CHROMIUM	1.77E-08	2.37E-09	2.03E-10	NA	2.90E+02	--	5.88E-08				
COBALT	5.31E-09	7.12E-10	6.10E-11	NA	NA	--	--				
COPPER	1.25E-07	1.68E-08	1.44E-09	NA	NA	--	--				
LEAD	4.18E-07	5.61E-08	4.81E-09	NA	NA	--	--				
MANGANESE	2.39E-07	3.21E-08	2.75E-09	1.40E-05	NA	2.29E-03	--				
MERCURY	6.77E-10	9.08E-11	7.78E-12	NA	NA	--	--				
NICKEL	1.61E-08	2.16E-09	1.85E-10	NA	NA	--	--				
SELENIUM	3.89E-10	5.22E-11	4.48E-12	NA	NA	--	--				
SILVER	2.13E-10	2.85E-11	2.45E-12	NA	NA	--	--				
THALLIUM	1.00E-10	1.34E-11	1.15E-12	NA	NA	--	--				
VANADIUM	1.92E-08	2.57E-09	2.20E-10	NA	NA	--	--				

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	2.96E-07	3.97E-08	3.40E-09	NA	NA	--	--
PAHs							
ACENAPHTHENE	1.13E-10	1.51E-11	1.30E-12	6.00E-02	NA	2.52E-10	--
ACENAPHTHYLENE	4.02E-11	5.38E-12	4.61E-13	8.60E-04	NA	6.26E-09	--
ANTHRACENE	1.57E-10	2.10E-11	1.80E-12	3.00E-01	NA	7.01E-11	--
BENZ(A)ANTHRACENE	3.73E-10	5.01E-11	4.29E-12	NA	3.10E-01	--	1.33E-12
BENZO(A)PYRENE	3.55E-10	4.75E-11	4.07E-12	NA	3.10E+00	--	1.26E-11
BENZO(B)FLOURANTHENE	4.48E-10	6.01E-11	5.15E-12	NA	3.10E-01	--	1.60E-12
BENZO(G,H,I)PERYLENE	2.40E-10	3.22E-11	2.76E-12	3.00E-02	NA	1.07E-09	--
BENZO(K)FLOURANTHENE	1.76E-10	2.36E-11	2.02E-12	NA	3.10E-02	--	6.26E-14
CHRYSENE	3.99E-10	5.35E-11	4.59E-12	NA	3.10E-03	--	1.42E-14
DIBENZ(A, H)ANTHRACENE	1.01E-10	1.35E-11	1.16E-12	NA	3.10E+00	--	3.59E-12
FLUORANTHENE	6.27E-10	8.41E-11	7.21E-12	4.00E-02	NA	2.10E-09	--
FLUORENE	1.17E-10	1.57E-11	1.35E-12	4.00E-02	NA	3.94E-10	--
INDENO(1,2,3-CD)PYRENE	2.61E-10	3.50E-11	3.00E-12	NA	3.10E-01	--	9.31E-13
2-METHYLNAPHTHALENE	6.42E-11	8.60E-12	7.37E-13	NA	NA	--	--
NAPHTHALENE	7.80E-11	1.05E-11	8.97E-13	8.60E-04	NA	1.22E-08	--
PHENANTHRENE	1.27E-09	1.70E-10	1.45E-11	8.60E-04	NA	1.97E-07	--
PYRENE	7.29E-10	9.77E-11	8.38E-12	3.00E-02	NA	3.26E-09	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.82E-10	3.78E-11	3.24E-12	2.20E-02	NA	1.72E-09	--
BUTYLBENZYL PHTHALATE	5.91E-11	7.92E-12	6.79E-13	2.00E-01	NA	3.96E-11	--
DIBENZOFURAN	9.92E-11	1.33E-11	1.14E-12	4.00E-03	NA	3.33E-09	--
DIBUTYL PHTHALATE	1.86E-10	2.50E-11	2.14E-12	1.00E-01	NA	2.50E-10	--
Volatiles							
2-BUTANONE	7.58E-12	1.02E-12	8.71E-14	2.90E-01	NA	3.50E-12	--
ACETONE	5.30E-10	7.11E-11	6.09E-12	1.00E-01	NA	7.11E-10	--
BENZENE	3.26E-12	4.37E-13	3.74E-14	1.70E-03	2.70E-02	2.57E-10	1.01E-15
CARBON DISULFIDE	7.58E-12	1.02E-12	8.71E-14	2.00E-01	NA	5.08E-12	--
TOLUENE	1.67E-12	2.23E-13	1.92E-14	1.10E-01	NA	2.03E-12	--
TRICHLOROETHENE	2.50E-12	3.35E-13	2.87E-14	6.00E-03	6.00E-03	5.59E-11	1.72E-16
VINYL CHLORIDE	7.57576E-12	1.01575E-12	8.70641E-14	0.029	0.031	3.50E-11	2.70E-15
Cumulative Risk						0.003030917	5.96963E-08

TABLE A-10 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR COMMERCIAL WORKERS DUE TO EXPOSURES TO SURFACE SOIL
INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area									
* RME- Incidental Ingestion of Surface Soil											
Ingestion Rate = CR	50 mg/day										
Exposure Frequency = EF	250 day/yr										
Exposure Duration = ED	25 yr										
Body Weight = BW	70 kg										
Averaging Time (Noncancer) = AT	9,125 days										
Averaging Time (Cancer) = AT	2.56E+04 days										
Conversion Factor = CF	1.00E-06 kg/mg										
Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT)											
NCADI = Daily intake - Noncarcinogens											
CADI = Daily Intake - Carcinogens											
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD											
Risk = Cancer Risk = CADI * SF											
Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk				
Inorganics											
ALUMINUM	8.01E+03	3.92E-03	1.40E-03	1.00E+00	NA	3.92E-03	--				
ANTIMONY	2.69E+00	1.32E-06	4.70E-07	4.00E-04	NA	3.29E-03	--				
ARSENIC	5.89E+00	2.88E-06	1.03E-06	3.00E-04	1.50E+00	9.61E-03	1.54E-06				
BARIUM	2.08E+02	1.02E-04	3.63E-05	7.00E-02	NA	1.45E-03	--				
BERYLLIUM	3.33E-01	1.63E-07	5.82E-08	2.00E-03	NA	8.15E-05	--				
CADMIUM	9.72E-01	4.76E-07	1.70E-07	5.00E-04	NA	9.51E-04	--				
CHROMIUM	2.33E+01	1.14E-05	4.07E-06	3.00E-03	NA	3.80E-03	--				
COBALT	7.01E+00	3.43E-06	1.22E-06	6.00E-02	NA	5.72E-05	--				
COPPER	1.65E+02	8.07E-05	2.88E-05	3.70E-02	NA	2.18E-03	--				
LEAD	5.52E+02	2.70E-04	9.64E-05	NA	NA	--	--				
MANGANESE	3.16E+02	1.55E-04	5.52E-05	2.40E-02	NA	6.44E-03	--				
MERCURY	8.94E-01	4.37E-07	1.56E-07	1.00E-04	NA	4.37E-03	--				
NICKEL	2.13E+01	1.04E-05	3.72E-06	2.00E-02	NA	5.21E-04	--				
SELENIUM	5.14E-01	2.51E-07	8.98E-08	5.00E-03	NA	5.03E-05	--				
SILVER	2.81E-01	1.37E-07	4.91E-08	5.00E-03	NA	2.75E-05	--				
THALLIUM	1.32E-01	6.46E-08	2.31E-08	6.60E-05	NA	9.78E-04	--				
VANADIUM	2.53E+01	1.24E-05	4.42E-06	7.00E-03	NA	1.77E-03	--				

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ZINC	3.91E+02	1.91E-04	6.83E-05	3.00E-01	NA	6.38E-04	--
PAHs							
ACENAPHTHENE	1.49E-01	7.29E-08	2.60E-08	6.00E-02	NA	1.21E-06	--
ACENAPHTHYLENE	5.30E-02	2.59E-08	9.26E-09	2.00E-02	NA	1.30E-06	--
ANTHRACENE	2.07E-01	1.01E-07	3.62E-08	3.00E-01	NA	3.38E-07	--
BENZ(A)ANTHRACENE	4.93E-01	2.41E-07	8.61E-08	NA	7.30E-01	--	6.29E-08
BENZO(A)PYRENE	4.68E-01	2.29E-07	8.18E-08	NA	7.30E+00	--	5.97E-07
BENZO(B)FLOURANTHENE	5.92E-01	2.90E-07	1.03E-07	NA	7.30E-01	--	7.55E-08
BENZO(G,H,I)PERYLENE	3.17E-01	1.55E-07	5.54E-08	3.00E-02	NA	5.17E-06	--
BENZO(K)FLOURANTHENE	2.32E-01	1.14E-07	4.05E-08	NA	7.30E-02	--	2.96E-09
CHRYSENE	5.27E-01	2.58E-07	9.21E-08	NA	7.30E-03	--	6.72E-10
DIBENZ(A,H)ANTHRACENE	1.33E-01	6.51E-08	2.32E-08	NA	7.30E+00	--	1.70E-07
FLUORANTHENE	8.28E-01	4.05E-07	1.45E-07	4.00E-02	NA	1.01E-05	--
FLUORENE	1.55E-01	7.58E-08	2.71E-08	4.00E-02	NA	1.90E-06	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	1.69E-07	6.03E-08	NA	7.30E-01	--	4.40E-08
2-METHYLNAPHTHALENE	8.47E-02	4.14E-08	1.48E-08	2.00E-02	NA	2.07E-06	--
NAPHTHALENE	1.03E-01	5.04E-08	1.80E-08	2.00E-02	NA	2.52E-06	--
PHENANTHRENE	1.67E+00	8.17E-07	2.92E-07	2.00E-02	NA	4.09E-05	--
PYRENE	9.62E-01	4.71E-07	1.68E-07	3.00E-02	NA	1.57E-05	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	1.82E-07	6.50E-08	2.00E-02	1.40E-02	9.10E-06	9.10E-10
BUTYLBENZYLPHTHALATE	7.80E-02	3.82E-08	1.36E-08	2.00E-01	NA	1.91E-07	--
DIBENZOFURAN	1.31E-01	6.41E-08	2.29E-08	4.00E-03	NA	1.60E-05	--
DIBUTYLPHTHALATE	2.46E-01	1.20E-07	4.30E-08	1.00E-01	NA	1.20E-06	--
Volatiles							
2-BUTANONE	1.00E-02	4.89E-09	1.75E-09	6.00E-01	NA	8.15E-09	--
ACETONE	7.00E-01	3.42E-07	1.22E-07	1.00E-01	NA	3.42E-06	--
BENZENE	4.30E-03	2.10E-09	7.51E-10	3.00E-03	5.50E-02	7.01E-07	4.13E-11
BROMODICHLOROMETHANE	0.00E+00	0.00E+00	0.00E+00	2.00E-02	6.20E-02	0.00E+00	0.00E+00
CARBON DISULFIDE	1.00E-02	4.89E-09	1.75E-09	1.00E-01	NA	4.89E-08	--
CHLOROFORM	0.00E+00	0.00E+00	0.00E+00	1.00E-02	6.10E-03	0.00E+00	0.00E+00
ETHYLBENZENE	0.00E+00	0.00E+00	0.00E+00	1.00E-01	NA	0.00E+00	--
M&P XYLENES	0.00E+00	0.00E+00	0.00E+00	2.00E+00	NA	0.00E+00	--
O-XYLENE	0.00E+00	0.00E+00	0.00E+00	2.00E+00	NA	0.00E+00	--
TOLUENE	2.20E-03	1.08E-09	3.84E-10	2.00E-01	NA	5.38E-09	--
TRICHLOROETHENE	3.30E-03	1.61E-09	5.77E-10	6.00E-03	1.10E-02	2.69E-07	6.34E-12
VINYL CHLORIDE	0.01	4.8924E-09	1.74727E-09	0.003	1.5	1.63E-06	2.62E-09
Cumulative Risk						0.0402523	2.49991E-06

TABLE A-11 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR COMMERCIAL WORKERS DUE TO EXPOSURE TO DERMAL CONTACT WITH SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:	Fill Area
* RME - Dermal Contact with Surface Soil	
Surface Area for Contact = SA	5,700 cm ² /event
Adherence Factor = AF	0.1 mg/cm ²
Absorption Factor = ABS	chemical-specific
Exposure Frequency = EF	250 event/yr
Exposure Duration = ED	25 yr
Body Weight = BW	70 kg
Averaging Time (Noncancer) = AT	9,125 days
Averaging Time (Cancer) = AT	25,550 days
Conversion Factor = CF	1.00E-06 kg/mg
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED / (BW * AT)	
NCADI = Daily Intake - Noncarcinogens	
CADI = Daily Intake - Carcinogens	
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD	
Risk = Cancer Risk = CADI * SF	
Chemical of Concern	EPC (mg/kg)
Inorganics	
ALUMINUM	8.01E+03
ANTIMONY	2.69E+00
ARSENIC	5.89E+00
BARIUM	2.08E+02
BERYLLIUM	3.33E-01
CADMIUM	9.72E-01
CHROMIUM	2.33E+01
COBALT	7.01E+00
LEAD	5.52E+02
MANGANESE	3.16E+02
MERCURY	8.94E-01
NICKEL	2.13E+01
SELENIUM	5.14E-01
SILVER	2.81E-01
THTALLIUM	1.32E-01
THALLIUM	2.53E+01
ANADIUM	
NCADI (mg/kg-day)	
CADI (mg/kg-day)	
Chronic RfD (mg/kg-day)	
SF per (mg/kg-day)	
HQ	
Risk	

Chemical of Concern	EPC	NCADI	CADI	Chronic RID	SF	HQ	Risk
ZINC	3.91E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.49E-01	1.08E-07	3.86E-08	NA	NA	--	--
ACENAPHTHYLENE	5.30E-02	3.84E-08	1.37E-08	NA	NA	--	--
ANTHRACENE	2.07E-01	1.50E-07	5.36E-08	NA	NA	--	--
BENZ(A)ANTHRACENE	4.93E-01	3.57E-07	1.28E-07	NA	NA	--	--
BENZO(A)PYRENE	4.68E-01	3.39E-07	1.21E-07	NA	NA	--	--
BENZO(B)FLOURANTHENE	5.92E-01	4.29E-07	1.53E-07	NA	NA	--	--
BENZO(G,H,I)PERYLENE	3.17E-01	2.30E-07	8.21E-08	NA	NA	--	--
BENZO(K)FLOURANTHENE	2.32E-01	1.68E-07	6.01E-08	NA	NA	--	--
CHRYSENE	5.27E-01	3.82E-07	1.36E-07	NA	NA	--	--
DIBENZ(A, H)ANTHRACENE	1.33E-01	9.64E-08	3.44E-08	NA	NA	--	--
FLUORANTHENE	8.28E-01	6.00E-07	2.14E-07	NA	NA	--	--
FLUORENE	1.55E-01	1.12E-07	4.01E-08	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	2.50E-07	8.93E-08	NA	NA	--	--
2-METHYLNAPHTHALENE	8.47E-02	6.14E-08	2.19E-08	NA	NA	--	--
NAPHTHALENE	1.03E-01	7.47E-08	2.67E-08	NA	NA	--	--
PHENANTHRENE	1.67E+00	1.21E-06	4.32E-07	NA	NA	--	--
HEPTACHLOR EPOXIDE	0.00E+00	0.00E+00	0.00E+00	1.30E-05	9.10E+00	0.00E+00	0.00E+00
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	2.07E-07	7.41E-08	2.00E-02	1.40E-02	1.04E-05	1.04E-09
BUTYLBENZYL PHTHALATE	7.80E-02	4.35E-08	1.55E-08	2.00E-01	NA	2.18E-07	--
4-CHLOROPHENYL PHENYL ETHER	0.00E+00	0.00E+00	0.00E+00	NA	NA	--	--
DIBENZOFURAN	1.31E-01	7.31E-08	2.61E-08	4.00E-03	NA	1.83E-05	--
4-METHYLPHENOL	7.80E-03	4.35E-09	1.55E-09	5.00E-03	NA	8.70E-07	--
Volatiles							
2-BUTANONE	1.00E-02	--	--	6.00E-01	NA	--	--
ACETONE	7.00E-01	--	--	1.00E-01	NA	--	--
BROMODICHLOROMETHANE	0.00E+00	--	--	2.00E-02	6.20E-02	--	--
O-XYLENE	0.00E+00	--	--	2.00E+00	NA	--	--
TOLUENE	2.20E-03	--	--	2.00E-01	NA	--	--
TRICHLOROETHENE	3.30E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	1.00E-02	--	--	3.00E-03	1.50E+00	--	--
Cumulative Risk						3.75E-03	5.29E-07

TABLE A-12 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR COMMERCIAL WORKERS DUE TO INHALATION OF PARTICULATES FROM SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area									
* RME- Inhalation of Particles from Surface Soil											
Inhalation Rate = IR	0.833 m3/hr										
Exposure Time = ET	8 hr/day										
Exposure Frequency = EF	250 day/yr										
Exposure Duration = ED	25 yr										
Body Weight = BW	70 kg										
Averaging Time (Noncancer) = AT	9,125 days										
Averaging Time (Cancer) = AT	25,550 days										
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)											
NCADI = Daily intake - Noncarcinogens											
CADI = Daily Intake - Carcinogens											
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD											
Risk = Cancer Risk = CADI * SF											
Chemical of Concern	EPC (mg/m3)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF	HQ	Risk				
Inorganics											
ALUMINUM	6.07E-06	3.96E-07	1.41E-07	1.40E-03	NA	2.83E-04	-				
ANTIMONY	2.04E-09	1.33E-10	4.75E-11	NA	NA	-	-				
ARSENIC	4.46E-09	2.91E-10	1.04E-10	NA	1.50E+01	-	1.56E-09				
BARIUM	1.58E-07	1.03E-08	3.67E-09	1.40E-04	NA	7.34E-05	-				
BERYLLIUM	2.52E-10	1.64E-11	5.87E-12	5.70E-06	8.40E+00	2.89E-06	4.93E-11				
CADMIUM	7.36E-10	4.80E-11	1.71E-11	NA	6.30E+00	-	1.08E-10				
CHROMIUM	1.77E-08	1.15E-09	4.11E-10	NA	2.90E+02	-	1.19E-07				
COBALT	5.31E-09	3.46E-10	1.24E-10	NA	NA	-	-				
COPPER	1.25E-07	8.15E-09	2.91E-09	NA	NA	-	-				
LEAD	4.18E-07	2.73E-08	9.74E-09	NA	NA	-	-				
MANGANESE	2.39E-07	1.56E-08	5.57E-09	1.40E-05	NA	1.11E-03	-				
MERCURY	6.77E-10	4.42E-11	1.58E-11	NA	NA	-	-				
NICKEL	1.61E-08	1.05E-09	3.76E-10	NA	NA	-	-				
SELENIUM	3.89E-10	2.54E-11	9.07E-12	NA	NA	-	-				
SILVER	2.13E-10	1.39E-11	4.96E-12	NA	NA	-	-				
THALLIUM	1.00E-10	6.52E-12	2.33E-12	NA	NA	-	-				
VANADIUM	1.92E-08	1.25E-09	4.46E-10	NA	NA	-	-				
ZINC	2.96E-07	1.93E-08	6.90E-09	NA	NA	-	-				

