

Appendix F

Supporting Data

2011 PLOO Stations

Bioaccumulation of Contaminants in Fish Tissues

Appendix F.1

Lengths and weights of fishes used for each composite (Comp) tissue sample from PLOO trawl zones and rig fishing stations during October 2011. Data are summarized as number of individuals (*n*), minimum, maximum, and mean values.

Station	Comp	Species	<i>n</i>	Length (cm, size class)			Weight (g)		
				Min	Max	Mean	Min	Max	Mean
RF1	1	Vermilion rockfish	3	23	27	25	320	517	403
RF1	2	Vermilion rockfish	3	23	25	24	291	485	399
RF1	3	Vermilion rockfish	3	22	25	23	339	468	383
RF2	1	Chilipepper rockfish	3	26	32	28	499	970	664
RF2	2	Chilipepper rockfish	3	24	28	26	357	501	451
RF2	3	Flag rockfish	3	22	25	23	267	447	344
Zone 1	1	Pacific sanddab	8	15	18	17	55	105	69
Zone 1	2	Pacific sanddab	6	17	18	18	69	85	75
Zone 1	3	Pacific sanddab	6	16	18	17	62	87	73
Zone 2	1	Pacific sanddab	7	14	19	16	40	108	76
Zone 2	2	Pacific sanddab	8	15	18	17	44	86	65
Zone 2	3	Pacific sanddab	12	13	15	14	35	59	47
Zone 3	1	Pacific sanddab	3	20	22	21	126	225	179
Zone 3	2	Pacific sanddab	3	21	21	21	151	204	177
Zone 3	3	Pacific Sanddab	5	20	22	21	112	171	133
Zone 4	1	Pacific sanddab	7	16	17	16	51	84	70
Zone 4	2	Pacific sanddab	3	18	23	20	87	245	144
Zone 4	3	Pacific sanddab	7	15	18	17	57	97	75

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Appendix F.2

Constituents and method detection limits (MDL) used for the analysis of liver and muscle tissues of fishes collected from the PLOO region between 2009 and 2011.

Parameter	MDL		Parameter	MDL	
	Liver	Muscle		Liver	Muscle
Metals (ppm)					
Aluminum (Al)	3	3	Lead (Pb)	0.2	0.2
Antimony (Sb)	0.2	0.2	Manganese (Mn)	0.1	0.1
Arsenic (As)	0.24	0.24	Mercury (Hg)	0.002	0.002
Barium (Ba)	0.03	0.03	Nickel (Ni)	0.2	0.2
Beryllium (Be)	0.006	0.006	Selenium (Se)	0.06	0.06
Cadmium (Cd)	0.06	0.06	Silver (Ag)	0.05	0.05
Chromium (Cr)	0.1	0.1	Thallium (Ti)	0.4	0.4
Copper (Cu)	0.3	0.3	Tin (Sn)	0.2	0.2
Iron (Fe)	2	2	Zinc (Zn)	0.15	0.15
Chlorinated Pesticides (ppb)					
Hexachlorocyclohexane (HCH)					
HCH, Alpha isomer	24.70	2.47	HCH, Delta isomer	4.53	0.45
HCH, Beta isomer	4.68	0.47	HCH, Gamma isomer	63.4	6.34
Total Chlordane					
Alpha (cis) chlordane	4.56	0.46	Heptachlor epoxide	3.89	0.39
Cis nonachlor	4.70	0.47	Oxychlordane	7.77	0.78
Gamma (trans) chlordane	2.59	0.26	Trans nonachlor	2.58	0.26
Heptachlor	3.82	0.38			
Total Dichlorodiphenyltrichloroethane (DDT)					
o,p-DDD	2.02	0.20	p,p-DDD	3.36	0.34
o,p-DDE	2.79	0.28	p,p-DDE	2.08	0.21
o,p-DDT	1.62	0.16	p,p-DDT	2.69	0.27
p,-p-DDMU	3.29	0.33			
Miscellaneous Pesticides					
Aldrin	88.10	8.81	Hexachlorobenzene (HCB)	1.32	0.13
Alpha endosulfan	118.00	11.80	Mirex	1.49	0.15
Dieldrin	17.10	1.71	Toxaphene	342.00	34.20
Endrin	14.20	1.42			

