DATA APPENDIX

Pelagic Organism Decline (POD): Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento-San Joaquin Delta

2008-2010

Final Report

Appendix A

Analytical Chemistry and Laboratory Control Water Types

Table A-1. List of organophosphate pesticide analytes with corresponding method detection and reporting limits.

Organophosphate Pesticides	Method Detection Limit (µg/L)	Reporting limit (µg/L)
Azinphos methyl	0.030	0.050
Chlorpyrifos	0.010	0.020
Diazinon	0.005	0.020
Dimethoate	0.030	0.050
Disulfoton	0.010	0.050
Malathion	0.030	0.050
Methidathion	0.030	0.050
Parathion, Methyl	0.010	0.050
Phorate	0.030	0.050
Phosmet	0.030	0.050

Table A-2. List of pyrethroid pesticide analytes with corresponding method detection and reporting limits.

Pyrethroid Pesticides	Method Detection Limit (µg/L)	Reporting limit (µg/L)
Bifenthrin	0.001	0.002
Cyfluthrin	0.002	0.004
Cypermethrin	0.002	0.004
Deltamethrin	0.002	0.004
Esfenvalerate/Fenvalerate	0.001	0.002
Fenpropathrin	0.002	0.004
Lambda Cyhalothrin	0.001	0.002
Permethrin, Cis	0.003	0.005
Permethrin, Trans	0.003	0.005

Table A-3. List of carbamate pesticide analytes with corresponding method detection and reporting limits.

Carbamate Pesticides	Method Detection Limit (µg/L)	Reporting limit (µg/L)
Aldicarb	0.002	0.005
Captan	0.002	0.005
Carbaryl	0.001	0.002
Carbofuran	0.0005	0.001
Diuron	0.002	0.005
Linuron	0.002	0.005
Methiocarb	0.002	0.005
Methomyl	0.0005	0.001

Table A-4. List of Fipronil and Metabolites analytes with corresponding method detection and reporting limits.

Fipronil & Metabolites	Method Detection Limit (µg/L)	Reporting limit (µg/L)
Fipronil	0.100	0.200
Fipronil Desulfinyl	0.100	0.200
Fipronil Sulfide	0.100	0.200
Fipronil Sulfone	0.100	0.200

Table A-5. List of Trace Metal analytes with corresponding method detection and reporting limits.

Trace Metals	Method Detection Limit (µg/L)	Reporting limit (µg/L)
Aluminum	1.70	5.00
Arsenic	0.01	0.03
Cadmium	0.004	0.01
Chromium	0.10	0.30
Copper	0.03	0.10
Lead	0.002	0.006
Manganese	0.01	0.03
Nickel	0.01	0.03
Selenium	0.45	1.00
Silver	0.001	0.003
Zinc	0.05	0.15

Table A-6. List of PAH analytes with corresponding method detection and reporting limits.

PAHs	Method Detection Limit (µg/L)	Reporting limit (µg/L)
Naphthalene	0.00474	0.005
Methylnaphthalene, 2-	0.00457	0.005
Methylnaphthalene, 1-	0.00437	0.005
Dimethylnaphthalene, 2,6-	0.00293	0.005
Trimethylnaphthalene, 2,3,5-	0.00726	0.010
Naphthalenes, C1-	-	0.005
Naphthalenes, C2-	-	0.005
Naphthalenes, C3-	-	0.005
Naphthalenes, C4-	-	0.005
Biphenyl	0.00293	0.005
Acenaphthylene	0.00456	0.005
Acenaphthene	0.00251	0.005
Fluorene	0.00372	0.005
Methylfluorene, 1-	0.00656	0.010
Fluorenes, C1-	-	0.005
Fluorenes, C2-	-	0.005
Fluorenes, C3-	-	0.005
Dibenzothiophene	0.00195	0.005
Methyldibenzothiophene, 4-	0.00371	0.005
Dibenzothiophenes, C1-	-	0.005
Dibenzothiophenes, C2-	-	0.005
Dibenzothiophenes, C3-	-	0.005
Phenanthrene	0.00317	0.005
Methylphenanthrene, 1-	0.00762	0.010
Dimethylphenanthrene, 3,6-	0.00552	0.005
Phenanthrene/Anthracene, C1-	-	0.005
Phenanthrene/Anthracene, C2-	-	0.005
Phenanthrene/Anthracene, C3-	-	0.005
Phenanthrene/Anthracene, C4-	-	0.005
Anthracene	0.00281	0.005
Fluoranthene	0.00340	0.005
Methylfluoranthene, 2-	0.00410	0.005
Fluoranthene/Pyrenes, C1-	-	0.005
Pyrene	0.00379	0.005
Benz(a)anthracene	0.00364	0.005
Chrysene	0.00259	0.005
Chrysenes, C1-	-	0.005
Chrysenes, C2-	-	0.005
Chrysenes, C3-	-	0.005
Benzo(b)fluoranthene	0.00380	0.005
Benzo(k)fluoranthene	0.00377	0.005
Benzo(e)pyrene	0.00285	0.005
Benzo(a)pyrene	0.00345	0.005
Perylene	0.00313	0.005
Indenol(1,2,3-c,d)pyrene	0.00950	0.010
Dibenz(a,h)anthracene	0.00498	0.005
Benzo(g,h,i)perylene	0.00276	0.005

Table A-7. Description of synthetic laboratory control waters used for sensitivity studies.

Water	Species	SC-adjustment	pH-adjustment	Base
SSEPAMH	*C. dubia*	900 µS/cm with Instant Ocean	7.9 with hydrochloric acid or sodium hydroxide	Sierra Springs™ Spring Water adjusted to USEPA moderately hard standards
	E. affinis	900 µS/cm with Instant Ocean	7.9 with hydrochloric acid or sodium hydroxide	
SDEPAMH	*C. dubia*	900 µS/cm with Instant Ocean	7.9 with hydrochloric acid or sodium hydroxide	Sierra Springs™ Drinking Water adjusted to USEPA moderately hard standards
DIEPAMH	*P. promelas*	900 µS/cm with Instant Ocean	7.9 with hydrochloric acid or sodium hydroxide	Deionized water adjusted to USEPA moderately hard standards
DIEPAMHR	*H. azteca*	900 µS/cm with Instant Ocean	7.9 with hydrochloric acid or sodium hydroxide	Deionized water adjusted to USEPA moderately hard reconstituted standards
Filtered Hatchery Water	*H. transpacificus*	900 µS/cm with Instant Ocean	7.9 with hydrochloric acid or sodium hydroxide	Ambient water collected from the UC Davis Smelt Hatchery and passed through a 1µm filter.

Appendix B

Summary Tables:

Ambient Toxicity Tests with *H. Azteca*

Table B 1-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/03/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/01/08 - 1/02/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	90	0.5	89	4.5	NS
DIEPAMHR + organic matter	98	2.5	95	3.1	NS
High EC Control @ 13.15 mS/cm	97	2.8	100	0.0	NS
Sacramento River at Hood DWR Station	90	7.1	97	2.8	NS
Suisun Bay at Public Suisun Dock	97	3.1	100	0.0	NS
Napa River, near River Park Blvd.[3]	100	0.0	95	5.0	NS
Sacramento River at tip of Grand Island (711)	98	2.5	100	0.0	NS
San Joaquin River between Hog and Turner Cuts (910)	97	2.8	95	3.1	NS
Confluence of Linsey Sl. And Cache Sl.	85	4.9	93	4.8	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Sacramento Deep Water Channel, Light 55	97	2.8	90	5.8	NS
Old River at mouth of Holland Cut (915)	100	0.0	98	2.5	NS
Old River, western arm at railroad bridge (902)	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	95	2.9	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.032	0.015	0.047	0.009	NS
DIEPAMHR + organic matter	0.056	0.007	0.055	0.007	NS
High EC Control @ 13.15 mS/cm	0.052	0.013	0.051	0.009	NS
Sacramento River at Hood DWR Station	0.034	0.009	0.062	0.006	S*
Suisun Bay at Public Suisun Dock	0.045	0.014	0.057	0.009	NS
Napa River, near River Park Blvd.[3]	0.062	0.009	0.069	0.011	NS
Sacramento River at tip of Grand Island (711)	0.078	0.008	0.087	0.004	NS
San Joaquin River between Hog and Turner Cuts (910)	0.071	0.010	0.088	0.002	NS
Confluence of Linsey Sl. And Cache Sl.	0.067	0.005	0.074	0.007	NS
San Joaquin River at Potato Slough (815)	0.087	0.009	0.091	0.005	NS
Sacramento Deep Water Channel, Light 55	0.072	0.007	0.079	0.003	NS
Old River at mouth of Holland Cut (915)	0.081	0.005	0.100	0.004	S*
Old River, western arm at railroad bridge (902)	0.071	0.011	0.087	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek	0.070	0.012	0.096	0.009	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This high conductivity sample was compared to the high EC control.

Table B 1-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/01/08 - 1/02/08.

Treatment	Collection Date & Time	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
		SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	1/01/08 11:10	212	8.8	7.37	11.7	14.3	0.51	0.002
Suisun Bay at Public Suisun Dock	1/01/08 17:30	5960	7.3	7.65	10.2	266.3	0.32	0.002
Napa River, near River Park Blvd.	1/01/08 16:20	13470	9.2	7.17	10.5	69.5	0.37	0.001
Sacramento River at tip of Grand Island (711)	1/02/08 12:38	386	7.5	7.40	12.3	11.8	0.41	0.001
San Joaquin River between Hog and Turner Cuts (910)	1/02/08 10:30	610	7.4	7.55	12.5	5.7	0.13	0.001
Confluence of Linsey Sl. And Cache Sl.	1/02/08 13:20	379	7.7	7.76	12.6	16.1	0.44	0.004
San Joaquin River at Potato Slough (815)	1/02/08 11:35	722	7.9	7.72	12.3	7.7	0.23	0.002
Sacramento Deep Water Channel, Light 55	1/02/08 13:00	387	7.9	7.75	12.5	18.6	0.44	0.004
Old River at mouth of Holland Cut (915)	1/02/08 9:45	888	6.9	7.44	12.4	5.6	0.14	0.001
Old River, western arm at railroad bridge (902)	1/02/08 9:15	1444	6.9	7.56	12.4	6.1	0.19	0.001
Upper Cache Slough at mouth of Ulatis Creek	1/02/08 13:45	478	8.7	7.95	12.7	8.1	0.13	0.002

Table B 1-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 1/03/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/01/08 - 1/02/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	22.2	22.3	7.6	8.9	7.78	8.15	104	56	-
DIEPAMHR + organic matter	343	22.6	22.9	7.6	8.9	7.71	8.14	104	56	-
High EC Control @ 13.15 mS/cm	12520	22.6	23.5	7.5	8.7	7.73	8.02	1520	72	-
Sacramento River at Hood DWR Station	314	22.3	22.6	7.5	8.8	7.86	8.11	76	82	0.016
Suisun Bay at Public Suisun Dock	5640	22.6	22.8	7.6	8.6	7.99	8.34	768	208	0.011
Napa River, near River Park Blvd.	12040	22.1	22.6	7.3	8.7	7.81	7.98	1660	112	0.009
Sacramento River at tip of Grand Island (711)	294	22.1	22.5	7.5	8.9	7.88	8.12	88	82	0.015
San Joaquin River between Hog and Turner Cuts (910)	500	22.2	23.3	7.4	8.8	7.91	8.12	120	88	0.006
Confluence of Linsey Sl. And Cache Sl.	244	22.3	23.3	7.3	8.8	7.84	8.16	84	88	0.028
San Joaquin River at Potato Slough (815)	592	22.4	22.6	7.6	8.8	7.84	8.08	116	78	0.011
Sacramento Deep Water Channel, Light 55	242	22.3	22.4	7.5	8.9	7.88	8.17	92	90	0.019
Old River at mouth of Holland Cut (915)	767	22.2	22.9	7.7	8.8	7.83	8.10	132	76	0.007
Old River, western arm at railroad bridge (902)	875	22.3	23.4	7.7	8.7	7.83	8.05	144	80	0.007
Upper Cache Slough at mouth of Ulatis Creek	400	22.4	22.7	7.5	8.8	8.09	8.27	128	118	0.008
DIEPAMHR + 25 ppb PBO	332	22.3	22.4	7.6	8.9	7.77	8.12	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	332	22.4	22.5	7.6	8.8	7.74	8.12	-	-	-
High EC Control @ 13.15 mS/cm + 25 ppb PBO	11700	22.3	22.9	7.9	8.9	7.71	8.02	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	219	22.2	22.7	7.5	8.8	7.88	8.12	-	-	-
Suisun Bay at Public Suisun Dock + 25 ppb PBO	5345	22.1	22.5	7.4	8.7	8.02	8.33	-	-	-
Napa River, near River Park Blvd. + 25 ppb PBO	12345	22.1	22.7	7.2	8.9	7.82	7.93	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	304.9	22.0	22.5	7.5	8.7	7.82	8.11	-	-	-
San Joaquin River between Hog and Turner Cuts (910) + 25 ppb PBO	498	22.1	23.1	7.4	8.9	7.89	8.14	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	271	22.1	23.5	7.6	8.8	7.86	8.14	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	581	21.8	23.5	7.2	8.9	7.85	8.06	-	-	-
Sacramento Deep Water Channel, Light 55 + 25 ppb PBO	244	22.0	23.7	7.4	8.9	7.90	8.14	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	765	22.0	23.5	7.7	8.9	7.83	8.07	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	887	21.9	23.1	7.7	8.9	7.84	8.07	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	399	22.1	23.5	7.6	8.8	8.08	8.27	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 2-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/04/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/03/08 - 1/04/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	90	4.1	88	2.6	NS
DIEPAMHR + organic matter	95	2.9	95	2.8	NS
High EC Control @ 11.0 mS/cm	100	0.0	98	2.5	NS
High EC Control @ 22.0 mS/cm	92	2.6	81*	5.4	NS
Montezuma Slough at Nurse Slough (609)[3]	98	2.5	95	3.1	NS
Suisun Bay off Chipps Island (508)[3]	95	2.9	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	100	0.0	95	3.1	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.030	0.005	0.027**	0.006	NS
DIEPAMHR + organic matter	0.044	0.007	0.052	0.002	NS
High EC Control @ 11.0 mS/cm	0.043	0.007	0.045	0.006	NS
High EC Control @ 22.0 mS/cm	0.039	0.003	0.032*	0.006	NS
Montezuma Slough at Nurse Slough (609)[3]	0.046	0.007	0.048	0.001	NS
Suisun Bay off Chipps Island (508)[3]	0.063	0.003	0.054	0.004	NS
Grizzly Bay at Dolphin (602)[4]	0.046	0.008	0.039	0.006	NS
Rough and Ready DWR station, Stockton	0.053	0.004	0.063	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC Control @ 11.0 mS/cm.

4. This high conductivity sample was compared to the High EC Control @ 22.0 mS/cm.

Table B 2-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/03/08 - 1/04/08.

Treatment	Collection Date & Time	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
		SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Montezuma Slough at Nurse Slough (609)	1/03/08 12:15	14390	9.1	7.35	11.6	27.2	0.27	0.005
Suisun Bay off Chipps Island (508)	1/03/08 9:45	10590	8.3	7.79	12.0	10.1	0.21	0.006
Grizzly Bay at Dolphin (602)	1/03/08 11:30	22140	9.0	7.91	11.7	17.5	0.17	0.004
Rough and Ready DWR station, Stockton	1/04/08 9:30	846	9.0	7.78	11.1	4.6	0.16	0.005

Table B 2-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 1/04/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/03/08 - 1/04/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	333	22.3	22.5	7.6	8.8	7.79	8.07	104	56	-
DIEPAMHR + organic matter	334	22.3	22.7	7.5	8.9	7.68	8.02	104	56	-
High EC Control @ 11.0 mS/cm	10195	22.5	23.0	7.6	8.7	7.73	7.92	1200	72	-
High EC Control @ 22.0 mS/cm	20400	22.4	23.1	7.2	8.7	7.74	7.98	2400	84	-
Montezuma Slough at Nurse Slough (609)	10555	22.3	22.4	7.2	8.8	7.74	7.93	1220	92	0.005
Suisun Bay off Chipps Island (508)	9955	22.4	23.1	7.3	8.9	7.82	7.93	1120	90	0.006
Grizzly Bay at Dolphin (602)	19230	22.3	23.1	7.0	8.7	7.75	7.91	2400	98	0.004
Rough and Ready DWR station, Stockton	810	22.2	23.0	7.7	8.9	7.90	8.10	176	104	0.005
DIEPAMHR + 25 ppb PBO	339	22.2	22.5	7.6	9.5	7.82	8.03	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	336	22.1	22.2	7.4	8.8	7.70	8.08	-	-	-
High EC Control @ 11.0 mS/cm + 25 ppb PBO	10095	22.2	22.2	7.2	8.8	7.70	7.95	-	-	-
High EC Control @ 22.0 mS/cm + 25 ppb PBO	20170	22.2	22.3	7.2	8.8	7.72	7.99	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	10060	22.1	22.7	7.4	8.9	7.77	7.94	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	9680	22.1	22.4	7.3	8.8	7.82	7.95	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	19350	22.1	22.2	7.0	8.7	7.74	7.90	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	818	22.1	22.5	7.6	8.9	7.89	8.10	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 3-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 01/17/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/15/08 - 01/16/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.3	95	2.9	NS
DIEPAMHR + POM	98	2.5	90	0.0	NS
High EC Control @ 20.80 mS/cm + POM	97	2.8	100	0.0	NS
Suisun @ Public Access	98	2.5	100	0.0	NS
Napa @ Valley College	94	3.8	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	98	2.5	NS
Grizzly Bay @ Dolphin (602)	98	2.5	95	2.9	NS
Carquinez Strait, West of Benecia army dock (405)[3]	97	2.8	100	0.0	NS
Napa River @ Vallejo Seawall (340)[3]	100	0.0	89	4.6	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.055*	0.004	0.053*	0.004	NS
DIEPAMHR + POM	0.066	0.003	0.066	0.002	NS
High EC Control @ 20.80 mS/cm + POM	0.038***	0.003	0.038***	0.003	NS
Suisun @ Public Access	0.088	0.006	0.104	0.004	S*
Napa @ Valley College	0.100	0.003	0.107	0.007	NS
Suisun Bay off Chipps Island (508)	0.098	0.004	0.094	0.004	NS
Grizzly Bay @ Dolphin (602)	0.096	0.007	0.085	0.001	NS
Carquinez Strait, West of Benecia army dock (405)[3]	0.063	0.010	0.052	0.006	NS
Napa River @ Vallejo Seawall (340)[3]	0.064	0.003	0.065	0.007	NS
Montezuma Slough at Nurse Slough (609)	0.079	0.010	0.066	0.010	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the high EC control.

Table B 3-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/15/08-01/16/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun @ Public Access	2887	10.5	7.3	8.4	56.3	0.30	0.002
Napa @ Valley College	590	11.6	7.45	10.4	90.9	0.36	0.001
Suisun Bay off Chipps Island (508)	1045	7.8	7.32	11.1	82.3	0.27	0.001
Grizzly Bay @ Dolphin (602)	4023	8.9	7.54	11.1	35.9	0.08	0.000
Carquinez Strait, West of Benecia army dock (405)	20190	9.0	7.57	10.4	11.9	0.31	0.001
Napa River @ Vallejo Seawall (340)	21740	9.1	7.62	10.3	58.4	0.27	0.001
Montezuma Slough at Nurse Slough (609)	7710	8.7	7.27	10.3	45.7	0.25	0.001

Table B 3-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 01/17/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/15/08-01/16/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	249	22.2	23.4	7.6	8.4	7.22	8.10	104	56	-
DIEPAMHR + 1% nutrient add back	250	22.3	22.8	7.5	8.5	7.21	8.02	104	56	-
High EC Control @ 20.80 mS + 1% nutrient add back	18720	20.5	22.3	6.8	8.7	7.13	7.95	2240	84	-
Suisun @ Public Access	2682	22.3	22.7	7.5	8.7	7.44	8.33	388	166	0.005
Napa @ Valley College	535	22.2	23.0	7.6	8.8	7.32	8.07	132	78	0.003
Suisun Bay off Chipps Island (508)	806	20.2	22.1	7.8	8.9	7.25	8.04	160	74	0.010
Grizzly Bay @ Dolphin (602)	4361	22.0	23.4	7.6	8.7	7.27	8.04	528	84	0.008
Carquinez Strait, West of Benecia army dock (405)	17810	22.0	23.5	7.2	8.2	7.23	7.93	2040	96	0.005
Napa River @ Vallejo Seawall (340)	19450	22.0	23.7	6.9	8.6	7.24	7.91	2320	98	0.007
Montezuma Slough at Nurse Slough (609)	7115	22.0	23.4	7.4	8.4	7.19	8.03	860	82	0.014
DIEPAMHR + 25 ppb PBO	347	21.9	23.8	7.7	8.4	7.21	8.03	-	-	-

DIEPAMHR + 1% nutrient add back + 25 ppb PBO	336	21.9	23.8	7.6	8.8	7.25	8.07	-	-	-
High EC Control @ 20.80 mS + 1% nutrient add back + 25 ppb PBO	19180	21.8	23.3	7.3	8.4	7.16	7.99	-	-	-
Suisun @ Public Access + 25 ppb PBO	7353	19.8	21.8	7.6	8.8	7.55	8.36	-	-	-
Napa @ Valley College + 25 ppb PBO	551	21.7	23.0	7.5	8.7	7.33	8.06	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	1102	21.7	24.0	7.6	8.6	7.26	8.08	-	-	-
Grizzly Bay @ Dolphin (602) + 25 ppb PBO	4270	21.7	23.0	7.7	8.6	7.25	8.03	-	-	-
Carquinez Strait, West of Benecia army dock (405)3 + 25 ppb PBO	17815	21.6	23.8	7.4	8.7	7.22	7.95	-	-	-
Napa River @ Vallejo Seawall (340)3 + 25 ppb PBO	19340	21.6	23.8	7.0	8.7	7.23	7.90	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	7025	21.5	22.3	7.4	8.6	7.17	7.97	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 4-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 01/18/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/17/08 - 01/18/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	4.5	95	2.9	NS
DIEPAMHR + POM	93	4.8	95	2.9	NS
San Joaquin River @ Potato Slough (815)	98	2.5	95	2.9	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Confluence of Lindsey slough and Cache slough	95	2.9	93	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	98	2.3	95	2.8	NS
Sacramento River, Deep Water Channel, Light 55	93	4.8	98	2.5	NS
Sacramento River at tip of Grand Island (711)	95	5.0	95	2.9	NS
Sacramento River at Hood DWR Station	98	2.5	93	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.036*	0.003	0.033**	0.006	NS
DIEPAMHR + POM	0.061	0.008	0.060	0.003	NS
San Joaquin River @ Potato Slough (815)	0.069	0.005	0.089	0.008	NS
Old River, western arm at railroad bridge (902)	0.074	0.005	0.079	0.011	NS
Confluence of Lindsey slough and Cache slough	0.060	0.004	0.064	0.009	NS
Old River at mouth of Holland Cut (915)	0.072	0.007	0.079	0.012	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	0.066	0.006	0.067	0.006	NS

Sacramento River, Deep Water Channel, Light 55	0.060	0.004	0.066	0.012	NS
Sacramento River at tip of Grand Island (711)	0.061	0.002	0.056	0.004	NS
Sacramento River at Hood DWR Station	0.084	0.017	0.085	0.013	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 4-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/17/08 and 01/18/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
San Joaquin River at Potato Slough (815)	329	8.3	7.38	11.9	34.5	0.14	0.001
Old River, western arm at railroad bridge (902)	500	8.1	7.50	11.9	31.9	0.13	0.001
Confluence of Lindsey Sl. And Cache Sl.	255	8.4	7.52	12.1	64.4	0.24	0.001
Old River at mouth of Holland Cut (915)	538	8.2	7.48	11.7	14.6	0.44	0.002
Upper Cache Slough at mouth of Ulatis Creek	392	7.8	7.83	12.1	95.9	0.15	0.002
Sacramento Deep Water Channel, Light 55	303	8.4	7.64	11.8	90.0	0.18	0.001
Sacramento River at tip of Grand Island (711)	218	8.2	7.39	12.2	40.8	0.28	0.001
Sacramento River at Hood DWR Station	234	9.5	7.49	11.3	27.6	0.43	0.002

Table B 4-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 01/18/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/17/08 and 01/18/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
Control (DIEPAMHR)	331	21.9	22.4	7.7	8.6	7.82	8.08	104	56	-
Control (DIEPAMHR + Organic Matter)	336	22.1	22.4	7.7	8.6	7.84	8.04	104	56	-

San Joaquin River at Potato Slough (815)	314	22.2	22.8	7.5	8.7	7.89	7.98	88	68	0.006
Old River, western arm at railroad bridge (902)	476	22.1	22.8	7.7	8.8	7.91	8.03	100	76	0.005
Confluence of Lindsey Sl. And Cache Sl.	245	21.6	21.8	7.6	8.8	7.90	8.12	84	84	0.008
Old River at mouth of Holland Cut (915)	531	21.7	22.2	7.6	8.6	7.89	8.00	108	76	0.014
Upper Cache Slough at mouth of Ulatis Creek	433	21.4	22.6	7.6	8.7	8.06	8.36	136	120	0.007
Sacramento Deep Water Channel, Light 55	317	21.9	22.7	7.5	8.5	8.06	8.23	104	98	0.009
Sacramento River at tip of Grand Island (711)	210	21.9	22.7	7.5	8.9	7.87	8.18	76	98	0.009
Sacramento River at Hood DWR Station	230	21.8	22.8	7.5	8.7	7.85	8.12	84	86	0.013
Control (DIEPAMHR) + 25ppb PBO	346	21.7	21.8	7.9	8.9	7.84	8.11	-	-	-
Control (DIEPAMHR + Organic Matter) + 25ppb PBO	334	21.6	21.7	7.7	8.8	7.79	8.09	-	-	-
San Joaquin River at Potato Slough (815) + 25ppb PBO	316	21.6	22.3	7.5	8.7	7.89	8.06	-	-	-
Old River, western arm at railroad bridge (902) + 25ppb PBO	476	21.7	22.4	7.7	8.7	7.94	8.05	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25ppb PBO	249	21.7	22.4	7.6	8.7	7.97	8.22	-	-	-
Old River at mouth of Holland Cut (915) + 25ppb PBO	525	21.5	22.3	7.6	8.8	7.88	8.04	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25ppb PBO	431	21.3	22.4	7.4	8.7	8.09	8.33	-	-	-
Sacramento Deep Water Channel, Light 55 + 25ppb PBO	318	21.5	22.0	7.4	8.7	8.04	8.25	-	-	-
Sacramento River at tip of Grand Island (711) + 25ppb PBO	222	21.4	22.5	7.3	8.8	7.88	8.13	-	-	-
Sacramento River at Hood DWR Station + 25ppb PBO	227	21.5	23.0	7.3	8.7	7.72	8.16	-	-	-

1: This Un-ionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 5-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 01/31/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/29/08 - 01/30/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	93	4.8	NS
DIEPAMHR + POM	95	2.9	90	4.1	NS
High EC Control @ 14.28 mS/cm + POM	100	0.0	100	0.0	NS
Suisun @ Rush Ranch	98	2.3	98	2.3	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Napa River at Vallejo Seawall (340)[3]	98	2.5	100	0.0	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	98	2.5	NS
Carquinez Strait, West of Benicia army dock (405)[3]	100	0.0	100	0.0	NS
Field Duplicate: Napa River at Vallejo Seawall (340)[3]	100	0.0	-	-	NA
Trip Blank (DIEPAMHR)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.057*	0.007	0.062**	0.003	NS
DIEPAMHR + POM	0.078	0.005	0.093	0.005	NS
High EC Control @ 14.28 mS/cm + POM	0.079	0.006	0.073	0.009	NS
Suisun @ Rush Ranch	0.096	0.004	0.105	0.006	NS
Montezuma Slough at Nurse Slough (609)	0.099	0.005	0.081	0.006	NS
Napa River at Vallejo Seawall (340)[3]	0.078	0.005	0.087	0.002	NS
Grizzly Bay at Dolphin (602)	0.103	0.011	0.101	0.006	NS
Suisun Bay off Chipps Island (508)	0.097	0.006	0.107	0.006	NS
Carquinez Strait, West of Benicia army dock (405)[3]	0.079	0.007	0.080	0.003	NS
Field Duplicate: Napa River at Vallejo Seawall (340)[3]	0.089	0.005	-	-	NA
Trip Blank (DIEPAMHR)	0.061	0.004	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the high EC control.

Table B 5-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/29/08-01/31/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Bay at Public Suisun Dock (SU)	3516	8.3	7.34	10.1	69.5	0.12	0.000
Trip Blank (337)	342	16.1	8.06	10.1	-	0.01	0.000
Suisun Bay off Chipps Island (508)	678	8.0	7.40	12.1	38.7	0.29	0.001
Montezuma Slough at Nurse Slough (609)	5830	8.9	7.10	11.2	40.1	0.27	0.000
Grizzly Bay at Dolphin (602)	2723	8.3	6.95	12.3	57.3	0.29	0.000
Napa River at Vallejo Seawall (340)	11740	8.7	7.09	11.2	50.7	0.25	0.000
Field Duplicate: Napa River at Vallejo Seawall (340)	11740	8.7	7.09	11.2	61.9	0.26	0.000
Carquinez Strait, West of Benicia army dock (405)	13430	8.5	7.34	11.7	27.3	0.24	0.001

Table B 5-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 01/31/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 01/29/08-01/30/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	364	22.2	24.1	7.8	8.8	6.94	8.13	108	72	-
DIEPAMHR + 1% organic matter	278	22.0	23.2	7.6	8.6	6.74	8.19	108	72	-
High EC Control @ 14.28 mS + 1% organic matter	12960	22.2	22.3	7.5	8.3	6.75	8.03	1520	74	-
Suisun @ Rush Ranch	3306	22.7	22.9	7.8	8.6	7.41	8.23	424	166	0.004
Montezuma Slough at Nurse Slough (609)	5350	22.9	23.8	7.5	8.7	7.76	7.89	640	80	0.006
Napa River at Vallejo Seawall (340)	10525	22.0	23.7	7.5	8.6	7.78	7.90	1400	82	0.006
Grizzly Bay at Dolphin (602)	2435	22.8	23.4	7.8	8.5	7.90	8.06	304	82	0.013
Suisun Bay off Chipps Island (508)	540	22.6	23.8	7.6	8.9	7.99	8.06	112	86	0.015
Carquinez Strait, West of Benicia army dock (405)	12440	22.6	23.7	7.5	8.4	7.86	7.92	1640	88	0.006
Field Duplicate: Napa River at Vallejo Seawall (340)	10460	22.0	23.6	7.6	8.5	7.78	7.91	1240	80	0.006
Trip Blank (DIEPAMHR)	371	22.0	23.8	8.0	8.5	7.90	8.21	108	60	0.001
DIEPAMHR + 25 ppb PBO	332	22.0	22.8	7.9	8.4	7.87	8.11	-	-	-
DIEPAMHR + 1% organic matter + 25 ppb PBO	340	22.6	22.8	7.7	8.4	7.81	8.09	-	-	-
High EC Control @ 14.28 mS + 1% organic matter + 25 ppb PBO	13070	22.5	22.8	7.6	8.3	7.74	8.00	-	-	-
Suisun @ Rush Ranch + 25 ppb PBO	3318	22.6	23.3	7.8	8.4	7.96	8.32	-	-	-

Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	5300	22.4	23.2	7.4	8.3	7.78	7.89	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	10585	22.6	23.2	7.6	8.3	7.78	7.88	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	2404	22.7	23.3	7.7	8.8	7.92	8.03	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	2815	22.4	23.1	7.6	8.6	8.03	8.23	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	12245	22.6	23.6	7.6	8.4	7.83	7.94	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 6-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/01/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/31/08 - 2/01/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.8	95	2.9	NS
DIEPAMHR + organic matter	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Sacramento River at tip of Grand Island (711)	90	7.1	92	4.8	NS
Confluence of Linsey Sl. And Cache Sl.	98	2.5	95	2.9	NS
Upper Cache Slough at mouth of Ulatis Creek	97	2.8	8*	4.9	S (8%)*
Sacramento Deep Water Channel, Light 55	100	0.0	91	9.1	NS
Sacramento River at Hood DWR Station	100	0.0	90	4.1	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Napa River, near River Park Blvd.	100	0.0	98	2.5	NS
Bottle Blank: DIEPAMHR	95	2.9	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.060*	0.003	0.045**	0.010	NS
DIEPAMHR + organic matter	0.082	0.009	0.088	0.004	NS
Old River at mouth of Holland Cut (915)	0.091	0.005	0.091	0.004	NS
San Joaquin River at Potato Slough (815)	0.092	0.006	0.080	0.008	NS
Old River, western arm at railroad bridge (902)	0.093	0.011	0.085	0.011	NS
Sacramento River at tip of Grand Island (711)	0.067	0.010	0.065**	0.005	NS
Confluence of Linsey Sl. And Cache Sl.	0.088	0.010	0.067**	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.042**	0.007	0.055**	0.095	NS