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
PAHs							
ACENAPHTHENE	1.13E-10	7.36E-12	2.63E-12	6.00E-02	NA	1.23E-10	--
ACENAPHTHYLENE	4.02E-11	2.62E-12	9.35E-13	8.60E-04	NA	3.04E-09	--
ANTHRACENE	1.57E-10	1.02E-11	3.65E-12	3.00E-01	NA	3.41E-11	--
BENZO(A)ANTHRACENE	3.73E-10	2.44E-11	8.70E-12	NA	3.10E-01	--	2.70E-12
BENZO(A)PYRENE	3.55E-10	2.31E-11	8.26E-12	NA	3.10E+00	--	2.56E-11
BENZO(B)FLOURANTHENE	4.48E-10	2.92E-11	1.04E-11	NA	3.10E-01	--	3.24E-12
BENZO(G,H,I)PERYLENE	2.40E-10	1.57E-11	5.59E-12	3.00E-02	NA	5.22E-10	--
BENZO(K)FLOURANTHENE	1.76E-10	1.15E-11	4.09E-12	NA	3.10E-02	--	1.27E-13
CHRYSENE	3.99E-10	2.60E-11	9.30E-12	NA	3.10E-03	--	2.88E-14
DIBENZ(A, H)ANTHRACENE	1.01E-10	6.57E-12	2.35E-12	NA	3.10E+00	--	7.27E-12
FLOURANTHENE	6.27E-10	4.09E-11	1.46E-11	4.00E-02	NA	1.02E-09	--
FLUORENE	1.17E-10	7.66E-12	2.73E-12	4.00E-02	NA	1.91E-10	--
INDENO(1,2,3-CD)PYRENE	2.61E-10	1.70E-11	6.09E-12	NA	3.10E-01	--	1.89E-12
2-METHYLNAPHTHALENE	6.42E-11	4.18E-12	1.49E-12	NA	NA	--	--
NAPHTHALENE	7.80E-11	5.09E-12	1.82E-12	8.60E-04	NA	5.92E-09	--
PHENANTHRENE	1.27E-09	8.25E-11	2.95E-11	8.60E-04	NA	9.59E-08	--
PYRENE	7.29E-10	4.75E-11	1.70E-11	3.00E-02	NA	1.58E-09	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.82E-10	1.84E-11	6.56E-12	2.20E-02	NA	8.35E-10	--
BUTYLBENZYL PHTHALATE	5.91E-11	3.85E-12	1.38E-12	2.00E-01	NA	1.93E-11	--
DIBENZOFURAN	9.92E-11	6.47E-12	2.31E-12	4.00E-03	NA	1.62E-09	--
DIBUTYL PHTHALATE	1.86E-10	1.22E-11	4.34E-12	1.00E-01	NA	1.22E-10	--
Volatiles							
2-BUTANONE	7.58E-12	4.94E-13	1.76E-13	2.90E-01	NA	1.70E-12	--
ACETONE	5.30E-10	3.46E-11	1.23E-11	1.00E-01	NA	3.46E-10	--
BENZENE	3.26E-12	2.12E-13	7.59E-14	1.70E-03	2.70E-02	1.25E-10	2.05E-15
CARBON DISULFIDE	7.58E-12	4.94E-13	1.76E-13	2.00E-01	NA	2.47E-12	--
TOLUENE	1.67E-12	1.09E-13	3.88E-14	1.10E-01	NA	9.88E-13	--
TRICHLOROETHENE	2.50E-12	1.63E-13	5.82E-14	6.00E-03	6.00E-03	2.72E-11	3.49E-16
VINYL CHLORIDE	7.57576E-12	4.93981E-13	1.76422E-13	0.029	0.031	1.70E-11	5.47E-15
Cumulative Risk							0.001474002 1.20965E-07

TABLE A-13 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR CONSTRUCTION WORKERS DUE TO EXPOSURES TO TOTAL SOIL
INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area					
* RME- Incidental Ingestion of Total Soil							
Ingestion Rate = CR	480 mg/day						
Exposure Frequency = EF	150 day/yr						
Exposure Duration = ED	1 yr						
Body Weight = BW	70 kg						
Averaging Time (Noncancer) = AT	365 days						
Averaging Time (Cancer) = AT	25,550 days						
Conversion Factor = CF	1.00E-06 kg/mg						
Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF per (mg/kg-day)	HQ	Risk
Inorganics							
ALUMINUM	8.01E+03	2.26E-02	3.22E-04	1.00E+00	NA	2.26E-02	--
ANTIMONY	2.69E+00	7.58E-06	*1.08E-07	4.00E-04	NA	1.90E-02	--
ARSENIC	5.89E+00	1.66E-05	2.37E-07	3.00E-04	1.50E+00	5.53E-02	3.56E-07
BARIUM	2.08E+02	5.86E-04	8.37E-06	7.00E-02	NA	8.37E-03	--
BERYLLIUM	3.33E-01	9.38E-07	1.34E-08	2.00E-03	NA	4.69E-04	--
CADMIUM	9.72E-01	2.74E-06	3.91E-08	5.00E-04	NA	5.48E-03	--
CHROMIUM	2.33E+01	6.57E-05	9.38E-07	3.00E-03	NA	2.19E-02	--
COBALT	7.01E+00	1.98E-05	2.82E-07	6.00E-02	NA	3.29E-04	--
COPPER	1.65E+02	4.65E-04	6.64E-06	3.70E-02	NA	1.26E-02	--
LEAD	5.52E+02	1.56E-03	2.22E-05	NA	NA	--	--
MANGANESE	3.16E+02	8.90E-04	1.27E-05	2.40E-02	NA	3.71E-02	--
MERCURY	8.94E-01	2.52E-06	3.60E-08	1.00E-04	NA	2.52E-02	--
NICKEL	2.13E+01	6.00E-05	8.57E-07	2.00E-02	NA	3.00E-03	--
SELENIUM	5.14E-01	1.45E-06	2.07E-08	5.00E-03	NA	2.90E-04	--
SILVER	2.81E-01	7.92E-07	1.13E-08	5.00E-03	NA	1.58E-04	--
THALLIUM	1.32E-01	3.72E-07	5.31E-09	6.60E-05	NA	5.64E-03	--
VANADIUM	2.53E+01	7.13E-05	1.02E-06	7.00E-03	NA	1.02E-02	--
ZINC	3.91E+02	1.10E-03	1.57E-05	3.00E-01	NA	3.67E-03	--

Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF per (mg/kg-day)	HQ	Risk
PAHs							
ACENAPHTHENE	1.49E-01	4.20E-07	6.00E-09	6.00E-02	NA	7.00E-06	--
ACENAPHTHYLENE	5.30E-02	1.49E-07	2.13E-09	2.00E-02	NA	7.47E-06	--
ANTHRACENE	2.07E-01	5.83E-07	8.33E-09	3.00E-01	NA	1.94E-06	--
BENZO(A)ANTHRACENE	4.93E-01	1.39E-06	1.98E-08	NA	7.30E-01	--	1.45E-08
BENZO(A)PYRENE	4.68E-01	1.32E-06	1.88E-08	NA	7.30E+00	--	1.38E-07
BENZO(B)FLOURANTHENE	5.92E-01	1.67E-06	2.38E-08	NA	7.30E-01	--	1.74E-08
BENZO(G,H,I)PERYLENE	3.17E-01	8.93E-07	1.28E-08	3.00E-02	NA	2.98E-05	--
BENZO(K)FLOURANTHENE	2.32E-01	6.54E-07	9.34E-09	NA	7.30E-02	--	6.82E-10
CHRYSENE	5.27E-01	1.49E-06	2.12E-08	NA	7.30E-03	--	1.55E-10
DIBENZ(A,H)ANTHRACENE	1.33E-01	3.75E-07	5.35E-09	NA	7.30E+00	--	3.91E-08
FLUORANTHENE	8.28E-01	2.33E-06	3.33E-08	4.00E-02	NA	5.83E-05	--
FLUORENE	1.55E-01	4.37E-07	6.24E-09	4.00E-02	NA	1.09E-05	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	9.72E-07	1.39E-08	NA	7.30E-01	--	1.01E-08
2-METHYLNAPHTHALENE	8.47E-02	2.39E-07	3.41E-09	2.00E-02	NA	1.19E-05	--
NAPHTHALENE	1.03E-01	2.90E-07	4.15E-09	2.00E-02	NA	1.45E-05	--
PHENANTHRENE	1.67E+00	4.71E-06	6.72E-08	2.00E-02	NA	2.35E-04	--
PYRENE	9.62E-01	2.71E-06	3.87E-08	3.00E-02	NA	9.04E-05	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	1.05E-06	1.50E-08	2.00E-02	1.40E-02	5.24E-05	2.10E-10
BUTYLBENZYL PHTHALATE	7.80E-02	2.20E-07	3.14E-09	2.00E-01	NA	1.10E-06	--
DIBENZOFURAN	1.31E-01	3.69E-07	5.27E-09	4.00E-03	NA	9.23E-05	--
DIBUTYL PHTHALATE	2.46E-01	6.93E-07	9.90E-09	1.00E-01	NA	6.93E-06	--
Volatiles							
2-BUTANONE	1.00E-02	2.82E-08	4.03E-10	6.00E-01	NA	4.70E-08	--
ACETONE	7.00E-01	1.97E-06	2.82E-08	1.00E-01	NA	1.97E-05	--
BENZENE	4.30E-03	1.21E-08	1.73E-10	3.00E-03	5.50E-02	4.04E-06	9.52E-12
CARBON DISULFIDE	1.00E-02	2.82E-08	4.03E-10	1.00E-01	NA	2.82E-07	--
TOLUENE	2.20E-03	6.20E-09	8.86E-11	2.00E-01	NA	3.10E-08	--
TRICHLOROETHENE	3.30E-03	9.30E-09	1.33E-10	6.00E-03	1.10E-02	1.55E-06	1.46E-12
VINYL CHLORIDE	1.00E-02	2.82E-08	4.03E-10	3.00E-03	1.50E+00	9.39E-06	6.04E-10
Cumulative Risk						2.32E-01	5.76E-07

TABLE A-14 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CONSTRUCTION WORKER DUE TO EXPOSURE TO DERMAL CONTACT WITH TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Fill Area					
* RME- Dermal Contact with Total Soil							
Surface Area for Contact = SA	3,300 cm2/event						
Adherence Factor = AF	0.3 mg/cm2						
Absorption Factor = ABS	chemical-specific						
Exposure Frequency = EF	150 event/yr						
Exposure Duration = ED	1 yr						
Body Weight = BW	70 kg						
Averaging Time (Noncancer) = AT	365 days						
Averaging Time (Cancer) = AT	25,550 days						
Conversion Factor = CF	1.00E-06 kg/mg						
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF per (mg/kg-day)	HQ	Risk
Inorganics							
ALUMINUM	8.01E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	2.69E+00	--	--	6.00E-05	NA	--	--
ARSENIC	5.89E+00	1.03E-06	1.47E-08	3.00E-04	1.50E+00	3.42E-03	2.20E-08
BARIUM	2.08E+02	--	--	4.90E-03	NA	--	--
BERYLLIUM	3.33E-01	--	--	1.40E-05	NA	--	--
CADMIUM	9.72E-01	5.65E-09	8.07E-11	1.25E-05	NA	4.52E-04	--
CHROMIUM	2.33E+01	--	--	7.50E-05	NA	--	--
COBALT	7.01E+00	--	--	6.00E-02	NA	--	--
COPPER	1.65E+02	--	--	3.70E-02	NA	--	--
LEAD	5.52E+02	--	--	NA	NA	--	--
MANGANESE	3.16E+02	--	--	9.60E-04	NA	--	--
MERCURY	8.94E-01	--	--	1.00E-04	NA	--	--
NICKEL	2.13E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.14E-01	--	--	5.00E-03	NA	--	--
SILVER	2.81E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.32E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.53E+01	--	--	1.82E-04	NA	--	--
ZINC	3.91E+02	--	--	3.00E-01	NA	--	--

Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF (mg/kg-day)	HQ	Risk
PAHs							
ACENAPHTHENE	1.49E-01	1.13E-07	1.61E-09	NA	NA	--	--
ACENAPHTHYLENE	5.30E-02	4.00E-08	5.72E-10	NA	NA	--	--
ANTHRACENE	2.07E-01	1.56E-07	2.23E-09	NA	NA	--	--
BENZO(A)ANTHRACENE	4.93E-01	3.72E-07	5.32E-09	NA	NA	--	--
BENZO(A)PYRENE	4.68E-01	3.54E-07	5.05E-09	NA	NA	--	--
BENZO(B)FLOURANTHENE	5.92E-01	4.47E-07	6.39E-09	NA	NA	--	--
BENZO(G,H,I)PERYLENE	3.17E-01	2.40E-07	3.42E-09	NA	NA	--	--
BENZO(K)FLOURANTHENE	2.32E-01	1.75E-07	2.50E-09	NA	NA	--	--
CHRYSENE	5.27E-01	3.98E-07	5.69E-09	NA	NA	--	--
DIBENZ(A, H)ANTHRACENE	1.33E-01	1.00E-07	1.44E-09	NA	NA	--	--
FLUORANTHENE	8.28E-01	6.26E-07	8.94E-09	NA	NA	--	--
FLUORENE	1.55E-01	1.17E-07	1.67E-09	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	3.45E-01	2.61E-07	3.72E-09	NA	NA	--	--
2-METHYLNAPHTHALENE	8.47E-02	6.40E-08	9.14E-10	NA	NA	--	--
NAPHTHALENE	1.03E-01	7.78E-08	1.11E-09	NA	NA	--	--
PHENANTHRENE	1.67E+00	1.26E-06	1.80E-08	NA	NA	--	--
PYRENE	9.62E-01	7.27E-07	1.04E-08	NA	NA	--	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.72E-01	2.16E-07	3.09E-09	2.00E-02	1.40E-02	1.08E-05	4.32E-11
BUTYLBENZYL PHTHALATE	7.80E-02	4.53E-08	6.48E-10	2.00E-01	NA	2.27E-07	--
DIBENZOFURAN	1.31E-01	7.61E-08	1.09E-09	4.00E-03	NA	1.90E-05	--
DIBUTYL PHTHALATE	2.46E-01	1.43E-07	2.04E-09	1.00E-01	NA	1.43E-06	--
Volatiles							
2-BUTANONE	1.00E-02	--	--	6.00E-01	NA	--	--
ACETONE	7.00E-01	--	--	1.00E-01	NA	--	--
BENZENE	4.30E-03	--	--	3.00E-03	5.50E-02	--	--
CARBON DISULFIDE	1.00E-02	--	--	1.00E-01	NA	--	--
TOLUENE	2.20E-03	--	--	2.00E-01	NA	--	--
TRICHLOROETHENE	3.30E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	1.00E-02	--	--	3.00E-03	1.50E+00	--	--
Cumulative Risk						3.91E-03	2.21E-08

TABLE A-15 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CONSTRUCTION WORKERS DUE TO INHALATION OF PARTICULATES FROM TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:

Fill Area

* RME- Inhalation of Particles from Total Soil

Inhalation Rate = IR

0.833 m3/hr

Exposure Time = ET

8 hr/day

Exposure Frequency = EF

150 day/yr

Exposure Duration = ED

1 yr

Body Weight = BW

70 kg

Averaging Time (Noncancer) = AT

365 days

Averaging Time (Cancer) = AT

25,550 days

Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)

NCADI = Daily Intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI * SF

Chemical of Concern	EPC (mg/m3)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF per (mg/kg-day)	HQ	Risk
Inorganics							
ALUMINUM	6.07E-06	2.37E-07	3.39E-09	1.40E-03	NA	1.70E-04	--
ANTIMONY	2.04E-09	7.97E-11	1.14E-12	NA	NA	--	--
ARSENIC	4.46E-09	1.75E-10	2.49E-12	NA	1.50E+01	--	3.74E-11
BARIUM	1.58E-07	6.16E-09	8.81E-11	1.40E-04	NA	4.40E-05	--
BERYLLIUM	2.52E-10	9.87E-12	1.41E-13	5.70E-06	8.40E+00	1.73E-06	1.18E-12
CADMIUM	7.36E-10	2.88E-11	4.12E-13	NA	6.30E+00	--	2.59E-12
CHROMIUM	1.77E-08	6.91E-10	9.87E-12	NA	2.90E+02	--	2.86E-09
COBALT	5.31E-09	2.08E-10	2.97E-12	NA	NA	--	--
COPPER	1.25E-07	4.89E-09	6.99E-11	NA	NA	--	--
MANGANESE	2.39E-07	9.37E-09	1.34E-10	1.40E-05	NA	6.69E-04	--
MERCURY	6.77E-10	2.65E-11	3.79E-13	NA	NA	--	--
NICKEL	1.61E-08	6.31E-10	9.02E-12	NA	NA	--	--
SELENIUM	3.89E-10	1.52E-11	2.18E-13	NA	NA	--	--
SILVER	2.13E-10	8.33E-12	1.19E-13	NA	NA	--	--
THALLIUM	1.00E-10	3.91E-12	5.59E-14	NA	NA	--	--
VANADIUM	1.92E-08	7.50E-10	1.07E-11	NA	NA	--	--
ZINC	2.96E-07	1.16E-08	1.66E-10	NA	NA	--	--

Chemical of Concern	EPC (mg/m3)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF per (mg/kg-day)	HQ	Risk
PAHs							
ACENAPHTHENE	1.13E-10	4.42E-12	6.31E-14	6.00E-02	NA	7.36E-11	--
ACENAPHTHYLENE	4.02E-11	1.57E-12	2.24E-14	8.60E-04	NA	1.83E-09	--
ANTHRACENE	1.57E-10	6.14E-12	8.76E-14	3.00E-01	NA	2.05E-11	--
BENZ(A)ANTHRACENE	3.73E-10	1.46E-11	2.09E-13	NA	3.10E-01	--	6.47E-14
BENZO(A)PYRENE	3.55E-10	1.39E-11	1.98E-13	NA	3.10E+00	--	6.14E-13
BENZO(B)FLOURANTHENE	4.48E-10	1.75E-11	2.51E-13	NA	3.10E-01	--	7.77E-14
BENZO(G,H)PERYLENE	2.40E-10	9.40E-12	1.34E-13	3.00E-02	NA	3.13E-10	--
BENZO(K)FLOURANTHENE	1.76E-10	6.88E-12	9.82E-14	NA	3.10E-02	--	3.05E-15
CHRYSENE	3.99E-10	1.56E-11	2.23E-13	NA	3.10E-03	--	6.92E-16
DIBENZ(A, H)ANTHRACENE	1.01E-10	3.94E-12	5.63E-14	NA	3.10E+00	--	1.75E-13
FLUORANTHENE	6.27E-10	2.45E-11	3.51E-13	4.00E-02	NA	6.14E-10	--
FLUORENE	1.17E-10	4.59E-12	6.56E-14	4.00E-02	NA	1.15E-10	--
INDENO(1,2,3-CD)PYRENE	2.61E-10	1.02E-11	1.46E-13	NA	3.10E-01	--	4.53E-14
2-METHYLNAPHTHALENE	6.42E-11	2.51E-12	3.59E-14	NA	NA	--	--
NAPHTHALENE	7.80E-11	3.05E-12	4.36E-14	8.60E-04	NA	3.55E-09	--
PHENANTHRENE	1.27E-09	4.95E-11	7.07E-13	8.60E-04	NA	5.76E-08	--
PYRENE	7.29E-10	2.85E-11	4.07E-13	3.00E-02	NA	9.50E-10	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.82E-10	1.10E-11	1.58E-13	2.20E-02	NA	5.01E-10	--
BUTYLBENZYLPHTHALATE	5.91E-11	2.31E-12	3.30E-14	2.00E-01	NA	1.16E-11	--
CARBAZOLE	0.00E+00	0.00E+00	0.00E+00	NA	2.00E-02	--	0.00E+00
DIBENZOFURAN	9.92E-11	3.88E-12	5.55E-14	4.00E-03	NA	9.71E-10	--
DIBUTYLPHTHALATE	1.86E-10	7.29E-12	1.04E-13	1.00E-01	NA	7.29E-11	--
Volatiles							
2-BUTANONE	7.58E-12	2.96E-13	4.23E-15	2.90E-01	NA	1.02E-12	--
ACETONE	5.30E-10	2.07E-11	2.96E-13	1.00E-01	NA	2.07E-10	--
BENZENE	3.26E-12	1.27E-13	1.82E-15	1.70E-03	2.70E-02	7.50E-11	4.92E-17
CARBON DISULFIDE	7.58E-12	2.96E-13	4.23E-15	2.00E-01	NA	1.48E-12	--
TOLUENE	1.67E-12	6.52E-14	9.32E-16	1.10E-01	NA	5.93E-13	--
TRICHLOROETHENE	2.50E-12	9.78E-14	1.40E-15	6.00E-03	6.00E-03	1.63E-11	8.38E-18
VINYL CHLORIDE	7.58E-12	2.96E-13	4.23E-15	2.90E-02	3.10E-02	1.02E-11	1.31E-16
Cumulative Risk						8.84E-04	2.90E-09

TABLE A-16 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO EXPOSURES TO VEGETABLE INGESTION – REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Fill Area

Determine Daily Intake of COPC from produce:

$$I_{pg} = [(Pd + Pv + Pr) \cdot CR_{pg}] + (Pr \cdot CR_{pg}) + (Pr_{pg} \cdot CR_{pg}) \cdot F_{pg}$$

I_{pg} = Daily intake of COPC from produce in mg/kg-day (dry weight).

Pd = Above ground exposed produce concentration due to direct deposition onto plant surface in mg/kg.

Pv = Aboveground exposed produce concentration due to air-to-plant transfer in mg/kg.

Pr = Aboveground exposed and protected produce concentration due to root uptake in mg/kg.

Pr_{pg} = Belowground produce concentration due to root uptake in mg/kg.

CR_{pg} = Consumption rate of exposed aboveground produce in kg/kg-day.

Adult = 0.0003 kg/kg-day

Child = 0.00042 kg/kg-day

CR_{pg} = Consumption rate of protected aboveground produce in kg/kg-day.

Adult = 0.00057 kg/kg-day

Child = 0.00077 kg/kg-day

CR_{pg} = Consumption rate of belowground produce in kg/kg-day.

Adult = 0.00014 kg/kg-day

Child = 0.00022 kg/kg-day

F_{pg} = Fraction of produce that is contaminated (unitless).