Appendix F.2 *continued*

Parameter	MDL		Parameter	MDL	
	Liver	Muscle		Liver	Muscle
Polychlorinated Biphenyl Congeners (PCBs) (ppb)					
PCB 18	2.86	0.29	PCB 126	1.52	0.15
PCB 28	2.47	0.28	PCB 128	1.23	0.12
PCB 37	2.77	0.25	PCB 138	1.73	0.17
PCB 44	3.65	0.36	PCB 149	2.34	0.23
PCB 49	5.02	0.50	PCB 151	1.86	0.19
PCB 52	5.32	0.53	PCB 153/168	2.54	0.25
PCB 66	2.81	0.28	PCB 156	0.64	0.06
PCB 70	2.49	0.25	PCB 157	2.88	0.29
PCB 74	3.10	0.31	PCB 158	2.72	0.27
PCB 77	2.01	0.20	PCB 167	1.63	0.16
PCB 81	3.56	0.36	PCB 169	2.76	0.28
PCB 87	3.01	0.30	PCB 170	1.23	0.12
PCB 99	3.05	0.30	PCB 177	1.91	0.19
PCB 101	4.34	0.43	PCB 180	2.58	0.26
PCB 105	2.29	0.23	PCB 183	1.55	0.15
PCB 110	2.50	0.25	PCB 187	2.50	0.25
PCB 114	3.15	0.31	PCB 189	1.78	0.18
PCB 118	2.06	0.21	PCB 194	1.14	0.11
PCB 119	2.39	0.24	PCB 201	2.88	0.29
PCB 123	2.64	0.26	PCB 206	1.28	0.13

Appendix F.3

Summary of constituents that make up total DDT, total chlordane (tCHLOR) and total PCB in composite (Comp) tissue samples from the PLOO region during October 2011.