Sacramento Deep Water Channel, Light 55	0.090	0.010	0.081	0.004	NS
Sacramento River at Hood DWR Station	0.083	0.004	0.081	0.006	NS
Rough and Ready DWR station, Stockton	0.084**	0.005	0.076*	0.004	NS
Napa River, near River Park Blvd.	0.075	0.011	0.063**	0.006	NS
Bottle Blank: DIEPAMHR	0.048	0.011	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 6-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/31/08 - 2/01/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Old River at mouth of Holland Cut (915)	429	8.3	6.85	12.1	17.1	0.14	0.000
San Joaquin River at Potato Slough (815)	263	8.1	6.75	11.9	80.2	0.21	0.000
Old River, western arm at railroad bridge (902)	399	7.9	7.01	12.2	18.4	0.12	0.000
Sacramento River at tip of Grand Island (711)	150	8.0	6.89	11.9	143.0	0.24	0.000
Confluence of Lindsey Sl. And Cache Sl.	263	7.9	7.00	11.8	217.3	0.24	0.000
Upper Cache Slough at mouth of Ulatis Creek	347	8.5	6.80	11.1	119.0	0.20	0.000
Sacramento Deep Water Channel, Light 55	259	7.9	7.12	11.7	240.0	0.27	0.001
Sacramento River at Hood DWR Station	189	7.9	7.30	11.4	107.0	0.22	0.001
Rough and Ready DWR station, Stockton	399	9.5	7.13	10.2	45.1	0.26	0.001
Napa River, near River Park Blvd.	291	9.6	7.45	11.0	195.0	0.27	0.001
Bottle Blank	-	-	-	-	0.3	0.00	-

Table B 6-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/01/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/31/08 - 2/01/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	334	22.8	23.1	7.7	8.7	7.81	8.18	104	72	-
DIEPAMHR + organic matter	337	22.4	22.5	7.4	8.7	7.77	8.11	104	72	-
Old River at mouth of Holland Cut (915)	375	22.7	23.2	7.3	8.6	7.78	8.09	108	74	0.006
San Joaquin River at Potato Slough (815)	243	22.4	23.5	7.3	8.4	7.70	8.07	88	68	0.010
Old River, western arm at railroad bridge (902)	376	22.1	23.0	7.8	8.7	7.81	8.14	108	76	0.007
Sacramento River at tip of Grand Island (711)	133	22.5	23.5	7.7	8.5	7.64	7.97	64	56	0.010
Confluence of Linsey Sl. And Cache Sl.	238	21.4	22.6	7.9	8.9	7.84	8.17	96	82	0.009
Upper Cache Slough at mouth of Ulatis Creek	350	22.4	23.5	7.9	8.6	7.98	8.90	136	106	0.009
Sacramento Deep Water Channel, Light 55	244	22.4	23.5	8.0	8.8	7.88	8.18	96	86	0.013
Sacramento River at Hood DWR Station	162	22.1	22.9	7.8	8.7	7.64	7.98	80	62	0.007
Rough and Ready DWR station, Stockton	378	22.5	24.1	7.8	8.7	7.67	7.99	116	70	0.009
Napa River, near River Park Blvd.	284	22.6	23.8	7.9	8.5	7.66	8.05	100	62	0.011
Bottle Blank	340	22.5	23.7	8.1	8.6	7.80	8.14	120	60	0.000
DIEPAMHR + 25 ppb PBO	332	22.8	23.7	7.5	8.6	7.83	8.16	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	324	22.4	22.8	7.9	8.7	7.65	8.10	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	380	22.4	23.1	7.8	8.8	7.78	8.07	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	235	22.6	23.0	7.6	8.9	7.74	8.12	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	376	22.3	23.1	7.9	8.9	7.79	8.08	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	136	22.5	23.2	7.8	8.8	7.60	8.04	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	234	22.5	23.3	7.9	8.6	7.88	8.14	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	344	22.2	23.3	7.6	8.6	7.95	8.15	-	-	-
Sacramento Deep Water Channel, Light 55 + 25 ppb PBO	238	22.0	23.4	7.9	8.7	7.89	8.19	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	160	21.8	22.4	7.9	8.7	7.70	7.97	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	371	21.8	22.8	7.8	8.9	7.75	7.97	-	-	-
Napa River, near River Park Blvd. + 25 ppb PBO	270	22.4	23.5	7.8	8.6	7.67	8.09	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 7-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/14/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/12/08-2/13/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	88	6.3	98	2.5	NS
DIEPAMHR + POM	93	4.8	77	7.3	NS
High EC Control @ 12.46 mS/cm + POM	100	0.0	100	0.0	NS
Suisun at Rush Ranch	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Napa River at Vallejo Seawall (340)[3]	98	2.5	100	0.0	NS
Grizzly Bay at Dolphin (602)	100	0.0	90	10.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	98	2.5	NS
Carquinez Strait, West of Benicia army dock (405)[3]	93	7.5	98	2.5	NS
Napa River, near River Park Blvd. (NAPA)	98	2.3	98	2.5	NS
Field Duplicate: Suisun Bay off Chipps Island (447)	100	0.0	-	-	NA
Bottle Blank: DIEPAMHR (227)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.044	0.006	0.048**	0.012	NS
DIEPAMHR + POM	0.059	0.009	0.117	0.015	S*
High EC Control @ 12.46 mS/cm + POM	0.076	0.017	0.085*	0.005	NS
Suisun at Rush Ranch	0.091	0.009	0.132	0.009	S*
Montezuma Slough at Nurse Slough (609)	0.072	0.019	0.113	0.006	NS
Napa River at Vallejo Seawall (340)[3]	0.075	0.010	0.105	0.006	S*
Grizzly Bay at Dolphin (602)	0.086	0.009	0.076*	0.008	NS
Suisun Bay off Chipps Island (508)	0.081	0.004	0.074*	0.013	NS
Carquinez Strait, West of Benicia army dock (405)[3]	0.069	0.005	0.046***	0.003	S*
Napa River, near River Park Blvd. (NAPA)	0.097	0.009	0.086	0.009	NS
Field Duplicate: Suisun Bay off Chipps Island (447)	0.084	0.006	-	-	NA
Bottle Blank: DIEPAMHR (227)	0.087	0.019	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC Control.

Table B 7-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/12/08-2/13/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun at Rush Ranch (SU)	3089	14.1	7.51	9.1	53.4	0.08	0.001
Napa River, Near River Park Blvd. (NAPA)	366	13.0	7.71	10.0	37.6	0.05	0.001
Suisun Bay, off Chipps Island (508)	386	9.4	7.57	10.7	120.3	0.22	0.001
Montezuma Slough at Nurse Slough (609)	3497	10.8	7.27	9.9	103.4	0.24	0.001
Grizzly Bay at Dolphin (602)	364	10.4	7.65	10.2	188.3	0.25	0.002
Napa River at Vallejo Seawall (340)	10250	10.8	7.57	10.4	74.1	0.22	0.001
Field Duplicate: Suisun Bay off Chipps Island (447)	386	9.4	7.57	9.9	111.3	0.22	0.001
Carquinez Strait, West of Benicia army dock (405)	11730	10.3	7.67	10.3	116.7	0.23	0.001

Table B 7-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/14/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/12/08-2/13/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	329	21.7	22.4	7.5	8.7	7.88	8.09	104	58	-
DIEPAMHR + 1% organic matter	329	21.5	22.5	7.4	8.6	7.76	8.12	104	58	-
High EC Control @ 12.46 mS + 1% organic matter	11145	21.8	23.2	7.3	8.4	7.77	8.03	1480	78	-
Suisun at Rush Ranch	2816	21.7	22.7	7.3	8.9	7.74	8.29	400	160	0.002
Montezuma Slough at Nurse Slough (609)	3247	21.7	22.2	7.5	8.8	7.62	7.97	424	80	0.004
Napa River at Vallejo Seawall (340)	9405	22.3	23.5	7.3	8.5	7.84	7.95	1000	90	0.006
Grizzly Bay at Dolphin (602)	336	21.2	22.3	7.5	8.5	7.93	8.10	96	76	0.012
Suisun Bay off Chipps Island (508)	379	22.3	22.4	7.3	8.7	7.91	7.99	96	78	0.009
Carquinez Strait, West of Benicia army dock (405)	10875	21.6	22.3	7.4	8.1	7.82	7.99	1200	90	0.006
Napa River, near River Park Blvd. (NAPA)	343	22.2	22.6	7.5	8.6	7.95	8.10	104	80	0.002
Field Duplicate: Suisun Bay off Chipps Island (447)	415	21.8	22.6	7.4	8.7	7.99	8.06	100	80	0.011
Bottle Blank: DIEPAMHR (227)	1868	22.1	22.5	7.5	8.7	7.83	8.11	116	64	0.000
DIEPAMHR + 25 ppb PBO	335	21.5	22.7	7.7	8.8	7.85	8.05	-	-	-
DIEPAMHR + 1% organic matter + 25 ppb PBO	333	21.6	22.6	7.4	8.6	7.78	8.12	-	-	-
High EC Control @ 12.46 mS + 1% organic matter + 25 ppb PBO	11425	22.0	22.7	7.3	8.3	7.74	8.05	-	-	-
Suisun at Rush Ranch + 25 ppb PBO	2862	22.1	22.2	7.4	8.5	7.97	8.27	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3225	21.3	23.2	7.5	8.5	7.80	7.96	-	-	-

Napa River at Vallejo Seawall (340) + 25 ppb PBO	9505	21.4	23.0	7.2	8.3	7.81	7.93	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	345	21.2	23.0	7.5	8.5	7.89	8.10	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	378	20.8	23.3	7.3	8.9	7.86	7.99	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	10560	20.3	22.8	7.4	8.5	7.81	7.94	-	-	-
Napa River, near River Park Blvd. (NAPA) + 25 ppb PBO	412	20.2	22.8	7.4	8.8	7.92	8.10	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 8-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/15/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/14/08-2/15/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	89	6.1	100	0.0	NS
DIEPAMHR + POM	80	6.9	82*	8.5	NS
Confluence of Lindsey Sl. and Cache Sl. (CL)	100	0.0	98	2.5	NS
Old River, western arm at railroad bridge (902)	95	2.9	97	3.1	NS
Sacramento River, Deep water channel, Light 55	94	3.2	98	2.5	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	97	2.8	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	98	2.5	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station (Hood)	95	2.9	98	2.5	NS
Rough and Ready DWR Station, Stockton (R&R)	98	2.5	98	2.5	NS
Trip Blank: DIEPAMHR	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.006	0.056*	0.007	NS
DIEPAMHR + POM	0.055	0.008	0.075	0.005	NS
Confluence of Lindsey Sl. and Cache Sl. (CL)	0.091	0.006	0.091	0.008	NS
Old River, western arm at railroad bridge (902)	0.092	0.009	0.080	0.006	NS
Sacramento River, Deep water channel, Light 55	0.094	0.003	0.070	0.004	S**
San Joaquin River at Potato Slough (815)	0.083	0.009	0.097	0.005	NS
Sacramento River at tip of Grand Island (711)	0.089	0.009	0.090	0.005	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	0.088	0.005	0.082	0.009	NS
Old River at mouth of Holland Cut (915)	0.090	0.006	0.105	0.008	NS
Sacramento River at Hood DWR Station (Hood)	0.089	0.007	0.095	0.007	NS
Rough and Ready DWR Station, Stockton (R&R)	0.101	0.007	0.085	0.010	NS

Trip Blank: DIEPAMHR	0.057	0.002	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 8-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/14/08-2/15/08

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Old River, western arm at railroad bridge (902)	314	9.2	7.28	11.8	183.7	0.27	0.001
Old River, at mouth of Holland Cut (915)	333	9.9	7.44	11.4	44.3	0.18	0.001
San Joaquin, just west of Oulton Point (815)	255	9.3	7.24	11.8	44.5	0.17	0.000
Sacramento River, Deep Water Channel, Light 55	362	10.1	7.31	10.9	108.0	0.22	0.001
Sacramento River at tip of Grand Island (711)	341	10.1	7.27	11.4	26.4	0.29	0.001
Confluence of Lindsey Slough and Cache Slough (CL)	292	10.3	7.33	11.2	66.2	0.24	0.001
Upper Cache Slough, Mouth of Ulatis Creek (CU)	570	10.1	7.86	11.3	97.5	0.20	0.002
Sacramento River at Hood DWR Station (HOOD)	393	11.2	7.22	10.4	41.5	0.32	0.001
Rough and Ready DWR Station, Stockton (R&R)	662	11.1	7.26	9.6	19.4	0.18	0.001

Table B 8-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/15/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/14/08-2/15/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	21.8	24.4	7.8	8.4	7.83	8.04	104	58	-
DIEPAMHR + 1% organic matter	345	22.0	23.5	0.9	8.4	7.78	8.02	104	58	-
Confluence of Linsey Sl. and Cache Sl. (CL)	293	22.0	24.2	7.6	8.9	7.58	8.09	104	102	0.009
Old River, western arm at railroad bridge (902)	287	22.0	24.5	7.5	8.8	7.83	7.94	88	60	0.011
Sacramento River, Deep water channel, Light 55	343	22.0	24.0	7.5	8.8	6.15	8.15	116	118	0.014
San Joaquin River at Potato Slough (815)	255	22.0	24.1	7.6	8.6	7.78	7.93	80	100	0.006
Sacramento River at tip of Grand Island (711)	244	22.0	24.4	7.5	8.8	7.91	8.05	84	90	0.016
Upper Cache Slough at mouth of Ulatis Creek (CU)	562	22.0	24.5	7.5	8.8	8.21	8.31	220	164	0.018
Old River at mouth of Holland Cut (915)	306	21.9	23.9	7.3	8.8	7.80	7.97	52	70	0.008
Sacramento River at Hood DWR Station (Hood)	256	22.0	24.6	7.5	8.8	7.83	8.00	92	92	0.011
Rough and Ready DWR Station, Stockton (R&R)	648	22.1	24.5	7.6	8.5	7.88	8.07	244	88	0.010
Trip Blank: DIEPAMHR	345	21.9	24.5	7.7	8.5	7.81	8.06	104	58	0.001
DIEPAMHR	348	22.0	24.0	7.8	8.3	7.83	8.03	-	-	-
DIEPAMHR + 1% organic matter	349	22.0	24.0	7.8	8.4	7.78	8.12	-	-	-
Confluence of Linsey Sl. and Cache Sl. (CL)	293	22.0	24.4	7.6	8.8	7.98	8.12	-	-	-
Old River, western arm at railroad bridge (902)	289	22.0	24.4	7.5	8.9	7.80	7.94	-	-	-
Sacramento River, Deep water channel, Light 55	343	21.9	24.1	7.3	8.7	8.06	8.22	-	-	-
San Joaquin River at Potato Slough (815)	255	22.2	24.2	7.5	8.8	7.83	8.04	-	-	-
Sacramento River at tip of Grand Island (711)	241	22.1	23.7	7.5	8.6	7.91	8.08	-	-	-
Upper Cache Slough at mouth of Ulatis Creek (CU)	556	22.1	24.2	7.5	8.8	8.19	8.33	-	-	-
Old River at mouth of Holland Cut (915)	322	22.1	24.1	7.5	8.5	7.83	7.94	-	-	-
Sacramento River at Hood DWR Station (Hood)	264	22.2	24.4	7.5	8.5	7.95	8.16	-	-	-
Rough and Ready DWR Station, Stockton (R&R)	644	22.2	24.2	7.4	8.8	7.72	7.95	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 9-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/28/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/26/08-2/27/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
DIEPAMHR + POM	76*	4.4	78	8.5	NS
High EC Control @ 13.81 mS/cm	100	0.0	100	0.0	NS
Suisun @ Rush Ranch	98	2.3	100	0.0	NS
Napa River, near River Park Blvd. (NAPA)	98	2.5	98	2.5	NS
Carquinez Strait, West of Benicia army dock (405)[3]	98	2.5	95	5.0	NS
Napa River at Vallejo Seawall (340)[3]	95	2.9	98	2.5	NS
Suisun Bay off Chipps Island (508)	98	2.5	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	98	2.5	100	0.0	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Bottle Blank: DIEPAMHR	92	5.3	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.049	0.007	0.019	0.002	S**
DIEPAMHR + POM	0.051	0.007	0.029	0.005	S*
High EC Control @ 13.81 mS/cm	0.068	0.007	0.059	0.008	NS
Suisun @ Rush Ranch	0.094	0.007	0.084	0.002	NS
Napa River, near River Park Blvd. (NAPA)	0.095	0.009	0.083	0.006	NS
Carquinez Strait, West of Benicia army dock (405)[3]	0.062	0.001	0.038	0.008	NS
Napa River at Vallejo Seawall (340)[3]	0.067	0.007	0.069	0.006	NS
Suisun Bay off Chipps Island (508)	0.112	0.004	0.097	0.005	NS
Montezuma Slough at Nurse Slough (609)	0.081	0.007	0.078	0.010	NS
Grizzly Bay at Dolphin (602)	0.071	0.005	0.065	0.003	NS
Bottle Blank: DIEPAMHR[4]	0.029*	0.008	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC control.

4. The bottle blank showed significantly lower weight compared to the POM Control, but not compared to the control without POM.

Table B 9-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/26/08-2/27/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun @ Rush Ranch (SU)	3472	13.3	7.61	9.6	60.4	0.11	0.001
Napa River, near River Park Blvd. (NAPA)	260	13.3	7.88	10.6	30.7	0.05	0.001
Suisun Bay, off Chipps Island (508)	473	11.7	7.97	11.2	37.8	0.18	0.003
Montezuma Slough @ Nurse Slough (609)	3626	12.4	7.59	10.7	75.9	0.22	0.002
Grizzly Bay at Dolphin (602)	2090	14.1	7.91	10.8	45.1	0.14	0.002
Napa River at Vallejo Seawall (340)	12970	11.8	7.80	11.0	61.8	0.18	0.002
Carquinez Strait, just west of Benicia army dock (405)	8980	12.0	7.83	10.8	201.7	0.27	0.003

Table B 9-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/28/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/26/08-2/27/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	343	23.4	23.5	7.4	9.4	7.71	8.07	96	56	-
DIEPAMHR + organic matter	349	22.8	23.2	7.1	8.3	7.70	8.03	96	56	-
High EC Control @ 13.81 mS/cm	12855	23.0	23.4	7.5	8.8	7.76	7.84	1760	72	-
Suisun @ Rush Ranch	3295	23.4	23.8	7.3	8.6	7.92	8.31	456	178	0.0
Napa River, near River Park Blvd. (NAPA)	245	23.4	23.7	7.2	8.8	7.78	7.94	76	64	0.0
Carquinez Strait, West of Benicia army dock (405)	9405	23.4	23.9	7.5	8.6	7.84	7.90	1240	94	0.007
Napa River at Vallejo Seawall (340)	12250	23.2	23.6	7.2	8.7	7.81	7.90	1640	94	0.004
Suisun Bay off Chipps Island (508)	500	23.4	23.5	7.4	8.7	7.96	8.15	112	96	0.011
Montezuma Slough at Nurse Slough (609)	3402	23.2	23.5	7.2	8.7	7.72	7.93	408	82	0.005
Grizzly Bay at Dolphin (602)	1950	23.4	23.4	7.4	8.9	7.97	8.05	280	92	0.005
Bottle Blank: DIEPAMHR	348	23.3	23.5	6.9	8.4	7.84	8.07	104	58	0.000
DIEPAMHR + 25 ppb PBO	350	22.9	23.0	7.6	8.3	7.82	8.08	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	339	23.5	24.2	7.0	8.4	7.70	8.01	-	-	-
High EC Control @ 13.81 mS/cm + 25 ppb PBO	12760	23.4	24.0	7.5	8.5	7.77	7.84	-	-	-
Suisun @ Rush Ranch + 25 ppb PBO	3297	23.4	24.3	7.5	8.6	7.77	8.31	-	-	-
Napa River, near River Park Blvd. (NAPA) + 25 ppb PBO	247	23.7	24.5	7.4	8.9	7.75	7.97	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	9515	23.8	24.1	7.4	8.5	7.79	7.92	-	-	-

Napa River at Vallejo Seawall (340) + 25 ppb PBO	12315	23.8	24.2	7.2	8.7	7.73	7.91	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	471	23.7	24.0	7.3	8.9	8.02	8.15	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3350	23.9	24.0	7.4	8.5	7.73	7.94	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	1958	24.0	24.4	7.5	8.7	7.90	8.08	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 10-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/29/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/28/08-2/29/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	4.8	98	2.5	NS
DIEPAMHR + organic matter	87	4.7	71*	12.8	NS
San Joaquin River at Potato Slough (815)	95	5.0	98	2.5	NS
Confluence of Lindsey Slough and Cache Slough (CL)	95	2.8	100	0.0	NS
Sacramento River, Deep Water Channel, Light 55	98	2.5	95	2.9	NS
Sacramento River at tip of Grand Island (711)	95	2.9	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	98	2.5	66*	9.3	S* (67%)
Old River, western arm at railroad bridge (902)	98	2.5	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Rough and Ready DWR Station, Stockton (R&R)	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	98	2.5	97	2.8	NS
Field Duplicate: Sacramento River at tip of Grand Island (447)	98	2.5	-	-	NA
Trip Blank: DIEPAMHR	93	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.022*	0.007	0.049	0.003	S* (223%)
DIEPAMHR + organic matter	0.050	0.010	0.057	0.010	NS
San Joaquin River at Potato Slough (815)	0.092	0.009	0.103	0.003	NS
Confluence of Lindsey Slough and Cache Slough (CL)	0.103	0.004	0.106	0.007	NS
Sacramento River, Deep Water Channel, Light 55	0.078	0.010	0.098	0.003	NS
Sacramento River at tip of Grand Island (711)	0.055	0.007	0.060	0.005	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	0.080	0.008	0.051	0.013	NS
Old River, western arm at railroad bridge (902)	0.107	0.009	0.091	0.010	NS
Old River at mouth of Holland Cut (915)	0.103	0.003	0.105	0.006	NS
Rough and Ready DWR Station, Stockton (R&R)	0.101	0.008	0.129	0.007	S* (128%)

Sacramento River at Hood DWR Station	0.069	0.003	0.090	0.014	NS
Field Duplicate: Sacramento River at tip of Grand Island (447)	0.076	0.005	-	-	NA
Trip Blank: DIEPAMHR	0.049	0.010	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 10-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/28/08-2/29/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Old River, Western arm at railroad bridge (902)	314	12.5	7.85	10.8	19.0	0.11	0.002
Old River at mouth of Holland Cut (915)	340	12.5	7.81	10.5	14.6	0.14	0.002
San Joaquin, just west of Oulton Point (815)	273	11.8	7.76	10.8	14.6	0.24	0.003
Sacramento River, Deep Water Channel, Light 55	303	11.1	7.79	10.9	76.7	0.22	0.003
Sacramento River at tip of Grand Island (711)	148	10.8	7.82	11.0	243.0	0.38	0.005
Confluence of Lindsey Slough at Cache Slough (CL)	323	11.0	7.91	11.1	76.6	0.21	0.003
Upper Cache Slough, Mouth of Ulatis Creek (CU)	575	12.6	8.00	9.7	59.8	0.17	0.003
Field Duplicate: Sacramento River at tip of Grand Island (447)	148	10.8	7.82	11.0	241.0	0.00	0.000
Sacramento River at Hood DWR Station (HOOD)	165	12.3	7.91	10.7	99.8	0.37	0.006
Rough and Ready DWR Station, Stockton (R&R)	829	13.7	7.82	9.9	10.7	0.19	0.003

Table B 10-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/29/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/28/28-2/29/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	346	23.0	24.4	7.2	8.5	7.69	8.03	96	56	-
DIEPAMHR + organic matter	350	23.0	24.3	7.4	8.3	7.70	7.94	96	56	-
San Joaquin River at Potato Slough (815)	263	23.1	24.8	7.4	8.6	7.84	8.04	92	86	0.009
Confluence of Lindsey Slough and Cache Slough (CL)	267	23.0	24.9	7.4	8.9	7.89	8.04	88	88	0.009
Sacramento River, Deep Water Channel, Light 55	324	23.1	24.8	7.5	8.9	7.93	8.11	104	102	0.009
Sacramento River at tip of Grand Island (711)	145	23.1	24.4	7.4	8.9	7.70	7.91	56	56	0.010
Upper Cache Slough at mouth of Ulatis Creek (CU)	533	23.1	24.7	7.5	8.8	8.04	8.27	172	148	0.009
Old River, western arm at railroad bridge (902)	308	23.0	24.0	7.4	8.5	7.83	8.03	98	84	0.004
Old River at mouth of Holland Cut (915)	334	23.1	24.6	7.5	8.6	7.76	8.00	102	80	0.005
Rough and Ready DWR Station, Stockton (R&R)	810	23.2	24.7	7.3	8.8	7.87	8.08	184	114	0.003
Sacramento River at Hood DWR Station	159	23.2	24.9	7.4	8.6	7.65	7.79	68	62	0.006
Field Duplicate: Sacramento River at tip of Grand Island (447)	159	23.2	24.3	7.5	8.6	7.67	7.86	60	58	0.013
Trip Blank: DIEPAMHR	254	23.1	24.8	7.5	8.4	7.66	8.01	104	58	0.000
DIEPAMHR + 25 ppb PBO	346	23.2	24.1	7.6	8.6	7.73	7.98	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	345	23.1	24.4	7.1	8.5	7.55	7.95	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	310	23.2	24.7	7.2	8.9	7.82	8.05	-	-	-
Confluence of Lindsey Slough and Cache Slough (CL) + 25 ppb PBO	265	23.4	23.7	7.5	8.9	7.87	8.06	-	-	-
Sacramento River, Deep Water Channel, Light 55 + 25 ppb PBO	289	23.2	24.1	7.5	8.9	7.95	8.12	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	232	23.2	23.4	7.5	8.9	7.69	7.87	-	-	-
Upper Cache Slough at mouth of Ulatis Creek (CU) + 25 ppb PBO	343	23.1	24.5	7.4	8.6	8.01	8.27	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	423	23.3	24.6	7.4	8.6	7.83	8.06	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	322	23.6	24.9	7.6	8.8	7.82	8.04	-	-	-
Rough and Ready DWR Station, Stockton (R&R) + 25 ppb PBO	560	23.2	24.6	7.3	8.9	7.77	8.12	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	469	23.4	24.8	7.5	8.5	7.80	7.88	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 11-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/13/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/11/08-3/12/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.3	NS
Suisun @ Rush Ranch	100	0.0	100	0.0	NS
Napa River, near River Park Blvd. (NAPA)	95	5.0	100	0.0	NS
Rough and Ready DWR Station, Stockton (R&R)	98	2.5	98	2.5	NS
Sacramento River at Hood DWR Station (HOOD)	95	5.0	98	2.5	NS
Trip Blank: DIEPAMHR	98	2.5	-	-	NA
Field Duplicate: Sacramento River at Hood DWR Station (447)	88**	2.5	-	-	NA
Bottle Blank: DIEPAMHR	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.052	0.004	0.047	0.004	NS
Suisun @ Rush Ranch	0.088	0.003	0.088	0.009	NS
Napa River, near River Park Blvd. (NAPA)	0.082	0.004	0.080	0.004	NS
Rough and Ready DWR Station, Stockton (R&R)	0.093	0.008	0.073	0.010	NS
Sacramento River at Hood DWR Station (HOOD)	0.060	0.006	0.067	0.007	NS
Trip Blank: DIEPAMHR	0.035**	0.002	-	-	NA
Field Duplicate: Sacramento River at Hood DWR Station (447)	0.071	0.004	-	-	NA
Bottle Blank: DIEPAMHR	0.054	0.004	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 11-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/11/08-3/12/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun at Rush Ranch (SU)	3928	16.3	7.57	8.6	50.0	0.11	0.001
Napa River, near River Park Blvd. (NAPA)	553	14.9	7.89	10.6	7.3	0.03	0.001
Sacramento River at Hood DWR Station (HOOD)	357	14.5	7.60	9.5	13.2	0.40	0.004
Rough and Ready DWR Station, Stockton (R&R)	907	15.9	7.78	9.3	13.8	0.08	0.001
Trip Blank: DIEPAMHR (337)	357	21.2	8.09	9.1	0.2	0.01	0.000
Field Duplicate: Sacramento River at Hood DWR Station (447)	357	14.5	7.60	9.5	14.6	0.39	0.004

Table B 11-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/13/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/11/08-3/12/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	23.1	24.4	7.6	8.6	7.72	8.11	108	60	-
Suisun @ Rush Ranch	3572	22.2	25.0	7.6	8.3	7.94	8.47	512	186	0.004
Napa River, near River Park Blvd. (NAPA)	468	22.0	24.2	7.7	8.4	7.98	8.31	140	106	0.002
Rough and Ready DWR Station, Stockton (R&R)	833	22.2	24.3	7.4	8.5	7.96	8.24	192	122	0.003
Sacramento River at Hood DWR Station (HOOD)	215	22.4	24.5	7.7	8.6	7.82	8.07	84	82	0.023
Trip Blank: DIEPAMHR	332	22.6	24.4	7.8	8.4	7.70	8.08	112	58	0.001
Field Duplicate: Sacramento River at Hood DWR Station (447)	214	22.4	24.7	7.5	8.5	7.76	8.02	80	84	0.011
Bottle Blank: DIEPAMHR	332	22.3	24.4	7.8	8.8	7.73	8.10	112	60	0.000
DIEPAMHR + 25 ppb PBO	339	22.4	24.6	7.8	8.5	7.76	8.23	-	-	-
DIEPAMHR + Glassware contamination test + 25 ppb PBO	334	21.7	24.4	7.8	8.6	7.27	8.10	-	-	-
Suisun @ Rush Ranch + 25 ppb PBO	3346	22.6	24.6	7.5	8.9	7.86	8.50	-	-	-
Napa River, near River Park Blvd. (NAPA) + 25 ppb PBO	520	22.6	24.4	7.7	9.0	7.97	8.41	-	-	-
Rough and Ready DWR Station, Stockton (R&R) + 25 ppb PBO	831	22.4	24.6	6.7	8.6	7.98	8.24	-	-	-
Sacramento River at Hood DWR Station (HOOD) + 25 ppb PBO	207	22.2	24.5	6.9	8.9	7.52	8.05	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 12-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/15/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/13/08-3/14/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	94	3.2	100	0.0	NS
High EC Control @ 17.09 mS/cm	98	2.5	98	2.5	NS
High EC Control @ 23.45 mS/cm	85	8.7	55*	14.4	NS
Confluence of Lindsey Slough and Cache Slough (CL)	98	2.3	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	97	2.8	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	97	2.8	NS
San Joaquin River at Potato Slough (815)	97	2.8	98	2.5	NS
Sacramento River at tip of Grand Island (711)	89	0.3	92	2.6	NS
Sacramento River, Deep Water Channel, Light 55	100	0.0	95	2.9	NS
Suisun Bay off Chipps Island (508)[4]	100	0.0	97	3.1	NS
Carquinez Strait, West of Benicia army dock (405)[3]	98	2.5	89	4.1	NS
Grizzly Bay at Dolphin (602)	100	0.0	98	2.5	NS
Montezuma Slough at Nurse Slough (609)	97	2.8	100	0.0	NS
Napa River at Vallejo Seawall (340)[4]	71	6.4	82	11.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.037	0.003	0.041	0.008	NS
High EC Control @ 17.09 mS/cm	0.040	0.003	0.022*	0.004	S** (55%)
High EC Control @ 23.45 mS/cm	0.029	0.008	0.008**	0.003	S* (28%)
Confluence of Lindsey Slough and Cache Slough (CL)	0.069	0.009	0.064	0.005	NS
Old River, western arm at railroad bridge (902)	0.072	0.004	0.062	0.005	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	0.078	0.005	0.048	0.003	S** (62%)
Old River at mouth of Holland Cut (915)	0.070	0.007	0.070	0.003	NS
San Joaquin River at Potato Slough (815)	0.060	0.007	0.067	0.005	NS
Sacramento River at tip of Grand Island (711)	0.051	0.006	0.061	0.003	NS
Sacramento River, Deep Water Channel, Light 55	0.075	0.007	0.053	0.004	S* (71%)
Suisun Bay off Chipps Island (508)[4]	0.072	0.005	0.055	0.011	NS
Carquinez Strait, West of Benicia army dock (405)[3]	0.051	0.001	0.051	0.005	NS
Grizzly Bay at Dolphin (602)	0.049	0.006	0.067	0.005	NS
Montezuma Slough at Nurse Slough (609)	0.067	0.009	0.064	0.007	NS

Napa River at Vallejo Seawall (340)[4]	0.034	0.004	0.042	0.003	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control @ 17.09 mS

4. These high conductivity samples were compared to the High EC Control @ 23.45 mS.

Table B 12-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/13/08-3/14/08

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Slough and Cache Slough (CL)	349	14.2	8.13	10.0	48.9	0.23	0.007
Old River, western arm at railroad bridge (902)	382	14.9	8.24	9.8	19.2	0.08	0.003
Upper Cache Slough at mouth of Ulatis Creek (CU)	721	14.6	8.43	10.0	32.7	0.06	0.004
Old River at mouth of Holland Cut (915)	361	14.9	8.16	10.0	16.6	0.08	0.003
San Joaquin River at Potato Slough (815)	280	14.1	8.25	10.1	14.7	0.15	0.006
Sacramento River at tip of Grand Island (711)	237	14.2	8.16	10.1	9.3	0.39	0.013
Sacramento River, Deep Water Channel, Light 55	366	14.1	8.09	10.0	30.0	0.22	0.006
Suisun Bay, off Chipps Island (508)	2274	13.2	8.15	10.5	55.0	0.12	0.003
Carquinez Strait, west of Benicia army dock (405)	16190	12.9	8.05	10.9	16.3	0.11	0.002
Grizzly Bay at Dolphin (602)	8230	13.0	8.11	10.5	32.7	0.13	0.003
Montezuma Slough at Nurse Slough (609)	3651	13.8	7.92	9.6	7.7	0.21	0.003
Napa River at Vallejo Seawall (340)	20020	13.1	8.02	10.6	12.6	0.11	0.002

