Table A2-4

Calculated PRGs for Sediments and Semi-Aquatic Wildlife
Fireworks Site

Wildlife Receptor	Contaminant	NOAEL (mg/Kg-day)	LOAEL (mg/Kg-day)	Body Weight (Kg)	Ingestion Rate (Kg/day wwt)	Dietfraction (unitless)	Major Dietary Contribution	Diet - PRG	Sediments - PRG		
								NOAEL (mg/Kg wwt)	LOAEL (mg/Kg wwt)	NOAEL (mg/Kg dwt)	LOAEL (mg/Kg dwt)
Mink	Methyl Mercury	0.0171	0.0286	0.59	0.078	1	Forage Fish	0.13	0.22	0.0002	0.0008
Belted Kingfisher	Methyl Mercury	0.0064	0.064	0.15	0.068	1	Forage Fish	0.01	0.14	0.0000003	0.0002
Mallard	Total Mercury	0.45	0.9	1.7	1.15	1	Aquatic Worm	0.67	1.33	70	169
	Methyl Mercury	0.0064	0.064	1.7	1.15	1	Aquatic Worm	0.01	0.09	0.3	5.9
	Lead	1.13	11.3	1.7	1.15	1	Aquatic Plants	1.67	16.70	20	414
Mute Swan	Total Mercury	0.45	0.9	9.7	4.22	1	Aquatic Plants	1.03	2.07	11	27
	Methyl Mercury	0.0064	0.064	9.7	4.22	1	Aquatic Plants	0.01	0.15	0.040	0.82
	Lead	1.13	11.3	9.7	4.22	1	Aquatic Plants	2.60	25.97	36	740
Raccoon	Methyl Mercury	0.00943	0.0157	6.4	0.953	1	Forage Fish	0.06	0.11	0.0003	0.0011
	Antimony	0.0327	0.327	6.4	0.316*	1	Sediment	7.0	70.5	7.0	70
Muskrat	Total Mercury	0.919	9.19	1.4	0.731	1	Aquatic Plants	13.5	135.4	21.4	443
	Methyl Mercury	0.014	0.023	1.4	0.731	1	Aquatic Plants	0.2	0.3	0.1	0.2
	Antimony	0.0482	0.478	1.4	0.731	1	Aquatic Plants	0.7	7.0	0.4	9.1
	Lead	5.66	56.6	1.4	0.731	1	Aquatic Plants	83.4	833.8	234	4849
	Selenium	0.141	0.233	1.4	0.731	1	Aquatic Plants	2.1	3.4	1.8	3.5
	Thallium	0.00523	0.0523	1.4	0.731	1	Aquatic Plants	0.1	0.8	0.02	0.5

Notes:
*Dry weight ingestion rate
NOAEL = No observable adverse effects level
LOAEL = Lowest observable adverse effects level
mg/Kg wwt = milligram per kilogram wet weight
mg/Kg dwt = milligram per kilogram dry weight
mg/Kg-day = milligram per kilogram per day
PRG = preliminary remediation goal

Table A2-5

Calculated PRGs for Terrestrial and Wildlife Receptors
(Short-tailed Shrew and American Woodcock)
Fireworks Site

Short-tailed Shrew						Earthworm Soilds	Preliminary Remedial Goal	
	NOAEL	LOAEL	BAF	IR (wet)	BW	Content	NOAEL	LOAEL
Element	mg/Kg/day		(Unitless)	Kg/day	Kg	(Unitless)	mg/Kg dry wt	
Antimony	0.149	1.49	1	0.01	0.015	0.17	0.2	2
Arsenic	0.166	0.821	0.236	0.01	0.015	0.17	1	5
Barium	11.2	43.5	0.091	0.01	0.015	0.17	185	717
Copper	9.37	37.4	0.636	0.01	0.015	0.17	22	88
Total Mercury	2.86	-	3.93	0.01	0.015	0.17	1	-
Thallium	0.0163	0.163	1	0.01	0.015	0.17	0.02	0.2
Zinc	352	703	3.78	0.01	0.015	0.17	140	279
Hexachlorobenzene	0.176	0.637	10.5	0.01	0.015	0.17	0.03	0.1

American Woodcock						Earthworm Soilds	Preliminary Remedial Goal	
	NOAEL	LOAEL	BAF	IR (wet)	BW	Content	NOAEL	LOAEL
Element	mg/Kg/day		(Unitless)	Kg/day	Kg	(Unitless)	mg/Kg dry wt	
Chromium	1	5	0.161	0.058	0.218	0.17	23	117
Lead	1.13	11.3	0.225	0.058	0.218	0.17	19	189
Total Mercury	0.45	0.9	3.93	0.058	0.218	0.17	0.4	1
Selenium	0.4	0.8	0.548	0.058	0.218	0.17	3	5
Zinc	14.5	131	3.78	0.058	0.218	0.17	14	130
Di-octylphthalate	0.11	1.1	7.78	0.058	0.218	0.17	0.05	0.5