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 101	0.4	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 118	0.2	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 138	0.2	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 149	0.2	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 153/168	0.4	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 180	0.3	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 187	0.3	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	PCB	PCB 99	0.3	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	DDT	o,p-DDE	0.3	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	DDT	p,p-DDD	0.3	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	DDT	p,p-DDE	2.5	ppb
2011-4	RF1	1	Vermilion rockfish	Muscle	DDT	p,p-DDT	0.3	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	PCB	PCB 118	0.2	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	PCB	PCB 138	0.2	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	PCB	PCB 153/168	0.3	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	PCB	PCB 187	0.3	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	DDT	o,p-DDD	0.3	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	DDT	p,p-DDE	1.5	ppb
2011-4	RF1	2	Vermilion rockfish	Muscle	DDT	p,p-DDT	0.5	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 101	0.4	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 118	0.2	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 180	0.3	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 187	0.3	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 28	0.3	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 49	0.5	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 66	0.3	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	PCB	PCB 99	0.3	ppb
2011-4	RF1	3	Vermilion rockfish	Muscle	DDT	p,p-DDE	0.8	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 101	0.4	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 110	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 118	0.4	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 138	0.5	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 149	0.2	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 153/168	0.7	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 180	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 187	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 66	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 70	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 74	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	PCB	PCB 99	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	DDT	o,p-DDE	0.3	ppb
2011-4	RF2	1	Chilipepper rockfish	Muscle	DDT	p,p-DDE	6.7	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 101	0.4	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 110	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 138	0.3	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 149	0.2	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 153/168	0.5	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 180	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 187	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 66	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 70	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	PCB	PCB 99	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	DDT	o,p-DDE	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	DDT	p,p-DDD	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	DDT	p,p-DDE	4.5	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	DDT	p,p-DDT	0.3	ppb
2011-4	RF2	2	Chilipepper rockfish	Muscle	tCHLOR	Alpha (cis) Chlordane	0.5	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 101	0.4	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 118	0.3	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 138	0.4	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 153/168	0.8	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 170	0.1	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 180	0.3	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 187	0.3	ppb
2011-4	RF2	3	Flag rockfish	Muscle	PCB	PCB 99	0.3	ppb
2011-4	RF2	3	Flag rockfish	Muscle	DDT	p,p-DDE	5.3	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 101	7.4	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 105	5.5	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 110	8.6	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 118	17.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 119	0.7	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 123	2.1	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 128	9.7	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 138	25.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 149	7.5	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 151	4.4	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 153/168	45.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 156	5.8	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 158	2.6	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 167	2.9	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 170	4.6	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 177	2.8	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 180	15.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 183	3.8	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 187	14.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 194	3.7	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 201	2.2	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 206	2.6	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 44	1.1	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 49	2.3	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 52	3.4	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 66	2.4	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 70	2.5	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 74	1.7	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 87	2.4	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	PCB	PCB 99	10.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	DDT	o,p-DDE	1.9	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	DDT	o,p-DDT	0.7	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	DDT	p,-p-DDMU	22.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	DDT	p,p-DDD	4.4	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	DDT	p,p-DDE	220.0	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	DDT	p,p-DDT	4.3	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	3.2	ppb
2011-4	Zone 1	1	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	1.9	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 101	11.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 105	7.9	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 110	13.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 118	25.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 119	1.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 123	3.4	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 128	14.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 138	34.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 149	12.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 151	7.5	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 153/168	67.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 156	10.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 158	3.9	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 167	4.5	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 170	5.1	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 177	3.9	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 180	19.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 183	5.9	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 187	20.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 194	5.2	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 201	2.7	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 206	3.5	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 44	1.3	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 49	3.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 52	5.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 66	3.8	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 70	3.5	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 74	1.9	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 87	3.4	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	PCB	PCB 99	16.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	DDT	o,p-DDE	2.6	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	DDT	p,-p-DDMU	28.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	DDT	p,p-DDD	5.1	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	DDT	p,p-DDE	240.0	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	DDT	p,p-DDT	4.8	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	3.7	ppb
2011-4	Zone 1	2	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	2.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 101	7.2	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 105	5.7	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 110	8.6	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 118	18.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 119	0.6	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 123	2.3	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 128	11.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 138	25.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 149	6.3	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 151	4.9	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 153/168	41.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 156	6.9	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 158	2.4	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 167	3.1	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 170	3.8	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 177	2.3	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 180	13.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 183	3.2	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 187	12.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 194	2.9	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 201	2.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 206	2.1	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 44	1.1	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 49	2.4	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 52	4.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 66	2.3	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 70	2.8	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 74	1.6	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 87	2.2	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	PCB	PCB 99	9.6	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	DDT	o,p-DDE	3.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	DDT	p,-p-DDMU	22.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	DDT	p,p-DDD	4.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	DDT	p,p-DDE	230.0	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	DDT	p,p-DDT	4.6	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	4.6	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	4.7	ppb
2011-4	Zone 1	3	Pacific sanddab	Liver	tCHLOR	Gamma (trans) Chlordane	2.6	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 101	4.6	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 105	4.5	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 110	5.7	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 118	13.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 119	0.6	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 123	2.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 128	10.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 138	21.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 149	5.2	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 151	3.4	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 153/168	36.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 156	5.1	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 158	2.7	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 167	2.7	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 170	4.2	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 177	2.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 180	11.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 183	3.3	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 187	11.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 194	3.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 201	2.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 206	1.9	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 44	0.7	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 49	1.5	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 52	2.3	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 66	2.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 70	1.8	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 74	1.4	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 87	1.3	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	PCB	PCB 99	7.2	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	DDT	o,p-DDE	2.1	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	DDT	p,-p-DDMU	17.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	DDT	p,p-DDD	3.6	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	DDT	p,p-DDE	160.0	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	DDT	p,p-DDT	3.7	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	2.3	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	1.7	ppb