Adult Resident = 0.25

Child Resident = 0.25

Exposure Frequency = EF 60 day/yr

Exposure Duration = ED 6 yr

Averaging Time (Noncancer) = AT 2,190 days

Averaging Time (Cancer) = AT 25,550 days

$$\text{Intake (mg/kg-day)} = I_{pg} \cdot EF \cdot ED / (AT)$$

NCADI = Daily Intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI • SF

Chemical of Concern PAHs	Conc in plant (dw) aboveground (mg/kg)	Conc in plant (dw) belowground (mg/kg)	Protected Vegetative Conc in Plant (dw) (mg/kg)	Daily COPC Intake (I_{pg}) (mg/kg-day)	NCADI	CADI	Chronic RfD	SF	HQ	Risk
ACENAPHTHENE	2.95E-02	8.17E-01	2.95E-02	5.37E-05	8.83E-06	7.56E-07	6.00E-02	NA	1.47E-04	--
ACENAPHTHYLENE	9.12E-03	9.12E-03	9.12E-03	3.21E-06	5.28E-07	4.53E-08	2.00E-02	NA	2.64E-05	--
ANTHRACENE	2.09E-02	5.71E-03	2.09E-02	6.53E-06	1.07E-06	9.21E-08	3.00E-01	NA	3.58E-06	--
BENZ[<i>a</i>]ANTHRACENE	9.98E-03	1.04E-02	9.98E-03	3.53E-06	5.81E-07	4.98E-08	NA	7.30E-01	--	3.64E-08
BENZO[<i>a</i>]PYRENE	5.19E-03	5.90E-03	5.19E-03	1.87E-06	3.07E-07	2.63E-08	NA	7.30E+00	--	1.92E-07
BENZO[<i>b</i>]FLUORANTHENE	5.76E-03	9.50E-03	5.76E-03	2.24E-06	3.68E-07	3.15E-08	NA	7.30E-01	--	2.10E-08
BENZO[<i>k</i>]FLUORANTHENE	1.93E-03	1.93E-03	1.93E-03	6.81E-07	1.12E-07	9.59E-09	3.00E-02	NA	3.73E-06	--
BENZO[<i>ghi</i>]PERYLENE	2.34E-03	3.85E-03	2.34E-03	9.09E-07	1.49E-07	1.28E-08	NA	7.30E-02	--	9.35E-10
CHRYSENE	9.83E-03	1.08E-02	9.83E-03	3.52E-06	5.79E-07	4.96E-08	NA	7.30E-03	--	3.62E-10
DIBENZO[<i>a,h</i>]ANTHRACENE	8.46E-04	1.90E-02	8.46E-04	3.56E-07	5.86E-08	5.02E-09	NA	7.30E+00	--	3.66E-08
FLUORANTHENE	3.69E-02	3.23E-02	3.69E-02	1.28E-05	2.10E-06	1.80E-07	4.00E-02	NA	5.24E-05	--
FLUORENE	2.34E-02	7.69E-03	2.34E-02	7.39E-06	1.21E-06	1.04E-07	4.00E-02	NA	3.04E-05	--

INDENO[1,2,3-C,D]PYRENE	1.35E-03	4.11E-03	1.35E-03	6.26E-07	1.03E-07	8.82E-09	NA	7.30E-01	--	6.44E-09
2-METHYLNAPHTHALENE	3.70E-02	7.00E-01	3.70E-02	4.95E-05	8.13E-06	6.97E-07	2.00E-02	NA	4.07E-04	--
NAPHTHALENE	4.48E-02	8.48E-01	4.48E-02	6.00E-05	9.86E-06	8.45E-07	2.00E-02	NA	4.93E-04	--
PHENANTHRENE	1.52E-01	2.49E-02	1.52E-01	4.65E-05	7.64E-06	6.55E-07	2.00E-02	NA	3.82E-04	--
PYRENE	4.79E-02	2.35E-02	4.79E-02	1.55E-05	2.56E-06	2.19E-07	3.00E-02	NA	8.52E-05	--
SEMIVOLATILES										
BIS(2-ETHYLHEXYL)PHTHALATE	1.41E-02	7.92E-03	1.41E-02	4.64E-06	7.63E-07	6.54E-08	2.00E-02	1.40E-02	3.81E-05	9.16E-10
BUTYLBENZYLPHTHALATE	8.50E-03	3.33E-03	8.50E-03	2.71E-06	4.46E-07	3.82E-08	2.00E-01	NA	2.23E-06	--
DIBENZOFURAN	2.11E-02	2.11E-02	2.11E-02	7.43E-06	1.22E-06	1.05E-07	4.00E-03	NA	3.05E-04	--
DIBUTYLPHTHALATE	1.78E-02	1.58E-01	1.78E-02	1.40E-05	2.30E-06	1.97E-07	1.00E-01	NA	2.30E-05	--
VOLATILES										
2-BUTANONE	2.67E-01	2.86E+00	2.67E-01	2.37E-04	3.89E-05	3.34E-06	6.00E-01	NA	6.49E-05	--
ACETONE	3.64E+01	4.76E+02	3.64E+01	3.70E-02	6.08E-03	5.21E-04	1.00E-01	NA	6.08E-02	--
BENZENE	9.68E-03	1.15E-01	9.68E-03	9.19E-06	1.51E-06	1.30E-07	3.00E-03	5.50E-02	5.04E-04	7.12E-09
CARBON DISULFIDE	2.70E-02	2.79E-01	2.70E-02	2.34E-05	3.84E-06	3.29E-07	1.00E-01	NA	3.84E-05	--
TOLUENE	2.44E-03	5.13E-02	2.44E-03	3.55E-06	5.83E-07	5.00E-08	2.00E-01	NA	2.91E-06	--
TRICHLOROETHENE	5.02E-03	7.00E-02	5.02E-03	5.34E-06	8.78E-07	7.52E-08	6.00E-03	1.10E-02	1.46E-04	8.28E-10
VINYL CHLORIDE	8.42E-02	7.29E-01	8.42E-02	6.51E-05	1.07E-05	9.18E-07	3.00E-03	1.50E+00	3.57E-03	1.38E-06
METALS										
ALUMINUM	3.20E+01	3.20E+01	5.21E+00	6.13E-03	1.01E-03	8.64E-05	1.00E+00	NA	1.01E-03	--
ANTIMONY	8.58E-02	8.07E-02	8.58E-02	3.00E-05	4.93E-06	4.22E-07	4.00E-04	NA	1.23E-02	--
ARSENIC	3.73E-02	4.71E-02	3.73E-02	1.37E-05	2.25E-06	1.93E-07	3.00E-04	1.50E+00	7.50E-03	2.89E-07
BARIUM	6.70E+00	3.12E+00	6.70E+00	2.16E-03	3.56E-04	3.03E-05	7.00E-02	NA	5.08E-03	--
BERYLLIUM	8.59E-04	5.00E-04	8.59E-04	2.83E-07	4.65E-08	3.99E-09	2.00E-03	NA	2.33E-05	--
CADMIUM	1.22E-01	6.22E-02	1.22E-01	3.96E-05	6.50E-06	5.58E-07	5.00E-04	NA	1.30E-02	--
CHROMIUM	1.14E-01	1.03E-01	1.14E-01	3.96E-05	6.51E-06	5.58E-07	3.00E-03	NA	2.17E-03	--
COBALT	1.40E-01	1.40E-01	4.91E-02	3.19E-05	5.24E-06	4.49E-07	6.00E-02	NA	8.73E-05	--
COPPER	1.46E+01	1.46E+01	1.46E+01	5.15E-03	8.46E-04	7.25E-05	3.70E-02	NA	2.29E-02	--
LEAD	7.51E+00	4.97E+00	7.51E+00	2.51E-03	4.12E-04	3.53E-05	NA	NA	--	--
MANGANESE	7.90E+01	7.90E+01	1.58E+01	1.57E-02	2.58E-03	2.21E-04	2.40E-02	NA	1.07E-01	--
MERCURY	1.30E-02	3.22E-02	1.30E-02	5.63E-06	9.25E-07	7.93E-08	1.00E-04	NA	9.25E-03	--
NICKEL	1.98E-01	1.70E-01	1.98E-01	6.84E-05	1.12E-05	9.63E-07	2.00E-02	NA	5.62E-04	--
SELENIUM	8.22E-03	1.00E-02	8.22E-03	3.00E-06	4.93E-07	4.22E-08	5.00E-03	NA	9.86E-05	--
SILVER	3.88E-02	2.81E-02	3.88E-02	1.31E-05	2.15E-06	1.84E-07	5.00E-03	NA	4.30E-04	--
THALLIUM	1.13E-04	5.28E-05	1.13E-04	3.66E-08	6.02E-09	5.16E-10	6.00E-05	NA	9.12E-05	--
VANADIUM	1.39E-01	1.39E-01	7.59E-02	3.69E-05	6.06E-06	5.20E-07	7.00E-03	NA	8.66E-04	--
ZINC	1.80E+01	1.72E+01	1.80E+01	6.30E-03	1.04E-03	8.87E-05	3.00E-01	NA	3.45E-03	--
Cumulative Risk									2.53E-01	1.97E-06

TABLE A-17 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO EXPOSURES TO VEGETABLE INGESTION – REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Fill Area

Determine Daily intake of COPC from produce:

$$I_p = [(Pd + Pv + Pt) \cdot Crag] + (Pr \cdot CR_p) + (Pr_{bg} \cdot CR_{bg}) \cdot F_g$$

I_p = Daily intake of COPC from produce in mg/kg-day (dry weight).

Pd = Above ground exposed produce concentration due to direct deposition onto plant surface in mg/kg.

Pv = Aboveground exposed produce concentration due to air-to-plant transfer in mg/kg.

Pt = Aboveground exposed and protected produce concentration due to root uptake in mg/kg.

Pr_{bg} = Belowground produce concentration due to root uptake in mg/kg.

CR_p = Consumption rate of exposed aboveground produce in kg/kg-day.

Adult =

Child =

CR_{pr} = Consumption rate of protected aboveground produce in kg/kg-day.

Adult =

Child =

CR_{bg} = Consumption rate of belowground produce in kg/kg-day.

Adult =

Child =

F_g = Fraction of produce that is contaminated (unitless).

Adult Resident =

Child Resident =

Exposure Frequency = EF

Exposure Duration = ED

Averaging Time (Noncancer) = AT

Averaging Time (Cancer) = AT

$$\text{Intake (mg/kg-day)} = I_p \cdot EF \cdot ED / (AT)$$

NCADI = Daily Intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI • SF

Chemical of Concern	Conc in plant (dw) aboveground (mg/kg)	Conc in plant (dw) belowground (mg/kg)	Protected Vegetative Conc in Plant (dw) (mg/kg)	Daily COPC Intake (I _p) (mg/kg-day)	NCADI	CADI	Chronic RfD	SF	HQ	Risk
PAHs										
ACENAPHTHENE	2.95E-02	8.17E-01	2.95E-02	3.50E-05	5.75E-06	1.97E-06	6.00E-02	NA	9.59E-05	--
ACENAPHTHYLENE	9.12E-03	9.12E-03	9.12E-03	2.30E-06	3.78E-07	1.30E-07	2.00E-02	NA	1.89E-05	--
ANTHRACENE	2.09E-02	5.71E-03	2.09E-02	4.75E-06	7.80E-07	2.68E-07	3.00E-01	NA	2.60E-06	--
BENZO[A]PYRENE	9.96E-03	1.04E-02	9.96E-03	2.53E-06	4.16E-07	1.43E-07	NA	7.30E-01	--	1.04E-07
BENZO[A]PYRENE	5.19E-03	5.90E-03	5.19E-03	1.34E-06	2.20E-07	7.53E-08	NA	7.30E+00	--	5.50E-07
BENZO[B]FLUORANTHENE	5.76E-03	9.50E-03	5.76E-03	1.59E-06	2.61E-07	8.93E-08	NA	7.30E-01	--	6.52E-08
BENZO[G,H,I]PERYLENE	1.93E-03	1.93E-03	1.93E-03	4.88E-07	8.02E-08	2.75E-08	3.00E-02	NA	2.67E-06	--
BENZO[K]FLUORANTHENE	2.34E-03	3.85E-03	2.34E-03	6.44E-07	1.06E-07	3.63E-08	NA	7.30E-02	--	2.65E-09
CHRYSENE	9.83E-03	1.08E-02	9.83E-03	2.52E-06	4.14E-07	1.42E-07	NA	7.30E-03	--	1.04E-09
DIBENZO[A,H]ANTHRACENE	8.46E-04	1.90E-03	8.46E-04	2.51E-07	4.12E-08	1.41E-08	NA	7.30E+00	--	1.03E-07
FLUORANTHENE	3.69E-02	3.23E-02	3.69E-02	9.16E-06	1.51E-06	5.16E-07	4.00E-02	NA	3.77E-05	--
FLUORENE	2.34E-02	7.69E-03	2.34E-02	5.36E-06	8.81E-07	3.02E-07	4.00E-02	NA	2.20E-05	--

INDENO[1,2,3-CD]PYRENE	1.35E-03	4.11E-03	1.35E-03	4.36E-07	7.17E-08	2.46E-08	NA	7.30E-01	--	1.80E-08
2-METHYLNAPHTHALENE	3.70E-02	7.00E-01	3.70E-02	3.25E-05	5.35E-06	1.83E-06	2.00E-02	NA	2.67E-04	--
NAPHTHALENE	4.48E-02	8.48E-01	4.48E-02	3.94E-05	6.48E-06	2.22E-06	2.00E-02	NA	3.24E-04	--
PHENANTHRENE	1.52E-01	2.49E-02	1.52E-01	3.39E-05	5.66E-06	1.91E-06	2.00E-02	NA	2.78E-04	--
PYRENE	4.79E-02	2.35E-02	4.79E-02	1.12E-05	1.85E-06	6.34E-07	3.00E-02	NA	6.16E-05	--
SEMIVOLATILES										
BIS(2-ETHYLHEXYL)PHTHALATE	1.41E-02	7.92E-03	1.41E-02	3.35E-06	5.51E-07	1.89E-07	2.00E-02	1.40E-02	2.75E-05	2.64E-09
BUTYLBENZYL PHTHALATE	8.50E-03	3.33E-03	8.50E-03	1.97E-06	3.23E-07	1.11E-07	2.00E-01	NA	1.62E-06	--
CARBAZOLE	3.29E-02	2.11E-02	3.29E-02	8.30E-06	1.37E-06	4.68E-07	NA	2.00E-02	--	9.36E-09
DIBENZOFURAN	2.11E-02	2.11E-02	2.11E-02	5.32E-06	8.75E-07	3.00E-07	4.00E-03	NA	2.19E-04	--
DIBUTYL PHTHALATE	1.78E-02	1.58E-01	1.78E-02	9.41E-06	1.55E-06	5.30E-07	1.00E-01	NA	1.55E-05	--
VOLATILES										
2-BUTANONE	2.67E-01	2.86E+00	2.67E-01	1.58E-04	2.60E-05	8.91E-06	6.00E-01	NA	4.33E-05	--
ACETONE	3.64E+01	4.76E+02	3.64E+01	2.46E-02	4.04E-03	1.39E-03	1.00E-01	NA	4.04E-02	--
BENZENE	9.68E-03	1.15E-01	9.68E-03	6.12E-06	1.01E-06	3.45E-07	3.00E-03	5.50E-02	3.35E-04	1.90E-08
CARBON DISULFIDE	2.70E-02	2.79E-01	2.70E-02	1.56E-05	2.57E-06	8.81E-07	1.00E-01	NA	2.57E-05	--
TOLUENE	2.44E-03	5.13E-02	2.44E-03	2.33E-06	3.82E-07	1.31E-07	2.00E-01	NA	1.91E-06	--
TRICHLOROETHENE	5.02E-03	7.00E-02	5.02E-03	3.54E-06	5.82E-07	1.99E-07	6.00E-03	1.10E-02	9.70E-05	2.19E-09
VINYL CHLORIDE	8.42E-02	7.29E-01	8.42E-02	4.38E-05	7.20E-06	2.47E-06	3.00E-03	1.50E+00	2.40E-03	3.71E-06
METALS										
ALUMINUM	3.20E+01	3.20E+01	5.21E+00	4.27E-03	7.01E-04	2.40E-04	1.00E+00	NA	7.01E-04	--
ANTIMONY	8.58E-02	8.07E-02	8.58E-02	2.15E-05	3.53E-06	1.21E-06	4.00E-04	NA	8.83E-03	--
ARSENIC	3.73E-02	4.71E-02	3.73E-02	9.76E-06	1.60E-06	5.50E-07	3.00E-04	1.50E+00	5.33E-03	8.25E-07
BARIUM	6.70E+00	3.12E+00	6.70E+00	1.57E-03	2.57E-04	8.83E-05	7.00E-02	NA	3.68E-03	--
BERYLLIUM	8.59E-04	5.00E-04	8.59E-04	2.04E-07	3.36E-08	1.15E-08	2.00E-03	NA	1.68E-05	--
CADMIUM	1.22E-01	6.22E-02	1.22E-01	2.86E-05	4.70E-06	1.61E-06	5.00E-04	NA	9.40E-03	--
CHROMIUM	1.14E-01	1.05E-01	1.14E-01	2.84E-05	4.67E-06	1.60E-06	3.00E-03	NA	1.56E-03	--
COBALT	1.40E-01	1.40E-01	4.91E-02	2.24E-05	3.68E-06	1.26E-06	6.00E-02	NA	6.14E-05	--
COPPER	1.46E+01	1.46E+01	1.46E+01	3.69E-03	6.06E-04	2.08E-04	3.70E-02	NA	1.64E-02	--
MANGANESE	7.90E+01	7.90E+01	1.58E+01	1.09E-02	1.80E-03	6.17E-04	2.40E-02	NA	7.49E-02	--
MERCURY	1.30E-02	3.27E-02	1.30E-02	3.95E-06	6.49E-07	2.22E-07	1.00E-04	NA	6.49E-03	--
NICKEL	1.98E-01	1.70E-01	1.98E-01	4.91E-05	8.07E-06	2.77E-06	2.00E-02	NA	4.04E-04	--
SELENIUM	8.22E-03	1.00E-02	8.22E-03	2.14E-06	3.52E-07	1.21E-07	5.00E-03	NA	7.03E-05	--
SILVER	3.88E-02	2.81E-02	3.88E-02	9.42E-06	1.55E-06	5.31E-07	5.00E-03	NA	3.10E-04	--
THALLIUM	1.13E-04	5.28E-05	1.13E-04	2.65E-08	4.35E-09	1.49E-09	6.60E-05	NA	6.60E-05	--
VANADIUM	1.39E-01	1.39E-01	7.39E-02	2.61E-05	4.29E-06	1.47E-06	7.00E-03	NA	6.13E-04	--
ZINC	1.80E+01	1.72E+01	1.80E+01	4.51E-03	7.42E-04	2.54E-04	3.00E-01	NA	2.47E-03	--
Cumulative Risk									1.76E-01	5.41E-06

APPENDIX B

Fort Totten Human Health Risk Assessment Tables: Other Area

TABLE B-1 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO EXPOSURES TO TOTAL SOIL INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:

Other Area

*** RME- Incidental Ingestion of Total Soil**

Ingestion Rate = CR 100 mg/day
 Exposure Frequency = EF 350 day/yr
 Exposure Duration = ED 24 yr
 Body Weight = BW 70 kg
 Averaging Time (Noncancer) = AT 8,760 days
 Averaging Time (Cancer) = AT 25,550 days
 Conversion Factor = CF 1.00E-06 kg/mg

Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT)