Table B 12-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/15/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/13/08-3/14/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	22.9	23.4	6.5	8.5	7.54	8.90	108	60	-
High EC Control @ 17.09 mS	15430	22.2	23.7	6.7	8.5	7.58	7.91	2000	80	-
High EC Control @ 23.45 mS	20880	22.7	23.8	6.7	8.4	7.62	7.95	2680	88	-
Confluence of Lindsey Slough and Cache Slough (CL)	375	22.6	23.7	6.2	8.8	7.73	8.24	124	124	0.016
Old River, western arm at railroad bridge (902)	301	23.5	24.1	6.5	8.6	7.61	8.15	100	84	0.005
Upper Cache Slough at mouth of Ulatis Creek (CU)	664	23.5	24.0	6.9	8.6	8.10	8.53	228	200	0.004
Old River at mouth of Holland Cut (915)	335	22.3	23.9	6.5	8.7	7.60	8.15	108	84	0.003
San Joaquin River at Potato Slough (815)	268	23.3	24.1	6.3	8.8	7.56	8.10	96	82	0.008
Sacramento River at tip of Grand Island (711)	248	23.0	24.1	6.4	8.5	7.47	8.16	88	88	0.017
Sacramento River, Deep Water Channel, Light 55	343	23.3	24.3	6.5	8.6	7.84	8.28	132	122	0.017
Suisun Bay off Chipps Island (508)	2082	22.5	23.9	7.4	8.7	7.83	8.14	280	90	0.005
Carquinez Strait, West of Benicia army dock (405)	15390	23.3	24.1	6.8	8.6	7.67	8.04	1840	96	0.002
Grizzly Bay at Dolphin (602)	3959	22.5	24.3	6.8	8.5	7.54	8.08	980	94	0.003
Montezuma Slough at Nurse Slough (609)	1861	22.6	24.5	7.1	8.6	7.66	8.08	432	92	0.008
Napa River at Vallejo Seawall (340)	20430	23.6	24.5	6.6	8.5	7.51	8.05	2560	100	0.002
DIEPAMHR + 25 ppb PBO	336	23.1	23.4	6.9	8.5	7.71	8.04	-	-	-
High EC Control @ 17.09 mS + 25 ppb PBO	15130	22.3	23.9	6.9	8.5	7.61	7.99	-	-	-
High EC Control @ 23.45 mS + 25 ppb PBO	20715	22.9	24.1	7.1	8.3	7.67	8.02	-	-	-
Confluence of Lindsey Slough and Cache Slough (CL) + 25 ppb PBO	343	22.0	23.7	6.6	8.5	7.78	8.26	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	291	21.5	24.0	6.5	8.6	7.61	8.12	-	-	-
Upper Cache Slough at mouth of Ulatis Creek (CU) + 25 ppb PBO	655	22.0	24.1	6.8	8.7	7.77	8.56	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	320	21.1	23.8	6.9	8.6	7.69	8.09	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	269	20.9	24.2	6.4	8.8	7.70	8.15	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	239	21.2	24.2	6.6	9.0	7.72	8.12	-	-	-
Sacramento River, Deep Water Channel, Light 55 + 25 ppb PBO	342	21.2	24.5	6.5	8.8	7.87	8.30	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	2049	21.7	24.7	7.6	8.8	7.60	8.24	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	15030	21.6	24.4	7.3	8.3	7.75	8.09	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	7835	21.1	24.0	7.3	8.3	7.77	8.12	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3327	21.8	24.3	7.3	8.7	7.80	8.21	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	19785	21.2	23.7	6.9	8.4	7.70	7.97	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 13-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/27/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/25/08 - 3/26/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	97	2.8	NS
Sacramento River at Hood DWR Station	95	5.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Confluence of Linsey Sl. And Cache Sl. (CL)	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	98	2.3	98	2.5	NS
Suisun Bay at Public Suisun Dock	100	0.0	100	0.0	NS
Napa River at River Park Blvd.	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	98	2.5	NS
San Joaquin River at Potato Slough (815)	98	2.3	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.002	0.046	0.005	NS
Sacramento River at Hood DWR Station	0.084	0.011	0.091	0.006	NS
Rough and Ready DWR station, Stockton	0.127	0.010	0.099	0.018	NS
Sacramento R. Deep Water Channel, Light 55	0.091	0.006	0.077	0.007	NS
Confluence of Linsey Sl. And Cache Sl.	0.092	0.007	0.076	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek	0.108	0.008	0.077	0.007	S* (71%)
Suisun Bay at Public Suisun Dock	0.084	0.009	0.085	0.010	NS
Napa River at River Park Blvd.	0.105	0.017	0.086	0.013	NS
Old River, western arm at railroad bridge (902)	0.101	0.006	0.093	0.012	NS
Sacramento River at tip of Grand Island (711)	0.064	0.009	0.085	0.016	NS
San Joaquin River at Potato Slough (815)	0.101	0.006	0.093	0.006	NS
Old River at mouth of Holland Cut (915)	0.096	0.009	0.109	0.013	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 13-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 03/25/08 - 03/26/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	207	17.1	7.91	8.9	9.2	0.43	0.010
Rough and Ready DWR Station, Stockton	1045	16.8	8.10	9.2	13.1	0.07	0.003
Sacramento River, Deep Water Channel, Light 55	364	14.8	8.18	10.2	51.9	0.18	0.007
Confluence of Lindsey Slough and Cache Slough (CL)	459	15.1	8.25	10.1	36.5	0.21	0.009
Upper Cache Slough at mouth of Ulatis Creek (CU)	826	14.9	8.43	10.2	21.8	0.00	0.000
Suisun Bay at Public Suisun Dock (SU)	3759	12.8	7.97	8.6	74.2	0.07	0.001
Napa River at River Park Blvd.	714	15.6	8.70	9.8	16.5	0.00	0.000
Old River, western arm at railroad bridge (902)	353	16.0	8.20	10.1	12.3	0.00	0.000
Sacramento River at tip of Grand Island (711)	234	15.4	8.10	10.0	7.4	0.49	0.016
San Joaquin River at Potato Slough (815)	324	15.3	8.31	10.3	8.0	0.06	0.003
Old River at mouth of Holland Cut (915)	398	16.0	8.18	10.0	11.4	0.00	0.000

Table B 13-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/27/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/25/08-3/26/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	322	21.5	22.2	7.9	8.5	7.80	8.17	108	62	-
Sacramento River at Hood DWR Station	185	21.4	22.3	7.7	8.7	7.84	8.06	84	78	0.019
Rough and Ready DWR station, Stockton	809	21.5	23.2	7.9	8.7	8.05	8.21	200	126	0.004
Sacramento R. Deep Water Channel, Light 55	330	21.4	22.0	7.7	8.5	8.06	8.25	132	124	0.011
Confluence of Linsey Sl. And Cache Sl. (CL)	328	21.4	21.9	7.8	8.6	8.05	8.20	128	126	0.013
Upper Cache Slough at mouth of Ulatis Creek (CU)	706	21.1	22.7	7.8	8.7	8.34	8.44	248	222	0.000
Suisun Bay at Public Suisun Dock	3464	21.2	23.0	7.7	8.8	7.96	8.32	528	184	0.002
Napa River at River Park Blvd.	639	21.3	22.8	7.8	8.7	8.02	8.25	172	124	0.000
Old River, western arm at railroad bridge (902)	281	21.3	22.6	7.8	8.9	7.91	8.18	104	84	0.000
Sacramento River at tip of Grand Island (711)	180	21.3	23.2	7.8	8.5	7.83	7.99	92	82	0.022
San Joaquin River at Potato Slough (815)	259	21.3	22.9	7.7	8.8	7.87	8.11	66	84	0.003
Old River at mouth of Holland Cut (915)	309	21.2	23.2	7.8	8.7	7.87	8.04	116	86	0.000
DIEPAMHR + 25 ppb PBO	311	21.1	22.7	7.8	8.5	7.77	8.15	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	179	21.1	21.9	7.6	8.8	7.78	8.09	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	806	21.1	22.3	7.8	8.7	8.06	8.18	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	572	21.0	23.0	7.8	8.9	8.08	8.22	-	-	-
Confluence of Linsey Sl. And Cache Sl. (CL) + 25 ppb PBO	325	21.1	21.8	7.7	8.4	8.05	8.26	-	-	-
Upper Cache Slough at mouth of Ulatis Creek (CU) + 25 ppb PBO	703	21.4	22.0	7.7	8.8	8.32	8.44	-	-	-
Suisun Bay at Public Suisun Dock + 25 ppb PBO	3349	20.9	21.9	7.7	8.2	7.99	8.27	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	658	21.4	22.5	7.8	8.6	8.05	8.26	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	287	20.9	22.3	7.9	8.6	7.90	8.19	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	184	22.3	22.7	7.6	8.5	7.83	8.07	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	254	20.9	22.3	7.8	8.5	7.89	8.10	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	311	21.0	22.6	7.8	8.7	7.87	8.09	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 14-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/28/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/27/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
High EC Control @ 14.20 mS/cm	100	0.0	100	0.0	NS
High EC Control @ 18.76 mS/cm	100	0.0	93	4.8	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	93	4.8	NS
Napa River at Vallejo Seawall (340)[3]	94	3.2	94	5.6	NS
Carquinez Strait, West of Benicia army dock (405)[4]	87**	2.2	97	2.8	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.008	0.055	0.004	NS
High EC Control @ 14.20 mS/cm	0.037	0.001	0.042	0.012	NS
High EC Control @ 18.76 mS/cm	0.040	0.002	0.032**	0.002	S* (80%)
Suisun Bay off Chipps Island (508)	0.100	0.005	0.077	0.007	S* (77%)
Grizzly Bay at Dolphin (602)	0.070	0.010	0.078	0.005	NS
Montezuma Slough at Nurse Slough (609)	0.074	0.002	0.078	0.005	NS
Napa River at Vallejo Seawall (340)[3]	0.047	0.001	0.066	0.002	S* (140%)
Carquinez Strait, West of Benicia army dock (405)[4]	0.073	0.006	0.067	0.012	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high EC sample was compared to the High EC Control @ 14.20 mS.

4. This high EC sample was compared to the High EC Control @ 18.76 mS.

Table B 14-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 03/27/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^oC)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	1731	13.4	8.24	10.8	43.1	0.14	0.005
Grizzly Bay at Dolphin (602)	3921	13.6	8.28	11.1	40.8	0.11	0.004
Montezuma Slough at Nurse Slough (609)	3838	14.5	8.04	10.4	77.1	0.09	0.002
Napa River at Vallejo Seawall (340)	18580	12.9	8.03	10.6	28.8	0.09	0.002
Carquinez Strait, West of Benicia army dock (405)	13010	13.4	8.04	10.7	157.7	0.22	0.004

Table B 14-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/28/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/27/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	329	22.1	23.0	7.4	8.4	7.81	8.06	108	62	-
High EC Control @ 14.20 mS/cm	13085	22.2	23.8	7.8	8.4	7.77	7.93	1600	76	-
High EC Control @ 18.76 mS/cm	16900	22.4	24.2	7.4	8.1	7.72	7.92	2200	82	-
Suisun Bay off Chipps Island (508)	1842	22.4	22.7	7.8	8.5	7.99	8.14	248	94	0.006
Grizzly Bay at Dolphin (602)	4469	22.4	24.2	7.7	8.7	7.94	8.04	640	96	0.005
Montezuma Slough at Nurse Slough (609)	3535	22.3	24.3	7.8	8.7	7.83	8.04	464	92	0.003
Napa River at Vallejo Seawall (340)	16615	22.3	23.6	7.3	8.3	7.73	7.95	1880	108	0.003
Carquinez Strait, West of Benicia army dock (405)	12420	22.3	23.8	7.4	8.4	7.83	7.98	1680	100	0.008
DIEPAMHR + 25 ppb PBO	363	22.3	23.1	7.6	8.4	7.83	8.08	-	-	-
High EC Control @ 14.20 mS/cm + 25 ppb PBO	12980	22.3	23.1	7.5	8.5	7.79	7.92	-	-	-
High EC Control @ 18.76 mS/cm + 25 ppb PBO	9377	22.3	23.5	7.5	8.1	7.71	7.91	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	9172	22.3	23.3	7.8	8.6	7.94	8.15	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	4487	22.5	23.4	7.5	8.7	7.89	8.00	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3471	22.4	23.3	7.7	8.4	7.84	8.03	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	16595	22.3	23.7	7.2	8.3	7.76	7.92	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	12630	22.4	23.5	7.5	8.5	7.81	8.00	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 15-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/10/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/08/08 - 4/09/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	93	2.5	NS
Sacramento River at Hood DWR Station	93	2.5	95	5.0	NS
Rough and Ready DWR Station, Stockton	100	0.0	98	2.5	NS
Sacramento River, Deep Water Channel, Light 55	95	2.9	100	0.0	NS
Confluence of Lindsey Slough and Cache Slough (CL)	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch	95	2.9	100	0.0	NS
Napa River at River Park Blvd.	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	88	9.5	NS
San Joaquin River at Potato Slough (815)	98	2.5	95	2.9	NS
Old River at mouth of Holland Cut (915)	100	0.0	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.035	0.003	0.031	0.005	NS
Sacramento River at Hood DWR Station	0.044	0.007	0.042	0.001	NS
Rough and Ready DWR Station, Stockton	0.074	0.007	0.064	0.006	NS
Sacramento River, Deep Water Channel, Light 55	0.039	0.008	0.052	0.005	NS
Confluence of Lindsey Slough and Cache Slough (CL)	0.057	0.008	0.054	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek (CU)	0.056	0.004	0.034	0.004	S* (61%)
Suisun Slough at Rush Ranch	0.058	0.011	0.058	0.005	NS

Napa River at River Park Blvd.	0.058	0.009	0.061	0.009	NS
Old River, western arm at railroad bridge (902)	0.069	0.012	0.062	0.007	NS
Sacramento River at tip of Grand Island (711)	0.044	0.007	0.036	0.007	NS
San Joaquin River at Potato Slough (815)	0.045	0.004	0.042	0.006	NS
Old River at mouth of Holland Cut (915)	0.070	0.009	0.068	0.008	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 15-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/8/08-4/9/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	221	16.6	8.05	9.3	8.1	0.59	0.019
Rough and Ready DWR Station, Stockton	716	16.1	7.97	9.8	11.1	0.07	0.002
Sacramento River, Deep Water Channel, Light 55	396	14.4	8.24	10.6	28.3	0.15	0.006
Confluence of Lindsey Slough and Cache Slough (CL)	359	14.4	8.23	10.5	29.4	0.21	0.008
Upper Cache Slough at mouth of Ulatis Creek (CU)	498	14.3	8.31	10.7	47.3	0.03	0.001
Suisun Slough at Rush Ranch	4603	14.5	7.15	8.6	84.6	0.04	0.000
Napa River at River Park Blvd.	5110	15.3	8.52	12.4	21.1	0.00	0.000
Old River, western arm at railroad bridge (902)	340	15.8	8.30	10.5	14.2	0.00	0.000
Sacramento River at tip of Grand Island (711)	219	15.7	8.06	10.1	8.2	0.50	0.015
San Joaquin River at Potato Slough (815)	317	15.3	8.29	9.5	7.2	0.01	0.000
Old River at mouth of Holland Cut (915)	387	16.1	8.20	10.4	10.3	0.00	0.000

Table B 15-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/10/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/8/08-4/9/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	314	19.2	24.1	7.6	8.3	7.59	8.07	92	64	0.000
Sacramento River at Hood DWR Station	187	19.7	24.3	7.5	8.3	7.75	7.94	84	98	0.024
Rough and Ready DWR Station, Stockton	665	20.6	24.3	7.7	8.4	7.90	8.01	156	96	0.003
Sacramento River, Deep Water Channel, Light 55	363	20.4	24.1	7.6	8.4	8.03	8.17	124	119	0.009
Confluence of Lindsey Slough and Cache Slough (CL)	330	22.2	24.2	7.3	8.5	8.01	8.13	120	117	0.013
Upper Cache Slough at mouth of Ulatis Creek (CU)	446	22.4	24.1	7.8	8.5	8.13	8.27	166	158	0.002
Suisun Slough at Rush Ranch	3882	22.4	24.0	7.4	8.3	7.84	8.22	564	168	0.001
Napa River at River Park Blvd.	4435	22.2	24.2	7.5	8.6	7.85	8.27	592	128	0.000
Old River, western arm at railroad bridge (902)	296	22.4	24.1	7.8	8.8	7.97	8.07	100	86	0.000
Sacramento River at tip of Grand Island (711)	187	22.3	24.2	6.8	8.9	7.84	8.10	76	78	0.030
San Joaquin River at Potato Slough (815)	279	22.5	24.3	6.6	8.8	7.86	8.09	92	80	0.001
Old River at mouth of Holland Cut (915)	349	22.3	24.2	6.5	8.8	7.95	8.05	112	88	0.000
DIEPAMHR + 25 ppb PBO	316	22.4	23.7	7.7	8.4	7.74	8.07	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	190	22.4	23.7	7.2	8.6	7.78	8.00	-	-	-
Rough and Ready DWR Station, Stockton + 25 ppb PBO	649	22.4	23.8	7.6	8.4	7.88	8.11	-	-	-
Sacramento River, Deep Water Channel, Light 55 + 25 ppb PBO	350	22.5	23.7	7.2	8.6	8.02	8.15	-	-	-
Confluence of Lindsey Slough and Cache Slough (CL) + 25 ppb PBO	326	22.4	23.7	7.5	8.3	8.01	8.14	-	-	-
Upper Cache Slough at mouth of Ulatis Creek (CU) + 25 ppb PBO	441	22.4	23.9	7.8	8.4	8.13	8.26	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	3819	22.3	23.8	7.3	8.3	7.85	8.20	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	4350	22.5	23.7	7.3	8.8	7.87	8.30	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	297	22.7	24.0	6.6	8.4	7.94	8.21	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	195	22.5	24.0	6.7	8.6	7.81	8.11	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	282	23.0	24.1	6.7	8.3	7.86	8.13	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	350	22.9	23.6	6.2	8.6	7.92	8.06	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 16-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 04/11/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 04/10/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	97	2.8	100	0.0	NS
High EC Control @ 17.54 mS	83	7.5	50*	11.9	NS
High EC Control @ 23.43 mS	42*	8.2	21*	8.0	NS
Suisun Bay off Chipps Island (508)	98	2.5	100	0.0	NS
Grizzly Bay at Dolphin (602)	98	2.3	95	5.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	95	5.0	NS
Napa River at Vallejo Seawall (340)[3]	89	6.1	71	6.5	NS
Carquinez Strait, West of Benicia army dock (405)[4]	94	5.6	93	4.1	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.042	0.006	0.054	0.008	NS
High EC Control @ 17.54 mS	0.024	0.014	0.043	0.009	NS
High EC Control @ 23.43 mS	0.039	0.004	0.066	0.024	NS
Suisun Bay off Chipps Island (508)	0.054	0.007	0.057	0.006	NS
Grizzly Bay at Dolphin (602)	0.042	0.005	0.037	0.009	NS
Montezuma Slough at Nurse Slough (609)	0.067	0.010	0.065	0.005	NS
Napa River at Vallejo Seawall (340)[3]	0.050	0.007	0.021**	0.003	NS
Carquinez Strait, West of Benicia army dock (405)[4]	0.050	0.007	0.044	0.005	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high EC sample was compared to the High EC Control @ 23.43 mS.

4. This high EC sample was compared to the High EC Control @ 17.54 mS.

Table B 16-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/10/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	5970	14.2	8.07	10.9	22.1	0.05	0.001
Grizzly Bay at Dolphin (602)	8700	15.4	8.10	10.6	85.8	0.03	0.001
Montezuma Slough at Nurse Slough (609)	4265	14.7	7.97	10.3	46.0	0.00	0.000
Napa River at Vallejo Seawall (340)	23250	14.4	7.92	10.0	22.4	0.00	0.000
Carquinez Strait, west of Benicia army dock (405)	16720	14.5	7.94	10.3	378.3	0.26	0.004

Table B 16-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/11/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/10/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	345	22.3	23.2	7.5	8.8	7.88	8.12	92	64	-
High EC Control @ 17.54 mS	16470	22.4	24.0	6.7	8.8	7.67	7.88	2200	84	-
High EC Control @ 23.43 mS	22570	22.5	23.2	6.6	8.8	7.74	7.85	3000	92	-
Suisun Bay off Chipps Island (508)	5930	22.5	23.5	7.5	8.7	7.96	8.09	710	101	0.002
Grizzly Bay at Dolphin (602)	8300	22.5	23.4	7.2	8.8	7.95	8.05	940	102	0.001
Montezuma Slough at Nurse Slough (609)	4325	22.4	23.3	7.4	8.5	7.95	8.10	540	97	0.000
Napa River at Vallejo Seawall (340)	21650	22.4	23.6	7.2	8.9	7.78	7.92	2640	112	0.000
Carquinez Strait, West of Benicia army dock (405)	15150	22.4	23.3	7.5	8.9	7.85	7.97	1920	108	0.007
DIEPAMHR + 25 ppb PBO	350	22.4	22.5	7.4	8.5	7.91	8.16	-	-	-
High EC Control @ 17.54 mS + 25 ppb PBO	16520	22.4	22.5	7.0	8.4	7.77	7.86	-	-	-
High EC Control @ 23.43 mS + 25 ppb PBO	22010	22.2	23.4	6.7	8.6	7.71	7.83	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5660	22.1	23.1	7.4	8.7	7.93	8.10	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	8210	22.0	23.2	7.2	8.7	7.95	8.05	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	4152	22.5	23.3	7.6	8.9	7.96	8.08	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	21800	22.6	24.0	7.1	8.5	7.79	7.94	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	15180	22.5	24.1	7.3	8.6	7.86	7.99	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 17-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/24/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/22/08 - 4/23/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	93	7.5	93	4.8	NS
DIEPAMHR + organic matter	100	0.0	95	5.0	NS
Sacramento River at Hood DWR Station	93	2.5	95	2.9	NS
Rough and Ready DWR station, Stockton	98	2.5	98	2.3	NS
Sacramento R. Deep Water Channel, Light 55	97	2.8	98	2.5	NS
Confluence of Linsey Sl. And Cache Sl.	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	98	2.5	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Napa River, near River Park Blvd.	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	95	5.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	98	2.3	NS
San Joaquin River at Potato Slough (815)	95	2.9	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	95	2.9	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.029*	0.005	0.027	0.009	NS
DIEPAMHR + organic matter	0.050	0.005	0.046	0.013	NS
Sacramento River at Hood DWR Station	0.060	0.010	0.042	0.016	NS
Rough and Ready DWR station, Stockton	0.067	0.004	0.051	0.010	NS
Sacramento R. Deep Water Channel, Light 55	0.045	0.005	0.052	0.003	NS
Confluence of Linsey Sl. And Cache Sl.	0.045	0.005	0.038	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.051	0.005	0.062	0.007	NS
Suisun Slough at Rush Ranch	0.042	0.004	0.077	0.002	S*** (183%)

Napa River, near River Park Blvd.	0.046	0.008	0.082	0.005	S** (178%)
Old River, western arm at railroad bridge (902)	0.052	0.004	0.052	0.009	NS
Sacramento River at tip of Grand Island (711)	0.060	0.007	0.057	0.004	NS
San Joaquin River at Potato Slough (815)	0.047	0.011	0.067	0.005	NS
Old River at mouth of Holland Cut (915)	0.054	0.007	0.067	0.004	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 17-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/22/08-4/23/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	170	16.8	7.75	9.3	18.8	0.40	0.007
Rough and Ready DWR station, Stockton	579	17.7	7.89	7.9	34.2	0.17	0.004
Sacramento R. Deep Water Channel, Light 55	347	15.9	8.36	10.1	27.0	0.13	0.008
Confluence of Lindsey Sl. And Cache Sl.	297	15.5	8.29	10.2	31.3	0.17	0.008
Upper Cache Slough at mouth of Ulatis Creek	385	15.0	8.40	10.2	46.3	0.04	0.002
Suisun Slough at Rush Ranch	4864	15.1	7.38	7.0	74.5	0.14	0.001
Napa River, near River Park Blvd.	7590	16.6	7.55	8.6	46.3	0.11	0.001
Old River, western arm at railroad bridge (902)	400	15.9	8.22	10.1	15.7	0.02	0.001
Sacramento River at tip of Grand Island (711)	162	16.6	8.15	10.1	9.4	0.53	0.021
San Joaquin River at Potato Slough (815)	305	16.1	8.28	10.1	7.1	0.06	0.003
Old River at mouth of Holland Cut (915)	438	16.4	8.17	10.0	12.5	0.04	0.002

Table B 17-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/24/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/22/08 - 4/23/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	306	21.4	23.7	7.3	8.6	7.85	8.19	100	58	-
DIEPAMHR + organic matter	328	21.4	23.9	7.6	8.3	7.81	8.18	100	58	-
Sacramento River at Hood DWR Station	141	21.4	23.6	7.2	8.8	7.74	7.90	56	62	0.015
Rough and Ready DWR station, Stockton	500	21.3	24.0	7.5	8.6	7.92	8.06	124	88	0.009
Sacramento R. Deep Water Channel, Light 55	295	21.2	24.3	7.3	8.8	8.08	8.20	116	114	0.010
Confluence of Linsey Sl. And Cache Sl.	253	21.2	24.4	7.4	8.8	7.93	8.16	96	108	0.012
Upper Cache Slough at mouth of Ulatis Creek	332	21.2	24.5	7.6	8.8	8.16	8.23	128	132	0.003
Suisun Slough at Rush Ranch	4227	21.3	24.3	7.5	8.5	8.06	8.26	632	192	0.006
Napa River, near River Park Blvd.	6445	21.3	24.3	7.3	8.9	7.85	8.02	860	132	0.003
Old River, western arm at railroad bridge (902)	310	21.3	24.4	7.6	8.8	7.95	8.17	96	86	0.001
Sacramento River at tip of Grand Island (711)	145	21.2	24.4	7.6	8.9	7.77	7.97	72	68	0.024
San Joaquin River at Potato Slough (815)	266	21.2	24.5	7.4	8.9	7.82	8.08	96	88	0.003
Old River at mouth of Holland Cut (915)	356	21.3	24.6	1.8	8.9	7.95	8.08	120	96	0.002
DIEPAMHR + 25 ppb PBO	302	21.3	23.5	7.7	8.6	7.82	8.18	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	331	21.4	23.2	7.6	8.6	7.83	8.27	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	149	21.3	23.4	7.5	8.6	7.75	7.97	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	498	21.4	23.4	7.5	8.6	7.91	8.14	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	296	21.5	23.4	7.5	8.9	8.07	8.16	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	252	21.4	23.4	7.5	8.8	7.95	8.21	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	334	21.4	23.7	7.6	8.8	8.16	8.23	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4159	21.5	23.5	7.4	8.3	7.87	8.23	-	-	-
Napa River, near River Park Blvd. + 25 ppb PBO	6445	21.4	23.9	7.6	8.7	7.85	8.04	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	300	21.4	23.5	7.4	8.5	7.94	8.15	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	163	21.5	23.8	7.6	8.8	7.75	8.02	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	260	21.5	23.4	7.6	8.9	7.89	8.15	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	362	22.2	23.6	7.6	8.7	7.94	8.13	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 18-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/25/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/24/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.8	97	2.8	NS
DIEPAMHR + organic matter	100	0.0	100	0.0	NS
High EC Control @ 11.20 mS/cm + organic matter	100	0.0	100	0.0	NS
High EC Control @ 22.61 mS/cm + organic matter	100	0.0	80*	5.4	S (80%)
Suisun Bay off Chipps Island (508)	97	2.8	100	0.0	NS
Grizzly Bay at Dolphin (602)	98	2.5	98	2.5	NS
Montezuma Slough at Nurse Slough (609)	98	2.3	98	2.3	NS
Napa River at Vallejo Seawall (340)[4]	98	2.5	90	10.0	NS
Carquinez Strait, West of Benicia army dock (405)[3]	98	2.5	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.017	0.008	0.025	0.003	NS
DIEPAMHR + organic matter	0.049	0.006	0.057	0.004	NS
High EC Control @ 11.20 mS/cm + organic matter	0.060	0.004	0.050	0.006	NS
High EC Control @ 22.61 mS/cm + organic matter	0.021**	0.002	0.048	0.007	S* (229%)
Suisun Bay off Chipps Island (508)	0.061	0.009	0.067	0.006	NS
Grizzly Bay at Dolphin (602)	0.026*	0.008	0.024*	0.010	NS
Montezuma Slough at Nurse Slough (609)	0.070	0.004	0.043*	0.003	S** (61%)
Napa River at Vallejo Seawall (340)[4]	0.023	0.007	0.050	0.009	NS
Carquinez Strait, West of Benicia army dock (405)[3]	0.038	0.012	0.028*	0.004	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC control @ 11.20 mS/cm.

4. This high conductivity sample was compared to the High EC control @ 22.60 mS/cm.

Table B 18-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/25/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^oC)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	2207	14.9	8.10	10.5	25.7	0.12	0.003
Grizzly Bay at Dolphin (602)	6520	15.0	8.10	10.6	33.7	0.10	0.003
Montezuma Slough at Nurse Slough (609)	4609	14.2	7.80	9.5	60.7	0.14	0.002
Napa River at Vallejo Seawall (340)	22080	15.1	7.92	10.2	18.5	0.09	0.001
Carquinez Strait, West of Benicia army dock (405)	10360	14.1	8.00	10.4	141.7	0.20	0.004

Table B 18-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/25/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/24/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	314	22.2	25.0	7.5	8.4	7.84	8.05	100	58	-
DIEPAMHR + organic matter	342	22.3	24.8	7.5	8.3	7.73	8.04	100	58	-
High EC Control @ 11.20 mS/cm + organic matter	10010	22.9	25.0	7.3	8.7	7.66	7.80	1260	84	-
High EC Control @ 22.61 mS/cm + organic matter	20000	22.8	24.9	5.7	8.3	7.57	7.78	3280	90	-
Suisun Bay off Chipps Island (508)	1801	21.9	24.9	7.5	8.7	7.93	8.06	244	92	0.006
Grizzly Bay at Dolphin (602)	6015	22.5	25.1	7.5	8.9	7.90	8.00	748	102	0.003
Montezuma Slough at Nurse Slough (609)	4183	22.3	25.0	7.5	8.5	7.84	9.17	576	102	0.004
Napa River at Vallejo Seawall (340)	19395	21.5	24.8	7.0	8.4	7.77	7.89	2368	116	0.002
Carquinez Strait, West of Benicia army dock (405)	9180	22.5	24.7	7.2	8.8	7.88	7.95	1144	102	0.006
DIEPAMHR + 25 ppb PBO	310	21.8	24.1	7.3	8.5	7.77	8.02	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	379	22.6	23.7	7.3	8.4	7.80	8.01	-	-	-
High EC Control @ 11.20 mS/cm + 25 ppb PBO	9760	22.3	24.0	7.2	8.6	7.65	7.78	-	-	-
High EC Control @ 22.61 mS/cm + 25 ppb PBO	19595	23.3	24.0	6.7	8.3	7.65	7.79	-	-	-

Suisun Bay off Chipps Island (508) + 25 ppb PBO	1825	23.2	24.0	7.4	8.5	7.94	8.01	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	5955	22.6	23.6	7.5	8.6	7.92	7.99	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	4173	23.6	24.0	7.3	8.7	7.88	7.96	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	19300	23.0	23.7	6.2	8.3	7.76	7.89	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	8855	23.3	23.9	7.4	8.8	7.86	7.95	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 19-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/08/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/06/08 - 5/07/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	98	2.5	NS
DIEPAMHR + organic matter	100	0.0	97	2.8	NS
High EC Control @10.83 mS + organic matter	100	0.0	93	4.8	NS
High EC Control @17.36 mS + organic matter	98	2.5	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Napa River at River Park Blvd.	100	0.0	98	2.5	NS
Montezuma Slough at Nurse Slough (609)	95	2.9	100	0.0	NS
Grizzly Bay at Dolphin (602)[3]	100	0.0	98	2.3	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[4]	100	0.0	100	0.0	NS
Trip Blank: DIEPAMHR	98	2.5	-	-	NA
Field Dup.: Montezuma Slough at Nurse Slough (609)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.042*	0.006	0.040**	0.006	NS
DIEPAMHR + organic matter	0.059	0.006	0.070	0.006	NS
High EC Control @10.83 mS + organic matter	0.081	0.009	0.066	0.003	NS
High EC Control @17.36 mS + organic matter	0.081	0.006	0.043*	0.011	S* (53%)
Suisun Slough at Rush Ranch	0.082	0.006	0.067	0.005	NS
Napa River at River Park Blvd.	0.087	0.003	0.071	0.009	NS

Montezuma Slough at Nurse Slough (609)	0.087	0.006	0.077	0.006	NS
Grizzly Bay at Dolphin (602)[3]	0.062*	0.004	0.044***	0.003	S* (71%)
Suisun Bay off Chipps Island (508)	0.103	0.004	0.071	0.006	S** (69%)
Carquinez Strait, West of Benicia army dock (405)[4]	0.050**	0.001	0.043	0.004	NS
Trip Blank: DIEPAMHR	0.045	0.006	-	-	NA
Field Dup.: Montezuma Slough at Nurse Slough (609)	0.074	0.010	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

   *: $P < 0.05$

   **: $P < 0.01$

   ***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control @ 10.83 mS/cm.

4. This high conductivity sample was compared to the High EC Control @ 17.36 mS/cm.

Table B 19-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/06/08 - 5/07/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	5740	15.4	7.81	7.6	154.5	0.20	0.003
Napa River at River Park Blvd.	8430	18.3	8.10	8.2	58	0.04	0.002
Montezuma Slough at Nurse Slough (609)	5030	17.6	7.74	8.8	59.4	0.08	0.001
Grizzly Bay at Dolphin (602)	11260	17.0	8.01	9.5	213.5	0.15	0.003
Suisun Bay off Chipps Island (508)	5310	16.9	7.80	9.7	38.3	0.09	0.001
Carquinez Strait, West of Benicia army dock (405)	17080	14.9	7.86	10.4	252.5	0.21	0.003
Trip Blank: DIEPAMHR	345	21.6	8.15	8.6	0.25	0.02	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	5030	17.6	7.74	8.8	55.9	0.09	0.001

Table B 19-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/08/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/06/08 - 5/07/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	334	24.2	24.6	7.2	8.1	7.61	8.10	88	58	-
DIEPAMHR + organic matter	330	24.0	24.3	7.0	8.2	7.61	8.15	88	58	-
High EC Control @10.83 mS + organic matter	10205	23.9	24.3	7.1	8.4	7.60	7.88	1640	74	-
High EC Control @17.36 mS + organic matter	16450	23.7	24.3	6.9	8.2	7.57	7.90	2600	82	-
Suisun Slough at Rush Ranch	5300	24.0	24.3	7.1	8.6	7.91	8.14	720	156	0.006
Napa River at River Park Blvd.	7980	23.9	24.2	7.1	8.9	7.84	8.05	960	140	0.001
Montezuma Slough at Nurse Slough (609)	4653	24.2	24.3	7.2	8.7	7.81	7.95	680	110	0.003
Grizzly Bay at Dolphin (602)	9660	24.2	24.2	7.1	8.7	7.80	7.95	1560	102	0.005
Suisun Bay off Chipps Island (508)	4870	23.9	24.2	7.3	8.5	7.82	7.92	660	94	0.003
Carquinez Strait, West of Benicia army dock (405)	15380	24.2	24.2	7.0	8.2	7.71	7.83	2480	104	0.005
Trip Blank: DIEPAMHR	478	24.2	24.6	7.4	8.6	7.82	8.18	120	60	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	4763	24.2	24.2	7.3	8.6	7.89	8.09	740	108	0.004
DIEPAMHR + 25 ppb PBO	401	23.7	24.2	7.4	8.3	7.71	8.14	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	334	23.5	24.2	7.2	8.1	7.60	8.16	-	-	-
High EC Control @10.83 mS + organic matter + 25 ppb PBO	10080	24.0	24.2	7.2	8.2	7.55	7.96	-	-	-
High EC Control @17.36 mS + organic matter + 25 ppb PBO	16385	24.0	24.2	7.0	8.2	7.53	7.93	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	5309	24.1	24.1	7.3	8.3	7.96	8.12	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	7970	24.2	24.4	7.2	8.3	7.92	8.04	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	4692	24.1	24.4	7.2	8.4	7.94	7.95	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	9740	24.2	24.3	7.1	8.3	7.05	8.01	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5125	24.2	24.3	7.3	8.7	7.84	8.08	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	15475	23.9	24.3	7.0	8.2	7.77	7.89	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 20-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/09/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/08/08 - 5/09/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
DIEPAMHR + organic matter	98	2.5	90	4.1	NS
Low EC Control + organic matter	98	2.5	95	2.9	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	93	4.8	NS
Confluence of Lindsey Sl. And Cache Sl.	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station[3]	98	2.5	100	0.0	NS
Bottle Blank	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.012***	0.004	0.033**	0.003	S** (275%)
DIEPAMHR + organic matter	0.082	0.007	0.076	0.010	NS
Low EC Control + organic matter	0.058*	0.004	0.074	0.011	NS
Upper Cache Slough at mouth of Ulatis Creek	0.048**	0.006	0.067	0.005	NS
Sacramento River at tip of Grand Island (711)[3]	0.037*	0.009	0.063	0.013	NS
Confluence of Lindsey Sl. And Cache Sl.	0.055*	0.006	0.073	0.006	NS
Sacramento R. Deep Water Channel, Light 55	0.063	0.011	0.076	0.005	NS
Rough and Ready DWR station, Stockton	0.064	0.007	0.084	0.006	NS
Sacramento River at Hood DWR Station[3]	0.043	0.011	0.061	0.010	NS
Bottle Blank	0.036	0.007	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity sample was compared to the Low EC Control.

