APPENDIX H
HUMAN HEALTH EXPOSURE AND RISK ESTIMATES FOR THE AREA NORTH OF I-10 AND AQUATIC ENVIRONMENT

[ON ENCLOSED CD]

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Table H-6. Site Exposure to Sediment via Incidental Ingestion, Hypothetical Subsistence Fisher

Scenario Type: Baseline
Medium: Sediment
Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{sed,\ cancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 1.87E-06$ $\quad I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor,\ cancer,\ RME} = 1.99E-07$ $\quad I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Beach Area A								Beach Area B/C								Beach Area D								Beach Area E							
	Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
COPC[a]	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																																
TEQ_{DF} (ND = 1/2DL)	4.3E-13	6.1E-04	--	--	4.5E-14	1.9E-04	--	--	6.0E-12	8.5E-03	--	--	6.3E-13	2.6E-03	--	--	2.0E-12	2.8E-03	--	--	2.1E-13	8.6E-04	--	--	1.2E-08	1.7E+01	--	--	1.3E-09	5.3E+00	--	--
TEQ_{DF} (ND = DL0)	3.2E-13	4.5E-04	--	--	3.4E-14	1.4E-04	--	--	5.7E-12	8.2E-03	--	--	6.1E-13	2.5E-03	--	--	1.9E-12	2.7E-03	--	--	2.0E-13	8.2E-04	--	--	1.2E-08	1.7E+01	--	--	1.3E-09	5.3E+00	--	--
Metals																																
Arsenic (inorganic)	2.8E-07	9.4E-04	--	--	3.0E-08	4.5E-08	--	--	2.4E-06	7.9E-03	--	--	2.5E-07	3.8E-07	--	--	2.3E-06	7.6E-03	--	--	2.4E-07	3.6E-07	--	--	1.8E-06	5.9E-03	--	--	1.9E-07	2.8E-07	--	--
Cadmium	1.9E-07	1.9E-04	--	--	2.0E-08	--	--	--	4.0E-07	4.0E-04	--	--	4.3E-08	--	--	--	8.1E-07	8.1E-04	--	--	8.6E-08	--	--	--	3.0E-06	3.0E-03	--	--	3.2E-07	--	--	--
Chromium (III)	1.6E-06	1.0E-06	--	--	1.7E-07	--	--	--	4.1E-05	2.7E-05	--	--	4.3E-06	--	--	--	2.1E-05	1.4E-05	--	--	2.2E-06	--	--	--	3.0E-05	2.0E-05	--	--	3.2E-06	--	--	--
Copper	6.6E-06	1.6E-04	--	--	7.0E-07	--	--	--	1.3E-05	3.3E-04	--	--	1.4E-06	--	--	--	1.5E-05	3.7E-04	--	--	1.6E-06	--	--	--	1.1E-04	2.7E-03	--	--	1.1E-05	--	--	--
Mercury (inorganic)	1.9E-08	6.5E-05	--	--	2.1E-09	--	--	--	3.7E-08	1.2E-04	--	--	4.0E-09	--	--	--	7.5E-08	2.5E-04	--	--	8.0E-09	--	--	--	3.7E-06	1.2E-02	--	--	4.0E-07	--	--	--
Nickel	7.1E-07	3.5E-05	--	--	7.5E-08	--	--	--	1.6E-05	8.2E-04	--	--	1.8E-06	--	--	--	1.2E-05	6.1E-04	--	--	1.3E-06	--	--	--	1.7E-05	8.7E-04	--	--	1.9E-06	--	--	--
Zinc	1.6E-05	5.4E-05	--	--	1.7E-06	--	--	--	9.0E-05	3.0E-04	--	--	9.6E-06	--	--	--	8.6E-05	2.9E-04	--	--	9.1E-06	--	--	--	4.2E-04	1.4E-03	--	--	4.4E-05	--	--	--
Polychlorinated Biphenyls																																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.6E-06	1.3E-01	--	--	2.8E-07	5.6E-07	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	--	--	0.0E+00	0.0E+00	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_{P} (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.2E-12	6.0E-03	--	--	4.5E-13	1.8E-03	--	--
TEQ_{P} (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.2E-12	3.1E-03	--	--	2.3E-13	9.6E-04	--	--
Semivolatile Organic Compounds																																
Bis(2-ethylhexyl)phthalate	1.8E-08	8.9E-07	--	--	1.9E-09	2.6E-11	--	--	1.7E-07	8.7E-06	--	--	1.9E-08	2.6E-10	--	--	9.2E-08	4.6E-06	--	--	9.8E-09	1.4E-10	--	--	1.3E-06	6.5E-05	--	--	1.4E-07	1.9E-09	--	--

Table H-7. Site Exposure to Sediment via Dermal Contact, Hypothetical Subsistence Fisher

Scenario Type: Baseline
Medium: Sediment
Exposure Pathway: Dermal Absorption

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{sed,\ cancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 1.77E\text{-}04$

$DAD_{factor,\ cancer,\ RME} = 5.29E\text{-}05$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Beach Area A								Beach Area B/C								Beach Area D								Beach Area E							
	Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_{ni}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																																
TEQ_{DF} (ND = 1/2DL)	2.4E-12	3.5E-03	--	--	7.2E-13	1.1E-03	--	--	3.4E-11	4.8E-02	--	--	1.0E-11	1.5E-02	--	--	1.1E-11	1.6E-02	--	--	3.4E-12	4.9E-03	--	--	6.9E-08	9.9E+01	--	--	2.1E-08	3.0E+01	--	--
TEQ_{DF} (ND = DL0)	1.8E-12	2.6E-03	--	--	5.4E-13	7.8E-04	--	--	3.3E-11	4.6E-02	--	--	9.7E-12	1.4E-02	--	--	1.1E-11	1.5E-02	--	--	3.2E-12	4.6E-03	--	--	6.9E-08	9.9E+01	--	--	2.1E-08	3.0E+01	--	--
Metals																																
Arsenic (inorganic)	1.6E-06	5.3E-03	--	--	4.8E-07	7.1E-07	--	--	1.3E-05	4.5E-02	--	--	4.0E-06	6.0E-06	--	--	1.3E-05	4.3E-02	--	--	3.9E-06	5.8E-06	--	--	1.0E-05	3.4E-02	--	--	3.0E-06	4.5E-06	--	--
Cadmium	1.8E-08	1.8E-05	--	--	5.3E-09	--	--	--	3.8E-08	3.8E-05	--	--	1.1E-08	--	--	--	7.6E-08	7.6E-05	--	--	2.3E-08	--	--	--	2.8E-07	2.8E-04	--	--	8.5E-08	--	--	--
Chromium (III)	2.9E-06	2.0E-06	--	--	8.8E-07	--	--	--	7.7E-05	5.1E-05	--	--	2.3E-05	--	--	--	4.0E-05	2.7E-05	--	--	1.2E-05	--	--	--	5.7E-05	3.8E-05	--	--	1.7E-05	--	--	--
Copper	6.2E-04	1.5E-02	--	--	1.9E-04	--	--	--	1.2E-03	3.1E-02	--	--	3.7E-04	--	--	--	1.4E-03	3.5E-02	--	--	4.2E-04	--	--	--	1.0E-02	2.5E-01	--	--	3.0E-03	--	--	--
Mercury (inorganic)	5.5E-08	1.8E-04	--	--	1.7E-08	--	--	--	1.1E-07	3.5E-04	--	--	3.2E-08	--	--	--	2.1E-07	7.1E-04	--	--	6.3E-08	--	--	--	1.1E-05	3.5E-02	--	--	3.2E-06	--	--	--
Nickel	2.7E-06	1.3E-04	--	--	8.0E-07	--	--	--	6.2E-05	3.1E-03	--	--	1.9E-05	--	--	--	4.6E-05	2.3E-03	--	--	1.4E-05	--	--	--	6.6E-05	3.3E-03	--	--	2.0E-05	--	--	--
Zinc	1.5E-03	5.1E-03	--	--	4.6E-04	--	--	--	8.5E-03	2.8E-02	--	--	2.5E-03	--	--	--	8.1E-03	2.7E-02	--	--	2.4E-03	--	--	--	3.9E-02	1.3E-01	--	--	1.2E-02	--	--	--
Polychlorinated Biphenyls																																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.5E-05	1.7E+00	--	--	1.0E-05	2.1E-05	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	--	--	0.0E+00	0.0E+00	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_{B} (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.4E-11	3.4E-02	--	--	7.1E-12	1.0E-02	--	--
TEQ_{B} (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-11	1.8E-02	--	--	3.7E-12	5.4E-03	--	--
Semivolatile Organic Compounds																																
Bis(2-ethylhexyl)phthalate	1.7E-07	8.4E-06	--	--	5.0E-08	7.0E-10	--	--	1.7E-06	8.3E-05	--	--	4.9E-07	6.9E-09	--	--	8.7E-07	4.4E-05	--	--	2.6E-07	3.6E-09	--	--	1.2E-05	6.1E-04	--	--	3.7E-06	5.1E-08	--	--

Table H-8. Site Exposure via Ingestion of Hardhead Catfish , Hypothetical Subsistence Fisher

Scenario Type: Baseline
Medium: Hardhead Catfish Fillet
Exposure Pathway: Ingestion

$I_{factor,\ noncancer,\ RME}$ = 1.58E-03
$I_{factor,\ cancer,\ RME}$ = 3.98E-04

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$
$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$
$HQ = ADD / RfD$
$Risk = LADD \times CSF$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$
$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	FCA 1								FCA 2/3							
	Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_{tj}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	6.2E-09	8.8E+00	--	--	1.6E-09	2.7E+00	--	--	6.4E-09	9.2E+00	--	--	1.6E-09	2.8E+00	--	--
TEQ_{DF} (ND = DL0)	6.1E-09	8.7E+00	--	--	1.5E-09	2.6E+00	--	--	6.3E-09	9.0E+00	--	--	1.6E-09	2.7E+00	--	--
Metals																
Arsenic (inorganic)	8.9E-05	3.0E-01	--	--	2.2E-05	3.4E-05	--	--	1.1E-04	3.5E-01	--	--	2.6E-05	4.0E-05	--	--
Arsenic (organic)	8.0E-04	8.0E-02	--	--	2.0E-04	--	--	--	9.5E-04	9.5E-02	--	--	2.4E-04	--	--	--
Cadmium	3.8E-06	3.8E-03	--	--	9.5E-07	--	--	--	1.6E-06	1.6E-03	--	--	4.1E-07	--	--	--
Chromium (III)	1.5E-04	9.7E-05	--	--	3.7E-05	--	--	--	5.5E-05	3.7E-05	--	--	1.4E-05	--	--	--
Copper	8.0E-04	2.0E-02	--	--	2.0E-04	--	--	--	4.4E-04	1.1E-02	--	--	1.1E-04	--	--	--
Mercury (methyl)	3.0E-04	3.0E+00	--	--	7.6E-05	--	--	--	2.3E-04	2.3E+00	--	--	5.7E-05	--	--	--
Nickel	9.7E-05	4.8E-03	--	--	2.4E-05	--	--	--	5.1E-05	2.5E-03	--	--	1.3E-05	--	--	--
Zinc	4.6E-02	1.5E-01	--	--	1.2E-02	--	--	--	2.8E-02	9.5E-02	--	--	7.2E-03	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	1.6E-04	8.2E+00	--	--	4.1E-05	8.3E-05	--	--	1.5E-04	7.4E+00	--	--	3.8E-05	7.5E-05	--	--
Sum of 43 PCB Congeners (ND = DL0)	1.6E-04	8.2E+00	--	--	4.1E-05	8.3E-05	--	--	1.5E-04	7.4E+00	--	--	3.8E-05	7.5E-05	--	--
TEQ_{P} (ND = 1/2DL)	2.6E-09	3.8E+00	--	--	6.6E-10	1.1E+00	--	--	2.5E-09	3.5E+00	--	--	6.3E-10	1.1E+00	--	--
TEQ_{P} (ND = DL0)	2.3E-09	3.2E+00	--	--	5.7E-10	9.8E-01	--	--	3.8E-09	5.4E+00	--	--	9.5E-10	1.6E+00	--	--
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.7E-04	8.3E-03	--	--	4.2E-05	5.9E-07	--	--	1.7E-04	8.3E-03	--	--	4.2E-05	5.9E-07	--	--

Table H-9. Site Exposure via Ingestion of Clam , Hypothetical Subsistence Fisher

Scenario Type: Baseline
Medium: Edible Clam Tissue
Exposure Pathway: Ingestion

$I_{factor, noncancer, RME}$ = 1.05E-04
$I_{factor, cancer, RME}$ = 3.04E-05

$ADD = I_{tissue, noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$
$LADD = I_{tissue, cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$
$HQ = ADD / RfD$
$Risk = LADD \times CSF$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$
$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	FCA 1/3								FCA 2							
	Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_{tj}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.7E-10	2.5E-01	--	--	5.0E-11	7.6E-02	--	--	2.0E-09	2.9E+00	--	--	5.8E-10	8.7E-01	--	--
TEQ_{DF} (ND = DL0)	1.6E-10	2.3E-01	--	--	4.6E-11	6.9E-02	--	--	2.3E-09	3.2E+00	--	--	6.5E-10	9.8E-01	--	--
Metals																
Arsenic (inorganic)	5.5E-06	1.8E-02	--	--	1.6E-06	2.4E-06	--	--	6.2E-06	2.1E-02	--	--	1.8E-06	2.7E-06	--	--
Arsenic (organic)	5.0E-05	5.0E-03	--	--	1.4E-05	--	--	--	5.6E-05	5.6E-03	--	--	1.6E-05	--	--	--
Cadmium	2.8E-06	2.8E-03	--	--	8.1E-07	--	--	--	3.1E-06	3.1E-03	--	--	8.9E-07	--	--	--
Chromium (III)	2.1E-05	1.4E-05	--	--	6.1E-06	--	--	--	2.3E-05	1.6E-05	--	--	6.7E-06	--	--	--
Copper	3.5E-04	8.9E-03	--	--	1.0E-04	--	--	--	4.2E-04	1.1E-02	--	--	1.2E-04	--	--	--
Mercury (methyl)	1.3E-06	1.3E-02	--	--	3.9E-07	--	--	--	1.2E-06	1.2E-02	--	--	3.5E-07	--	--	--
Nickel	1.7E-04	8.3E-03	--	--	4.8E-05	--	--	--	1.4E-04	6.8E-03	--	--	4.0E-05	--	--	--
Zinc	1.1E-03	3.7E-03	--	--	3.2E-04	--	--	--	1.2E-03	4.0E-03	--	--	3.5E-04	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	2.3E-06	1.1E-01	--	--	6.6E-07	1.3E-06	--	--	5.3E-06	2.6E-01	--	--	1.5E-06	3.0E-06	--	--
Sum of 43 PCB Congeners (ND = DL0)	2.3E-06	1.1E-01	--	--	6.6E-07	1.3E-06	--	--	5.3E-06	2.6E-01	--	--	1.5E-06	3.0E-06	--	--
TEQ_{P} (ND = 1/2DL)	3.6E-11	5.2E-02	--	--	1.1E-11	1.6E-02	--	--	8.7E-11	1.2E-01	--	--	2.5E-11	3.8E-02	--	--
TEQ_{P} (ND = DL0)	8.4E-12	1.2E-02	--	--	2.4E-12	3.7E-03	--	--	4.7E-11	6.6E-02	--	--	1.3E-11	2.0E-02	--	--
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.1E-05	5.5E-04	--	--	3.2E-06	4.5E-08	--	--	1.1E-05	5.5E-04	--	--	3.2E-06	4.5E-08	--	--

Table H-10. Site Exposure via Ingestion of Crab , Hypothetical Subsistence Fisher

Scenario Type: Baseline
Medium: Edible Crab Tissue
Exposure Pathway: Ingestion

$I_{factor, noncancer, RME}$ = 1.05E-04
$I_{factor, cancer, RME}$ = 3.04E-05

$ADD = I_{tissue, noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$
$LADD = I_{tissue, cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$
$HQ = ADD / RfD$
$Risk = LADD \times CSF$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$
$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	FCA 1								FCA 2/3							
	Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_{tt}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.1E-10	1.6E-01	--	--	3.3E-11	4.9E-02	--	--	3.0E-11	4.3E-02	--	--	8.7E-12	1.3E-02	--	--
TEQ_{DF} (ND = DL0)	1.0E-10	1.5E-01	--	--	3.0E-11	4.4E-02	--	--	1.9E-11	2.6E-02	--	--	5.4E-12	8.1E-03	--	--
Metals																
Arsenic (inorganic)	5.5E-06	1.8E-02	--	--	1.6E-06	2.4E-06	--	--	4.8E-06	1.6E-02	--	--	1.4E-06	2.1E-06	--	--
Arsenic (organic)	4.9E-05	4.9E-03	--	--	1.4E-05	--	--	--	4.3E-05	4.3E-03	--	--	1.3E-05	--	--	--
Cadmium	2.6E-06	2.6E-03	--	--	7.4E-07	--	--	--	2.1E-06	2.1E-03	--	--	6.1E-07	--	--	--
Chromium (III)	6.6E-06	4.4E-06	--	--	1.9E-06	--	--	--	2.7E-06	1.8E-06	--	--	7.9E-07	--	--	--
Copper	1.5E-03	3.6E-02	--	--	4.2E-04	--	--	--	1.2E-03	2.9E-02	--	--	3.4E-04	--	--	--
Mercury (methyl)	6.1E-06	6.1E-02	--	--	1.8E-06	--	--	--	4.0E-06	4.0E-02	--	--	1.2E-06	--	--	--
Nickel	5.7E-06	2.8E-04	--	--	1.6E-06	--	--	--	7.1E-06	3.6E-04	--	--	2.1E-06	--	--	--
Zinc	5.4E-03	1.8E-02	--	--	1.6E-03	--	--	--	5.3E-03	1.8E-02	--	--	1.5E-03	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	3.5E-07	1.8E-02	--	--	1.0E-07	2.0E-07	--	--	7.5E-07	3.8E-02	--	--	2.2E-07	4.4E-07	--	--
Sum of 43 PCB Congeners (ND = DL0)	3.5E-07	1.7E-02	--	--	1.0E-07	2.0E-07	--	--	7.5E-07	3.8E-02	--	--	2.2E-07	4.3E-07	--	--
TEQ_{PCB} (ND = 1/2DL)	1.6E-11	2.2E-02	--	--	4.5E-12	6.8E-03	--	--	3.1E-11	4.5E-02	--	--	9.0E-12	1.4E-02	--	--
TEQ_{PCB} (ND = DL0)	2.1E-12	3.0E-03	--	--	6.1E-13	9.2E-04	--	--	2.0E-11	2.8E-02	--	--	5.7E-12	8.5E-03	--	--
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.1E-05	5.5E-04	--	--	3.2E-06	4.5E-08	--	--	1.1E-05	5.5E-04	--	--	3.2E-06	4.5E-08	--	--

Notes

-- = not applicable
ADD = average daily dose
CF_1 = conversion factor 1; 1E-06 kg/mg
CF_2 = conversion factor 2; 1E-03 kg/g
$COPC_{tt}$ = chemical of potential concern for human health
CTE = central tendency exposure
FCA = fish collection area
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero.
RME = reasonable maximum exposure
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_{PCB} = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQ_{DF} and TEQ_{PCB} are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).

Hypothetical Recreational Visitor: Exposure Pathway-Specific Noncancer Hazards and Cancer Risks, Area North of I-10 and Aquatic Environment

Table H-11. Site Exposure to Sediment via Incidental Ingestion, Hypothetical Recreational Visitor

Scenario Type: Baseline
Medium: Sediment
Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{sed,\ cancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 9.37E-07$
$I_{factor,\ noncancer,\ CTE} = 8.90E-09$
$I_{factor,\ cancer,\ RME} = 9.95E-08$
$I_{factor,\ cancer,\ CTE} = 1.37E-09$

$I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Beach Area A								Beach Area B/C							
	Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
COPC[H]	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	2.1E-13	3.1E-04	1.4E-15	2.0E-06	2.3E-14	9.3E-05	2.1E-16	6.0E-07	3.0E-12	4.3E-03	1.8E-14	2.6E-05	3.2E-13	1.3E-03	2.8E-15	7.9E-06
TEQ_{DF} (ND = DL0)	1.6E-13	2.3E-04	8.8E-16	1.3E-06	1.7E-14	6.9E-05	1.4E-16	3.8E-07	2.9E-12	4.1E-03	1.7E-14	2.4E-05	3.0E-13	1.2E-03	2.6E-15	7.3E-06
Metals																
Arsenic (inorganic)	1.4E-07	4.7E-04	8.9E-10	3.0E-06	1.5E-08	2.2E-08	1.4E-10	2.1E-10	1.2E-06	3.9E-03	7.1E-09	2.4E-05	1.3E-07	1.9E-07	1.1E-09	1.6E-09
Cadmium	9.4E-08	9.4E-05	8.9E-10	8.9E-07	9.9E-09	--	1.4E-10	--	2.0E-07	2.0E-04	7.3E-10	7.3E-07	2.1E-08	--	1.1E-10	--
Chromium (III)	7.8E-07	5.2E-07	5.3E-09	3.6E-09	8.3E-08	--	8.2E-10	--	2.0E-05	1.4E-05	7.2E-08	4.8E-08	2.2E-06	--	1.1E-08	--
Copper	3.3E-06	8.2E-05	7.2E-09	1.8E-07	3.5E-07	--	1.1E-09	--	6.6E-06	1.6E-04	5.1E-08	1.3E-06	7.0E-07	--	7.8E-09	--
Mercury (inorganic)	9.7E-09	3.2E-05	5.3E-11	1.8E-07	1.0E-09	--	8.1E-12	--	1.9E-08	6.2E-05	8.9E-11	3.0E-07	2.0E-09	--	1.4E-11	--
Nickel	3.5E-07	1.8E-05	2.8E-09	1.4E-07	3.8E-08	--	4.3E-10	--	8.2E-06	4.1E-04	4.6E-08	2.3E-06	8.8E-07	--	7.1E-09	--
Zinc	8.1E-06	2.7E-05	3.0E-08	9.9E-08	8.6E-07	--	4.6E-09	--	4.5E-05	1.5E-04	2.2E-07	7.3E-07	4.8E-06	--	3.4E-08	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_{DL} (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_{DL} (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	8.9E-09	4.5E-07	8.5E-11	4.2E-09	9.5E-10	1.3E-11	1.3E-11	1.8E-13	8.7E-08	4.4E-06	2.1E-10	1.1E-08	9.3E-09	1.3E-10	3.2E-11	4.5E-13

	Beach Area D								Beach Area E							
	Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
COPC[H]	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	9.9E-13	1.4E-03	6.3E-15	9.0E-06	1.1E-13	4.3E-04	9.7E-16	2.7E-06	6.1E-09	8.7E+00	4.1E-12	5.8E-03	6.5E-10	2.6E+00	6.2E-13	1.8E-03
TEQ_{DF} (ND = DL0)	9.4E-13	1.3E-03	5.8E-15	8.3E-06	9.9E-14	4.1E-04	8.9E-16	2.5E-06	6.1E-09	8.7E+00	3.9E-12	5.6E-03	6.5E-10	2.6E+00	6.0E-13	1.7E-03
Metals																
Arsenic (inorganic)	1.1E-06	3.8E-03	8.6E-09	2.9E-05	1.2E-07	1.8E-07	1.3E-09	2.0E-09	8.9E-07	3.0E-03	7.6E-09	2.5E-05	9.5E-08	1.4E-07	1.2E-09	1.7E-09
Cadmium	4.0E-07	4.0E-04	3.0E-09	3.0E-06	4.3E-08	--	4.6E-10	--	1.5E-06	1.5E-03	2.7E-09	2.7E-06	1.6E-07	--	4.1E-10	--
Chromium (III)	1.1E-05	7.1E-06	5.3E-08	3.5E-08	1.1E-06	--	8.2E-09	--	1.5E-05	1.0E-05	7.2E-08	4.8E-08	1.6E-06	--	1.1E-08	--
Copper	7.4E-06	1.8E-04	5.2E-08	1.3E-06	7.8E-07	--	8.0E-09	--	5.4E-05	1.3E-03	1.4E-07	3.6E-06	5.7E-06	--	2.2E-08	--
Mercury (inorganic)	3.7E-08	1.2E-04	1.8E-10	5.9E-07	4.0E-09	--	2.7E-11	--	1.9E-06	6.2E-03	1.8E-09	5.9E-06	2.0E-07	--	2.7E-10	--
Nickel	6.1E-06	3.0E-04	4.8E-08	2.4E-06	6.5E-07	--	7.4E-09	--	8.7E-06	4.4E-04	6.3E-08	3.2E-06	9.3E-07	--	9.7E-09	--
Zinc	4.3E-05	1.4E-04	2.7E-07	8.9E-07	4.6E-06	--	4.1E-08	--	2.1E-04	6.9E-04	5.8E-07	1.9E-06	2.2E-05	--	8.9E-08	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	1.3E-06	6.6E-02	5.0E-09	2.5E-04	1.4E-07	2.8E-07	7.7E-10	7.7E-10
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_{DL} (ND = 1/2DL)	--	--	--	--	--	--	--	--	2.1E-12	3.0E-03	1.3E-14	1.9E-05	2.2E-13	9.2E-04	2.0E-15	5.8E-06
TEQ_{DL} (ND = DL0)	--	--	--	--	--	--	--	--	1.1E-12	1.6E-03	7.2E-15	1.0E-05	1.2E-13	4.8E-04	1.1E-15	3.1E-06
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	4.6E-08	2.3E-06	2.8E-10	1.4E-08	4.9E-09	6.9E-11	4.4E-11	6.1E-13	6.5E-07	3.2E-05	1.9E-09	9.4E-08	6.9E-08	9.7E-10	2.9E-10	4.1E-12

Table H-12. Site Exposure to Soil via Incidental Ingestion, Hypothetical Recreational Visitor

Scenario Type: Baseline

Medium: Soil

Exposure Pathway: Incidental Ingestion

$ADD = I_{soil,\ noncancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{soil,\ cancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 9.37E-07$

$I_{factor,\ noncancer,\ CTE} = 8.90E-09$

$I_{factor,\ cancer,\ RME} = 9.95E-08$

$I_{factor,\ cancer,\ CTE} = 1.37E-09$

$I_{soil} = C_{soil} \times RBA_{soil} \times I_{factor}$

$I_{factor} = IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT)$

	North of I-10							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.1E-11	1.5E-02	2.0E-14	2.9E-05	1.1E-12	4.6E-03	3.1E-15	8.8E-06
TEQ_{DF} (ND = DL0)	1.1E-11	1.6E-02	1.9E-14	2.7E-05	1.2E-12	4.8E-03	2.9E-15	8.1E-06
Metals								
Arsenic (inorganic)	1.8E-06	5.9E-03	8.9E-09	3.0E-05	1.9E-07	2.8E-07	1.4E-09	2.1E-09
Cadmium	5.1E-07	5.1E-04	9.8E-10	9.8E-07	5.4E-08	--	1.5E-10	--
Chromium (III)	2.0E-05	1.3E-05	6.9E-08	4.6E-08	2.1E-06	--	1.1E-08	--
Copper	2.8E-05	7.0E-04	7.3E-08	1.8E-06	3.0E-06	--	1.1E-08	--
Mercury (inorganic)	2.8E-06	9.4E-03	6.2E-09	2.1E-05	3.0E-07	--	9.6E-10	--
Nickel	1.7E-05	8.4E-04	5.2E-08	2.6E-06	1.8E-06	--	7.9E-09	--
Zinc	2.1E-04	6.9E-04	4.0E-07	1.3E-06	2.2E-05	--	6.2E-08	--
Polychlorinated Biphenyls								
Sum of Aroclors	4.5E-08	2.3E-03	2.9E-10	1.5E-05	4.8E-09	9.6E-09	4.5E-11	4.5E-11
Sum of Aroclors (ND = DL0)	4.5E-08	2.3E-03	2.9E-10	1.5E-05	4.8E-09	9.6E-09	4.5E-11	4.5E-11
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_{DL} (ND = 1/2DL)	1.2E-12	1.8E-03	2.4E-15	3.4E-06	1.3E-13	5.4E-04	3.7E-16	1.0E-06
TEQ_{DL} (ND = DL0)	1.3E-12	1.9E-03	1.0E-15	1.4E-06	1.4E-13	5.8E-04	1.5E-16	4.4E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.1E-07	1.0E-05	3.2E-10	1.6E-08	2.2E-08	3.1E-10	4.9E-11	6.9E-13

Table H-13. Site Exposure to Sediment via Dermal Contact, Hypothetical Recreational Visitor

Scenario Type: Baseline
Medium: Sediment
Exposure Pathway: Dermal Absorption

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$
$LADD = DAD_{sed,\ cancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_c)$
$HQ = ADD / RfD$
$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 8.85E-05$
$DAD_{factor,\ noncancer,\ CTE} = 1.33E-05$
$DAD_{factor,\ cancer,\ RME} = 2.64E-05$
$DAD_{factor,\ cancer,\ CTE} = 2.04E-06$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$
$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Beach Area A								Beach Area B/C								Beach Area D								Beach Area E							
	Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)		RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_{H}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																																
TEQ_{DF} (ND = 1/2DL)	1.2E-12	1.7E-03	1.2E-13	1.8E-04	3.6E-13	5.3E-04	1.9E-14	5.4E-05	1.7E-11	2.4E-02	1.6E-12	2.3E-03	5.0E-12	7.3E-03	2.5E-13	7.1E-04	5.6E-12	8.0E-03	5.7E-13	8.1E-04	1.7E-12	2.4E-03	8.7E-14	2.5E-04	3.5E-08	4.9E+01	3.6E-10	5.2E-01	1.0E-08	1.5E+01	5.6E-11	1.6E-01
TEQ_{DF} (ND = DL0)	9.0E-13	1.3E-03	7.9E-14	1.1E-04	2.7E-13	3.9E-04	1.2E-14	3.4E-05	1.6E-11	2.3E-02	1.5E-12	2.1E-03	4.9E-12	7.1E-03	2.3E-13	6.5E-04	5.3E-12	7.6E-03	5.2E-13	7.4E-04	1.6E-12	2.3E-03	8.0E-14	2.2E-04	3.5E-08	4.9E+01	3.5E-10	5.0E-01	1.0E-08	1.5E+01	5.4E-11	1.5E-01
Metals																																
Arsenic (inorganic)	8.0E-07	2.7E-03	8.0E-08	2.7E-04	2.4E-07	3.6E-07	1.2E-08	1.8E-08	6.7E-06	2.2E-02	6.3E-07	2.1E-03	2.0E-06	3.0E-06	9.7E-08	1.5E-07	6.5E-06	2.2E-02	7.7E-07	2.6E-03	1.9E-06	2.9E-06	1.2E-07	1.8E-07	5.0E-06	1.7E-02	6.8E-07	2.3E-03	1.5E-06	2.3E-06	1.0E-07	1.6E-07
Cadmium	8.9E-09	8.9E-06	1.3E-09	1.3E-06	2.6E-09	--	2.0E-10	--	1.9E-08	1.9E-05	1.1E-09	1.1E-06	5.7E-09	--	1.7E-10	--	3.8E-08	3.8E-05	4.4E-09	4.4E-06	1.1E-08	--	6.8E-10	--	1.4E-07	1.4E-04	4.0E-09	4.0E-06	4.2E-08	--	6.1E-10	--
Chromium (III)	1.5E-06	9.8E-07	1.6E-07	1.1E-07	4.4E-07	--	2.4E-08	--	3.8E-05	2.6E-05	2.1E-06	1.4E-06	1.1E-05	--	3.3E-07	--	2.0E-05	1.3E-05	1.6E-06	1.1E-06	6.0E-06	--	2.4E-07	--	2.8E-05	1.9E-05	2.1E-06	1.4E-06	8.5E-06	--	3.3E-07	--
Copper	3.1E-04	7.7E-03	1.1E-05	2.7E-04	9.3E-05	--	1.7E-06	--	6.2E-04	1.5E-02	7.6E-05	1.9E-03	1.9E-04	--	1.2E-05	--	7.0E-04	1.7E-02	7.7E-05	1.9E-03	2.1E-04	--	1.2E-05	--	5.1E-03	1.3E-01	2.1E-04	5.3E-03	1.5E-03	--	3.3E-05	--
Mercury (inorganic)	2.8E-08	9.2E-05	2.3E-09	7.8E-06	8.3E-09	--	3.6E-10	--	5.3E-08	1.8E-04	4.0E-09	1.3E-05	1.6E-08	--	6.1E-10	--	1.1E-07	3.5E-04	8.0E-09	2.7E-05	3.2E-08	--	1.2E-09	--	5.3E-06	1.8E-02	8.0E-08	2.7E-04	1.6E-06	--	1.2E-08	--
Nickel	1.3E-06	6.7E-05	1.7E-07	8.4E-06	4.0E-07	--	2.6E-08	--	3.1E-05	1.6E-03	2.7E-06	1.4E-04	9.3E-06	--	4.2E-07	--	2.3E-05	1.2E-03	2.9E-06	1.4E-04	6.9E-06	--	4.4E-07	--	3.3E-05	1.7E-03	3.8E-06	1.9E-04	9.9E-06	--	5.8E-07	--
Zinc	7.6E-04	2.5E-03	4.4E-05	1.5E-04	2.3E-04	--	6.8E-06	--	4.3E-03	1.4E-02	3.3E-04	1.1E-03	1.3E-03	--	5.0E-05	--	4.1E-03	1.4E-02	4.0E-04	1.3E-03	1.2E-03	--	6.1E-05	--	2.0E-02	6.6E-02	8.6E-04	2.9E-03	5.9E-03	--	1.3E-04	--
Polychlorinated Biphenyls																																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.7E-05	8.7E-01	1.0E-06	5.2E-02	5.2E-06	1.0E-05	1.6E-07	1.6E-07
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_{D} (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-11	1.7E-02	1.2E-12	1.7E-03	3.6E-12	5.2E-03	1.8E-13	5.2E-04
TEQ_{D} (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.2E-12	8.9E-03	6.4E-13	9.2E-04	1.9E-12	2.7E-03	9.9E-14	2.8E-04
Semivolatile Organic Compounds																																
Bis(2-ethylhexyl)phthalate	8.4E-08	4.2E-06	1.3E-08	6.3E-07	2.5E-08	3.5E-10	1.9E-09	2.7E-11	8.3E-07	4.1E-05	3.1E-08	1.6E-06	2.5E-07	3.5E-09	4.8E-09	6.8E-11	4.4E-07	2.2E-05	4.2E-08	2.1E-06	1.3E-07	1.8E-09	6.5E-09	9.1E-11	6.1E-06	3.1E-04	2.8E-07	1.4E-05	1.8E-06	2.6E-08	4.3E-08	6.1E-10