2011-4	Zone 2	1	Pacific sanddab	Liver	tCHLOR	Gamma (trans) Chlordane	0.5	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 101	5.8	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 105	4.5	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 110	6.9	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 118	13.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 119	0.7	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 123	2.2	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 128	8.5	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 138	21.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 149	5.2	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 151	3.7	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 153/168	40.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 156	6.3	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 158	1.9	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 167	2.9	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 170	4.3	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 177	2.7	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 180	14.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 183	4.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 187	13.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 194	4.1	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 201	2.4	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 206	2.7	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 44	0.8	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 49	1.9	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 52	3.1	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 66	2.5	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 70	2.6	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 74	1.6	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 87	6.9	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	PCB	PCB 99	8.5	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	DDT	o,p-DDE	2.6	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	DDT	p,-p-DDMU	26.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	DDT	p,p-DDD	4.8	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	DDT	p,p-DDE	240.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	DDT	p,p-DDT	4.0	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	3.2	ppb
2011-4	Zone 2	2	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	2.3	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 101	6.4	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 105	4.7	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 110	10.6	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 118	16.0	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 128	12.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 138	25.0	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 149	6.8	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 151	5.0	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 153/168	45.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 156	6.4	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 167	3.1	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 170	5.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 177	2.8	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 180	16.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 183	4.6	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 187	14.0	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 194	4.7	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 206	3.1	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 70	2.6	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	PCB	PCB 99	9.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	DDT	p,-p-DDMU	23.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	DDT	p,p-DDD	4.9	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	DDT	p,p-DDE	225.0	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	DDT	p,p-DDT	3.5	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	2.9	ppb
2011-4	Zone 2	3	Pacific sanddab	Liver	tCHLOR	Gamma (trans) Chlordane	0.6	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 101	4.9	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 105	3.2	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 110	5.7	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 118	9.5	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 123	1.3	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 128	5.3	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 138	12.0	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 149	4.7	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 151	2.5	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 153/168	23.0	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 156	3.0	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 158	1.2	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 177	1.2	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 18	0.2	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 180	6.5	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 183	2.3	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 187	6.9	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 194	1.7	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 201	1.2	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 44	0.7	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 49	1.5	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 52	2.5	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 66	1.6	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 70	2.3	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 74	1.2	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	PCB	PCB 99	5.0	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	DDT	o,p-DDE	1.2	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	DDT	p,-p-DDMU	13.0	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	DDT	p,p-DDD	2.1	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	DDT	p,p-DDE	100.0	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	DDT	p,p-DDT	2.1	ppb
2011-4	Zone 3	1	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	1.9	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 101	6.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 105	2.9	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 110	5.7	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 118	11.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 123	1.4	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 128	4.9	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 138	12.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 149	4.4	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 151	2.9	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 153/168	24.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 158	1.2	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 177	1.4	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 180	8.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 183	2.1	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 187	7.1	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 194	2.5	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 201	1.4	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 206	1.9	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 44	0.9	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 49	1.8	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 52	2.5	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 66	1.4	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 70	2.2	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 74	1.3	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	PCB	PCB 99	5.3	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	DDT	o,p-DDD	0.6	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	DDT	p,-p-DDMU	15.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	DDT	p,p-DDD	3.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	DDT	p,p-DDE	130.0	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	DDT	p,p-DDT	3.5	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 3	2	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	3.4	ppb
2011-4	Zone 3	2	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	1.3	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 101	12.5	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 105	6.3	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 110	15.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 118	21.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 128	8.2	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 138	19.5	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 149	6.7	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 151	3.7	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 153/168	36.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 156	5.2	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 167	2.8	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 170	3.3	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 177	2.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 180	9.5	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 183	2.7	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 187	9.3	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 194	3.1	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 206	2.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 44	2.5	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 49	10.5	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 52	17.5	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 66	5.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 70	7.6	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 87	4.8	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	PCB	PCB 99	11.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	DDT	p,-p-DDMU	13.0	ppb
2011-4	Zone 3	3	Pacific sanddab	Liver	DDT	p,p-DDE	130.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 101	9.3	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 105	7.2	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 110	13.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 118	23.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 119	1.1	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 123	3.3	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 128	13.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 138	33.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 149	8.8	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 151	6.3	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 153/168	62.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 156	8.2	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 158	2.8	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 167	3.7	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 170	5.8	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 177	3.2	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 180	20.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 183	5.3	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 187	17.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 194	4.7	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 201	2.6	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 206	3.2	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 44	1.4	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 49	2.9	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 52	4.2	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 66	3.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 74	2.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 87	2.7	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	PCB	PCB 99	13.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	DDT	o,p-DDE	2.5	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	DDT	p,p-DDMU	26.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	DDT	p,p-DDD	5.1	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	DDT	p,p-DDE	260.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	DDT	p,p-DDT	5.0	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	3.4	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	2.9	ppb
2011-4	Zone 4	1	Pacific sanddab	Liver	tCHLOR	Gamma (trans) Chlordane	0.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 101	2.7	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 110	2.1	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 118	3.4	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 138	3.7	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 149	2.4	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 151	1.0	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 153/168	7.9	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 180	2.5	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 183	0.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 187	2.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 44	0.4	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 49	0.8	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 52	1.2	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 66	0.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 70	1.1	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 74	0.4	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	PCB	PCB 99	1.8	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	DDT	o,p-DDD	0.9	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	DDT	o,p-DDE	1.1	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	DDT	o,p-DDT	0.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	DDT	p,p-DDMU	5.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	DDT	p,p-DDD	1.6	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	DDT	p,p-DDE	35.0	ppb
2011-4	Zone 4	2	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	1.3	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 101	7.6	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 105	4.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 110	7.6	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 118	13.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 123	2.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 128	8.7	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 138	18.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 149	7.0	ppb