NCADI = Daily intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI * SF

Chemical of Concern	EPC (mg/kg)	NCADI (mg/kg-day)	CADI (mg/kg-day)	Chronic RfD (mg/kg-day)	SF per (mg/kg-day)	HQ	Risk
Inorganics							
ALUMINUM	9.31E+03	1.28E-02	4.37E-03	1.00E+00	NA	1.28E-02	--
ANTIMONY	6.35E-01	8.70E-07	2.98E-07	4.00E-04	NA	2.17E-03	--
ARSENIC	5.47E+00	7.49E-06	2.57E-06	3.00E-04	1.50E+00	2.50E-02	3.85E-06
BARIUM	8.18E+01	1.12E-04	3.84E-05	7.00E-02	NA	1.60E-03	--
BERYLLIUM	2.85E-01	3.90E-07	1.34E-07	2.00E-03	NA	1.95E-04	--
CADMIUM	3.39E-01	4.64E-07	1.59E-07	5.00E-04	NA	9.29E-04	--
CHROMIUM	1.96E+01	2.68E-05	9.21E-06	3.00E-03	NA	8.95E-03	--
COBALT	7.02E+00	9.62E-06	3.30E-06	6.00E-02	NA	1.60E-04	--
COPPER	1.18E+02	1.62E-04	5.54E-05	3.70E-02	NA	4.37E-03	--
LEAD	2.06E+02	2.82E-04	9.68E-05	NA	NA	--	--
MANGANESE	3.21E+02	4.40E-04	1.51E-04	2.40E-02	NA	1.83E-02	--
MERCURY	9.29E-01	1.27E-06	4.36E-07	1.00E-04	NA	1.27E-02	--
NICKEL	1.68E+01	2.30E-05	7.89E-06	2.00E-02	NA	1.15E-03	--
SELENIUM	5.54E-01	7.59E-07	2.60E-07	5.00E-03	NA	1.52E-04	--
SILVER	2.10E-01	2.88E-07	9.86E-08	5.00E-03	NA	5.75E-05	--
THALLIUM	1.15E-01	1.58E-07	5.40E-08	6.60E-05	NA	2.39E-03	--
VANADIUM	2.82E+01	3.86E-05	1.32E-05	7.00E-03	NA	5.52E-03	--
ZINC	1.18E+02	1.62E-04	5.54E-05	3.00E-01	NA	5.39E-04	--
PAHs							
ACENAPHTHENE	1.30E-01	1.78E-07	6.11E-08	6.00E-02	NA	2.97E-06	--
ACENAPHTHYLENE	1.94E-01	2.66E-07	9.11E-08	2.00E-02	NA	1.33E-05	--
ANTHRACENE	1.18E-01	1.62E-07	5.54E-08	3.00E-01	NA	5.39E-07	--
BENZ(A)ANTHRACENE	7.40E-01	1.01E-06	3.48E-07	NA	7.30E-01	--	2.54E-07
BENZO(A)PYRENE	8.97E-01	1.23E-06	4.21E-07	NA	7.30E+00	--	3.08E-06
BENZO(B)FLOURANTHENE	1.24E+00	1.70E-06	5.82E-07	NA	7.30E-01	--	4.25E-07
BENZO(G,H,I)PERYLENE	4.76E-01	6.52E-07	2.24E-07	3.00E-02	NA	2.17E-05	--
BENZO(K)FLOURANTHENE	3.83E-01	5.25E-07	1.80E-07	NA	7.30E-02	--	1.31E-08
CHRYSENE	6.47E-01	8.86E-07	3.04E-07	NA	7.30E-03	--	2.22E-09
DIBENZ[A, H]ANTHRACENE	1.71E-01	2.34E-07	8.03E-08	NA	7.30E+00	--	5.86E-07
FLUORANTHENE	8.68E-01	1.19E-06	4.08E-07	4.00E-02	NA	2.97E-05	--
FLUORENE	1.24E+00	1.70E-06	5.82E-07	4.00E-02	NA	4.25E-05	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	7.08E-07	2.43E-07	NA	7.30E-01	--	1.77E-07
2-METHYLNAPHTHALENE	1.09E-01	1.49E-07	5.12E-08	2.00E-02	NA	7.47E-06	--
NAPHTHALENE	9.94E-02	1.36E-07	4.67E-08	2.00E-02	NA	6.81E-06	--
PHENANTHRENE	3.56E-01	4.88E-07	1.67E-07	2.00E-02	NA	2.44E-05	--

Chemical of Concern	EPC	NCADI	CADI	Chronic RID	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
PYRENE	1.10E+00	1.51E-06	5.17E-07	3.00E-02	NA	5.02E-05	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	4.30E-06	1.47E-06	2.00E-02	1.40E-02	2.15E-04	2.06E-08
BUTYLBENZYLPHthalATE	9.49E-02	1.30E-07	4.46E-08	2.00E-01	NA	6.50E-07	--
2-CHLOROPHENOL	1.55E-01	2.12E-07	7.28E-08	5.00E-03	NA	4.25E-05	--
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	2.14E-07	7.33E-08	NA	NA	--	--
DIBENZOFURAN	1.22E-01	1.67E-07	5.73E-08	4.00E-03	NA	4.18E-05	--
DIBUTYLPHthalATE	1.57E-01	2.15E-07	7.37E-08	1.00E-01	NA	2.15E-06	--
DIOCTYLPHthalATE	1.52E-01	2.08E-07	7.14E-08	2.00E-02	NA	1.04E-05	--
4-METHYLPHENOL	5.50E-02	7.53E-08	2.58E-08	5.00E-03	NA	1.51E-05	--
Volatiles							
2-BUTANONE	4.00E-03	5.48E-09	1.88E-09	6.00E-01	NA	9.13E-09	--
ACETONE	7.29E-02	9.99E-08	3.42E-08	1.00E-01	NA	9.99E-07	--
BENZENE	2.86E-03	3.92E-09	1.34E-09	3.00E-03	5.50E-02	1.31E-06	7.39E-11
CHLOROFORM	1.10E-03	1.51E-09	5.17E-10	1.00E-02	6.10E-03	1.51E-07	3.15E-12
ETHYLBENZENE	2.53E-03	3.47E-09	1.19E-09	1.00E-01	NA	3.47E-08	--
TRICHLOROETHENE	2.20E-03	3.01E-09	1.03E-09	6.00E-03	1.10E-02	5.02E-07	1.14E-11
VINYL CHLORIDE	4.37E-03	5.99E-09	2.05E-09	3.00E-03	1.50E+00	2.00E-06	3.08E-09
Cumulative Risk						9.75E-02	8.41E-06

TABLE B-2 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO EXPOSURE TO DERMAL CONTACT WITH TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Other Area					
* RME- Dermal Contact with Total Soil							
Surface Area for Contact = SA		5700 cm2/event					
Adherence Factor = AF		0.07 mg/cm2					
Absorption Factor = ABS		chemical-specific					
Exposure Frequency = EF		350 event/yr					
Exposure Duration = ED		24 yr					
Body Weight = BW		70 kg					
Averaging Time (Noncancer) = AT		8.76E+03 days					
Averaging Time (Cancer) = AT		25550 days					
Conversion Factor = CF		0.000001 kg/mg					
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	6.35E-01	--	--	6.00E-05	NA	--	--
ARSENIC	5.47E+00	8.97E-07	3.08E-07	3.00E-04	1.50E+00	2.99E-03	4.61E-07
BARJUM	8.18E+01	--	--	4.90E-03	NA	--	--
BERYLLIUM	2.85E-01	--	--	1.40E-05	NA	--	--
CADMIUM	3.39E-01	1.85E-09	6.35E-10	1.25E-05	NA	1.48E-04	--
CHROMIUM	1.96E+01	--	--	7.50E-05	NA	--	--
COBALT	7.02E+00	--	--	6.00E-02	NA	--	--
COPPER	1.18E+02	--	--	3.70E-02	NA	--	--
LEAD	2.06E+02	--	--	NA	NA	--	--
MANGANESE	3.21E+02	--	--	9.60E-04	NA	--	--
MERCURY	9.29E-01	--	--	1.00E-04	NA	--	--
NICKEL	1.68E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.54E-01	--	--	5.00E-03	NA	--	--
SILVER	2.10E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.15E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.82E+01	--	--	1.82E-04	NA	--	--
ZINC	1.18E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.30E-01	9.24E-08	3.17E-08	NA	NA	--	--
ACENAPHTHYLENE	1.94E-01	1.38E-07	4.73E-08	NA	NA	--	--
ANTHRACENE	1.18E-01	8.38E-08	2.87E-08	NA	NA	--	--
BENZ(A)ANTHRACENE	7.40E-01	5.26E-07	1.80E-07	NA	NA	--	--
BENZO(A)PYRENE	8.97E-01	6.37E-07	2.19E-07	NA	NA	--	--
BENZO(B)FLOURANTHENE	1.24E+00	8.81E-07	3.02E-07	NA	NA	--	--
BENZO(G,H,I)PERYLENE	4.76E-01	3.38E-07	1.16E-07	NA	NA	--	--
BENZO(K)FLOURANTHENE	3.83E-01	2.72E-07	9.33E-08	NA	NA	--	--
CHRYSENE	6.47E-01	4.60E-07	1.58E-07	NA	NA	--	--
DIBENZ[A, H]ANTHRACENE	1.71E-01	1.22E-07	4.17E-08	NA	NA	--	--
FLUORANTHENE	8.68E-01	6.17E-07	2.11E-07	NA	NA	--	--
FLUORENE	1.24E+00	8.81E-07	3.02E-07	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	3.67E-07	1.26E-07	NA	NA	--	--
2-METHYLNAPHTHALENE	1.09E-01	7.74E-08	2.66E-08	NA	NA	--	--
NAPHTHALENE	9.94E-02	7.06E-08	2.42E-08	NA	NA	--	--
PHENANTHRENE	3.56E-01	2.53E-07	8.67E-08	NA	NA	--	--
PYRENE	1.10E+00	7.82E-07	2.68E-07	NA	NA	--	--

Risk = Cancer Risk = CADI * SF							
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	1.72E-06	5.88E-07	2.00E-02	1.40E-02	8.58E-05	8.24E-09
BUTYLBENZYLPHTHALATE	9.49E-02	5.19E-08	1.78E-08	2.00E-01	NA	2.59E-07	--
2-CHLOROPHENOL	1.55E-01	8.47E-08	2.90E-08	5.00E-03	NA	1.69E-05	--
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	8.53E-08	2.92E-08	NA	NA	--	--
DIBENZOFURAN	1.22E-01	6.67E-08	2.29E-08	4.00E-03	NA	1.67E-05	--
DIBUTYLPHTHALATE	1.57E-01	8.58E-08	2.94E-08	1.00E-01	NA	8.58E-07	--
DIOCTYLPHTHALATE	1.52E-01	8.31E-08	2.85E-08	2.00E-02	NA	4.15E-06	--
4-METHYLPHENOL	5.50E-02	3.01E-08	1.03E-08	5.00E-03	NA	6.01E-06	--
Volatiles							
2-BUTANONE	4.00E-03	--	--	6.00E-01	NA	--	--
ACETONE	7.29E-02	--	--	1.00E-01	NA	--	--
BENZENE	2.86E-03	--	--	3.00E-03	5.50E-02	--	--
CHLOROFORM	1.10E-03	--	--	1.00E-02	6.10E-03	--	--
ETHYLBENZENE	2.53E-03	--	--	1.00E-01	NA	--	--
TRICHLOROETHENE	2.20E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	0.00437	--	--	0.003	1.5	--	--
Cumulative Risk						0.003269	4.7E-07

TABLE B-3 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR ADULT RESIDENTS DUE TO INHALATION OF PARTICULATES FROM TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Other Area					
* RME- Inhalation of Particles from Total Soil							
Inhalation Rate = IR	0.833 m3/hr						
Exposure Time = ET	24 hr/day						
Exposure Frequency = EF	350 day/yr						
Exposure Duration = ED	24 yr						
Body Weight = BW	70 kg						
Averaging Time (Noncancer) = AT	8,760 days						
Averaging Time (Cancer) = AT	25,550 days						
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/m3)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	7.05E-06	1.93E-06	6.62E-07	1.40E-03	NA	1.38E-03	--
ANTIMONY	4.81E-10	1.32E-10	4.52E-11	NA	NA	--	--
ARSENIC	4.14E-09	1.13E-09	3.89E-10	NA	1.50E+01	--	5.84E-09
BARIUM	6.20E-08	1.70E-08	5.82E-09	1.40E-04	NA	1.21E-04	--
BERYLLIUM	2.16E-10	5.91E-11	2.03E-11	5.70E-06	8.40E+00	1.04E-05	1.70E-10
CADMIUM	2.57E-10	7.03E-11	2.41E-11	NA	6.30E+00	--	1.52E-10
CHROMIUM	1.48E-08	4.07E-09	1.39E-09	NA	2.90E+02	--	4.04E-07
COBALT	5.32E-09	1.46E-09	4.99E-10	NA	NA	--	--
COPPER	8.94E-08	2.45E-08	8.39E-09	NA	NA	--	--
LEAD	1.56E-07	4.27E-08	1.47E-08	NA	NA	--	--
MANGANESE	2.43E-07	6.66E-08	2.28E-08	1.40E-05	NA	4.76E-03	--
MERCURY	7.04E-10	1.93E-10	6.61E-11	NA	NA	--	--
NICKEL	1.27E-08	3.49E-09	1.20E-09	NA	NA	--	--
SELENIUM	4.20E-10	1.15E-10	3.94E-11	NA	NA	--	--
SILVER	1.59E-10	4.36E-11	1.49E-11	NA	NA	--	--
THALLIUM	8.71E-11	2.39E-11	8.18E-12	NA	NA	--	--
VANADIUM	2.14E-08	5.85E-09	2.01E-09	NA	NA	--	--
ZINC	8.94E-08	2.45E-08	8.39E-09	NA	NA	--	--
PAHs							
ACENAPHTHENE	9.85E-11	2.70E-11	9.25E-12	6.00E-02	NA	4.50E-10	--
ACENAPHTHYLENE	1.47E-10	4.02E-11	1.38E-11	8.60E-04	NA	4.68E-08	--
ANTHRACENE	8.94E-11	2.45E-11	8.39E-12	3.00E-01	NA	8.16E-11	--
BENZ(A)ANTHRACENE	5.61E-10	1.54E-10	5.26E-11	NA	3.10E-01	--	1.63E-11
BENZO(A)PYRENE	6.80E-10	1.86E-10	6.38E-11	NA	3.10E+00	--	1.98E-10
BENZO(B)FLOURANTHENE	9.39E-10	2.57E-10	8.82E-11	NA	3.10E-01	--	2.73E-11
BENZO(G,H,I)PERYLENE	3.61E-10	9.88E-11	3.39E-11	3.00E-02	NA	3.29E-09	--
BENZO(K)FLOURANTHENE	2.90E-10	7.95E-11	2.72E-11	NA	3.10E-02	--	8.45E-13
CHRYSENE	4.90E-10	1.34E-10	4.60E-11	NA	3.10E-03	--	1.43E-13
DIBENZ[A, H]ANTHRACENE	1.30E-10	3.55E-11	1.22E-11	NA	3.10E+00	--	3.77E-11

Risk = Cancer Risk = CADI * SF							
FLUORANTHENE	6.58E-10	1.80E-10	6.17E-11	4.00E-02	NA	4.50E-09	--
FLUORENE	9.39E-10	2.57E-10	8.82E-11	4.00E-02	NA	6.43E-09	--
INDENO(1,2,3-CD)PYRENE	3.92E-10	1.07E-10	3.68E-11	NA	3.10E-01	--	1.14E-11
2-METHYLNAPHTHALENE	8.26E-11	2.26E-11	7.75E-12	NA	NA	--	--
NAPHTHALENE	7.53E-11	2.06E-11	7.07E-12	8.60E-04	NA	2.40E-08	--
PHENANTHRENE	2.70E-10	7.39E-11	2.53E-11	8.60E-04	NA	8.59E-08	--
PYRENE	8.33E-10	2.28E-10	7.82E-11	3.00E-02	NA	7.61E-09	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.38E-09	6.51E-10	2.23E-10	2.20E-02	NA	2.96E-08	--
BUTYLBENZYLPHTHALATE	7.19E-11	1.97E-11	6.75E-12	2.00E-01	NA	9.84E-11	--
CARBAZOLE	0.00E+00	0.00E+00	0.00E+00	NA	2.00E-02	--	0.00E+00
2-CHLOROPHENOL	1.17E-10	3.22E-11	1.10E-11	5.00E-03	NA	6.43E-09	--
4-CHLOROPHENYL PHENYL ETHER	1.18E-10	3.24E-11	1.11E-11	NA	NA	--	--
DIBENZOFURAN	9.24E-11	2.53E-11	8.68E-12	4.00E-03	NA	6.33E-09	--
DIBUTYLPHTHALATE	1.19E-10	3.26E-11	1.12E-11	1.00E-01	NA	3.26E-10	--
DIOCTYLPHTHALATE	1.15E-10	3.15E-11	1.08E-11	2.00E-02	NA	1.58E-09	--
4-METHYLPHENOL	4.17E-11	1.14E-11	3.91E-12	5.00E-03	NA	2.28E-09	--
Volatiles							
2-BUTANONE	3.03E-12	8.30E-13	2.85E-13	2.90E-01	NA	2.86E-12	--
ACETONE	5.52E-11	1.51E-11	5.19E-12	1.00E-01	NA	1.51E-10	--
BENZENE	2.17E-12	5.93E-13	2.03E-13	1.70E-03	2.70E-02	3.49E-10	5.49E-15
CHLOROFORM	8.33E-13	2.28E-13	7.82E-14	8.60E-05	8.05E-02	2.65E-09	6.30E-15
ETHYLBENZENE	1.92E-12	5.25E-13	1.80E-13	2.90E-01	NA	1.81E-12	--
TRICHLOROETHENE	1.67E-12	4.56E-13	1.56E-13	6.00E-03	6.00E-03	7.61E-11	9.39E-16
VINYL CHLORIDE	3.31061E-12	9.06653E-13	3.10852E-13	0.029	0.031	3.13E-11	9.64E-15
Cumulative Risk						0.006269	4.11E-07

**TABLE B-4 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO EXPOSURES TO TOTAL SOIL
INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number: Other Area * RME- Incidental Ingestion of Total Soil Ingestion Rate = CR 200 mg/day Exposure Frequency = EF 350 day/yr Exposure Duration = ED 6 yr Body Weight = BW 15 kg Averaging Time (Noncancer) = AT 2.19E+03 days Averaging Time (Cancer) = AT 2.56E+04 days Conversion Factor = CF 1.00E-06 kg/mg Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT) NCADI = Daily intake - Noncarcinogens CADI = Daily Intake - Carcinogens HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	1.19E-01	1.02E-02	1.00E+00	NA	1.19E-01	--
ANTIMONY	6.35E-01	8.12E-06	6.96E-07	4.00E-04	NA	2.03E-02	--
ARSENIC	5.47E+00	6.99E-05	5.99E-06	3.00E-04	1.50E+00	2.33E-01	8.99E-06
BARIUM	8.18E+01	1.05E-03	8.96E-05	7.00E-02	NA	1.49E-02	--
BERYLLIUM	2.85E-01	3.64E-06	3.12E-07	2.00E-03	NA	1.82E-03	--
CADMIUM	3.39E-01	4.33E-06	3.72E-07	5.00E-04	NA	8.67E-03	--
CHROMIUM	1.96E+01	2.51E-04	2.15E-05	3.00E-03	NA	8.35E-02	--
COBALT	7.02E+00	8.98E-05	7.69E-06	6.00E-02	NA	1.50E-03	--
COPPER	1.18E+02	1.51E-03	1.29E-04	3.70E-02	NA	4.08E-02	--
LEAD	2.06E+02	2.63E-03	2.26E-04	NA	NA	--	--
MANGANESE	3.21E+02	4.10E-03	3.52E-04	2.40E-02	NA	1.71E-01	--
MERCURY	9.29E-01	1.19E-05	1.02E-06	1.00E-04	NA	1.19E-01	--
NICKEL	1.68E+01	2.15E-04	1.84E-05	2.00E-02	NA	1.07E-02	--
SELENIUM	5.54E-01	7.08E-06	6.07E-07	5.00E-03	NA	1.42E-03	--
SILVER	2.10E-01	2.68E-06	2.30E-07	5.00E-03	NA	5.37E-04	--
THALLIUM	1.15E-01	1.47E-06	1.26E-07	6.60E-05	NA	2.23E-02	--
VANADIUM	2.82E+01	3.61E-04	3.09E-05	7.00E-03	NA	5.15E-02	--
ZINC	1.18E+02	1.51E-03	1.29E-04	3.00E-01	NA	5.03E-03	--
PAHs							
ACENAPHTHENE	1.30E-01	1.66E-06	1.42E-07	6.00E-02	NA	2.77E-05	--
ACENAPHTHYLENE	1.94E-01	2.48E-06	2.13E-07	2.00E-02	NA	1.24E-04	--
ANTHRACENE	1.18E-01	1.51E-06	1.29E-07	3.00E-01	NA	5.03E-06	--
BENZ(A)ANTHRACENE	7.40E-01	9.46E-06	8.11E-07	NA	7.30E-01	--	5.92E-07
BENZO(A)PYRENE	8.97E-01	1.15E-05	9.83E-07	NA	7.30E+00	--	7.18E-06
BENZO(B)FLOURANTHENE	1.24E+00	1.59E-05	1.36E-06	NA	7.30E-01	--	9.92E-07
BENZO(G,H,I)PERYLENE	4.76E-01	6.09E-06	5.22E-07	3.00E-02	NA	2.03E-04	--
BENZO(K)FLOURANTHENE	3.83E-01	4.90E-06	4.20E-07	NA	7.30E-02	--	3.06E-08
CHRYSENE	6.47E-01	8.27E-06	7.09E-07	NA	7.30E-03	--	5.18E-09
DIBENZ[A, H]ANTHRACENE	1.71E-01	2.19E-06	1.87E-07	NA	7.30E+00	--	1.37E-06
FLUORANTHENE	8.68E-01	1.11E-05	9.51E-07	4.00E-02	NA	2.77E-04	--
FLUORENE	1.24E+00	1.59E-05	1.36E-06	4.00E-02	NA	3.96E-04	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	6.61E-06	5.67E-07	NA	7.30E-01	--	4.14E-07