Table H-14. Site Exposure to Soil via Dermal Contact, Hypothetical Recreational Visitor

Scenario Type: Baseline
Medium: Soil
Exposure Pathway: Dermal Absorption

$ADD = DAD_{soil,\ noncancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{soil,\ cancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 2.21E\text{-}06$

$DAD_{factor,\ noncancer,\ CTE} = 1.89E\text{-}07$

$DAD_{factor,\ cancer,\ RME} = 4.46E\text{-}07$

$DAD_{factor,\ cancer,\ CTE} = 2.92E\text{-}08$

$DAD_{soil} = C_{soil} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT)$

	North of I-10							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.5E-12	2.1E-03	2.6E-14	3.7E-05	3.0E-13	6.5E-04	4.0E-15	1.1E-05
TEQ_{DF} (ND = DL0)	1.6E-12	2.3E-03	2.4E-14	3.4E-05	3.2E-13	6.9E-04	3.7E-15	1.0E-05
Metals								
Arsenic (inorganic)	2.5E-07	8.4E-04	1.1E-08	3.8E-05	5.1E-08	7.6E-08	1.7E-09	2.6E-09
Cadmium	1.2E-09	1.2E-06	2.1E-11	2.1E-08	2.4E-10	--	3.2E-12	--
Chromium (III)	9.3E-07	6.2E-07	2.9E-08	1.9E-08	1.9E-07	--	4.5E-09	--
Copper	6.6E-05	1.6E-03	1.6E-06	3.9E-05	1.3E-05	--	2.4E-07	--
Mercury (inorganic)	2.0E-07	6.6E-04	4.0E-09	1.3E-05	4.0E-08	--	6.1E-10	--
Nickel	1.6E-06	8.0E-05	4.4E-08	2.2E-06	3.2E-07	--	6.8E-09	--
Zinc	4.9E-04	1.6E-03	8.5E-06	2.8E-05	9.8E-05	--	1.3E-06	--
Polychlorinated Biphenyls								
Sum of Aroclors	1.5E-08	7.5E-04	8.7E-10	4.4E-05	3.0E-09	6.0E-09	1.3E-10	1.3E-10
Sum of Aroclors (ND = DL0)	1.5E-08	7.5E-04	8.7E-10	4.4E-05	3.0E-09	6.0E-09	1.3E-10	1.3E-10
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_{DL} (ND = 1/2DL)	1.8E-13	2.5E-04	3.1E-15	4.4E-06	3.5E-14	7.7E-05	4.7E-16	1.3E-06
TEQ_{DL} (ND = DL0)	1.9E-13	2.7E-04	1.3E-15	1.8E-06	3.8E-14	8.2E-05	2.0E-16	5.6E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	4.9E-08	2.4E-06	6.8E-10	3.4E-08	9.8E-09	1.4E-10	1.0E-10	1.5E-12

Notes

-- = not applicable
ADD = average daily dose
CF_1 = conversion factor 1; 1E-06 kg/mg
CF_2 = conversion factor 2; 1E-03 kg/g
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero.
RME = reasonable maximum exposure
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_{DL} = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQ_{DF} and TEQ_{DL} are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE)

Hypothetical Recreational Fisher: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Area North of I-10 and Aquatic Environment

Table H-15. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 1A

Scenario: Baseline, Scenario 1A

Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans																
TEQdf1/2DL	2.3E-04	1.3E-03	1.1E+00	1.1E+00	9.9E-07	8.8E-05	1.4E-01	1.4E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	3.5E-04	2.0E-03	5.3E-02	5.5E-02	1.5E-06	1.3E-04	4.4E-03	4.5E-03	1.7E-08	2.7E-07	4.2E-06	4.5E-06	1.0E-10	9.2E-09	2.4E-07	2.5E-07
Cadmium	7.0E-05	6.6E-06	1.9E-04	2.7E-04	4.5E-07	6.6E-07	1.8E-05	1.9E-05	--	--	--	--	--	--	--	--
Chromium	3.9E-07	7.3E-07	4.3E-06	5.4E-06	1.8E-09	5.3E-08	4.8E-07	5.3E-07	--	--	--	--	--	--	--	--
Copper	6.2E-05	5.8E-03	1.3E-03	7.2E-03	9.0E-08	1.3E-04	1.8E-04	3.1E-04	--	--	--	--	--	--	--	--
Mercury	2.4E-05	6.9E-05	2.7E-01	2.7E-01	8.8E-08	3.9E-06	2.4E-02	2.4E-02	--	--	--	--	--	--	--	--
Nickel	1.3E-05	5.0E-05	3.0E-04	3.6E-04	7.0E-08	4.2E-06	2.5E-05	2.9E-05	--	--	--	--	--	--	--	--
Zinc	2.0E-05	1.9E-03	1.1E-02	1.3E-02	5.0E-08	7.4E-05	1.5E-03	1.5E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	8.8E-01	8.8E-01	--	--	1.1E-01	1.1E-01	--	--	7.9E-06	7.9E-06	--	--	3.4E-07	3.4E-07
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	3.3E-07	3.2E-06	9.8E-04	9.8E-04	2.1E-09	3.2E-07	1.4E-04	1.4E-04	9.9E-12	2.6E-10	6.2E-08	6.2E-08	9.1E-14	1.4E-11	6.0E-09	6.0E-09
PATHWAY TOTALS ACROSS $COPC_H$s	7.7E-04	1.1E-02	**2.3E+00**	**2.3E+00**	3.2E-06	4.4E-04	2.8E-01	2.8E-01	1.7E-08	2.7E-07	1.2E-05	1.2E-05	1.0E-10	9.2E-09	5.9E-07	5.9E-07
TOTAL PATHWAY CONTRIBUTION	0.03%	0.48%	99.48%	100%	0.00%	0.16%	99.84%	100%	0.13%	2.15%	97.72%	100%	0.02%	1.55%	98.44%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	7.0E-05	3.9E-04	3.3E-01	3.3E-01	3.0E-07	2.7E-05	4.1E-02	4.1E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	0.02%	0.12%	99.86%	100%	0.00%	0.06%	99.93%	100%

Table H-16. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 1B

Scenario: Baseline, Scenario 1B

Exposure Units: Beach Area A, FCA 1/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans																
TEQdf1/2DL	2.3E-04	1.3E-03	1.9E-02	2.0E-02	9.9E-07	8.8E-05	2.3E-03	2.4E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	3.5E-04	2.0E-03	1.7E-03	4.1E-03	1.5E-06	1.3E-04	2.6E-04	3.9E-04	1.7E-08	2.7E-07	1.7E-07	4.6E-07	1.0E-10	9.2E-09	1.4E-08	2.3E-08
Cadmium	7.0E-05	6.6E-06	2.1E-04	2.9E-04	4.5E-07	6.6E-07	3.2E-05	3.3E-05	--	--	--	--	--	--	--	--
Chromium	3.9E-07	7.3E-07	1.1E-06	2.2E-06	1.8E-09	5.3E-08	1.4E-07	2.0E-07	--	--	--	--	--	--	--	--
Copper	6.2E-05	5.8E-03	6.7E-04	6.5E-03	9.0E-08	1.3E-04	7.2E-05	2.1E-04	--	--	--	--	--	--	--	--
Mercury	2.4E-05	6.9E-05	1.0E-03	1.1E-03	8.8E-08	3.9E-06	1.4E-04	1.4E-04	--	--	--	--	--	--	--	--
Nickel	1.3E-05	5.0E-05	6.2E-04	6.9E-04	7.0E-08	4.2E-06	8.7E-05	9.1E-05	--	--	--	--	--	--	--	--
Zinc	2.0E-05	1.9E-03	2.8E-04	2.2E-03	5.0E-08	7.4E-05	4.1E-05	1.1E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	8.6E-03	8.6E-03	--	--	1.2E-03	1.2E-03	--	--	9.5E-08	9.5E-08	--	--	3.7E-09	3.7E-09
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	3.3E-07	3.2E-06	4.1E-05	4.5E-05	2.1E-09	3.2E-07	6.6E-06	6.9E-06	9.9E-12	2.6E-10	3.2E-09	3.5E-09	9.1E-14	1.4E-11	2.8E-10	3.0E-10
PATHWAY TOTALS ACROSS $COPC_H$s	7.7E-04	1.1E-02	3.2E-02	4.4E-02	3.2E-06	4.4E-04	4.1E-03	4.6E-03	1.7E-08	2.7E-07	2.7E-07	5.5E-07	1.0E-10	9.2E-09	1.8E-08	2.7E-08
TOTAL PATHWAY CONTRIBUTION	1.77%	25.50%	72.73%	100%	0.07%	9.63%	90.29%	100%	3.04%	48.43%	48.53%	100%	0.37%	33.49%	66.13%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	7.0E-05	3.9E-04	5.7E-03	6.1E-03	3.0E-07	2.7E-05	6.9E-04	7.2E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	1.14%	6.44%	92.42%	100%	0.04%	3.74%	96.22%	100%

Table H-17. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 1C

Scenario: Baseline, Scenario 1C

Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans																
TEQdf1/2DL	2.3E-04	1.3E-03	3.2E-03	4.8E-03	9.9E-07	8.8E-05	2.9E-04	3.8E-04	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	3.5E-04	2.0E-03	1.5E-03	3.9E-03	1.5E-06	1.3E-04	2.3E-04	3.6E-04	1.7E-08	2.7E-07	1.5E-07	4.3E-07	1.0E-10	9.2E-09	1.2E-08	2.2E-08
Cadmium	7.0E-05	6.6E-06	1.6E-04	2.4E-04	4.5E-07	6.6E-07	1.3E-05	1.4E-05	--	--	--	--	--	--	--	--
Chromium	3.9E-07	7.3E-07	1.4E-07	1.3E-06	1.8E-09	5.3E-08	8.2E-09	6.3E-08	--	--	--	--	--	--	--	--
Copper	6.2E-05	5.8E-03	2.2E-03	8.1E-03	9.0E-08	1.3E-04	3.3E-04	4.6E-04	--	--	--	--	--	--	--	--
Mercury	2.4E-05	6.9E-05	3.0E-03	3.1E-03	8.8E-08	3.9E-06	4.2E-04	4.3E-04	--	--	--	--	--	--	--	--
Nickel	1.3E-05	5.0E-05	2.7E-05	9.0E-05	7.0E-08	4.2E-06	2.2E-06	6.4E-06	--	--	--	--	--	--	--	--
Zinc	2.0E-05	1.9E-03	1.3E-03	3.2E-03	5.0E-08	7.4E-05	2.0E-04	2.7E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.8E-03	2.8E-03	--	--	2.9E-04	2.9E-04	--	--	3.1E-08	3.1E-08	--	--	9.1E-10	9.1E-10
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	3.3E-07	3.2E-06	4.1E-05	4.5E-05	2.1E-09	3.2E-07	6.6E-06	6.9E-06	9.9E-12	2.6E-10	3.2E-09	3.5E-09	9.1E-14	1.4E-11	2.8E-10	3.0E-10
PATHWAY TOTALS ACROSS $COPC_H$s	7.7E-04	1.1E-02	1.4E-02	2.6E-02	3.2E-06	4.4E-04	1.8E-03	2.2E-03	1.7E-08	2.7E-07	1.8E-07	4.7E-07	1.0E-10	9.2E-09	1.3E-08	2.3E-08
TOTAL PATHWAY CONTRIBUTION	2.94%	42.47%	54.59%	100%	0.14%	19.73%	80.13%	100%	3.58%	57.12%	39.30%	100%	0.45%	40.38%	59.17%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	7.0E-05	3.9E-04	9.8E-04	1.4E-03	3.0E-07	2.7E-05	8.9E-05	1.2E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	4.82%	27.31%	67.87%	100%	0.26%	23.07%	76.67%	100%

Table H-18. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 2A

Scenario: Baseline, Scenario 2A

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans																
TEQdf1/2DL	3.2E-03	1.8E-02	1.1E+00	1.1E+00	1.3E-05	1.2E-03	1.4E-01	1.4E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	3.0E-03	1.7E-02	5.3E-02	7.2E-02	1.2E-05	1.1E-03	4.4E-03	5.5E-03	1.4E-07	2.2E-06	4.2E-06	6.6E-06	8.2E-10	7.3E-08	2.4E-07	3.1E-07
Cadmium	1.5E-04	1.4E-05	1.9E-04	3.6E-04	3.7E-07	5.4E-07	1.8E-05	1.9E-05	--	--	--	--	--	--	--	--
Chromium	1.0E-05	1.9E-05	4.3E-06	3.4E-05	2.4E-08	7.2E-07	4.8E-07	1.2E-06	--	--	--	--	--	--	--	--
Copper	1.2E-04	1.2E-02	1.3E-03	1.3E-02	6.3E-07	9.5E-04	1.8E-04	1.1E-03	--	--	--	--	--	--	--	--
Mercury	4.7E-05	1.3E-04	2.7E-01	2.7E-01	1.5E-07	6.6E-06	2.4E-02	2.4E-02	--	--	--	--	--	--	--	--
Nickel	3.1E-04	1.2E-03	3.0E-04	1.8E-03	1.2E-06	6.9E-05	2.5E-05	9.4E-05	--	--	--	--	--	--	--	--
Zinc	1.1E-04	1.1E-02	1.1E-02	2.2E-02	3.7E-07	5.5E-04	1.5E-03	2.0E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	8.8E-01	8.8E-01	--	--	1.1E-01	1.1E-01	--	--	7.9E-06	7.9E-06	--	--	3.4E-07	3.4E-07
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	3.3E-06	3.1E-05	9.8E-04	1.0E-03	5.3E-09	7.9E-07	1.4E-04	1.4E-04	9.7E-11	2.6E-09	6.2E-08	6.5E-08	2.3E-13	3.4E-11	6.0E-09	6.1E-09
PATHWAY TOTALS ACROSS $COPC_H$s	6.9E-03	5.8E-02	**2.3E+00**	**2.4E+00**	2.7E-05	3.8E-03	2.8E-01	2.8E-01	1.4E-07	2.3E-06	1.2E-05	1.5E-05	8.2E-10	7.3E-08	5.9E-07	6.6E-07
TOTAL PATHWAY CONTRIBUTION	0.29%	2.47%	97.23%	100%	0.01%	1.35%	98.64%	100%	0.97%	15.43%	83.60%	100%	0.12%	11.08%	88.79%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	9.7E-04	5.5E-03	3.3E-01	3.4E-01	4.0E-06	3.5E-04	4.1E-02	4.2E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	0.29%	1.64%	98.07%	100%	0.01%	0.85%	99.14%	100%

Table H-19. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 2B

Scenario: Baseline, Scenario 2B

Exposure Units: Beach Area B/C, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans																
TEQdf1/2DL	3.2E-03	1.8E-02	2.1E-01	2.4E-01	1.3E-05	1.2E-03	7.9E-03	9.1E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	3.0E-03	1.7E-02	2.0E-03	2.2E-02	1.2E-05	1.1E-03	2.9E-04	1.4E-03	1.4E-07	2.2E-06	1.9E-07	2.6E-06	8.2E-10	7.3E-08	1.6E-08	9.0E-08
Cadmium	1.5E-04	1.4E-05	2.3E-04	4.0E-04	3.7E-07	5.4E-07	3.4E-05	3.5E-05	--	--	--	--	--	--	--	--
Chromium	1.0E-05	1.9E-05	1.2E-06	3.1E-05	2.4E-08	7.2E-07	1.3E-07	8.7E-07	--	--	--	--	--	--	--	--
Copper	1.2E-04	1.2E-02	7.9E-04	1.3E-02	6.3E-07	9.5E-04	8.2E-05	1.0E-03	--	--	--	--	--	--	--	--
Mercury	4.7E-05	1.3E-04	9.0E-04	1.1E-03	1.5E-07	6.6E-06	1.2E-04	1.3E-04	--	--	--	--	--	--	--	--
Nickel	3.1E-04	1.2E-03	5.1E-04	2.0E-03	1.2E-06	6.9E-05	7.4E-05	1.4E-04	--	--	--	--	--	--	--	--
Zinc	1.1E-04	1.1E-02	3.0E-04	1.1E-02	3.7E-07	5.5E-04	4.5E-05	5.9E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.0E-02	2.0E-02	--	--	1.6E-03	1.6E-03	--	--	2.2E-07	2.2E-07	--	--	5.0E-09	5.0E-09
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	3.3E-06	3.1E-05	4.1E-05	7.6E-05	5.3E-09	7.9E-07	6.6E-06	7.4E-06	9.7E-11	2.6E-09	3.2E-09	5.9E-09	2.3E-13	3.4E-11	2.8E-10	3.2E-10
PATHWAY TOTALS ACROSS $COPC_H$s	6.9E-03	5.8E-02	2.4E-01	3.0E-01	2.7E-05	3.8E-03	1.0E-02	1.4E-02	1.4E-07	2.3E-06	4.1E-07	2.8E-06	8.2E-10	7.3E-08	2.1E-08	9.5E-08
TOTAL PATHWAY CONTRIBUTION	2.27%	19.22%	78.51%	100%	0.20%	27.07%	72.73%	100%	5.03%	80.27%	14.70%	100%	0.86%	76.97%	22.17%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	9.7E-04	5.5E-03	6.5E-02	7.2E-02	4.0E-06	3.5E-04	2.4E-03	2.8E-03
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	1.36%	7.68%	90.96%	100%	0.14%	12.82%	87.04%	100%

Table H-20. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 2C

Scenario: Baseline, Scenario 2C

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	3.2E-03	1.8E-02	3.2E-03	2.5E-02	1.3E-05	1.2E-03	2.9E-04	1.5E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	3.0E-03	1.7E-02	1.5E-03	2.1E-02	1.2E-05	1.1E-03	2.3E-04	1.3E-03	1.4E-07	2.2E-06	1.5E-07	2.5E-06	8.2E-10	7.3E-08	1.2E-08	8.6E-08
Cadmium	1.5E-04	1.4E-05	1.6E-04	3.2E-04	3.7E-07	5.4E-07	1.3E-05	1.4E-05	--	--	--	--	--	--	--	--
Chromium	1.0E-05	1.9E-05	1.4E-07	3.0E-05	2.4E-08	7.2E-07	8.2E-09	7.5E-07	--	--	--	--	--	--	--	--
Copper	1.2E-04	1.2E-02	2.2E-03	1.4E-02	6.3E-07	9.5E-04	3.3E-04	1.3E-03	--	--	--	--	--	--	--	--
Mercury	4.7E-05	1.3E-04	3.0E-03	3.2E-03	1.5E-07	6.6E-06	4.2E-04	4.3E-04	--	--	--	--	--	--	--	--
Nickel	3.1E-04	1.2E-03	2.7E-05	1.5E-03	1.2E-06	6.9E-05	2.2E-06	7.2E-05	--	--	--	--	--	--	--	--
Zinc	1.1E-04	1.1E-02	1.3E-03	1.2E-02	3.7E-07	5.5E-04	2.0E-04	7.4E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners (ND = 1/2DL)	--	--	2.8E-03	2.8E-03	--	--	2.9E-04	2.9E-04	--	--	3.1E-08	3.1E-08	--	--	9.1E-10	9.1E-10
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	3.3E-06	3.1E-05	4.1E-05	7.6E-05	5.3E-09	7.9E-07	6.6E-06	7.4E-06	9.7E-11	2.6E-09	3.2E-09	5.9E-09	2.3E-13	3.4E-11	2.8E-10	3.2E-10
PATHWAY TOTALS ACROSS $COPC_H$s	6.9E-03	5.8E-02	1.4E-02	8.0E-02	2.7E-05	3.8E-03	1.8E-03	5.6E-03	1.4E-07	2.3E-06	1.8E-07	2.6E-06	8.2E-10	7.3E-08	1.3E-08	8.7E-08
TOTAL PATHWAY CONTRIBUTION	8.66%	73.37%	17.97%	100%	0.49%	67.66%	31.84%	100%	5.48%	87.37%	7.15%	100%	0.94%	83.63%	15.43%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	9.7E-04	5.5E-03	9.8E-04	7.5E-03	4.0E-06	3.5E-04	8.9E-05	4.5E-04
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	13.02%	73.82%	13.16%	100%	0.89%	79.17%	19.95%	100%

Table H-21. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 3A

Scenario: Baseline, Scenario 3A

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	**6.5E+00**	**3.7E+01**	1.1E+00	**4.5E+01**	2.9E-03	2.6E-01	1.4E-01	4.0E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	2.2E-03	1.3E-02	5.3E-02	6.7E-02	1.3E-05	1.1E-03	4.4E-03	5.5E-03	1.1E-07	1.7E-06	4.2E-06	6.0E-06	8.7E-10	7.8E-08	2.4E-07	3.2E-07
Cadmium	1.1E-03	1.1E-04	1.9E-04	1.4E-03	1.3E-06	2.0E-06	1.8E-05	2.1E-05	--	--	--	--	--	--	--	--
Chromium	7.5E-06	1.4E-05	4.3E-06	2.6E-05	2.4E-08	7.1E-07	4.8E-07	1.2E-06	--	--	--	--	--	--	--	--
Copper	1.0E-03	9.5E-02	1.3E-03	9.8E-02	1.8E-06	2.7E-03	1.8E-04	2.8E-03	--	--	--	--	--	--	--	--
Mercury	4.7E-03	1.3E-02	2.7E-01	2.9E-01	3.0E-06	1.3E-04	2.4E-02	2.4E-02	--	--	--	--	--	--	--	--
Nickel	3.3E-04	1.2E-03	3.0E-04	1.9E-03	1.6E-06	9.4E-05	2.5E-05	1.2E-04	--	--	--	--	--	--	--	--
Zinc	5.2E-04	4.9E-02	1.1E-02	6.1E-02	9.6E-07	1.4E-03	1.5E-03	2.9E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	4.9E-02	6.5E-01	--	7.0E-01	1.2E-04	2.6E-02	--	2.6E-02	2.1E-07	7.8E-06	--	8.0E-06	3.8E-10	8.0E-08	--	8.0E-08
Sum of 43 Congeners - 1/2DL	--	--	8.8E-01	8.8E-01	--	--	1.1E-01	1.1E-01	--	--	7.9E-06	7.9E-06	--	--	3.4E-07	3.4E-07
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	2.4E-05	2.3E-04	9.8E-04	1.2E-03	4.7E-08	7.0E-06	1.4E-04	1.5E-04	7.2E-10	1.9E-08	6.2E-08	8.2E-08	2.0E-12	3.0E-10	6.0E-09	6.3E-09
PATHWAY TOTALS ACROSS $COPC_H$s	**6.6E+00**	**3.8E+01**	**2.3E+00**	**4.7E+01**	3.0E-03	2.9E-01	2.8E-01	5.7E-01	3.2E-07	9.5E-06	1.2E-05	2.2E-05	1.3E-09	1.6E-07	5.9E-07	7.4E-07
TOTAL PATHWAY CONTRIBUTION	14.10%	80.98%	4.92%	100%	0.53%	50.88%	48.59%	100%	1.44%	43.13%	55.44%	100%	0.17%	21.27%	78.57%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	**2.0E+00**	**1.1E+01**	3.3E-01	**1.4E+01**	8.8E-04	7.9E-02	4.1E-02	1.2E-01
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	14.63%	82.94%	2.43%	100%	0.73%	65.03%	34.24%	100%

Table H-22. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 3B

Scenario: Baseline, Scenario 3B

Exposure Units: Beach Area E, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	**6.5E+00**	**3.7E+01**	2.1E-01	**4.4E+01**	2.9E-03	2.6E-01	7.9E-03	2.7E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	2.2E-03	1.3E-02	2.0E-03	1.7E-02	1.3E-05	1.1E-03	2.9E-04	1.4E-03	1.1E-07	1.7E-06	1.9E-07	2.0E-06	8.7E-10	7.8E-08	1.6E-08	9.5E-08
Cadmium	1.1E-03	1.1E-04	2.3E-04	1.5E-03	1.3E-06	2.0E-06	3.4E-05	3.8E-05	--	--	--	--	--	--	--	--
Chromium	7.5E-06	1.4E-05	1.2E-06	2.3E-05	2.4E-08	7.1E-07	1.3E-07	8.7E-07	--	--	--	--	--	--	--	--
Copper	1.0E-03	9.5E-02	7.9E-04	9.7E-02	1.8E-06	2.7E-03	8.2E-05	2.8E-03	--	--	--	--	--	--	--	--
Mercury	4.7E-03	1.3E-02	9.0E-04	1.9E-02	3.0E-06	1.3E-04	1.2E-04	2.6E-04	--	--	--	--	--	--	--	--
Nickel	3.3E-04	1.2E-03	5.1E-04	2.1E-03	1.6E-06	9.4E-05	7.4E-05	1.7E-04	--	--	--	--	--	--	--	--
Zinc	5.2E-04	4.9E-02	3.0E-04	5.0E-02	9.6E-07	1.4E-03	4.5E-05	1.5E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	4.9E-02	6.5E-01	--	7.0E-01	1.2E-04	2.6E-02	--	2.6E-02	2.1E-07	7.8E-06	--	8.0E-06	3.8E-10	8.0E-08	--	8.0E-08
Sum of 43 Congeners - 1/2DL	--	--	2.0E-02	2.0E-02	--	--	1.6E-03	1.6E-03	--	--	2.2E-07	2.2E-07	--	--	5.0E-09	5.0E-09
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	2.4E-05	2.3E-04	4.1E-05	3.0E-04	4.7E-08	7.0E-06	6.6E-06	1.4E-05	7.2E-10	1.9E-08	3.2E-09	2.3E-08	2.0E-12	3.0E-10	2.8E-10	5.9E-10
PATHWAY TOTALS ACROSS $COPC_H$s	**6.6E+00**	**3.8E+01**	2.4E-01	**4.5E+01**	3.0E-03	2.9E-01	1.0E-02	3.0E-01	3.2E-07	9.5E-06	4.1E-07	1.0E-05	1.3E-09	1.6E-07	2.1E-08	1.8E-07
TOTAL PATHWAY CONTRIBUTION	14.75%	84.71%	0.53%	100%	1.00%	95.65%	3.35%	100%	3.09%	92.87%	4.04%	100%	0.70%	87.66%	11.64%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	**2.0E+00**	**1.1E+01**	6.5E-02	**1.3E+01**	8.8E-04	7.9E-02	2.4E-03	8.2E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	14.92%	84.59%	0.49%	100%	1.07%	96.00%	2.93%	100%

Table H-23. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 3C

Scenario: Baseline, Scenario 3C

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	**6.5E+00**	**3.7E+01**	3.2E-03	**4.4E+01**	2.9E-03	2.6E-01	2.9E-04	2.6E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	2.2E-03	1.3E-02	1.5E-03	1.6E-02	1.3E-05	1.1E-03	2.3E-04	1.4E-03	1.1E-07	1.7E-06	1.5E-07	2.0E-06	8.7E-10	7.8E-08	1.2E-08	9.1E-08
Cadmium	1.1E-03	1.1E-04	1.6E-04	1.4E-03	1.3E-06	2.0E-06	1.3E-05	1.6E-05	--	--	--	--	--	--	--	--
Chromium	7.5E-06	1.4E-05	1.4E-07	2.2E-05	2.4E-08	7.1E-07	8.2E-09	7.4E-07	--	--	--	--	--	--	--	--
Copper	1.0E-03	9.5E-02	2.2E-03	9.9E-02	1.8E-06	2.7E-03	3.3E-04	3.0E-03	--	--	--	--	--	--	--	--
Mercury	4.7E-03	1.3E-02	3.0E-03	2.1E-02	3.0E-06	1.3E-04	4.2E-04	5.6E-04	--	--	--	--	--	--	--	--
Nickel	3.3E-04	1.2E-03	2.7E-05	1.6E-03	1.6E-06	9.4E-05	2.2E-06	9.8E-05	--	--	--	--	--	--	--	--
Zinc	5.2E-04	4.9E-02	1.3E-03	5.1E-02	9.6E-07	1.4E-03	2.0E-04	1.6E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	4.9E-02	6.5E-01	--	7.0E-01	1.2E-04	2.6E-02	--	2.6E-02	2.1E-07	7.8E-06	--	8.0E-06	3.8E-10	8.0E-08	--	8.0E-08
Sum of 43 Congeners - 1/2DL	--	--	2.8E-03	2.8E-03	--	--	2.9E-04	2.9E-04	--	--	3.1E-08	3.1E-08	--	--	--	--
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	2.4E-05	2.3E-04	4.1E-05	3.0E-04	4.7E-08	7.0E-06	6.6E-06	1.4E-05	7.2E-10	1.9E-08	3.2E-09	2.3E-08	2.0E-12	3.0E-10	2.8E-10	5.9E-10
PATHWAY TOTALS ACROSS $COPC_H$s	**6.6E+00**	**3.8E+01**	1.4E-02	**4.4E+01**	3.0E-03	2.9E-01	1.8E-03	2.9E-01	3.2E-07	9.5E-06	1.8E-07	1.0E-05	1.3E-09	1.6E-07	1.3E-08	1.7E-07
TOTAL PATHWAY CONTRIBUTION	14.83%	85.14%	0.03%	100%	1.03%	98.37%	0.60%	100%	3.16%	94.99%	1.85%	100%	0.73%	91.97%	7.30%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	**2.0E+00**	**1.1E+01**	9.8E-04	**1.3E+01**	8.8E-04	7.9E-02	8.9E-05	8.0E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	15.00%	85.00%	0.01%	100%	1.11%	98.78%	0.11%	100%

Table H-24. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 4A

Scenario: Baseline, Scenario 4A

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.1E-03	6.0E-03	1.0E+00	1.1E+00	4.5E-06	4.0E-04	1.1E-01	1.1E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	2.8E-03	1.6E-02	4.5E-02	6.4E-02	1.4E-05	1.3E-03	5.5E-03	6.7E-03	1.4E-07	2.2E-06	3.6E-06	5.9E-06	9.9E-10	8.9E-08	3.0E-07	3.9E-07
Cadmium	3.0E-04	2.9E-05	4.4E-04	7.8E-04	1.5E-06	2.2E-06	2.5E-05	2.8E-05	--	--	--	--	--	--	--	--
Chromium	5.3E-06	1.0E-05	1.2E-05	2.7E-05	1.8E-08	5.3E-07	5.9E-07	1.1E-06	--	--	--	--	--	--	--	--
Copper	1.4E-04	1.3E-02	2.4E-03	1.6E-02	6.5E-07	9.7E-04	2.3E-04	1.2E-03	--	--	--	--	--	--	--	--
Mercury	9.4E-05	2.7E-04	3.6E-01	3.6E-01	3.0E-07	1.3E-05	4.2E-02	4.2E-02	--	--	--	--	--	--	--	--
Nickel	2.3E-04	8.6E-04	5.7E-04	1.7E-03	1.2E-06	7.2E-05	3.6E-05	1.1E-04	--	--	--	--	--	--	--	--
Zinc	1.1E-04	1.0E-02	1.8E-02	2.9E-02	4.4E-07	6.6E-04	1.8E-03	2.4E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	9.7E-01	9.7E-01	--	--	1.1E-01	1.1E-01	--	--	8.8E-06	8.8E-06	--	--	3.5E-07	3.5E-07
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.7E-06	1.6E-05	9.8E-04	1.0E-03	7.1E-09	1.1E-06	1.4E-04	1.4E-04	5.1E-11	1.4E-09	6.2E-08	6.3E-08	3.1E-13	4.6E-11	6.0E-09	6.1E-09
PATHWAY TOTALS ACROSS $COPC_H$s	4.8E-03	4.7E-02	**2.4E+00**	**2.5E+00**	2.3E-05	3.4E-03	2.7E-01	2.8E-01	1.4E-07	2.2E-06	1.2E-05	1.5E-05	9.9E-10	8.9E-08	6.5E-07	7.4E-07
TOTAL PATHWAY CONTRIBUTION	0.19%	1.87%	97.94%	100%	0.01%	1.22%	98.77%	100%	0.93%	14.77%	84.30%	100%	0.13%	11.97%	87.89%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	3.2E-04	1.8E-03	3.2E-01	3.2E-01	1.4E-06	1.2E-04	3.4E-02	3.4E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	0.10%	0.57%	99.33%	100%	0.00%	0.36%	99.64%	100%