Table B 20-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/08/08 - 5/09/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	319	17.4	8.13	8.8	58.8	0.15	0.006
Sacramento River at tip of Grand Island (711)	181	18.8	7.72	11.7	14.1	0.50	0.009
Confluence of Lindsey Sl. And Cache Sl.	245	17.8	7.96	8.8	31.4	0.31	0.009
Sacramento R. Deep Water Channel, Light 55	251	17.9	7.85	8.9	31.5	0.23	0.005
Rough and Ready DWR station, Stockton	410	20.1	7.86	7.8	9.0	0.05	0.001
Sacramento River at Hood DWR Station	192	20.8	7.81	8.0	6.4	0.34	0.008

Table B 20-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/09/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/08/08 - 5/09/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	302	22.9	23.5	7.3	8.1	7.72	8.18	104	60	-
DIEPAMHR + organic matter	355	23.1	24.4	7.0	8.3	7.62	8.16	104	60	-
Low EC Control + organic matter	197	23.1	24.3	7.1	8.2	7.34	8.01	68	28	-
Upper Cache Slough at mouth of Ulatis Creek	287	23.0	24.6	7.2	8.5	7.97	8.30	112	106	0.007
Sacramento River at tip of Grand Island (711)	171	23.0	24.0	7.0	8.5	7.68	8.10	64	72	0.030
Confluence of Lindsey Sl. And Cache Sl.	223	23.0	24.6	7.0	8.7	7.82	8.16	84	84	0.015
Sacramento R. Deep Water Channel, Light 55	252	23.0	24.1	7.1	8.6	7.83	8.24	96	94	0.007
Rough and Ready DWR station, Stockton	378	23.0	24.1	7.2	8.6	7.67	7.91	96	66	0.003
Sacramento River at Hood DWR Station	177	23.0	24.1	7.0	8.5	7.67	7.78	80	72	0.016
Bottle Blank	329	23.0	24.6	7.4	8.9	7.77	8.19	-	-	-
DIEPAMHR + 25 ppb PBO	322	23.0	23.4	7.3	8.2	7.71	8.15	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	351	23.0	23.3	7.0	8.3	7.63	8.17	-	-	-
Low EC Control + organic matter + 25 ppb PBO	205	23.0	23.5	7.1	8.7	7.43	7.95	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	285	23.0	23.8	7.3	8.6	7.98	8.22	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	171	23.0	23.9	7.0	8.7	7.65	8.22	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	220	23.1	23.4	6.8	8.7	7.82	8.28	-	-	-

Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	250	23.1	24.1	7.0	8.6	7.83	8.26	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	382	23.1	23.5	7.2	8.7	7.70	7.81	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	186	23.1	23.7	7.1	8.5	7.65	7.73	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 21-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/13/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	95	2.8	NS
DIEPAMHR + organic matter	92	2.6	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	98	2.5	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.044**	0.005	0.034**	0.009	NS
DIEPAMHR + organic matter	0.088	0.011	0.087	0.009	NS
Old River, western arm at railroad bridge (902)	0.097	0.006	0.091	0.020	NS
Old River at mouth of Holland Cut (915)	0.090	0.008	0.090	0.006	NS
San Joaquin River at Potato Slough (815)	0.071	0.003	0.088	0.004	S* (124%)

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 21-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Old River, western arm at railroad bridge (902)	348	18.5	7.74	8.8	21.2	0.02	0.000
Old River at mouth of Holland Cut (915)	471	19.8	7.69	8.5	10.5	0.04	0.001
San Joaquin River at Potato Slough (815)	321	18.8	7.78	9.1	8.4	0.12	0.002

1. Unionized ammonia was calculated from ammonia nitrogen measured at sample receipt and water chemistry measured at sample collection.

Table B 21-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/13/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	22.9	24.0	7.3	8.5	7.77	8.03	88	58	-
DIEPAMHR + organic matter	340	22.6	24.5	7.2	8.5	7.64	7.91	88	58	-
Old River, western arm at railroad bridge (902)	316	23.2	24.1	7.4	8.6	7.86	8.01	88	82	0.001
Old River at mouth of Holland Cut (915)	418	22.5	23.8	7.3	8.3	7.86	8.07	108	88	0.001
San Joaquin River at Potato Slough (815)	286	23.1	24.0	7.4	8.6	7.82	8.03	84	76	0.005
DIEPAMHR + 25 ppb PBO	341	23.5	24.0	7.4	8.3	7.78	8.01	-	-	-

DIEPAMHR + organic matter + 25 ppb PBO	326	23.6	23.8	7.3	8.7	7.65	7.96	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	330	23.8	24.1	7.3	8.6	7.87	8.02	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	418	23.4	23.8	7.4	8.5	7.89	8.06	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	293	23.8	24.5	7.3	8.7	7.85	8.05	-	-	-

1. Unionized ammonia was calculated from ammonia nitrogen measured at sample receipt and water chemistry measured at test initiation.

Table B 22-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/22/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/20/08 - 5/21/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
DIEPAMHR + organic matter	98	2.5	95	2.8	NS
Low EC Control + organic matter	98	2.5	95	3.1	NS
High EC Control + organic matter	97	2.8	100	0.0	NS
Sacramento River at Hood DWR Station[3]	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Napa River at River Park Blvd.[4]	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	98	2.5	NS
Confluence of Linsey Sl. And Cache Sl.	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.084	0.007	0.080	0.003	NS
DIEPAMHR + organic matter	0.110	0.008	0.081	0.003	S* (74%)
Low EC Control + organic matter	0.112	0.010	0.096	0.007	NS
High EC Control + organic matter	0.063	0.017	0.085	0.006	NS
Sacramento River at Hood DWR Station[3]	0.114	0.003	0.094	0.004	S* (82%)
Rough and Ready DWR station, Stockton	0.124	0.017	0.101	0.009	NS
Napa River at River Park Blvd.[4]	0.116	0.007	0.055**	0.004	S*** (47%)
Suisun Slough at Rush Ranch	0.116	0.009	0.098	0.007	NS

Confluence of Linsey Sl. And Cache Sl.	0.093	0.011	0.119	0.013	NS
Upper Cache Slough at mouth of Ulatis Creek	0.105	0.001	0.093	0.008	NS
Sacramento R. Deep Water Channel, Light 55	0.107	0.005	0.108	0.004	NS
Sacramento River at tip of Grand Island (711)[3]	0.116	0.005	0.098	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

   *: $P < 0.05$

   **: $P < 0.01$

   ***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. These low conductivity samples were compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control.

Table B 22-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/20/08 - 5/21/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	180	24.1	7.32	7.9	16.7	0.41	0.004
Rough and Ready DWR station, Stockton	401	23.1	7.08	7.3	11.7	0.07	0.000
Napa River at River Park Blvd.	12540	22.6	7.51	5.9	24.3	0.06	0.001
Suisun Slough at Rush Ranch	6870	16.9	7.38	6.7	46.8	0.11	0.001
Confluence of Lindsey Sl. And Cache Sl.	243	19.5	7.22	8.7	72.1	0.23	0.001
Upper Cache Slough at mouth of Ulatis Creek	288	19.2	7.19	9.2	94.3	0.14	0.001
Sacramento R. Deep Water Channel, Light 55	280	20.7	7.47	8.8	40.2	0.17	0.002
Sacramento River at tip of Grand Island (711)	179	22.9	6.93	8.6	31.6	0.43	0.002

Table B 22-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/22/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/20/08 - 5/21/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	346	23.2	23.9	7.4	8.2	7.36	7.82	104	60	-
DIEPAMHR + organic matter	347	23.2	23.9	6.8	8.2	7.44	7.80	104	60	-
Low EC Control + organic matter	184	23.2	24.1	7.1	8.7	7.45	7.78	54	35	-
High EC Control + organic matter	12145	23.2	24.4	7.0	8.8	7.31	7.80	1400	79	-
Sacramento River at Hood DWR Station	192	23.2	24.6	6.6	8.7	7.56	7.90	64	66	0.008
Rough and Ready DWR station, Stockton	398	23.1	24.5	6.9	8.9	7.57	7.98	88	64	0.001
Napa River at River Park Blvd.	12330	23.1	24.5	6.9	8.7	7.05	8.11	1400	148	0.000
Suisun Slough at Rush Ranch	6800	23.1	24.5	7.3	8.8	7.12	8.20	800	168	0.001
Confluence of Linsey Sl. And Cache Sl.	304	22.9	24.4	6.9	8.4	7.68	8.16	80	88	0.005
Upper Cache Slough at mouth of Ulatis Creek	274	23.0	24.4	6.9	8.3	7.70	8.11	96	102	0.003
Sacramento R. Deep Water Channel, Light 55	288	23.0	24.3	7.0	8.7	7.69	8.08	88	92	0.004
Sacramento River at tip of Grand Island (711)	185	22.8	24.0	7.1	8.4	7.63	7.97	64	68	0.009
DIEPAMHR + 25 ppb PBO	347	22.8	24.1	7.3	8.3	7.62	7.85	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	347	22.8	23.9	7.0	8.4	7.61	7.91	-	-	-
Low EC Control + organic matter + 25 ppb PBO	6149	22.8	23.9	7.2	8.8	7.24	7.69	-	-	-
High EC Control + organic matter + 25 ppb PBO	6171	22.8	23.6	7.2	8.7	7.62	7.85	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	198	22.9	23.7	6.9	8.2	7.52	7.90	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	395	22.8	24.1	7.2	8.4	7.66	7.96	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	12045	22.7	22.9	7.1	8.5	7.08	8.10	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	6630	22.7	22.9	7.3	8.7	7.12	8.19	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	281	22.8	23.1	7.1	8.8	7.64	8.17	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	292	22.7	23.3	7.1	8.6	7.85	8.12	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	287	22.9	23.2	6.8	8.7	7.73	8.07	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	186	22.8	23.5	7.0	8.4	7.65	7.97	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 23-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/25/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/23/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
DIEPAMHR + organic matter	95	2.9	93	2.5	NS
High EC Control @ 13.77 mS + organic matter	100	0.0	95	2.9	NS
High EC Control @ 18.91 mS + organic matter	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	98	2.5	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	97	2.8	NS
Carquinez Strait, West of Benicia army dock (405)[4]	98	2.5	94	3.7	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[3]	95	3.2	95	2.9	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.037**	0.014	0.025	0.010	NS
DIEPAMHR + organic matter	0.060	0.003	0.061	0.010	NS
High EC Control @ 13.77 mS + organic matter	0.040	0.005	0.054	0.014	NS
High EC Control @ 18.91 mS + organic matter	0.027*	0.012	0.048*	0.007	NS
Suisun Bay off Chipps Island (508)	0.066	0.008	0.091	0.002	S* (138%)
San Joaquin River at Potato Slough (815)	0.076	0.003	0.110	0.004	S*** (145%)
Old River, western arm at railroad bridge (902)	0.053	0.016	0.098	0.005	S* (185%)
Carquinez Strait, West of Benicia army dock (405)[4]	0.057	0.008	0.024	0.006	S* (42%)
Old River at mouth of Holland Cut (915)	0.081	0.007	0.094	0.004	NS
Grizzly Bay at Dolphin (602)[3]	0.033	0.010	0.061	0.004	S* (185%)
Montezuma Slough at Nurse Slough (609)	0.056	0.005	0.073	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control @ 13.77 mS/cm

4. This high conductivity sample was compared to the High EC Control @ 18.91 mS/cm

Table B 23-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/23/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	6200	18.7	7.15	9.3	18.7	0.06	0.002
San Joaquin River at Potato Slough (815)	317	19.8	7.21	9.6	12.0	0.06	0.003
Old River, western arm at railroad bridge (902)	359	19.1	6.59	8.8	42.8	0.51	0.020
Carquinez Strait, West of Benicia army dock (405)	18670	17.9	7.49	10.1	225.3	0.19	0.005
Old River at mouth of Holland Cut (915)	446	20.6	7.23	9.4	8.9	0.05	0.003
Grizzly Bay at Dolphin (602)	13290	18.4	7.64	10.0	82.7	0.10	0.003
Montezuma Slough at Nurse Slough (609)	7060	19.1	7.28	9.2	50.9	0.09	0.002

Table B 23-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/25/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/23/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	323	20.4	23.4	7.8	8.6	7.79	8.13	104	62	-
DIEPAMHR + organic matter	323	20.9	23.1	7.5	8.4	7.68	8.08	104	62	-
High EC Control @ 13.77 mS + organic matter	12536	20.9	23.6	7.5	8.3	7.59	8.01	1540	83	-
High EC Control @ 18.91 mS + organic matter	17575	20.9	23.4	7.3	8.3	7.61	8.02	2220	94	-
Suisun Bay off Chipps Island (508)	5805	21.3	23.5	7.6	8.7	7.79	8.07	668	94	0.002
San Joaquin River at Potato Slough (815)	320	22.0	23.4	7.6	8.8	7.93	8.19	84	80	0.003
Old River, western arm at railroad bridge (902)	335	21.9	23.6	7.6	8.7	7.89	8.14	112	84	0.020
Carquinez Strait, West of Benicia army dock (405)	17855	22.1	23.8	7.6	8.8	7.80	7.99	224	112	0.005
Old River at mouth of Holland Cut (915)	415	22.0	23.4	7.5	8.4	8.01	8.27	116	86	0.003
Grizzly Bay at Dolphin (602)	12665	22.0	23.1	7.5	8.5	7.84	8.01	148	106	0.003
Montezuma Slough at Nurse Slough (609)	6490	21.7	23.2	7.5	8.8	7.87	8.13	792	112	0.002
DIEPAMHR + 25 ppb PBO	360	21.8	23.2	7.5	8.5	7.81	8.14	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	346	22.1	22.4	7.6	8.5	7.77	8.11	-	-	-
High EC Control @ 13.77 mS + organic matter + 25 ppb PBO	12620	21.7	23.1	7.3	8.6	7.67	8.01	-	-	-
High EC Control @ 18.91 mS + organic matter + 25 ppb PBO	17550	21.9	23.1	7.3	8.2	7.69	8.03	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5745	22.1	22.9	7.4	8.7	7.80	8.07	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	310	21.8	23.2	7.5	8.9	7.87	8.14	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	348	22.0	22.5	7.4	8.5	7.92	8.12	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	16970	21.8	22.7	7.5	8.1	7.81	7.95	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	411	21.9	22.1	7.5	8.7	7.87	8.21	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	12115	21.9	22.8	7.5	8.3	7.83	8.02	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	6520	21.9	22.5	7.5	8.5	7.89	8.12	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 24-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/5/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/03/08 - 6/04/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	98	2.5	NS
DIEPAMHR + POM	94	3.3	93	4.8	NS
Low EC Control @ 210 uS + organic matter	98	2.5	90	4.1	NS
High EC Control @ 12.32 mS + organic matter	100	0.0	98	2.5	NS
High EC Control @ 17.95 mS + organic matter	95	2.8	93	7.5	NS
Sacramento River at Hood DWR Station[3]	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	98	2.5	100	0.0	NS
Napa River at River Park Blvd.[5]	100	0.0	93	4.4	NS
Suisun Slough at Rush Ranch	100	0.0	98	2.3	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	100	0.0	95	4.5	NS
Carquinez Strait, West of Benicia army dock (405)[4]	100	0.0	95	3.1	NS
Suisun Bay off Chipps Island (508)[4]	98	2.5	98	2.5	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)	100	0.0	-	-	NA
Trip Blank: DIEPAMHR	100	0.0	-	-	NA
Bottle Blank: DIEPAMHR	95	2.9	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.003	0.045*	0.007	NS
DIEPAMHR + organic matter	0.062	0.007	0.068	0.005	NS
Low EC Control @ 210 uS + organic matter	0.098	0.007	0.092	0.005	NS
High EC Control @ 12.32 mS + organic matter	0.049	0.004	0.045**	0.003	NS
High EC Control @ 17.95 mS + organic matter	0.028**	0.002	0.032***	0.003	NS
Sacramento River at Hood DWR Station[3,6]	0.092	0.007	0.076*	0.002	NS
Rough and Ready DWR station, Stockton	0.093	0.010	0.105	0.011	NS
Napa River at River Park Blvd.[5]	0.087	0.028	0.049	0.006	NS
Suisun Slough at Rush Ranch	0.092	0.006	0.089	0.004	NS
Montezuma Slough at Nurse Slough (609)	0.089	0.007	0.088	0.011	NS
Grizzly Bay at Dolphin (602)[4]	0.069	0.004	0.048	0.007	S* (70%)
Carquinez Strait, West of Benicia army dock (405)[4]	0.059	0.004	0.052	0.008	NS
Suisun Bay off Chipps Island (508)[4]	0.101	0.008	0.078	0.004	S* (77%)
Field Dup.: Montezuma Slough at Nurse Slough (609)	0.102	0.006	-	-	NA
Trip Blank: DIEPAMHR	0.047	0.004	-	-	NA
Bottle Blank: DIEPAMHR	0.046	0.009	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 12.32 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 17.95 mS/cm.

6. The PBO-treated Hood sample showed significantly lower weight compared to the Low EC Control, but not compared to the DIEPAMHR or DIEPAMHR + POM.

Table B 24-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/03/08 - 6/04/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	214	20.8	7.23	8.2	17.5	0.30	0.007
Rough and Ready DWR station, Stockton	498	20.8	7.28	6.8	18.2	0.04	0.001
Napa River at River Park Blvd.	17040	20.0	7.49	7.3	30.0	0.00	0.000
Suisun Slough at Rush Ranch	8580	16.7	6.74	6.3	101.7	0.09	0.002
Montezuma Slough at Nurse Slough (609)	8160	19.1	7.56	9.1	50.8	0.12	0.003
Grizzly Bay at Dolphin (602)	11930	18.8	7.39	9.4	104.0	0.18	0.007
Carquinez Strait, West of Benicia army dock (405)	18600	17.7	7.86	9.5	95.4	0.19	0.004
Suisun Bay off Chipps Island (508)	5450	18.0	7.30	9.7	33.3	0.14	0.005
Field Dup.: Montezuma Slough at Nurse Slough (609)	8160	19.1	7.56	9.1	56.7	0.14	0.001
Trip Blank: DIEPAMHR	330	21.3	8.10	8.8	0.2	0.00	0.000
Bottle Blank: DIEPAMHR	-	-	-	-	0.3	-	-

Table B 24-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/05/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/03/08 - 6/04/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	362	22.6	23.9	7.4	8.2	7.66	8.17	100	60	-
DIEPAMHR + organic matter	350	22.6	23.6	7.3	8.3	7.63	8.18	100	60	-
Low EC Control @ 210 uS + organic matter	222	22.6	23.3	7.1	8.6	7.37	7.99	60	34	-
High EC Control @ 12.32 mS + organic matter	11945	22.6	23.4	7.1	8.5	7.67	7.92	1320	74	-
High EC Control @ 17.95 mS + organic matter	17400	22.6	23.3	7.1	8.7	7.70	7.93	1920	80	-
Sacramento River at Hood DWR Station	207	22.6	24.2	7.1	8.4	7.72	7.90	60	66	0.009
Rough and Ready DWR station, Stockton	488	22.6	23.7	7.2	8.8	7.79	8.02	124	74	0.002
Napa River at River Park Blvd.	16785	22.6	23.3	6.6	8.5	7.74	8.02	1920	140	0.000
Suisun Slough at Rush Ranch	8300	22.6	23.8	7.1	8.8	7.45	8.15	960	148	0.001
Montezuma Slough at Nurse Slough (609)	7745	22.6	23.6	7.4	8.4	7.91	8.04	880	112	0.004
Grizzly Bay at Dolphin (602)	11710	22.6	24.1	7.0	8.6	7.79	7.90	1280	92	0.005
Carquinez Strait, West of Benicia army dock (405)	11635	22.6	23.7	7.2	8.4	7.75	7.98	1880	100	0.007
Suisun Bay off Chipps Island (508)	11110	22.6	23.0	7.2	8.3	7.81	7.94	60	86	0.003
Field Dup.: Montezuma Slough at Nurse Slough (609)	7800	22.6	24.1	7.3	8.7	7.88	8.03	840	108	0.004
Trip Blank: DIEPAMHR	378	22.6	24.2	7.3	8.9	7.87	8.19	112	58	0.000
Bottle Blank: DIEPAMHR	407	22.9	23.7	7.4	8.6	7.81	8.25	-	-	-
DIEPAMHR + 25 ppb PBO	383	22.6	23.6	7.4	8.2	7.74	8.19	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	372	22.7	23.8	7.2	8.4	7.62	8.16	-	-	-
Low EC Control @ 210 uS + organic matter + 25 ppb PBO	242	22.7	23.8	7.3	8.6	7.35	7.96	-	-	-
High EC Control @ 12.32 mS + organic matter + 25 ppb PBO	11990	22.7	24.2	7.2	8.6	7.67	7.92	-	-	-
High EC Control @ 17.95 mS + organic matter + 25 ppb PBO	17325	22.6	23.8	7.1	8.5	7.70	7.93	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	238	22.7	23.6	7.2	8.5	7.74	7.98	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	509	22.7	23.7	7.1	8.5	7.82	8.10	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	16835	22.7	23.9	6.8	8.1	7.76	8.02	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	8240	22.7	23.7	7.1	8.5	7.85	8.15	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	7690	22.9	23.6	7.3	8.6	7.85	8.03	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	11240	23.3	23.3	7.1	8.5	7.70	7.91	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	17380	23.0	23.4	7.1	8.4	7.78	7.89	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5195	22.9	23.5	7.2	8.7	7.83	7.96	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 25-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/6/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/6/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	96	4.2	NS
DIEPAMHR + organic matter	98	2.5	94	3.2	NS
Low EC Control @ 200 uS + organic matter	75*	9.0	87	2.3	NS
Sacramento River at tip of Grand Island (711)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	98	2.5	NS
Confluence of Lindsey Sl. And Cache Sl.	98	2.5	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	97	2.8	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.037**	0.007	0.045	0.008	NS
DIEPAMHR + organic matter	0.079	0.007	0.062	0.005	NS
Low EC Control @ 200 uS + organic matter	0.050*	0.007	0.067	0.010	NS
Sacramento River at tip of Grand Island (711)	0.081	0.007	0.107	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.084	0.010	0.077	0.014	NS
Confluence of Lindsey Sl. And Cache Sl.	0.097	0.013	0.091	0.001	NS
Sacramento R. Deep Water Channel, Light 55	0.086	0.014	0.097	0.005	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 25-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/6/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at tip of Grand Island (711)	217	18.8	7.07	8.8	20.2	0.24	0.001
Upper Cache Slough at mouth of Ulatis Creek	403	17.9	7.35	8.7	92.2	0.20	0.001
Confluence of Lindsey Sl. And Cache Sl.	351	18.9	7.16	9.4	48.5	0.16	0.001
Sacramento R. Deep Water Channel, Light 55	436	19.7	7.35	8.8	63.9	0.15	0.001

Table B 25-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/6/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/6/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	349	23.0	23.6	7.5	8.2	7.76	8.11	100	60	-
DIEPAMHR + organic matter	347	23.0	23.0	7.2	8.5	7.65	8.06	100	60	-
Low EC Control @ 200 uS + organic matter	207	23.0	23.6	7.1	8.9	7.48	7.92	56	30	-
Sacramento River at tip of Grand Island (711)	208	23.0	23.6	7.2	8.9	7.66	7.94	68	70	0.010
Upper Cache Slough at mouth of Ulatis Creek	265	23.1	24.0	7.4	8.8	7.79	7.97	44	90	0.009
Confluence of Lindsey Sl. And Cache Sl.	220	23.1	24.3	7.3	8.8	7.73	7.90	68	78	0.006
Sacramento R. Deep Water Channel, Light 55	261	23.3	23.3	7.2	8.9	7.75	7.95	84	82	0.006
DIEPAMHR + 25 ppb PBO	340	22.9	23.2	7.3	8.4	7.70	8.03	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	341	23.2	23.4	7.1	8.4	7.60	8.03	-	-	-
Low EC Control @ 200 uS + organic matter + 25 ppb PBO	202	23.5	23.7	7.0	8.8	7.37	7.95	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	211	23.4	24.0	7.3	8.9	7.63	7.90	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	256	23.8	24.0	7.2	8.7	7.85	7.97	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb	207	23.4	23.6	7.4	8.8	7.74	7.88	-	-	-

PBO										
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	265	23.8	24.0	7.4	8.7	7.78	7.96	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 26-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/19/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/17/08 - 6/18/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	97	2.8	94	3.3	NS
DIEPAMHR + organic matter	98	2.5	95	3.1	NS
Low EC Control @ 139.6 uS/cm + organic matter	100	0.0	89	4.1	NS
High EC Control @ 13,550 uS/cm + organic matter	98	2.5	95	2.9	NS
High EC Control @ 21,150 uS/cm + organic matter	95	2.9	98	2.5	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Suisun Slough at Rush Ranch	98	2.5	98	2.5	NS
Sacramento River at Hood DWR Station[3]	97	2.8	100	0.0	NS
Napa River at River Park Blvd.[5]	89	6.8	82*	2.7	NS
Suisun Bay off Chipps Island (508)	100	0.0	96	2.6	NS
Montezuma Slough at Nurse Slough (609)	95	2.8	98	2.5	NS
Carquinez Strait, West of Benicia army dock (405)[5]	85	6.5	89*	4.2	NS
Grizzly Bay at Dolphin (602)[4]	90	7.1	100	0.0	NS
Field Dup.: Rough and Ready DWR station, Stockton	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.045	0.008	0.040***	0.003	NS
DIEPAMHR + organic matter	0.065	0.009	0.078	0.001	NS
Low EC Control @ 139.6 uS/cm + organic matter	0.082	0.013	0.085	0.005	NS
High EC Control @ 13,550 uS/cm + organic matter	0.080	0.005	0.075	0.005	NS
High EC Control @ 21,150 uS/cm + organic matter	0.062	0.007	0.052***	0.002	NS
Rough and Ready DWR station, Stockton	0.103	0.008	0.102	0.007	NS
Suisun Slough at Rush Ranch	0.088	0.007	0.099	0.006	NS
Sacramento River at Hood DWR Station[3]	0.080	0.003	0.066*	0.007	NS
Napa River at River Park Blvd.[5,6]	0.028**	0.005	0.034*	0.006	NS
Suisun Bay off Chipps Island (508)	0.082	0.003	0.088	0.007	NS
Montezuma Slough at Nurse Slough (609)	0.110	0.010	0.083	0.006	NS

Carquinez Strait, West of Benicia army dock (405)[5]	0.061	0.004	0.053	0.008	NS
Grizzly Bay at Dolphin (602)[4]	0.094	0.007	0.085	0.016	NS
Field Dup.: Rough and Ready DWR station, Stockton	0.125	0.007	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 13,550 uS/cm.
5. These high conductivity samples were compared to the High EC Control @ 21,150 uS/cm.
6. The Napa River sample showed significantly lower weight compared to the High EC Control @ 21,150 uS/cm, but not compared to the DIEPAMHR without organic matter.