Risk = Cancer Risk = CADI * SF							
2-METHYLNAPHTHALENE	1.09E-01	1.39E-06	1.19E-07	2.00E-02	NA	6.97E-05	--
NAPHTHALENE	9.94E-02	1.27E-06	1.09E-07	2.00E-02	NA	6.35E-05	--
PHENANTHRENE	3.56E-01	4.55E-06	3.90E-07	2.00E-02	NA	2.28E-04	--
PYRENE	1.10E+00	1.41E-05	1.21E-06	3.00E-02	NA	4.69E-04	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	4.01E-05	3.44E-06	2.00E-02	1.40E-02	2.01E-03	4.82E-08
BUTYLBENZYLPHTHALATE	9.49E-02	1.21E-06	1.04E-07	2.00E-01	NA	6.07E-06	--
CARBAZOLE	0.00E+00	0.00E+00	0.00E+00	NA	2.00E-02	--	0.00E+00
2-CHLOROPHENOL	1.55E-01	1.98E-06	1.70E-07	5.00E-03	NA	3.96E-04	--
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	1.99E-06	1.71E-07	NA	NA	--	--
DIBENZOFURAN	1.22E-01	1.56E-06	1.34E-07	4.00E-03	NA	3.90E-04	--
DIBUTYLPHTHALATE	1.57E-01	2.01E-06	1.72E-07	1.00E-01	NA	2.01E-05	--
DIOCTYLPHTHALATE	1.52E-01	1.94E-06	1.67E-07	2.00E-02	NA	9.72E-05	--
4-METHYLPHENOL	5.50E-02	7.03E-07	6.03E-08	5.00E-03	NA	1.41E-04	--
Volatiles							
2-BUTANONE	4.00E-03	5.11E-08	4.38E-09	6.00E-01	NA	8.52E-08	--
ACETONE	7.29E-02	9.32E-07	7.99E-08	1.00E-01	NA	9.32E-06	--
BENZENE	2.86E-03	3.66E-08	3.13E-09	3.00E-03	5.50E-02	1.22E-05	1.72E-10
BROMODICHLOROMETHANE	0.00E+00	0.00E+00	0.00E+00	2.00E-02	6.20E-02	0.00E+00	0.00E+00
CARBON DISULFIDE	0.00E+00	0.00E+00	0.00E+00	1.00E-01	NA	0.00E+00	--
CHLOROFORM	1.10E-03	1.41E-08	1.21E-09	1.00E-02	6.10E-03	1.41E-06	7.35E-12
ETHYLBENZENE	2.53E-03	3.23E-08	2.77E-09	1.00E-01	NA	3.23E-07	--
M&P XYLENES	0.00E+00	0.00E+00	0.00E+00	2.00E+00	NA	0.00E+00	--
O-XYLENE	0.00E+00	0.00E+00	0.00E+00	2.00E+00	NA	0.00E+00	--
TOLUENE	0.00E+00	0.00E+00	0.00E+00	2.00E-01	NA	0.00E+00	--
TRICHLOROETHENE	2.20E-03	2.81E-08	2.41E-09	6.00E-03	1.10E-02	4.69E-06	2.65E-11
VINYL CHLORIDE	0.00437	5.58721E-08	4.78904E-09	0.003	1.5	1.86E-05	7.18E-09
Cumulative Risk						9.10E-01	1.96E-05

**TABLE B-5 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO EXPOSURE TO DERMAL CONTACT
WITH TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number: Other Area * RME- Dermal Contact with Total Soil Surface Area for Contact = SA 2800 cm2/event Adherence Factor = AF 0.2 mg/cm2 Absorption Factor = ABS chemical specific Exposure Frequency = EF 350 event/yr Exposure Duration = ED 6 yr Body Weight = BW 15 kg Averaging Time (Noncancer) = AT 2.19E+03 days Averaging Time (Cancer) = AT 25550 days Conversion Factor = CF 0.000001 kg/mg Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT) NCADI = Daily intake - Noncarcinogens CADI = Daily Intake - Carcinogens HQ = Hazard Quotient - Noncarcinogens = NCADI / Rfd							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic Rfd	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	6.35E-01	--	--	6.00E-05	NA	--	--
ARSENIC	5.47E+00	5.87E-06	5.04E-07	3.00E-04	1.50E+00	1.96E-02	7.55E-07
BARIUM	8.18E+01	--	--	4.90E-03	NA	--	--
BERYLLIUM	2.85E-01	--	--	1.40E-05	NA	--	--
CADMIUM	3.39E-01	1.21E-08	1.04E-09	1.25E-05	NA	9.71E-04	--
CHROMIUM	1.96E+01	--	--	7.50E-05	NA	--	--
COBALT	7.02E+00	--	--	6.00E-02	NA	--	--
COPPER	1.18E+02	--	--	3.70E-02	NA	--	--
LEAD	2.06E+02	--	--	NA	NA	--	--
MANGANESE	3.21E+02	--	--	9.60E-04	NA	--	--
MERCURY	9.29E-01	--	--	1.00E-04	NA	--	--
NICKEL	1.68E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.54E-01	--	--	5.00E-03	NA	--	--
SILVER	2.10E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.15E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.82E+01	--	--	1.82E-04	NA	--	--
ZINC	1.18E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.30E-01	6.05E-07	5.19E-08	NA	NA	--	--
ACENAPHTHYLENE	1.94E-01	9.03E-07	7.74E-08	NA	NA	--	--
ANTHRACENE	1.18E-01	5.49E-07	4.71E-08	NA	NA	--	--
BENZ(A)ANTHRACENE	7.40E-01	3.44E-06	2.95E-07	NA	NA	--	--
BENZO(A)PYRENE	8.97E-01	4.17E-06	3.58E-07	NA	NA	--	--
BENZO(B)FLOURANTHENE	1.24E+00	5.77E-06	4.95E-07	NA	NA	--	--
BENZO(G,H,I)PERYLENE	4.76E-01	2.22E-06	1.90E-07	NA	NA	--	--
BENZO(K)FLOURANTHENE	3.83E-01	1.78E-06	1.53E-07	NA	NA	--	--
CHRYSENE	6.47E-01	3.01E-06	2.58E-07	NA	NA	--	--
DIBENZ[A, H]ANTHRACENE	1.71E-01	7.96E-07	6.82E-08	NA	NA	--	--
FLUORANTHENE	8.68E-01	4.04E-06	3.46E-07	NA	NA	--	--
FLUORENE	1.24E+00	5.77E-06	4.95E-07	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	2.41E-06	2.06E-07	NA	NA	--	--

Risk = Cancer Risk = CADI * SF							
2-METHYLNAPHTHALENE	1.09E-01	5.07E-07	4.35E-08	NA	NA	--	--
NAPHTHALENE	9.94E-02	4.63E-07	3.97E-08	NA	NA	--	--
PHENANTHRENE	3.56E-01	1.66E-06	1.42E-07	NA	NA	--	--
PYRENE	1.10E+00	5.12E-06	4.39E-07	NA	NA	--	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	1.12E-05	9.64E-07	2.00E-02	1.40E-02	5.62E-04	1.35E-08
BUTYLBENZYL PHTHALATE	9.49E-02	3.40E-07	2.91E-08	2.00E-01	NA	1.70E-06	--
2-CHLOROPHENOL	1.55E-01	5.55E-07	4.76E-08	5.00E-03	NA	1.11E-04	--
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	5.58E-07	4.79E-08	NA	NA	--	--
DIBENZOFURAN	1.22E-01	4.37E-07	3.74E-08	4.00E-03	NA	1.09E-04	--
DIBUTYL PHTHALATE	1.57E-01	5.62E-07	4.82E-08	1.00E-01	NA	5.62E-06	--
DIOCTYL PHTHALATE	1.52E-01	5.44E-07	4.66E-08	2.00E-02	NA	2.72E-05	--
4-METHYLPHENOL	5.50E-02	1.97E-07	1.69E-08	5.00E-03	NA	3.94E-05	--
Volatiles							
2-BUTANONE	4.00E-03	--	--	6.00E-01	NA	--	--
ACETONE	7.29E-02	--	--	1.00E-01	NA	--	--
BENZENE	2.86E-03	--	--	3.00E-03	5.50E-02	--	--
CHLOROFORM	1.10E-03	--	--	1.00E-02	6.10E-03	--	--
ETHYLBENZENE	2.53E-03	--	--	1.00E-01	NA	--	--
TRICHLOROETHENE	2.20E-03	--	--	6.00E-03	1.10E-02	--	--
VINYL CHLORIDE	0.00437	--	--	0.003	1.5	--	--
Cumulative Risk						0.021409	7.69E-07

TABLE B-6 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO INHALATION OF PARTICULATES FROM TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:		Other Area					
* RME- Inhalation of Particles from Total Soil							
Inhalation Rate = IR	0.417 m3/hr						
Exposure Time = ET	24 hr/day						
Exposure Frequency = EF	350 day/yr						
Exposure Duration = ED	6 yr						
Body Weight = BW	15 kg						
Averaging Time (Noncancer) = AT	2,190 days						
Averaging Time (Cancer) = AT	25550 days						
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/m3)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	7.05E-06	4.51E-06	3.87E-07	1.40E-03	NA	3.22E-03	--
ANTIMONY	4.81E-10	3.08E-10	2.64E-11	NA	NA	--	--
ARSENIC	4.14E-09	2.65E-09	2.27E-10	NA	1.50E+01	--	3.41E-09
BARIUM	6.20E-08	3.96E-08	3.40E-09	1.40E-04	NA	2.83E-04	--
BERYLLIUM	2.16E-10	1.38E-10	1.18E-11	5.70E-06	8.40E+00	2.42E-05	9.95E-11
CADMIUM	2.57E-10	1.64E-10	1.41E-11	NA	6.30E+00	--	8.87E-11
CHROMIUM	1.48E-08	9.50E-09	8.14E-10	NA	2.90E+02	--	2.36E-07
COBALT	5.32E-09	3.40E-09	2.92E-10	NA	NA	--	--
COPPER	8.94E-08	5.72E-08	4.90E-09	NA	NA	--	--
MANGANESE	2.43E-07	1.56E-07	1.33E-08	1.40E-05	NA	1.11E-02	--
MERCURY	7.04E-10	4.50E-10	3.86E-11	NA	NA	--	--
NICKEL	1.27E-08	8.14E-09	6.98E-10	NA	NA	--	--
SELENIUM	4.20E-10	2.69E-10	2.30E-11	NA	NA	--	--
SILVER	1.59E-10	1.02E-10	8.72E-12	NA	NA	--	--
THALLIUM	8.71E-11	5.57E-11	4.78E-12	NA	NA	--	--
VANADIUM	2.14E-08	1.37E-08	1.17E-09	NA	NA	--	--
ZINC	8.94E-08	5.72E-08	4.90E-09	NA	NA	--	--
PAHs							
ACENAPHTHENE	9.85E-11	6.30E-11	5.40E-12	6.00E-02	NA	1.05E-09	--
ACENAPHTHYLENE	1.47E-10	9.40E-11	8.06E-12	8.60E-04	NA	1.09E-07	--
ANTHRACENE	8.94E-11	5.72E-11	4.90E-12	3.00E-01	NA	1.91E-10	--
BENZ(A)ANTHRACENE	5.61E-10	3.59E-10	3.07E-11	NA	3.10E-01	--	9.53E-12
BENZO(A)PYRENE	6.80E-10	4.35E-10	3.73E-11	NA	3.10E+00	--	1.16E-10
BENZO(B)FLOURANTHENE	9.39E-10	6.01E-10	5.15E-11	NA	3.10E-01	--	1.60E-11
BENZO(G,H,I)PERYLENE	3.61E-10	2.31E-10	1.98E-11	3.00E-02	NA	7.69E-09	--
BENZO(K)FLOURANTHENE	2.90E-10	1.86E-10	1.59E-11	NA	3.10E-02	--	4.93E-13
CHRYSENE	4.90E-10	3.14E-10	2.69E-11	NA	3.10E-03	--	8.33E-14
DIBENZ[A, H]ANTHRACENE	1.30E-10	8.29E-11	7.10E-12	NA	3.10E+00	--	2.20E-11
FLUORANTHENE	6.58E-10	4.21E-10	3.61E-11	4.00E-02	NA	1.05E-08	--
FLUORENE	9.39E-10	6.01E-10	5.15E-11	4.00E-02	NA	1.50E-08	--
INDENO(1,2,3-CD)PYRENE	3.92E-10	2.51E-10	2.15E-11	NA	3.10E-01	--	6.66E-12
2-METHYLNAPHTHALENE	8.26E-11	5.28E-11	4.53E-12	NA	NA	--	--

Risk = Cancer Risk = CADI * SF							
NAPHTHALENE	7.53E-11	4.82E-11	4.13E-12	8.60E-04	NA	5.60E-08	—
PHENANTHRENE	2.70E-10	1.73E-10	1.48E-11	8.60E-04	NA	2.01E-07	—
PYRENE	8.33E-10	5.33E-10	4.57E-11	3.00E-02	NA	1.78E-08	—
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.38E-09	1.52E-09	1.30E-10	2.20E-02	NA	6.92E-08	—
BUTYLBENZYLPHthalate	7.19E-11	4.60E-11	3.94E-12	2.00E-01	NA	2.30E-10	—
2-CHLOROPHENOL	1.17E-10	7.51E-11	6.44E-12	5.00E-03	NA	1.50E-08	—
4-CHLOROPHENYL PHENYL ETHER	1.18E-10	7.56E-11	6.48E-12	NA	NA	—	—
DIBENZOFURAN	9.24E-11	5.91E-11	5.07E-12	4.00E-03	NA	1.48E-08	—
DIBUTYLPHthalate	1.19E-10	7.61E-11	6.52E-12	1.00E-01	NA	7.61E-10	—
DIOCTYLPHthalate	1.15E-10	7.37E-11	6.31E-12	2.00E-02	NA	3.68E-09	—
4-METHYLPHENOL	4.17E-11	2.67E-11	2.28E-12	5.00E-03	NA	5.33E-09	—
Volatiles							
2-BUTANONE	3.03E-12	1.94E-12	1.66E-13	2.90E-01	NA	6.69E-12	—
ACETONE	5.52E-11	3.53E-11	3.03E-12	1.00E-01	NA	3.53E-10	—
BENZENE	2.17E-12	1.39E-12	1.19E-13	1.70E-03	2.70E-02	8.15E-10	3.21E-15
BROMODICHLOROMETHANE	0.00E+00	0.00E+00	0.00E+00	2.00E-02	6.20E-02	0.00E+00	0.00E+00
CARBON DISULFIDE	0.00E+00	0.00E+00	0.00E+00	2.00E-01	NA	0.00E+00	—
CHLOROFORM	8.33E-13	5.33E-13	4.57E-14	8.60E-05	8.05E-02	6.20E-09	3.68E-15
ETHYLBENZENE	1.92E-12	1.23E-12	1.05E-13	2.90E-01	NA	4.23E-12	—
TRICHLOROETHENE	1.66667E-12	1.0663E-12	9.13973E-14	0.006	0.006	1.78E-10	5.48E-16
VINYL CHLORIDE	3.31061E-12	2.11806E-12	1.81548E-13	0.029	0.031	7.30366E-11	5.62799E-15
Cumulative Risk						0.014644176	2.39904E-07

**TABLE B-7 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR RECREATIONAL USERS DUE TO EXPOSURES TO SURFACE SOIL
INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number: Other Area * RME- Incidental Ingestion of Surface Soil Ingestion Rate = CR 200 mg/day Exposure Frequency = EF 141 day/yr Exposure Duration = ED 9 yr Body Weight = BW 36 kg Averaging Time (Noncancer) = AT 3.29E+03 days Averaging Time (Cancer) = AT 25550 days Conversion Factor = CF 0.000001 kg/mg Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT) NCADI = Daily intake - Noncarcinogens CADI = Daily Intake - Carcinogens HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	2.00E-02	2.57E-03	1.00E+00	NA	2.00E-02	—
ANTIMONY	6.35E-01	1.36E-06	1.75E-07	4.00E-04	NA	3.41E-03	—
ARSENIC	5.47E+00	1.17E-05	1.51E-06	3.00E-04	1.50E+00	3.91E-02	2.26E-06
BARIUM	8.18E+01	1.76E-04	2.26E-05	7.00E-02	NA	2.51E-03	—
BERYLLIUM	2.85E-01	6.12E-07	7.86E-08	2.00E-03	NA	3.06E-04	—
CADMIUM	3.39E-01	7.28E-07	9.35E-08	5.00E-04	NA	1.46E-03	—
CHROMIUM	1.96E+01	4.21E-05	5.41E-06	3.00E-03	NA	1.40E-02	—
COBALT	7.02E+00	1.51E-05	1.94E-06	6.00E-02	NA	2.51E-04	—
COPPER	1.18E+02	2.53E-04	3.26E-05	3.70E-02	NA	6.84E-03	—
MANGANESE	3.21E+02	6.89E-04	8.86E-05	2.40E-02	NA	2.87E-02	—
MERCURY	9.29E-01	1.99E-06	2.56E-07	1.00E-04	NA	1.99E-02	—
NICKEL	1.68E+01	3.61E-05	4.64E-06	2.00E-02	NA	1.80E-03	—
SELENIUM	5.54E-01	1.19E-06	1.53E-07	5.00E-03	NA	2.38E-04	—
SILVER	2.10E-01	4.51E-07	5.79E-08	5.00E-03	NA	9.01E-05	—
THALLIUM	1.15E-01	2.47E-07	3.17E-08	6.60E-05	NA	3.74E-03	—
VANADIUM	2.82E+01	6.05E-05	7.78E-06	7.00E-03	NA	8.65E-03	—
ZINC	1.18E+02	2.53E-04	3.26E-05	3.00E-01	NA	8.44E-04	—
PAHs							
ACENAPHTHENE	1.30E-01	2.79E-07	3.59E-08	6.00E-02	NA	4.65E-06	—
ACENAPHTHYLENE	1.94E-01	4.16E-07	5.35E-08	2.00E-02	NA	2.08E-05	—
ANTHRACENE	1.18E-01	2.53E-07	3.26E-08	3.00E-01	NA	8.44E-07	—
BENZ(A)ANTHRACENE	7.40E-01	1.59E-06	2.04E-07	NA	7.30E-01	—	1.49E-07
BENZO(A)PYRENE	8.97E-01	1.93E-06	2.48E-07	NA	7.30E+00	—	1.81E-06
BENZO(B)FLUORANTHENE	1.24E+00	2.66E-06	3.42E-07	NA	7.30E-01	—	2.50E-07
BENZO(G,H,I)PERYLENE	4.76E-01	1.02E-06	1.31E-07	3.00E-02	NA	3.41E-05	—
BENZO(K)FLUORANTHENE	3.83E-01	8.22E-07	1.06E-07	NA	7.30E-02	—	7.71E-09
CHRYSENE	6.47E-01	1.39E-06	1.79E-07	NA	7.30E-03	—	1.30E-09
DIBENZ[A, H]ANTHRACENE	1.71E-01	3.67E-07	4.72E-08	NA	7.30E+00	—	3.44E-07
FLUORANTHENE	8.68E-01	1.86E-06	2.40E-07	4.00E-02	NA	4.66E-05	—
FLUORENE	1.24E+00	2.66E-06	3.42E-07	4.00E-02	NA	6.65E-05	—
INDENO(1,2,3-CD)PYRENE	5.17E-01	1.11E-06	1.43E-07	NA	7.30E-01	—	1.04E-07
2-METHYLNAPHTHALENE	1.09E-01	2.34E-07	3.01E-08	2.00E-02	NA	1.17E-05	—
NAPHTHALENE	9.94E-02	2.13E-07	2.74E-08	2.00E-02	NA	1.07E-05	—

Risk = Cancer Risk = CADI * SF							
PHENANTHRENE	3.56E-01	7.64E-07	9.82E-08	2.00E-02	NA	3.82E-05	--
PYRENE	1.10E+00	2.36E-06	3.04E-07	3.00E-02	NA	7.87E-05	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	6.74E-06	8.66E-07	2.00E-02	1.40E-02	3.37E-04	1.21E-08
BUTYLBENZYLPHthalATE	9.49E-02	2.04E-07	2.62E-08	2.00E-01	NA	1.02E-06	--
2-CHLOROPHENOL	1.55E-01	3.33E-07	4.28E-08	5.00E-03	NA	6.65E-05	--
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	3.35E-07	4.30E-08	NA	NA	--	--
DIBENZOFURAN	1.22E-01	2.62E-07	3.37E-08	4.00E-03	NA	6.55E-05	--
DIBUTYLPHthalATE	1.57E-01	3.37E-07	4.33E-08	1.00E-01	NA	3.37E-06	--
DIOCTYLPHthalATE	1.52E-01	3.26E-07	4.19E-08	2.00E-02	NA	1.63E-05	--
4-METHYLPHENOL	5.50E-02	1.18E-07	1.52E-08	5.00E-03	NA	2.36E-05	--
Volatiles							
2-BUTANONE	4.00E-03	8.58E-09	1.10E-09	6.00E-01	NA	1.43E-08	--
ACETONE	7.29E-02	1.56E-07	2.01E-08	1.00E-01	NA	1.56E-06	--
BENZENE	2.86E-03	6.14E-09	7.89E-10	3.00E-03	5.50E-02	2.05E-06	4.34E-11
CHLOROFORM	1.10E-03	2.36E-09	3.04E-10	1.00E-02	6.10E-03	2.36E-07	1.85E-12
ETHYLBENZENE	2.53E-03	5.43E-09	6.98E-10	1.00E-01	NA	5.43E-08	--
TRICHLOROETHENE	0.0022	4.72146E-09	6.07045E-10	0.006	0.011	7.87E-07	6.68E-12
VINYL CHLORIDE	0.00437	9.37854E-09	1.20581E-09	0.003	1.5	3.12618E-06	1.80872E-09
Cumulative Risk						0.152739402	4.94123E-06