Table H-25. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 4B

Scenario: Baseline, Scenario 4B

Exposure Units: Beach Area D, FCA 1/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.1E-03	6.0E-03	1.9E-02	2.6E-02	4.5E-06	4.0E-04	2.3E-03	2.7E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	2.8E-03	1.6E-02	1.7E-03	2.1E-02	1.4E-05	1.3E-03	2.6E-04	1.6E-03	1.4E-07	2.2E-06	1.7E-07	2.5E-06	9.9E-10	8.9E-08	1.4E-08	1.0E-07
Cadmium	3.0E-04	2.9E-05	2.1E-04	5.4E-04	1.5E-06	2.2E-06	3.2E-05	3.5E-05	--	--	--	--	--	--	--	--
Chromium	5.3E-06	1.0E-05	1.1E-06	1.6E-05	1.8E-08	5.3E-07	1.4E-07	6.9E-07	--	--	--	--	--	--	--	--
Copper	1.4E-04	1.3E-02	6.7E-04	1.4E-02	6.5E-07	9.7E-04	7.2E-05	1.0E-03	--	--	--	--	--	--	--	--
Mercury	9.4E-05	2.7E-04	1.0E-03	1.4E-03	3.0E-07	1.3E-05	1.4E-04	1.5E-04	--	--	--	--	--	--	--	--
Nickel	2.3E-04	8.6E-04	6.2E-04	1.7E-03	1.2E-06	7.2E-05	8.7E-05	1.6E-04	--	--	--	--	--	--	--	--
Zinc	1.1E-04	1.0E-02	2.8E-04	1.1E-02	4.4E-07	6.6E-04	4.1E-05	7.0E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	8.6E-03	8.6E-03	--	--	1.2E-03	1.2E-03	--	--	9.5E-08	9.5E-08	--	--	3.7E-09	3.7E-09
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.7E-06	1.6E-05	4.1E-05	6.0E-05	7.1E-09	1.1E-06	6.6E-06	7.6E-06	5.1E-11	1.4E-09	3.2E-09	4.6E-09	3.1E-13	4.6E-11	2.8E-10	3.3E-10
PATHWAY TOTALS ACROSS $COPC_H$s	4.8E-03	4.7E-02	3.2E-02	8.3E-02	2.3E-05	3.4E-03	4.1E-03	7.5E-03	1.4E-07	2.2E-06	2.7E-07	2.6E-06	9.9E-10	8.9E-08	1.8E-08	1.1E-07
TOTAL PATHWAY CONTRIBUTION	5.76%	56.03%	38.21%	100%	0.30%	45.15%	54.55%	100%	5.28%	84.29%	10.43%	100%	0.92%	82.24%	16.84%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	3.2E-04	1.8E-03	5.7E-03	7.8E-03	1.4E-06	1.2E-04	6.9E-04	8.1E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	4.14%	23.47%	72.39%	100%	0.17%	15.08%	84.75%	100%

Table H-26. Hazards and Risks for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 4C

Scenario: Baseline, Scenario 4C

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.1E-03	6.0E-03	1.2E-02	1.9E-02	4.5E-06	4.0E-04	1.3E-03	1.7E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	2.8E-03	1.6E-02	1.7E-03	2.1E-02	1.4E-05	1.3E-03	2.5E-04	1.5E-03	1.4E-07	2.2E-06	1.7E-07	2.5E-06	9.9E-10	8.9E-08	1.3E-08	1.0E-07
Cadmium	3.0E-04	2.9E-05	1.9E-04	5.2E-04	1.5E-06	2.2E-06	1.9E-05	2.2E-05	--	--	--	--	--	--	--	--
Chromium	5.3E-06	1.0E-05	3.3E-07	1.6E-05	1.8E-08	5.3E-07	3.9E-08	5.9E-07	--	--	--	--	--	--	--	--
Copper	1.4E-04	1.3E-02	2.7E-03	1.6E-02	6.5E-07	9.7E-04	3.5E-04	1.3E-03	--	--	--	--	--	--	--	--
Mercury	9.4E-05	2.7E-04	4.6E-03	4.9E-03	3.0E-07	1.3E-05	6.6E-04	6.7E-04	--	--	--	--	--	--	--	--
Nickel	2.3E-04	8.6E-04	2.1E-05	1.1E-03	1.2E-06	7.2E-05	2.6E-06	7.6E-05	--	--	--	--	--	--	--	--
Zinc	1.1E-04	1.0E-02	1.4E-03	1.2E-02	4.4E-07	6.6E-04	2.1E-04	8.7E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	1.3E-03	1.3E-03	--	--	7.3E-05	7.3E-05	--	--	1.5E-08	1.5E-08	--	--	2.2E-10	2.2E-10
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.7E-06	1.6E-05	4.1E-05	6.0E-05	7.1E-09	1.1E-06	6.6E-06	7.6E-06	5.1E-11	1.4E-09	3.2E-09	4.6E-09	3.1E-13	4.6E-11	2.8E-10	3.3E-10
PATHWAY TOTALS ACROSS $COPC_H$s	4.8E-03	4.7E-02	2.4E-02	7.5E-02	2.3E-05	3.4E-03	2.9E-03	6.3E-03	1.4E-07	2.2E-06	1.9E-07	2.5E-06	9.9E-10	8.9E-08	1.4E-08	1.0E-07
TOTAL PATHWAY CONTRIBUTION	6.35%	61.78%	31.87%	100%	0.36%	53.94%	45.70%	100%	5.45%	87.01%	7.54%	100%	0.96%	85.58%	13.46%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	3.2E-04	1.8E-03	3.7E-03	5.8E-03	1.4E-06	1.2E-04	4.0E-04	5.3E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	5.55%	31.48%	62.97%	100%	0.26%	23.36%	76.38%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

FCA = fish collection area

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQDF were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

Hypothetical Subsistence Fisher: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Area North of I-10 and Aquatic Environment

Table H-27. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 1A

Scenario: Baseline, Scenario 1A

Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.1E-04	3.5E-03	**9.2E+00**	**9.2E+00**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	9.4E-04	5.3E-03	4.4E-01	4.5E-01	4.5E-08	7.1E-07	4.0E-05	4.0E-05
Cadmium	1.9E-04	1.8E-05	1.6E-03	1.8E-03	--	--	--	--
Chromium	1.0E-06	2.0E-06	3.7E-05	4.0E-05	--	--	--	--
Copper	1.6E-04	1.5E-02	1.1E-02	2.7E-02	--	--	--	--
Mercury	6.5E-05	1.8E-04	**2.3E+00**	**2.3E+00**	--	--	--	--
Nickel	3.5E-05	1.3E-04	2.5E-03	2.7E-03	--	--	--	--
Zinc	5.4E-05	5.1E-03	9.5E-02	1.0E-01	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	**7.4E+00**	**7.4E+00**	--	--	7.5E-05	7.5E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.9E-07	8.4E-06	8.3E-03	8.3E-03	2.6E-11	7.0E-10	5.9E-07	5.9E-07
PATHWAY TOTALS ACROSS $COPC_H$S	2.1E-03	3.0E-02	**1.9E+01**	**1.9E+01**	4.5E-08	7.1E-07	1.2E-04	1.2E-04
TOTAL PATHWAY CONTRIBUTION	0.01%	0.15%	99.84%	100%	0.04%	0.62%	99.35%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	1.9E-04	1.1E-03	**2.8E+00**	**2.8E+00**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	0.01%	0.04%	99.96%	100%

Table H-28. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 1E

Scenario: Baseline, Scenario 1B

Exposure Units: Beach Area A, FCA 1/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.1E-04	3.5E-03	2.5E-01	2.5E-01	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	9.4E-04	5.3E-03	2.3E-02	3.0E-02	4.5E-08	7.1E-07	2.4E-06	3.1E-06
Cadmium	1.9E-04	1.8E-05	2.8E-03	3.0E-03	--	--	--	--
Chromium	1.0E-06	2.0E-06	1.4E-05	1.7E-05	--	--	--	--
Copper	1.6E-04	1.5E-02	8.9E-03	2.5E-02	--	--	--	--
Mercury	6.5E-05	1.8E-04	1.3E-02	1.4E-02	--	--	--	--
Nickel	3.5E-05	1.3E-04	8.3E-03	8.5E-03	--	--	--	--
Zinc	5.4E-05	5.1E-03	3.7E-03	8.9E-03	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	1.1E-01	1.1E-01	--	--	1.3E-06	1.3E-06
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.9E-07	8.4E-06	5.5E-04	5.6E-04	2.6E-11	7.0E-10	4.5E-08	4.5E-08
PATHWAY TOTALS ACROSS $COPC_H$s	2.1E-03	3.0E-02	4.2E-01	4.6E-01	4.5E-08	7.1E-07	3.7E-06	4.5E-06
TOTAL PATHWAY CONTRIBUTION	0.45%	6.52%	93.02%	100%	0.99%	15.85%	83.16%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	1.9E-04	1.1E-03	7.6E-02	7.7E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	0.24%	1.37%	98.39%	100%

Table H-29. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 1C

Scenario: Baseline, Scenario 1C

Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.1E-04	3.5E-03	4.3E-02	4.7E-02	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	9.4E-04	5.3E-03	2.0E-02	2.7E-02	4.5E-08	7.1E-07	2.1E-06	2.9E-06
Cadmium	1.9E-04	1.8E-05	2.1E-03	2.3E-03	--	--	--	--
Chromium	1.0E-06	2.0E-06	1.8E-06	4.8E-06	--	--	--	--
Copper	1.6E-04	1.5E-02	2.9E-02	4.5E-02	--	--	--	--
Mercury	6.5E-05	1.8E-04	4.0E-02	4.0E-02	--	--	--	--
Nickel	3.5E-05	1.3E-04	3.6E-04	5.2E-04	--	--	--	--
Zinc	5.4E-05	5.1E-03	1.8E-02	2.3E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	3.8E-02	3.8E-02	--	--	4.4E-07	4.4E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.9E-07	8.4E-06	5.5E-04	5.6E-04	2.6E-11	7.0E-10	4.5E-08	4.5E-08
PATHWAY TOTALS ACROSS $COPC_H$s	2.1E-03	3.0E-02	1.9E-01	2.2E-01	4.5E-08	7.1E-07	2.6E-06	3.3E-06
TOTAL PATHWAY CONTRIBUTION	0.92%	13.34%	85.74%	100%	1.34%	21.44%	77.22%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	1.9E-04	1.1E-03	1.3E-02	1.4E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	1.30%	7.35%	91.35%	100%

Table H-30. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 2A

Scenario: Baseline, Scenario 2A

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	8.5E-03	4.8E-02	**9.2E+00**	**9.2E+00**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	7.9E-03	4.5E-02	4.4E-01	5.0E-01	3.8E-07	6.0E-06	4.0E-05	4.6E-05
Cadmium	4.0E-04	3.8E-05	1.6E-03	2.1E-03	--	--	--	--
Chromium	2.7E-05	5.1E-05	3.7E-05	1.1E-04	--	--	--	--
Copper	3.3E-04	3.1E-02	1.1E-02	4.2E-02	--	--	--	--
Mercury	1.2E-04	3.5E-04	**2.3E+00**	**2.3E+00**	--	--	--	--
Nickel	8.2E-04	3.1E-03	2.5E-03	6.5E-03	--	--	--	--
Zinc	3.0E-04	2.8E-02	9.5E-02	1.2E-01	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	**7.4E+00**	**7.4E+00**	--	--	7.5E-05	7.5E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.7E-06	8.3E-05	8.3E-03	8.4E-03	2.6E-10	6.9E-09	5.9E-07	5.9E-07
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-02	1.6E-01	**1.9E+01**	**2.0E+01**	3.8E-07	6.0E-06	1.2E-04	1.2E-04
TOTAL PATHWAY CONTRIBUTION	0.09%	0.80%	99.11%	100%	0.31%	4.93%	94.76%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	2.6E-03	1.5E-02	**2.8E+00**	**2.8E+00**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	0.09%	0.52%	99.38%	100%

Table H-31. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 2B

Scenario: Baseline, Scenario 2B

Exposure Units: Beach Area B/C, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	8.5E-03	4.8E-02	**2.9E+00**	**2.9E+00**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	7.9E-03	4.5E-02	2.6E-02	7.9E-02	3.8E-07	6.0E-06	2.7E-06	9.0E-06
Cadmium	4.0E-04	3.8E-05	3.1E-03	3.5E-03	--	--	--	--
Chromium	2.7E-05	5.1E-05	1.6E-05	9.4E-05	--	--	--	--
Copper	3.3E-04	3.1E-02	1.1E-02	4.2E-02	--	--	--	--
Mercury	1.2E-04	3.5E-04	1.2E-02	1.2E-02	--	--	--	--
Nickel	8.2E-04	3.1E-03	6.8E-03	1.1E-02	--	--	--	--
Zinc	3.0E-04	2.8E-02	4.0E-03	3.3E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	2.6E-01	2.6E-01	--	--	3.0E-06	3.0E-06
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.7E-06	8.3E-05	5.5E-04	6.4E-04	2.6E-10	6.9E-09	4.5E-08	5.2E-08
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-02	1.6E-01	**3.2E+00**	**3.4E+00**	3.8E-07	6.0E-06	5.8E-06	1.2E-05
TOTAL PATHWAY CONTRIBUTION	0.55%	4.64%	94.81%	100%	3.10%	49.47%	47.43%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	2.6E-03	1.5E-02	8.7E-01	8.9E-01
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	0.29%	1.66%	98.05%	100%

Table H-32. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 2C

Scenario: Baseline, Scenario 2C

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	8.5E-03	4.8E-02	4.3E-02	1.0E-01	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	7.9E-03	4.5E-02	2.0E-02	7.3E-02	3.8E-07	6.0E-06	2.1E-06	8.5E-06
Cadmium	4.0E-04	3.8E-05	2.1E-03	2.6E-03	--	--	--	--
Chromium	2.7E-05	5.1E-05	1.8E-06	8.0E-05	--	--	--	--
Copper	3.3E-04	3.1E-02	2.9E-02	6.1E-02	--	--	--	--
Mercury	1.2E-04	3.5E-04	4.0E-02	4.0E-02	--	--	--	--
Nickel	8.2E-04	3.1E-03	3.6E-04	4.3E-03	--	--	--	--
Zinc	3.0E-04	2.8E-02	1.8E-02	4.6E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	3.8E-02	3.8E-02	--	--	4.4E-07	4.4E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.7E-06	8.3E-05	5.5E-04	6.4E-04	2.6E-10	6.9E-09	4.5E-08	5.2E-08
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-02	1.6E-01	1.9E-01	3.7E-01	3.8E-07	6.0E-06	2.6E-06	9.0E-06
TOTAL PATHWAY CONTRIBUTION	5.04%	42.69%	52.27%	100%	4.20%	67.05%	28.74%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	2.6E-03	1.5E-02	1.3E-02	3.0E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	8.53%	48.37%	43.10%	100%

Table H-33. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 3A

Scenario: Baseline, Scenario 3A

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	**1.7E+01**	**9.9E+01**	**9.2E+00**	**1.3E+02**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	5.9E-03	3.4E-02	4.4E-01	4.8E-01	2.8E-07	4.5E-06	4.0E-05	4.5E-05
Cadmium	3.0E-03	2.8E-04	1.6E-03	4.9E-03	--	--	--	--
Chromium	2.0E-05	3.8E-05	3.7E-05	9.4E-05	--	--	--	--
Copper	2.7E-03	2.5E-01	1.1E-02	2.7E-01	--	--	--	--
Mercury	1.2E-02	3.5E-02	**2.3E+00**	**2.3E+00**	--	--	--	--
Nickel	8.7E-04	3.3E-03	2.5E-03	6.7E-03	--	--	--	--
Zinc	1.4E-03	1.3E-01	9.5E-02	2.3E-01	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	1.3E-01	**1.7E+00**	--	**1.9E+00**	5.6E-07	2.1E-05	--	2.1E-05
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	**7.4E+00**	**7.4E+00**	--	--	7.5E-05	7.5E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.5E-05	6.1E-04	8.3E-03	9.0E-03	1.9E-09	5.1E-08	5.9E-07	6.4E-07
PATHWAY TOTALS ACROSS $COPC_H$s	**1.8E+01**	**1.0E+02**	**1.9E+01**	**1.4E+02**	8.4E-07	2.5E-05	1.2E-04	1.4E-04
TOTAL PATHWAY CONTRIBUTION	12.74%	73.17%	14.09%	100%	0.60%	17.89%	81.51%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	**5.3E+00**	**3.0E+01**	**2.8E+00**	**3.8E+01**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	13.90%	78.79%	7.31%	100%

Table H-34. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 3B

Scenario: Baseline, Scenario 3B

Exposure Units: Beach Area E, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	**1.7E+01**	**9.9E+01**	**2.9E+00**	**1.2E+02**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	5.9E-03	3.4E-02	2.6E-02	6.6E-02	2.8E-07	4.5E-06	2.7E-06	7.5E-06
Cadmium	3.0E-03	2.8E-04	3.1E-03	6.4E-03	--	--	--	--
Chromium	2.0E-05	3.8E-05	1.6E-05	7.3E-05	--	--	--	--
Copper	2.7E-03	2.5E-01	1.1E-02	2.7E-01	--	--	--	--
Mercury	1.2E-02	3.5E-02	1.2E-02	6.0E-02	--	--	--	--
Nickel	8.7E-04	3.3E-03	6.8E-03	1.1E-02	--	--	--	--
Zinc	1.4E-03	1.3E-01	4.0E-03	1.4E-01	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	1.3E-01	**1.7E+00**	--	**1.9E+00**	5.6E-07	2.1E-05	--	2.1E-05
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	2.6E-01	2.6E-01	--	--	3.0E-06	3.0E-06
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.5E-05	6.1E-04	5.5E-04	1.2E-03	1.9E-09	5.1E-08	4.5E-08	9.8E-08
PATHWAY TOTALS ACROSS $COPC_H$s	**1.8E+01**	**1.0E+02**	**3.2E+00**	**1.2E+02**	8.4E-07	2.5E-05	5.8E-06	3.2E-05
TOTAL PATHWAY CONTRIBUTION	14.44%	82.94%	2.62%	100%	2.64%	79.31%	18.05%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	**5.3E+00**	**3.0E+01**	8.7E-01	**3.6E+01**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	14.64%	82.96%	2.40%	100%

Table H-35. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 3C

Scenario: Baseline, Scenario 3C

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	**1.7E+01**	**9.9E+01**	4.3E-02	**1.2E+02**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	5.9E-03	3.4E-02	2.0E-02	6.0E-02	2.8E-07	4.5E-06	2.1E-06	6.9E-06
Cadmium	3.0E-03	2.8E-04	2.1E-03	5.4E-03	--	--	--	--
Chromium	2.0E-05	3.8E-05	1.8E-06	6.0E-05	--	--	--	--
Copper	2.7E-03	2.5E-01	2.9E-02	2.9E-01	--	--	--	--
Mercury	1.2E-02	3.5E-02	4.0E-02	8.8E-02	--	--	--	--
Nickel	8.7E-04	3.3E-03	3.6E-04	4.5E-03	--	--	--	--
Zinc	1.4E-03	1.3E-01	1.8E-02	1.5E-01	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	1.3E-01	**1.7E+00**	--	**1.9E+00**	5.6E-07	2.1E-05	--	2.1E-05
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	3.8E-02	3.8E-02	--	--	4.4E-07	4.4E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.5E-05	6.1E-04	5.5E-04	1.2E-03	1.9E-09	5.1E-08	4.5E-08	9.8E-08
PATHWAY TOTALS ACROSS $COPC_H$s	**1.8E+01**	**1.0E+02**	1.9E-01	**1.2E+02**	8.4E-07	2.5E-05	2.6E-06	2.9E-05
TOTAL PATHWAY CONTRIBUTION	14.81%	85.03%	0.16%	100%	2.93%	88.10%	8.96%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	**5.3E+00**	**3.0E+01**	1.3E-02	**3.5E+01**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	14.99%	84.97%	0.04%	100%

Table H-36. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 4A

Scenario: Baseline, Scenario 4A

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	2.8E-03	1.6E-02	**8.8E+00**	**8.9E+00**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	7.6E-03	4.3E-02	3.8E-01	4.3E-01	3.6E-07	5.8E-06	3.4E-05	4.0E-05
Cadmium	8.1E-04	7.6E-05	3.8E-03	4.6E-03	--	--	--	--
Chromium	1.4E-05	2.7E-05	9.7E-05	1.4E-04	--	--	--	--
Copper	3.7E-04	3.5E-02	2.0E-02	5.5E-02	--	--	--	--
Mercury	2.5E-04	7.1E-04	**3.0E+00**	**3.0E+00**	--	--	--	--
Nickel	6.1E-04	2.3E-03	4.8E-03	7.7E-03	--	--	--	--
Zinc	2.9E-04	2.7E-02	1.5E-01	1.8E-01	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	**8.2E+00**	**8.2E+00**	--	--	8.3E-05	8.3E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	4.6E-06	4.4E-05	8.3E-03	8.3E-03	1.4E-10	3.6E-09	5.9E-07	5.9E-07
PATHWAY TOTALS ACROSS $COPC_H$s	1.3E-02	1.2E-01	**2.1E+01**	**2.1E+01**	3.6E-07	5.8E-06	1.2E-04	1.2E-04
TOTAL PATHWAY CONTRIBUTION	0.06%	0.60%	99.34%	100%	0.29%	4.70%	95.01%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	8.6E-04	4.9E-03	**2.7E+00**	**2.7E+00**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	0.03%	0.18%	99.79%	100%

Table H-37. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 4B

Scenario: Baseline, Scenario 4B

Exposure Units: Beach Area D, FCA 1/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	2.8E-03	1.6E-02	2.5E-01	2.7E-01	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	7.6E-03	4.3E-02	2.3E-02	7.4E-02	3.6E-07	5.8E-06	2.4E-06	8.5E-06
Cadmium	8.1E-04	7.6E-05	2.8E-03	3.7E-03	--	--	--	--
Chromium	1.4E-05	2.7E-05	1.4E-05	5.5E-05	--	--	--	--
Copper	3.7E-04	3.5E-02	8.9E-03	4.4E-02	--	--	--	--
Mercury	2.5E-04	7.1E-04	1.3E-02	1.4E-02	--	--	--	--
Nickel	6.1E-04	2.3E-03	8.3E-03	1.1E-02	--	--	--	--
Zinc	2.9E-04	2.7E-02	3.7E-03	3.1E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	1.1E-01	1.1E-01	--	--	1.3E-06	1.3E-06
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	4.6E-06	4.4E-05	5.5E-04	6.0E-04	1.4E-10	3.6E-09	4.5E-08	4.8E-08
PATHWAY TOTALS ACROSS $COPC_H$s	1.3E-02	1.2E-01	4.2E-01	5.6E-01	3.6E-07	5.8E-06	3.7E-06	9.9E-06
TOTAL PATHWAY CONTRIBUTION	2.28%	22.16%	75.56%	100%	3.66%	58.46%	37.88%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	8.6E-04	4.9E-03	7.6E-02	8.1E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	1.06%	6.02%	92.91%	100%

Table H-38. Hazards and Risks for Hypothetical Subsistence Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 4C

Scenario: Baseline, Scenario 4C

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	2.8E-03	1.6E-02	1.6E-01	1.8E-01	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	7.6E-03	4.3E-02	2.3E-02	7.4E-02	3.6E-07	5.8E-06	2.4E-06	8.5E-06
Cadmium	8.1E-04	7.6E-05	2.6E-03	3.5E-03	--	--	--	--
Chromium	1.4E-05	2.7E-05	4.4E-06	4.5E-05	--	--	--	--
Copper	3.7E-04	3.5E-02	3.6E-02	7.2E-02	--	--	--	--
Mercury	2.5E-04	7.1E-04	6.1E-02	6.2E-02	--	--	--	--
Nickel	6.1E-04	2.3E-03	2.8E-04	3.2E-03	--	--	--	--
Zinc	2.9E-04	2.7E-02	1.8E-02	4.5E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	1.8E-02	1.8E-02	--	--	2.0E-07	2.0E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	4.6E-06	4.4E-05	5.5E-04	6.0E-04	1.4E-10	3.6E-09	4.5E-08	4.8E-08
PATHWAY TOTALS ACROSS $COPC_H$s	1.3E-02	1.2E-01	3.2E-01	4.6E-01	3.6E-07	5.8E-06	2.6E-06	8.8E-06
TOTAL PATHWAY CONTRIBUTION	2.79%	27.16%	70.05%	100%	4.13%	65.95%	29.91%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	8.6E-04	4.9E-03	4.9E-02	5.5E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	1.58%	8.95%	89.47%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

FCA = fish collection area

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

[a] Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

Hypothetical Recreational Visitor: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Area North of I-10 and Aquatic Environment

Table H-39. Hazards and Risks for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 1

Scenario: Baseline, Scenario 1

Exposure Units: Beach Area A, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer Hazards										Cancer Risks									
	RME HQ (young child)					CTE HQ (adult)					RME Risk (lifetime)					CTE Risk (adult)				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans																				
TEQ_{DF} (ND = 1/2DL)	3.1E-04	1.5E-02	1.7E-03	2.1E-03	1.9E-02	2.0E-06	2.9E-05	1.8E-04	3.7E-05	2.4E-04	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																				
Arsenic	4.7E-04	5.9E-03	2.7E-03	8.4E-04	9.9E-03	3.0E-06	3.0E-05	2.7E-04	3.8E-05	3.4E-04	2.2E-08	2.8E-07	3.6E-07	7.6E-08	7.4E-07	2.1E-10	2.1E-09	1.8E-08	2.6E-09	2.3E-08
Cadmium	9.4E-05	5.1E-04	8.9E-06	1.2E-06	6.1E-04	8.9E-07	9.8E-07	1.3E-06	2.1E-08	3.2E-06	--	--	--	--	--	--	--	--	--	--
Chromium	5.2E-07	1.3E-05	9.8E-07	6.2E-07	1.5E-05	3.6E-09	4.6E-08	1.1E-07	1.9E-08	1.7E-07	--	--	--	--	--	--	--	--	--	--
Copper	8.2E-05	7.0E-04	7.7E-03	1.6E-03	1.0E-02	1.8E-07	1.8E-06	2.7E-04	3.9E-05	3.1E-04	--	--	--	--	--	--	--	--	--	--
Mercury	3.2E-05	9.4E-03	9.2E-05	6.6E-04	1.0E-02	1.8E-07	2.1E-05	7.8E-06	1.3E-05	4.2E-05	--	--	--	--	--	--	--	--	--	--
Nickel	1.8E-05	8.4E-04	6.7E-05	8.0E-05	1.0E-03	1.4E-07	2.6E-06	8.4E-06	2.2E-06	1.3E-05	--	--	--	--	--	--	--	--	--	--
Zinc	2.7E-05	6.9E-04	2.5E-03	1.6E-03	4.9E-03	9.9E-08	1.3E-06	1.5E-04	2.8E-05	1.8E-04	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																				
Sum of Aroclors	--	2.3E-03	--	7.5E-04	3.0E-03	--	1.5E-05	--	4.4E-05	5.8E-05	--	9.6E-09	--	6.0E-09	1.6E-08	--	4.5E-11	--	1.3E-10	1.8E-10
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																				
Bis(2-ethylhexyl)phthalate	4.5E-07	1.0E-05	4.2E-06	2.4E-06	1.7E-05	4.2E-09	1.6E-08	6.3E-07	3.4E-08	6.8E-07	1.3E-11	3.1E-10	3.5E-10	1.4E-10	8.1E-10	1.8E-13	6.9E-13	2.7E-11	1.5E-12	2.9E-11
PATHWAY TOTALS ACROSS $COPC_H$s	1.0E-03	3.5E-02	1.5E-02	7.7E-03	5.9E-02	6.4E-06	1.0E-04	8.8E-04	2.0E-04	1.2E-03	2.2E-08	2.9E-07	3.6E-07	8.2E-08	7.6E-07	2.1E-10	2.1E-09	1.8E-08	2.8E-09	2.3E-08
TOTAL PATHWAY CONTRIBUTION	1.74%	60.02%	25.13%	13.12%	100%	0.54%	8.49%	73.98%	16.98%	100%	2.96%	38.84%	47.29%	10.91%	100%	0.88%	8.95%	78.41%	11.76%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	--	--	9.3E-05	4.6E-03	5.3E-04	6.5E-04	5.9E-03	6.0E-07	8.8E-06	5.4E-05	1.1E-05	7.4E-05
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	--	--	--	--	1.58%	78.36%	8.96%	11.10%	100%	0.81%	11.82%	72.28%	15.09%	100%

Table H-40. Hazards and Risks for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 2

Scenario: Baseline, Scenario 2

Exposure Units: Beach Area B/C, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer Hazards										Cancer Risks									
	RME HQ (young child)					CTE HQ (adult)					RME Risk (lifetime)					CTE Risk (adult)				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans																				
TEQ_{DF} (ND = 1/2DL)	4.3E-03	1.5E-02	2.4E-02	2.1E-03	4.6E-02	2.6E-05	2.9E-05	2.3E-03	3.7E-05	2.4E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																				
Arsenic	3.9E-03	5.9E-03	2.2E-02	8.4E-04	3.3E-02	2.4E-05	3.0E-05	2.1E-03	3.8E-05	2.2E-03	1.9E-07	2.8E-07	3.0E-06	7.6E-08	3.5E-06	1.6E-09	2.1E-09	1.5E-07	2.6E-09	1.5E-07
Cadmium	2.0E-04	5.1E-04	1.9E-05	1.2E-06	7.3E-04	7.3E-07	9.8E-07	1.1E-06	2.1E-08	2.8E-06	--	--	--	--	--	--	--	--	--	--
Chromium	1.4E-05	1.3E-05	2.6E-05	6.2E-07	5.3E-05	4.8E-08	4.6E-08	1.4E-06	1.9E-08	1.5E-06	--	--	--	--	--	--	--	--	--	--
Copper	1.6E-04	7.0E-04	1.5E-02	1.6E-03	1.8E-02	1.3E-06	1.8E-06	1.9E-03	3.9E-05	1.9E-03	--	--	--	--	--	--	--	--	--	--
Mercury	6.2E-05	9.4E-03	1.8E-04	6.6E-04	1.0E-02	3.0E-07	2.1E-05	1.3E-05	1.3E-05	4.8E-05	--	--	--	--	--	--	--	--	--	--
Nickel	4.1E-04	8.4E-04	1.6E-03	8.0E-05	2.9E-03	2.3E-06	2.6E-06	1.4E-04	2.2E-06	1.4E-04	--	--	--	--	--	--	--	--	--	--
Zinc	1.5E-04	6.9E-04	1.4E-02	1.6E-03	1.7E-02	7.3E-07	1.3E-06	1.1E-03	2.8E-05	1.1E-03	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																				
Sum of Aroclors	--	2.3E-03	--	7.5E-04	3.0E-03	--	1.5E-05	--	4.4E-05	5.8E-05	--	9.6E-09	--	6.0E-09	1.6E-08	--	4.5E-11	--	1.3E-10	1.8E-10
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																				
Bis(2-ethylhexyl)phthalate	4.4E-06	1.0E-05	4.1E-05	2.4E-06	5.8E-05	1.1E-08	1.6E-08	1.6E-06	3.4E-08	1.6E-06	1.3E-10	3.1E-10	3.5E-09	1.4E-10	4.0E-09	4.5E-13	6.9E-13	6.8E-11	1.5E-12	7.0E-11
PATHWAY TOTALS ACROSS $COPC_H$s	9.2E-03	3.5E-02	7.8E-02	7.7E-03	1.3E-01	5.5E-05	1.0E-04	7.6E-03	2.0E-04	7.9E-03	1.9E-07	2.9E-07	3.0E-06	8.2E-08	3.6E-06	1.6E-09	2.1E-09	1.5E-07	2.8E-09	1.5E-07
TOTAL PATHWAY CONTRIBUTION	7.06%	27.20%	59.80%	5.94%	100%	0.69%	1.27%	95.50%	2.54%	100%	5.28%	8.23%	84.18%	2.31%	100%	1.07%	1.38%	95.74%	1.81%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	--	--	--	--	1.3E-03	4.6E-03	7.3E-03	6.5E-04	1.4E-02	7.9E-06	8.8E-06	7.1E-04	1.1E-05	7.4E-04
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	--	--	9.32%	33.13%	52.85%	4.69%	100%	1.08%	1.19%	96.21%	1.52%	100%