Appendix F.3 *continued*

Yr-Qtr	Station	Comp	Species	Tissue	Class	Parameter	Value	Units
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 151	4.4	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 153/168	34.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 156	5.5	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 158	1.5	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 167	2.1	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 170	3.1	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 177	2.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 180	10.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 183	2.9	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 187	10.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 194	2.1	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 201	1.4	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 206	1.9	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 44	0.9	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 49	2.3	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 52	3.3	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 66	2.2	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 70	2.7	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 74	1.5	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 87	2.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	PCB	PCB 99	8.4	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	DDT	o,p-DDE	2.9	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	DDT	p,-p-DDMU	27.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	DDT	p,p-DDD	5.1	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	DDT	p,p-DDE	230.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	DDT	p,p-DDT	4.0	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	tCHLOR	Alpha (cis) Chlordane	3.2	ppb
2011-4	Zone 4	3	Pacific sanddab	Liver	tCHLOR	Cis Nonachlor	1.7	ppb

Appendix F.4

Species of fish collected from each PLOO trawl and rig fishing station between 2009 and 2011.

Station	Comp	2009	2010	2011
RF1	1	Copper rockfish	Ca. scorpionfish	Vermilion Rockfish
RF1	2	Vermilion rockfish	Ca. scorpionfish	Vermilion Rockfish
RF1	3	Sebastes spp.	Ca. scorpionfish	Vermilion Rockfish
RF2	1	Vermilion rockfish	Vermilion rockfish	Chilipepper
RF2	2	Vermilion rockfish	Mixed rockfish	Chilipepper
RF2	3	Sebastes spp.	Mixed rockfish	Flag rockfish
Zone 1	1	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 1	2	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 1	3	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 2	1	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 2	2	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 2	3	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 3	1	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 3	2	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 3	3	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 4	1	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 4	2	Pacific sanddab	Pacific sanddab	Pacific Sanddab
Zone 4	3	Pacific sanddab	Pacific sanddab	Pacific Sanddab

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Appendix F.5

PLOO two-way crossed ANOSIM results for liver tissue (A=survey, B=lipid content). Lipid content bins: 1 = 0–10%, 2 = 10.1%–20%, 3 = 20.1%–30%, 4 = 30.1%–40%, 5 = 40.1%–50%, 6 = > 50.1%.

Global Test: Factor A

Tests for differences between survey (across all across all lipid groups)

Sample statistic (Global R):	0.352
Significance level of sample statistic:	0.01%
Number of permutations:	9999
Number of permuted statistics greater than or equal to Global R:	0

Pairwise Tests: Factor A

Tests for pairwise differences between individual surveys across all lipid groups: r values (p values)

	2010	2011
2009	0.437 (0.005)	0.327 (0.002)
2010		0.268 (0.009)

Global Test: Factor B

Tests for differences between across all lipid groups (across all surveys)

Sample statistic (Global R):	0.077
Significance level of sample statistic:	22.2%
Number of permutations:	9999
Number of permuted statistics greater than or equal to Global R:	2217

Pairwise Tests: Factor B

Tests for pairwise differences between lipid groups across all surveys: r values (p values)

	2	3	4	5	6
1	no test	1 (0.200)	0.822 (0.143)	no test	no test
2		-0.167 (0.600)	-0.346 (0.952)	1 (0.067)	1 (0.333)
3			-0.124 (0.766)	-0.24 (0.833)	1 (0.333)
4				0.091 (0.146)	0.216 (0.233)
5					0.228 (0.19)

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Appendix F.6

PLOO two-way crossed ANOSIM results for muscle tissue (A=survey, B=species).

Global Test: Factor A

Tests for differences between surveys (across all species)

Sample statistic (Global R):	0.727
Significance level of sample statistic:	3.3%
Number of permutations:	210
Number of permuted statistics greater than or equal to Global R:	7

Pairwise Tests: Factor A

Tests for pairwise differences between individual surveys across all species: r values (p values)

	2010	2011
2009	0.721 (0.167)	1 (0.100)
2010		-0.333 (1.00)

Global Test: Factor B

Tests for differences between species (across all surveys)

Sample statistic (Global R):	0.076
Significance level of sample statistic:	34.6%
Number of permutations:	9999
Number of permuted statistics greater than or equal to Global R:	3455

Pairwise Tests: Factor B

Tests for pairwise differences between individual species across all surveys: r values (p values)

	Chilipepper rockfish	Flag rockfish	California scorpionfish	Mixed rockfish	Copper rockfish
Vermilion rockfish	0.333 (0.200)	0.111 (0.750)	-0.556 (1.00)	0.21 (0.200)	1 (0.25)
Chilipepper rockfish		-1 (1.00)	no test	no test	no test
Flag rockfish				no test	no test
California scorpionfish				-0.25 (0.90)	no test
Mixed rockfish					-1 (1.00)

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