TABLE B-8 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR RECREATIONAL USERS DUE TO EXPOSURE TO DERMAL CONTACT WITH SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number:

Other Area

* RME- Dermal Contact with Surface Soil

Surface Area for Contact = SA

2900 cm2/event

Adherence Factor = AF

1 mg/cm2

Absorption Factor = ABS

chemical-specific

Exposure Frequency = EF

0 event/yr

Exposure Duration = ED

9 yr

Body Weight = BW

36 kg

Averaging Time (Noncancer) = AT

3.29E+03 days

Averaging Time (Cancer) = AT

25550 days

Conversion Factor = CF

0.000001 kg/mg

Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)

NCADI = Daily intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	6.35E-01	--	--	6.00E-05	NA	--	--
ARSENIC	5.47E+00	1.09E-08	1.40E-09	3.00E-04	1.50E+00	3.62E-05	2.10E-09
BARIUM	8.18E+01	--	--	4.90E-03	NA	--	--
BERYLLIUM	2.85E-01	--	--	1.40E-05	NA	--	--
CADMIUM	3.39E-01	2.24E-11	2.89E-12	1.25E-05	NA	1.80E-06	--
CHROMIUM	1.96E+01	--	--	7.50E-05	NA	--	--
COBALT	7.02E+00	--	--	6.00E-02	NA	--	--
COPPER	1.18E+02	--	--	3.70E-02	NA	--	--
MANGANESE	3.21E+02	--	--	9.60E-04	NA	--	--
MERCURY	9.29E-01	--	--	1.00E-04	NA	--	--
NICKEL	1.68E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.54E-01	--	--	5.00E-03	NA	--	--
SILVER	2.10E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.15E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.82E+01	--	--	1.82E-04	NA	--	--
ZINC	1.18E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.30E-01	1.12E-09	1.44E-10	NA	NA	--	--
ACENAPHTHYLENE	1.94E-01	1.67E-09	2.15E-10	NA	NA	--	--
ANTHRACENE	1.18E-01	1.02E-09	1.31E-10	NA	NA	--	--
BENZ(A)ANTHRACENE	7.40E-01	6.37E-09	8.19E-10	NA	NA	--	--
BENZO(A)PYRENE	8.97E-01	7.72E-09	9.93E-10	NA	NA	--	--
BENZO(B)FLOURANTHENE	1.24E+00	1.07E-08	1.37E-09	NA	NA	--	--
BENZO(G,H,I)PERYLENE	4.76E-01	4.10E-09	5.27E-10	NA	NA	--	--
BENZO(K)FLOURANTHENE	3.83E-01	3.30E-09	4.24E-10	NA	NA	--	--
CHRYSENE	6.47E-01	5.57E-09	7.16E-10	NA	NA	--	--
DIBENZ[A, H]ANTHRACENE	1.71E-01	1.47E-09	1.89E-10	NA	NA	--	--
FLUORANTHENE	8.68E-01	7.47E-09	9.61E-10	NA	NA	--	--
FLUORENE	1.24E+00	1.07E-08	1.37E-09	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	4.45E-09	5.72E-10	NA	NA	--	--
2-METHYLNAPHTHALENE	1.09E-01	9.38E-10	1.21E-10	NA	NA	--	--
NAPHTHALENE	9.94E-02	8.56E-10	1.10E-10	NA	NA	--	--
PHENANTHRENE	3.56E-01	3.06E-09	3.94E-10	NA	NA	--	--
PYRENE	1.10E+00	9.47E-09	1.22E-09	NA	NA	--	--

Risk = Cancer Risk = CADI * SF							
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	2.08E-08	2.67E-09	2.00E-02	1.40E-02	1.04E-06	3.74E-11
BUTYLBENZYLPHthalATE	9.49E-02	6.28E-10	8.08E-11	2.00E-01	NA	3.14E-09	-
2-CHLOROPHENOL	1.55E-01	1.03E-09	1.32E-10	5.00E-03	NA	2.05E-07	-
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	1.03E-09	1.33E-10	NA	NA	-	-
DIBENZOFURAN	1.22E-01	8.08E-10	1.04E-10	4.00E-03	NA	2.02E-07	-
DIBUTYLPHthalATE	1.57E-01	1.04E-09	1.34E-10	1.00E-01	NA	1.04E-08	-
DIOCTYLPHthalATE	1.52E-01	1.01E-09	1.29E-10	2.00E-02	NA	5.03E-08	-
4-METHYLPHENOL	5.50E-02	3.64E-10	4.68E-11	5.00E-03	NA	7.28E-08	-
Volatiles							
2-BUTANONE	4.00E-03	-	-	6.00E-01	NA	-	-
ACETONE	7.29E-02	-	-	1.00E-01	NA	-	-
BENZENE	2.86E-03	-	-	3.00E-03	5.50E-02	-	-
CHLOROFORM	1.10E-03	-	-	1.00E-02	6.10E-03	-	-
ETHYLBENZENE	2.53E-03	-	-	1.00E-01	NA	-	-
TRICHLOROETHENE	0.0022	-	-	0.006	0.011	-	-
VINYL CHLORIDE	0.00437	-	-	0.003	1.5	-	-
Cumulative Risk						3.95959E-05	2.13283E-09

**TABLE B-9 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR RECREATIONAL USERS DUE TO INHALATION OF PARTICULATES
FROM SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number:		Other Area					
* RME- Inhalation of Particles from Surface Soil							
Inhalation Rate = IR	0.833 m3/hr						
Exposure Time = ET	10 hr/day						
Exposure Frequency = EF	141 day/yr						
Exposure Duration = ED	9 yr						
Body Weight = BW	36 kg						
Averaging Time (Noncancer) = AT	2,190 days						
Averaging Time (Cancer) = AT	25550 days						
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/m3)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	7.05E-06	9.46E-07	8.11E-08	1.40E-03	NA	6.75E-04	--
ANTIMONY	4.81E-10	6.45E-11	5.53E-12	NA	NA	--	--
ARSENIC	4.14E-09	5.56E-10	4.76E-11	NA	1.50E+01	--	7.14E-10
BARIUM	6.20E-08	8.31E-09	7.12E-10	1.40E-04	NA	5.93E-05	--
BERYLLIUM	2.16E-10	2.89E-11	2.48E-12	5.70E-06	8.40E+00	5.08E-06	2.08E-11
CADMIUM	2.57E-10	3.44E-11	2.95E-12	NA	6.30E+00	--	1.86E-11
CHROMIUM	1.48E-08	1.99E-09	1.71E-10	NA	2.90E+02	--	4.95E-08
COBALT	5.32E-09	7.13E-10	6.11E-11	NA	NA	--	--
COPPER	8.94E-08	1.20E-08	1.03E-09	NA	NA	--	--
LEAD	1.56E-07	2.09E-08	1.79E-09	NA	NA	--	--
MANGANESE	2.43E-07	3.26E-08	2.79E-09	1.40E-05	NA	2.33E-03	--
MERCURY	7.04E-10	9.44E-11	8.09E-12	NA	NA	--	--
NICKEL	1.27E-08	1.71E-09	1.46E-10	NA	NA	--	--
SELENIUM	4.20E-10	5.63E-11	4.82E-12	NA	NA	--	--
SILVER	1.59E-10	2.13E-11	1.83E-12	NA	NA	--	--
THALLIUM	8.71E-11	1.17E-11	1.00E-12	NA	NA	--	--
VANADIUM	2.14E-08	2.86E-09	2.46E-10	NA	NA	--	--
ZINC	8.94E-08	1.20E-08	1.03E-09	NA	NA	--	--
PAHs							
ACENAPHTHENE	9.85E-11	1.32E-11	1.13E-12	6.00E-02	NA	2.20E-10	--
ACENAPHTHYLENE	1.47E-10	1.97E-11	1.69E-12	8.60E-04	NA	2.29E-08	--
ANTHRACENE	8.94E-11	1.20E-11	1.03E-12	3.00E-01	NA	4.00E-11	--
BENZ(A)ANTHRACENE	5.61E-10	7.52E-11	6.44E-12	NA	3.10E-01	--	2.00E-12
BENZO(A)PYRENE	6.80E-10	9.11E-11	7.81E-12	NA	3.10E+00	--	2.42E-11
BENZO(B)FLOURANTHENE	9.39E-10	1.26E-10	1.08E-11	NA	3.10E-01	--	3.35E-12
BENZO(G,H,I)PERYLENE	3.61E-10	4.83E-11	4.14E-12	3.00E-02	NA	1.61E-09	--
BENZO(K)FLOURANTHENE	2.90E-10	3.89E-11	3.33E-12	NA	3.10E-02	--	1.03E-13
CHRYSENE	4.90E-10	6.57E-11	5.63E-12	NA	3.10E-03	--	1.75E-14
DIBENZ[A, H]ANTHRACENE	1.30E-10	1.74E-11	1.49E-12	NA	3.10E+00	--	4.62E-12
FLUORANTHENE	6.58E-10	8.82E-11	7.56E-12	4.00E-02	NA	2.20E-09	--
FLUORENE	9.39E-10	1.26E-10	1.08E-11	4.00E-02	NA	3.15E-09	--
INDENO(1,2,3-CD)PYRENE	3.92E-10	5.25E-11	4.50E-12	NA	3.10E-01	--	1.40E-12
2-METHYLNAPHTHALENE	8.26E-11	1.11E-11	9.49E-13	NA	NA	--	--
NAPHTHALENE	7.53E-11	1.01E-11	8.65E-13	8.60E-04	NA	1.17E-08	--
PHENANTHRENE	2.70E-10	3.62E-11	3.10E-12	8.60E-04	NA	4.20E-08	--
PYRENE	8.33E-10	1.12E-10	9.58E-12	3.00E-02	NA	3.72E-09	--

Risk = Cancer Risk = CADI * SF							
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.38E-09	3.19E-10	2.73E-11	2.20E-02	NA	1.45E-08	—
BUTYLBENZYLPHTHALATE	7.19E-11	9.64E-12	8.26E-13	2.00E-01	NA	4.82E-11	—
2-CHLOROPHENOL	1.17E-10	1.57E-11	1.35E-12	5.00E-03	NA	3.15E-09	—
4-CHLOROPHENYL PHENYL ETHER	1.18E-10	1.58E-11	1.36E-12	NA	NA	—	—
DIBENZOFURAN	9.24E-11	1.24E-11	1.06E-12	4.00E-03	NA	3.10E-09	—
DIBUTYLPHTHALATE	1.19E-10	1.59E-11	1.37E-12	1.00E-01	NA	1.59E-10	—
DIOCTYLPHTHALATE	1.15E-10	1.54E-11	1.32E-12	2.00E-02	NA	7.72E-10	—
4-METHYLPHENOL	4.17E-11	5.59E-12	4.79E-13	5.00E-03	NA	1.12E-09	—
Volatiles							
2-BUTANONE	3.03E-12	4.06E-13	3.48E-14	2.90E-01	NA	1.40E-12	—
ACETONE	5.52E-11	7.40E-12	6.35E-13	1.00E-01	NA	7.40E-11	—
BENZENE	2.17E-12	2.91E-13	2.49E-14	1.70E-03	2.70E-02	1.71E-10	6.72E-16
CHLOROFORM	8.33E-13	1.12E-13	9.58E-15	8.60E-05	8.05E-02	1.30E-09	7.71E-16
ETHYLBENZENE	1.92E-12	2.57E-13	2.20E-14	2.90E-01	NA	8.86E-13	—
TRICHLOROETHENE	1.66667E-12	2.23465E-13	1.91541E-14	0.006	0.006	3.72E-11	1.15E-16
VINYL CHLORIDE	3.31061E-12	4.43882E-13	3.8047E-14	0.029	0.031	1.53063E-11	1.17946E-15
Cumulative Risk						0.003068978	5.02767E-08

**TABLE B-10 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR COMMERCIAL WORKERS DUE TO EXPOSURES TO SURFACE
SOIL INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number: _____ Other Area _____ * RME- Incidental Ingestion of Surface Soil Ingestion Rate = CR 50 mg/day Exposure Frequency = EF 250 day/yr Exposure Duration = ED 25 yr Body Weight = BW 70 kg Averaging Time (Noncancer) = AT 9.13E+03 days Averaging Time (Cancer) = AT 2.56E+04 days Conversion Factor = CF 1.00E-06 kg/mg Intake (mg/kg-day) = Conc * CR * EF * ED * CF / (BW * AT) NCADI = Daily intake - Noncarcinogens CADI = Daily Intake - Carcinogens HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	4.55E-03	1.63E-03	1.00E+00	NA	4.55E-03	--
ANTIMONY	6.35E-01	3.11E-07	1.11E-07	4.00E-04	NA	7.77E-04	--
ARSENIC	5.47E+00	2.68E-06	9.56E-07	3.00E-04	1.50E+00	8.92E-03	1.43E-06
BARIUM	8.18E+01	4.00E-05	1.43E-05	7.60E-02	NA	5.72E-04	--
BERYLLIUM	2.85E-01	1.39E-07	4.98E-08	2.00E-03	NA	6.97E-05	--
CADMIUM	3.39E-01	1.66E-07	5.92E-08	5.00E-04	NA	3.32E-04	--
CHROMIUM	1.96E+01	9.59E-06	3.42E-06	3.00E-03	NA	3.20E-03	--
COBALT	7.02E+00	3.43E-06	1.23E-06	6.00E-02	NA	5.72E-05	--
COPPER	1.18E+02	5.77E-05	2.06E-05	3.70E-02	NA	1.56E-03	--
MANGANESE	3.21E+02	1.57E-04	5.61E-05	2.40E-02	NA	6.54E-03	--
MERCURY	9.29E-01	4.55E-07	1.62E-07	1.00E-04	NA	4.55E-03	--
NICKEL	1.68E+01	8.22E-06	2.94E-06	2.00E-02	NA	4.11E-04	--
SELENIUM	5.54E-01	2.71E-07	9.68E-08	5.00E-03	NA	5.42E-05	--
SILVER	2.10E-01	1.03E-07	3.67E-08	5.00E-03	NA	2.05E-05	--
THALLIUM	1.15E-01	5.63E-08	2.01E-08	6.60E-05	NA	8.52E-04	--
VANADIUM	2.82E+01	1.38E-05	4.93E-06	7.00E-03	NA	1.97E-03	--
ZINC	1.18E+02	5.77E-05	2.06E-05	3.00E-01	NA	1.92E-04	--
PAHs							
ACENAPHTHENE	1.30E-01	6.36E-08	2.27E-08	6.00E-02	NA	1.06E-06	--
ACENAPHTHYLENE	1.94E-01	9.49E-08	3.39E-08	2.00E-02	NA	4.75E-06	--
ANTHRACENE	1.18E-01	5.77E-08	2.06E-08	3.00E-01	NA	1.92E-07	--
BENZ(A)ANTHRACENE	7.40E-01	3.62E-07	1.29E-07	NA	7.30E-01	--	9.44E-08
BENZO(A)PYRENE	8.97E-01	4.39E-07	1.57E-07	NA	7.30E+00	--	1.14E-06
BENZO(B)FLUORANTHENE	1.24E+00	6.07E-07	2.17E-07	NA	7.30E-01	--	1.58E-07
BENZO(G,H,I)PERYLENE	4.76E-01	2.33E-07	8.32E-08	3.00E-02	NA	7.76E-06	--
BENZO(K)FLUORANTHENE	3.83E-01	1.87E-07	6.69E-08	NA	7.30E-02	--	4.89E-09
CHRYSENE	6.47E-01	3.17E-07	1.13E-07	NA	7.30E-03	--	8.25E-10
DIBENZ(A, H)ANTHRACENE	1.71E-01	8.37E-08	2.99E-08	NA	7.30E+00	--	2.18E-07
FLUORANTHENE	8.68E-01	4.25E-07	1.52E-07	4.00E-02	NA	1.06E-05	--
FLUORENE	1.24E+00	6.07E-07	2.17E-07	4.00E-02	NA	1.52E-05	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	2.53E-07	9.03E-08	NA	7.30E-01	--	6.59E-08
2-METHYLNAPHTHALENE	1.09E-01	5.33E-08	1.90E-08	2.00E-02	NA	2.67E-06	--
NAPHTHALENE	9.94E-02	4.86E-08	1.74E-08	2.00E-02	NA	2.43E-06	--

Risk = Cancer Risk = CADI * SF							
PHENANTHRENE	3.56E-01	1.74E-07	6.22E-08	2.00E-02	NA	8.71E-06	—
PYRENE	1.10E+00	5.38E-07	1.92E-07	3.00E-02	NA	1.79E-05	—
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	1.54E-06	5.49E-07	2.00E-02	1.40E-02	7.68E-05	7.68E-09
BUTYLBENZYLPHTHALATE	9.49E-02	4.64E-08	1.66E-08	2.00E-01	NA	2.32E-07	—
2-CHLOROPHENOL	1.55E-01	7.58E-08	2.71E-08	5.00E-03	NA	1.52E-05	—
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	7.63E-08	2.73E-08	NA	NA	—	—
DIBENZOFURAN	1.22E-01	5.97E-08	2.13E-08	4.00E-03	NA	1.49E-05	—
DIBUTYLPHTHALATE	1.57E-01	7.68E-08	2.74E-08	1.00E-01	NA	7.68E-07	—
DIOCTYLPHTHALATE	1.52E-01	7.44E-08	2.66E-08	2.00E-02	NA	3.72E-06	—
4-METHYLPHENOL	5.50E-02	2.69E-08	9.61E-09	5.00E-03	NA	5.38E-06	—
Volatiles							
2-BUTANONE	4.00E-03	1.96E-09	6.99E-10	6.00E-01	NA	3.26E-09	—
ACETONE	7.29E-02	3.57E-08	1.27E-08	1.00E-01	NA	3.57E-07	—
BENZENE	2.86E-03	1.40E-09	5.00E-10	3.00E-03	5.50E-02	4.66E-07	2.75E-11
CHLOROFORM	1.10E-03	5.38E-10	1.92E-10	1.00E-02	6.10E-03	5.38E-08	1.17E-12
ETHYLBENZENE	2.53E-03	1.24E-09	4.42E-10	1.00E-01	NA	1.24E-08	—
TRICHLOROETHENE	0.0022	1.07632E-09	3.844E-10	0.006	0.011	1.79E-07	4.23E-12
VINYL CHLORIDE	0.00437	2.13796E-09	7.63559E-10	0.003	1.5	7.12655E-07	1.14534E-09

Cumulative Risk

0.034819013

3.12895E-06

**TABLE B-11 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR COMMERCIAL WORKERS DUE TO EXPOSURE TO DERMAL
CONTACT WITH SURFACE SOIL -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number:	Other Area						
* RME- Dermal Contact with Surface Soil							
Surface Area for Contact = SA	5700 cm2/event						
Adherence Factor = AF	0.1 mg/cm2						
Absorption Factor = ABS	chemical-specific						
Exposure Frequency = EF	250 event/yr						
Exposure Duration = ED	25 yr						
Body Weight = BW	70 kg						
Averaging Time (Noncancer) = AT	9.13E+03 days						
Averaging Time (Cancer) = AT	2.56E+04 days						
Conversion Factor = CF	0.000001 kg/mg						
Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	6.35E-01	--	--	6.00E-05	NA	--	--
ARSENIC	5.47E+00	9.15E-07	3.27E-07	3.00E-04	1.50E+00	3.05E-03	4.90E-07
BARIUM	8.18E+01	--	--	4.90E-03	NA	--	--
BERYLLIUM	2.85E-01	--	--	1.40E-05	NA	--	--
CADMIUM	3.39E-01	1.89E-09	6.75E-10	1.25E-05	NA	1.51E-04	--
CHROMIUM	1.96E+01	--	--	7.50E-05	NA	--	--
COBALT	7.02E+00	--	--	6.00E-02	NA	--	--
COPPER	1.18E+02	--	--	3.70E-02	NA	--	--
MANGANESE	3.21E+02	--	--	9.60E-04	NA	--	--
MERCURY	9.29E-01	--	--	1.00E-04	NA	--	--
NICKEL	1.68E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.54E-01	--	--	5.00E-03	NA	--	--
SILVER	2.10E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.15E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.82E+01	--	--	1.82E-04	NA	--	--
ZINC	1.18E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.30E-01	9.43E-08	3.37E-08	NA	NA	--	--
ACENAPHTHYLENE	1.94E-01	1.41E-07	5.02E-08	NA	NA	--	--
ANTHRACENE	1.18E-01	8.56E-08	3.06E-08	NA	NA	--	--
BENZ(A)ANTHRACENE	7.40E-01	5.37E-07	1.92E-07	NA	NA	--	--
BENZO(A)PYRENE	8.97E-01	6.50E-07	2.32E-07	NA	NA	--	--
BENZO(B)FLOURANTHENE	1.24E+00	8.99E-07	3.21E-07	NA	NA	--	--
BENZO(G,H,I)PERYLENE	4.76E-01	3.45E-07	1.23E-07	NA	NA	--	--
BENZO(K)FLOURANTHENE	3.83E-01	2.78E-07	9.92E-08	NA	NA	--	--
CHRYSENE	6.47E-01	4.69E-07	1.68E-07	NA	NA	--	--
DIBENZ[A, H]ANTHRACENE	1.71E-01	1.24E-07	4.43E-08	NA	NA	--	--
FLUORANTHENE	8.68E-01	6.29E-07	2.25E-07	NA	NA	--	--
FLUORENE	1.24E+00	8.99E-07	3.21E-07	NA	NA	--	--
INDENO(1,2,3-CD)PYRENE	5.17E-01	3.75E-07	1.34E-07	NA	NA	--	--
2-METHYLNAPHTHALENE	1.09E-01	7.90E-08	2.82E-08	NA	NA	--	--