Table H-41. Hazards and Risks for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 3

Scenario: Baseline, Scenario 3

Exposure Units: Beach Area E, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer Hazards										Cancer Risks									
	RME HQ (young child)					CTE HQ (adult)					RME Risk (lifetime)					CTE Risk (adult)				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans																				
TEQ_{DF} (ND = 1/2DL)	**8.7E+00**	1.5E-02	**4.9E+01**	2.1E-03	**5.8E+01**	5.8E-03	2.9E-05	5.2E-01	3.7E-05	5.2E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																				
Arsenic	3.0E-03	5.9E-03	1.7E-02	8.4E-04	2.7E-02	2.5E-05	3.0E-05	2.3E-03	3.8E-05	2.3E-03	1.4E-07	2.8E-07	2.3E-06	7.6E-08	2.8E-06	1.7E-09	2.1E-09	1.6E-07	2.6E-09	1.6E-07
Cadmium	1.5E-03	5.1E-04	1.4E-04	1.2E-06	2.1E-03	2.7E-06	9.8E-07	4.0E-06	2.1E-08	7.6E-06	--	--	--	--	--	--	--	--	--	--
Chromium	1.0E-05	1.3E-05	1.9E-05	6.2E-07	4.3E-05	4.8E-08	4.6E-08	1.4E-06	1.9E-08	1.5E-06	--	--	--	--	--	--	--	--	--	--
Copper	1.3E-03	7.0E-04	1.3E-01	1.6E-03	1.3E-01	3.6E-06	1.8E-06	5.3E-03	3.9E-05	5.4E-03	--	--	--	--	--	--	--	--	--	--
Mercury	6.2E-03	9.4E-03	1.8E-02	6.6E-04	3.4E-02	5.9E-06	2.1E-05	2.7E-04	1.3E-05	3.1E-04	--	--	--	--	--	--	--	--	--	--
Nickel	4.4E-04	8.4E-04	1.7E-03	8.0E-05	3.0E-03	3.2E-06	2.6E-06	1.9E-04	2.2E-06	2.0E-04	--	--	--	--	--	--	--	--	--	--
Zinc	6.9E-04	6.9E-04	6.6E-02	1.6E-03	6.9E-02	1.9E-06	1.3E-06	2.9E-03	2.8E-05	2.9E-03	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																				
Sum of Aroclors	6.6E-02	2.3E-03	8.7E-01	7.5E-04	9.4E-01	2.5E-04	1.5E-05	5.2E-02	4.4E-05	5.2E-02	2.8E-07	9.6E-09	1.0E-05	6.0E-09	1.1E-05	7.7E-10	4.5E-11	1.6E-07	1.3E-10	1.6E-07
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																				
Bis(2-ethylhexyl)phthalate	3.2E-05	1.0E-05	3.1E-04	2.4E-06	3.5E-04	9.4E-08	1.6E-08	1.4E-05	3.4E-08	1.4E-05	9.7E-10	3.1E-10	2.6E-08	1.4E-10	2.7E-08	4.1E-12	6.9E-13	6.1E-10	1.5E-12	6.1E-10
PATHWAY TOTALS ACROSS $COPC_H$s	**8.8E+00**	3.5E-02	**5.0E+01**	7.7E-03	**5.9E+01**	6.1E-03	1.0E-04	5.8E-01	2.0E-04	5.9E-01	4.2E-07	2.9E-07	1.3E-05	8.2E-08	1.3E-05	2.5E-09	2.1E-09	3.2E-07	2.8E-09	3.2E-07
TOTAL PATHWAY CONTRIBUTION	14.82%	0.06%	85.11%	0.01%	100%	1.04%	0.02%	98.91%	0.03%	100%	3.13%	2.18%	94.07%	0.61%	100%	0.78%	0.65%	97.72%	0.85%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	--	--	--	--	**2.6E+00**	4.6E-03	**1.5E+01**	6.5E-04	**1.8E+01**	1.8E-03	8.8E-06	1.6E-01	1.1E-05	1.6E-01
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	--	--	14.99%	0.03%	84.98%	0.00%	100%	1.11%	0.01%	98.88%	0.01%	100%

Table H-42. Hazards and Risks for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 4

Scenario: Baseline, Scenario 4

Exposure Units: Beach Area D, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer Hazards										Cancer Risks									
	RME HQ (young child)					CTE HQ (adult)					RME Risk (lifetime)					CTE Risk (adult)				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans																				
TEQ_{DF} (ND = 1/2DL)	1.4E-03	1.5E-02	8.0E-03	2.1E-03	2.7E-02	9.0E-06	2.9E-05	8.1E-04	3.7E-05	8.8E-04	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																				
Arsenic	3.8E-03	5.9E-03	2.2E-02	8.4E-04	3.2E-02	2.9E-05	3.0E-05	2.6E-03	3.8E-05	2.7E-03	1.8E-07	2.8E-07	2.9E-06	7.6E-08	3.4E-06	2.0E-09	2.1E-09	1.8E-07	2.6E-09	1.8E-07
Cadmium	4.0E-04	5.1E-04	3.8E-05	1.2E-06	9.5E-04	3.0E-06	9.8E-07	4.4E-06	2.1E-08	8.4E-06	--	--	--	--	--	--	--	--	--	--
Chromium	7.1E-06	1.3E-05	1.3E-05	6.2E-07	3.4E-05	3.5E-08	4.6E-08	1.1E-06	1.9E-08	1.2E-06	--	--	--	--	--	--	--	--	--	--
Copper	1.8E-04	7.0E-04	1.7E-02	1.6E-03	2.0E-02	1.3E-06	1.8E-06	1.9E-03	3.9E-05	2.0E-03	--	--	--	--	--	--	--	--	--	--
Mercury	1.2E-04	9.4E-03	3.5E-04	6.6E-04	1.1E-02	5.9E-07	2.1E-05	2.7E-05	1.3E-05	6.1E-05	--	--	--	--	--	--	--	--	--	--
Nickel	3.0E-04	8.4E-04	1.2E-03	8.0E-05	2.4E-03	2.4E-06	2.6E-06	1.4E-04	2.2E-06	1.5E-04	--	--	--	--	--	--	--	--	--	--
Zinc	1.4E-04	6.9E-04	1.4E-02	1.6E-03	1.6E-02	8.9E-07	1.3E-06	1.3E-03	2.8E-05	1.4E-03	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																				
Sum of Aroclors	--	2.3E-03	--	7.5E-04	3.0E-03	--	1.5E-05	--	4.4E-05	5.8E-05	--	9.6E-09	--	6.0E-09	1.6E-08	--	4.5E-11	--	1.3E-10	1.8E-10
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																				
Bis(2-ethylhexyl)phthalate	2.3E-06	1.0E-05	2.2E-05	2.4E-06	3.7E-05	1.4E-08	1.6E-08	2.1E-06	3.4E-08	2.2E-06	6.9E-11	3.1E-10	1.8E-09	1.4E-10	2.3E-09	6.1E-13	6.9E-13	9.1E-11	1.5E-12	9.4E-11
PATHWAY TOTALS ACROSS $COPC_H$s	6.4E-03	3.5E-02	6.2E-02	7.7E-03	1.1E-01	4.6E-05	1.0E-04	6.8E-03	2.0E-04	7.2E-03	1.8E-07	2.9E-07	2.9E-06	8.2E-08	3.5E-06	2.0E-09	2.1E-09	1.8E-07	2.8E-09	1.8E-07
TOTAL PATHWAY CONTRIBUTION	5.72%	31.75%	55.59%	6.94%	100%	0.64%	1.41%	95.13%	2.82%	100%	5.26%	8.51%	83.85%	2.39%	100%	1.08%	1.14%	96.28%	1.50%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	--	--	4.3E-04	4.6E-03	2.4E-03	6.5E-04	8.1E-03	2.7E-06	8.8E-06	2.5E-04	1.1E-05	2.7E-04
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	--	--	5.31%	56.59%	30.09%	8.02%	100%	1.02%	3.27%	91.54%	4.17%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. Chromium was assumed to be present in the form of chromium (III) in soil and sediment.

Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

Summary of RME Situation for Scenarios with Total Risk>1E-04 and/or Total endpoint specific HI > 1 Hypothetical Recreational Fisher, Area North of I-10 and Aquatic Environment

Table H-43. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Recreational Fisher, Scenario 3A

Scenario: Baseline, Scenario 3A

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Catfish	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.5E+00	3.7E+01	1.1E+00	4.5E+01	99%	98%	47%	96%
Metals								
Arsenic	2.2E-03	1.3E-02	5.3E-02	6.7E-02	0.03%	0.03%	2%	0.1%
Cadmium	1.1E-03	1.1E-04	1.9E-04	1.4E-03	0.02%	0.0003%	0.008%	0.003%
Chromium	7.5E-06	1.4E-05	4.3E-06	2.6E-05	0.0001%	0.00004%	0.0002%	0.00006%
Copper	1.0E-03	9.5E-02	1.3E-03	9.8E-02	0.02%	0.3%	0.06%	0.2%
Mercury	4.7E-03	1.3E-02	2.7E-01	2.9E-01	0.07%	0.04%	12%	1%
Nickel	3.3E-04	1.2E-03	3.0E-04	1.9E-03	0.005%	0.003%	0.01%	0.004%
Zinc	5.2E-04	4.9E-02	1.1E-02	6.1E-02	0.01%	0.13%	0.5%	0.1%
Polychlorinated Biphenyls								
Sum of Aroclors	4.9E-02	6.5E-01	--	7.0E-01	1%	2%	--	1%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	8.8E-01	8.8E-01	--	--	38%	2%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.4E-05	2.3E-04	9.8E-04	1.2E-03	0.0004%	0.0006%	0.04%	0.003%
PATHWAY TOTALS ACROSS $COPC_H$s	6.6E+00	3.8E+01	2.3E+00	4.7E+01				
TOTAL PATHWAY CONTRIBUTION	14.10%	80.98%	4.92%	100%				

Table H-44. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Recreational Fisher, Scenario 3B

Scenario: Baseline, Scenario 3B

Exposure Units: Beach Area E, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Clam	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.5E+00	3.7E+01	2.1E-01	4.4E+01	99%	98%	90%	98%
Metals								
Arsenic	2.2E-03	1.3E-02	2.0E-03	1.7E-02	0.03%	0.03%	0.8%	0.04%
Cadmium	1.1E-03	1.1E-04	2.3E-04	1.5E-03	0.02%	0.0003%	0.1%	0.003%
Chromium	7.5E-06	1.4E-05	1.2E-06	2.3E-05	0.0001%	0.00004%	0.0005%	0.00005%
Copper	1.0E-03	9.5E-02	7.9E-04	9.7E-02	0.02%	0.3%	0.3%	0.2%
Mercury	4.7E-03	1.3E-02	9.0E-04	1.9E-02	0.1%	0.04%	0.4%	0.04%
Nickel	3.3E-04	1.2E-03	5.1E-04	2.1E-03	0.005%	0.003%	0.2%	0.00%
Zinc	5.2E-04	4.9E-02	3.0E-04	5.0E-02	0.01%	0.1%	0.1%	0.1%
Polychlorinated Biphenyls								
Sum of Aroclors	4.9E-02	6.5E-01	--	7.0E-01	1%	2%	--	2%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	2.0E-02	2.0E-02	--	--	8%	0.04%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.4E-05	2.3E-04	4.1E-05	3.0E-04	0.0004%	0.0006%	0.02%	0.0007%
PATHWAY TOTALS ACROSS $COPC_H$s	6.6E+00	3.8E+01	2.4E-01	4.5E+01				
TOTAL PATHWAY CONTRIBUTION	14.75%	84.71%	0.53%	100%				

Table H-45. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Recreational Fisher, Scenario 3C

Scenario: Baseline, Scenario 3C

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Crab	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.5E+00	3.7E+01	3.2E-03	4.4E+01	99%	98%	23%	98%
Metals								
Arsenic	2.2E-03	1.3E-02	1.5E-03	1.6E-02	0.03%	0.03%	11%	0.04%
Cadmium	1.1E-03	1.1E-04	1.6E-04	1.4E-03	0.02%	0.0003%	1%	0.003%
Chromium	7.5E-06	1.4E-05	1.4E-07	2.2E-05	0.0001%	0.00004%	0.001%	0.00005%
Copper	1.0E-03	9.5E-02	2.2E-03	9.9E-02	0.02%	0.3%	15%	0.2%
Mercury	4.7E-03	1.3E-02	3.0E-03	2.1E-02	0.07%	0.04%	21%	0.05%
Nickel	3.3E-04	1.2E-03	2.7E-05	1.6E-03	0.005%	0.003%	0.2%	0.004%
Zinc	5.2E-04	4.9E-02	1.3E-03	5.1E-02	0.008%	0.1%	9%	0.1%
Polychlorinated Biphenyls								
Sum of Aroclors	4.9E-02	6.5E-01	--	7.0E-01	0.7%	2%	--	2%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	2.8E-03	2.8E-03	--	--	20%	0.006%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.4E-05	2.3E-04	4.1E-05	3.0E-04	0.0004%	0.0006%	0.3%	0.0007%
PATHWAY TOTALS ACROSS $COPC_H$s	6.6E+00	3.8E+01	1.4E-02	4.4E+01				
TOTAL PATHWAY CONTRIBUTION	14.83%	85.14%	0.03%	100%				

Table H-46. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Recreational Fisher, Scenario 4A

Scenario: Baseline, Scenario 4A

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Catfish	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.1E-03	6.0E-03	1.0E+00	1.1E+00	22%	13%	43%	42%
Metals								
Arsenic	2.8E-03	1.6E-02	4.5E-02	6.4E-02	59%	35%	2%	3%
Cadmium	3.0E-04	2.9E-05	4.4E-04	7.8E-04	6%	0.06%	0.02%	0.03%
Chromium	5.3E-06	1.0E-05	1.2E-05	2.7E-05	0.1%	0.02%	0.0005%	0.001%
Copper	1.4E-04	1.3E-02	2.4E-03	1.6E-02	3%	28%	0.1%	0.6%
Mercury	9.4E-05	2.7E-04	3.6E-01	3.6E-01	2%	0.6%	15%	14%
Nickel	2.3E-04	8.6E-04	5.7E-04	1.7E-03	5%	2%	0.02%	0.07%
Zinc	1.1E-04	1.0E-02	1.8E-02	2.9E-02	2%	22%	0.8%	1%
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	9.7E-01	9.7E-01	--	--	40%	39%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.7E-06	1.6E-05	9.8E-04	1.0E-03	0.04%	0.04%	0.04%	0.04%
PATHWAY TOTALS ACROSS $COPC_H$s	4.8E-03	4.7E-02	2.4E+00	2.5E+00				
TOTAL PATHWAY CONTRIBUTION	0.19%	1.87%	97.94%	100%				

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

FCA = fish collection area

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Summary of RME Situation for Scenarios with Total Risk>1E-04 and/or Total endpoint specific HI > 1 Hypothetical Subsistence Fisher, Area North of I-10 and Aquatic Environment

Table H-47. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 1A

Scenario: Baseline, Scenario 1A

Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Catfish	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	6.1E-04	3.5E-03	9.2E+00	9.2E+00	30%	12%	47%	47%
Metals								
Arsenic	9.4E-04	5.3E-03	4.4E-01	4.5E-01	46%	18%	2%	2%
Cadmium	1.9E-04	1.8E-05	1.6E-03	1.8E-03	9%	0.06%	0.008%	0.009%
Chromium	1.0E-06	2.0E-06	3.7E-05	4.0E-05	0.05%	0.007%	0.0002%	0.0002%
Copper	1.6E-04	1.5E-02	1.1E-02	2.7E-02	8%	52%	0.06%	0.1%
Mercury	6.5E-05	1.8E-04	2.3E+00	2.3E+00	3%	0.6%	12%	12%
Nickel	3.5E-05	1.3E-04	2.5E-03	2.7E-03	2%	0.4%	0.01%	0.01%
Zinc	5.4E-05	5.1E-03	9.5E-02	1.0E-01	3%	17%	0.5%	0.5%
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	7.4E+00	7.4E+00	--	--	38%	38%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.9E-07	8.4E-06	8.3E-03	8.3E-03	0.04%	0.03%	0.04%	0.04%
PATHWAY TOTALS ACROSS $COPC_H$S	2.1E-03	3.0E-02	1.9E+01	1.9E+01				
TOTAL PATHWAY CONTRIBUTION	0.01%	0.15%	99.84%	100%				

Table H-48. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 2A

Scenario: Baseline, Scenario 2A

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Catfish	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	8.5E-03	4.8E-02	9.2E+00	9.2E+00	46%	31%	47%	47%
Metals								
Arsenic	7.9E-03	4.5E-02	4.4E-01	5.0E-01	43%	29%	2%	3%
Cadmium	4.0E-04	3.8E-05	1.6E-03	2.1E-03	2%	0.02%	0.008%	0.01%
Chromium	2.7E-05	5.1E-05	3.7E-05	1.1E-04	0.1%	0.03%	0.0002%	0.0006%
Copper	3.3E-04	3.1E-02	1.1E-02	4.2E-02	2%	20%	0.06%	0.2%
Mercury	1.2E-04	3.5E-04	2.3E+00	2.3E+00	0.7%	0.2%	12%	12%
Nickel	8.2E-04	3.1E-03	2.5E-03	6.5E-03	4%	2%	0.01%	0.03%
Zinc	3.0E-04	2.8E-02	9.5E-02	1.2E-01	2%	18%	0.5%	0.6%
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	7.4E+00	7.4E+00	--	--	38%	38%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.7E-06	8.3E-05	8.3E-03	8.4E-03	0.05%	0.05%	0.04%	0.04%
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-02	1.6E-01	1.9E+01	2.0E+01				
TOTAL PATHWAY CONTRIBUTION	0.09%	0.80%	99.11%	100%				

Table H-49. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 2B

Scenario: Baseline, Scenario 2B

Exposure Units: Beach Area B/C, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Clam	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	8.5E-03	4.8E-02	2.9E+00	2.9E+00	46%	31%	90%	87%
Metals								
Arsenic	7.9E-03	4.5E-02	2.6E-02	7.9E-02	43%	29%	0.8%	2%
Cadmium	4.0E-04	3.8E-05	3.1E-03	3.5E-03	2%	0.02%	0.1%	0.1%
Chromium	2.7E-05	5.1E-05	1.6E-05	9.4E-05	0.1%	0.03%	0.0005%	0.003%
Copper	3.3E-04	3.1E-02	1.1E-02	4.2E-02	2%	20%	0.3%	1%
Mercury	1.2E-04	3.5E-04	1.2E-02	1.2E-02	0.7%	0.2%	0.4%	0.4%
Nickel	8.2E-04	3.1E-03	6.8E-03	1.1E-02	4%	2%	0.2%	0.3%
Zinc	3.0E-04	2.8E-02	4.0E-03	3.3E-02	2%	18.2%	0.1%	1.0%
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	2.6E-01	2.6E-01	--	--	8.3%	7.8%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.7E-06	8.3E-05	5.5E-04	6.4E-04	0.05%	0.05%	0.02%	0.02%
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-02	1.6E-01	3.2E+00	3.4E+00				
TOTAL PATHWAY CONTRIBUTION	0.55%	4.64%	94.81%	100%				

Table H-50. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 3A

Scenario: Baseline, Scenario 3A

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Catfish	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.7E+01	9.9E+01	9.2E+00	1.3E+02	99%	98%	47%	91%
Metals								
Arsenic	5.9E-03	3.4E-02	4.4E-01	4.8E-01	0.03%	0.03%	2%	0.4%
Cadmium	3.0E-03	2.8E-04	1.6E-03	4.9E-03	0.02%	0.0003%	0.008%	0.004%
Chromium	2.0E-05	3.8E-05	3.7E-05	9.4E-05	0.0001%	0.00004%	0.0002%	0.00007%
Copper	2.7E-03	2.5E-01	1.1E-02	2.7E-01	0.02%	0.3%	0.06%	0.2%
Mercury	1.2E-02	3.5E-02	2.3E+00	2.3E+00	0.07%	0.04%	12%	2%
Nickel	8.7E-04	3.3E-03	2.5E-03	6.7E-03	0.005%	0.003%	0.01%	0.005%
Zinc	1.4E-03	1.3E-01	9.5E-02	2.3E-01	0.008%	0.1%	0.5%	0.2%
Polychlorinated Biphenyls								
Sum of Aroclors	1.3E-01	1.7E+00	--	1.9E+00	0.7%	2%	--	1%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	7.4E+00	7.4E+00	--	--	38%	5%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.5E-05	6.1E-04	8.3E-03	9.0E-03	0.0004%	0.0006%	0.04%	0.007%
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E+01	1.0E+02	1.9E+01	1.4E+02				
TOTAL PATHWAY CONTRIBUTION	12.74%	73.17%	14.09%	100%				

Table H-51. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 3B

Scenario: Baseline, Scenario 3B

Exposure Units: Beach Area E, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Clam	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.7E+01	9.9E+01	2.9E+00	1.2E+02	99%	98%	90%	98%
Metals								
Arsenic	5.9E-03	3.4E-02	2.6E-02	6.6E-02	0.03%	0.03%	0.8%	0.05%
Cadmium	3.0E-03	2.8E-04	3.1E-03	6.4E-03	0.02%	0.0003%	0.1%	0.005%
Chromium	2.0E-05	3.8E-05	1.6E-05	7.3E-05	0.0001%	0.00004%	0.0005%	0.00006%
Copper	2.7E-03	2.5E-01	1.1E-02	2.7E-01	0.02%	0.3%	0.3%	0.2%
Mercury	1.2E-02	3.5E-02	1.2E-02	6.0E-02	0.07%	0.04%	0.4%	0.05%
Nickel	8.7E-04	3.3E-03	6.8E-03	1.1E-02	0.005%	0.003%	0.2%	0.009%
Zinc	1.4E-03	1.3E-01	4.0E-03	1.4E-01	0.008%	0.1%	0.1%	0.1%
Polychlorinated Biphenyls								
Sum of Aroclors	1.3E-01	1.7E+00	--	1.9E+00	0.7%	2%	--	2%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	2.6E-01	2.6E-01	--	--	8%	0.2%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.5E-05	6.1E-04	5.5E-04	1.2E-03	0.0004%	0.0006%	0.02%	0.001%
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E+01	1.0E+02	3.2E+00	1.2E+02				
TOTAL PATHWAY CONTRIBUTION	14.44%	82.94%	2.62%	100%				

Table H-52. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 3C

Scenario: Baseline, Scenario 3C

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Crab	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.7E+01	9.9E+01	4.3E-02	1.2E+02	99%	98%	23%	98%
Metals								
Arsenic	5.9E-03	3.4E-02	2.0E-02	6.0E-02	0.03%	0.03%	11%	0.05%
Cadmium	3.0E-03	2.8E-04	2.1E-03	5.4E-03	0.02%	0.0003%	1%	0.005%
Chromium	2.0E-05	3.8E-05	1.8E-06	6.0E-05	0.0001%	0.00004%	0.001%	0.00005%
Copper	2.7E-03	2.5E-01	2.9E-02	2.9E-01	0.02%	0.3%	15%	0.2%
Mercury	1.2E-02	3.5E-02	4.0E-02	8.8E-02	0.07%	0.04%	21%	0.07%
Nickel	8.7E-04	3.3E-03	3.6E-04	4.5E-03	0.005%	0.003%	0.2%	0.004%
Zinc	1.4E-03	1.3E-01	1.8E-02	1.5E-01	0.01%	0.1%	9%	0.1%
Polychlorinated Biphenyls								
Sum of Aroclors	1.3E-01	1.7E+00	--	1.9E+00	1%	2%	--	2%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	3.8E-02	3.8E-02	--	--	20%	0.03%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.5E-05	6.1E-04	5.5E-04	1.2E-03	0.0004%	0.0006%	0.3%	0.001%
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E+01	1.0E+02	1.9E-01	1.2E+02				
TOTAL PATHWAY CONTRIBUTION	14.81%	85.03%	0.16%	100%				

Table H-53. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Subsistence Fisher, Scenario 4A

Scenario: Baseline, Scenario 4A

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Noncancer - RME HQ (young child)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	% Chem of Ingestion Sediment	% Chem of Dermal Sediment	% Chem of Catfish	% Chem of Total
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	2.8E-03	1.6E-02	8.8E+00	8.9E+00	22%	13%	43%	43%
Metals								
Arsenic	7.6E-03	4.3E-02	3.8E-01	4.3E-01	59%	35%	2%	2%
Cadmium	8.1E-04	7.6E-05	3.8E-03	4.6E-03	6%	0.06%	0.02%	0.02%
Chromium	1.4E-05	2.7E-05	9.7E-05	1.4E-04	0.1%	0.02%	0.0005%	0.0007%
Copper	3.7E-04	3.5E-02	2.0E-02	5.5E-02	3%	28%	0.1%	0.3%
Mercury	2.5E-04	7.1E-04	3.0E+00	3.0E+00	2%	0.6%	15%	14%
Nickel	6.1E-04	2.3E-03	4.8E-03	7.7E-03	5%	2%	0.02%	0.04%
Zinc	2.9E-04	2.7E-02	1.5E-01	1.8E-01	2%	22%	0.8%	0.9%
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	8.2E+00	8.2E+00	--	--	40%	40%
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	4.6E-06	4.4E-05	8.3E-03	8.3E-03	0.04%	0.04%	0.04%	0.04%
PATHWAY TOTALS ACROSS $COPC_H$s	1.3E-02	1.2E-01	2.1E+01	2.1E+01				
TOTAL PATHWAY CONTRIBUTION	0.06%	0.60%	99.34%	100%				

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

FCA = fish collection area

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Summary of RME Situation for Scenarios with Total Risk>1E-04 and/or Total endpoint specific HI > 1 Hypothetical Recreational Visitor, Area North of I-10 and Aquatic Environment

Table H-54. Exposure Pathway and COPCH Contributions to Noncancer Hazards, Hypothetical Recreational Visitor, Scenario 3

Scenario: Baseline, Scenario 3

Exposure Units: Beach Area E, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer - RME HQ (young child)					Noncancer - RME HQ (young child)				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	% Chem of Ingestion Sediment	% Chem of Ingestion Soil	% Chem of Dermal Sediment	% Chem of Dermal Soil	% Chem of Total
Dioxins/Furans										
TEQ_{DF} (ND = 1/2DL)	8.7E+00	1.5E-02	4.9E+01	2.1E-03	5.8E+01	99%	43%	98%	28%	98%
Metals										
Arsenic	3.0E-03	5.9E-03	1.7E-02	8.4E-04	2.7E-02	0.03%	17%	0.03%	11%	0.04%
Cadmium	1.5E-03	5.1E-04	1.4E-04	1.2E-06	2.1E-03	0.02%	1%	0.0003%	0.02%	0.004%
Chromium	1.0E-05	1.3E-05	1.9E-05	6.2E-07	4.3E-05	0.0001%	0.04%	0.00004%	0.008%	0.00007%
Copper	1.3E-03	7.0E-04	1.3E-01	1.6E-03	1.3E-01	0.02%	2%	0.3%	21%	0.2%
Mercury	6.2E-03	9.4E-03	1.8E-02	6.6E-04	3.4E-02	0.07%	26%	0.04%	9%	0.06%
Nickel	4.4E-04	8.4E-04	1.7E-03	8.0E-05	3.0E-03	0.005%	2%	0.003%	1%	0.005%
Zinc	6.9E-04	6.9E-04	6.6E-02	1.6E-03	6.9E-02	0.008%	2%	0.1%	21%	0.1%
Polychlorinated Biphenyls										
Sum of Aroclors	6.6E-02	2.3E-03	8.7E-01	7.5E-04	9.4E-01	1%	6%	2%	10%	2%
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds										
Bis(2-ethylhexyl)phthalate	3.2E-05	1.0E-05	3.1E-04	2.4E-06	3.5E-04	0.0004%	0.03%	0.0006%	0.03%	0.0006%
PATHWAY TOTALS ACROSS $COPC_H$s	8.8E+00	3.5E-02	5.0E+01	7.7E-03	5.9E+01					
TOTAL PATHWAY CONTRIBUTION	14.82%	0.06%	85.11%	0.01%	100%					

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. Chromium was assumed to be present in the form of chromium (III) in soil and sediment.