Table B 26-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/17/2008-6/18/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Rough and Ready DWR station, Stockton	739	23.0	7.27	8.2	16.1	0.10	0.001
Suisun Slough at Rush Ranch	9250	16.7	7.23	5.1	45.0	0.14	0.001
Sacramento River at Hood DWR Station	163	21.4	7.15	7.2	12.3	0.33	0.002
Napa River at River Park Blvd.	20740	21.1	7.61	6.0	27.5	0.12	0.001
Suisun Bay off Chipps Island (508)	4542	19.8	7.60	10.3	19.1	0.06	0.001
Montezuma Slough at Nurse Slough (609)	9090	21.3	7.30	9.7	28.4	0.04	0.000
Carquinez Strait, West of Benicia army dock (405)	20420	20.1	7.50	10.2	42.9	0.07	0.001
Grizzly Bay at Dolphin (602)	12850	20.7	7.80	10.3	24.7	0.05	0.001
Field Dup.: Rough and Ready DWR station, Stockton	739	23.0	7.27	8.2	15.7	0.01	0.000

Table B 26-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/19/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/17/08 - 6/18/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	359	22.7	23.8	7.4	8.0	7.65	8.18	104	60	-
DIEPAMHR + organic matter	370	22.7	24.5	7.3	8.0	7.61	8.25	104	60	-
Low EC Control @ 139.6 uS/cm + organic matter	165	22.7	24.7	7.3	8.6	7.38	7.97	44	18	-
High EC Control @ 13,550 uS/cm + organic matter	13515	22.7	24.8	7.2	8.5	7.56	7.96	1640	78	-
High EC Control @ 21,150 uS/cm + organic matter	21160	22.7	24.5	6.9	7.8	7.56	8.06	2480	90	-
Rough and Ready DWR station, Stockton	609	22.7	24.2	7.3	8.5	7.82	8.00	132	86	0.004
Suisun Slough at Rush Ranch	9080	22.6	24.1	7.2	8.5	7.79	8.15	1400	154	0.003
Sacramento River at Hood DWR Station	171	22.6	24.3	7.1	8.6	7.48	7.90	48	48	0.013
Napa River at River Park Blvd.	20455	22.8	24.5	6.4	7.9	7.80	7.90	3120	148	0.003
Suisun Bay off Chipps Island (508)	4524	22.7	24.4	7.2	8.6	7.69	8.01	528	80	0.002
Montezuma Slough at Nurse Slough (609)	8820	22.7	24.3	7.2	8.3	7.77	7.96	1160	114	0.001
Carquinez Strait, West of Benicia army dock (405)	20140	22.6	24.1	6.8	8.0	7.64	7.85	1960	98	0.002

Grizzly Bay at Dolphin (602)	12600	22.5	24.3	7.2	8.3	7.63	7.90	1640	90	0.001
Field Dup.: Rough and Ready DWR station, Stockton	628	22.6	24.4	7.1	8.4	7.81	8.10	140	84	0.001
DIEPAMHR + 25 ppb PBO	381	22.7	23.8	7.2	8.6	7.66	8.22	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	395	22.6	24.6	7.3	8.4	7.65	8.19	-	-	-
Low EC Control @ 139.6 uS/cm + organic matter + 25 ppb PBO	187	22.6	24.5	7.4	8.5	7.23	8.04	-	-	-
High EC Control @ 13,550 uS/cm + organic matter + 25 ppb PBO	13390	22.6	24.6	7.1	8.1	7.55	7.98	-	-	-
High EC Control @ 21,150 uS/cm + organic matter + 25 ppb PBO	20890	22.7	24.8	7.1	8.0	7.58	8.06	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	629	22.6	23.9	7.3	8.7	7.77	8.03	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	9225	22.6	23.9	7.1	8.2	7.80	8.12	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	187.05	22.7	24.0	7.2	8.4	7.51	7.96	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	20330	22.7	24.0	6.8	7.7	7.77	7.93	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	4462	22.7	23.9	7.3	8.6	7.69	8.02	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	9030	23.0	24.4	7.2	8.4	7.80	7.96	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	20100	22.6	24.3	6.9	8.1	7.64	7.92	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	12575	23.8	24.2	7.3	8.7	7.64	7.97	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 27-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/20/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/19/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	87	5.1	95	5.0	NS
DIEPAMHR + organic matter	86	5.4	82	4.6	NS
Low EC Control @ 209 uS+ organic matter	86	7.0	83	7.5	NS
Upper Cache Slough at mouth of Ulatis Creek	94	5.6	95	2.9	NS
Sacramento R. Deep Water Channel, Light 55	95	5.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	92	2.6	98	2.5	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	95	2.9	95	2.9	NS
Old River, western arm at railroad bridge (902)	95	2.9	90	4.6	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.073	0.004	0.060*	0.005	NS
DIEPAMHR + organic matter	0.088	0.009	0.083	0.007	NS
Low EC Control @ 209 uS + organic matter	0.089	0.012	0.089	0.025	NS
Upper Cache Slough at mouth of Ulatis Creek	0.125	0.009	0.101	0.007	NS
Sacramento R. Deep Water Channel, Light 55	0.129	0.008	0.140	0.019	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.124	0.012	0.132	0.006	NS

San Joaquin River at Potato Slough (815)	0.131	0.011	0.126	0.009	NS
Sacramento River at tip of Grand Island (711)[3]	0.106	0.005	0.142	0.017	NS
Old River, western arm at railroad bridge (902)	0.129	0.009	0.137	0.021	NS
Old River at mouth of Holland Cut (915)	0.157	0.010	0.113	0.011	S* (72%)

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 27-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/19/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	243	22.0	8.00	9.2	79.9	0.10	0.004
Sacramento R. Deep Water Channel, Light 55	291	22.9	7.50	8.9	41.2	0.05	0.001
Confluence of Lindsey Sl. And Cache Sl.	214	21.4	7.80	9.3	49.6	0.10	0.003
San Joaquin River at Potato Slough (815)	244	22.6	7.60	8.8	12.0	0.10	0.002
Sacramento River at tip of Grand Island (711)	146	22.8	7.50	8.5	16.0	0.58	0.008
Old River, western arm at railroad bridge (902)	313	23.5	7.70	8.0	15.8	0.03	0.001
Old River at mouth of Holland Cut (915)	351	24.3	7.60	8.3	11.6	0.03	0.001

Table B 27-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/20/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/19/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			

DIEPAMHR	382	22.1	24.5	7.0	8.2	7.57	8.09	104	60	-
DIEPAMHR + organic matter	344	22.1	24.3	7.3	8.2	7.51	8.08	104	60	-
Low EC Control + organic matter	240	22.0	24.8	7.0	8.6	7.52	7.98	56	36	-
Upper Cache Slough at mouth of Ulatis Creek	230	22.0	24.6	7.4	8.6	7.73	8.10	80	80	0.006
Sacramento R. Deep Water Channel, Light 55	296	22.0	24.7	7.1	8.4	7.91	8.06	92	86	0.003
Confluence of Lindsey Sl. And Cache Sl.	207	22.0	24.1	7.3	8.3	7.80	8.07	72	74	0.006
San Joaquin River at Potato Slough (815)	256	22.1	24.8	7.2	8.5	7.74	7.91	72	71	0.004
Sacramento River at tip of Grand Island (711)	164	22.0	24.7	6.9	8.1	7.65	7.76	200	53	0.016
Old River, western arm at railroad bridge (902)	346	22.1	24.7	7.5	8.5	7.81	8.08	92	74	0.001
Old River at mouth of Holland Cut (915)	396	22.1	24.7	7.3	8.2	7.81	8.13	88	166	0.002
DIEPAMHR + 25 ppb PBO	385	22.1	24.4	7.1	8.0	7.70	8.10	-	-	-
DIEPAMHR + organic matter + 25 ppb PBO	393	22.0	24.4	7.1	8.2	7.73	8.11	-	-	-
Low EC Control + organic matter + 25 ppb PBO	227	22.0	24.2	7.3	8.9	7.43	8.00	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	268	22.1	24.4	7.4	8.4	7.87	8.04	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	332	22.1	24.2	7.1	8.6	7.90	8.18	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	250	22.0	24.3	7.3	8.3	7.84	8.04	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	239	22.0	24.3	7.1	8.1	7.70	8.63	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	134	22.0	24.2	7.1	8.2	7.61	7.90	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	329	22.0	24.1	7.6	8.3	7.70	8.02	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	334	22.1	24.2	7.2	8.3	7.82	8.16	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 28-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 07/03/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/01/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	94	3.2	98	2.5	NS
DIEPAMHR + POM	98	2.5	98	2.5	NS
Low EC control @ 203.1 uS/cm + POM	93	4.8	95	3.1	NS
High EC control @ 24430 uS/cm + POM	95	2.9	90	5.8	NS
Rough and Ready, DWR Station, Stockton	95	3.1	100	0.0	NS
Suisun at Rush Ranch[4]	95	4.5	95	4.5	NS
Sacramento River at Hood DWR Station[3]	95	2.9	100	0.0	NS
Napa River, near River Park Blvd.[4]	98	2.5	85	8.7	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.072	0.007	0.051	0.010	NS
DIEPAMHR + POM	0.102	0.008	0.089	0.011	NS
Low EC control @ 203.1 uS/cm + POM	0.127	0.008	0.083	0.006	S (65%)***
High EC control @ 24430 uS/cm + POM	0.068**	0.003	0.061	0.012	NS
Rough and Ready, DWR Station, Stockton	0.130	0.012	0.135	0.008	NS
Suisun at Rush Ranch[4]	0.119	0.013	0.105	0.004	NS
Sacramento River at Hood DWR Station[3]	0.103	0.018	0.101	0.007	NS
Napa River, near River Park Blvd.[4]	0.060	0.006	0.056	0.007	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control.

Table B 28-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/01/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Rough and Ready DWR station, Stockton	695	24.4	7.37	7.9	16.6	0.08	0.001
Suisun at Rush Ranch	12860	17.2	7.08	5.9	77.1	0.16	0.000
Sacramento River at Hood DWR Station	215	22.1	7.26	7.5	19.5	0.54	0.004
Napa River, near River Park Blvd.	22970	21.6	7.23	5.4	24.8	0.08	0.000

Table B 28-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 07/03/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/01/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	349	23.1	24.7	7.1	8.2	7.61	8.11	100	56	-
DIEPAMHR + POM	345	23.0	24.6	6.9	8.0	7.56	8.10	100	56	-
Low EC control @ 203.1 uS/cm + POM	221	23.1	24.7	7.0	8.3	7.37	7.98	64	36	-
High EC control @ 24430 uS/cm + POM	23790	23.1	24.8	6.9	8.8	7.66	7.88	2840	90	-
Rough and Ready DWR station, Stockton	695	23.1	24.6	7.0	8.7	7.41	8.03	136	84	0.001
Suisun at Rush Ranch	10605	22.9	24.2	7.0	8.2	7.32	8.13	1640	136	0.001
Sacramento River at Hood DWR Station	188	22.9	24.8	6.6	8.4	7.33	7.82	56	62	0.006
Napa River, near River Park Blvd.	13484	23.3	24.5	6.4	8.0	7.49	7.97	2680	144	0.001
DIEPAMHR + 25 ppb PBO	601	23.4	25.3	6.6	8.2	7.60	7.99	-	-	-
DIEPAMHR + POM + 25 ppb PBO	352	22.2	23.4	6.9	8.2	7.63	7.99	-	-	-
Low EC control @ 203.1 uS/cm + POM + 25 ppb PBO	223	23.4	24.3	6.8	8.6	7.45	7.86	-	-	-
High EC control @ 24430 uS/cm + POM + 25 ppb PBO	23930	23.9	25.1	6.4	8.0	7.62	7.89	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	692	23.5	25.2	7.2	8.3	7.38	8.10	-	-	-
Suisun at Rush Ranch + 25 ppb PBO	10740	23.9	25.1	6.8	8.0	7.16	8.06	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	184	24.1	24.5	6.8	8.4	7.36	7.81	-	-	-
Napa River, near River Park Blvd. + 25 ppb PBO	13615	24.8	25.3	6.4	8.8	7.43	7.97	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 29-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/04/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/03/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	92	4.8	NS
DIEPAMHR + POM	95	2.9	98	2.5	NS
Low EC Control @ 159.2 uS/cm + POM	86	5.8	98	2.3	NS
High EC Control @ 16.17 mS/cm + POM	100	0.0	98	2.5	NS
High EC Control @ 21.02 mS/cm + POM	98	2.5	90	4.1	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	88	12.5	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS

Grizzly Bay at Dolphin (602)[4]	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	95	2.9	100	0.0	NS
Suisun Bay off Chipps Island (508)	98	2.3	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)[3]	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[5]	98	2.5	90	4.1	NS
Bottle Blank: DIEPAMHR	95	2.8	-	-	NA
Field dup: Old River, western arm at railroad bridge (902)	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.118	0.016	0.066	0.011	S (56%)*
DIEPAMHR + POM	0.106	0.004	0.091	0.009	NS
Low EC Control @ 159.2 uS/cm + POM	0.105	0.017	0.098	0.003	NS
High EC Control @ 16.17 mS/cm + POM	0.108	0.005	0.066	0.016	S (61%)*
High EC Control @ 21.02 mS/cm + POM	0.093*	0.003	0.059*	0.004	S (63%)***
Sacramento River at tip of Grand Island (711)[3]	0.080	0.006	0.028***	0.005	S (35%)***
Sacramento R. Deep Water Channel, Light 55	0.106	0.025	0.068	0.012	NS
Old River at mouth of Holland Cut (915)	0.107	0.022	0.090	0.005	NS
Grizzly Bay at Dolphin (602)[4]	0.103	0.005	0.048	0.014	S (46%)**
Montezuma Slough at Nurse Slough (609)	0.104	0.021	0.050*	0.012	NS
Suisun Bay off Chipps Island (508)	0.068**	0.008	0.076	0.022	NS
Old River, western arm at railroad bridge (902)	0.136	0.012	0.067	0.011	S (49%)**
San Joaquin River at Potato Slough (815)[3]	0.123	0.022	0.056**	0.011	S (46%)*
Carquinez Strait, West of Benicia army dock (405)[5]	0.062	0.019	0.053	0.008	NS
Bottle Blank: DIEPAMHR	0.052*	0.018	-	-	NA
Field dup: Old River, western arm at railroad bridge (902)	0.104	0.018	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. These low conductivity samples were compared to the Low EC Control.
4. These High conductivity samples were compared to the High EC Control @ 16.17 mS/cm.
5. These High conductivity samples were compared to the High EC Control @ 21.02 mS/cm.

Table B 29-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/03/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at tip of Grand Island (711)	-	-	-	-	13.7	0.17	-
Sacramento R. Deep Water Channel, Light 55	-	-	-	-	61.4	0.05	-
Old River at mouth of Holland Cut (915)	315	24.6	7.14	8.0	12.8	0.01	0.000

Grizzly Bay at Dolphin (602)	14760	20.4	7.76	9.3	130.7	0.13	0.002
Montezuma Slough at Nurse Slough (609)	9180	21.5	7.41	8.6	28.8	0.03	0.000
Suisun Bay off Chipps Island (508)	7580	19.9	7.49	9.3	35.0	0.04	0.000
Old River, western arm at railroad bridge (902)	293	23.3	7.10	8.2	16.4	0.04	0.000
San Joaquin River at Potato Slough (815)	218	22.7	7.41	8.6	11.4	0.06	0.001
Carquinez Strait, West of Benicia army dock (405)	20060	19.5	7.54	9.3	237.3	0.22	0.002
Bottle Blank: DIEPAMHR	-	-	-	-	0.3	0.00	-
Field dup: Old River, western arm at railroad bridge (902)	293	23.3	7.10	8.2	17.3	0.05	0.000

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	354	22.8	23.9	6.9	8.2	7.59	8.20	100	56	-
DIEPAMHR + POM	349	22.7	23.9	7.0	8.2	7.55	8.14	100	56	-
Low EC Control @ 159.2 uS/cm + POM	181	22.8	23.9	6.8	8.6	7.24	7.92	48	28	-
High EC Control @ 16.17 mS/cm + POM	15540	23.1	23.8	6.7	8.9	7.60	8.01	1960	84	-
High EC Control @ 21.02 mS/cm + POM	20310	22.9	23.8	6.2	8.4	7.63	8.01	3000	94	-
Sacramento River at tip of Grand Island (711)	181	23.1	24.1	6.3	8.4	7.53	7.94	64	62	0.007
Sacramento R. Deep Water Channel, Light 55	305	22.8	24.3	6.8	8.9	7.71	8.07	88	84	0.003
Old River at mouth of Holland Cut (915)	321	22.9	24.2	6.8	8.7	7.63	7.92	80	70	0.000
Grizzly Bay at Dolphin (602)	14460	23.1	24.1	6.7	8.5	7.64	7.84	2240	92	0.003
Montezuma Slough at Nurse Slough (609)	9110	23.1	24.3	6.8	8.3	7.77	7.92	1160	104	0.001
Suisun Bay off Chipps Island (508)	7650	23.1	24.3	6.8	8.4	7.55	7.91	960	86	0.001
Old River, western arm at railroad bridge (902)	295	23.0	24.1	6.9	8.5	7.68	8.03	76	66	0.002
San Joaquin River at Potato Slough (815)	224	23.1	24.2	7.0	8.8	7.63	7.95	72	66	0.003
Carquinez Strait, West of Benicia army dock (405)	18220	23.4	23.6	6.6	8.1	7.61	7.76	2720	98	0.004
Bottle Blank: DIEPAMHR	357	23.3	24.2	6.9	8.6	7.57	8.10	104	62	0.000
Field dup: Old River, western arm at railroad bridge (902)	309	23.4	24.5	6.7	8.5	7.60	7.91	72	70	0.002
DIEPAMHR + 25 ppb PBO	351	23.4	23.5	6.8	8.2	7.53	8.10	-	-	-
DIEPAMHR + POM + 25 ppb PBO	344	23.5	23.5	6.9	8.2	7.59	8.09	-	-	-
Low EC Control @ 159.2 uS/cm + POM + 25 ppb PBO	170	23.4	23.4	6.7	8.8	7.30	7.88	-	-	-
High EC Control @ 16.17 mS/cm + POM + 25 ppb PBO	15275	23.3	23.4	6.3	8.2	7.58	8.00	-	-	-
High EC Control @ 21.02 mS/cm + POM + 25 ppb PBO	20220	23.3	23.5	6.0	8.3	7.57	8.01	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	177	23.3	23.5	6.6	8.8	7.49	7.97	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	295	23.3	23.6	6.8	8.8	7.67	8.08	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	307	23.3	23.4	6.7	8.4	7.61	7.87	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	14335	23.2	23.7	6.1	8.3	7.40	7.87	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	8935	23.3	23.9	6.4	8.5	7.69	7.85	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	7545	23.2	23.7	6.5	8.9	7.49	7.92	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	310	23.4	23.7	6.9	8.7	7.61	7.93	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	224	23.3	24.2	6.7	8.9	7.57	7.91	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	18935	23.3	24.1	6.4	8.6	7.59	7.79	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 30-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/09/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/08/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	95	2.9	NS
DIEPAMHR + POM	100	0.0	92	2.6	S (92%)**
Low EC Control @ 179.5 uS/cm + POM	98	2.5	95	2.9	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	98	2.5	90	10.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.071	0.002	0.036*	0.002	S (51%)***
DIEPAMHR + POM	0.083	0.004	0.060	0.011	NS
Low EC Control @ 179.5 uS/cm + POM	0.085	0.008	0.049	0.008	S (58%)**
Confluence of Lindsey Sl. and Cache Sl.[3]	0.087	0.007	0.071	0.007	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.089	0.009	0.078	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC control @ 179.5 uS/cm.

Table B 30-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/09/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. and Cache Sl.	167	24.3	7.00	7.5	14.3	0.15	0.001
Upper Cache Slough at mouth of Ulatis Creek	197	24.7	7.76	9.3	40.2	0.05	0.001

Table B 30-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/09/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/09/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	365	21.9	24.1	7.3	8.3	7.86	8.13	100	56	-
DIEPAMHR + POM	362	22.2	24.5	7.3	8.1	7.80	8.12	100	56	-
Low EC Control @ 179.5 uS/cm + POM	190	21.9	24.5	7.3	8.1	7.55	7.97	48	30	-
Confluence of Lindsey Sl. and Cache Sl.	173	22.8	24.2	7.2	8.4	7.77	8.14	56	62	0.010
Upper Cache Slough at mouth of Ulatis Creek	198	22.1	23.9	7.4	8.7	7.88	8.20	64	70	0.004
DIEPAMHR + 25 ppb PBO	354	23.0	24.5	7.2	8.0	7.85	8.15	-	-	-
DIEPAMHR + POM + 25 ppb PBO	358	22.8	24.5	7.2	8.2	7.81	8.14	-	-	-
Low EC Control @ 179.5 uS/cm + POM + 25 ppb PBO	188	23.4	24.5	7.4	8.4	7.52	7.96	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	171	23.1	24.5	7.1	8.2	7.72	8.12	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	206	23.8	24.5	7.1	8.4	7.86	8.19	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 31-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/17/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/15/08 - 7/16/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
DIEPAMHR + POM	63*	3.4	80	9.0	NS
Low EC Control + POM	44*	14.0	66	16.0	NS
High EC Control @ 13.09 mS/cm + POM	100	0.0	83	14.4	NS
High EC Control @ 17.81 mS/cm + POM	100	0.0	78	9.8	NS
High EC Control @ 27.30 mS/cm + POM	87	6.2	19*	6.6	S*** (22%)
Suisun Slough at Rush Ranch[4]	100	0.0	98	2.5	NS
Rough and Ready DWR station, Stockton	98	2.5	98	2.3	NS
Sacramento River at Hood DWR Station[3]	98	2.5	92	2.7	NS
Napa River at River Park Blvd.[6]	90	6.7	42	15.0	S* (47%)
Carquinez Strait, West of Benicia army dock (405)[6]	93	4.8	91	3.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	90	4.1	NS
Grizzly Bay at Dolphin (602)[5]	95	3.1	76	9.2	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	85	6.5	NS
Trip Blank: DIEPAMHR	95	2.9	-	-	NA
Bottle Blank: DIEPAMHR	98	2.3	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.006	0.033	0.008	NS
DIEPAMHR + POM	0.067	0.020	0.051	0.003	NS
Low EC Control + POM	0.075	0.006	0.053	0.008	NS
High EC Control @ 13.09 mS/cm + POM	0.081	0.007	0.047	0.010	S* (58%)
High EC Control @ 17.81 mS/cm + POM	0.065	0.002	0.046	0.010	NS
High EC Control @ 27.30 mS/cm + POM	0.044	0.003	0.069	0.014	NS
Suisun Slough at Rush Ranch[4]	0.071	0.008	0.083	0.007	NS
Rough and Ready DWR station, Stockton	0.098	0.009	0.084	0.005	NS
Sacramento River at Hood DWR Station[3]	0.089	0.006	0.048	0.003	S*** (54%)
Napa River at River Park Blvd.[6]	0.034*	0.003	0.043	0.012	NS
Carquinez Strait, West of Benicia army dock (405)[6]	0.068	0.006	0.056	0.001	NS
Suisun Bay off Chipps Island (508)	0.089	0.011	0.061	0.006	NS
Grizzly Bay at Dolphin (602)[5]	0.065	0.005	0.051	0.007	NS
Montezuma Slough at Nurse Slough (609)[4]	0.093	0.007	0.047	0.008	S** (51%)
Trip Blank: DIEPAMHR	0.063	0.002	-	-	NA
Bottle Blank: DIEPAMHR	0.066	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. All comparisons were performed using USEPA standard single-concentration statistical protocols.

$P < 0.05$: *

$P < 0.01$: **

$P < 0.001$: ***

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 13.09 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 17.81 mS/cm.

6. This high conductivity sample was compared to the High EC Control @ 27.3 mS/cm.

Table B 31-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/15/08 - 7/16/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	11970	18.2	7.24	5.1	153.7	0.21	0.001
Rough and Ready DWR station, Stockton	776	25.7	6.92	8.1	17.2	0.10	0.000
Sacramento River at Hood DWR Station	292	22.9	7.08	7.4	13.3	0.51	0.003
Napa River at River Park Blvd.	25790	23.4	7.19	5.8	32.4	0.07	0.000
Carquinez Strait, West of Benicia army dock (405)	21810	20.2	7.75	8.3	43.1	0.12	0.002
Suisun Bay off Chipps Island (508)	6620	20.5	7.62	8.9	15.2	0.07	0.001
Grizzly Bay at Dolphin (602)	16870	19.5	7.63	8.6	305.7	0.24	0.003
Montezuma Slough at Nurse Slough (609)	10000	21.7	7.47	8.5	15.4	0.05	0.000
Trip Blank: DIEPAMHR	365	23.2	8.3	7.9	0.6	0.03	0.003

Table B 31-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/17/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/15/08 - 7/16/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	22.0	24.2	7.5	8.7	7.72	8.40	100	56	-
DIEPAMHR + POM	341	22.0	24.2	7.2	8.4	7.53	8.51	100	56	-
Low EC Control + POM	171	22.1	24.3	6.9	8.8	7.30	8.04	44	30	-
High EC Control @ 13.09 mS/cm + POM	12415	22.0	24.3	6.9	8.3	7.63	8.26	1440	80	-
High EC Control @ 17.81 mS/cm + POM	17120	22.0	24.2	6.9	8.2	7.59	8.33	1960	90	-
High EC Control @ 27.30 mS/cm + POM	26310	22.0	24.1	6.5	8.7	7.61	8.23	3040	98	-
Suisun Slough at Rush Ranch	11825	22.1	24.2	6.7	8.4	7.76	8.75	1480	144	0.002
Rough and Ready DWR station, Stockton	694	22.0	24.3	7.0	8.7	7.79	8.73	138	90	0.004
Sacramento River at Hood DWR Station	178	22.0	24.3	6.6	8.7	7.56	8.57	28	62	0.013
Napa River at River Park Blvd.	24500	22.1	24.2	6.5	8.0	7.70	8.66	3160	140	0.000
Carquinez Strait, West of Benicia army dock (405)	20610	22.1	24.3	6.7	8.3	7.59	8.39	2360	100	0.002
Suisun Bay off Chipps Island (508)	6320	22.0	24.2	6.9	8.6	7.69	8.60	680	72	0.003
Grizzly Bay at Dolphin (602)	15920	22.1	24.3	6.8	8.7	7.54	8.58	1800	94	0.003
Montezuma Slough at Nurse Slough (609)	9560	22.1	24.1	7.1	8.6	7.78	8.51	1640	98	0.001
Trip Blank: DIEPAMHR	376	22.1	24.1	7.7	8.7	7.80	8.55	104	62	0.001
Bottle Blank: DIEPAMHR	355	22.1	24.1	7.6	8.9	7.77	8.52	-	-	-
DIEPAMHR + 25 ppb PBO	353	22.1	24.1	7.2	8.6	7.69	8.41	-	-	-
DIEPAMHR + POM + 25 ppb PBO	350	22.1	24.1	6.9	8.7	7.53	8.62	-	-	-
Low EC Control + POM + 25 ppb PBO	186	22.1	24.1	6.9	8.9	7.27	8.22	-	-	-
High EC Control @ 13.09 mS/cm + POM + 25 ppb PBO	12540	22.2	24.4	6.8	8.7	7.63	8.36	-	-	-
High EC Control @ 17.81 mS/cm + POM + 25 ppb PBO	17085	22.2	24.4	6.8	8.4	7.60	8.30	-	-	-
High EC Control @ 27.30 mS/cm + POM + 25 ppb PBO	25100	22.1	24.3	6.8	8.3	7.66	8.54	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	11785	22.2	24.3	6.6	8.4	7.70	8.87	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	690	22.2	24.3	6.9	9.0	7.78	8.79	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	186	22.2	24.3	6.5	8.8	7.56	8.63	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	25695	22.3	24.2	6.5	8.2	7.69	8.56	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	20695	22.6	24.2	6.6	8.2	7.62	8.40	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6455	22.5	24.2	7.0	8.8	7.64	8.44	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16395	23.2	24.2	6.9	8.7	7.58	8.58	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	9710	22.8	24.2	7.1	8.8	7.76	8.55	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 32-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/18/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/17/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
DIEPAMHR + POM	92	2.7	98	2.5	NS
Low EC Control @ 158.6 uS/cm + POM	64**	6.8	77	8.5	NS
Sacramento River at tip of Grand Island (711)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	98	2.3	98	2.5	NS
San Joaquin River at Potato Slough (815)[3]	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	93	2.4	95	2.9	NS
Old River, western arm at railroad bridge (902)	98	2.5	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55[3]	100	0.0	98	2.5	NS
Trip Blank: DIEPAMHR	100	0.0	98	2.5	NS
Field Dup.: San Joaquin River at Potato Slough (815)[3]	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.031	0.009	0.065	0.013	NS
DIEPAMHR + POM	0.030	0.006	0.030	0.004	NS
Low EC Control @ 158.6 uS/cm + POM	0.035	0.009	0.034	0.006	NS
Sacramento River at tip of Grand Island (711)	0.050	0.012	0.051	0.005	NS
Old River at mouth of Holland Cut (915)	0.061	0.015	0.071	0.012	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.046	0.002	0.041	0.010	NS
San Joaquin River at Potato Slough (815)[3]	0.085	0.011	0.036	0.007	S** (42%)
Confluence of Lindsey Sl. And Cache Sl.[3]	0.059	0.010	0.031	0.013	NS
Old River, western arm at railroad bridge (902)	0.076	0.006	0.063	0.011	NS
Sacramento R. Deep Water Channel, Light 55[3]	0.042	0.004	0.062	0.004	S* (148%)
Trip Blank: DIEPAMHR	0.024	0.006	0.062	0.004	NS
Field Dup.: San Joaquin River at Potato Slough (815)[3]	0.087	0.002	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

Table B 32-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/17/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at tip of Grand Island (711)	156	23.0	7.62	7.9	13.7	0.24	0.005
Old River at mouth of Holland Cut (915)	365	24.7	7.67	7.5	11.1	0.04	0.001
Upper Cache Slough at mouth of Ulatis Creek	199	20.8	7.44	8.4	90.4	0.09	0.001
San Joaquin River at Potato Slough (815)	241	23.3	7.62	8.1	8.3	0.05	0.001
Confluence of Lindsey Sl. And Cache Sl.	185	21.2	7.77	8.7	56.1	0.13	0.003
Old River, western arm at railroad bridge (902)	437	23.7	7.57	7.9	12.6	0.04	0.001
Sacramento R. Deep Water Channel, Light 55	281	23.1	7.38	8.2	55.3	0.00	0.000
Trip Blank: DIEPAMHR	-	-	-	-	0.2	-	-
Field Dup.: San Joaquin River at Potato Slough (815)	241	23.3	7.62	8.1	9.1	0.06	0.001

Table B 32-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/18/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/17/07.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	22.4	23.8	7.2	8.4	7.78	8.14	100	56	-
DIEPAMHR + POM	330	22.4	23.4	7.1	8.3	7.66	8.15	100	56	-
Low EC Control @ 158.6 uS/cm + POM	155	22.4	23.8	7.1	8.5	7.40	8.02	40	30	-
Sacramento River at tip of Grand Island (711)	303	22.4	23.7	7.0	8.6	7.59	7.95	52	66	0.005
Old River at mouth of Holland Cut (915)	349	22.4	23.6	7.2	8.4	7.72	7.89	76	68	0.001
Upper Cache Slough at mouth of Ulatis Creek	191	22.4	23.5	7.2	8.5	7.72	8.03	72	74	0.002
San Joaquin River at Potato Slough (815)	232	22.4	23.6	7.1	8.6	7.74	7.97	60	66	0.002
Confluence of Lindsey Sl. And Cache Sl.	169	22.4	23.6	7.2	8.9	7.69	8.00	56	68	0.005
Old River, western arm at railroad bridge (902)	402	22.4	23.7	7.2	8.6	7.76	7.96	80	64	0.001
Sacramento R. Deep Water Channel, Light 55	334	22.4	23.6	7.4	8.4	7.76	8.11	104	66	0.000
Trip Blank: DIEPAMHR	233	22.4	23.6	7.3	8.7	7.74	8.00	64	62	0.002
Field Dup.: San Joaquin River at Potato Slough (815)	258	22.6	23.8	7.3	8.4	7.85	8.05	80	82	0.003
DIEPAMHR + 25 ppb PBO	332	22.4	23.6	7.5	8.4	7.77	8.14	-	-	-
DIEPAMHR + POM + 25 ppb PBO	330	22.4	23.5	7.0	8.4	7.56	8.14	-	-	-
Low EC Control @ 158.6 uS/cm + POM + 25 ppb PBO	156	22.4	23.7	6.9	8.4	7.29	7.99	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	148	22.4	23.6	6.8	8.7	7.60	7.94	-	-	-

Old River at mouth of Holland Cut (915) + 25 ppb PBO	344	22.3	23.7	7.1	8.6	7.72	7.92	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	190	22.5	23.7	7.2	8.8	7.82	8.04	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	232	22.5	23.8	7.0	8.8	7.69	7.96	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	172	22.4	23.6	7.3	8.6	7.74	8.08	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	418	22.7	23.9	7.2	8.6	7.73	7.92	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	258	22.6	23.7	7.2	8.5	7.84	8.01	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 33-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/31/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/29/08 - 7/30/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMH	100	0.0	100	0.0	NS
DIEPAMH + POM	90	4.1	97	3.1	NS
High EC Control @ 13.48 mS/cm + POM	100	0.0	98	2.5	NS
High EC Control @ 18.09 mS/cm + POM	100	0.0	97	2.8	NS
High EC Control @ 23.60 mS/cm + POM	98	2.5	84	6.6	NS
Suisun Slough at Rush Ranch [3]	98	2.5	100	0.0	NS
Rough and Ready DWR Station, Stockton	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	93	2.5	95	2.9	NS
Montezuma Slough at Nurse Slough (609)[3]	98	2.5	100	0.0	NS
Carquinez strait, West of Benicia army dock (405)[5]	83	3.6	61	20.9	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	95	2.9	94	5.6	NS
Field Dup.: Grizzly Bay at Dolphin (602)[4]	100	0.0	-	-	NA
Bottle Blank: DIEPAMHR	95	2.9	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMH	0.066	0.008	0.057	0.008	NS
DIEPAMH + POM	0.078	0.016	0.063	0.013	NS
High EC Control @ 13.48 mS/cm + POM	0.089	0.012	0.068	0.007	NS
High EC Control @ 18.09 mS/cm + POM	0.069	0.006	0.056	0.003	NS
High EC Control @ 23.60 mS/cm + POM	0.041*	0.005	0.026*	0.005	NS
Suisun Slough at Rush Ranch [3]	0.086	0.006	0.071	0.007	NS
Rough and Ready DWR Station, Stockton	0.109	0.011	0.106	0.005	NS
Sacramento River at Hood DWR Station	0.099	0.011	0.083	0.009	NS

Montezuma Slough at Nurse Slough (609)[3]	0.106	0.010	0.066	0.011	S (62%)*
Carquinez strait, West of Benicia army dock (405)[5]	0.043	0.006	0.064	0.019	NS
Suisun Bay off Chipps Island (508)	0.096	0.016	0.074	0.010	NS
Grizzly Bay at Dolphin (602)[4]	0.069	0.006	0.061	0.007	NS
Field Dup.: Grizzly Bay at Dolphin (602)[4]	0.061	0.005	-	-	NA
Bottle Blank: DIEPAMHR	0.070	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC Control @ 13.48 mS/cm.

4. These high conductivity samples were compared to the High EC Control @ 18.09 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 23.60 mS/cm.