Risk = Cancer Risk = CADI * SF							
NAPHTHALENE	9.94E-02	7.21E-08	2.57E-08	NA	NA	—	—
PHENANTHRENE	3.56E-01	2.58E-07	9.22E-08	NA	NA	—	—
PYRENE	1.10E+00	7.98E-07	2.85E-07	NA	NA	—	—
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	1.75E-06	6.25E-07	2.00E-02	1.40E-02	8.76E-05	8.76E-09
BUTYLBENZYLPHTHALATE	9.49E-02	5.29E-08	1.89E-08	2.00E-01	NA	2.65E-07	—
2-CHLOROPHENOL	1.55E-01	8.64E-08	3.09E-08	5.00E-03	NA	1.73E-05	—
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	8.70E-08	3.11E-08	NA	NA	—	—
DIBENZOFURAN	1.22E-01	6.80E-08	2.43E-08	4.00E-03	NA	1.70E-05	—
DIBUTYLPHTHALATE	1.57E-01	8.76E-08	3.13E-08	1.00E-01	NA	8.76E-07	—
DIOCTYLPHTHALATE	1.52E-01	8.48E-08	3.03E-08	2.00E-02	NA	4.24E-06	—
1,2,4-TRICHLOROBENZENE	0.00E+00	0.00E+00	0.00E+00	1.00E-02	NA	0.00E+00	—
2-METHYLNAPHTHALENE	0.00E+00	0.00E+00	0.00E+00	2.00E-02	NA	0.00E+00	—
4-METHYLPHENOL	5.50E-02	3.07E-08	1.10E-08	5.00E-03	NA	6.14E-06	—
Volatiles							
2-BUTANONE	4.00E-03	—	—	6.00E-01	NA	—	—
ACETONE	7.29E-02	—	—	1.00E-01	NA	—	—
BENZENE	2.86E-03	—	—	3.00E-03	5.50E-02	—	—
CHLOROFORM	1.10E-03	—	—	1.00E-02	6.10E-03	—	—
ETHYLBENZENE	2.53E-03	—	—	1.00E-01	NA	—	—
TRICHLOROETHENE	0.0022	—	—	0.006	0.011	—	—
VINYL CHLORIDE	0.00437	—	—	0.003	1.5	—	—
Cumulative Risk						0.003335417	4.99061E-07

**TABLE B-12 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR COMMERCIAL WORKERS DUE TO INHALATION OF
PARTICULATES FROM SURFACE SOIL – REASONABLE MAXIMUM SCENARIO (RME)**

Site Number: Other Area * RME- Inhalation of Particles from Surface Soil Inhalation Rate = IR 0.833 m ³ /hr Exposure Time = ET 8 hr/day Exposure Frequency = EF 250 day/yr Exposure Duration = ED 25 yr Body Weight = BW 70 kg Averaging Time (Noncancer) = AT 9,125 days Averaging Time (Cancer) = AT 25550 days Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT) NCADI = Daily intake - Noncarcinogens CADI = Daily Intake - Carcinogens HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/m ³)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	7.05E-06	4.60E-07	1.64E-07	1.40E-03	NA	3.28E-04	–
ANTIMONY	4.81E-10	3.14E-11	1.12E-11	NA	NA	–	–
ARSENIC	4.14E-09	2.70E-10	9.65E-11	NA	1.50E+01	–	1.45E-09
BARIUM	6.20E-08	4.04E-09	1.44E-09	1.40E-04	NA	2.89E-05	–
BERYLLIUM	2.16E-10	1.41E-11	5.03E-12	5.70E-06	8.40E+00	2.47E-06	4.22E-11
CADMIUM	2.57E-10	1.67E-11	5.98E-12	NA	6.30E+00	–	3.77E-11
CHROMIUM	1.48E-08	9.68E-10	3.46E-10	NA	2.90E+02	–	1.00E-07
COBALT	5.32E-09	3.47E-10	1.24E-10	NA	NA	–	–
COPPER	8.94E-08	5.83E-09	2.08E-09	NA	NA	–	–
MANGANESE	2.43E-07	1.59E-08	5.66E-09	1.40E-05	NA	1.13E-03	–
MERCURY	7.04E-10	4.59E-11	1.64E-11	NA	NA	–	–
NICKEL	1.27E-08	8.30E-10	2.96E-10	NA	NA	–	–
SELENIUM	4.20E-10	2.74E-11	9.77E-12	NA	NA	–	–
SILVER	1.59E-10	1.04E-11	3.70E-12	NA	NA	–	–
THALLIUM	8.71E-11	5.68E-12	2.03E-12	NA	NA	–	–
VANADIUM	2.14E-08	1.39E-09	4.98E-10	NA	NA	–	–
ZINC	8.94E-08	5.83E-09	2.08E-09	NA	NA	–	–
PAHs							
ACENAPHTHENE	9.85E-11	6.42E-12	2.29E-12	6.00E-02	NA	1.07E-10	–
ACENAPHTHYLENE	1.47E-10	9.58E-12	3.42E-12	8.60E-04	NA	1.11E-08	–
ANTHRACENE	8.94E-11	5.83E-12	2.08E-12	3.00E-01	NA	1.94E-11	–
BENZ(A)ANTHRACENE	5.61E-10	3.66E-11	1.31E-11	NA	3.10E-01	–	4.05E-12
BENZO(A)PYRENE	6.80E-10	4.43E-11	1.58E-11	NA	3.10E+00	–	4.91E-11
BENZO(B)FLUORANTHENE	9.39E-10	6.13E-11	2.19E-11	NA	3.10E-01	–	6.78E-12
BENZO(G,H,I)PERYLENE	3.61E-10	2.35E-11	8.40E-12	3.00E-02	NA	7.84E-10	–
BENZO(K)FLUORANTHENE	2.90E-10	1.89E-11	6.76E-12	NA	3.10E-02	–	2.09E-13
CHRYSENE	4.90E-10	3.20E-11	1.14E-11	NA	3.10E-03	–	3.54E-14
DIBENZ(A, H)ANTHRACENE	1.30E-10	8.45E-12	3.02E-12	NA	3.10E+00	–	9.35E-12
FLUORANTHENE	6.58E-10	4.29E-11	1.53E-11	4.00E-02	NA	1.07E-09	–
FLUORENE	9.39E-10	6.13E-11	2.19E-11	4.00E-02	NA	1.53E-09	–
INDENO(1,2,3-CD)PYRENE	3.92E-10	2.55E-11	9.12E-12	NA	3.10E-01	–	2.83E-12
2-METHYLNAPHTHALENE	8.26E-11	5.38E-12	1.92E-12	NA	NA	–	–
NAPHTHALENE	7.53E-11	4.91E-12	1.75E-12	8.60E-04	NA	5.71E-09	–
PHENANTHRENE	2.70E-10	1.76E-11	6.28E-12	8.60E-04	NA	2.04E-08	–
PYRENE	8.33E-10	5.43E-11	1.94E-11	3.00E-02	NA	1.81E-09	–
Semivolatiles							

Risk = Cancer Risk = CADI * SF							
BIS(2-ETHYLHEXYL)PHTHALATE	2.38E-09	1.55E-10	5.54E-11	2.20E-02	NA	7.05E-09	--
BUTYLBENZYLPHthalATE	7.19E-11	4.69E-12	1.67E-12	2.00E-01	NA	2.34E-11	--
2-CHLOROPHENOL	1.17E-10	7.66E-12	2.73E-12	5.00E-03	NA	1.53E-09	--
4-CHLOROPHENYL PHENYL ETHER	1.18E-10	7.71E-12	2.75E-12	NA	NA	--	--
DIBENZOFURAN	9.24E-11	6.03E-12	2.15E-12	4.00E-03	NA	1.51E-09	--
DIBUTYLPHthalATE	1.19E-10	7.76E-12	2.77E-12	1.00E-01	NA	7.76E-11	--
DIOCTYLPHthalATE	1.15E-10	7.51E-12	2.68E-12	2.00E-02	NA	3.75E-10	--
4-METHYLPHENOL	4.17E-11	2.72E-12	9.70E-13	5.00E-03	NA	5.43E-10	--
Volatiles							
2-BUTANONE	3.03E-12	1.98E-13	7.06E-14	2.90E-01	NA	6.81E-13	--
ACETONE	5.52E-11	3.60E-12	1.29E-12	1.00E-01	NA	3.60E-11	--
BENZENE	2.17E-12	1.41E-13	5.05E-14	1.70E-03	2.70E-02	8.31E-11	1.36E-15
CHLOROFORM	8.33E-13	5.43E-14	1.94E-14	8.60E-05	8.05E-02	6.32E-10	1.56E-15
ETHYLBENZENE	1.92E-12	1.25E-13	4.46E-14	2.90E-01	NA	4.31E-13	--
TRICHLOROETHENE	1.66667E-12	1.08676E-13	3.88128E-14	0.006	0.006	1.81E-11	2.33E-16
VINYL CHLORIDE	3.31061E-12	2.1587E-13	7.70963E-14	0.029	0.031	7.44378E-12	2.38999E-15
Cumulative Risk						0.001492512	1.01878E-07

**TABLE B-13 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR CONSTRUCTION WORKERS DUE TO EXPOSURES TO TOTAL SOIL
INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number: Other Area • RME- Incidental Ingestion of Total Soil Ingestion Rate = CR 480 mg/day Exposure Frequency = EF 150 day/yr Exposure Duration = ED 1 yr Body Weight = BW 70 kg Averaging Time (Noncancer) = AT 3.65E+02 days Averaging Time (Cancer) = AT 2.56E+04 days Conversion Factor = CF 1.00E-06 kg/mg Intake (mg/kg-day) = Conc • CR • EF • ED • CF / (BW • AT) NCADI = Daily intake - Noncarcinogens CADI = Daily Intake - Carcinogens HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI • SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	2.62E-02	3.75E-04	1.00E+00	NA	2.62E-02	—
ANTIMONY	6.35E-01	1.79E-06	2.56E-08	4.00E-04	NA	4.47E-03	—
ARSENIC	5.47E+00	1.54E-05	2.20E-07	3.00E-04	1.50E+00	5.14E-02	3.30E-07
BARIUM	8.18E+01	2.31E-04	3.29E-06	7.00E-02	NA	3.29E-03	—
BERYLLIUM	2.85E-01	8.03E-07	1.15E-08	2.00E-03	NA	4.02E-04	—
CADMIUM	3.39E-01	9.55E-07	1.36E-08	5.00E-04	NA	1.91E-03	—
CHROMIUM	1.96E+01	5.52E-05	7.89E-07	3.00E-03	NA	1.84E-02	—
COBALT	7.02E+00	1.98E-05	2.83E-07	6.00E-02	NA	3.30E-04	—
COPPER	1.18E+02	3.33E-04	4.75E-06	3.70E-02	NA	8.99E-03	—
MANGANESE	3.21E+02	9.05E-04	1.29E-05	2.40E-02	NA	3.77E-02	—
MERCURY	9.29E-01	2.62E-06	3.74E-08	1.00E-04	NA	2.62E-02	—
NICKEL	1.68E+01	4.73E-05	6.76E-07	2.00E-02	NA	2.37E-03	—
SELENIUM	5.54E-01	1.56E-06	2.23E-08	5.00E-03	NA	3.12E-04	—
SILVER	2.10E-01	5.92E-07	8.45E-09	5.00E-03	NA	1.18E-04	—
THALLIUM	1.15E-01	3.24E-07	4.63E-09	6.60E-05	NA	4.91E-03	—
VANADIUM	2.82E+01	7.95E-05	1.14E-06	7.00E-03	NA	1.14E-02	—
ZINC	1.18E+02	3.33E-04	4.75E-06	3.00E-01	NA	1.11E-03	—
PAHs							
ACENAPHTHENE	1.30E-01	3.66E-07	5.23E-09	6.00E-02	NA	6.11E-06	—
ACENAPHTHYLENE	1.94E-01	5.47E-07	7.81E-09	2.00E-02	NA	2.73E-05	—
ANTHRACENE	1.18E-01	3.33E-07	4.75E-09	3.00E-01	NA	1.11E-06	—
BENZ(A)ANTHRACENE	7.40E-01	2.09E-06	2.98E-08	NA	7.30E-01	—	2.17E-08
BENZO(A)PYRENE	8.97E-01	2.53E-06	3.61E-08	NA	7.30E+00	—	2.64E-07
BENZO(B)FLOURANTHENE	1.24E+00	3.49E-06	4.99E-08	NA	7.30E-01	—	3.64E-08
BENZO(G,H,I)PERYLENE	4.76E-01	1.34E-06	1.92E-08	3.00E-02	NA	4.47E-05	—
BENZO(K)FLOURANTHENE	3.83E-01	1.08E-06	1.54E-08	NA	7.30E-02	—	1.13E-09
CHRYSENE	6.47E-01	1.82E-06	2.60E-08	NA	7.30E-03	—	1.90E-10
DIBENZ[A, H]ANTHRACENE	1.71E-01	4.82E-07	6.88E-09	NA	7.30E+00	—	5.03E-08
FLUORANTHENE	8.68E-01	2.45E-06	3.49E-08	4.00E-02	NA	6.12E-05	—
FLUORENE	1.24E+00	3.49E-06	4.99E-08	4.00E-02	NA	8.74E-05	—
INDENO(1,2,3-CD)PYRENE	5.17E-01	1.46E-06	2.08E-08	NA	7.30E-01	—	1.52E-08
2-METHYLNAPHTHALENE	1.09E-01	3.07E-07	4.39E-09	2.00E-02	NA	1.54E-05	—
NAPHTHALENE	9.94E-02	2.80E-07	4.00E-09	2.00E-02	NA	1.40E-05	—

Risk = Cancer Risk = CADI * SF							
PHENANTHRENE	3.56E-01	1.00E-06	1.43E-08	2.00E-02	NA	5.02E-05	—
PYRENE	1.10E+00	3.10E-06	4.43E-08	3.00E-02	NA	1.03E-04	—
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	8.85E-06	1.26E-07	2.00E-02	1.40E-02	4.42E-04	1.77E-09
BUTYLBENZYLPHthalATE	9.49E-02	2.67E-07	3.82E-09	2.00E-01	NA	1.34E-06	—
2-CHLOROPHENOL	1.55E-01	4.37E-07	6.24E-09	5.00E-03	NA	8.74E-05	—
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	4.40E-07	6.28E-09	NA	NA	—	—
DIBENZOFURAN	1.22E-01	3.44E-07	4.91E-09	4.00E-03	NA	8.59E-05	—
DIBUTYLPHthalATE	1.57E-01	4.42E-07	6.32E-09	1.00E-01	NA	4.42E-06	—
DIOCTYLPHthalATE	1.52E-01	4.28E-07	6.12E-09	2.00E-02	NA	2.14E-05	—
4-METHYLPHENOL	5.50E-02	1.55E-07	2.21E-09	5.00E-03	NA	3.10E-05	—
Volatiles							
2-BUTANONE	4.00E-03	1.13E-08	1.61E-10	6.00E-01	NA	1.88E-08	—
ACETONE	7.29E-02	2.05E-07	2.93E-09	1.00E-01	NA	2.05E-06	—
BENZENE	2.86E-03	8.06E-09	1.15E-10	3.00E-03	5.50E-02	2.69E-06	6.33E-12
CHLOROFORM	1.10E-03	3.10E-09	4.43E-11	1.00E-02	6.10E-03	3.10E-07	2.70E-13
ETHYLBENZENE	2.53E-03	7.13E-09	1.02E-10	1.00E-01	NA	7.13E-08	—
TRICHLOROETHENE	0.0022	6.19961E-09	8.85658E-11	0.006	0.011	1.03E-06	9.74E-13
VINYL CHLORIDE	0.00437	1.23147E-08	1.75924E-10	0.003	1.5	4.10489E-06	2.63886E-10
Cumulative Risk						0.200557513	7.2091E-07

**TABLE B-14 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR CONSTRUCTION WORKER DUE TO EXPOSURE TO DERMAL
CONTACT WITH TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number:

Other Area

* RME- Dermal Contact with Total Soil

Surface Area for Contact = SA3300 cm2/event

Adherence Factor = AF0.3 mg/cm2

Absorption Factor = ABSchemical-specific

Exposure Frequency = EF150 event/yr

Exposure Duration = ED1 yr

Body Weight = BW70 kg

Averaging Time (Noncancer) = AT3.65E+02 days

Averaging Time (Cancer) = AT2.56E+04 days

Conversion Factor = CF0.000001 kg/mg

Intake (mg/kg-day) = Conc * SA * AF * ABS * EF * ED * CF / (BW * AT)

NCADI = Daily intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI * SF

Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/kg)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	9.31E+03	--	--	1.00E+00	NA	--	--
ANTIMONY	6.35E-01	--	--	6.00E-05	NA	--	--
ARSENIC	5.47E+00	9.54E-07	1.36E-08	3.00E-04	1.50E+00	3.18E-03	2.04E-08
BARIUM	8.18E+01	--	--	4.90E-03	NA	--	--
BERYLLIUM	2.85E-01	--	--	1.40E-05	NA	--	--
CADMIUM	3.39E-01	1.97E-09	2.81E-11	1.25E-05	NA	1.58E-04	--
CHROMIUM	1.96E+01	--	--	7.50E-05	NA	--	--
COBALT	7.02E+00	--	--	6.00E-02	NA	--	--
COPPER	1.18E+02	--	--	3.70E-02	NA	--	--
MANGANESE	3.21E+02	--	--	9.60E-04	NA	--	--
MERCURY	9.29E-01	--	--	1.00E-04	NA	--	--
NICKEL	1.68E+01	--	--	8.00E-04	NA	--	--
SELENIUM	5.54E-01	--	--	5.00E-03	NA	--	--
SILVER	2.10E-01	--	--	2.00E-04	NA	--	--
THALLIUM	1.15E-01	--	--	6.60E-05	NA	--	--
VANADIUM	2.82E+01	--	--	1.82E-04	NA	--	--
ZINC	1.18E+02	--	--	3.00E-01	NA	--	--
PAHs							
ACENAPHTHENE	1.30E-01	9.82E-08	1.40E-09	NA	NA	--	--
ACENAPHTHYLENE	1.94E-01	1.47E-07	2.09E-09	NA	NA	--	--
ANTHRACENE	1.18E-01	8.92E-08	1.27E-09	NA	NA	--	--
BENZ(A)ANTHRACENE	7.40E-01	5.59E-07	7.99E-09	NA	NA	--	--
BENZO(A)PYRENE	8.97E-01	6.78E-07	9.68E-09	NA	NA	--	--
BENZO(B)FLOURANTHENE	1.24E+00	9.37E-07	1.34E-08	NA	NA	--	--
BENZO(G,H,I)PERYLENE	4.76E-01	3.60E-07	5.14E-09	NA	NA	--	--
BENZO(K)FLOURANTHENE	3.83E-01	2.89E-07	4.13E-09	NA	NA	--	--
CHRYSENE	6.47E-01	4.89E-07	6.98E-09	NA	NA	--	--
DIBENZ[A, H]ANTHRACENE	1.71E-01	1.29E-07	1.85E-09	NA	NA	--	--
FLUORANTHENE	8.68E-01	6.56E-07	9.37E-09	NA	NA	--	--
FLUORENE	1.24E+00	9.37E-07	1.34E-08	NA	NA	--	--