APPENDIX I
HUMAN HEALTH EXPOSURE AND RISK ESTIMATES FOR BACKGROUND

[ON ENCLOSED CD]

Hypothetical Recreational Fisher: Exposure Pathway-Specific Noncancer Hazards and Cancer Risks, Background

Table I-1. Background Exposure to Sediment via Incidental Ingestion, Hypothetical Recreational Fisher

Scenario Type: Background

Medium: Sediment

Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{sed,\ cancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 7.03E\text{-}07$

$I_{factor,\ noncancer,\ CTE} = 4.45E\text{-}09$

$I_{factor,\ cancer,\ RME} = 7.46E\text{-}08$

$I_{factor,\ cancer,\ CTE} = 6.85E\text{-}10$

$I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Background Sediment							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	2.1E-13	3.0E-04	8.9E-16	1.3E-06	2.3E-14	9.3E-05	1.4E-16	3.9E-07
TEQ_{DF} (ND = DL0)	1.8E-13	2.6E-04	6.7E-16	9.6E-07	1.9E-14	7.8E-05	1.0E-16	2.9E-07
Metals								
Arsenic (inorganic)	3.4E-07	1.1E-03	9.0E-10	3.0E-06	3.6E-08	5.4E-08	1.4E-10	2.1E-10
Cadmium	1.2E-07	1.2E-04	4.0E-10	4.0E-07	1.3E-08	--	6.2E-11	--
Chromium (III)	3.4E-06	2.3E-06	8.1E-09	5.4E-09	3.6E-07	--	1.2E-09	--
Copper	1.4E-06	3.4E-05	6.1E-09	1.5E-07	1.4E-07	--	9.3E-10	--
Mercury (inorganic)	3.2E-09	1.1E-05	1.2E-11	4.0E-08	3.4E-10	--	1.9E-12	--
Nickel	2.8E-06	1.4E-04	4.0E-09	2.0E-07	2.9E-07	--	6.2E-10	--
Zinc	7.2E-06	2.4E-05	1.9E-08	6.4E-08	7.7E-07	--	3.0E-09	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	7.0E-14	9.9E-05	3.7E-16	5.2E-07	7.4E-15	3.0E-05	5.7E-17	1.6E-07
TEQ_P (ND = DL0)	3.5E-15	5.0E-06	1.1E-17	1.6E-08	3.7E-16	1.5E-06	1.7E-18	4.8E-09
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.2E-08	5.8E-07	4.8E-11	2.4E-09	1.2E-09	1.7E-11	7.4E-12	1.0E-13

Table I-2. Background Exposure to Sediment via Dermal Contact, Hypothetical Recreational Fisher

Scenario Type: Background

Medium: Sediment

Exposure Pathway: Dermal Contact

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{sed,\ cancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 6.64E-05$

$DAD_{factor,\ noncancer,\ CTE} = 6.63E-06$

$DAD_{factor,\ cancer,\ RME} = 1.98E-05$

$DAD_{factor,\ cancer,\ CTE} = 1.02E-06$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Background Sediment							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.2E-12	1.7E-03	8.0E-14	1.1E-04	3.6E-13	5.3E-04	1.2E-14	3.5E-05
TEQ_{DF} (ND = DL0)	1.0E-12	1.5E-03	6.0E-14	8.6E-05	3.1E-13	4.4E-04	9.2E-15	2.6E-05
Metals								
Arsenic (inorganic)	1.9E-06	6.4E-03	8.0E-08	2.7E-04	5.8E-07	8.6E-07	1.2E-08	1.9E-08
Cadmium	1.2E-08	1.2E-05	6.0E-10	6.0E-07	3.5E-09	--	9.3E-11	--
Chromium (III)	6.4E-06	4.3E-06	2.4E-07	1.6E-07	1.9E-06	--	3.7E-08	--
Copper	1.3E-04	3.2E-03	9.0E-06	2.3E-04	3.8E-05	--	1.4E-06	--
Mercury (inorganic)	9.0E-09	3.0E-05	5.4E-10	1.8E-06	2.7E-09	--	8.3E-11	--
Nickel	1.0E-05	5.2E-04	2.4E-07	1.2E-05	3.1E-06	--	3.7E-08	--
Zinc	6.8E-04	2.3E-03	2.9E-05	9.5E-05	2.0E-04	--	4.4E-06	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	3.9E-13	5.6E-04	3.3E-14	4.7E-05	1.2E-13	1.7E-04	5.1E-15	1.4E-05
TEQ_P (ND = DL0)	2.0E-14	2.8E-05	9.9E-16	1.4E-06	5.9E-15	8.7E-06	1.5E-16	4.3E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.1E-07	5.5E-06	7.2E-09	3.6E-07	3.3E-08	4.6E-10	1.1E-09	1.5E-11

Table I-3. Background Exposure via Ingestion of Hardhead Catfish Fillet, Hypothetical Recreational Fisher

Scenario Type: Background

Medium: Hardhead Catfish Fillet

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME}$ = 1.87E-04

$I_{factor,\ noncancer,\ CTE}$ = 2.66E-05

$I_{factor,\ cancer,\ RME}$ = 4.21E-05

$I_{factor,\ cancer,\ CTE}$ = 4.10E-06

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	Background Catfish							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	3.1E-10	4.4E-01	1.3E-11	1.8E-02	6.9E-11	1.3E-01	1.9E-12	5.5E-03
TEQ_{DF} (ND = DL0)	8.3E-10	1.2E+00	3.2E-12	4.6E-03	1.9E-10	3.6E-01	5.0E-13	1.4E-03
Metals								
Arsenic (inorganic)	6.3E-06	2.1E-02	7.7E-07	2.6E-03	1.4E-06	2.1E-06	1.2E-07	1.8E-07
Arsenic (organic)	5.7E-05	5.7E-03	6.9E-06	6.9E-04	1.3E-05	--	1.1E-06	--
Cadmium	4.2E-07	4.2E-04	2.3E-08	2.3E-05	9.4E-08	--	3.6E-09	--
Chromium (III)	5.6E-06	3.7E-06	3.7E-07	2.5E-07	1.3E-06	--	5.7E-08	--
Copper	3.3E-04	8.3E-03	1.6E-05	4.1E-04	7.5E-05	--	2.5E-06	--
Mercury (methyl)	2.8E-05	2.8E-01	3.4E-06	3.4E-02	6.3E-06	--	5.2E-07	--
Nickel	4.1E-06	2.0E-04	3.1E-07	1.5E-05	9.2E-07	--	4.8E-08	--
Zinc	3.0E-03	9.9E-03	3.7E-04	1.2E-03	6.7E-04	--	5.7E-05	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	1.1E-05	5.3E-01	1.3E-06	6.4E-02	2.4E-06	4.8E-06	2.0E-07	2.0E-07
Sum of 43 PCB Congeners (ND = DL0)	1.1E-05	5.3E-01	1.3E-06	6.4E-02	2.4E-06	4.8E-06	2.0E-07	2.0E-07
TEQ_P (ND = 1/2DL)	3.1E-10	4.4E-01	2.6E-11	3.7E-02	6.9E-11	1.3E-01	4.0E-12	1.1E-02
TEQ_P (ND = DL0)	1.4E-10	2.0E-01	7.8E-12	1.1E-02	3.2E-11	6.1E-02	1.2E-12	3.4E-03
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.0E-05	9.8E-04	2.8E-06	1.4E-04	4.4E-06	6.2E-08	4.3E-07	6.0E-09

Table I-4. Background Exposure via Ingestion of Clam, Hypothetical Recreational Fisher

Scenario Type: Background

Medium: Edible Clam Tissue

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 7.89E\text{-}06$

$I_{factor,\ noncancer,\ CTE} = 1.25E\text{-}06$

$I_{factor,\ cancer,\ RME} = 2.18E\text{-}06$

$I_{factor,\ cancer,\ CTE} = 1.92E\text{-}07$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	Background Clam							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	3.7E-12	5.3E-03	4.6E-13	6.5E-04	1.0E-12	1.6E-03	7.0E-14	2.0E-04
TEQ_{DF} (ND = DL0)	3.1E-12	4.5E-03	1.7E-13	2.5E-04	8.6E-13	1.4E-03	2.7E-14	7.6E-05
Metals								
Arsenic (inorganic)	4.2E-07	1.4E-03	6.1E-08	2.0E-04	1.1E-07	1.7E-07	9.4E-09	1.4E-08
Arsenic (organic)	3.8E-06	3.8E-04	5.5E-07	5.5E-05	1.0E-06	--	8.5E-08	--
Cadmium	1.1E-07	1.1E-04	1.6E-08	1.6E-05	3.0E-08	--	2.4E-09	--
Chromium (III)	1.2E-06	7.7E-07	1.6E-07	1.1E-07	3.2E-07	--	2.5E-08	--
Copper	1.3E-05	3.2E-04	1.8E-06	4.6E-05	3.5E-06	--	2.8E-07	--
Mercury (methyl)	5.3E-08	5.3E-04	7.7E-09	7.7E-05	1.5E-08	--	1.2E-09	--
Nickel	1.1E-05	5.5E-04	1.5E-06	7.5E-05	3.0E-06	--	2.3E-07	--
Zinc	8.3E-05	2.8E-04	1.2E-05	4.1E-05	2.3E-05	--	1.9E-06	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	9.4E-08	4.7E-03	1.0E-08	5.2E-04	2.6E-08	5.2E-08	1.6E-09	1.6E-09
Sum of 43 PCB Congeners (ND = DL0)	9.2E-08	4.6E-03	1.0E-08	5.0E-04	2.5E-08	5.1E-08	1.5E-09	1.5E-09
TEQ_P (ND = 1/2DL)	1.7E-12	2.4E-03	2.3E-13	3.2E-04	4.6E-13	7.3E-04	3.5E-14	9.8E-05
TEQ_P (ND = DL0)	3.0E-13	4.3E-04	2.8E-14	4.0E-05	8.4E-14	1.3E-04	4.3E-15	1.2E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.3E-07	4.1E-05	1.3E-07	6.6E-06	2.3E-07	3.2E-09	2.0E-08	2.8E-10

Table I-5. Background Exposure via Ingestion of Crab, Hypothetical Recreational Fisher

Scenario Type: Background

Medium: Edible Crab Tissue

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME}$ = 7.89E-06

$I_{factor,\ noncancer,\ CTE}$ = 1.25E-06

$I_{factor,\ cancer,\ RME}$ = 2.18E-06

$I_{factor,\ cancer,\ CTE}$ = 1.92E-07

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	Background Crab							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	1.4E-12	2.1E-03	1.6E-13	2.3E-04	4.0E-13	6.3E-04	2.4E-14	6.8E-05
TEQ_{DF} (ND = DL0)	7.3E-13	1.0E-03	3.7E-14	5.3E-05	2.0E-13	3.2E-04	5.8E-15	1.6E-05
Metals								
Arsenic (inorganic)	7.5E-07	2.5E-03	8.0E-08	2.7E-04	2.1E-07	3.1E-07	1.2E-08	1.8E-08
Arsenic (organic)	6.8E-06	6.8E-04	7.2E-07	7.2E-05	1.9E-06	--	1.1E-07	--
Cadmium	7.4E-08	7.4E-05	6.8E-09	6.8E-06	2.0E-08	--	1.0E-09	--
Chromium (III)	2.2E-07	1.4E-07	2.7E-08	1.8E-08	5.9E-08	--	4.1E-09	--
Copper	6.0E-05	1.5E-03	9.2E-06	2.3E-04	1.7E-05	--	1.4E-06	--
Mercury (methyl)	1.8E-07	1.8E-03	2.3E-08	2.3E-04	5.0E-08	--	3.6E-09	--
Nickel	3.7E-07	1.8E-05	4.8E-08	2.4E-06	1.0E-07	--	7.4E-09	--
Zinc	3.7E-04	1.2E-03	5.6E-05	1.9E-04	1.0E-04	--	8.7E-06	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	8.3E-09	4.1E-04	1.1E-09	5.7E-05	2.3E-09	4.6E-09	1.8E-10	1.8E-10
Sum of 43 PCB Congeners (ND = DL0)	7.6E-09	3.8E-04	1.0E-09	5.2E-05	2.1E-09	4.2E-09	1.6E-10	1.6E-10
TEQ_P (ND = 1/2DL)	7.5E-13	1.1E-03	1.0E-13	1.5E-04	2.1E-13	3.2E-04	1.6E-14	4.5E-05
TEQ_P (ND = DL0)	4.1E-14	5.8E-05	5.3E-15	7.6E-06	1.1E-14	1.8E-05	8.1E-16	2.3E-06
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	8.3E-07	4.1E-05	1.3E-07	6.6E-06	2.3E-07	3.2E-09	2.0E-08	2.8E-10

Notes

-- = not applicable
ADD = average daily dose
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero
RME = reasonable maximum exposure
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_P = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQ_{DF} and TEQ_P are presented as cancer hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).

Hypothetical Subsistence Fisher: Exposure Pathway-Specific Noncancer Hazards and Cancer Risks, Background

Table I-6. Background Exposure to Sediment via Incidental Ingestion, Hypothetical Subsistence Fisher

Scenario Type: Background

Medium: Sediment

Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{sed,\ cancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 1.87E-06$

$I_{factor,\ cancer,\ RME} = 1.99E-07$

$I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Background Sediment							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	5.7E-13	8.1E-04	--	--	6.0E-14	2.5E-04	--	--
TEQ_{DF} (ND = DL0)	4.8E-13	6.9E-04	--	--	5.1E-14	2.1E-04	--	--
Metals								
Arsenic (inorganic)	9.1E-07	3.0E-03	--	--	9.6E-08	1.4E-07	--	--
Cadmium	3.3E-07	3.3E-04	--	--	3.5E-08	--	--	--
Chromium (III)	9.0E-06	6.0E-06	--	--	9.6E-07	--	--	--
Copper	3.6E-06	9.0E-05	--	--	3.8E-07	--	--	--
Mercury (inorganic)	8.4E-09	2.8E-05	--	--	9.0E-10	--	--	--
Nickel	7.4E-06	3.7E-04	--	--	7.8E-07	--	--	--
Zinc	1.9E-05	6.4E-05	--	--	2.0E-06	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	1.9E-13	2.7E-04	--	--	2.0E-14	8.1E-05	--	--
TEQ_P (ND = DL0)	9.4E-15	1.3E-05	--	--	9.9E-16	4.1E-06	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	3.1E-08	1.5E-06	--	--	3.3E-09	4.6E-11	--	--

Table I-7. Background Exposure to Sediment via Dermal Contact, Hypothetical Subsistence Fisher

Scenario Type: Background

Medium: Sediment

Exposure Pathway: Dermal Contact

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{sed,\ cancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 1.77E-04$

$DAD_{factor,\ cancer,\ RME} = 5.29E-05$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Background Sediment							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	3.2E-12	4.6E-03	--	--	9.6E-13	1.4E-03	--	--
TEQ_{DF} (ND = DL0)	2.7E-12	3.9E-03	--	--	8.1E-13	1.2E-03	--	--
Metals								
Arsenic (inorganic)	5.1E-06	1.7E-02	--	--	1.5E-06	2.3E-06	--	--
Cadmium	3.1E-08	3.1E-05	--	--	9.3E-09	--	--	--
Chromium (III)	1.7E-05	1.1E-05	--	--	5.1E-06	--	--	--
Copper	3.4E-04	8.5E-03	--	--	1.0E-04	--	--	--
Mercury (inorganic)	2.4E-08	8.0E-05	--	--	7.1E-09	--	--	--
Nickel	2.8E-05	1.4E-03	--	--	8.3E-06	--	--	--
Zinc	1.8E-03	6.1E-03	--	--	5.4E-04	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	1.1E-12	1.5E-03	--	--	3.1E-13	4.6E-04	--	--
TEQ_P (ND = DL0)	5.3E-14	7.6E-05	--	--	1.6E-14	2.3E-05	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.9E-07	1.5E-05	--	--	8.7E-08	1.2E-09	--	--

Table I-8. Background Exposure via Ingestion of Hardhead Catfish Fillet, Hypothetical Subsistence Fisher

Scenario Type: Background

Medium: Hardhead Catfish Fillet

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 1.58E\text{-}03$

$I_{factor,\ cancer,\ RME} = 3.98E\text{-}04$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	Background Catfish							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	2.6E-09	3.7E+00	--	--	6.6E-10	1.1E+00	--	--
TEQ_{DF} (ND = DL0)	7.0E-09	1.0E+01	--	--	1.8E-09	3.0E+00	--	--
Metals								
Arsenic (inorganic)	5.3E-05	1.8E-01	--	--	1.3E-05	2.0E-05	--	--
Arsenic (organic)	4.8E-04	4.8E-02	--	--	1.2E-04	--	--	--
Cadmium	3.5E-06	3.5E-03	--	--	8.9E-07	--	--	--
Chromium (III)	4.7E-05	3.2E-05	--	--	1.2E-05	--	--	--
Copper	2.8E-03	7.0E-02	--	--	7.1E-04	--	--	--
Mercury (methyl)	2.4E-04	2.4E+00	--	--	5.9E-05	--	--	--
Nickel	3.4E-05	1.7E-03	--	--	8.7E-06	--	--	--
Zinc	2.5E-02	8.4E-02	--	--	6.3E-03	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	9.0E-05	4.5E+00	--	--	2.3E-05	4.5E-05	--	--
Sum of 43 PCB Congeners (ND = DL0)	9.0E-05	4.5E+00	--	--	2.3E-05	4.5E-05	--	--
TEQ_P (ND = 1/2DL)	2.6E-09	3.7E+00	--	--	6.6E-10	1.1E+00	--	--
TEQ_P (ND = DL0)	1.2E-09	1.7E+00	--	--	3.0E-10	5.1E-01	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.7E-04	8.3E-03	--	--	4.2E-05	5.9E-07	--	--

Table I-9. Background Exposure via Ingestion of Clam, Hypothetical Subsistence Fisher

Scenario Type: Background

Medium: Edible Clam Tissue

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 1.05E\text{-}04$

$I_{factor,\ cancer,\ RME} = 3.04E\text{-}05$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	Background Clam							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	4.9E-11	7.1E-02	--	--	1.4E-11	2.2E-02	--	--
TEQ_{DF} (ND = DL0)	4.2E-11	6.0E-02	--	--	1.2E-11	1.8E-02	--	--
Metals								
Arsenic (inorganic)	5.6E-06	1.9E-02	--	--	1.6E-06	2.4E-06	--	--
Arsenic (organic)	5.0E-05	5.0E-03	--	--	1.4E-05	--	--	--
Cadmium	1.5E-06	1.5E-03	--	--	4.2E-07	--	--	--
Chromium (III)	1.5E-05	1.0E-05	--	--	4.5E-06	--	--	--
Copper	1.7E-04	4.3E-03	--	--	4.9E-05	--	--	--
Mercury (methyl)	7.1E-07	7.1E-03	--	--	2.0E-07	--	--	--
Nickel	1.5E-04	7.3E-03	--	--	4.2E-05	--	--	--
Zinc	1.1E-03	3.7E-03	--	--	3.2E-04	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	1.3E-06	6.3E-02	--	--	3.6E-07	7.2E-07	--	--
Sum of 43 PCB Congeners (ND = DL0)	1.2E-06	6.2E-02	--	--	3.6E-07	7.1E-07	--	--
TEQ_P (ND = 1/2DL)	2.2E-11	3.2E-02	--	--	6.4E-12	9.7E-03	--	--
TEQ_P (ND = DL0)	4.0E-12	5.8E-03	--	--	1.2E-12	1.8E-03	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.1E-05	5.5E-04	--	--	3.2E-06	4.5E-08	--	--

Table I-10. Background Exposure via Ingestion of Crab, Hypothetical Subsistence Fisher

Scenario Type: Background

Medium: Edible Crab Tissue

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$LADD = I_{tissue,\ cancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 1.05E\text{-}04$

$I_{factor,\ cancer,\ RME} = 3.04E\text{-}05$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	Background Crab							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	1.9E-11	2.8E-02	--	--	5.6E-12	8.4E-03	--	--
TEQ_{DF} (ND = DL0)	9.7E-12	1.4E-02	--	--	2.8E-12	4.2E-03	--	--
Metals								
Arsenic (inorganic)	1.0E-05	3.4E-02	--	--	2.9E-06	4.4E-06	--	--
Arsenic (organic)	9.0E-05	9.0E-03	--	--	2.6E-05	--	--	--
Cadmium	9.8E-07	9.8E-04	--	--	2.8E-07	--	--	--
Chromium (III)	2.9E-06	1.9E-06	--	--	8.3E-07	--	--	--
Copper	8.0E-04	2.0E-02	--	--	2.3E-04	--	--	--
Mercury (methyl)	2.4E-06	2.4E-02	--	--	7.0E-07	--	--	--
Nickel	4.9E-06	2.4E-04	--	--	1.4E-06	--	--	--
Zinc	4.9E-03	1.6E-02	--	--	1.4E-03	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	1.1E-07	5.5E-03	--	--	3.2E-08	6.4E-08	--	--
Sum of 43 PCB Congeners (ND = DL0)	1.0E-07	5.1E-03	--	--	2.9E-08	5.8E-08	--	--
TEQ_P (ND = 1/2DL)	9.9E-12	1.4E-02	--	--	2.9E-12	4.3E-03	--	--
TEQ_P (ND = DL0)	5.4E-13	7.8E-04	--	--	1.6E-13	2.4E-04	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.1E-05	5.5E-04	--	--	3.2E-06	4.5E-08	--	--

Notes

-- = not applicable
ADD = average daily dose
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero
RME = reasonable maximum exposure
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_P = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQdf and TEQp are presented as cancer hazards, calculated using a cancer-based TCDD TDI and average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).
Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

Table I-11. Background Exposure to Sediment via Incidental Ingestion, Hypothetical Recreational Visitors

Scenario Type: Background

Medium: Sediment

Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{sed,\ cancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 9.37E\text{-}07$

$I_{factor,\ noncancer,\ CTE} = 8.90E\text{-}09$

$I_{factor,\ cancer,\ RME} = 9.95E\text{-}08$

$I_{factor,\ cancer,\ CTE} = 1.37E\text{-}09$

$I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Background Sediment							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	2.8E-13	4.1E-04	1.8E-15	2.5E-06	3.0E-14	1.2E-04	2.7E-16	7.7E-07
TEQ_{DF} (ND = DL0)	2.4E-13	3.4E-04	1.3E-15	1.9E-06	2.6E-14	1.0E-04	2.1E-16	5.8E-07
Metals								
Arsenic (inorganic)	4.5E-07	1.5E-03	1.8E-09	6.0E-06	4.8E-08	7.2E-08	2.8E-10	4.1E-10
Cadmium	1.6E-07	1.6E-04	8.1E-10	8.1E-07	1.8E-08	--	1.2E-10	--
Chromium (III)	4.5E-06	3.0E-06	1.6E-08	1.1E-08	4.8E-07	--	2.5E-09	--
Copper	1.8E-06	4.5E-05	1.2E-08	3.0E-07	1.9E-07	--	1.9E-09	--
Mercury (inorganic)	4.2E-09	1.4E-05	2.4E-11	8.1E-08	4.5E-10	--	3.7E-12	--
Nickel	3.7E-06	1.8E-04	8.1E-09	4.0E-07	3.9E-07	--	1.2E-09	--
Zinc	9.7E-06	3.2E-05	3.8E-08	1.3E-07	1.0E-06	--	5.9E-09	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	9.3E-14	1.3E-04	7.3E-16	1.0E-06	9.9E-15	4.0E-05	1.1E-16	3.2E-07
TEQ_P (ND = DL0)	4.7E-15	6.7E-06	2.2E-17	3.2E-08	5.0E-16	2.0E-06	3.4E-18	9.7E-09
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.5E-08	7.7E-07	9.6E-11	4.8E-09	1.6E-09	2.3E-11	1.5E-11	2.1E-13

Table I-12. Background Exposure to Soil via Incidental Ingestion, Hypothetical Recreational Visitors

Scenario Type: Background

Medium: Soil

Exposure Pathway: Incidental Ingestion

$ADD = I_{soil,\ noncancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{soil,\ cancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$I_{factor,\ noncancer,\ RME} = 9.37E\text{-}07$

$I_{factor,\ noncancer,\ CTE} = 8.90E\text{-}09$

$I_{factor,\ cancer,\ RME} = 9.95E\text{-}08$

$I_{factor,\ cancer,\ CTE} = 1.37E\text{-}09$

$I_{soil} = C_{soil} \times RBA_{soil} \times I_{factor}$

$I_{factor} = IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT)$

	Background Soil							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	3.8E-12	5.5E-03	1.4E-14	2.0E-05	4.1E-13	1.7E-03	2.1E-15	6.0E-06
TEQ_{DF} (ND = DL0)	3.5E-12	5.0E-03	5.0E-15	7.1E-06	3.7E-13	1.5E-03	7.7E-16	2.2E-06
Metals								
Arsenic (inorganic)	1.9E-06	6.3E-03	9.8E-09	3.3E-05	2.0E-07	3.0E-07	1.5E-09	2.3E-09
Cadmium	3.3E-07	3.3E-04	8.1E-10	8.1E-07	3.5E-08	--	1.3E-10	--
Chromium (III)	1.5E-05	9.8E-06	7.1E-08	4.7E-08	1.6E-06	--	1.1E-08	--
Copper	9.2E-06	2.3E-04	7.2E-08	1.8E-06	9.8E-07	--	1.1E-08	--
Mercury (inorganic)	6.6E-08	2.2E-04	3.0E-10	1.0E-06	7.0E-09	--	4.6E-11	--
Nickel	1.4E-05	6.9E-04	4.8E-08	2.4E-06	1.5E-06	--	7.4E-09	--
Zinc	9.0E-05	3.0E-04	2.7E-07	9.1E-07	9.5E-06	--	4.2E-08	--
Polychlorinated Biphenyls								
Sum of Aroclors	8.9E-09	4.5E-04	8.5E-11	4.2E-06	9.5E-10	1.9E-09	1.3E-11	1.3E-11
Sum of Aroclors (ND = DL0)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	--	--	--	--	--	--	--	--
TEQ_P (ND = DL0)	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	5.8E-08	2.9E-06	2.0E-10	1.0E-08	6.2E-09	8.6E-11	3.1E-11	4.4E-13

Table I-13. Background Exposure to Sediment via Dermal Contact, Hypothetical Recreational Visitors

Scenario Type: Background

Medium: Sediment

Exposure Pathway: Dermal Contact

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{sed,\ cancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 8.85E\text{-}05$

$DAD_{factor,\ noncancer,\ CTE} = 1.33E\text{-}05$

$DAD_{factor,\ cancer,\ RME} = 2.64E\text{-}05$

$DAD_{factor,\ cancer,\ CTE} = 2.04E\text{-}06$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Background Sediment							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	1.6E-12	2.3E-03	1.6E-13	2.3E-04	4.8E-13	7.0E-04	2.4E-14	6.9E-05
TEQ_{DF} (ND = DL0)	1.4E-12	1.9E-03	1.2E-13	1.7E-04	4.1E-13	5.9E-04	1.8E-14	5.2E-05
Metals								
Arsenic (inorganic)	2.6E-06	8.6E-03	1.6E-07	5.3E-04	7.7E-07	1.2E-06	2.5E-08	3.7E-08
Cadmium	1.6E-08	1.6E-05	1.2E-09	1.2E-06	4.7E-09	--	1.9E-10	--
Chromium (III)	8.5E-06	5.7E-06	4.8E-07	3.2E-07	2.5E-06	--	7.4E-08	--
Copper	1.7E-04	4.3E-03	1.8E-05	4.5E-04	5.1E-05	--	2.8E-06	--
Mercury (inorganic)	1.2E-08	4.0E-05	1.1E-09	3.6E-06	3.6E-09	--	1.7E-10	--
Nickel	1.4E-05	7.0E-04	4.8E-07	2.4E-05	4.2E-06	--	7.4E-08	--
Zinc	9.1E-04	3.0E-03	5.7E-05	1.9E-04	2.7E-04	--	8.8E-06	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	5.3E-13	7.5E-04	6.6E-14	9.4E-05	1.6E-13	2.3E-04	1.0E-14	2.9E-05
TEQ_P (ND = DL0)	2.7E-14	3.8E-05	2.0E-15	2.8E-06	7.9E-15	1.2E-05	3.1E-16	8.7E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.5E-07	7.3E-06	1.4E-08	7.2E-07	4.4E-08	6.1E-10	2.2E-09	3.1E-11

Table I-14. Background Exposure to Soil via Dermal Contact, Hypothetical Recreational Visitors

Scenario Type: Background

Medium: Soil

Exposure Pathway: Dermal Contact

$ADD = DAD_{soil,\ noncancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{soil,\ cancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_c)$

$HQ = ADD / RfD$

$Risk = LADD \times CSF$

$DAD_{factor,\ noncancer,\ RME} = 2.21E\text{-}06$

$DAD_{factor,\ noncancer,\ CTE} = 1.89E\text{-}07$

$DAD_{factor,\ cancer,\ RME} = 4.46E\text{-}07$

$DAD_{factor,\ cancer,\ CTE} = 2.92E\text{-}08$

$DAD_{soil} = C_{soil} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT)$

	Background Soil							
	Noncancer				Cancer			
	RME (young child)		CTE (adult)		RME (lifetime)		CTE (adult)	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	5.4E-13	7.7E-04	1.8E-14	2.5E-05	1.1E-13	2.4E-04	2.7E-15	7.7E-06
TEQ_{DF} (ND = DL0)	4.9E-13	7.0E-04	6.4E-15	9.1E-06	9.9E-14	2.1E-04	9.8E-16	2.8E-06
Metals								
Arsenic (inorganic)	2.7E-07	9.0E-04	1.2E-08	4.1E-05	5.4E-08	8.1E-08	1.9E-09	2.9E-09
Cadmium	7.9E-10	7.9E-07	1.7E-11	1.7E-08	1.6E-10	--	2.7E-12	--
Chromium (III)	7.0E-07	4.6E-07	3.0E-08	2.0E-08	1.4E-07	--	4.6E-09	--
Copper	2.2E-05	5.4E-04	1.5E-06	3.8E-05	4.4E-06	--	2.3E-07	--
Mercury (inorganic)	4.7E-09	1.6E-05	1.9E-10	6.4E-07	9.4E-10	--	2.9E-11	--
Nickel	1.3E-06	6.5E-05	4.1E-08	2.0E-06	2.6E-07	--	6.3E-09	--
Zinc	2.1E-04	7.1E-04	5.8E-06	1.9E-05	4.3E-05	--	8.9E-07	--
Polychlorinated Biphenyls								
Sum of Aroclors	2.9E-09	1.5E-04	2.5E-10	1.3E-05	5.9E-10	1.2E-09	3.9E-11	3.9E-11
Sum of Aroclors (ND = DL0)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	--	--	--	--	--	--	--	--
TEQ_P (ND = DL0)	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.4E-08	6.9E-07	4.3E-10	2.2E-08	2.8E-09	3.9E-11	6.6E-11	9.3E-13

Notes

-- = not applicable
ADD = average daily dose
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero
RME = reasonable maximum exposure
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_P = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQdf and TEQp are presented as cancer hazards, calculated using a cancer-based TCDD TDI and average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

Hypothetical Recreational Fisher: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Background

Table I-15. Hazards and Risks for Hypothetical Recreational Fishers Exposed to Background, Direct Contact with Sediments and Consumption of Catfish

Scenario: Background, Scenario A

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins and Furans																
TEQ_{DF} (ND = 1/2DL)	3.0E-04	1.7E-03	4.4E-01	4.4E-01	1.3E-06	1.1E-04	1.8E-02	1.8E-02	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	1.1E-03	6.4E-03	2.7E-02	3.4E-02	3.0E-06	2.7E-04	3.3E-03	3.5E-03	5.4E-08	8.6E-07	2.1E-06	3.0E-06	2.1E-10	1.9E-08	1.8E-07	2.0E-07
Cadmium	1.2E-04	1.2E-05	4.2E-04	5.5E-04	4.0E-07	6.0E-07	2.3E-05	2.4E-05	--	--	--	--	--	--	--	--
Chromium	2.3E-06	4.3E-06	3.7E-06	1.0E-05	5.4E-09	1.6E-07	2.5E-07	4.1E-07	--	--	--	--	--	--	--	--
Copper	3.4E-05	3.2E-03	8.3E-03	1.2E-02	1.5E-07	2.3E-04	4.1E-04	6.4E-04	--	--	--	--	--	--	--	--
Mercury	1.1E-05	3.0E-05	2.8E-01	2.8E-01	4.0E-08	1.8E-06	3.4E-02	3.4E-02	--	--	--	--	--	--	--	--
Nickel	1.4E-04	5.2E-04	2.0E-04	8.6E-04	2.0E-07	1.2E-05	1.5E-05	2.8E-05	--	--	--	--	--	--	--	--
Zinc	2.4E-05	2.3E-03	9.9E-03	1.2E-02	6.4E-08	9.5E-05	1.2E-03	1.3E-03	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	5.3E-01	5.3E-01	--	--	6.4E-02	6.4E-02	--	--	4.8E-06	4.8E-06	--	--	2.0E-07	2.0E-07
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	5.8E-07	5.5E-06	9.8E-04	9.9E-04	2.4E-09	3.6E-07	1.4E-04	1.4E-04	1.7E-11	4.6E-10	6.2E-08	6.2E-08	1.0E-13	1.5E-11	6.0E-09	6.0E-09
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-03	1.4E-02	**1.3E+00**	**1.3E+00**	5.1E-06	7.2E-04	1.2E-01	1.2E-01	5.4E-08	8.6E-07	7.0E-06	7.9E-06	2.1E-10	1.9E-08	3.8E-07	4.0E-07
TOTAL PATHWAY CONTRIBUTION	0.13%	1.08%	98.78%	100%	0.00%	0.59%	99.41%	100%	0.69%	10.94%	88.37%	100%	0.05%	4.63%	95.32%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	9.3E-05	5.3E-04	1.3E-01	1.3E-01	3.9E-07	3.5E-05	5.5E-03	5.5E-03
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	0.07%	0.39%	99.54%	100%	0.01%	0.63%	99.37%	100%

Table I-16. Hazards and Risks for Hypothetical Recreational Fishers Exposed to Background, Direct Contact with Sediments and Consumption of Clams

Scenario: Background, Scenario B

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins and Furans																
TEQ_{DF} (ND = 1/2DL)	3.0E-04	1.7E-03	5.3E-03	7.3E-03	1.3E-06	1.1E-04	6.5E-04	7.6E-04	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	1.1E-03	6.4E-03	1.8E-03	9.3E-03	3.0E-06	2.7E-04	2.6E-04	5.3E-04	5.4E-08	8.6E-07	1.7E-07	1.1E-06	2.1E-10	1.9E-08	1.4E-08	3.3E-08
Cadmium	1.2E-04	1.2E-05	1.1E-04	2.4E-04	4.0E-07	6.0E-07	1.6E-05	1.7E-05	--	--	--	--	--	--	--	--
Chromium	2.3E-06	4.3E-06	7.7E-07	7.3E-06	5.4E-09	1.6E-07	1.1E-07	2.7E-07	--	--	--	--	--	--	--	--
Copper	3.4E-05	3.2E-03	3.2E-04	3.6E-03	1.5E-07	2.3E-04	4.6E-05	2.7E-04	--	--	--	--	--	--	--	--
Mercury	1.1E-05	3.0E-05	5.3E-04	5.7E-04	4.0E-08	1.8E-06	7.7E-05	7.9E-05	--	--	--	--	--	--	--	--
Nickel	1.4E-04	5.2E-04	5.5E-04	1.2E-03	2.0E-07	1.2E-05	7.5E-05	8.7E-05	--	--	--	--	--	--	--	--
Zinc	2.4E-05	2.3E-03	2.8E-04	2.6E-03	6.4E-08	9.5E-05	4.1E-05	1.4E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	4.7E-03	4.7E-03	--	--	5.2E-04	5.2E-04	--	--	5.2E-08	5.2E-08	--	--	1.6E-09	1.6E-09
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	5.8E-07	5.5E-06	4.1E-05	4.8E-05	2.4E-09	3.6E-07	6.6E-06	6.9E-06	1.7E-11	4.6E-10	3.2E-09	3.7E-09	1.0E-13	1.5E-11	2.8E-10	3.0E-10
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-03	1.4E-02	1.4E-02	3.0E-02	5.1E-06	7.2E-04	1.7E-03	2.4E-03	5.4E-08	8.6E-07	2.3E-07	1.1E-06	2.1E-10	1.9E-08	1.6E-08	3.5E-08
TOTAL PATHWAY CONTRIBUTION	5.99%	48.05%	45.97%	100%	0.21%	29.66%	70.13%	100%	4.73%	75.40%	19.87%	100%	0.60%	53.24%	46.17%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	9.3E-05	5.3E-04	1.6E-03	2.2E-03	3.9E-07	3.5E-05	2.0E-04	2.3E-04
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	4.16%	23.56%	72.29%	100%	0.17%	14.86%	84.97%	100%

Table I-17. Hazards and Risks for Hypothetical Recreational Fishers Exposed to Background, Direct Contact with Sediments and Consumption of Crabs