Table B 33-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/29/08 - 7/30/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	178	23.3	7.86	7.3	11.5	0.43	0.014
Rough and Ready DWR Station, Stockton	718	25.4	7.56	7.6	16.0	0.06	0.001
Suisun Slough at Rush Ranch	13010	18.0	7.00	5.2	38.0	0.12	0.000
Suisun Bay off Chipps Island (508)	7190	21.5	6.80	8.3	10.1	0.03	0.000
Carquinez strait, West of Benicia army dock (405)	23070	19.8	6.43	8.1	28.6	0.08	0.000
Grizzly Bay at Dolphin (602)	18700	20.4	7.41	8.4	55.4	0.07	0.000
Field Dup.: Grizzly Bay at Dolphin (602)	18700	20.4	7.41	8.4	65.7	0.08	0.001
Montezuma Slough at Nurse Slough (609)	11460	21.5	6.51	8.2	17.3	0.02	0.000

Table B 33-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/31/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/29/08 - 7/30/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMH	336	22.7	23.7	7.4	8.1	7.82	8.11	100	60	-
DIEPAMH + POM	337	22.4	23.7	7.1	8.4	7.62	8.15	100	60	-
High EC Control @ 13.48 mS/cm + POM	12995	22.4	23.8	7.4	8.5	7.68	7.96	1520	78	-
High EC Control @ 18.09 mS/cm + POM	17430	22.4	23.7	7.1	8.5	7.73	7.99	2080	86	-
High EC Control @ 23.60 mS/cm + POM	22805	22.4	23.6	6.9	8.9	7.67	7.95	2720	94	-
Suisun Slough at Rush Ranch	12295	22.4	23.6	7.2	8.4	7.25	8.17	2440	146	0.001
Rough and Ready DWR Station, Stockton	708	22.4	23.7	7.5	8.5	7.88	8.31	144	92	0.002
Sacramento River at Hood DWR Station	179	22.4	23.7	7.1	8.4	7.76	8.12	60	66	0.026
Montezuma Slough at Nurse Slough (609)	10980	22.4	23.6	6.9	8.3	7.73	7.97	1320	108	0.000
Carquinez strait, West of Benicia army dock (405)	21975	22.4	23.6	7.0	8.2	7.73	7.83	2640	98	0.001
Suisun Bay off Chipps Island (508)	6555	22.4	23.7	7.1	8.4	7.72	7.94	760	76	0.001
Grizzly Bay at Dolphin (602)	17185	22.4	23.6	7.1	8.2	7.74	7.90	2000	92	0.002
Field Dup.: Grizzly Bay at Dolphin (602)	17420	22.4	23.6	7.1	8.1	7.74	7.93	2000	90	0.002
Bottle Blank: DIEPAMHR	392	22.4	23.6	7.5	8.5	7.86	8.16	100	60	0.000
DIEPAMH + 25 ppb PBO	360	22.4	23.0	6.6	8.2	7.78	8.14	-	-	-
DIEPAMH + POM + 25 ppb PBO	370	22.4	23.1	7.1	8.3	7.64	8.22	-	-	-
High EC Control @ 13.48 mS/cm + POM + 25 ppb PBO	12770	22.3	23.0	6.6	8.6	7.49	7.94	-	-	-
High EC Control @ 18.09 mS/cm + POM + 25 ppb PBO	17285	22.3	23.3	6.8	8.3	7.62	7.96	-	-	-
High EC Control @ 23.60 mS/cm + POM + 25 ppb PBO	22535	22.4	23.2	6.9	8.3	7.61	7.94	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12255	22.4	23.3	6.9	8.4	7.93	8.15	-	-	-
Rough and Ready DWR Station, Stockton + 25 ppb PBO	723	22.2	23.1	7.4	8.5	7.83	8.29	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	197	22.2	23.4	6.7	8.5	7.82	8.09	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	10845	22.2	23.1	6.9	8.5	7.74	8.01	-	-	-
Carquinez strait, West of Benicia army dock (405) + 25 ppb PBO	21725	22.2	23.1	6.5	8.3	7.64	7.88	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6500	22.3	23.0	6.8	8.4	7.66	7.92	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16900	22.3	23.3	7.2	8.5	7.73	7.90	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 34-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/01/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/31/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.8	100	0.0	NS
DIEPAMHR + POM	90	7.1	97	2.8	NS
Low EC Control + POM	92	5.3	90	4.1	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	95	3.1	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	98	2.5	100	0.0	NS
San Joaquin River at Potato Slough (815)[3]	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55[3]	98	2.5	95	2.9	NS
Old River at mouth of Holland Cut (915)	100	0.0	98	2.5	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Trip Blank: DIEPAMHR	100	0.0	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.038**	0.005	0.045	0.006	NS
DIEPAMHR + POM	0.072	0.006	0.062	0.012	NS
Low EC Control + POM	0.066	0.005	0.058	0.006	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.069	0.008	0.052	0.003	NS
Sacramento River at tip of Grand Island (711)[3]	0.061	0.005	0.064	0.003	NS
San Joaquin River at Potato Slough (815)[3]	0.088	0.009	0.071	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.079	0.011	0.067	0.004	NS
Sacramento R. Deep Water Channel, Light 55[3]	0.082	0.012	0.085	0.015	NS
Old River at mouth of Holland Cut (915)	0.089	0.009	0.058	0.007	S (65%)*
Old River, western arm at railroad bridge (902)	0.093	0.011	0.066	0.008	NS
Trip Blank: DIEPAMHR	0.047*	0.007	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 34-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/31/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. And Cache Sl.	227	20.9	6.80	9.1	55.3	0.14	0.000
Sacramento River at tip of Grand Island (711)	242	23.1	6.82	8.1	12.4	0.47	0.001
San Joaquin River at Potato Slough (815)	331	23.6	6.81	8.0	7.3	0.05	0.000
Upper Cache Slough at mouth of Ulatis Creek	200	20.3	6.76	8.3	78.9	0.08	0.000
Sacramento R. Deep Water Channel, Light 55	262	22.1	7.28	9.4	49.1	0.07	0.001
Old River at mouth of Holland Cut (915)	433	24.5	6.78	7.6	9.4	0.03	0.000
Old River, western arm at railroad bridge (902)	484	24.8	6.83	7.8	10.0	0.04	0.000
Trip Blank: DIEPAMHR	364	22.9	8.16	8.9	-	-	-

Table B 34-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 08/01/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 07/31/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	332	23.6	23.6	7.5	8.8	7.76	8.04	100	60	-
DIEPAMHR + POM	332	23.5	23.5	7.5	8.6	7.76	8.05	100	60	-
Low EC Control + POM	164	23.5	23.5	7.3	8.8	7.41	7.90	52	30	-
Confluence of Lindsey Sl. And Cache Sl.	173	23.6	23.6	7.5	8.8	7.83	8.00	68	76	0.005
Sacramento River at tip of Grand Island (711)	165	23.6	23.6	7.2	8.9	7.57	8.01	60	72	0.008
San Joaquin River at Potato Slough (815)	245	23.6	23.6	7.2	8.6	7.72	8.03	72	64	0.001
Upper Cache Slough at mouth of Ulatis Creek	196	23.7	23.7	7.2	8.9	7.78	7.99	72	78	0.002
Sacramento R. Deep Water Channel, Light 55	251	23.6	23.6	7.2	8.7	7.84	8.04	80	80	0.003
Old River at mouth of Holland Cut (915)	417	23.7	23.7	7.2	8.8	7.63	7.87	84	66	0.001
Old River, western arm at railroad bridge (902)	471	23.5	23.5	7.4	8.8	7.52	7.91	84	66	0.001
Trip Blank: DIEPAMHR	334	23.3	23.3	7.6	8.8	7.76	8.05	104	56	0.000
DIEPAMHR + 25 ppb PBO	335	23.3	23.3	8.5	8.5	8.07	8.07	-	-	-
DIEPAMHR + POM + 25 ppb PBO	334	23.1	23.1	8.8	8.8	8.05	8.05	-	-	-
Low EC Control + POM + 25 ppb PBO	165	23.0	23.0	8.9	8.9	7.83	7.83	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	173	23.0	23.0	8.9	8.9	7.85	7.85	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	167	22.9	22.9	8.6	8.6	7.59	7.59	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb	248	22.9	22.9	8.6	8.6	7.72	7.72	-	-	-

PBO										
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	191	22.9	22.9	8.8	8.8	7.81	7.81	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	246	22.8	22.8	8.8	8.8	7.93	7.93	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	410	22.8	22.8	8.5	8.5	7.66	7.66	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	463	22.7	22.7	8.4	8.4	7.65	7.65	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 35-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/14/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/12/08 - 8/13/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
DIEPAMHR + POM	90	4.1	83	12.0	NS
Low EC Control @ 179.9 uS/cm + POM	80	0.0	70*†	12.6	NA
High EC Control @ 15.09 mS/cm + POM	98	2.5	95	2.9	NS
High EC Control @ 20.27 mS/cm + POM	100	0.0	50*†	20.8	S (50%)*
Suisun Slough at Rush Ranch[4]	16*	6.5	0*	0.0	NS
Rough and Ready DWR station, Stockton	85	15.0	100	0.0	NS
Sacramento River at Hood DWR Station[3]	98	2.5	98	2.5	NS
Montezuma Slough at Nurse Slough (609)[4]	93	6.8	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	95	5.0	55*†	18.2	NS
Field Dup.: Suisun Bay off Chipps Island (508)	100	0.0	-	-	NA
Bottle Blank: DIEPAMHR	97	3.3	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.049	0.006	0.054	0.006	NS
DIEPAMHR + POM	0.068	0.005	0.056	0.000	NS
Low EC Control @ 179.9 uS/cm + POM	0.069	0.009	0.064	0.009	NA
High EC Control @ 15.09 mS/cm + POM	0.096	0.004	0.070	0.004	S (73%)**
High EC Control @ 20.27 mS/cm + POM	0.077	0.004	0.070	0.006	NS
Suisun Slough at Rush Ranch[4]	0.075	0.015	-	-	NA
Rough and Ready DWR station, Stockton	0.089	0.017	0.077	0.007	NS
Sacramento River at Hood DWR Station[3]	0.083	0.010	0.080	0.009	NS
Montezuma Slough at Nurse Slough (609)[4]	0.068	0.005	0.072	0.005	NS
Suisun Bay off Chipps Island (508)	0.087	0.011	0.079	0.012	NS
Grizzly Bay at Dolphin (602)[5]	0.058*	0.006	0.049*	0.006	NS
Field Dup.: Suisun Bay off Chipps Island (508)	0.083	0.003	-	-	NA
Bottle Blank: DIEPAMHR	0.072	0.003	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compare to the High EC Control @ 15.09 mS/cm.

5. This high conductivity sample was compare to the High EC Control @ 20.27 mS/cm.

†. These PBO-added samples showed lower survival compared to the DIEPAMHR + PBO control, but not compared to the PBO control with added POM.

Table B 35-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/12/08 - 8/13/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	14140	17.7	7.24	5.6	176.7	0.21	0.001
Rough and Ready DWR station, Stockton	697	25.4	7.64	5.8	13.1	0.07	0.002
Sacramento River at Hood DWR Station	180	23.7	7.54	7.1	9.0	0.39	0.006
Montezuma Slough at Nurse Slough (609)	12610	23.2	7.76	7.9	12.5	0.01	0.000
Suisun Bay off Chipps Island (508)	7220	21.5	7.89	8.6	6.8	0.02	0.001
Grizzly Bay at Dolphin (602)	19400	21.3	7.95	8.4	11.4	0.01	0.000
Field Dup.: Suisun Bay off Chipps Island (508)	7220	21.5	7.89	8.6	7.3	0.01	0.000

Table B 35-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/14/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/12/08 - 8/13/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	346	23.3	24.5	6.9	8.0	7.66	8.08	100	58	-
DIEPAMHR + POM	344	23.3	24.4	7.0	8.2	7.42	8.07	100	58	-
Low EC Control @ 179.9 uS/cm + POM	196	23.3	24.5	6.7	8.8	7.25	7.97	48	28	-
High EC Control @ 15.09 mS/cm + POM	14690	23.4	24.4	7.0	8.6	7.51	8.00	1720	72	-
High EC Control @ 20.27 mS/cm + POM	19710	23.3	24.4	7.0	8.6	7.60	8.00	2080	80	-
Suisun Slough at Rush Ranch	13740	23.9	24.4	6.8	8.5	7.44	8.06	1680	152	0.002
Rough and Ready DWR station, Stockton	719	23.2	24.5	6.7	8.6	7.73	8.02	140	94	0.002
Sacramento River at Hood DWR Station	203	23.3	24.5	6.7	8.6	7.63	7.76	60	68	0.011
Montezuma Slough at Nurse Slough (609)	12030	23.2	24.5	7.0	8.5	7.75	7.91	1360	98	0.000
Suisun Bay off Chipps Island (508)	7180	23.3	24.5	7.0	8.6	7.69	7.91	800	70	0.001
Grizzly Bay at Dolphin (602)	18715	23.4	24.5	6.8	8.6	7.65	7.82	2120	90	0.000
Field Dup.: Suisun Bay off Chipps Island (508)	7125	23.1	24.5	7.0	8.6	7.59	7.87	800	68	0.000

Bottle Blank: DIEPAMHR	367	23.2	24.5	7.0	8.4	7.77	8.36	104	54	0.000
DIEPAMHR + 25 ppb PBO	359	23.2	24.3	7.2	8.3	7.79	8.31	-	-	-
DIEPAMHR + POM + 25 ppb PBO	349	23.1	24.3	7.2	8.3	7.54	8.15	-	-	-
Low EC Control @ 179.9 uS/cm + POM + 25 ppb PBO	200	23.2	24.3	7.0	8.7	7.28	8.14	-	-	-
High EC Control @ 15.09 mS/cm + POM + 25 ppb PBO	14430	23.1	24.4	7.1	8.7	7.59	8.02	-	-	-
High EC Control @ 20.27 mS/cm + POM + 25 ppb PBO	19780	23.1	24.4	6.9	8.3	7.68	8.02	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	13850	24.4	24.4	7.2	7.2	7.47	7.47	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	702	23.3	24.4	7.0	8.5	7.88	8.01	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	187	23.2	24.4	6.8	8.5	7.65	8.02	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	12030	23.2	24.4	7.0	8.4	7.68	7.92	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	7255	23.3	24.4	6.9	8.9	7.65	7.84	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	18810	23.3	24.4	7.0	8.8	7.68	7.85	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 36-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/15/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/14/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
DIEPAMHR + POM	84*	5.8	87	7.1	NS
Low EC Control @ 177 uS/cm + POM	88	9.5	90	7.1	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	95	2.9	98	2.5	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	88	6.3	NS
San Joaquin River at Potato Slough (815)	98	2.3	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	92	2.7	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	85*	8.7	97	3.3	NS
Old River at mouth of Holland Cut (915)[4]	98	2.5	100	0.0	NA
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Trip Blank: DIEPAMHR[5]	85	15.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.065	0.006	0.083	0.021	NS
DIEPAMHR + POM	0.078	0.005	0.074	0.006	NS
Low EC Control @ 177 uS/cm + POM	0.085	0.009	0.056*	0.004	S* (66%)
Confluence of Lindsey Sl. and Cache Sl.[3]	0.079	0.007	0.075	0.005	NS
Sacramento River at tip of Grand Island (711)[3]	0.078	0.007	0.062	0.004	NS

San Joaquin River at Potato Slough (815)	0.090	0.012	0.074	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.078	0.011	0.075	0.003	NS
Sacramento R. Deep Water Channel, Light 55	0.085	0.011	0.074	0.012	NS
Old River at mouth of Holland Cut (915)[4]	0.099	0.005	0.072	0.006	NA
Old River, western arm at railroad bridge (902)	0.088	0.001	0.075	0.011	NS
Trip Blank: DIEPAMHR[5]	0.115	0.050	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

4. Two PBO-treated replicates of sample 915 were excluded due to early mortality and high inter-replicate variability of test animal performance indicative of contamination. The PBO treatment was not included in statistical analysis.

5. Two replicates of the trip blank were excluded due to early mortality and high inter-replicate variability of test animal performance indicative of contamination. This sample was not included in statistical analysis.

Table B 36-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/14/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. and Cache Sl.	185	22.6	7.96	8.3	31.9	0.15	0.006
Sacramento River at tip of Grand Island (711)	172	24.1	7.67	7.8	7.2	0.37	0.008
San Joaquin River at Potato Slough (815)	318	24.2	7.91	7.9	4.9	0.09	0.003
Upper Cache Slough at mouth of Ulatis Creek	198	21.9	8.12	8.3	48.8	0.07	0.004
Sacramento R. Deep Water Channel, Light 55	249	22.7	8.09	8.2	37.0	0.09	0.005
Old River at mouth of Holland Cut (915)	775	25.3	7.80	7.6	7.5	0.05	0.002
Old River, western arm at railroad bridge (902)	633	24.9	7.91	7.8	6.9	0.05	0.002
Trip Blank: DIEPAMHR	350	22.1	8.03	8.2	0.2	0.02	0.001

Table B 36-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/15/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/14/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	343	22.5	24.9	7.4	8.0	7.48	8.15	100	58	-
DIEPAMHR + POM	343	22.5	24.9	6.4	8.2	7.38	8.14	100	58	-
Low EC Control @ 177 uS/cm + POM	179	22.6	25.0	6.4	8.6	7.19	8.00	52	28	-
Confluence of Linsey Sl. And Cache Sl.	188	23.0	24.9	6.8	8.5	7.50	8.05	64	72	0.008

Sacramento River at tip of Grand Island (711)	173	22.6	24.9	5.7	8.6	7.32	8.04	60	68	0.020
San Joaquin River at Potato Slough (815)	314	23.2	24.9	7.0	8.5	7.52	8.04	76	68	0.005
Upper Cache Slough at mouth of Ulatis Creek	201	22.7	24.9	6.8	8.3	6.66	8.15	72	76	0.005
Sacramento R. Deep Water Channel, Light 55	243	23.3	24.9	6.9	8.3	7.60	8.17	80	80	0.006
Old River at mouth of Holland Cut (915)	546	22.8	25.0	6.5	8.4	7.51	7.98	96	68	0.002
Old River, western arm at railroad bridge (902)	619	23.2	24.9	7.0	8.4	7.54	8.04	104	66	0.003
Trip Blank: DIEPAMHR	344	24.9	24.9	6.8	8.3	7.48	8.13	104	58	0.001
DIEPAMHR + 25 ppb PBO	343	22.7	24.7	6.9	8.4	7.56	8.12	-	-	-
DIEPAMHR + POM + 25 ppb PBO	378	23.4	24.9	6.7	8.4	7.36	7.97	-	-	-
Low EC Control @ 177 uS/cm + POM + 25 ppb PBO	181	22.7	24.9	6.5	8.6	7.17	8.11	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	189	23.6	25.0	6.8	8.7	7.51	7.98	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	173	22.8	25.0	5.9	8.8	7.36	8.05	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	317	23.7	25.0	6.9	8.5	7.54	8.16	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	201	23.8	25.0	6.8	8.4	7.61	8.15	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	243	22.9	25.0	7.0	8.4	7.60	7.96	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	543	23.0	25.0	6.8	8.7	7.54	8.04	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	626	23.7	24.9	6.9	8.4	7.54	7.97	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 37-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/16/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/15/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	88	6.3	75	25.0	NS
DIEPAMHR + 1% nutrient add back	98	2.5	73	24.3	NS
High EC Control @ 13.5 uS + 1% nutrient add back	100	0.0	100	0.0	NS
Suisun Slough at Rush Ranch[3]	81	16.0	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.048	0.008	0.059	0.002	NS
DIEPAMHR + 1% nutrient add back	0.065	0.007	0.067	0.010	NS
High EC Control @ 13.5 uS + 1% nutrient add back	0.074	0.003	0.074	0.003	NS
Suisun Slough at Rush Ranch[3]	0.052	0.015	0.069	0.010	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This high conductivity sample was compared to the High EC Control.

Table B 37-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/15/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	13350	28.0	7.72	8.0	20.7	0.04	0.001

Table B 37-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/16/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/15/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	345	22.8	24.1	7.5	8.1	7.62	8.07	100	58	-
DIEPAMHR + 1% nutrient add back	344	22.9	24.3	7.2	8.2	7.55	8.02	100	58	-
High EC Control @ 13.5 uS + 1% nutrient add back	13000	22.9	23.9	7.2	8.5	7.55	7.92	1560	80	-
Suisun Slough at Rush Ranch	13015	22.9	24.2	7.2	8.9	7.56	8.07	1680	172	0.001
DIEPAMHR + 25 ppb PBO	343.9	23	23.5	7.6	8.1	7.64	8.08	-	-	-
DIEPAMHR + 25 ppb PBO + 1% nutrient add back	345.9	22.8	23.4	7.2	8.1	7.54	8.01	-	-	-
High EC Control @ 13.5 uS + 25 ppb PBO + 1% nutrient add back	12940	22.8	23.7	7.4	8.8	7.56	7.91	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12916	22.6	23.8	7.5	8.6	7.57	8.04	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 38-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/20/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/12/2008 - 8/14/2008.

Treatment	Survival (%)[1]	
	Unmanipulated	25 ppb PBO added

	mean	se	mean	se	vs Non-PBO[2]
DIEPAMH	92	2.8	97	2.8	NS
DIEPAMH + POM	90	4.1	95	2.8	NS
Low EC Control @ 179.9 uS + POM	85	6.5	100	0.0	NS
High EC Control @ 13.47 mS + POM	100	0.0	98	2.5	NS
High EC Control @ 20.27 mS + POM	92	4.8	98	2.5	NS
Rough and Ready DWR Station, Stockton	98	2.5	100	0.0	NS
Sacramento River at Hood DWR Station[3]	74	2.6	60*	9.1	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	95	2.9	NS
Suisun Bay off Chipps Island (508)	95	3.1	93	2.5	NS
Grizzly Bay at Dolphin (602)[5]	100	0.0	97	2.8	NS
Old River at mouth of Holland Cut (915)	100	0.0	80	16.8	NS
Sacramento River Deep Water Channel, Light 55	84	3.2	95	2.9	NS
Field Dup: Suisun Bay off Chipps Island (508)	100	0.0	-	-	NA
Contaminated glassware + DIEPAMH	77*	4.7	22*	9.3	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMH	0.026**	0.005	0.046	0.008	NS
DIEPAMH + POM	0.072	0.009	0.057	0.006	NS
Low EC Control @ 179.9 uS + POM	0.082	0.014	0.061	0.016	NS
High EC Control @ 13.47 mS + POM	0.074	0.004	0.052	0.011	NS
High EC Control @ 20.27 mS + POM	0.062	0.002	0.035*	0.005	S* (56%)
Rough and Ready DWR Station, Stockton	0.086	0.012	0.072	0.013	NS
Sacramento River at Hood DWR Station[3]	0.057	0.003	0.109	0.016	S* (191%)
Montezuma Slough at Nurse Slough (609)[4]	0.041**	0.005	0.054	0.001	NS
Suisun Bay off Chipps Island (508)	0.049	0.003	0.031*	0.006	S* (63%)
Grizzly Bay at Dolphin (602)[5]	0.042*	0.008	0.015	0.002	S* (36%)
Old River at mouth of Holland Cut (915)	0.091	0.007	0.076	0.006	NS
Sacramento River Deep Water Channel, Light 55	0.067	0.002	0.046	0.002	S*** (69%)
Field Dup: Suisun Bay off Chipps Island (508)	0.060†	0.003	-	-	NA
Contaminated glassware + DIEPAMH	0.071	0.003	0.032	0.010	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.1$

**: $P < 0.05$

***: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low EC sample was compared to the low EC Control at 179.9 uS/cm.

4. This high EC sample was compared to the high EC Control at 13.47 mS/cm.

5. This high EC sample was compared to the high EC Control at 20.27 mS/cm.

†. The field duplicate showed heavier weights compared to the original sample collected at site 508.

Table B 38-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/12/2008 - 8/14/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Rough and Ready DWR Station, Stockton	697	25.4	7.64	5.8	13.1	0.07	0.002
Sacramento River at Hood DWR Station	180	23.7	7.54	7.1	9.0	0.39	0.006
Montezuma Slough at Nurse Slough (609)	12610	23.2	7.76	7.9	12.5	0.01	0.000
Suisun Bay off Chipps Island (508)	7220	21.5	7.89	8.6	6.8	0.02	0.001
Grizzly Bay at Dolphin (602)	19400	21.3	7.95	8.4	11.4	0.01	0.000
Old River at mouth of Holland Cut (915)	775	25.3	7.8	7.6	7.5	0.05	0.002
Sacramento River Deep Water Channel, Light 55	249	22.7	8.09	8.2	37.0	0.09	0.005
Field Dup: Suisun Bay off Chipps Island (508)	7220	21.5	7.89	8.6	7.3	0.01	0.000

Table B 38-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/20/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/12/2008 - 8/14/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMH	348	22.8	24.6	7.1	8.1	7.67	8.09	100	58	-
DIEPAMH + POM	343	22.8	24.6	7.0	8.3	7.65	8.09	100	58	-
Low EC Control @ 179.9 uS/cm + POM	189	22.7	24.6	7.3	8.5	7.41	7.87	48	31	-
High EC Control @ 13.47 mS/cm + POM	13090	23.0	24.6	6.9	8.3	7.48	8.00	1320	77	-
High EC Control @ 20.27 mS/cm + POM	20090	23.2	24.6	6.8	8.2	7.48	7.97	1960	85	-
Rough and Ready DWR Station, Stockton	696	23.0	24.5	7.0	8.6	7.84	8.20	140	94	0.002
Sacramento River at Hood DWR Station	214	23.8	24.5	7.2	8.6	7.58	7.88	60	68	0.014
Montezuma Slough at Nurse Slough (609)	12410	23.9	24.6	7.1	8.7	7.63	8.00	1360	98	0.000
Suisun Bay off Chipps Island (508)	7500	23.5	24.8	7.1	8.7	7.67	7.93	800	70	0.001
Grizzly Bay at Dolphin (602)	18930	23.8	24.5	7.2	8.5	7.59	7.84	2120	90	0.000
Old River at mouth of Holland Cut (915)	624	23.5	24.6	7.4	8.5	7.72	8.01	96	68	0.002
Sacramento River Deep Water Channel, Light 55	284	23.6	24.5	7.2	8.6	7.73	8.08	80	80	0.005
Field Dup: Suisun Bay off Chipps Island (508)	7140	23.8	24.6	7.2	8.6	7.65	7.94	800	68	0.000
DIEPAMH + 25 ppb PBO	376	24.2	24.6	7.2	8.4	7.73	8.09	-	-	-
DIEPAMH + POM + 25 ppb PBO	355	24.0	24.2	7.2	8.3	7.66	8.07	-	-	-
Low EC Control @ 179.9 uS/cm + POM + 25 ppb PBO	218	24.2	24.3	7.0	8.8	7.45	7.84	-	-	-
High EC Control @ 13.47 mS/cm + POM + 25 ppb PBO	13370	23.6	24.3	7.5	8.4	7.63	7.97	-	-	-
High EC Control @ 20.27 mS/cm + POM + 25 ppb PBO	20240	24.2	24.4	7.4	8.2	7.58	8.27	-	-	-
Rough and Ready DWR Station, Stockton + 25 ppb PBO	697	24.3	24.4	7.3	8.7	7.94	8.23	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	234	24.4	24.4	6.8	8.7	7.64	7.97	-	-	-
Montezuma Slough at Nurse Slough + 25 ppb PBO	12420	24.0	24.5	7.2	8.3	7.70	7.98	-	-	-
Suisun Bay off Chipps Island + 25 ppb PBO	7575	24.4	24.5	7.0	8.6	7.59	7.90	-	-	-
Grizzly Bay at Dolphin + 25 ppb PBO	19130	24.0	24.4	7.0	8.2	7.50	7.85	-	-	-
Old River at mouth of Holland Cut + 25 ppb PBO	1330	22.3	24.4	7.2	8.6	7.69	8.06	-	-	-
Sacramento River Deep Water Channel, Light 55 + 25 ppb PBO	273	24.5	24.5	7.2	8.7	7.70	8.13	-	-	-

1: This Unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 39-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/28/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/26/08 - 8/27/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	80	13.5	76*	8.6	NS
DIEPAMHR + POM	80	3.9	88	5.7	NS
Low EC Control @194.4 uS/cm + POM	95	2.9	74*	3.4	S** (78%)
High EC Control @ 14.79 mS/cm + POM	100	0.0	98	2.5	NS
High EC Control @ 19.04 mS/cm + POM	100	0.0	94	5.6	NS
Sacramento River at Hood DWR Station[3,6]	72*	8.2	72	3.4	NS
Rough and Ready DWR station, Stockton	98	2.5	95	5.0	NS
Suisun Slough at Rush Ranch[4]	100	0.0	95	2.9	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)[4]	98	2.3	98	2.5	NS
Grizzly Bay at Dolphin (602)[5]	90	7.1	100	0.0	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	98	2.5	-	-	NA
Trip Blank	97	2.8	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.050	0.008	0.044	0.002	NS
DIEPAMHR + POM	0.052	0.009	0.070	0.010	NS
Low EC Control @194.4 uS/cm + POM	0.065	0.009	0.069	0.009	NS
High EC Control @ 14.79 mS/cm + POM	0.073	0.004	0.068	0.005	NS
High EC Control @ 19.04 mS/cm + POM	0.058	0.005	0.070	0.007	NS
Sacramento River at Hood DWR Station[3]	0.069	0.014	0.090	0.015	NS
Rough and Ready DWR station, Stockton	0.107	0.006	0.096	0.011	NS
Suisun Slough at Rush Ranch[4]	0.067	0.009	0.070	0.013	NS
Suisun Bay off Chipps Island (508)	0.078	0.009	0.092	0.003	NS
Montezuma Slough at Nurse Slough (609)[4]	0.082	0.009	0.084	0.003	NS
Grizzly Bay at Dolphin (602)[5]	0.066	0.005	0.078	0.003	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	0.072	0.005	-	-	NA
Trip Blank	0.045	0.006	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols. Both DIEPAMHR and DIEPAMHR + POM method control treatments showed 79.7% survival, below the test acceptability criterion of 80% survival.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @14.79 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 19.04 mS/cm.

6. The untreated Hood sample showed significantly lower survival compared to the Low EC Control, but not compared to the Normal EC Controls with or without added POM.

Table B 39-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/26/08 - 8/27/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	282	27.7	7.45	7.1	19.4	0.24	0.004
Rough and Ready DWR station, Stockton	845	29.8	7.58	6.3	13.4	0.06	0.002
Suisun Slough at Rush Ranch	14330	23.1	7.53	6.7	20.6	0.07	0.001
Suisun Bay off Chipps Island (508)	6490	22.2	7.80	8.2	7.3	0.01	0.000
Montezuma Slough at Nurse Slough (609)	13960	23.0	7.50	7.4	23.8	0.02	0.000
Grizzly Bay at Dolphin (602)	18280	21.8	7.71	8.0	16.7	0.05	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	13960	23.0	7.50	7.4	18.1	0.04	0.000
Trip Blank	350	21.9	8.00	8.0	0.2	0.00	0.000

Table B 39-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/28/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/26/08 - 8/27/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMH	344	22.6	24.4	7.2	8.3	7.61	8.14	104	60	-
DIEPAMH + POM	341	22.5	24.5	7.0	8.3	7.61	8.17	104	60	-
Low EC @194.4 uS/cm + POM	205	22.5	24.5	7.2	11.2	7.43	8.02	64	36	-
High EC @ 14.79 mS/cm + POM	14135	22.4	24.5	7.0	8.6	7.54	7.94	2400	83	-
High EC @ 19.04 mS/cm + POM	18390	22.5	24.5	5.2	8.0	7.63	8.01	1560	90	-
Sacramento River at Hood DWR Station	272	22.5	24.4	7.0	8.6	7.77	8.31	72	80	0.022
Rough and Ready DWR station, Stockton	746	22.6	24.5	7.2	8.5	7.94	8.01	160	98	0.003
Suisun Slough at Rush Ranch	13865	22.4	24.5	6.8	8.6	7.73	8.06	1680	168	0.001
Suisun Bay off Chipps Island (508)	6280	22.7	24.5	6.8	8.3	7.68	7.83	600	82	0.000
Montezuma Slough at Nurse Slough (609)	13485	22.5	24.4	6.9	8.0	7.67	7.90	1720	111	0.000
Grizzly Bay at Dolphin (602)	17605	22.5	24.5	7.0	8.6	7.63	7.77	1920	95	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	13665	22.5	24.5	7.2	8.2	7.69	7.89	1560	111	0.001
Trip Blank	420	22.5	24.5	7.2	8.6	7.70	8.18	104	62	0.000
DIEPAMH + 25 ppb PBO	348	22.4	24.5	7.0	8.4	7.66	8.22	-	-	-
DIEPAMH + POM + 25 ppb PBO	348	22.7	24.5	6.8	8.5	7.64	8.19	-	-	-
Low EC @194.4 uS/cm + POM + 25 ppb PBO	207	22.5	24.5	7.3	8.6	7.52	8.00	-	-	-
High EC @ 14.79 mS/cm + POM + 25 ppb PBO	14300	22.5	24.5	7.2	8.3	7.63	7.88	-	-	-
High EC @ 19.04 mS/cm + POM + 25 ppb PBO	18430	22.5	24.5	6.9	8.5	7.55	7.75	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	295	22.5	24.4	6.9	8.6	7.72	8.06	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	741	23.0	24.4	7.2	8.7	7.92	8.16	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	13845	22.7	24.5	7.0	8.3	7.69	8.08	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6385	22.8	24.5	6.9	8.6	7.64	7.85	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	13570	22.9	24.5	6.9	8.1	7.65	7.88	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	17665	23.2	24.5	7.1	8.4	7.60	7.80	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 40-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/29/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/28/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	84	3.1	94	6.3	NS
DIEPAMHR + POM	80	12.2	72	8.2	NS
Low EC Control @ 203.1 uS/cm + POM	91	6.0	81	10.8	NS
Confluence of Lindsey Sl. and Cache Sl.	83	4.0	74	9.4	NS
Sacramento River at tip of Grand Island (711)	81	3.9	75	10.2	NS
San Joaquin River at Potato Slough (815)	88	5.1	88	8.8	NS
Upper Cache Slough at mouth of Ulatis Creek	84	9.4	84	3.2	NS
Sacramento R. Deep Water Channel, Light 55	93	3.9	91	6.0	NS
Old River at mouth of Holland Cut (915)[3]	94	3.6	60*	14.1	S* (64%)
Old River, western arm at railroad bridge (902)[3]	97	3.1	28	20.7	S* (29%)

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.017***	0.007	0.028**	0.007	NS
DIEPAMHR + POM	0.066	0.005	0.060	0.003	NS
Low EC Control @ 203.1 uS/cm + POM	0.057	0.010	0.049	0.011	NS
Confluence of Lindsey Sl. and Cache Sl.	0.091	0.012	0.076	0.015	NS
Sacramento River at tip of Grand Island (711)	0.073	0.008	0.088	0.005	NS
San Joaquin River at Potato Slough (815)	0.083	0.010	0.090	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek	0.097	0.007	0.094	0.008	NS
Sacramento R. Deep Water Channel, Light 55	0.096	0.005	0.085	0.012	NS
Old River at mouth of Holland Cut (915)	0.089	0.008	0.042	0.011	S* (47%)
Old River, western arm at railroad bridge (902)[4]	0.092	0.005	0.028	0.008	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. Survival in sample 915 and 902 treated with PBO was reduced compared to the DIEPAMHR without POM, but not compared to the DIEPAMHR + POM.