Risk = Cancer Risk = CADI * SF							
INDENO(1,2,3-CD)PYRENE	5.17E-01	3.91E-07	5.58E-09	NA	NA	--	--
2-METHYLNAPHTHALENE	1.09E-01	8.24E-08	1.18E-09	NA	NA	--	--
NAPHTHALENE	9.94E-02	7.51E-08	1.07E-09	NA	NA	--	--
PHENANTHRENE	3.56E-01	2.69E-07	3.84E-09	NA	NA	--	--
PYRENE	1.10E+00	8.31E-07	1.19E-08	NA	NA	--	--
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	3.14E+00	1.83E-06	2.61E-08	2.00E-02	1.40E-02	9.13E-05	3.65E-10
BUTYLBENZYLPHTHALATE	9.49E-02	5.52E-08	7.88E-10	2.00E-01	NA	2.76E-07	--
2-CHLOROPHENOL	1.55E-01	9.01E-08	1.29E-09	5.00E-03	NA	1.80E-05	--
4-CHLOROPHENYL PHENYL ETHER	1.56E-01	9.07E-08	1.30E-09	NA	NA	--	--
DIBENZOFURAN	1.22E-01	7.09E-08	1.01E-09	4.00E-03	NA	1.77E-05	--
DIBUTYLPHTHALATE	1.57E-01	9.13E-08	1.30E-09	1.00E-01	NA	9.13E-07	--
DIOCTYLPHTHALATE	1.52E-01	8.83E-08	1.26E-09	2.00E-02	NA	4.42E-06	--
4-METHYLPHENOL	5.50E-02	3.20E-08	4.57E-10	5.00E-03	NA	6.39E-06	--
Volatiles							
2-BUTANONE	4.00E-03	--	--	6.00E-01	NA	--	--
ACETONE	7.29E-02	--	--	1.00E-01	NA	--	--
BENZENE	2.86E-03	--	--	3.00E-03	5.50E-02	--	--
CHLOROFORM	1.10E-03	--	--	1.00E-02	6.10E-03	--	--
ETHYLBENZENE	2.53E-03	--	--	1.00E-01	NA	--	--
TRICHLOROETHENE	0.0022	--	--	0.006	0.011	--	--
VINYL CHLORIDE	0.00437	--	--	0.003	1.5	--	--
Cumulative Risk						0.003475856	2.08E-08

**TABLE B-15 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF
CANCER AND NONCANCER RISKS FOR CONSTRUCTION WORKERS DUE TO INHALATION OF
PARTICULATES FROM TOTAL SOIL -- REASONABLE MAXIMUM SCENARIO (RME)**

Site Number:		Other Area					
* RME- Inhalation of Particles from Total Soil							
Inhalation Rate = IR		0.833 m3/hr					
Exposure Time = ET		8 hr/day					
Exposure Frequency = EF		150 day/yr					
Exposure Duration = ED		1 yr					
Body Weight = BW		70 kg					
Averaging Time (Noncancer) = AT		365 days					
Averaging Time (Cancer) = AT		25550 days					
Intake (mg/kg-day) = Conc * IR * ET * EF * ED / (BW * AT)							
NCADI = Daily intake - Noncarcinogens							
CADI = Daily Intake - Carcinogens							
HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD							
Risk = Cancer Risk = CADI * SF							
Chemical of Concern	EPC	NCADI	CADI	Chronic RfD	SF	HQ	Risk
	(mg/m3)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	per (mg/kg-day)		
Inorganics							
ALUMINUM	7.05E-06	2.76E-07	3.94E-09	1.40E-03	NA	1.97E-04	--
ANTIMONY	4.81E-10	1.88E-11	2.69E-13	NA	NA	--	--
ARSENIC	4.14E-09	1.62E-10	2.32E-12	NA	1.50E+01	--	3.47E-11
BARIUM	6.20E-08	2.42E-09	3.46E-11	1.40E-04	NA	1.73E-05	--
BERYLLIUM	2.16E-10	8.45E-12	1.21E-13	5.70E-06	8.40E+00	1.48E-06	1.01E-12
CADMIUM	2.57E-10	1.00E-11	1.44E-13	NA	6.30E+00	--	9.04E-13
CHROMIUM	1.48E-08	5.81E-10	8.30E-12	NA	2.90E+02	--	2.41E-09
COBALT	5.32E-09	2.08E-10	2.97E-12	NA	NA	--	--
COPPER	8.94E-08	3.50E-09	5.00E-11	NA	NA	--	--
MANGANESE	2.43E-07	9.51E-09	1.36E-10	1.40E-05	NA	6.80E-04	--
MERCURY	7.04E-10	2.75E-11	3.93E-13	NA	NA	--	--
NICKEL	1.27E-08	4.98E-10	7.11E-12	NA	NA	--	--
SELENIUM	4.20E-10	1.64E-11	2.35E-13	NA	NA	--	--
SILVER	1.59E-10	6.22E-12	8.89E-14	NA	NA	--	--
THALLIUM	8.71E-11	3.41E-12	4.87E-14	NA	NA	--	--
VANADIUM	2.14E-08	8.36E-10	1.19E-11	NA	NA	--	--
ZINC	8.94E-08	3.50E-09	5.00E-11	NA	NA	--	--
PAHs							
ACENAPHTHENE	9.85E-11	3.85E-12	5.50E-14	6.00E-02	NA	6.42E-11	--
ACENAPHTHYLENE	1.47E-10	5.75E-12	8.21E-14	8.60E-04	NA	6.69E-09	--
ANTHRACENE	8.94E-11	3.50E-12	5.00E-14	3.00E-01	NA	1.17E-11	--
BENZ(A)ANTHRACENE	5.61E-10	2.19E-11	3.13E-13	NA	3.10E-01	--	9.71E-14
BENZO(A)PYRENE	6.80E-10	2.66E-11	3.80E-13	NA	3.10E+00	--	1.18E-12
BENZO(B)FLOURANTHENE	9.39E-10	3.68E-11	5.25E-13	NA	3.10E-01	--	1.63E-13
BENZO(G,H,I)PERYLENE	3.61E-10	1.41E-11	2.02E-13	3.00E-02	NA	4.70E-10	--
BENZO(K)FLOURANTHENE	2.90E-10	1.14E-11	1.62E-13	NA	3.10E-02	--	5.03E-15
CHRYSENE	4.90E-10	1.92E-11	2.74E-13	NA	3.10E-03	--	8.49E-16
DIBENZ[A, H]ANTHRACENE	1.30E-10	5.07E-12	7.24E-14	NA	3.10E+00	--	2.24E-13
FLUORANTHENE	6.58E-10	2.57E-11	3.68E-13	4.00E-02	NA	6.43E-10	--
FLUORENE	9.39E-10	3.68E-11	5.25E-13	4.00E-02	NA	9.19E-10	--
INDENO(1,2,3-CD)PYRENE	3.92E-10	1.53E-11	2.19E-13	NA	3.10E-01	--	6.79E-14
2-METHYLNAPHTHALENE	8.26E-11	3.23E-12	4.62E-14	NA	NA	--	--
NAPHTHALENE	7.53E-11	2.95E-12	4.21E-14	8.60E-04	NA	3.43E-09	--
PHENANTHRENE	2.70E-10	1.06E-11	1.51E-13	8.60E-04	NA	1.23E-08	--
PYRENE	8.33E-10	3.26E-11	4.66E-13	3.00E-02	NA	1.09E-09	--
HEPTACHLOR EPOXIDE	0.00E+00	0.00E+00	0.00E+00	1.30E-05	9.10E+00	0.00E+00	0.00E+00

Risk = Cancer Risk = CADI * SF							
Semivolatiles							
BIS(2-ETHYLHEXYL)PHTHALATE	2.38E-09	9.31E-11	1.33E-12	2.20E-02	NA	4.23E-09	--
BUTYLBENZYLPHthalATE	7.19E-11	2.81E-12	4.02E-14	2.00E-01	NA	1.41E-11	--
2-CHLOROPHENOL	1.17E-10	4.59E-12	6.56E-14	5.00E-03	NA	9.19E-10	--
4-CHLOROPHENYL PHENYL ETHER	1.18E-10	4.62E-12	6.61E-14	NA	NA	--	--
DIBENZOFURAN	9.24E-11	3.62E-12	5.17E-14	4.00E-03	NA	9.04E-10	--
DIBUTYLPHthalATE	1.19E-10	4.65E-12	6.65E-14	1.00E-01	NA	4.65E-11	--
DIOCTYLPHthalATE	1.15E-10	4.51E-12	6.44E-14	2.00E-02	NA	2.25E-10	--
4-METHYLPHENOL	4.17E-11	1.63E-12	2.33E-14	5.00E-03	NA	3.26E-10	--
Volatiles							
2-BUTANONE	3.03E-12	1.19E-13	1.69E-15	2.90E-01	NA	4.09E-13	--
ACETONE	5.52E-11	2.16E-12	3.09E-14	1.00E-01	NA	2.16E-11	--
BENZENE	2.17E-12	8.48E-14	1.21E-15	1.70E-03	2.70E-02	4.99E-11	3.27E-17
CHLOROFORM	8.33E-13	3.26E-14	4.66E-16	8.60E-05	8.05E-02	3.79E-10	3.75E-17
ETHYLBENZENE	1.92E-12	7.50E-14	1.07E-15	2.90E-01	NA	2.59E-13	--
TRICHLOROETHENE	1.66667E-12	6.52055E-14	9.31507E-16	0.006	0.006	1.09E-11	5.59E-18
VINYL CHLORIDE	3.31061E-12	1.29522E-13	1.85031E-15	0.029	0.031	4.46627E-12	5.73597E-17
Cumulative Risk						0.000895507	2.44507E-09

TABLE B-17 FORT TOTTEN HUMAN HEALTH RISK ASSESSMENT CALCULATIONS, ESTIMATES OF CANCER AND NONCANCER RISKS FOR CHILD RESIDENTS DUE TO EXPOSURES TO VEGETABLE INGESTION -- REASONABLE MAXIMUM SCENARIO (RME)

Site Number: Other Area

Determine Daily Intake of COPC from produce:

$$\text{Iag} = [((\text{Pd} + \text{Pv} + \text{Pr}) \cdot \text{Crag}) + (\text{Pr} \cdot \text{CRpp}) + (\text{Prbg} \cdot \text{CRbg})] \cdot \text{Fag}$$

Iag = Daily Intake of COPC from produce in mg/kg-day (dry weight).

Pd = Above ground exposed produce concentration due to direct deposition onto plant surface in mg/kg.

Pv = Aboveground exposed produce concentration due to air-to-plant transfer in mg/kg.

Pr = Aboveground exposed and protected produce concentration due to root uptake in mg/kg.

Prbg = Belowground produce concentration due to root uptake in mg/kg.

CRag = Consumption rate of exposed aboveground produce in kg/kg-day.

Adult = 0.0003 kg/kg-day

Child = 0.00042 kg/kg-day

Adult = 0.00057 kg/kg-day

Child = 0.00077 kg/kg-day

CRpp = Consumption rate of protected aboveground produce in kg/kg-day.

Adult = 0.00014 kg/kg-day

Child = 0.00022 kg/kg-day

CRbg = Consumption rate of belowground produce in kg/kg-day.

Adult = 0.00014 kg/kg-day

Child = 0.00022 kg/kg-day

Fag = Fraction of produce that is contaminated (unitless).

Adult Resident = 0.25

Child Resident = 0.25

Exposure Frequency = EF 60 day/yr

Exposure Duration = ED 24 yr

Averaging Time (Noncancer) = AT 8,760 days

Averaging Time (Cancer) = AT 25,550 days

$$\text{Intake (mg/kg-day)} = \text{Iag} \cdot \text{EF} \cdot \text{ED} / (\text{AT})$$

NCADI = Daily Intake - Noncarcinogens

CADI = Daily Intake - Carcinogens

HQ = Hazard Quotient - Noncarcinogens = NCADI / RfD

Risk = Cancer Risk = CADI * SF

Chemical of Concern	Conc in plant (dw) aboveground (mg/kg)	Conc in plant (dw) belowground (mg/kg)	Protected Vegetative Conc in Plant (dw) (mg/kg)	Daily COPC Intake (Iag) (mg/kg-day)	NCADI	CADI	Chronic RfD	SF	HQ	Risk
PAHs										
ACENAPHTHENE	2.57E-02	7.12E-01	2.57E-02	5.18E-05	8.51E-06	2.92E-06	6.00E-02	NA	1.42E-04	--
ACENAPHTHYLENE	3.34E-02	3.34E-02	3.34E-02	1.82E-05	2.99E-06	1.02E-06	2.00E-02	NA	1.49E-04	--
ANTHRACENE	1.19E-02	3.26E-03	1.19E-02	6.02E-06	9.89E-07	3.39E-07	3.00E-01	NA	3.30E-06	--
BENZ[<i>a</i>]ANTHRACENE	1.49E-02	1.56E-02	1.49E-02	8.18E-06	1.35E-06	4.61E-07	NA	7.30E-01	--	3.37E-07
BENZO[<i>a</i>]PYRENE	9.96E-03	1.13E-02	9.96E-03	5.50E-06	9.04E-07	3.10E-07	NA	7.30E-01	--	2.26E-06
BENZO[<i>b</i>]FLUORANTHENE	1.25E-02	2.06E-02	1.25E-02	7.25E-06	1.19E-06	4.09E-07	NA	7.30E-01	--	2.98E-07
BENZO[<i>k</i>]FLUORANTHENE	2.90E-03	2.90E-03	2.90E-03	1.58E-06	2.60E-07	8.91E-08	3.00E-02	NA	8.66E-06	--
BENZO[<i>ghi</i>]PERYLENE	3.87E-03	6.36E-03	3.87E-03	2.25E-06	3.69E-07	1.27E-07	NA	7.30E-02	--	9.24E-09
CHRYSENE	1.21E-02	1.33E-02	1.21E-02	6.65E-06	1.09E-06	3.75E-07	NA	7.30E-03	--	2.73E-09
DIBENZ[<i>a,h</i>]ANTHRACENE	1.09E-03	2.45E-03	1.09E-03	6.67E-07	1.10E-07	3.76E-08	NA	7.30E-03	--	2.75E-07
FLUORANTHENE	3.87E-02	3.39E-02	3.87E-02	2.08E-05	3.42E-06	1.17E-06	4.00E-02	NA	8.56E-05	--

FLUORENE	1.87E-01	6.15E-02	1.87E-01	9.51E-05	1.56E-05	5.36E-06	4.00E-02	NA	3.91E-04	--
INDENO(1,2,3-C,DI)PYRENE	0.0020163	0.0061523	0.0020163	1.32636E-06	2.18032E-07	7.4754E-08	NA	0.73	--	5.45704E-08
2-METHYLNAPHTHALENE	4.74E-02	8.97E-01	4.74E-02	7.26E-05	1.19E-05	4.09E-06	2.00E-02	NA	5.96E-04	--
NAPHTHALENE	4.32E-02	8.18E-01	4.32E-02	6.62E-05	1.09E-05	3.73E-06	2.00E-02	NA	5.44E-04	--
PHENANTHRENE	3.23E-02	5.30E-03	3.23E-02	1.61E-05	2.65E-06	9.09E-07	2.00E-02	NA	1.33E-04	--
PYRENE	5.48E-02	2.68E-02	5.48E-02	2.83E-05	4.65508E-06	1.59603E-06	0.03 NA	0.000155169	--	--
SEMIVOLATILES										
2-CHLOROPHENOL	3.38E-01	6.82E-01	3.38E-01	2.03E-04	3.34E-05	1.14E-05	5.00E-03	NA	6.68E-03	--
4-CHLOROPHENYL PHENYL ETHER	1.06E-02	2.31E-03	1.06E-02	5.32E-06	8.75E-07	3.00E-07	NA	NA	--	--
4-METHYLPHENOL	1.61E-01	1.62E+00	1.61E-01	1.68E-04	2.76E-05	9.46E-06	5.00E-03	NA	5.52E-03	--
BIS(2-ETHYLHEXYL)PHTHALATE	1.19E-01	6.69E-02	1.19E-01	6.21E-05	1.02E-05	3.50E-06	2.00E-02	1.40E-02	5.11E-04	4.90E-08
BUTYLBENZYLPHTHALATE	1.04E-02	4.06E-03	1.04E-02	5.30E-06	8.71E-07	2.99E-07	2.00E-01	NA	4.35E-06	--
CARBAZOLE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	2.00E-02	--	0.00E+00
DIBENZOFURAN	1.96E-02	1.96E-02	1.96E-02	1.07E-05	1.76E-06	6.03E-07	4.00E-03	NA	4.40E-04	--
DIBUTYLPHTHALATE	1.14E-02	1.01E-01	1.14E-02	1.11E-05	1.83E-06	6.27E-07	1.00E-01	NA	1.83E-05	--
DIOCTYLPHTHALATE	2.39E-05	5.97E-04	2.39E-05	4.45E-08	7.32299E-09	2.51074E-09	0.02 NA	NA	3.66149E-07	--
VOLATILES										
2-BUTANONE	1.07E-01	1.14E+00	1.07E-01	1.15E-04	1.89E-05	6.50E-06	6.00E-01	NA	3.16E-05	--
ACETONE	3.79E+00	4.96E+01	3.79E+00	4.58E-03	7.54E-04	2.58E-04	1.00E-01	NA	7.54E-03	--
BENZENE	6.44E-03	7.64E-02	6.44E-03	7.35E-06	1.21E-06	4.14E-07	3.00E-03	5.50E-02	4.03E-04	2.28E-08
CHLOROFORM	3.18E-03	2.84E-02	3.18E-03	3.12E-06	5.13E-07	1.76E-07	1.00E-02	6.10E-03	5.13E-05	1.07E-09
ETHYLBENZENE	1.54E-03	8.10E-02	1.54E-03	5.21E-06	8.56E-07	2.93E-07	1.00E-01	NA	8.56E-06	--
TRICHLOROETHENE	3.34E-03	4.66E-02	3.34E-03	4.20E-06	6.91E-07	2.37E-07	6.00E-03	1.10E-02	1.15E-04	2.61E-09
VINYL CHLORIDE	3.68E-02	3.19E-01	3.68E-02	3.56E-05	5.84404E-06	2.00367E-06	0.003	1.5	0.001948014	3.00551E-06
METALS										
ALUMINUM	3.72E+01	3.72E+01	6.05E+00	1.43E-02	2.35E-03	8.05E-04	1.00E+00	NA	2.35E-03	--
ANTIMONY	2.03E-02	1.91E-02	2.03E-02	1.10E-05	1.80E-06	6.18E-07	4.00E-04	NA	4.51E-03	--
ARSENIC	3.46E-02	4.38E-02	3.46E-02	1.94E-05	3.18E-06	1.09E-06	3.00E-04	1.50E+00	1.06E-02	1.64E-06
BARIUM	2.63E+00	1.23E+00	2.63E+00	1.36E-03	2.23E-04	7.65E-05	7.00E-02	NA	3.19E-03	--
BERYLLIUM	7.35E-04	4.28E-04	7.35E-04	3.84E-07	6.31E-08	2.16E-08	2.00E-03	NA	3.15E-05	--
CADMIUM	4.24E-02	2.17E-02	4.24E-02	2.20E-05	3.61E-06	1.24E-06	5.00E-04	NA	7.22E-03	--
CHROMIUM	9.56E-02	8.82E-02	9.56E-02	5.17E-05	8.50E-06	2.91E-06	3.00E-03	NA	2.83E-03	--
COBALT	1.40E-01	1.40E-01	4.91E-02	5.90E-05	9.69E-06	3.32E-06	6.00E-02	NA	1.62E-04	--
COPPER	1.28E+01	1.28E+01	1.28E+01	6.97E-03	1.15E-03	3.93E-04	3.70E-02	NA	3.70E-02	--
MANGANESE	8.03E+01	8.03E+01	1.61E+01	3.14E-02	5.16E-03	1.77E-03	2.40E-02	NA	2.15E-01	--
MERCURY	1.35E-02	3.34E-02	1.35E-02	8.44E-06	1.39E-06	4.76E-07	1.00E-04	NA	1.39E-02	--
NICKEL	1.56E-01	1.34E-01	1.56E-01	8.40E-05	1.38E-05	4.74E-06	2.00E-02	NA	6.91E-04	--
SELENIUM	8.86E-03	1.08E-02	8.86E-03	4.94E-06	8.12E-07	2.78E-07	5.00E-03	NA	1.62E-04	--
SILVER	2.90E-02	2.10E-02	2.90E-02	1.54E-05	2.52E-06	8.65E-07	5.00E-03	NA	5.05E-04	--
THALLIUM	9.87E-05	4.60E-05	9.87E-05	5.09E-08	8.36E-09	2.87E-09	6.60E-05	NA	1.27E-04	--
VANADIUM	1.55E-01	1.55E-01	8.46E-02	7.10E-05	1.17E-05	4.00E-06	7.00E-03	NA	1.61E-03	--
ZINC	5.428	5.192	5.428	0.00294528	0.000484156	0.000165996	3.00E-01 NA	NA	1.61E-03	--
Cumulative Risk									0.320903446	7.95797E-06