Scenario: Background, Scenario C

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer Hazards								Cancer Risks							
	RME HQ (young child)				CTE HQ (adult)				RME Risk (lifetime)				CTE Risk (adult)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins and Furans																
TEQ_{DF} (ND = 1/2DL)	3.0E-04	1.7E-03	2.1E-03	4.1E-03	1.3E-06	1.1E-04	2.3E-04	3.4E-04	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																
Arsenic	1.1E-03	6.4E-03	3.2E-03	1.1E-02	3.0E-06	2.7E-04	3.4E-04	6.1E-04	5.4E-08	8.6E-07	3.1E-07	1.2E-06	2.1E-10	1.9E-08	1.8E-08	3.7E-08
Cadmium	1.2E-04	1.2E-05	7.4E-05	2.1E-04	4.0E-07	6.0E-07	6.8E-06	7.8E-06	--	--	--	--	--	--	--	--
Chromium	2.3E-06	4.3E-06	1.4E-07	6.7E-06	5.4E-09	1.6E-07	1.8E-08	1.8E-07	--	--	--	--	--	--	--	--
Copper	3.4E-05	3.2E-03	1.5E-03	4.7E-03	1.5E-07	2.3E-04	2.3E-04	4.6E-04	--	--	--	--	--	--	--	--
Mercury	1.1E-05	3.0E-05	1.8E-03	1.9E-03	4.0E-08	1.8E-06	2.3E-04	2.3E-04	--	--	--	--	--	--	--	--
Nickel	1.4E-04	5.2E-04	1.8E-05	6.8E-04	2.0E-07	1.2E-05	2.4E-06	1.5E-05	--	--	--	--	--	--	--	--
Zinc	2.4E-05	2.3E-03	1.2E-03	3.5E-03	6.4E-08	9.5E-05	1.9E-04	2.8E-04	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	4.1E-04	4.1E-04	--	--	5.7E-05	5.7E-05	--	--	4.6E-09	4.6E-09	--	--	1.8E-10	1.8E-10
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	5.8E-07	5.5E-06	4.1E-05	4.8E-05	2.4E-09	3.6E-07	6.6E-06	6.9E-06	1.7E-11	4.6E-10	3.2E-09	3.7E-09	1.0E-13	1.5E-11	2.8E-10	3.0E-10
PATHWAY TOTALS ACROSS $COPC_H$s	1.8E-03	1.4E-02	1.0E-02	2.6E-02	5.1E-06	7.2E-04	1.3E-03	2.0E-03	5.4E-08	8.6E-07	3.2E-07	1.2E-06	2.1E-10	1.9E-08	1.9E-08	3.8E-08
TOTAL PATHWAY CONTRIBUTION	6.73%	53.96%	39.31%	100%	0.26%	35.71%	64.03%	100%	4.38%	69.78%	25.84%	100%	0.55%	49.27%	50.18%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	9.3E-05	5.3E-04	6.3E-04	1.2E-03	3.9E-07	3.5E-05	6.8E-05	1.0E-04
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	7.44%	42.17%	50.39%	100%	0.37%	33.44%	66.18%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

Hypothetical Subsistence Fisher: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Background

Table I-18. Hazards and Risks for Hypothetical Subsistence Fishers Exposed to Background, Direct Contact with Sediments and Consumption of Catfish

Scenario: Background, Scenario A

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	8.1E-04	4.6E-03	**3.7E+00**	**3.7E+00**	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	3.0E-03	1.7E-02	2.3E-01	2.5E-01	1.4E-07	2.3E-06	2.0E-05	2.3E-05
Cadmium	3.3E-04	3.1E-05	3.5E-03	3.9E-03	--	--	--	--
Chromium	6.0E-06	1.1E-05	3.2E-05	4.9E-05	--	--	--	--
Copper	9.0E-05	8.5E-03	7.0E-02	7.9E-02	--	--	--	--
Mercury	2.8E-05	8.0E-05	**2.4E+00**	**2.4E+00**	--	--	--	--
Nickel	3.7E-04	1.4E-03	1.7E-03	3.5E-03	--	--	--	--
Zinc	6.4E-05	6.1E-03	8.4E-02	9.0E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	**4.5E+00**	**4.5E+00**	--	--	4.5E-05	4.5E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.5E-06	1.5E-05	8.3E-03	8.3E-03	4.6E-11	1.2E-09	5.9E-07	5.9E-07
PATHWAY TOTALS ACROSS $COPC_H$s	4.7E-03	3.8E-02	**1.1E+01**	**1.1E+01**	1.4E-07	2.3E-06	6.6E-05	6.8E-05
TOTAL PATHWAY CONTRIBUTION	0.04%	0.34%	99.61%	100%	0.21%	3.37%	96.42%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	2.5E-04	1.4E-03	**1.1E+00**	**1.1E+00**
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	0.02%	0.12%	99.85%	100%

Table I-19. Hazards and Risks for Hypothetical Subsistence Fishers Exposed to Background, Direct Contact with Sediments and Consumption of Clams

Scenario: Background, Scenario B

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	8.1E-04	4.6E-03	7.1E-02	7.6E-02	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	3.0E-03	1.7E-02	2.4E-02	4.4E-02	1.4E-07	2.3E-06	2.4E-06	4.9E-06
Cadmium	3.3E-04	3.1E-05	1.5E-03	1.8E-03	--	--	--	--
Chromium	6.0E-06	1.1E-05	1.0E-05	2.8E-05	--	--	--	--
Copper	9.0E-05	8.5E-03	4.3E-03	1.3E-02	--	--	--	--
Mercury	2.8E-05	8.0E-05	7.1E-03	7.2E-03	--	--	--	--
Nickel	3.7E-04	1.4E-03	7.3E-03	9.1E-03	--	--	--	--
Zinc	6.4E-05	6.1E-03	3.7E-03	9.8E-03	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	6.3E-02	6.3E-02	--	--	7.2E-07	7.2E-07
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.5E-06	1.5E-05	5.5E-04	5.7E-04	4.6E-11	1.2E-09	4.5E-08	4.6E-08
PATHWAY TOTALS ACROSS $COPC_H$s	4.7E-03	3.8E-02	1.8E-01	2.2E-01	1.4E-07	2.3E-06	3.2E-06	5.6E-06
TOTAL PATHWAY CONTRIBUTION	2.11%	16.93%	80.96%	100%	2.57%	40.95%	56.49%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	2.5E-04	1.4E-03	2.2E-02	2.3E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	1.07%	6.05%	92.88%	100%

Table I-20. Hazards and Risks for Hypothetical Subsistence Fishers Exposed to Background, Direct Contact with Sediments and Consumption of Crabs

Scenario: Background, Scenario C

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer - RME HQ (young child)				Cancer - RME Risk (lifetime)			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins and Furans								
TEQ_{DF} (ND = 1/2DL)	8.1E-04	4.6E-03	2.8E-02	3.3E-02	--[a]	--[a]	--[a]	--[a]
Metals								
Arsenic	3.0E-03	1.7E-02	4.3E-02	6.3E-02	1.4E-07	2.3E-06	4.4E-06	6.8E-06
Cadmium	3.3E-04	3.1E-05	9.8E-04	1.3E-03	--	--	--	--
Chromium	6.0E-06	1.1E-05	1.9E-06	1.9E-05	--	--	--	--
Copper	9.0E-05	8.5E-03	2.0E-02	2.9E-02	--	--	--	--
Mercury	2.8E-05	8.0E-05	2.4E-02	2.4E-02	--	--	--	--
Nickel	3.7E-04	1.4E-03	2.4E-04	2.0E-03	--	--	--	--
Zinc	6.4E-05	6.1E-03	1.6E-02	2.2E-02	--	--	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	5.5E-03	5.5E-03	--	--	6.4E-08	6.4E-08
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	1.5E-06	1.5E-05	5.5E-04	5.7E-04	4.6E-11	1.2E-09	4.5E-08	4.6E-08
PATHWAY TOTALS ACROSS $COPC_H$S	4.7E-03	3.8E-02	1.4E-01	1.8E-01	1.4E-07	2.3E-06	4.5E-06	6.9E-06
TOTAL PATHWAY CONTRIBUTION	2.61%	20.98%	76.41%	100%	2.09%	33.32%	64.59%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	2.5E-04	1.4E-03	8.4E-03	1.0E-02
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	2.47%	13.99%	83.55%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQDF were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.
Bold values indicate noncancer and cancer hazards greater than 1 and cancer risks greater than 1E-04.

Table I-21. Hazards and Risks for Hypothetical Recreational Visitors Exposed to Background, Direct Contact with Sediments and Soils

Scenario: Background, Scenario 1

Exposure Units: Background

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer Hazards										Cancer Risks									
	RME HQ (young child)					CTE HQ (adult)					RME Risk (lifetime)					CTE Risk (adult)				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins and Furans																				
TEQ_{DF} (ND = 1/2DL)	4.1E-04	5.5E-03	2.3E-03	7.7E-04	8.9E-03	2.5E-06	2.0E-05	2.3E-04	2.5E-05	2.8E-04	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals																				
Arsenic	1.5E-03	6.3E-03	8.6E-03	9.0E-04	1.7E-02	6.0E-06	3.3E-05	5.3E-04	4.1E-05	6.1E-04	7.2E-08	3.0E-07	1.2E-06	8.1E-08	1.6E-06	4.1E-10	2.3E-09	3.7E-08	2.9E-09	4.3E-08
Cadmium	1.6E-04	3.3E-04	1.6E-05	7.9E-07	5.1E-04	8.1E-07	8.1E-07	1.2E-06	1.7E-08	2.8E-06	--	--	--	--	--	--	--	--	--	--
Chromium	3.0E-06	9.8E-06	5.7E-06	4.6E-07	1.9E-05	1.1E-08	4.7E-08	3.2E-07	2.0E-08	4.0E-07	--	--	--	--	--	--	--	--	--	--
Copper	4.5E-05	2.3E-04	4.3E-03	5.4E-04	5.1E-03	3.0E-07	1.8E-06	4.5E-04	3.8E-05	4.9E-04	--	--	--	--	--	--	--	--	--	--
Mercury	1.4E-05	2.2E-04	4.0E-05	1.6E-05	2.9E-04	8.1E-08	1.0E-06	3.6E-06	6.4E-07	5.3E-06	--	--	--	--	--	--	--	--	--	--
Nickel	1.8E-04	6.9E-04	7.0E-04	6.5E-05	1.6E-03	4.0E-07	2.4E-06	2.4E-05	2.0E-06	2.9E-05	--	--	--	--	--	--	--	--	--	--
Zinc	3.2E-05	3.0E-04	3.0E-03	7.1E-04	4.1E-03	1.3E-07	9.1E-07	1.9E-04	1.9E-05	2.1E-04	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																				
Sum of Aroclors	--	4.5E-04	--	1.5E-04	5.9E-04	--	4.2E-06	--	1.3E-05	1.7E-05	--	1.9E-09	--	1.2E-09	3.1E-09	--	1.3E-11	--	3.9E-11	5.2E-11
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																				
Bis(2-ethylhexyl)phthalate	7.7E-07	2.9E-06	7.3E-06	6.9E-07	1.2E-05	4.8E-09	1.0E-08	7.2E-07	2.2E-08	7.5E-07	2.3E-11	8.6E-11	6.1E-10	3.9E-11	7.6E-10	2.1E-13	4.4E-13	3.1E-11	9.3E-13	3.2E-11
PATHWAY TOTALS ACROSS $COPC_H$s	2.4E-03	1.4E-02	1.9E-02	3.1E-03	3.8E-02	1.0E-05	6.4E-05	1.4E-03	1.4E-04	1.6E-03	7.2E-08	3.0E-07	1.2E-06	8.2E-08	1.6E-06	4.1E-10	2.3E-09	3.7E-08	2.9E-09	4.3E-08
TOTAL PATHWAY CONTRIBUTION	6.14%	36.43%	49.25%	8.19%	100%	0.62%	3.86%	87.04%	8.47%	100%	4.48%	18.89%	71.50%	5.12%	100%	0.97%	5.31%	86.89%	6.83%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	--	--	--	--	1.2E-04	1.7E-03	7.0E-04	2.4E-04	2.7E-03	7.7E-07	6.0E-06	6.9E-05	7.7E-06	8.4E-05
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	--	--	--	--	4.55%	61.04%	25.77%	8.65%	100%	0.92%	7.21%	82.65%	9.21%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. Chromium was assumed to be present in the form of chromium (III).

APPENDIX J
HUMAN HEALTH EXPOSURE AND RISK ESTIMATES FOR THE AREA OF INVESTIGATION ON THE PENINSULA SOUTH OF I-10

[ON ENCLOSED CD]

Appendix J overview.

In comments on the draft of the BHHRA, USEPA required preparation and presentation of exposure and risk estima
consruction worker exposure and risk estimates to this appendix fulfillls that requirement. The results are discuss

ates for soils > 2ft. The addition of the
ed in the final BHHRA.

Hypothetical Trespasser: Exposure Pathway-Specific Noncancer Hazards, Cancer Risks, and Dioxin Cancer Hazards, Area of Investigation on the Peninsula South of I-10

Table J-1. Site Exposure to Soil via Incidental Ingestion, Hypothetical Trespasser

Scenario: Baseline

Medium: Surface soils

Exposure Pathway: Incidental ingestion

$ADD = I_{soil,\ noncancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{soil,\ cancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_c)$

Noncancer HQ = ADD / RfD

Cancer Hazard (for TEQdf only) = ADD / TDI

Cancer Risk = LADD x CSF

$I_{factor,\ noncancer,\ RME} = 1.82E-08$

$I_{factor,\ noncancer,\ CTE} = 4.55E-09$

$I_{factor,\ cancer,\ RME} = 1.63E-09$

$I_{factor,\ cancer,\ CTE} = 2.34E-10$

$I_{soil} = C_{soil} \times RBA_{soil} \times I_{factor}$

$I_{factor} = IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT)$

	Area of Investigation on the Peninsula South of I-10							
	Noncancer				Cancer			
	RME		CTE		RME		CTE	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	DRAFT	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND=1/2DL)	2.5E-13	3.6E-04	2.3E-14	3.4E-05	2.3E-14	1.1E-04	1.2E-15	1.0E-05
TEQ_{DF} (ND=DL0)	2.6E-13	3.7E-04	2.3E-14	3.3E-05	2.3E-14	1.1E-04	1.2E-15	9.9E-06
Metals								
Arsenic[b]	1.0E-06	3.3E-03	7.1E-08	2.4E-04	9.0E-08	1.3E-07	3.6E-09	5.4E-09
Semivolatile Organic Compounds								
Benzo(a)pyrene	6.7E-09	--	6.4E-10	--	6.0E-10	4.4E-09	3.3E-11	2.4E-10

Table J-2. Site Exposure to Soil via Dermal Contact, Hypothetical Trespasser

Scenario: Baseline

Medium: Surface soils

Exposure Pathway: Dermal contact

$ADD = DAD_{soil,\ noncancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{soil,\ cancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_c)$

Noncancer HQ = ADD / RfD

Cancer Hazard (for TEQdf only) = ADD / TDI

Cancer Risk = LADD x CSF

$DAD_{factor,\ noncancer,\ RME} = 1.71E\text{-}07$

$DAD_{factor,\ noncancer,\ CTE} = 4.28E\text{-}08$

$DAD_{factor,\ cancer,\ RME} = 1.54E\text{-}08$

$DAD_{factor,\ cancer,\ CTE} = 2.19E\text{-}09$

$DAD_{soil} = C_{soil} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{soil} \times SA \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT)$

	Area of Investigation on the Peninsula South of I-10							
	Noncancer				Cancer			
	RME		CTE		RME		CTE	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND=1/2DL)	1.4E-13	2.0E-04	1.3E-14	1.9E-05	1.3E-14	6.2E-05	6.8E-16	5.7E-06
TEQ_{DF} (ND=DL0)	1.4E-13	2.1E-04	1.3E-14	1.8E-05	1.3E-14	6.3E-05	6.6E-16	5.6E-06
Metals								
Arsenic[b]	5.6E-07	1.9E-03	4.0E-08	1.3E-04	5.1E-08	7.6E-08	2.0E-09	3.1E-09
Semivolatile Organic Compounds								
Benzo(a)pyrene	8.2E-09	--	7.8E-10	--	7.3E-10	5.4E-09	4.0E-11	2.9E-10

Notes

-- = not applicable

ADD = average daily dose

CF_1 = conversion factor 1; 1E-06 kg/mg

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

LADD = lifetime average daily dose

ND = 1/2DL = nondetects set at one-half the detection limit

ND = DL0 = Nondetects set at zero.

TEQ_{DF} = toxicity equivalent for dioxins and furans

a- Cancer "risks" from exposure to TEQ_{DF} are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).

b- Arsenic is assumed to be present in its inorganic form.

Hypothetical Commercial Worker: Exposure Pathway-Specific Noncancer Hazards, Cancer Risks, and Dioxin Cancer Hazards, Area of Investigation on the Peninsula South of I-10

Table J-3. Site Exposure to Soil via Incidental Ingestion, Hypothetical Commercial Worker

Scenario: Baseline

Medium: Surface and shallow subsurface soils

Exposure Pathway: Incidental ingestion

$ADD = I_{soil,\ noncancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_n)$

$LADD = I_{soil,\ cancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_c)$

Noncancer HQ = ADD / RfD

Cancer Hazard (for TEQdf only) = ADD / TDI

Cancer Risk = LADD x CSF

$I_{factor,\ noncancer,\ RME} = 7.71E\text{-}07$

$I_{factor,\ noncancer,\ CTE} = 3.85E\text{-}07$

$I_{factor,\ cancer,\ RME} = 2.47E\text{-}07$

$I_{factor,\ cancer,\ CTE} = 5.93E\text{-}08$

$I_{soil} = C_{soil} \times RBA_{soil} \times I_{factor}$

$I_{factor} = IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT)$

	Area of Investigation on the Peninsula South of I-10							
	Noncancer				Cancer			
	RME		CTE		RME		CTE	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND=1/2DL)	9.5E-12	1.4E-02	2.1E-12	2.9E-03	3.0E-12	4.1E-03	3.2E-13	9.0E-04
TEQ_{DF} (ND=DL0)	9.5E-12	1.4E-02	2.0E-12	2.9E-03	3.1E-12	4.1E-03	3.1E-13	8.8E-04
Metals								
Arsenic[b]	3.7E-05	1.2E-01	5.8E-06	1.9E-02	1.2E-05	1.8E-05	8.9E-07	1.3E-06
Semivolatile Organic Compounds								
Benzo(a)pyrene	2.7E-07	--	4.5E-08	--	8.5E-08	6.2E-07	6.9E-09	5.0E-08

Table J-4. Site Exposure to Soil via Dermal Contact, Hypothetical Commercial Worker

Scenario: Baseline

Medium: Surface and shallow subsurface soils

Exposure Pathway: Dermal contact

$ADD = DAD_{soil,\ noncancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$LADD = DAD_{soil,\ cancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_c)$

Noncancer HQ = ADD / RfD

Cancer Hazard (for TEQdf only) = ADD / TDI

Cancer Risk = LADD x CSF

$DAD_{factor,\ noncancer,\ RME}$ = 5.35E-06

$DAD_{factor,\ noncancer,\ CTE}$ = 5.35E-06

$DAD_{factor,\ cancer,\ RME}$ = 1.71E-06

$DAD_{factor,\ cancer,\ CTE}$ = 8.23E-07

$DAD_{soil} = C_{soil} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{soil} \times SA \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT)$

	Area of Investigation on the Peninsula South of I-10							
	Noncancer				Cancer			
	RME		CTE		RME		CTE	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins and Furans								
TEQ_{DF} (ND=1/2DL)	3.9E-12	5.6E-03	1.7E-12	2.5E-03	1.3E-12	1.7E-03	2.6E-13	7.5E-04
TEQ_{DF} (ND=DL0)	4.0E-12	5.7E-03	1.7E-12	2.4E-03	1.3E-12	1.7E-03	2.6E-13	7.3E-04
Metals								
Arsenic[b]	1.6E-05	5.2E-02	4.8E-06	1.6E-02	5.0E-06	7.5E-06	7.4E-07	1.1E-06
Semivolatile Organic Compounds								
Benzo(a)pyrene	2.4E-07	--	8.1E-08	--	7.7E-08	5.6E-07	1.2E-08	9.1E-08

Notes

-- = not applicable

ADD = average daily dose

CF_1 = conversion factor 1; 1E-06 kg/mg

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

LADD = lifetime average daily dose

ND = 1/2DL = nondetects set at one-half the detection limit

ND = DL0 = Nondetects set at zero.

TEQ_{DF} = toxicity equivalent for dioxins and furans

a- Cancer "risks" from exposure to TEQ_{DF} are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).

b- Arsenic is assumed to be present in its inorganic form.

Table J-5. Site Exposure to Soil via Incidental Ingestion, Hypothetical Consruction Worker

Scenario: Baseline
Medium: Surface and deep subsurface soils
Exposure Pathway: Incidental ingestion

$ADD = I_{soil,\ noncancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_n)$
$LADD = I_{soil,\ cancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_c)$
Noncancer HQ = ADD / RfD
Cancer Hazard (for TEQdf only) = ADD / TDI
Cancer Risk = LADD x CSF

$I_{factor,\ noncancer,\ RME} =$ 2.83E-06
$I_{factor,\ noncancer,\ CTE} =$ 4.28E-07
$I_{factor,\ cancer,\ RME} =$ 3.62E-08
$I_{factor,\ cancer,\ CTE} =$ 5.49E-09

$I_{soil} = C_{soil} \times RBA_{soil} \times I_{factor}$
$I_{factor} = IR_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT)$

	DS-1								DS-2								DS-3							
	Noncancer				Cancer				Noncancer				Cancer				Noncancer				Cancer			
	RME		CTE [c]		RME		CTE [c]		RME		CTE [c]		RME		CTE [c]		RME		CTE [c]		RME		CTE [c]	
COPC$_{in}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																								
TEQdf1/2DL	3.4E-09	4.8E+00	5.1E-10	7.3E-01	4.3E-11	1.5E+00	6.6E-12	2.2E-01	1.5E-08	2.2E+01	2.3E-09	3.3E+00	2.0E-10	6.7E+00	3.0E-11	1.0E+00	8.4E-12	1.2E-02	1.3E-12	1.8E-03	1.1E-13	3.6E-03	1.6E-14	5.5E-04
TEQdfDL0	3.4E-09	4.8E+00	5.1E-10	7.3E-01	4.3E-11	1.5E+00	6.6E-12	2.2E-01	1.5E-08	2.2E+01	2.3E-09	3.3E+00	2.0E-10	6.7E+00	3.0E-11	1.0E+00	8.1E-12	1.2E-02	1.2E-12	1.7E-03	1.0E-13	3.5E-03	1.6E-14	5.3E-04
Metals																								
Arsenic[b]	8.8E-06	2.9E-02	1.3E-06	4.4E-03	1.1E-07	1.7E-07	1.7E-08	2.6E-08	8.9E-06	3.0E-02	1.4E-06	4.5E-03	1.1E-07	1.7E-07	1.7E-08	2.6E-08	1.2E-04	3.9E-01	1.8E-05	6.0E-02	1.5E-06	2.3E-06	2.3E-07	3.4E-07
Semivolatile Organic Compounds																								
Benzo(a)pyrene	4.5E-07	--	6.9E-08	--	5.8E-09	4.3E-08	8.8E-10	6.5E-09	7.5E-07	--	1.1E-07	--	9.6E-09	7.0E-08	1.5E-09	1.1E-08	1.1E-07	--	1.6E-08	--	1.4E-09	1.0E-08	2.1E-10	1.5E-09
Polychlorinated Biphenyls																								
Sum of 43 Congeners - 1/2DL	8.1E-07	1.3E-02	1.2E-07	2.0E-03	1.0E-08	2.1E-08	1.6E-09	1.6E-09	1.5E-06	2.5E-02	2.2E-07	3.7E-03	1.9E-08	3.8E-08	2.9E-09	2.9E-09	9.5E-08	1.6E-03	1.4E-08	2.4E-04	1.2E-09	2.4E-09	1.8E-10	1.8E-10
Sum of 43 Congeners - DL0	8.1E-07	1.3E-02	1.2E-07	2.0E-03	1.0E-08	2.1E-08	1.6E-09	1.6E-09	1.5E-06	2.5E-02	2.2E-07	3.7E-03	1.9E-08	3.8E-08	2.9E-09	2.9E-09	9.5E-08	1.6E-03	1.4E-08	2.4E-04	1.2E-09	2.4E-09	1.8E-10	1.8E-10
TEQp1/2DL	2.4E-12	3.4E-03	3.6E-13	5.1E-04	3.0E-14	1.0E-03	4.6E-15	1.6E-04	1.7E-11	2.4E-02	2.6E-12	3.7E-03	2.2E-13	7.4E-03	3.3E-14	1.1E-03	1.1E-12	1.6E-03	1.7E-13	2.4E-04	1.5E-14	4.9E-04	2.2E-15	7.5E-05
TEQpDL0	1.6E-12	2.2E-03	2.4E-13	3.4E-04	2.0E-14	6.8E-04	3.0E-15	1.0E-04	5.4E-12	7.7E-03	8.2E-13	1.2E-03	7.0E-14	2.4E-03	1.1E-14	3.6E-04	1.7E-13	2.4E-04	2.6E-14	3.7E-05	2.2E-15	7.4E-05	3.3E-16	1.1E-05

	DS-4								DS-5							
	Noncancer				Cancer				Noncancer				Cancer			
	RME		CTE [c]		RME		CTE [c]		RME		CTE [c]		RME		CTE [c]	
COPC$_{in}$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQdf1/2DL	1.1E-08	1.6E+01	1.7E-09	2.4E+00	1.4E-10	4.8E+00	2.1E-11	7.2E-01	7.8E-10	1.1E+00	1.2E-10	1.7E-01	1.0E-11	3.4E-01	1.5E-12	5.1E-02
TEQdfDL0	1.1E-08	1.6E+01	1.7E-09	2.4E+00	1.4E-10	4.8E+00	2.1E-11	7.2E-01	7.8E-10	1.1E+00	1.2E-10	1.7E-01	1.0E-11	3.4E-01	1.5E-12	5.1E-02
Metals																
Arsenic[b]	4.0E-05	1.3E-01	6.1E-06	2.0E-02	5.2E-07	7.7E-07	7.8E-08	1.2E-07	4.2E-06	1.4E-02	6.4E-07	2.1E-03	5.4E-08	8.1E-08	8.2E-09	1.2E-08
Semivolatile Organic Compounds																
Benzo(a)pyrene	7.1E-07	--	1.1E-07	--	9.1E-09	6.6E-08	1.4E-09	1.0E-08	2.1E-08	--	3.1E-09	--	2.7E-10	1.9E-09	4.0E-11	2.9E-10
Polychlorinated Biphenyls																
Sum of 43 Congeners - 1/2DL	2.0E-06	3.4E-02	3.1E-07	5.1E-03	2.6E-08	5.2E-08	3.9E-09	3.9E-09	5.6E-08	9.4E-04	8.5E-09	1.4E-04	7.2E-10	1.4E-09	1.1E-10	1.1E-10
Sum of 43 Congeners - DL0	2.0E-06	3.4E-02	3.1E-07	5.1E-03	2.6E-08	5.2E-08	3.9E-09	3.9E-09	5.6E-08	9.4E-04	8.5E-09	1.4E-04	7.2E-10	1.4E-09	1.1E-10	1.1E-10
TEQp1/2DL	7.5E-12	1.1E-02	1.1E-12	1.6E-03	9.6E-14	3.3E-03	1.5E-14	4.9E-04	6.5E-13	9.2E-04	9.8E-14	1.4E-04	8.3E-15	2.8E-04	1.3E-15	4.3E-05
TEQpDL0	1.9E-12	2.8E-03	3.0E-13	4.2E-04	2.5E-14	8.5E-04	3.8E-15	1.3E-04	1.1E-13	1.6E-04	1.7E-14	2.4E-05	1.4E-15	4.9E-05	2.2E-16	7.4E-06

Table J-6. Site Exposure to Soil via Dermal Contact, Hypothetical Construction Worker

Scenario: Baseline
Medium: Surface and deep subsurface soils
Exposure Pathway: Dermal contact

$ADD = DAD_{soil,\ noncancer} = C_{soil}\ x\ ABS_d\ x\ AF_{soil}\ x\ SA\ x\ FI_{soil}\ x\ EF_{soil}\ x\ ED\ x\ EV\ x\ CF_1\ /\ (BW\ x\ AT_n)$
$LADD = DAD_{soil,\ cancer} = C_{soil}\ x\ ABS_d\ x\ AF_{soil}\ x\ SA\ x\ FI_{soil}\ x\ EF_{soil}\ x\ ED\ x\ EV\ x\ CF_1\ /\ (BW\ x\ AT_c)$
Noncancer HQ = ADD / RfD
Cancer Hazard (for TEQdf only) = ADD / TDI
Cancer Risk = LADD x CSF

$DAD_{factor,\ noncancer,\ RME}$ = 4.73E-06
$DAD_{factor,\ noncancer,\ CTE}$ = 2.36E-06
$DAD_{factor,\ cancer,\ RME}$ = 6.06E-08
$DAD_{factor,\ cancer,\ CTE}$ = 3.03E-08

$DAD_{soil} = C_{soil}\ x\ ABS_d\ x\ DAD_{factor}$
$DAD_{factor} = AF_{soil}\ x\ SA\ x\ FI_{soil}\ x\ EF_{soil}\ x\ ED\ x\ EV\ x\ CF_1\ /\ (BW\ x\ AT)$

	DS-1								DS-2							
	Noncancer				Cancer				Noncancer				Cancer			
	RME		CTE [c]		RME		CTE [c]		RME		CTE [c]		RME		CTE [c]	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND=1/2DL)	3.4E-10	4.9E-01	1.7E-10	2.4E-01	4.4E-12	1.5E-01	2.2E-12	7.4E-02	1.5E-09	2.2E+00	7.7E-10	1.1E+00	2.0E-11	6.7E-01	9.9E-12	3.4E-01
TEQ_{DF} (ND=DL0)	3.4E-10	4.9E-01	1.7E-10	2.4E-01	4.4E-12	1.5E-01	2.2E-12	7.4E-02	1.5E-09	2.2E+00	7.7E-10	1.1E+00	2.0E-11	6.7E-01	9.9E-12	3.4E-01
Metals																
Arsenic[b]	8.8E-07	2.9E-03	4.4E-07	1.5E-03	1.1E-08	1.7E-08	5.7E-09	8.5E-09	9.0E-07	3.0E-03	4.5E-07	1.5E-03	1.2E-08	1.7E-08	5.8E-09	8.6E-09
Semivolatile Organic Compounds																
Benzo(a)pyrene	9.9E-08	--	4.9E-08	--	1.3E-09	9.3E-09	6.3E-10	4.6E-09	1.6E-07	--	8.1E-08	--	2.1E-09	1.5E-08	1.0E-09	7.6E-09
Polychlorinated Biphenyls																
Sum of 43 Congeners (ND=1/2DL)	1.9E-07	3.2E-03	9.5E-08	1.6E-03	2.4E-09	4.9E-09	1.2E-09	1.2E-09	3.5E-07	5.8E-03	1.7E-07	2.9E-03	4.5E-09	8.9E-09	2.2E-09	2.2E-09
Sum of 43 Congeners (ND=DL0)	1.9E-07	3.2E-03	9.5E-08	1.6E-03	2.4E-09	4.9E-09	1.2E-09	1.2E-09	3.5E-07	5.8E-03	1.7E-07	2.9E-03	4.5E-09	8.9E-09	2.2E-09	2.2E-09
TEQp1/2DL	2.4E-13	3.4E-04	1.2E-13	1.7E-04	3.1E-15	1.0E-04	1.5E-15	5.2E-05	1.7E-12	2.4E-03	8.5E-13	1.2E-03	2.2E-14	7.4E-04	1.1E-14	3.7E-04
TEQpDL0	1.6E-13	2.2E-04	7.8E-14	1.1E-04	2.0E-15	6.8E-05	1.0E-15	3.4E-05	5.4E-13	7.8E-04	2.7E-13	3.9E-04	7.0E-15	2.4E-04	3.5E-15	1.2E-04

	DS-3								DS-4							
	Noncancer				Cancer				Noncancer				Cancer			
	RME		CTE [c]		RME		CTE [c]		RME		CTE [c]		RME		CTE [c]	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND=1/2DL)	8.4E-13	1.2E-03	4.2E-13	6.0E-04	1.1E-14	3.7E-04	5.4E-15	1.8E-04	1.1E-09	1.6E+00	5.5E-10	7.9E-01	1.4E-11	4.8E-01	7.1E-12	2.4E-01
TEQ_{DF} (ND=DL0)	8.1E-13	1.2E-03	4.1E-13	5.8E-04	1.0E-14	3.5E-04	5.2E-15	1.8E-04	1.1E-09	1.6E+00	5.5E-10	7.9E-01	1.4E-11	4.8E-01	7.1E-12	2.4E-01
Metals																
Arsenic[b]	1.2E-05	4.0E-02	5.9E-06	2.0E-02	1.5E-07	2.3E-07	7.6E-08	1.1E-07	4.0E-06	1.3E-02	2.0E-06	6.7E-03	5.2E-08	7.8E-08	2.6E-08	3.9E-08
Semivolatile Organic Compounds																
Benzo(a)pyrene	2.3E-08	--	1.2E-08	--	3.0E-10	2.2E-09	1.5E-10	1.1E-09	1.5E-07	--	7.7E-08	--	2.0E-09	1.4E-08	9.9E-10	7.2E-09
Polychlorinated Biphenyls																
Sum of 43 Congeners (ND=1/2DL)	2.2E-08	3.7E-04	1.1E-08	1.9E-04	2.9E-10	5.7E-10	1.4E-10	1.4E-10	4.7E-07	7.9E-03	2.4E-07	3.9E-03	6.1E-09	1.2E-08	3.0E-09	3.0E-09
Sum of 43 Congeners (ND=DL0)	2.2E-08	3.7E-04	1.1E-08	1.9E-04	2.9E-10	5.7E-10	1.4E-10	1.4E-10	4.7E-07	7.9E-03	2.4E-07	3.9E-03	6.1E-09	1.2E-08	3.0E-09	3.0E-09
TEQp1/2DL	1.1E-13	1.6E-04	5.7E-14	8.1E-05	1.5E-15	4.9E-05	7.3E-16	2.5E-05	7.5E-13	1.1E-03	3.8E-13	5.4E-04	9.7E-15	3.3E-04	4.8E-15	1.6E-04
TEQpDL0	1.7E-14	2.4E-05	8.5E-15	1.2E-05	2.2E-16	7.4E-06	1.1E-16	3.7E-06	2.0E-13	2.8E-04	9.8E-14	1.4E-04	2.5E-15	8.5E-05	1.3E-15	4.3E-05

	DS-5							
	Noncancer				Cancer			
	RME		CTE [c]		RME		CTE [c]	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD (mg/kg-day)	HQ (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)	LADD (mg/kg-day)	Risk[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND=1/2DL)	7.8E-11	1.1E-01	3.9E-11	5.6E-02	1.0E-12	3.4E-02	5.0E-13	1.7E-02
TEQ_{DF} (ND=DL0)	7.8E-11	1.1E-01	3.9E-11	5.6E-02	1.0E-12	3.4E-02	5.0E-13	1.7E-02
Metals								
Arsenic[b]	4.2E-07	1.4E-03	2.1E-07	7.0E-04	5.4E-09	8.1E-09	2.7E-09	4.1E-09
Semivolatile Organic Compounds								
Benzo(a)pyrene	4.5E-09	--	2.3E-09	--	5.8E-11	4.2E-10	2.9E-11	2.1E-10
Polychlorinated Biphenyls								
Sum of 43 Congeners (ND=1/2DL)	1.3E-08	2.2E-04	6.6E-09	1.1E-04	1.7E-10	3.4E-10	8.4E-11	8.4E-11
Sum of 43 Congeners (ND=DL0)	1.3E-08	2.2E-04	6.6E-09	1.1E-04	1.7E-10	3.4E-10	8.4E-11	8.4E-11
TEQp1/2DL	6.5E-14	9.3E-05	3.2E-14	4.6E-05	8.3E-16	2.8E-05	4.2E-16	1.4E-05
TEQpDL0	1.1E-14	1.6E-05	5.6E-15	8.0E-06	1.4E-16	4.9E-06	7.2E-17	2.4E-06

Notes
-- = not applicable
ADD = average daily dose
CF_1 = conversion factor 1; 1E-06 kg/mg
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = Nondetects set at zero.
TEQ_{DF} = toxicity equivalent for dioxins and furans
a- Cancer "risks" from exposure to TEQ_{DF} are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).
b- Arsenic is assumed to be present in its inorganic form.
c - For the construction worker scenario, both CTE and RME exposure and risk estimates relied on a RME exposure point concentration

Hypothetical Trespasser: Noncancer Hazards, Cancer Risks, and Dioxin Cancer HazardsCombined Across Exposure Pathways, Area of Investigation on the Peninsula South of I-10

Table J-7. Hazards and Risks for Hypothetical Trespassers, Direct Contact with Soil, Scenario 1

Scenario: Baseline, Scenario 1

Exposure Units: Southern impoundment area surface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ			RME Risk			CTE Risk		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins and Furans												
TEQ_{DF} (ND=1/2DL)	3.6E-04	2.0E-04	5.7E-04	3.4E-05	1.9E-05	5.2E-05	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	3.3E-03	1.9E-03	5.2E-03	2.4E-04	1.3E-04	3.7E-04	1.3E-07	7.6E-08	2.1E-07	5.4E-09	3.1E-09	8.5E-09
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	4.4E-09	5.4E-09	9.8E-09	2.4E-10	2.9E-10	5.3E-10
PATHWAY TOTALS ACROSS $COPC_H$s	3.7E-03	2.1E-03	5.8E-03	2.7E-04	1.5E-04	4.2E-04	1.4E-07	8.1E-08	2.2E-07	5.7E-09	3.4E-09	9.0E-09
TOTAL PATHWAY CONTRIBUTION	64%	36%	100%	64%	36%	100%	63%	37%	100%	63%	37%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	1.1E-04	6.2E-05	1.7E-04	1.0E-05	5.7E-06	1.6E-05
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	64%	36%	100%	64%	36%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses.

b - Arsenic is assumed to be present in its inorganic form.