4. Weight of 902 + PBO could not be examined statistically because only 2 replicates had surviving animals.

Table B 40-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/28/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. And Cache Sl.	209	25.0	7.46	8.2	40.8	0.08	0.001
Sacramento River at tip of Grand Island (711)	201	24.5	7.29	7.2	6.8	0.27	0.003
San Joaquin River at Potato Slough (815)	284	24.9	7.39	7.6	3.9	0.07	0.001
Upper Cache Slough at mouth of Ulatis Creek	287	22.8	7.92	8.4	53.1	0.06	0.002
Sacramento R. Deep Water Channel, Light 55	294	23.6	7.17	8.1	53.5	0.09	0.001
Old River at mouth of Holland Cut (915)	650	25.1	7.33	7.8	6.5	0.04	0.000
Old River, western arm at railroad bridge (902)	741	24.9	7.52	8.2	5.3	0.02	0.000

Table B 40-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/29/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/28/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMH	345	23.0	24.5	6.5	8.4	7.51	8.29	104	60	-
DIEPAMH + POM	352	23.8	24.5	6.4	8.3	7.48	8.27	104	60	-
Low EC Control @ 203.1 uS/cm + POM	225	24.2	24.5	6.8	8.8	7.33	8.28	58	39	-
Confluence of Lindsey Sl. and Cache Sl.	226	24.4	24.5	6.8	8.7	7.61	8.17	72	82	0.006
Sacramento River at tip of Grand Island (711)	217	24.5	24.6	6.5	8.7	7.56	7.91	72	82	0.011
San Joaquin River at Potato Slough (815)	321	24.6	24.6	6.8	8.7	7.59	8.03	76	82	0.004
Upper Cache Slough at mouth of Ulatis Creek	244	24.5	24.6	6.7	8.5	7.68	8.10	76	88	0.004
Sacramento R. Deep Water Channel, Light 55	320	24.7	24.7	7.0	8.6	7.67	8.27	84	90	0.008
Old River at mouth of Holland Cut (915)	656	24.6	24.9	6.7	8.8	7.59	8.02	104	72	0.002
Old River, western arm at railroad bridge (902)	744	24.6	25.1	6.9	8.7	7.57	8.08	112	86	0.001
DIEPAMH + 25 ppb PBO	365	24.8	25.1	6.7	8.5	7.52	8.25	-	-	-
DIEPAMH + POM + 25 ppb PBO	371	24.7	25.0	6.8	8.4	7.46	8.25	-	-	-
Low EC Control @ 203.1 uS/cm + POM + 25 ppb PBO	232	24.7	25.2	6.6	8.9	7.33	8.17	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	242	24.5	25.2	6.8	8.6	7.62	8.13	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	232	24.7	25.2	6.9	8.9	7.55	7.92	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	322	24.8	25.1	6.9	8.7	7.59	8.00	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25	262	24.8	25.0	7.2	8.9	7.60	8.08	-	-	-

ppb PBO										
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	322	24.7	25.1	6.8	8.8	7.69	8.17	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	670	24.8	25.2	6.9	8.7	7.61	8.04	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	746	24.8	25.3	6.9	8.9	7.52	8.15	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 41-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/10/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/26/2008 - 8/27/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	95	2.9	NS
DIEPAMHR + POM	95	5.0	90	10.0	NS
Low EC @194.4 uS/cm + POM	90	4.1	100	0.0	NS
High EC @ 14.79 mS/cm + POM	100	0.0	71	14.1	NS
High EC @ 19.04 mS/cm + POM	100	0.0	73	2.5	S* (73%)
Sacramento River at Hood DWR Station[3]	100	0.0	82	17.9	NS
Rough and Ready DWR station, Stockton	100	0.0	97	2.8	NS
Suisun Slough at Rush Ranch[4]	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	89	7.9	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	100	0.0	90	4.1	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	100	0.0	-	-	NS
Trip Blank: DIEPAMHR	98	2.5	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.002	0.043	0.005	NS
DIEPAMHR + POM	0.048	0.004	0.038	0.005	NS
Low EC @194.4 uS/cm + POM	0.050	0.010	0.040	0.007	NS
High EC @ 14.79 mS/cm + POM	0.051	0.009	0.038	0.005	NS
High EC @ 19.04 mS/cm + POM	0.051	0.005	0.042	0.005	NS
Sacramento River at Hood DWR Station[3]	0.061	0.010	0.056	0.017	NS
Rough and Ready DWR station, Stockton	0.083	0.003	0.063	0.005	S* (76%)
Suisun Slough at Rush Ranch[4]	0.054	0.005	0.037	0.002	S* (69%)
Suisun Bay off Chipps Island (508)	0.063	0.003	0.049	0.004	S* (78%)

Montezuma Slough at Nurse Slough (609)[4]	0.055	0.005	0.053	0.005	NS
Grizzly Bay at Dolphin (602)[5]	0.054	0.004	0.045	0.007	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	0.061	0.008	-	-	NS
Trip Blank: DIEPAMHR	0.052	0.003	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 14.79 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 19.04 mS/cm.

Table B 41-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/26/08 - 8/27/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	282	27.7	7.45	7.1	19.4	0.24	0.004
Rough and Ready DWR station, Stockton	845	29.8	7.58	6.3	13.4	0.06	0.002
Suisun Slough at Rush Ranch	14330	23.1	7.53	6.7	20.6	0.07	0.001
Suisun Bay off Chipps Island (508)	6490	22.2	7.80	8.2	7.3	0.01	0.000
Montezuma Slough at Nurse Slough (609)	13440	23.0	7.50	7.4	23.8	0.02	0.000
Grizzly Bay at Dolphin (602)	18280	21.8	7.71	8.0	16.7	0.05	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	13440	23.0	7.50	7.4	23.8	0.04	0.000
Trip Blank: DIEPAMHR	350	21.9	8.00	8.0	0.2	0.00	0.000

Table B 41-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/10/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/26/08 - 8/27/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	23.1	23.8	7.3	8.3	7.69	8.00	104	56	-
DIEPAMHR + POM	357	22.7	23.8	7.2	8.3	7.61	8.13	104	56	-
Low EC @194.4 uS/cm + POM	205	23.5	23.7	7.3	8.8	7.41	7.93	64	36	-
High EC @ 14.79 mS/cm + POM	14475	23.0	23.8	7.2	8.8	7.65	8.03	2400	83	-
High EC @ 19.04 mS/cm + POM	18050	23.3	23.8	7.0	8.9	7.68	8.02	1560	90	-
Sacramento River at Hood DWR Station	200	24.0	24.0	6.9	8.8	7.72	8.12	72	80	0.015
Rough and Ready DWR station, Stockton	862	23.1	24.0	7.0	8.9	7.92	8.14	160	98	0.003
Suisun Slough at Rush Ranch	13415	23.4	24.0	7.0	8.7	7.89	8.14	1680	168	0.002
Suisun Bay off Chipps Island (508)	6120	23.7	23.9	7.2	8.9	7.69	7.97	600	82	0.000
Montezuma Slough at Nurse Slough (609)	12720	23.5	24.0	7.0	8.3	7.72	8.00	1720	111	0.001
Grizzly Bay at Dolphin (602)	17185	23.9	24.9	6.9	8.3	7.68	7.82	1920	95	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	13095	23.7	24.0	6.7	8.6	7.77	7.90	1560	111	0.001
Trip Blank: DIEPAMHR	649	23.8	24.0	7.1	8.9	7.69	8.14	104	62	0.000
DIEPAMHR + 25 ppb PBO	387	23.4	23.7	7.2	8.2	7.66	8.13	-	-	-
DIEPAMHR + POM + 25 ppb PBO	438	23.3	25.3	7.0	8.2	7.65	8.12	-	-	-
Low EC @194.4 uS/cm + POM + 25 ppb PBO	242	23.3	23.9	7.1	8.6	7.50	7.92	-	-	-
High EC @ 14.79 mS/cm + POM + 25 ppb PBO	14330	23.3	23.9	7.0	8.5	7.53	8.01	-	-	-
High EC @ 19.04 mS/cm + POM + 25 ppb PBO	18265	23.1	23.8	7.1	8.9	7.65	8.07	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	192	23.3	24.4	6.5	8.6	7.73	8.87	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	740	23.2	24.1	7.1	8.6	7.89	8.25	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	13095	23.1	25.3	6.7	8.6	7.91	8.12	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6195	23.3	24.4	7.1	8.4	7.72	7.94	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	13110	23.2	24.1	6.8	8.4	7.77	7.92	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16995	23.2	24.5	7.3	8.4	7.63	7.89	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 42-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/11/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/09/2008 - 9/10/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	95	5.0	NS
DIEPAMHR + POM	90	4.1	95	3.1	NS
Low EC @ 200.7 uS/cm + POM	94	3.3	100	0.0	NS
High EC @ 15.94 mS/cm + POM	100	0.0	98	2.5	NS
High EC @ 21.87 mS/cm + POM	100	0.0	98	2.5	NS
Sacramento River at Hood DWR Station[3]	98	2.5	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch[4]	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	98	2.5	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	95	5.0	95	5.0	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	98	2.5	-	-	NS
Field Dup.: Rough and Ready DWR station, Stockton	100	0.0	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.006	0.073	0.009	S* (159%)
DIEPAMHR + POM	0.062	0.007	0.051	0.013	NS
Low EC @ 200.7 uS/cm + POM	0.047	0.004	0.054	0.006	NS
High EC @ 15.94 mS/cm + POM	0.046	0.002	0.050	0.008	NS
High EC @ 21.87 mS/cm + POM	0.046*	0.005	0.022	0.002	S* (48%)
Sacramento River at Hood DWR Station[3]	0.096	0.010	0.079	0.010	NS
Rough and Ready DWR station, Stockton	0.118	0.012	0.093	0.008	NS
Suisun Slough at Rush Ranch[4]	0.053	0.003	0.059	0.005	NS
Suisun Bay off Chipps Island (508)	0.091	0.010	0.057	0.005	S* (63%)
Montezuma Slough at Nurse Slough (609)[4]	0.072	0.005	0.036	0.009	S* (50%)
Grizzly Bay at Dolphin (602)[5]	0.056	0.003	0.027	0.009	S* (48%)
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	0.071	0.004	-	-	NS
Field Dup.: Rough and Ready DWR station, Stockton	0.097	0.006	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 15.94 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 21.87 mS/cm.

Table B 42-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/09/08 - 9/10/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	202	22.4	7.52	7.5	9.7	0.23	0.003
Rough and Ready DWR station, Stockton	710	25.4	7.61	6.4	10.2	0.03	0.001
Suisun Slough at Rush Ranch	15130	24.3	7.54	7.3	28.6	0.08	0.001
Suisun Bay off Chipps Island (508)	8010	20.4	7.86	8.5	8.1	0.03	0.001
Montezuma Slough at Nurse Slough (609)	14850	21.3	7.70	7.7	16.6	0.02	0.000
Grizzly Bay at Dolphin (602)	20520	20.2	7.93	8.0	9.4	0.00	0.000
Field Dup.: Montezuma Slough at Nurse Slough (609)	14850	21.3	7.70	7.7	17.3	0.02	0.000
Field Dup.: Rough and Ready DWR station, Stockton	710	25.4	7.61	6.4	11.7	0.06	0.001

Table B 42-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/11/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/09/08 - 9/10/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	327	21.9	23.4	7.4	8.2	7.69	8.08	104	56	-
DIEPAMHR + POM	334	21.8	23.3	7.5	8.2	7.73	8.08	104	56	-
Low EC @ 200.7 uS/cm + POM	193	21.8	23.4	7.2	8.6	7.49	7.90	56	36	-
High EC @ 15.94 mS/cm + POM	15140	21.8	23.3	7.2	8.1	7.58	7.98	1800	82	-
High EC @ 21.87 mS/cm + POM	20545	21.8	23.4	7.1	7.9	7.68	7.98	2520	90	-
Sacramento River at Hood DWR Station	199	21.8	23.4	7.0	8.4	7.74	7.98	48	82	0.009
Rough and Ready DWR station, Stockton	682	21.8	23.3	7.3	8.3	7.87	8.08	156	106	0.001
Suisun Slough at Rush Ranch	14185	21.7	23.3	6.9	8.2	7.75	8.10	2000	176	0.002
Suisun Bay off Chipps Island (508)	7765	21.8	23.4	7.2	8.1	7.68	7.82	920	84	0.001
Montezuma Slough at Nurse Slough (609)	14215	21.8	23.4	7.1	8.2	7.69	7.88	1680	110	0.000
Grizzly Bay at Dolphin (602)	19380	21.8	23.5	7.3	8.2	7.65	7.82	2320	92	0.000
Field Dup.: Montezuma Slough at Nurse Slough (609)	14195	21.7	23.6	7.1	8.2	7.69	7.90	1720	112	0.000
Field Dup.: Rough and Ready DWR station, Stockton	696	21.7	23.3	7.4	8.2	7.83	8.12	152	106	0.002
DIEPAMHR + 25 ppb PBO	344	21.7	23.0	7.5	8.1	7.67	8.09	-	-	-
DIEPAMHR + POM + 25 ppb PBO	345	21.7	23.0	7.4	8.3	7.73	8.09	-	-	-
Low EC @ 200.7 uS/cm + POM + 25 ppb PBO	199	21.8	22.9	7.4	8.5	7.51	7.90	-	-	-
High EC @ 15.94 mS/cm + POM + 25 ppb PBO	14950	21.8	23.1	7.2	8.1	7.59	7.97	-	-	-
High EC @ 21.87 mS/cm + POM + 25 ppb PBO	20575	21.8	23.2	7.2	8.1	7.70	7.98	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	205	21.8	23.3	7.0	8.3	7.76	8.00	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	693	22.2	23.3	7.3	8.5	7.87	8.07	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	14190	22.0	23.7	7.1	8.2	7.73	8.12	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	7770	22.0	23.6	7.3	8.2	7.70	7.87	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	14230	22.1	23.6	7.1	8.3	7.74	7.93	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	19455	22.6	23.6	7.3	8.2	7.65	7.80	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 43-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/12/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/11/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	87	4.7	NS
Low EC Control @ 209.7 uS/cm	95	2.9	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	98	2.5	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	98	2.5	95	4.5	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Bottle Blank: DIEPAMHR	98	2.5	-	-	NA
Trip Blank: DIEPAMHR	95	2.8	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.065	0.006	0.077	0.003	NS
Low EC Control @ 209.7 uS/cm	0.041*	0.007	0.068	0.006	S* (166%)
Confluence of Lindsey Sl. and Cache Sl.[3]	0.106	0.011	0.123	0.006	NS
Sacramento River at tip of Grand Island (711)[3]	0.109	0.003	0.120	0.010	NS
San Joaquin River at Potato Slough (815)	0.145	0.007	0.128	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.121	0.006	0.118	0.004	NS
Sacramento R. Deep Water Channel, Light 55	0.125	0.006	0.120	0.015	NS
Old River at mouth of Holland Cut (915)	0.135	0.007	0.132	0.011	NS
Old River, western arm at railroad bridge (902)	0.153	0.010	0.127	0.007	NS
Bottle Blank: DIEPAMHR	0.080	0.001	-	-	NA
Trip Blank: DIEPAMHR	0.068	0.004	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

Table B 43-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/11/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. and Cache Sl.	225	20.5	7.74	8.2	42.7	0.11	0.002
Sacramento River at tip of Grand Island (711)	330	23.5	7.28	7.8	5.4	0.48	0.004
San Joaquin River at Potato Slough (815)	449	22.4	7.63	8.1	3.5	0.07	0.001
Upper Cache Slough at mouth of Ulatis Creek	345	22.0	7.70	8.9	50.3	0.05	0.001
Sacramento R. Deep Water Channel, Light 55	309	21.6	7.83	8.2	29.7	0.03	0.001
Old River at mouth of Holland Cut (915)	638	23.5	7.71	7.5	5.0	0.07	0.002
Old River, western arm at railroad bridge (902)	1093	23.8	7.36	8.4	5.4	0.03	0.000
Trip Blank: DIEPAMHR	345	22.3	8.11	8.2	0.6	0.01	0.001

Table B 43-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/12/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/11/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	340	21.9	23.2	7.2	8.2	7.73	8.14	104	56	-
Low EC Control @ 209.7 uS/cm	219	21.9	23.2	7.3	8.6	7.52	7.90	56	82	-
Confluence of Lindsey Sl. and Cache Sl.	217	21.9	23.3	7.0	8.9	7.81	8.11	72	86	0.006
Sacramento River at tip of Grand Island (711)	210	21.9	23.4	6.9	8.8	7.74	7.97	68	84	0.016
San Joaquin River at Potato Slough (815)	453	21.9	23.3	7.0	8.4	7.83	8.05	92	82	0.003
Upper Cache Slough at mouth of Ulatis Creek	235	21.8	23.2	7.2	8.3	7.93	8.15	80	90	0.003
Sacramento R. Deep Water Channel, Light 55	301	21.8	23.2	7.3	8.4	7.97	8.21	92	92	0.002
Old River at mouth of Holland Cut (915)	623	21.8	23.3	7.1	8.5	7.80	8.08	108	80	0.003
Old River, western arm at railroad bridge (902)	916	21.8	23.3	7.3	8.9	7.80	8.08	140	80	0.002
Bottle Blank: DIEPAMHR	352	21.9	23.4	7.1	8.6	7.80	8.15	104	60	0.001
Trip Blank: DIEPAMHR	353	21.8	23.3	7.4	8.5	7.77	8.15	108	62	0.001
DIEPAMHR + 25 ppb PBO	339	21.8	23.5	7.1	8.1	7.74	8.16	-	-	-
Low EC Control @ 209.7 uS/cm + 25 ppb PBO	215	21.9	23.5	7.3	8.2	7.52	7.91	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	217	22.1	23.5	7.2	8.4	7.81	8.16	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	198	22.0	23.5	7.1	8.4	7.74	7.99	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	448	22.2	23.5	7.1	8.3	7.86	8.07	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	220	22.4	23.6	7.3	8.3	7.95	8.17	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	297	22.8	23.4	7.1	8.4	7.98	8.21	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	616	22.6	23.4	7.1	8.3	7.82	8.01	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	926	22.7	23.5	7.2	8.4	7.81	8.04	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 44-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/25/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/23/08 - 9/24/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	80	20.0	NS
Low EC Control @ 172 µS/cm	97	2.8	100	0.0	NS
High EC Control @ 17.38 mS/cm	72*	20.9	65	22.5	NS
Sacramento River at Hood DWR Station[3]	100	0.0	95	3.1	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch[4]	98	2.5	73	11.9	NS
Suisun Bay off Chipps Island (508)	98	2.5	98	2.5	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	83	5.6	S* (83%)
Grizzly Bay at Dolphin (602)[4]	98	2.5	93	4.8	NS
Trip Blank: DIEPAMHR	95	3.1	-	-	NA
Field Dup.: Sacramento River at Hood DWR Station[3]	95	3.1	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.064	0.004	0.063	0.005	NS
Low EC Control @ 172 µS/cm	0.060	0.006	0.064	0.005	NS
High EC Control @ 17.38 mS/cm	0.055	0.003	0.043*	0.003	S* (78%)
Sacramento River at Hood DWR Station[3]	0.078	0.001	0.079	0.006	NS
Rough and Ready DWR station, Stockton	0.132	0.016	0.084	0.010	S* (64%)
Suisun Slough at Rush Ranch[4]	0.048	0.009	0.041	0.009	NS
Suisun Bay off Chipps Island (508)	0.086	0.009	0.076	0.001	NS
Montezuma Slough at Nurse Slough (609)[4]	0.046	0.005	0.062	0.011	NS
Grizzly Bay at Dolphin (602)[4]	0.061	0.009	0.068	0.006	NS
Trip Blank: DIEPAMHR	0.062	0.005	-	-	NA
Field Dup.: Sacramento River at Hood DWR Station[3]	0.079	0.008	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control.

Table B 44-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/23/08 - 9/24/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	172	20.8	7.25	7.6	6.7	0.29	0.002
Rough and Ready DWR station, Stockton	724	23.3	7.24	7.8	12.9	0.07	0.001
Suisun Slough at Rush Ranch	16070	20.9	7.31	7.8	15.2	0.06	0.000
Suisun Bay off Chipps Island (508)	5150	19.2	7.59	9.0	9.4	0.05	0.001
Montezuma Slough at Nurse Slough (609)	15420	19.9	7.33	7.9	14.9	0.01	0.000
Grizzly Bay at Dolphin (602)	16680	18.9	7.77	8.8	17.5	0.06	0.001
Trip Blank: DIEPAMHR	342	20.6	8.05	8.6	0.3	0.00	0.000
Field Dup.: Sacramento River at Hood DWR Station	172	20.8	7.25	7.6	6.8	0.27	0.002

Table B 44-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/25/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/23/08 - 9/24/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	336	21.8	24.0	7.4	8.0	7.49	8.00	104	56	-
Low EC Control @ 172 µS/cm	166	21.9	23.9	7.7	8.4	7.35	7.75	52	30	-
High EC Control @ 17.38 mS/cm	16395	21.8	23.8	7.5	8.7	7.66	7.93	1920	88	-
Sacramento River at Hood DWR Station	169	21.9	23.7	7.0	8.4	7.54	7.79	60	68	0.008
Rough and Ready DWR station, Stockton	696	21.9	24.0	7.1	8.6	7.87	8.04	152	106	0.003
Suisun Slough at Rush Ranch	15275	22.1	23.9	7.1	8.5	7.70	8.07	2320	186	0.001
Suisun Bay off Chipps Island (508)	4940	22.0	24.0	7.2	8.9	7.73	7.88	572	88	0.001
Montezuma Slough at Nurse Slough (609)	14725	22.4	24.0	6.9	8.6	7.71	7.88	1880	110	0.000
Grizzly Bay at Dolphin (602)	16370	22.8	23.8	7.1	8.3	7.67	7.77	2000	92	0.001
Trip Blank: DIEPAMHR	350	22.6	23.7	7.7	8.7	7.72	8.04	104	62	0.000
Field Dup.: Sacramento River at Hood DWR Station	174	22.7	24.0	7.2	8.6	7.62	7.94	60	68	0.009
DIEPAMHR + 25 ppb PBO	343	22.4	23.2	7.7	8.3	7.73	8.02	-	-	-
Low EC Control @ 172 µS + 25 ppb PBO	173	22.0	23.1	6.9	8.6	7.37	7.78	-	-	-
High EC Control @ 17.38 mS + 25 ppb PBO	16185	22.6	22.9	7.2	8.4	7.68	7.93	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	204	22.2	22.9	7.1	8.4	7.65	7.88	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	692	22.1	23.0	7.1	8.5	7.81	8.10	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	15280	22.2	22.9	7.0	8.2	7.71	8.05	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5030	22.7	23.3	7.2	8.4	7.71	7.88	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	14770	22.3	23.3	7.4	8.5	7.79	7.89	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16130	22.7	23.7	7.1	8.5	7.70	7.79	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 45-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 09/26/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 09/25/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	2.8	92	4.8	NS
Low EC Control @ 175 uS/cm	95	2.9	91	5.9	NS
Sacramento River at tip of Grand Island (711)[3]	87	3.1	95	2.9	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	95	5.0	95	2.9	NS
San Joaquin River at Potato Slough (815)	100	0.0	98	2.5	NS
Sacramento R. Deep Water Channel, Light 55	97	2.8	90	4.1	NS
Field Dup.: Old River at mouth of Holland Cut (915)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.043	0.009	0.031	0.007	NS
Low EC Control @ 175 uS/cm	0.046	0.002	0.034	0.012	NS
Sacramento River at tip of Grand Island (711)[3]	0.049	0.014	0.061	0.007	NS
Old River at mouth of Holland Cut (915)	0.077	0.004	0.078	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.067	0.009	0.092	0.018	NS
Old River, western arm at railroad bridge (902)	0.086	0.004	0.084	0.014	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.065	0.009	0.069	0.006	NS
San Joaquin River at Potato Slough (815)	0.051	0.006	0.058	0.005	NS
Sacramento R. Deep Water Channel, Light 55	0.076	0.006	0.068	0.005	NS
Field Dup.: Old River at mouth of Holland Cut (915)	0.077	0.008	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 45-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 09/25/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento River at tip of Grand Island (711)	176	21.2	7.29	7.9	4.0	0.43	0.003
Old River at mouth of Holland Cut (915)	704	21.5	7.51	8.6	7.3	0.03	0.000
Upper Cache Slough at mouth of Ulatis Creek	287	19.7	7.83	8.5	48.0	0.02	0.000
Old River, western arm at railroad bridge (902)	704	21.7	7.45	8.9	6.7	0.00	0.000
Confluence of Lindsey Sl. And Cache Sl.	220	20.1	7.56	8.4	37.1	0.07	0.001
San Joaquin River at Potato Slough (815)	294	21.1	7.43	8.4	4.5	0.06	0.001
Sacramento R. Deep Water Channel, Light 55	315	20.0	7.45	8.5	51.9	0.00	0.000
Field Dup. of Old River at mouth of Holland Cut (915)	704	21.5	7.51	8.6	7.1	0.01	0.000

Table B 45-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 09/26/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 09/25/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	360	22.0	24.1	7.2	8.3	7.55	8.15	104	56	-
Low EC Control @ 175 uS/cm	217	22.9	24.1	7.4	8.8	7.35	7.99	60	32	-
Sacramento River at tip of Grand Island (711)	201	22.0	23.5	7.0	8.7	7.61	7.89	60	68	0.015
Old River at mouth of Holland Cut (915)	685	21.9	23.7	7.3	8.8	7.68	8.03	116	80	0.001
Upper Cache Slough at mouth of Ulatis Creek	274	21.9	23.5	7.3	8.6	7.78	8.17	88	98	0.001
Old River, western arm at railroad bridge (902)	680	21.9	23.6	7.1	8.6	7.66	8.10	116	78	0.000
Confluence of Lindsey Sl. And Cache Sl.	232	21.9	23.9	7.4	8.6	7.74	8.11	100	90	0.004
San Joaquin River at Potato Slough (815)	302	22.0	23.9	7.1	8.6	7.67	8.08	64	78	0.003
Sacramento R. Deep Water Channel, Light 55	327	22.0	23.7	7.1	8.8	7.74	8.17	104	96	0.000
Field Dup. of Old River at mouth of Holland Cut (915)	679	21.8	23.8	7.5	8.7	7.68	8.08	116	82	0.001
DIEPAMHR + 25 ppb PBO	343	21.8	23.3	7.3	8.4	7.53	8.16	-	-	-
Low EC Control @ 175 uS/cm + 25 ppb PBO	194	21.9	23.3	7.4	8.6	7.38	7.96	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	191	21.9	23.9	7.0	8.7	7.60	7.97	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	677	21.9	23.8	7.3	8.8	7.70	8.10	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	271	21.9	23.8	7.3	8.6	7.83	8.14	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	684	21.9	23.7	7.2	8.6	7.69	8.11	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	235	22.0	23.7	7.3	8.6	7.78	8.14	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	304	22.0	23.5	7.3	8.7	7.70	8.10	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	328	22.1	24.2	7.1	8.6	7.72	8.20	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 46-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/9/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/7/08 - 10/8/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC Control @ 164 µS/cm	98	2.5	98	2.5	NS
High EC Control @ 18.42 mS/cm	100	0.0	77*	8.5	NS
Sacramento River at Hood DWR Station[3]	93	4.4	98	2.3	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Suisun Slough at Rush Ranch[4]	98	2.5	95	2.8	NS
Suisun Bay off Chipps Island (508)	100	0.0	95	5.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	95	2.9	86	10.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.080	0.012	0.053	0.005	NS
Low EC Control @ 164 µS/cm	0.041*	0.009	0.059	0.009	NS
High EC Control @ 18.42 mS/cm	0.010**	0.002	0.022**	0.004	S* (220%)
Sacramento River at Hood DWR Station[3]	0.022	0.005	0.050	0.006	S* (227%)
Rough and Ready DWR station, Stockton	0.046	0.015	0.075	0.008	NS
Suisun Slough at Rush Ranch[4]	0.037	0.005	0.040	0.006	NS
Suisun Bay off Chipps Island (508)	0.047*	0.008	0.048	0.005	NS
Montezuma Slough at Nurse Slough (609)	0.043*	0.012	0.022**	0.005	NS
Grizzly Bay at Dolphin (602)[4]	0.055	0.003	0.042	0.011	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control.

Table B 46-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/07/08 - 10/08/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	152	22.1	7.42	9.7	5.4	0.32	0.004
Rough and Ready DWR station, Stockton	730	25.0	7.77	9.2	7.0	0.08	0.002
Suisun Slough at Rush Ranch	16020	24.5	7.68	11.0	22.2	0.09	0.002
Suisun Bay off Chipps Island (508)	8060	21.1	7.85	9.2	6.9	0.07	0.002
Montezuma Slough at Nurse Slough (609)	9330	21.4	7.71	9.2	10.8	0.08	0.001
Grizzly Bay at Dolphin (602)	17520	20.3	7.86	9.8	10.1	0.07	0.001

Table B 46-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/09/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/07/08 - 10/08/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	338	21.5	23.5	7.4	8.4	7.06	8.04	108	60	-
Low EC Control @ 164 µS/cm	162	21.5	23.6	7.8	8.9	7.46	7.84	52	34	-
High EC Control @ 18.42 mS/cm	10934	21.5	23.8	7.4	8.2	7.78	7.90	2560	94	-
Sacramento River at Hood DWR Station	156	21.4	24.1	7.1	8.7	7.65	7.80	56	66	0.007
Rough and Ready DWR station, Stockton	706	21.5	24.0	7.3	8.4	7.83	8.19	160	116	0.002
Suisun Slough at Rush Ranch	15730	21.3	24.2	7.0	8.3	7.64	8.13	1960	176	0.001
Suisun Bay off Chipps Island (508)	7605	21.2	24.2	7.3	8.6	7.71	7.93	880	88	0.002
Montezuma Slough at Nurse Slough (609)	8755	20.9	24.2	7.4	8.5	7.75	7.88	1080	88	0.002
Grizzly Bay at Dolphin (602)	16035	20.5	24.1	7.2	8.2	7.76	8.11	2040	96	0.001
DIEPAMHR + 25 ppb PBO	363	20.9	23.2	7.7	8.5	7.83	8.11	-	-	-
Low EC Control @ 164 µS/cm + 25 ppb PBO	169	20.9	23.1	7.7	8.9	7.46	7.87	-	-	-
High EC Control @ 18.42 mS/cm + 25 ppb PBO	20790	20.8	23.3	7.3	8.1	7.75	7.92	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	155	20.7	23.6	7.5	8.4	7.60	7.83	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	699	20.6	23.4	7.4	8.6	7.84	8.14	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	15205	20.5	23.4	7.1	8.2	7.66	8.14	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	7550	20.9	23.8	7.2	8.4	7.84	7.90	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	8480	20.4	23.7	7.4	8.3	7.78	7.88	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16645	20.4	23.8	7.0	8.6	7.78	7.88	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 47-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/10/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/9/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
Low EC Control @ 175 µS/cm	95	5.0	93	2.5	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	98	2.3	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	78	19.3	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	100	0.0	NS
Field Dup.: Sacramento R. Deep Water Channel, Light 55	98	2.5	-	-	NA
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.[3]	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.040	0.004	0.037	0.007	NS
Low EC Control @ 175 µS/cm	0.034	0.005	0.037	0.004	NS
Sacramento River at tip of Grand Island (711)[3]	0.060	0.006	0.058	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.060	0.009	0.048	0.010	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.073	0.006	0.052	0.009	NS
San Joaquin River at Potato Slough (815)	0.060	0.008	0.068	0.009	NS
Sacramento R. Deep Water Channel, Light 55	0.076	0.011	0.069	0.005	NS
Field Dup.: Sacramento R. Deep Water Channel, Light 55	0.066	0.002	-	-	NA
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.[3]	0.072	0.006	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. These low conductivity samples were compared to the Low EC Control.