Notes:
NOAEL = No observable adverse effects level
LOAEL = Lowest observable adverse effects level
mg/Kg dry wt = milligram per kilogram dry weight
mg/Kg/day = milligram per kilogram per day
PRG = preliminary remediation goal
BAF = bioaccumulation factor
IR = ingestion rate
BW = body weight

Table A2-6

Proposed PRGs for Soil Invertebrates and Terrestrial Plants
Fireworks Site

COPEC	Preliminary Remediation Goals (mg/Kg)[1]	
	Soil Invertebrates	Plants
Barium	3302	NA
Chromium	0.4	1
Copper	50	100
Lead	500	50
Nickel	200	30
Total Mercury	0.1	0.3
Zinc	200	50

Notes:

[1] = from Efroymson et al., 1997b

[2] = USEPA Eco Soil Screening Level

NA = PRG not available

mg/Kg = milligram per kilogram

COPEC = constituents of potential environmental concern

PRG = preliminary remediation goal

Table A2-7

Summary of Sediment PRGs by Environmental COC and Assessment Endpoint
Fireworks Site

Endpoint	Sediment Based PRGs for Aquatic Life and Semi-Aquatic Wildlife (mg/Kg dry wt)								
	Methyl Mercury	**Total Mercury**	**Antimony**	**Lead**	**Selenium**	**Thallium**	**Zinc**	**DCE**	**TCE**
Benthic Communities (River[a]/Pond[b]/Wetland[c]) (No Effect Concentration)	NA	29[a]/40[b,c]	NA	NA	NA	NA	152[a]/**337**[b]	**0.4**[b]	**0.22**[b]
Piscivorous Fish (NOAEL/LOAEL)	NA	100/415	NA	NA	NA	NA	NA	NA	NA
Piscivorous Mammal (NOAEL/LOAEL)	0.0002/0.0008	0.02/0.32	NA	NA	NA	NA	NA	NA	NA
Piscivorous Birds (NOAEL/LOAEL)	0.0000003/**0.0002**	0.0000009/**0.02**	NA	NA	NA	NA	NA	NA	NA
Omnivorous Waterfowl (NOAEL/LOAEL)	0.3/5.9	70/169	NA	226/4180	NA	NA	NA	NA	NA
Herbivorous Waterfowl (NOAEL/LOAEL)	0.04/0.82	11/27	NA	36/**740**	NA	NA	NA	NA	NA
Omnivorous Mammal (NOAEL/LOAEL)	0.0003/0.0011	NA	7/70	NA	NA	NA	NA	NA	NA
Herbivorous Mammal (NOAEL/LOAEL)	0.1/0.2	21/443	0.4/**9**	234/4849	1.8/**3.5**	0.02/**0.5**	NA	NA	NA
Aquatic Reptiles (NOAEL/LOAEL)	NA	119/204	NA	NA	NA	NA	NA	NA	NA

Notes:
PRG = preliminary remediation goal
Bolded PRGs identify lowest corresponding PRG for all assessment endpoints.
NA = Not applicable to endpoint
NOAEL = No observable adverse effects level
LOAEL = Lowest observable adverse effects level
mg/Kg dry wt = milligram per kilogram dry weight

Table A2-8

Proposed Surface Soil PRGs by Receptor
Fireworks Site

Endpoint	Surface Soil PRG Concentration (mg/Kg dry wt)											
	Antimony	**Arsenic**	**Barium**	**Chromium**	**Copper**	**Lead**	**Total Mercury**	**Selenium**	**Thallium**	**Zinc**	**Heachloro-benzene**	**Di-n-octyl-phthalate**
Soil Invertebrates (NOEC)	NA	NA	NA	**0.4**	50	500	**0.1**	NA	NA	200	NA	NA
Terrestrial Plants (NOEC)	NA	NA	330	1	100	50	0.3	NA	NA	50	NA	NA
Insectivorous Mammals (NOAEL/LOAEL)	0.2/**2.2**	1.1/**5.2**	185/**717**	NA	22/**88**	NA	1.1/-	NA	0.02/**0.2**	140/279	0.03/**0.1**	NA
Insectivorous Birds (NOAEL/LOAEL)	NA	NA	NA	23/117	NA	19/**189**	0.4/1.0	3/**5**	NA	14/**130**	NA	0.05/**0.5**

Notes:
- = Value not available.
NA = not applicable to receptor.
PRG = preliminary remediation goal
Bold indicates proposed PRG.
NOEC = No observable effects concentration.
NOAEL = No observable adverse effects level.
LOAEL = Lowest observable adverse effects level.
mg/Kg dry wt = milligram per kilogram dry weight