Hypothetical Commercial Worker: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Area of Investigation on the Peninsula South of I-10

Table J-8. Hazards and Risks for Hypothetical Commercial Workers, Direct Contact with Soil, Scenario 1

Scenario: Baseline, Scenario 1

Exposure Units: Southern impoundment area surface and shallow subsurface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ			RME Risk			CTE Risk		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins and Furans												
TEQ_{DF} (ND=1/2DL)	1.4E-02	5.6E-03	1.9E-02	2.9E-03	2.5E-03	5.4E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	1.2E-01	5.2E-02	1.8E-01	1.9E-02	1.6E-02	3.5E-02	1.8E-05	7.5E-06	2.5E-05	1.3E-06	1.1E-06	2.4E-06
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	6.2E-07	5.6E-07	1.2E-06	5.0E-08	9.1E-08	1.4E-07
PATHWAY TOTALS ACROSS $COPC_H$S	1.4E-01	5.8E-02	2.0E-01	2.2E-02	1.8E-02	4.1E-02	1.9E-05	8.0E-06	2.7E-05	1.4E-06	1.2E-06	2.6E-06
TOTAL PATHWAY CONTRIBUTION	71%	29%	100%	55%	45%	100%	70%	30%	100%	54%	46%	100%
TEQ_{DF} CANCER HAZARD[a]	--	--	--	--	--	--	4.1E-03	1.7E-03	5.8E-03	9.0E-04	7.5E-04	1.6E-03
PATHWAY CONTRIBUTION for TEQ_{DF} CANCER HAZARD	--	--	--	--	--	--	71%	29%	100%	55%	45%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses.

b - Arsenic is assumed to be present in its inorganic form.

Hypothetical Construction Worker: Noncancer Hazards and Cancer Risks Combined Across Exposure Pathways, Area of Investigation on the Peninsula South of I-10

Table J-9. Hazards and Risks for Hypothetical Construction Workers, Direct Contact with Soil, Scenario DS-1

Scenario: Baseline, Scenario DS-1

Exposure Units: DS-1 surface and deep subsurface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ [c]			RME Risk			CTE Risk [c]		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins/Furans												
TEQdf1/2DL	**4.8E+00**	4.9E-01	**5.3E+00**	7.3E-01	2.4E-01	9.8E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	2.9E-02	2.9E-03	3.2E-02	4.4E-03	1.5E-03	5.9E-03	1.7E-07	1.7E-08	1.9E-07	2.6E-08	8.5E-09	3.4E-08
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	4.3E-08	9.3E-09	5.2E-08	6.5E-09	4.6E-09	1.1E-08
Polychlorinated Biphenyls												
Sum of 43 Congeners - 1/2DL	1.3E-02	3.2E-03	1.7E-02	2.0E-03	1.6E-03	3.6E-03	2.1E-08	4.9E-09	2.6E-08	1.6E-09	1.2E-09	2.8E-09
PATHWAY TOTALS ACROSS $COPC_H$s	**4.9E+00**	4.9E-01	**5.4E+00**	7.4E-01	2.5E-01	9.9E-01	2.3E-07	3.1E-08	2.6E-07	3.4E-08	1.4E-08	4.8E-08
TOTAL PATHWAY CONTRIBUTION	91%	9%	100%	75%	25%	100%	88%	12%	100%	70%	30%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	1.5E+00	1.5E-01	**1.6E+00**	2.2E-01	7.4E-02	3.0E-01
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	91%	9%	100%	75%	25%	100%

Table J-10. Hazards and Risks for Hypothetical Construction Workers, Direct Contact with Soil, Scenario DS-2

Scenario: Baseline, Scenario DS-2

Exposure Units: DS-2 surface and deep subsurface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ [c]			RME Risk			CTE Risk [c]		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins/Furans												
TEQdf1/2DL	**2.2E+01**	**2.2E+00**	**2.4E+01**	**3.3E+00**	1.1E+00	**4.4E+00**	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	3.0E-02	3.0E-03	3.3E-02	4.5E-03	1.5E-03	6.0E-03	1.7E-07	1.7E-08	1.9E-07	2.6E-08	8.6E-09	3.5E-08
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	7.0E-08	1.5E-08	8.5E-08	1.1E-08	7.6E-09	1.8E-08
Polychlorinated Biphenyls												
Sum of 43 Congeners - 1/2DL	2.5E-02	5.8E-03	3.1E-02	3.7E-03	2.9E-03	6.6E-03	3.8E-08	8.9E-09	4.7E-08	2.9E-09	2.2E-09	5.1E-09
PATHWAY TOTALS ACROSS $COPC_H$S	**2.2E+01**	**2.2E+00**	**2.4E+01**	**3.3E+00**	1.1E+00	**4.5E+00**	2.8E-07	4.1E-08	3.2E-07	4.0E-08	1.8E-08	5.8E-08
TOTAL PATHWAY CONTRIBUTION	91%	9%	100%	75%	25%	100%	87%	13%	100%	68%	32%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	**6.7E+00**	6.7E-01	**7.4E+00**	1.0E+00	3.4E-01	1.4E+00
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	91%	9%	100%	75%	25%	100%

Table J-11. Hazards and Risks for Hypothetical Construction Workers, Direct Contact with Soil, Scenario DS-3

Scenario: Baseline, Scenario DS- 3

Exposure Units: DS-3 surface and deep subsurface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ [c]			RME Risk			CTE Risk [c]		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins/Furans												
TEQdf1/2DL	1.2E-02	1.2E-03	1.3E-02	1.8E-03	6.0E-04	2.4E-03	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	3.9E-01	4.0E-02	4.3E-01	6.0E-02	2.0E-02	7.9E-02	2.3E-06	2.3E-07	2.5E-06	3.4E-07	1.1E-07	4.6E-07
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	1.0E-08	2.2E-09	1.2E-08	1.5E-09	1.1E-09	2.6E-09
Polychlorinated Biphenyls												
Sum of 43 Congeners - 1/2DL	1.6E-03	3.7E-04	2.0E-03	2.4E-04	1.9E-04	4.3E-04	2.4E-09	5.7E-10	3.0E-09	1.8E-10	1.4E-10	3.3E-10
PATHWAY TOTALS ACROSS $COPC_H$S	4.1E-01	4.1E-02	4.5E-01	6.2E-02	2.1E-02	8.2E-02	2.3E-06	2.3E-07	2.5E-06	3.5E-07	1.2E-07	4.6E-07
TOTAL PATHWAY CONTRIBUTION	91%	9%	100%	75%	25%	100%	91%	9%	100%	75%	25%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	3.6E-03	3.7E-04	4.0E-03	5.5E-04	1.8E-04	7.4E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	91%	9%	100%	75%	25%	100%

Table J-12. Hazards and Risks for Hypothetical Construction Workers, Direct Contact with Soil, Scenario DS-4

Scenario: Baseline, Scenario DS-4

Exposure Units: DS-4 surface and deep subsurface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ [c]			RME Risk			CTE Risk [c]		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins/Furans												
TEQdf1/2DL	**1.6E+01**	**1.6E+00**	**1.7E+01**	**2.4E+00**	7.9E-01	**3.2E+00**	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	1.3E-01	1.3E-02	1.5E-01	2.0E-02	6.7E-03	2.7E-02	7.7E-07	7.8E-08	8.5E-07	1.2E-07	3.9E-08	1.6E-07
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	6.6E-08	1.4E-08	8.1E-08	1.0E-08	7.2E-09	1.7E-08
Polychlorinated Biphenyls												
Sum of 43 Congeners - 1/2DL	3.4E-02	7.9E-03	4.1E-02	5.1E-03	3.9E-03	9.0E-03	5.2E-08	1.2E-08	6.4E-08	3.9E-09	3.0E-09	6.9E-09
PATHWAY TOTALS ACROSS $COPC_H$S	**1.6E+01**	**1.6E+00**	**1.7E+01**	**2.4E+00**	8.0E-01	**3.2E+00**	8.9E-07	1.0E-07	1.0E-06	1.3E-07	4.9E-08	1.8E-07
TOTAL PATHWAY CONTRIBUTION	91%	9%	100%	75%	25%	100%	90%	10%	100%	73%	27%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	**4.8E+00**	4.8E-01	**5.3E+00**	7.2E-01	2.4E-01	9.6E-01
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	91%	9%	100%	75%	25%	100%

Table J-13. Hazards and Risks for Hypothetical Construction Workers, Direct Contact with Soil, Scenario DS-5

Scenario: Baseline, Scenario DS- 5

Exposure Units: DS-5 surface and deep subsurface soils

Media/Exposure Pathways: Incidental ingestion of soil, dermal contact with soil

	Noncancer Hazards						Cancer Risks					
	RME HQ			CTE HQ [c]			RME Risk			CTE Risk [c]		
$COPC_H$	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total	Incidental Ingestion of Soil	Dermal Contact with Soil	Total
Dioxins/Furans												
TEQ_{DF} (ND=1/2DL)	1.1E+00	1.1E-01	1.2E+00	1.7E-01	5.6E-02	2.2E-01	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
Metals												
Arsenic[b]	1.4E-02	1.4E-03	1.5E-02	2.1E-03	7.0E-04	2.8E-03	8.1E-08	8.1E-09	8.9E-08	1.2E-08	4.1E-09	1.6E-08
Semivolatile Organic Compounds												
Benzo(a)pyrene	--	--	--	--	--	--	1.9E-09	4.2E-10	2.4E-09	2.9E-10	2.1E-10	5.1E-10
Polychlorinated Biphenyls												
Sum of 43 Congeners (ND= 1/2DL)	9.4E-04	2.2E-04	1.2E-03	1.4E-04	1.1E-04	2.5E-04	1.4E-09	3.4E-10	1.8E-09	1.1E-10	8.4E-11	1.9E-10
PATHWAY TOTALS ACROSS $COPC_H$S	1.1E+00	1.1E-01	1.2E+00	1.7E-01	5.7E-02	2.3E-01	8.4E-08	8.9E-09	9.3E-08	1.3E-08	4.4E-09	1.7E-08
TOTAL PATHWAY CONTRIBUTION	91%	9%	100%	75%	25%	100%	90%	10%	100%	74%	26%	100%
TEQdf CANCER HAZARD[a]	--	--	--	--	--	--	3.4E-01	3.4E-02	3.7E-01	5.1E-02	1.7E-02	6.8E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	--	--	--	--	--	--	91%	9%	100%	75%	25%	100%

Notes

-- = not applicable

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

HQ = hazard quotient

ND = 1/2DL = nondetects set at one-half the detection limit

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQ_{DF} were calculated from average daily doses.

b - Arsenic is assumed to be present in its inorganic form.

c - For the construction worker scenario, both CTE and RME exposure and risk estimates relied on a RME exposure point concentration

Bold values indicate noncancer hazards and cancer hazards greater than 1 and cancer risks greater than 1E-04

APPENDIX K
HUMAN HEALTH RISK ASSESSMENT FOR THE AREA NORTH OF I-10 AND AQUATIC ENVIRONMENT, CENTRAL TENDENCY EXPOSURE CHILD UNCERTAINTY EVALUATION

[ON ENCLOSED CD]

Appendix K overview.

In comments on the draft of the BHHRA, USEPA required preparation and presentation of central tendency exposure (CTE) estimates for all hypothetical exposure scenarios evaluated for the area north of I-10 and surrounding aquatic environment. This appendix fulfills that requirement, and results are discussed in the uncertainty analysis of the final BHHRA

Recreational Fisher: Exposure Pathway-Specific Noncancer and Cancer Hazards -- Young Child CTE Uncertainty Analysis

Table K-1. Site Exposure to Sediment via Incidental Ingestion, Hypothetical Recreational Fisher

Scenario Type: Baseline, Uncertainty

Medium: Sediment

Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$HQ = ADD / RfD$

$I_{factor,\ noncancer,\ CTE} = 4.69E\text{-}08$

$I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Beach Area A				Beach Area B/C				Beach Area D				Beach Area E			
	Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	7.3E-15	1.0E-05	7.3E-15	3.2E-06	9.6E-14	1.4E-04	9.6E-14	4.2E-05	3.3E-14	4.8E-05	3.3E-14	1.4E-05	2.1E-11	3.0E-02	2.1E-11	9.3E-03
TEQ_{DF} (ND = DL0)	4.6E-15	6.6E-06	4.6E-15	2.0E-06	8.8E-14	1.3E-04	8.8E-14	3.8E-05	3.0E-14	4.4E-05	3.0E-14	1.3E-05	2.1E-11	2.9E-02	2.1E-11	9.0E-03
Metals																
Arsenic (inorganic)	4.7E-09	1.6E-05	--	--	3.7E-08	1.2E-04	--	--	4.5E-08	1.5E-04	--	--	4.0E-08	1.3E-04	--	--
Cadmium	4.7E-09	4.7E-06	--	--	3.8E-09	3.8E-06	--	--	1.6E-08	1.6E-05	--	--	1.4E-08	1.4E-05	--	--
Chromium (III)	2.8E-08	1.9E-08	--	--	3.8E-07	2.5E-07	--	--	2.8E-07	1.9E-07	--	--	3.8E-07	2.5E-07	--	--
Copper	3.8E-08	9.5E-07	--	--	2.7E-07	6.7E-06	--	--	2.7E-07	6.8E-06	--	--	7.5E-07	1.9E-05	--	--
Mercury (inorganic)	2.8E-10	9.2E-07	--	--	4.7E-10	1.6E-06	--	--	9.4E-10	3.1E-06	--	--	9.4E-09	3.1E-05	--	--
Nickel	1.5E-08	7.4E-07	--	--	2.4E-07	1.2E-05	--	--	2.5E-07	1.3E-05	--	--	3.3E-07	1.7E-05	--	--
Zinc	1.6E-07	5.2E-07	--	--	1.2E-06	3.9E-06	--	--	1.4E-06	4.7E-06	--	--	3.0E-06	1.0E-05	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	2.6E-08	1.3E-03	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	7.0E-14	1.0E-04	7.0E-14	3.0E-05
TEQ_P (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	3.8E-14	5.4E-05	3.8E-14	1.6E-05
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	4.5E-10	2.2E-08	--	--	1.1E-09	5.6E-08	--	--	1.5E-09	7.5E-08	--	--	9.9E-09	5.0E-07	--	--

Table K-2. Site Exposure to Sediment via Dermal Contact, Hypothetical Recreational Fisher

Scenario Type: Baseline, Uncertainty

Medium: Sediment

Exposure Pathway: Dermal Absorption

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$HQ = ADD / RfD$

$DAD_{factor,\ noncancer,\ CTE} = 7.50E\text{-}07$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Beach Area A				Beach Area B/C				Beach Area D				Beach Area E			
	Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	7.0E-15	1.0E-05	7.0E-15	3.0E-06	9.2E-14	1.3E-04	9.2E-14	4.0E-05	3.2E-14	4.6E-05	3.2E-14	1.4E-05	2.0E-11	2.9E-02	2.0E-11	8.9E-03
TEQ_{DF} (ND = DL0)	4.5E-15	6.4E-06	4.5E-15	1.9E-06	8.5E-14	1.2E-04	8.5E-14	3.7E-05	2.9E-14	4.2E-05	2.9E-14	1.3E-05	2.0E-11	2.8E-02	2.0E-11	8.6E-03
Metals																
Arsenic (inorganic)	4.5E-09	1.5E-05	--	--	3.6E-08	1.2E-04	--	--	4.3E-08	1.4E-04	--	--	3.8E-08	1.3E-04	--	--
Cadmium	7.5E-11	7.5E-08	--	--	6.1E-11	6.1E-08	--	--	2.5E-10	2.5E-07	--	--	2.2E-10	2.2E-07	--	--
Chromium (III)	9.0E-09	6.0E-09	--	--	1.2E-07	8.1E-08	--	--	9.0E-08	6.0E-08	--	--	1.2E-07	8.0E-08	--	--
Copper	6.1E-07	1.5E-05	--	--	4.3E-06	1.1E-04	--	--	4.4E-06	1.1E-04	--	--	1.2E-05	3.0E-04	--	--
Mercury (inorganic)	1.3E-10	4.4E-07	--	--	2.2E-10	7.5E-07	--	--	4.5E-10	1.5E-06	--	--	4.5E-09	1.5E-05	--	--
Nickel	9.4E-09	4.7E-07	--	--	1.6E-07	7.8E-06	--	--	1.6E-07	8.1E-06	--	--	2.1E-07	1.1E-05	--	--
Zinc	2.5E-06	8.4E-06	--	--	1.9E-05	6.2E-05	--	--	2.2E-05	7.5E-05	--	--	4.9E-05	1.6E-04	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	5.9E-08	2.9E-03	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	6.7E-14	9.6E-05	6.7E-14	2.9E-05
TEQ_P (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	3.6E-14	5.2E-05	3.6E-14	1.6E-05
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	7.1E-10	3.6E-08	--	--	1.8E-09	8.9E-08	--	--	2.4E-09	1.2E-07	--	--	1.6E-08	7.9E-07	--	--

Table K-3. Site Exposure via Ingestion of Hardhead Catfish , Hypothetical Recreational Fisher

Scenario Type: Baseline, Uncertainty

Medium: Hardhead Catfish Fillet

Exposure Pathway: Ingestion

$I_{factor,\ noncancer,\ CTE}$ = 6.00E-05

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$HQ = ADD / RfD$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	FCA 1				FCA 2/3			
	Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.8E-10	2.5E-01	1.8E-10	7.7E-02	2.1E-10	3.1E-01	2.1E-10	9.3E-02
TEQ_{DF} (ND = DL0)	1.7E-10	2.5E-01	1.7E-10	7.5E-02	2.1E-10	3.0E-01	2.1E-10	9.2E-02
Metals								
Arsenic (inorganic)	2.9E-06	9.7E-03	--	--	2.3E-06	7.8E-03	--	--
Arsenic (organic)	2.6E-05	2.6E-03	--	--	2.1E-05	2.1E-03	--	--
Cadmium	5.6E-08	5.6E-05	--	--	4.1E-08	4.1E-05	--	--
Chromium (III)	2.0E-06	1.3E-06	--	--	1.6E-06	1.1E-06	--	--
Copper	2.1E-05	5.2E-04	--	--	1.6E-05	4.0E-04	--	--
Mercury (methyl)	9.5E-06	9.5E-02	--	--	5.4E-06	5.4E-02	--	--
Nickel	1.6E-06	8.1E-05	--	--	1.1E-06	5.6E-05	--	--
Zinc	1.2E-03	4.0E-03	--	--	9.8E-04	3.3E-03	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	5.1E-06	2.5E-01	--	--	5.0E-06	2.5E-01	--	--
Sum of 43 PCB Congeners (ND = DL0)	5.1E-06	2.5E-01	--	--	5.0E-06	2.5E-01	--	--
TEQ_P (ND = 1/2DL)	8.3E-11	1.2E-01	8.3E-11	3.6E-02	7.9E-11	1.1E-01	7.9E-11	3.4E-02
TEQ_P (ND = DL0)	6.2E-11	8.9E-02	6.2E-11	2.7E-02	4.2E-11	6.0E-02	4.2E-11	1.8E-02
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	6.3E-06	3.2E-04	--	--	6.3E-06	3.2E-04	--	--

Table K-4. Site Exposure via Ingestion of Clam, Hypothetical Recreational Fisher

Scenario Type: Baseline, Uncertainty

Medium: Edible Clam Tissue

Exposure Pathway: Ingestion

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$HQ = ADD / RfD$

$I_{factor,\ noncancer,\ CTE} = 2.11E\text{-}06$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	FCA 1/3				FCA 2			
	Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	2.7E-12	3.8E-03	2.7E-12	1.2E-03	9.3E-12	1.3E-02	9.3E-12	4.0E-03
TEQ_{DF} (ND = DL0)	2.3E-12	3.3E-03	2.3E-12	1.0E-03	8.2E-12	1.2E-02	8.2E-12	3.6E-03
Metals								
Arsenic (inorganic)	1.0E-07	3.4E-04	--	--	1.1E-07	3.8E-04	--	--
Arsenic (organic)	9.3E-07	9.3E-05	--	--	1.0E-06	1.0E-04	--	--
Cadmium	5.3E-08	5.3E-05	--	--	5.8E-08	5.8E-05	--	--
Chromium (III)	3.6E-07	2.4E-07	--	--	3.3E-07	2.2E-07	--	--
Copper	4.8E-06	1.2E-04	--	--	5.5E-06	1.4E-04	--	--
Mercury (methyl)	2.3E-08	2.3E-04	--	--	2.0E-08	2.0E-04	--	--
Nickel	2.9E-06	1.5E-04	--	--	2.5E-06	1.2E-04	--	--
Zinc	2.1E-05	6.8E-05	--	--	2.3E-05	7.6E-05	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	4.1E-08	2.0E-03	--	--	5.5E-08	2.7E-03	--	--
Sum of 43 PCB Congeners (ND = DL0)	4.0E-08	2.0E-03	--	--	5.5E-08	2.7E-03	--	--
TEQ_P (ND = 1/2DL)	6.2E-13	8.8E-04	6.2E-13	2.7E-04	8.6E-13	1.2E-03	8.6E-13	3.8E-04
TEQ_P (ND = DL0)	1.4E-13	2.0E-04	1.4E-13	6.0E-05	3.0E-13	4.3E-04	3.0E-13	1.3E-04
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.2E-07	1.1E-05	--	--	2.2E-07	1.1E-05	--	--

Table K-5. Site Exposure via Ingestion of Crab, Hypothetical Recreational Fisher

Scenario Type: Baseline, Uncertainty

Medium: Edible Crab Tissue

Exposure Pathway: Ingestion

$I_{factor,\ noncancer,\ CTE}$ = 2.11E-06

$ADD = I_{tissue,\ noncancer} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT_n)$

$HQ = ADD / RfD$

$I_{tissue} = C_{tissue} \times RBA_{tissue} \times (1\text{-}LOSS) \times I_{factor}$

$I_{factor} = IR_{tissue} \times FI_{tissue} \times EF_{tissue} \times ED \times CF_2 / (BW \times AT)$

	FCA 1				FCA 2/3			
	Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans								
TEQ_{DF} (ND = 1/2DL)	1.6E-12	2.2E-03	1.6E-12	6.8E-04	3.5E-13	4.9E-04	3.5E-13	1.5E-04
TEQ_{DF} (ND = DL0)	1.3E-12	1.8E-03	1.3E-12	5.5E-04	1.3E-13	1.9E-04	1.3E-13	5.6E-05
Metals								
Arsenic (inorganic)	9.8E-08	3.3E-04	--	--	9.0E-08	3.0E-04	--	--
Arsenic (organic)	8.8E-07	8.8E-05	--	--	8.1E-07	8.1E-05	--	--
Cadmium	3.1E-08	3.1E-05	--	--	2.2E-08	2.2E-05	--	--
Chromium (III)	9.9E-08	6.6E-08	--	--	2.1E-08	1.4E-08	--	--
Copper	2.3E-05	5.8E-04	--	--	2.2E-05	5.5E-04	--	--
Mercury (methyl)	1.1E-07	1.1E-03	--	--	7.1E-08	7.1E-04	--	--
Nickel	8.8E-08	4.4E-06	--	--	7.3E-08	3.7E-06	--	--
Zinc	1.1E-04	3.5E-04	--	--	1.0E-04	3.3E-04	--	--
Polychlorinated Biphenyls								
Sum of Aroclors	--	--	--	--	--	--	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	2.4E-09	1.2E-04	--	--	9.9E-09	5.0E-04	--	--
Sum of 43 PCB Congeners (ND = DL0)	2.3E-09	1.1E-04	--	--	9.8E-09	4.9E-04	--	--
TEQ_P (ND = 1/2DL)	2.5E-13	3.6E-04	2.5E-13	1.1E-04	3.5E-13	5.0E-04	3.5E-13	1.5E-04
TEQ_P (ND = DL0)	1.4E-14	2.0E-05	1.4E-14	5.9E-06	1.4E-13	2.0E-04	1.4E-13	6.1E-05
Semivolatile Organic Compounds								
Bis(2-ethylhexyl)phthalate	2.2E-07	1.1E-05	--	--	2.2E-07	1.1E-05	--	--

Notes

-- = not applicable
ADD = average daily dose
CF_1 = conversion factor 1; 1E-06 kg/mg
CF_2 = conversion factor 2; 1E-03 kg/g
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
FCA = fish collection area
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero.
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_P = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQ_{DF} and TEQ_P are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).

Recreational Visitor: Exposure Pathway-Specific Noncancer and Cancer Hazards -- Young Child CTE Uncertainty Analysis

Table K-6. Site Exposure to Sediment via Incidental Ingestion, Hypothetical Recreational Visitor

Scenario Type: Baseline, Uncertainty

Medium: Sediment

Exposure Pathway: Incidental Ingestion

$ADD = I_{sed,\ noncancer} = C_{sed} \times RBA_{sed} \times IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT_n)$

$HQ = ADD / RfD$

$I_{factor,\ noncancer,\ CTE} = 9.37E-08$

$I_{sed} = C_{sed} \times RBA_{sed} \times I_{factor}$

$I_{factor} = IR_{sed} \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times CF_1 / (BW \times AT)$

	Beach Area A				Beach Area B/C				Beach Area D				Beach Area E			
	Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.5E-14	2.1E-05	1.5E-14	6.3E-06	1.9E-13	2.7E-04	1.9E-13	8.3E-05	6.7E-14	9.5E-05	6.7E-14	2.9E-05	4.3E-11	6.1E-02	4.3E-11	1.9E-02
TEQ_{DF} (ND = DL0)	9.3E-15	1.3E-05	9.3E-15	4.0E-06	1.8E-13	2.5E-04	1.8E-13	7.7E-05	6.1E-14	8.7E-05	6.1E-14	2.6E-05	4.1E-11	5.9E-02	4.1E-11	1.8E-02
Metals																
Arsenic (inorganic)	9.4E-09	3.1E-05	--	--	7.5E-08	2.5E-04	--	--	9.0E-08	3.0E-04	--	--	8.0E-08	2.7E-04	--	--
Cadmium	9.4E-09	9.4E-06	--	--	7.7E-09	7.7E-06	--	--	3.1E-08	3.1E-05	--	--	2.8E-08	2.8E-05	--	--
Chromium (III)	5.6E-08	3.7E-08	--	--	7.6E-07	5.1E-07	--	--	5.6E-07	3.7E-07	--	--	7.5E-07	5.0E-07	--	--
Copper	7.6E-08	1.9E-06	--	--	5.3E-07	1.3E-05	--	--	5.5E-07	1.4E-05	--	--	1.5E-06	3.8E-05	--	--
Mercury (inorganic)	5.5E-10	1.8E-06	--	--	9.4E-10	3.1E-06	--	--	1.9E-09	6.2E-06	--	--	1.9E-08	6.2E-05	--	--
Nickel	3.0E-08	1.5E-06	--	--	4.8E-07	2.4E-05	--	--	5.1E-07	2.5E-05	--	--	6.6E-07	3.3E-05	--	--
Zinc	3.1E-07	1.0E-06	--	--	2.3E-06	7.7E-06	--	--	2.8E-06	9.3E-06	--	--	6.1E-06	2.0E-05	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	5.2E-08	2.6E-03	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	1.4E-13	2.0E-04	1.4E-13	6.1E-05
TEQ_P (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	7.5E-14	1.1E-04	7.5E-14	3.3E-05
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	8.9E-10	4.5E-08	--	--	2.2E-09	1.1E-07	--	--	3.0E-09	1.5E-07	--	--	2.0E-08	9.9E-07	--	--

Table K-7. Site Exposure to Soil via Incidental Ingestion, Hypothetical Recreational Visitor

Scenario Type: Baseline, Uncertainty

Medium: Soil

Exposure Pathway: Incidental Ingestion

$ADD = I_{soil,\ noncancer} = C_{soil} \times RBA_{soil} \times IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT_n)$

$HQ = ADD / RfD$

$I_{factor,\ noncancer,\ CTE} = 9.37E\text{-}08$

$I_{soil} = C_{soil} \times RBA_{soil} \times I_{factor}$

$I_{factor} = IR_{soil} \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times CF_1 / (BW \times AT)$

	North of I-10			
	Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	2.1E-13	3.0E-04	2.1E-13	9.2E-05
TEQ_{DF} (ND = DL0)	2.0E-13	2.8E-04	2.0E-13	8.5E-05
Metals				
Arsenic (inorganic)	9.4E-08	3.1E-04	--	--
Cadmium	1.0E-08	1.0E-05	--	--
Chromium (III)	7.2E-07	4.8E-07	--	--
Copper	7.7E-07	1.9E-05	--	--
Mercury (inorganic)	6.6E-08	2.2E-04	--	--
Nickel	5.4E-07	2.7E-05	--	--
Zinc	4.2E-06	1.4E-05	--	--
Polychlorinated Biphenyls				
Sum of Aroclors	3.1E-09	1.5E-04	--	--
Sum of Aroclors (ND = DL0)	3.1E-09	1.5E-04	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--
TEQ_P (ND = 1/2DL)	2.5E-14	3.6E-05	2.5E-14	1.1E-05
TEQ_P (ND = DL0)	1.1E-14	1.5E-05	1.1E-14	4.6E-06
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	3.4E-09	1.7E-07	--	--

Table K-8. Site Exposure to Sediment via Dermal Contact, Hypothetical Recreational Visitor

Scenario Type: Baseline, Uncertainty

Medium: Sediment

Exposure Pathway: Dermal Absorption

$ADD = DAD_{sed,\ noncancer} = C_{sed} \times ABS_d \times AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$HQ = ADD / RfD$

$DAD_{factor,\ noncancer,\ CTE} = 1.50E\text{-}06$

$DAD_{sed} = C_{sed} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{sed} \times SA \times F_{sed} \times FI_{sed} \times EF_{sed} \times ED \times EV \times CF_1 / (BW \times AT)$

	Beach Area A				Beach Area B/C				Beach Area D				Beach Area E			
	Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer		Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans																
TEQ_{DF} (ND = 1/2DL)	1.4E-14	2.0E-05	1.4E-14	6.1E-06	1.8E-13	2.6E-04	1.8E-13	8.0E-05	6.4E-14	9.1E-05	6.4E-14	2.8E-05	4.1E-11	5.8E-02	4.1E-11	1.8E-02
TEQ_{DF} (ND = DL0)	8.9E-15	1.3E-05	8.9E-15	3.9E-06	1.7E-13	2.4E-04	1.7E-13	7.4E-05	5.8E-14	8.4E-05	5.8E-14	2.5E-05	4.0E-11	5.7E-02	4.0E-11	1.7E-02
Metals																
Arsenic (inorganic)	9.0E-09	3.0E-05	--	--	7.2E-08	2.4E-04	--	--	8.7E-08	2.9E-04	--	--	7.6E-08	2.5E-04	--	--
Cadmium	1.5E-10	1.5E-07	--	--	1.2E-10	1.2E-07	--	--	5.0E-10	5.0E-07	--	--	4.5E-10	4.5E-07	--	--
Chromium (III)	1.8E-08	1.2E-08	--	--	2.4E-07	1.6E-07	--	--	1.8E-07	1.2E-07	--	--	2.4E-07	1.6E-07	--	--
Copper	1.2E-06	3.0E-05	--	--	8.5E-06	2.1E-04	--	--	8.8E-06	2.2E-04	--	--	2.4E-05	6.0E-04	--	--
Mercury (inorganic)	2.7E-10	8.8E-07	--	--	4.5E-10	1.5E-06	--	--	9.0E-10	3.0E-06	--	--	9.0E-09	3.0E-05	--	--
Nickel	1.9E-08	9.4E-07	--	--	3.1E-07	1.6E-05	--	--	3.2E-07	1.6E-05	--	--	4.3E-07	2.1E-05	--	--
Zinc	5.0E-06	1.7E-05	--	--	3.7E-05	1.2E-04	--	--	4.5E-05	1.5E-04	--	--	9.7E-05	3.2E-04	--	--
Polychlorinated Biphenyls																
Sum of Aroclors	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-07	5.9E-03	--	--
Sum of Aroclors (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	0.0E+00	0.0E+00	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ_P (ND = 1/2DL)	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-13	1.9E-04	1.3E-13	5.8E-05
TEQ_P (ND = DL0)	--	--	--	--	--	--	--	--	--	--	--	--	7.2E-14	1.0E-04	7.2E-14	3.1E-05
Semivolatile Organic Compounds																
Bis(2-ethylhexyl)phthalate	1.4E-09	7.1E-08	--	--	3.6E-09	1.8E-07	--	--	4.8E-09	2.4E-07	--	--	3.2E-08	1.6E-06	--	--

Table K-9. Site Exposure to Soil via Dermal Contact, Hypothetical Recreational Visitor

Scenario Type: Baseline, Uncertainty

Medium: Soil

Exposure Pathway: Dermal Absorption

$ADD = DAD_{soil,\ noncancer} = C_{soil} \times ABS_d \times AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT_n)$

$HQ = ADD / RfD$

$DAD_{factor,\ noncancer,\ CTE} = 2.40E\text{-}07$

$DAD_{soil} = C_{soil} \times ABS_d \times DAD_{factor}$

$DAD_{factor} = AF_{soil} \times SA \times F_{soil} \times FI_{soil} \times EF_{soil} \times ED \times EV \times CF_1 / (BW \times AT)$

	North of I-10			
	Noncancer		Cancer	
$COPC_H$	ADD (mg/kg-day)	HQ (unitless)	ADD[a] (mg/kg-day)	HQ[a] (unitless)
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	3.3E-14	4.7E-05	3.3E-14	1.4E-05
TEQ_{DF} (ND = DL0)	3.0E-14	4.3E-05	3.0E-14	1.3E-05
Metals				
Arsenic (inorganic)	1.4E-08	4.8E-05	--	--
Cadmium	2.6E-11	2.6E-08	--	--
Chromium (III)	3.7E-08	2.5E-08	--	--
Copper	2.0E-06	4.9E-05	--	--
Mercury (inorganic)	5.0E-09	1.7E-05	--	--
Nickel	5.6E-08	2.8E-06	--	--
Zinc	1.1E-05	3.6E-05	--	--
Polychlorinated Biphenyls				
Sum of Aroclors	1.1E-09	5.5E-05	--	--
Sum of Aroclors (ND = DL0)	1.1E-09	5.5E-05	--	--
Sum of 43 PCB Congeners (ND = 1/2DL)	--	--	--	--
Sum of 43 PCB Congeners (ND = DL0)	--	--	--	--
TEQ_P (ND = 1/2DL)	3.9E-15	5.6E-06	3.9E-15	1.7E-06
TEQ_P (ND = DL0)	1.6E-15	2.3E-06	1.6E-15	7.1E-07
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	8.6E-10	4.3E-08	--	--

Notes

-- = not applicable
ADD = average daily dose
CF_1 = conversion factor 1; 1E-06 kg/mg
CF_2 = conversion factor 2; 1E-03 kg/g
$COPC_H$ = chemical of potential concern for human health
CTE = central tendency exposure
FCA = fish collection area
HQ = hazard quotient
LADD = lifetime average daily dose
ND = 1/2DL = nondetects set at one-half the detection limit
ND = DL0 = nondetects set at zero.
TEQ_{DF} = toxicity equivalent for dioxins and furans
TEQ_P = toxicity equivalent for dioxin-like polychlorinated biphenyls
a - Cancer "risks" from exposure to TEQ_{DF} and TEQ_P are actually carcinogenic hazards, calculated using a cancer-based TCDD TDI and ADDs that incorporate exposure parameters for the young child (RME) and adult (CTE).

Recreational Fisher: Noncancer and Cancer Hazards Combined Across Exposure Pathways -- Young Child CTE Uncertainty Analysis

Table K-10. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 1A, Uncertainty Evaluation

Scenario: Baseline, Scenario 1A, Uncertainty
Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	1.0E-05	1.0E-05	3.1E-01	3.1E-01
Metals				
Arsenic	1.6E-05	1.5E-05	9.9E-03	9.9E-03
Cadmium	4.7E-06	7.5E-08	4.1E-05	4.5E-05
Chromium	1.9E-08	6.0E-09	1.1E-06	1.1E-06
Copper	9.5E-07	1.5E-05	4.0E-04	4.1E-04
Mercury	9.2E-07	4.4E-07	5.4E-02	5.4E-02
Nickel	7.4E-07	4.7E-07	5.6E-05	5.7E-05
Zinc	5.2E-07	8.4E-06	3.3E-03	3.3E-03
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of Aroclors (ND = 1/2DL)	--	--	2.5E-01	2.5E-01
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	2.2E-08	3.6E-08	3.2E-04	3.2E-04
PATHWAY TOTALS ACROSS $COPC_H$s	3.4E-05	5.0E-05	6.2E-01	6.2E-01
TOTAL PATHWAY CONTRIBUTION	0.01%	0.01%	99.99%	100%
TEQdf CANCER HAZARD[a]	3.2E-06	3.0E-06	9.3E-02	9.3E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	0.00%	0.00%	99.99%	100%

Table K-11. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 1B, Uncertainty Evaluation

Scenario: Baseline, Scenario 1B, Uncertainty

Exposure Units: Beach Area A, FCA 1/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	1.0E-05	1.0E-05	3.8E-03	3.8E-03
Metals				
Arsenic	1.6E-05	1.5E-05	4.4E-04	4.7E-04
Cadmium	4.7E-06	7.5E-08	5.3E-05	5.8E-05
Chromium	1.9E-08	6.0E-09	2.4E-07	2.6E-07
Copper	9.5E-07	1.5E-05	1.2E-04	1.4E-04
Mercury	9.2E-07	4.4E-07	2.3E-04	2.4E-04
Nickel	7.4E-07	4.7E-07	1.5E-04	1.5E-04
Zinc	5.2E-07	8.4E-06	6.8E-05	7.7E-05
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.0E-03	2.0E-03
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	2.2E-08	3.6E-08	1.1E-05	1.1E-05
PATHWAY TOTALS ACROSS $COPC_H$s	3.4E-05	5.0E-05	6.9E-03	7.0E-03
TOTAL PATHWAY CONTRIBUTION	0.48%	0.71%	98.81%	100%
TEQdf CANCER HAZARD[a]	3.2E-06	3.0E-06	1.2E-03	1.2E-03
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	0.27%	0.26%	99.47%	100%

Table K-12. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 1C, Uncertainty Evaluation

Scenario: Baseline, Scenario 1C, Uncertainty

Exposure Units: Beach Area A, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	1.0E-05	1.0E-05	4.9E-04	5.1E-04
Metals				
Arsenic	1.6E-05	1.5E-05	3.8E-04	4.1E-04
Cadmium	4.7E-06	7.5E-08	2.2E-05	2.6E-05
Chromium	1.9E-08	6.0E-09	1.4E-08	3.9E-08
Copper	9.5E-07	1.5E-05	5.5E-04	5.6E-04
Mercury	9.2E-07	4.4E-07	7.1E-04	7.2E-04
Nickel	7.4E-07	4.7E-07	3.7E-06	4.9E-06
Zinc	5.2E-07	8.4E-06	3.3E-04	3.4E-04
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	5.0E-04	5.0E-04
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	2.2E-08	3.6E-08	1.1E-05	1.1E-05
PATHWAY TOTALS ACROSS $COPC_H$s	3.4E-05	5.0E-05	3.0E-03	3.1E-03
TOTAL PATHWAY CONTRIBUTION	1.10%	1.61%	97.29%	100%
TEQdf CANCER HAZARD[a]	3.2E-06	3.0E-06	1.5E-04	1.6E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	2.02%	1.94%	96.04%	100%

Table K-13. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 2A, Uncertainty Evaluation

Scenario: Baseline, Scenario 2A, Uncertainty

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	1.4E-04	1.3E-04	3.1E-01	3.1E-01
Metals				
Arsenic	1.2E-04	1.2E-04	9.9E-03	1.0E-02
Cadmium	3.8E-06	6.1E-08	4.1E-05	4.5E-05
Chromium	2.5E-07	8.1E-08	1.1E-06	1.4E-06
Copper	6.7E-06	1.1E-04	4.0E-04	5.1E-04
Mercury	1.6E-06	7.5E-07	5.4E-02	5.4E-02
Nickel	1.2E-05	7.8E-06	5.6E-05	7.6E-05
Zinc	3.9E-06	6.2E-05	3.3E-03	3.3E-03
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.5E-01	2.5E-01
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	5.6E-08	8.9E-08	3.2E-04	3.2E-04
PATHWAY TOTALS ACROSS $COPC_H$s	2.9E-04	4.3E-04	6.2E-01	6.3E-01
TOTAL PATHWAY CONTRIBUTION	0.05%	0.07%	99.89%	100%
TEQdf CANCER HAZARD[a]	4.2E-05	4.0E-05	9.3E-02	9.3E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	0.04%	0.04%	99.91%	100%

Table K-14. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 2B, Uncertainty Evaluation

Scenario: Baseline, Scenario 2B, Uncertainty

Exposure Units: Beach Area B/C, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	1.4E-04	1.3E-04	1.3E-02	1.4E-02
Metals				
Arsenic	1.2E-04	1.2E-04	4.9E-04	7.3E-04
Cadmium	3.8E-06	6.1E-08	5.8E-05	6.2E-05
Chromium	2.5E-07	8.1E-08	2.2E-07	5.6E-07
Copper	6.7E-06	1.1E-04	1.4E-04	2.5E-04
Mercury	1.6E-06	7.5E-07	2.0E-04	2.0E-04
Nickel	1.2E-05	7.8E-06	1.2E-04	1.4E-04
Zinc	3.9E-06	6.2E-05	7.6E-05	1.4E-04
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.7E-03	2.7E-03
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	5.6E-08	8.9E-08	1.1E-05	1.1E-05
PATHWAY TOTALS ACROSS $COPC_H$s	2.9E-04	4.3E-04	1.7E-02	1.8E-02
TOTAL PATHWAY CONTRIBUTION	1.62%	2.40%	95.98%	100%
TEQdf CANCER HAZARD[a]	4.2E-05	4.0E-05	4.0E-03	4.1E-03
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	1.01%	0.97%	98.02%	100%

Table K-15. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 2C, Uncertainty Evaluation

Scenario: Baseline, Scenario 2C, Uncertainty

Exposure Units: Beach Area B/C, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	1.4E-04	1.3E-04	4.9E-04	7.6E-04
Metals				
Arsenic	1.2E-04	1.2E-04	3.8E-04	6.2E-04
Cadmium	3.8E-06	6.1E-08	2.2E-05	2.6E-05
Chromium	2.5E-07	8.1E-08	1.4E-08	3.5E-07
Copper	6.7E-06	1.1E-04	5.5E-04	6.6E-04
Mercury	1.6E-06	7.5E-07	7.1E-04	7.2E-04
Nickel	1.2E-05	7.8E-06	3.7E-06	2.4E-05
Zinc	3.9E-06	6.2E-05	3.3E-04	4.0E-04
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	5.0E-04	5.0E-04
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	5.6E-08	8.9E-08	1.1E-05	1.1E-05
PATHWAY TOTALS ACROSS $COPC_H$s	2.9E-04	4.3E-04	3.0E-03	3.7E-03
TOTAL PATHWAY CONTRIBUTION	7.79%	11.51%	80.70%	100%
TEQdf CANCER HAZARD[a]	4.2E-05	4.0E-05	1.5E-04	2.3E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	17.98%	17.26%	64.76%	100%

Table K-16. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 3A, Uncertainty Evaluation

Scenario: Baseline, Scenario 3A, Uncertainty

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	3.0E-02	2.9E-02	3.1E-01	3.7E-01
Metals				
Arsenic	1.3E-04	1.3E-04	9.9E-03	1.0E-02
Cadmium	1.4E-05	2.2E-07	4.1E-05	5.5E-05
Chromium	2.5E-07	8.0E-08	1.1E-06	1.4E-06
Copper	1.9E-05	3.0E-04	4.0E-04	7.2E-04
Mercury	3.1E-05	1.5E-05	5.4E-02	5.5E-02
Nickel	1.7E-05	1.1E-05	5.6E-05	8.3E-05
Zinc	1.0E-05	1.6E-04	3.3E-03	3.5E-03
Polychlorinated Biphenyls				
Sum of Aroclors	1.3E-03	2.9E-03	--	4.3E-03
Sum of 43 Congeners - 1/2DL	--	--	2.5E-01	2.5E-01
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	5.0E-07	7.9E-07	3.2E-04	3.2E-04
PATHWAY TOTALS ACROSS $COPC_H$s	3.2E-02	3.3E-02	6.2E-01	6.9E-01
TOTAL PATHWAY CONTRIBUTION	4.64%	4.76%	90.60%	100%
TEQdf CANCER HAZARD[a]	9.3E-03	8.9E-03	9.3E-02	1.1E-01
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	8.31%	7.98%	83.71%	100%

Table K-17. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 3B, Uncertainty Evaluation

Scenario: Baseline, Scenario 3B, Uncertainty

Exposure Units: Beach Area E, FCA 2

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	3.0E-02	2.9E-02	1.3E-02	7.3E-02
Metals				
Arsenic	1.3E-04	1.3E-04	4.9E-04	7.5E-04
Cadmium	1.4E-05	2.2E-07	5.8E-05	7.2E-05
Chromium	2.5E-07	8.0E-08	2.2E-07	5.5E-07
Copper	1.9E-05	3.0E-04	1.4E-04	4.6E-04
Mercury	3.1E-05	1.5E-05	2.0E-04	2.5E-04
Nickel	1.7E-05	1.1E-05	1.2E-04	1.5E-04
Zinc	1.0E-05	1.6E-04	7.6E-05	2.5E-04
Polychlorinated Biphenyls				
Sum of Aroclors	1.3E-03	2.9E-03	--	4.3E-03
Sum of 43 Congeners - 1/2DL	--	--	2.7E-03	2.7E-03
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	5.0E-07	7.9E-07	1.1E-05	1.2E-05
PATHWAY TOTALS ACROSS $COPC_H$s	3.2E-02	3.3E-02	1.7E-02	8.2E-02
TOTAL PATHWAY CONTRIBUTION	39.06%	40.04%	20.91%	100%
TEQdf CANCER HAZARD[a]	9.3E-03	8.9E-03	4.0E-03	2.2E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	41.73%	40.06%	18.21%	100%

Table K-18. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 3C, Uncertainty Evaluation

Scenario: Baseline, Scenario 3C, Uncertainty

Exposure Units: Beach Area E, FCA 2/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	3.0E-02	2.9E-02	4.9E-04	6.0E-02
Metals				
Arsenic	1.3E-04	1.3E-04	3.8E-04	6.4E-04
Cadmium	1.4E-05	2.2E-07	2.2E-05	3.6E-05
Chromium	2.5E-07	8.0E-08	1.4E-08	3.4E-07
Copper	1.9E-05	3.0E-04	5.5E-04	8.7E-04
Mercury	3.1E-05	1.5E-05	7.1E-04	7.6E-04
Nickel	1.7E-05	1.1E-05	3.7E-06	3.1E-05
Zinc	1.0E-05	1.6E-04	3.3E-04	5.1E-04
Polychlorinated Biphenyls				
Sum of Aroclors	1.3E-03	2.9E-03	--	4.3E-03
Sum of 43 Congeners - 1/2DL	--	--	5.0E-04	5.0E-04
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	5.0E-07	7.9E-07	1.1E-05	1.2E-05
PATHWAY TOTALS ACROSS $COPC_H$s	3.2E-02	3.3E-02	3.0E-03	6.8E-02
TOTAL PATHWAY CONTRIBUTION	47.20%	48.38%	4.43%	100%
TEQdf CANCER HAZARD[a]	9.3E-03	8.9E-03	1.5E-04	1.8E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	50.60%	48.58%	0.82%	100%

Table K-19 Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Catfish, Scenario 4A, Uncertainty Evaluation

Scenario: Baseline, Scenario 4A, Uncertainty

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of catfish

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Catfish	Total
Dioxins/Furans				
TEQ_{DF} (ND = 1/2DL)	4.8E-05	4.6E-05	2.5E-01	2.5E-01
Metals				
Arsenic	1.5E-04	1.4E-04	1.2E-02	1.3E-02
Cadmium	1.6E-05	2.5E-07	5.6E-05	7.1E-05
Chromium	1.9E-07	6.0E-08	1.3E-06	1.6E-06
Copper	6.8E-06	1.1E-04	5.2E-04	6.3E-04
Mercury	3.1E-06	1.5E-06	9.5E-02	9.5E-02
Nickel	1.3E-05	8.1E-06	8.1E-05	1.0E-04
Zinc	4.7E-06	7.5E-05	4.0E-03	4.0E-03
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.5E-01	2.5E-01
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	7.5E-08	1.2E-07	3.2E-04	3.2E-04
PATHWAY TOTALS ACROSS $COPC_H$s	2.4E-04	3.8E-04	6.2E-01	6.2E-01
TOTAL PATHWAY CONTRIBUTION	0.04%	0.06%	99.90%	100%
TEQdf CANCER HAZARD[a]	1.4E-05	1.4E-05	7.7E-02	7.7E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	0.02%	0.02%	99.96%	100%

Table K-20. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Clam, Scenario 4B, Uncertainty Evaluation

Scenario: Baseline, Scenario 4B, Uncertainty

Exposure Units: Beach Area D, FCA 1/3

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of clam

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Clam	Total
Dioxins/Furans				
TEQdf1/2DL	4.8E-05	4.6E-05	3.8E-03	3.9E-03
Metals				
Arsenic	1.5E-04	1.4E-04	4.4E-04	7.3E-04
Cadmium	1.6E-05	2.5E-07	5.3E-05	6.9E-05
Chromium	1.9E-07	6.0E-08	2.4E-07	4.8E-07
Copper	6.8E-06	1.1E-04	1.2E-04	2.4E-04
Mercury	3.1E-06	1.5E-06	2.3E-04	2.4E-04
Nickel	1.3E-05	8.1E-06	1.5E-04	1.7E-04
Zinc	4.7E-06	7.5E-05	6.8E-05	1.5E-04
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	2.0E-03	2.0E-03
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	7.5E-08	1.2E-07	1.1E-05	1.1E-05
PATHWAY TOTALS ACROSS $COPC_H$s	2.4E-04	3.8E-04	6.9E-03	7.5E-03
TOTAL PATHWAY CONTRIBUTION	3.20%	5.10%	91.71%	100%
TEQdf CANCER HAZARD[a]	1.4E-05	1.4E-05	1.2E-03	1.2E-03
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	1.21%	1.17%	97.62%	100%

Table L-K1. Hazards for Hypothetical Recreational Fishers, Direct Contact with Sediment and Consumption of Crab, Scenario 4C, Uncertainty Evaluation

Scenario: Baseline, Scenario 4C, Uncertainty

Exposure Units: Beach Area D, FCA 1

Media/Exposure Pathways: Incidental ingestion of sediment, dermal contact with sediment, consumption of crab

	Noncancer HQ			
$COPC_H$	Incidental Ingestion of Sediment	Dermal Contact with Sediment	Consumption of Crab	Total
Dioxins/Furans				
TEQdf1/2DL	4.8E-05	4.6E-05	2.2E-03	2.3E-03
Metals				
Arsenic	1.5E-04	1.4E-04	4.2E-04	7.1E-04
Cadmium	1.6E-05	2.5E-07	3.1E-05	4.7E-05
Chromium	1.9E-07	6.0E-08	6.6E-08	3.1E-07
Copper	6.8E-06	1.1E-04	5.8E-04	7.0E-04
Mercury	3.1E-06	1.5E-06	1.1E-03	1.1E-03
Nickel	1.3E-05	8.1E-06	4.4E-06	2.5E-05
Zinc	4.7E-06	7.5E-05	3.5E-04	4.3E-04
Polychlorinated Biphenyls				
Sum of Aroclors	--	--	--	--
Sum of 43 Congeners - 1/2DL	--	--	1.2E-04	1.2E-04
Semivolatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	7.5E-08	1.2E-07	1.1E-05	1.1E-05
PATHWAY TOTALS ACROSS $COPC_H$s	2.4E-04	3.8E-04	4.9E-03	5.5E-03
TOTAL PATHWAY CONTRIBUTION	4.41%	7.02%	88.58%	100%
TEQdf CANCER HAZARD[a]	1.4E-05	1.4E-05	6.8E-04	7.0E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	2.05%	1.97%	95.98%	100%

Notes

-- = not applicable

1/2DL = nondetects set at one-half the detection limit

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

FCA = fish collection area

HQ = hazard quotient

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQDF were calculated from average daily doses

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Bold values indicate noncancer and hazards greater than 1.

Recreational Visitor: Noncancer and Cancer Hazards Combined Across Exposure Pathways -- Uncertainty Analysis

Table K-22. Hazards for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 1, Uncertainty Evaluation

Scenario: Baseline, Scenario 1, Uncertainty

Exposure Units: Beach Area A, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer HQ				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans					
TEQdf1/2DL	2.1E-05	3.0E-04	2.0E-05	4.7E-05	3.9E-04
Metals					
Arsenic	3.1E-05	3.1E-04	3.0E-05	4.8E-05	4.2E-04
Cadmium	9.4E-06	1.0E-05	1.5E-07	2.6E-08	2.0E-05
Chromium	3.7E-08	4.8E-07	1.2E-08	2.5E-08	5.6E-07
Copper	1.9E-06	1.9E-05	3.0E-05	4.9E-05	1.0E-04
Mercury	1.8E-06	2.2E-04	8.8E-07	1.7E-05	2.4E-04
Nickel	1.5E-06	2.7E-05	9.4E-07	2.8E-06	3.2E-05
Zinc	1.0E-06	1.4E-05	1.7E-05	3.6E-05	6.8E-05
Polychlorinated Biphenyls					
Sum of Aroclors	--	1.5E-04	--	5.5E-05	2.1E-04
Sum of 43 Congeners - 1/2DL	--	--	--	--	--
Semivolatile Organic Compounds					
Bis(2-ethylhexyl)phthalate	4.5E-08	1.7E-07	7.1E-08	4.3E-08	3.3E-07
PATHWAY TOTALS ACROSS $COPC_H$s	6.8E-05	1.1E-03	9.9E-05	2.5E-04	1.5E-03
TOTAL PATHWAY CONTRIBUTION	4.57%	71.54%	6.69%	17.20%	100%
TEQdf CANCER HAZARD[a]	6.3E-06	9.2E-05	6.1E-06	1.4E-05	1.2E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	5.31%	77.66%	5.10%	11.93%	100%

Table K-23. Hazards for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 2, Uncertainty Evaluation

Scenario: Baseline, Scenario 2, Uncertainty

Exposure Units: Beach Area B/C, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer HQ				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans					
TEQdf1/2DL	2.7E-04	3.0E-04	2.6E-04	4.7E-05	8.9E-04
Metals					
Arsenic	2.5E-04	3.1E-04	2.4E-04	4.8E-05	8.5E-04
Cadmium	7.7E-06	1.0E-05	1.2E-07	2.6E-08	1.8E-05
Chromium	5.1E-07	4.8E-07	1.6E-07	2.5E-08	1.2E-06
Copper	1.3E-05	1.9E-05	2.1E-04	4.9E-05	3.0E-04
Mercury	3.1E-06	2.2E-04	1.5E-06	1.7E-05	2.4E-04
Nickel	2.4E-05	2.7E-05	1.6E-05	2.8E-06	7.0E-05
Zinc	7.7E-06	1.4E-05	1.2E-04	3.6E-05	1.8E-04
Polychlorinated Biphenyls					
Sum of Aroclors	--	1.5E-04	--	5.5E-05	2.1E-04
Sum of 43 Congeners - 1/2DL	--	--	--	--	--
Semivolatile Organic Compounds					
Bis(2-ethylhexyl)phthalate	1.1E-07	1.7E-07	1.8E-07	4.3E-08	5.0E-07
PATHWAY TOTALS ACROSS $COPC_H$s	5.8E-04	1.1E-03	8.6E-04	2.5E-04	2.7E-03
TOTAL PATHWAY CONTRIBUTION	21.05%	38.55%	31.13%	9.27%	100%
TEQdf CANCER HAZARD[a]	8.3E-05	9.2E-05	8.0E-05	1.4E-05	2.7E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	30.89%	34.21%	29.65%	5.25%	100%

Table K-24. Hazards for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 3, Uncertainty Evaluation

Scenario: Baseline, Scenario 3, Uncertainty

Exposure Units: Beach Area E, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer HQ				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans					
TEQdf1/2DL	6.1E-02	3.0E-04	5.8E-02	4.7E-05	1.2E-01
Metals					
Arsenic	2.7E-04	3.1E-04	2.5E-04	4.8E-05	8.8E-04
Cadmium	2.8E-05	1.0E-05	4.5E-07	2.6E-08	3.9E-05
Chromium	5.0E-07	4.8E-07	1.6E-07	2.5E-08	1.2E-06
Copper	3.8E-05	1.9E-05	6.0E-04	4.9E-05	7.1E-04
Mercury	6.2E-05	2.2E-04	3.0E-05	1.7E-05	3.3E-04
Nickel	3.3E-05	2.7E-05	2.1E-05	2.8E-06	8.4E-05
Zinc	2.0E-05	1.4E-05	3.2E-04	3.6E-05	3.9E-04
Polychlorinated Biphenyls					
Sum of Aroclors	2.6E-03	1.5E-04	5.9E-03	5.5E-05	8.7E-03
Sum of 43 Congeners - 1/2DL	--	--	--	--	--
Semivolatile Organic Compounds					
Bis(2-ethylhexyl)phthalate	9.9E-07	1.7E-07	1.6E-06	4.3E-08	2.8E-06
PATHWAY TOTALS ACROSS $COPC_H$s	6.4E-02	1.1E-03	6.6E-02	2.5E-04	1.3E-01
TOTAL PATHWAY CONTRIBUTION	48.89%	0.81%	50.11%	0.19%	100%
TEQdf CANCER HAZARD[a]	1.9E-02	9.2E-05	1.8E-02	1.4E-05	3.6E-02
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	50.87%	0.25%	48.84%	0.04%	100%

Table K-25. Hazards for Hypothetical Recreational Visitors , Direct Contact with Sediment and Soil, Scenario 4, Uncertainty Evaluation

Scenario: Baseline, Scenario 4, Uncertainty

Exposure Units: Beach Area D, soils north of I-10

Media/Exposure Pathways: Incidental ingestion of sediment and soil, dermal contact with sediment and soil

	Noncancer HQ				
$COPC_H$	Incidental Ingestion of Sediment	Incidental Ingestion of Soil	Dermal Contact with Sediment	Dermal Contact with Soil	Total
Dioxins/Furans					
TEQdf1/2DL	9.5E-05	3.0E-04	9.1E-05	4.7E-05	5.4E-04
Metals					
Arsenic	3.0E-04	3.1E-04	2.9E-04	4.8E-05	9.5E-04
Cadmium	3.1E-05	1.0E-05	5.0E-07	2.6E-08	4.2E-05
Chromium	3.7E-07	4.8E-07	1.2E-07	2.5E-08	1.0E-06
Copper	1.4E-05	1.9E-05	2.2E-04	4.9E-05	3.0E-04
Mercury	6.2E-06	2.2E-04	3.0E-06	1.7E-05	2.4E-04
Nickel	2.5E-05	2.7E-05	1.6E-05	2.8E-06	7.2E-05
Zinc	9.3E-06	1.4E-05	1.5E-04	3.6E-05	2.1E-04
Polychlorinated Biphenyls					
Sum of Aroclors	--	1.5E-04	--	5.5E-05	2.1E-04
Sum of 43 Congeners - 1/2DL	--	--	--	--	--
Semivolatile Organic Compounds					
Bis(2-ethylhexyl)phthalate	1.5E-07	1.7E-07	2.4E-07	4.3E-08	6.0E-07
PATHWAY TOTALS ACROSS $COPC_H$s	4.8E-04	1.1E-03	7.7E-04	2.5E-04	2.6E-03
TOTAL PATHWAY CONTRIBUTION	18.81%	41.29%	29.96%	9.93%	100%
TEQdf CANCER HAZARD[a]	2.9E-05	9.2E-05	2.8E-05	1.4E-05	1.6E-04
PATHWAY CONTRIBUTION for TEQdf CANCER HAZARD	17.73%	56.56%	17.02%	8.69%	100%

Notes

-- = not applicable

1/2DL = nondetects set at one-half the detection limit

$COPC_H$ = chemical of potential concern for human health

CTE = central tendency exposure

FCA = fish collection area

HQ = hazard quotient

RME = reasonable maximum exposure

TEQ_{DF} = toxicity equivalent for dioxins and furans

a - Carcinogenic hazards from exposure to TEQ_{DF} are presented separately. This cancer HQ was calculated using a cancer-based TCDD TDI, and cannot be meaningfully combined with cancer risks calculated using CSFs. Carcinogenic hazards from exposure to TEQDF were calculated from average daily doses (ADDs) that incorporate exposure parameters for the young child (RME) and adult (CTE).

In soil and sediment, arsenic and mercury were assumed to be present in their inorganic forms. In tissue, mercury was assumed to be present in its organic form while arsenic was assumed to be present in both organic and inorganic forms (90 percent of the total arsenic concentration is assumed to be organic and 10 percent inorganic). Chromium was assumed to be present in the form of chromium (III) in all media.

Bold values indicate noncancer and hazards greater than 1.

APPENDIX L
INCOME LEVEL AND ETHNIC/CULTURAL BACKGROUND AS PREDICTORS OF FISH CONSUMPTION RATES