Table B 47-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/9/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at tip of Grand Island (711)	175	19.5	7.67	8.7	8.4	0.27	0.004
Upper Cache Slough at mouth of Ulatis Creek	276	18.5	7.75	9.2	40.6	0.05	0.001
Confluence of Lindsey Sl. And Cache Sl.	188	19.6	7.74	8.6	20.5	0.18	0.004
San Joaquin River at Potato Slough (815)	296	20.2	7.75	9.1	5.2	0.10	0.002
Sacramento R. Deep Water Channel, Light 55	265	19.7	7.83	8.8	32.4	0.06	0.001
Field Dup.: Sacramento R. Deep Water Channel, Light 55	265	19.7	7.83	8.8	32.8	0.08	0.002
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.	188	19.6	7.74	8.6	32.8	0.18	0.004

Table B 47-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/10/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/9/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	21.8	23.8	7.8	8.0	7.78	8.07	108	60	-
Low EC Control @ 175 µS/cm	174	21.9	23.6	7.6	8.5	7.52	7.91	52	32	-
Sacramento River at tip of Grand Island (711)	172	21.9	23.5	7.4	8.6	7.67	7.88	60	68	0.010
Upper Cache Slough at mouth of Ulatis Creek	278	22.0	23.8	7.3	8.4	7.95	8.12	96	106	0.003

Confluence of Lindsey Sl. And Cache Sl.	187	21.9	23.6	7.3	8.9	7.72	7.89	68	74	0.006
San Joaquin River at Potato Slough (815)	277	21.8	23.5	7.4	8.5	7.77	7.92	72	78	0.004
Sacramento R. Deep Water Channel, Light 55	261	22.0	23.8	7.1	8.8	7.82	8.06	84	84	0.003
Field Dup.: Sacramento R. Deep Water Channel, Light 55	250	21.9	23.6	7.4	8.6	7.78	8.04	80	86	0.004
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.	185	22.4	23.8	7.3	8.8	7.67	7.89	64	74	-
DIEPAMHR + 25 ppb PBO	337	22.0	22.7	7.6	8.3	7.74	8.06	-	-	-
Low EC Control @ 175 µS/cm + 25 ppb PBO	177	22.0	22.7	7.7	8.7	7.56	7.89	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	173	22.0	22.8	7.5	8.6	7.68	7.94	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	274	21.9	22.6	7.6	8.4	7.94	8.13	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	186	22.0	22.7	7.2	8.4	7.75	7.89	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	278	22.0	22.6	7.4	8.6	7.75	8.00	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	256	22.1	22.7	7.6	8.5	7.80	8.01	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 48-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/14/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/14/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	95	5.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	93	2.4	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.007	0.025	0.007	S* (47%)
Old River, western arm at railroad bridge (902)	0.077	0.006	0.052	0.005	S* (67%)
Old River at mouth of Holland Cut (915)	0.072	0.002	0.058	0.012	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 48-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/14/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Old River, western arm at railroad bridge (902)	527	16.5	7.87	9.7	6.9	0.03	0.001
Old River at mouth of Holland Cut (915)	543	16.4	7.95	9.7	7.2	0.02	0.000

Table B 48-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/14/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/14/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	22.7	24.0	7.6	8.3	7.72	8.06	108	60	-
Old River, western arm at railroad bridge (902)	521	23.1	23.7	7.5	8.6	7.79	7.91	100	76	0.001
Old River at mouth of Holland Cut (915)	533	22.8	24.1	7.5	8.5	7.79	7.97	96	78	0.001
DIEPAMHR + 25 ppb PBO	337	23.6	24.2	7.5	8.3	7.71	8.03	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	514	23.2	24.0	7.3	8.6	7.73	7.91	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	530	23.0	24.1	7.5	8.8	7.79	7.94	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 49-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/23/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/21/08 - 10/22/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	79	9.4	S* (79%)
Low EC Control @ 160.3 uS/cm	100	0.0	93	4.5	NS
High EC Control @ 16.26 mS/cm	100	0.0	69	14.6	S* (69%)
High EC Control @ 21.56 mS/cm	98	2.5	25	25.0	NS
Sacramento River at Hood DWR Station[3]	100	0.0	98	2.5	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch[4]	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	84	15.6	100	0.0	NS
Field Dup: Suisun Slough at Rush Ranch	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.064	0.006	0.013	0.003	S*** (20%)
Low EC Control @ 160.3 uS/cm	0.087	0.005	0.032	0.007	S*** (37%)
High EC Control @ 16.26 mS/cm	0.059	0.005	0.035	0.005	S** (59%)
High EC Control @ 21.56 mS/cm	0.040*	0.006	0.051	-	NA
Sacramento River at Hood DWR Station[3]	0.091	0.005	0.058	0.011	S* (63%)
Rough and Ready DWR station, Stockton	0.122	0.011	0.113	0.007	NS
Suisun Slough at Rush Ranch[4]	0.073	0.008	0.072	0.011	NS
Suisun Bay off Chipps Island (508)	0.098	0.008	0.069	0.003	S* (70%)
Montezuma Slough at Nurse Slough (609)	0.089	0.009	0.074	0.006	NS
Grizzly Bay at Dolphin (602)[5]	0.065	0.011	0.051	0.005	NS
Field Dup: Suisun Slough at Rush Ranch	0.065	0.008	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control @ 160.3 uS/cm

4. This high conductivity sample was compared to the High EC Control @ 16.26 mS/cm

5. This high conductivity sample was compared to the High EC Control @ 21.56 mS/cm

Table B 49-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/21/08 - 10/22/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	157	18.2	6.80	11.2	4.5	0.37	0.001
Rough and Ready DWR station, Stockton	690	19.0	7.49	8.7	6.6	0.05	0.001
Suisun Slough at Rush Ranch	14890	16.5	7.52	8.3	33.8	0.11	0.001
Suisun Bay off Chipps Island (508)	9730	16.6	7.58	10.1	20.8	0.05	0.000
Montezuma Slough at Nurse Slough (609)	10370	16.5	7.49	8.9	20.5	0.07	0.000

Grizzly Bay at Dolphin (602)	20320	16.4	7.68	9.5	10.9	0.06	0.001
Field Dup: Suisun Slough at Rush Ranch	14890	16.5	7.52	8.3	29.5	0.07	0.000

Table B 49-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/23/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/21/08 - 10/22/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	21.5	23.4	7.7	8.5	7.70	8.12	108	60	-
Low EC Control @ 160.3 uS/cm	161	21.6	23.5	7.9	8.7	7.22	7.94	52	30	-
High EC Control @ 16.26 mS/cm	15555	21.5	23.8	7.4	8.2	7.59	7.95	1880	84	-
High EC Control @ 21.56 mS/cm	20385	21.5	24.1	7.3	8.4	7.67	8.06	2560	92	-
Sacramento River at Hood DWR Station	155	21.5	23.9	7.3	8.5	7.62	7.93	52	62	0.015
Rough and Ready DWR station, Stockton	546	21.5	23.9	7.6	8.6	7.80	8.05	128	94	0.003
Suisun Slough at Rush Ranch	14380	21.5	23.9	7.5	8.6	7.83	8.03	1680	162	0.003
Suisun Bay off Chipps Island (508)	9650	21.5	24.0	7.6	8.8	7.64	7.92	1160	90	0.002
Montezuma Slough at Nurse Slough (609)	10060	21.5	23.9	7.5	8.4	7.64	7.90	2320	94	0.002
Grizzly Bay at Dolphin (602)	19650	21.5	23.9	7.3	8.4	7.68	7.88	1120	88	0.001
Field Dup: Suisun Slough at Rush Ranch	14415	21.7	24.0	7.4	8.4	7.83	8.08	1600	160	0.002
DIEPAMHR + 25 ppb PBO	373	21.5	24.1	7.8	8.5	7.62	8.21	-	-	-
Low EC Control @ 160.3 uS/cm + 25 ppb PBO	169	21.4	24.1	7.1	8.7	7.46	7.89	-	-	-
High EC Control @ 16.26 mS/cm + 25 ppb PBO	15675	21.5	24.1	7.6	8.5	7.59	7.95	-	-	-
High EC Control @ 21.56 mS/cm + 25 ppb PBO	20520	21.3	24.0	7.5	8.3	7.66	8.04	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	193	21.3	24.1	7.4	8.8	7.63	7.83	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	562	21.5	24.0	7.6	8.6	7.86	8.28	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	14230	22.5	24.1	7.5	8.3	7.86	8.08	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	9680	22.2	24.0	7.5	8.7	7.64	7.88	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	10015	21.7	24.0	7.3	8.5	7.67	7.84	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	19550	21.5	23.8	7.3	8.4	7.69	7.87	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 50-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/24/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/23/08

Treatment	Survival (%)[1]

	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC Control at 187 µS/cm	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl. [3]	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Field Dup: Sacramento River at Tip of Grand Island [3]	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.057	0.003	0.064	0.007	NS
Low EC Control at 187 µS/cm	0.062	0.003	0.060	0.005	NS
Sacramento R. Deep Water Channel, Light 55	0.084	0.006	0.090	0.006	NS
Sacramento River at tip of Grand Island (711)[3]	0.076	0.005	0.091	0.005	NS
Upper Cache Slough at mouth of Ulatis Creek	0.093	0.012	0.090	0.008	NS
Confluence of Lindsey Sl. and Cache Sl. [3]	0.074	0.012	0.073	0.006	NS
San Joaquin River at Potato Slough (815)	0.095	0.007	0.096	0.009	NS
Old River, western arm at railroad bridge (902)	0.087	0.010	0.085	0.007	NS
Old River at mouth of Holland Cut (915)	0.088	0.006	0.093	0.004	NS
Field Dup: Sacramento River at Tip of Grand Island [3]	0.086	0.001	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 50-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/23/08

Treatment	Field Chemistry	Turbidity	Total	Unionized

	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)	(NTU)	Ammonia Nitrogen (mg/L)	Ammonia (mg/L)
Sacramento R. Deep Water Channel, Light 55	303	16.4	7.08	10.3	39.5	0.07	0.000
Upper Cache Slough at mouth of Ulatis Cut	266	15.4	7.79	10.4	25.7	0.19	0.000
Confluence of Lindsey Sl. and Cache Slough	190	16.6	7.42	10.0	8.4	0.35	0.001
Sacramento River at tip of Grand Island (711)	165	16.6	7.15	9.5	35.1	0.03	0.001
San Joaquin River at Potato Slough (815)	285	16.5	7.38	10.6	3.3	0.12	0.001
Old River, western arm at railroad bridge (902)	621	17.4	7.50	10.4	6.1	0.03	0.000
Old River at mouth of Holland Cut (915)	531	17.6	7.77	10.7	6.4	0.00	0.000
Field Dup: Sacramento River at tip of Grand Island	164	16.6	7.15	9.5	8.5	0.34	0.001

Table B 50-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/24/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/23/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	21.5	24.1	7.6	8.3	7.78	8.12	108	60	-
Low EC Control at 187 µS/cm	185	21.4	24.0	7.5	8.9	7.53	7.97	56	34	-
Sacramento R. Deep Water Channel, Light 55	288	21.4	24.1	7.3	8.9	7.79	8.09	96	86	0.004
Sacramento River at tip of Grand Island (711)	180	21.4	24.2	7.3	8.8	7.64	8.00	64	68	0.017
Upper Cache Slough at mouth of Ulatis Creek	255	21.4	24.2	7.3	8.7	7.89	8.16	88	92	0.002
Confluence of Lindsey Sl. and Cache Sl.	186	21.4	24.1	6.9	8.7	7.62	8.04	72	70	0.010
San Joaquin River at Potato Slough (815)	274	21.4	24.2	7.4	8.8	7.65	8.05	76	70	0.006
Old River, western arm at railroad bridge (902)	604	21.4	24.1	7.4	8.8	7.80	8.06	112	78	0.002
Old River at mouth of Holland Cut (915)	521	21.4	24.2	7.7	8.8	7.86	8.12	104	76	0.000
Field Dup: Sacramento River at Tip of Grand Island	182	21.4	24.1	7.1	8.6	7.61	7.98	64	66	0.013
DIEPAMHR + 25 ppb PBO	327	21.4	23.9	7.6	8.5	7.77	8.11	-	-	-
Low EC Control at 187 µS/cm + 25 ppb PBO	181	21.4	24.0	7.6	8.5	7.51	7.95	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	292	21.4	24.0	7.1	8.9	7.82	8.13	-	-	-
Sacramento River at tip of Grand Island + 25 ppb pBO	180	21.5	24.1	7.3	8.4	7.63	7.98	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	247	21.5	24.1	7.3	8.9	7.91	8.14	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	181	21.5	24.1	7.3	8.5	7.71	8.07	-	-	-
San Joaquin River at Potato Slough + 25 ppb PBO	278	21.6	24.3	7.1	8.7	7.69	8.02	-	-	-
Old River, western arm at railroad bridge + 25 ppb PBO	595	21.6	24.1	7.4	8.7	7.79	8.04	-	-	-
Old River at mouth of Holland Cut + 25 ppb pBO	517	21.8	24.4	7.4	8.7	7.79	8.07	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 51-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 11/06/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/04/08 - 11/05/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
Low EC Control @ 192.6 µS/cm	95	5.0	75	21.8	NS
High EC Control @ 14.01 mS/cm	100	0.0	80	20.0	NS
High EC Control @ 22.24 mS/cm[6]	95	2.9	70	20.0	NS
Napa River at River Park Blvd.[5]	97	3.1	89	6.4	NS
Sacramento River at Hood DWR Station[3]	100	0.0	91	9.4	NS
Rough and Ready DWR station, Stockton	100	0.0	93	7.5	NS
Suisun Slough at Rush Ranch[4]	100	0.0	90	7.1	NS
Suisun Bay off Chipps Island (508)[4]	95	2.8	63	15.8	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	85	15.0	NS
Grizzly Bay at Dolphin (602)[5]	98	2.5	89	11.1	NS
Field Dup.: Napa River at River Park Blvd.[5]	95	5.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.041	0.006	0.035	0.002	NS
Low EC Control @ 192.6 µS/cm	0.051	0.011	0.093	0.066	NS
High EC Control @ 14.01 mS/cm	0.039	0.002	0.027	0.005	NS
High EC Control @ 22.24 mS/cm[6]	0.028	0.003	0.037	0.023	NS
Napa River at River Park Blvd.[5]	0.026	0.006	0.022	0.009	NS
Sacramento River at Hood DWR Station[3]	0.091	0.006	0.035	0.010	S** (38%)
Rough and Ready DWR station, Stockton	0.091	0.008	0.041	0.011	S* (45%)
Suisun Slough at Rush Ranch[4]	0.067	0.011	0.046	0.009	NS
Suisun Bay off Chipps Island (508)[4]	0.052	0.002	0.039	0.007	NS
Montezuma Slough at Nurse Slough (609)[4]	0.067	0.006	0.065	0.011	NS
Grizzly Bay at Dolphin (602)[5]	0.047	0.003	0.034	0.010	NS
Field Dup.: Napa River at River Park Blvd.[5]	0.039	0.002	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 14.01 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 22.24 mS/cm.

6. Two replicates in the PBO treatment were excluded from analysis because of high mortality at 48 hrs in a treatment with generally high survival. The treatment was not included in statistical analysis.

Table B 51-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/04/08-11/05/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Napa River at River Park Blvd.	20780	15.1	6.96	8.0	9.9	0.18	0.000
Sacramento River at Hood DWR Station	193	15.9	6.85	8.8	13.5	0.20	0.000
Rough and Ready DWR station, Stockton	680	17.3	7.34	8.2	6.6	0.15	0.001
Suisun Slough at Rush Ranch	13420	14.9	7.00	6.4	18.3	0.20	0.000
Suisun Bay off Chipps Island (508)	12180	15.8	7.84	9.7	7.8	0.12	0.002
Montezuma Slough at Nurse Slough (609)	12670	15.5	7.48	8.5	14.5	0.21	0.001
Grizzly Bay at Dolphin (602)	19130	15.8	7.80	10.1	10.7	0.11	0.001
Field Dup.: Napa River at River Park Blvd.	20780	15.1	6.96	8.0	5.4	0.19	0.000

Table B 51-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 11/06/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/04/08-11/05/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	348	22.1	23.2	7.5	8.4	7.73	8.11	104	60	-
Low EC Control @ 192.6 µS/cm	223	22.3	23.2	7.5	8.5	7.48	7.95	64	32	-
High EC Control @ 14.01 mS/cm	13590	22.3	23.4	7.3	8.5	7.72	8.05	1680	48	-
High EC Control @ 22.24 mS/cm	21520	22.3	23.5	7.2	8.4	7.07	7.84	2680	90	-
Napa River at River Park Blvd.	19965	22.2	23.5	6.8	8.2	7.47	7.75	2560	92	0.002
Sacramento River at Hood DWR Station	220	22.3	22.7	7.2	8.6	7.66	7.90	76	76	0.004
Rough and Ready DWR station, Stockton	673	22.3	23.3	7.3	8.7	7.86	8.15	156	106	0.005
Suisun Slough at Rush Ranch	13020	22.2	23.3	7.2	8.1	7.41	8.24	1680	166	0.002
Suisun Bay off Chipps Island (508)	11665	22.0	23.5	7.2	8.3	7.77	7.96	1520	82	0.003
Montezuma Slough at Nurse Slough (609)	12205	22.3	23.5	7.2	8.4	7.57	7.99	1560	94	0.003
Grizzly Bay at Dolphin (602)	18495	22.3	23.8	7.0	8.4	7.75	7.99	2240	94	0.002
Field Dup.: Napa River at River Park Blvd.	19970	22.2	23.3	6.9	8.0	7.47	7.92	2480	90	0.002
DIEPAMHR	367	22.1	23.1	7.5	8.5	7.80	8.14	-	-	-
Low EC Control @ 192.6 µS/cm	217	22.4	23.4	7.5	8.5	7.55	8.02	-	-	-
High EC Control @ 14.01 mS/cm	6932	22.3	23.4	7.3	8.5	7.75	8.05	-	-	-
High EC Control @ 22.24 mS/cm	21300	22.3	23.3	7.3	8.0	7.25	8.05	-	-	-
Napa River at River Park Blvd.	20180	22.5	23.2	7.0	8.0	7.49	8.70	-	-	-
Sacramento River at Hood DWR Station	264	22.3	23.1	7.1	8.3	7.74	8.00	-	-	-
Rough and Ready DWR station, Stockton	690	23.1	23.2	7.1	8.1	7.89	8.15	-	-	-
Suisun Slough at Rush Ranch	12930	22.4	23.4	7.1	8.0	7.46	8.23	-	-	-
Suisun Bay off Chipps Island (508)	11450	22.3	23.4	7.1	8.3	7.76	7.99	-	-	-
Montezuma Slough at Nurse Slough (609)	12090	22.4	22.8	7.2	8.3	7.59	8.01	-	-	-
Grizzly Bay at Dolphin (602)	18420	22.9	23.5	7.0	8.1	7.78	8.00	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 52-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 11/07/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/06/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	90	4.1	97	2.8	NS
Low EC Control @ 201.3 uS/cm	98	2.5	98	2.5	NS
Sacramento R. Deep Water Channel, Light 55 [3]	98	2.5	98	2.5	NS
Sacramento River at tip of Grand Island (711) [3]	98	2.5	95	4.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	97	2.8	NS
Confluence of Lindsey Sl. and Cache Sl. [3]	95	3.1	83	14.4	NS
San Joaquin River at Potato Slough (815)	100	0.0	89	6.1	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek (557)	100	0.0	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.042	0.009	0.071	0.006	NS
Low EC Control @ 201.3 uS/cm	0.033	0.003	0.036*	0.006	NS
Sacramento R. Deep Water Channel, Light 55 [3]	0.069	0.006	0.086	0.013	NS
Sacramento River at tip of Grand Island (711) [3]	0.072	0.005	0.065	0.007	NS
Upper Cache Slough at mouth of Ulatis Creek	0.093	0.005	0.089	0.009	NS
Confluence of Lindsey Sl. and Cache Sl. [3]	0.060	0.011	0.066	0.010	NS
San Joaquin River at Potato Slough (815)	0.071	0.010	0.055	0.010	NS
Old River, western arm at railroad bridge (902)	0.086	0.003	0.067	0.012	NS
Old River at mouth of Holland Cut (915)	0.071	0.009	0.052	0.009	NS
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek (557)	0.092	0.014	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control @ 201.3 uS/cm

Table B 52-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/06/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	212	15.1	7.76	9.6	14.3	0.21	0.003
Sacramento River at tip of Grand Island (711)	203	15.2	7.58	8.6	4.9	0.39	0.004
Upper Cache Slough at mouth of Ulatis Creek	449	14.6	7.84	9.0	23.3	0.14	0.002
Confluence of Lindsey Sl. And Cache Sl.	202	15.2	7.57	8.5	8.2	0.29	0.003
San Joaquin River at Potato Slough (815)	297	16.1	7.64	9.1	2.7	0.20	0.002
Old River, western arm at railroad bridge (902)	834	15.6	7.91	10.4	2.7	0.05	0.001
Old River at mouth of Holland Cut (915)	612	16.0	7.79	9.5	3.8	0.07	0.001
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek (557)	449	14.6	7.84	9.0	23.8	0.10	0.002

Table B 52-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 11/07/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/06/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	341	22.9	24.1	7.4	8.5	7.75	8.00	104	60	-
Low EC Control @ 201.3 uS/cm	200	23.0	24.0	7.6	8.5	7.52	7.76	76	30	-
Sacramento R. Deep Water Channel, Light 55	203	23.0	24.0	7.3	8.7	7.68	7.99	76	74	0.007
Sacramento River at tip of Grand Island (711)	194	23.1	23.9	7.1	8.9	7.67	8.00	72	70	0.012
Upper Cache Slough at mouth of Ulatis Creek	437	23.1	24.0	7.3	8.4	7.96	8.19	136	118	0.007
Confluence of Lindsey Sl. And Cache Sl.	195	23.0	24.0	7.1	8.4	7.70	7.99	76	66	0.009
San Joaquin River at Potato Slough (815)	284	23.0	24.0	7.2	8.8	7.68	7.95	72	66	0.008
Old River, western arm at railroad bridge (902)	787	23.0	23.9	7.3	8.9	7.68	7.98	132	70	0.002
Old River at mouth of Holland Cut (915)	598	23.1	23.9	7.1	8.6	7.77	7.98	108	70	0.003
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek (557)	442	23.0	24.0	7.0	8.3	7.89	8.20	148	118	0.004
DIEPAMHR + 25 ppb PBO	339	23.1	23.5	7.4	8.3	7.75	8.03	-	-	-
Low EC Control @ 201.3 uS/cm + 25 ppb PBO	200	23.0	23.6	7.4	8.5	7.53	7.85	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	205	23.0	23.9	7.1	8.4	7.70	7.99	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	196	23.0	23.8	7.1	8.8	7.66	8.00	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	437	23.3	23.7	7.4	8.4	7.95	8.21	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	195	23.1	23.9	7.1	8.4	7.71	8.02	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb	288	23.8	23.8	7.2	8.5	7.67	7.98	-	-	-

PBO										
Old River, western arm at railroad bridge (902) + 25 ppb PBO	789	23.1	23.9	7.3	8.2	7.78	7.99	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	601	23.7	24.0	7.3	8.3	7.78	8.00	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 53-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 11/20/2008 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/18/2008 - 11/19/2008.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC Control @ 205.3 uS/cm	95	2.9	97	2.8	NS
High EC Control @ 14.63 mS/cm	98	2.5	100	0.0	NS
High EC Control @ 21.88 mS/cm	95	5.0	90	7.1	NS
Suisun Slough at Rush Ranch[4]	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station[3]	100	0.0	98	2.5	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)[4]	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)[4]	98	2.5	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	98	2.5	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.060	0.006	0.051	0.004	NS
Low EC Control @ 205.3 uS/cm	0.050	0.007	0.049	0.004	NS
High EC Control @ 14.63 mS/cm	0.040*	0.005	0.036*	0.003	NS
High EC Control @ 21.88 mS/cm	0.030*	0.008	0.027*	0.005	NS
Suisun Slough at Rush Ranch[4]	0.083	0.004	0.070	0.004	NS
Sacramento River at Hood DWR Station[3]	0.068	0.005	0.072	0.003	NS
Rough and Ready DWR station, Stockton	0.091	0.005	0.090	0.009	NS
Suisun Bay off Chipps Island (508)[4]	0.057	0.010	0.057	0.003	NS
Montezuma Slough at Nurse Slough (609)[4]	0.049	0.002	0.051	0.005	NS
Grizzly Bay at Dolphin (602)[5]	0.040	0.003	0.037	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the high EC Control @ 14.63 mS/cm.
5. This high conductivity sample was compared to the high EC Control @ 21.88 mS/cm.

Table B 53-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/18/2008 - 11/19/2008.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^oC)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	13130	13.7	7.33	7.4	33.6	0.22	0.001
Sacramento River at Hood DWR Station	204	15.6	7.26	9.4	9.1	0.45	0.002
Rough and Ready DWR station, Stockton	717	16.6	7.49	8.6	5.9	0.17	0.001
Suisun Bay off Chipps Island (508)	13000	15.1	7.64	9.7	35.6	0.15	0.001
Montezuma Slough at Nurse Slough (609)	14020	15.0	7.44	8.2	25.5	0.25	0.001
Grizzly Bay at Dolphin (602)	20920	15.3	7.76	9.4	30.8	0.15	0.002

Table B 53-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 11/20/2008 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/18/2008 - 11/19/2008.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	350	22.7	24.3	7.6	8.4	7.71	8.18	102	60	-
Low EC Control @ 205.3 uS/cm	207	22.8	24.1	7.7	8.4	7.46	8.11	64	46	-
High EC Control @ 14.63 mS/cm	14305	22.7	24.1	7.4	8.4	7.66	8.04	1680	82	-
High EC Control @ 21.88 mS/cm	20980	24.2	24.2	7.0	8.4	7.81	8.09	2560	104	-
Suisun Slough at Rush Ranch	12710	22.8	24.1	7.2	8.4	7.82	7.94	1540	181	0.005
Sacramento River at Hood DWR Station	208	22.7	24.1	7.3	8.5	7.75	8.06	74	81	0.019
Rough and Ready DWR station, Stockton	711	22.7	24.2	7.2	8.9	7.91	8.08	162	114	0.009

Suisun Bay off Chipps Island (508)	12885	22.6	24.2	7.4	8.4	7.72	7.88	1480	92	0.004
Montezuma Slough at Nurse Slough (609)	13735	22.7	24.1	7.1	8.1	7.74	7.84	1600	114	0.005
Grizzly Bay at Dolphin (602)	20515	22.7	24.2	7.1	7.9	7.66	7.86	2400	104	0.004
DIEPAMHR + 25 ppb PBO	356	22.6	24.0	7.2	8.3	7.77	8.19	-	-	-
Low EC Control @ 205.3 uS/cm + 25 ppb PBO	211	22.7	24.0	7.6	8.5	7.52	8.08	-	-	-
High EC Control @ 14.63 mS/cm + 25 ppb PBO	14300	22.6	24.0	7.4	8.3	7.67	8.04	-	-	-
High EC Control @ 21.88 mS/cm + 25 ppb PBO	20890	24.0	24.0	7.5	8.6	7.78	8.08	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12645	22.8	23.9	7.1	8.4	7.74	7.95	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	214	22.8	23.9	7.4	8.4	7.75	8.16	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	714	22.9	23.9	7.3	8.7	7.97	8.01	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	12835	22.8	24.0	7.4	8.3	7.70	7.94	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	14200	24.0	24.4	7.3	8.3	7.74	7.85	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	20585	23.2	23.9	7.1	8.5	7.70	7.88	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 54-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 11/21/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/20/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	5.0	91	5.4	NS
Low E.C Control @ 221.8 µS/cm	98	2.5	100	0.0	NS
Sacramento River Deep Water Channel, Light 55 [3]	100	0.0	95	5.0	NS
Sacramento River at tip of Grand Island (711) [3]	100	0.0	89	6.1	NS
Upper Cache Slough at Mouth of Ulatis Creek	98	2.5	98	2.5	NS
Confluence of Lindsey Slough and Cache Slough [3]	100	0.0	88	8.9	NS
San Joaquin River at Potato Slough (815)	100	0.0	85	15.0	NS
Old River, Western Arm at Railroad Bridge (902)	94	5.6	100	0.0	NS
Old River at Mouth of Holland Cut (915)	93	7.5	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.047	0.013	0.035	0.005	NS
Low E.C Control @ 221.8 µS/cm	0.041	0.004	0.036	0.006	NS
Sacramento River Deep Water Channel, Light 55 [3]	0.066	0.009	0.055	0.008	NS
Sacramento River at tip of Grand Island (711) [3]	0.077	0.010	0.047	0.006	S* (61%)
Upper Cache Slough at Mouth of Ulatis Creek	0.071	0.006	0.063	0.002	NS

Confluence of Lindsey Slough and Cache Slough [3]	0.061	0.005	0.049	0.005	NS
San Joaquin River at Potato Slough (815)	0.065	0.004	0.070	0.016	NS
Old River, Western Arm at Railroad Bridge (902)	0.062	0.014	0.071	0.004	NS
Old River at Mouth of Holland Cut (915)	0.070	0.007	0.050	0.010	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 54-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/20/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento River Deep Water Channel, Light 55	246	15.0	7.32	9.6	29.8	0.18	0.001
Sacramento River at tip of Grand Island (711)	232	14.9	7.30	14.5	7.8	0.31	0.002
Upper Cache Slough at Mouth of Ulatis Creek	459	14.6	7.48	15.1	26.1	0.03	0.000
Confluence of Lindsey Slough and Cache Slough	224	15.0	7.36	14.4	12.5	0.29	0.002
San Joaquin River at Potato Slough (815)	401	15.3	7.33	13.8	3.8	0.14	0.001
Old River, Western Arm at Railroad Bridge (902)	865	15.2	7.33	14.9	3.9	0.05	0.000
Old River at Mouth of Holland Cut (915)	653	15.6	7.34	14.8	3.9	0.03	0.000

Table B 54-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 11/21/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/20/08.

Treatment	Laboratory Chemistry	Hardness	Alkalinity	Unionized

	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH	(mg/L as $CaCO_3$)	(mg/L as $CaCO_3$)	Ammonia (mg/L)[1]
DIEPAMHR	337	22.4	23.6	7.7	8.4	7.83	8.04	102	60	-
Low E.C Control @ 221.8 µS/cm	217	22.5	23.4	7.7	8.5	7.66	7.90	66	38	-
Sacramento River Deep Water Channel, Light 55	254	22.5	23.2	7.4	8.7	7.79	8.05	84	86	0.007
Sacramento River at tip of Grand Island (711)	231	22.5	23.3	7.6	8.7	7.77	8.06	82	82	0.012
Upper Cache Slough at Mouth of Ulatis Creek	451	22.5	22.8	7.5	8.6	8.02	8.22	140	126	0.001
Confluence of Lindsey Slough and Cache Slough	217	22.7	22.9	7.6	8.8	7.81	8.10	82	84	0.009
San Joaquin River at Potato Slough (815)	384	22.8	23.2	7.7	8.9	7.77	7.99	92	212	0.004
Old River, Western Arm at Railroad Bridge (902)	840	22.7	23.3	7.8	8.7	7.77	8.00	128	74	0.001
Old River at Mouth of Holland Cut (915)	634	22.5	23.3	7.7	8.6	7.83	7.97	114	76	0.001
DIEPAMHR + 25 ppb PBO	333	22.7	22.7	7.7	8.5	7.83	8.03	-	-	-
Low E.C Control @ 221.8 µS/cm + 25 ppb PBO	218	22.7	23.0	7.8	8.6	7.66	7.89	-	-	-
Sacramento River Deep Water Channel, Light 55 + 25 ppb PBO	255	22.8	23.1	7.7	8.7	7.79	8.05	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	230	22.9	23.1	7.4	8.6	7.83	8.05	-	-	-
Upper Cache Slough at Mouth of Ulatis Creek + 25 ppb PBO	460	23.1	23.2	7.6	8.8	8.04	8.24	-	-	-
Confluence of Lindsey Slough and Cache Slough + 25 ppb PBO	219	22.8	23.1	7.3	8.8	7.83	8.03	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	385	23.0	23.4	7.6	8.6	7.76	8.03	-	-	-
Old River, Western Arm at Railroad Bridge (902) + 25 ppb PBO	688	23.2	23.5	7.6	8.6	7.80	7.98	-	-	-
Old River at Mouth of Holland Cut (915) + 25 ppb PBO	633	23.2	23.2	7.8	8.8	7.85	8.06	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 55-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/04/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/02/08 - 12/03/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	90	5.8	100	0.0	NS
High E.C Control @ 14.16 mS/cm	98	2.5	100	0.0	NS
High E.C. Control @ 19.39 mS/cm	98	2.5	97	2.8	NS
Rough and Ready DWR station, Stockton	88	12.5	100	0.0	NS
Suisun Slough at Rush Ranch[3]	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	95	5.0	95	3.1	NS
Montezuma Slough at Nurse Slough (609)[3]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)[3]	98	2.5	100	0.0	NS

Field Dup.: Rough and Ready DWR station, Stockton	100	0.0	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.042	0.005	0.040	0.003	NS
High E.C Control @ 14.16 mS/cm	0.037	0.002	0.049	0.005	NS
High E.C. Control @ 19.39 mS/cm	0.036	0.002	0.032*	0.001	NS
Rough and Ready DWR station, Stockton	0.097	0.008	0.079	0.005	NS
Suisun Slough at Rush Ranch[3]	0.054	0.006	0.075	0.009	NS
Sacramento River at Hood DWR Station	0.074	0.005	0.064	0.009	NS
Montezuma Slough at Nurse Slough (609)[3]	0.072	0.008	0.049	0.006	NS
Grizzly Bay at Dolphin (602)[4]	0.044	0.003	0.038	0.004	NS
Suisun Bay off Chipps Island (508)[3]	0.052	0.005	0.048	0.005	NS
Field Dup.: Rough and Ready DWR station, Stockton	0.091	0.007	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC Control @ 14.16 mS/cm.

4. This high conductivity sample was compared to the High EC Control @ 19.39 mS/cm.

Table B 55-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/02/08 - 12/03/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Rough and Ready DWR station, Stockton	772	13.9	7.17	8.5	6.2	0.13	0.000
Suisun Slough at Rush Ranch	13920	11.5	7.00	7.2	41.7	0.23	0.000
Sacramento River at Hood DWR Station	222	12.7	7.12	9.6	5.1	0.54	0.002
Montezuma Slough at Nurse Slough (609)	12310	12.5	7.07	9.3	24.2	0.22	0.000
Grizzly Bay at Dolphin (602)	18570	13.1	7.57	10.0	10.4	0.15	0.001
Suisun Bay off Chipps Island (508)	11900	13.4	7.37	-	8.4	0.16	0.001
Field Dup.: Rough and Ready DWR station, Stockton	772	13.9	7.17	8.5	6.5	0.13	0.000

Table B 55-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/04/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/02/08 - 12/03/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	352	21.9	23.6	7.3	8.3	7.82	8.05	100	60	-
High E.C Control @ 14.16 mS/cm	13715	22.1	23.6	7.2	8.8	7.76	7.87	1600	74	-
High E.C. Control @ 19.39 mS/cm	18905	22.2	23.8	6.9	8.0	7.77	7.89	2200	80	-
Rough and Ready DWR station, Stockton	778	22.0	23.6	6.4	8.6	8.10	8.21	172	112	0.009
Suisun Slough at Rush Ranch	13540	22.2	23.9	6.9	8.9	7.68	8.21	1640	186	0.004
Sacramento River at Hood DWR Station	294	22.1	24.1	7.0	8.8	7.84	8.04	60	88	0.018
Montezuma Slough at Nurse Slough (609)	12350	22.1	24.0	7.1	9.0	7.76	7.98	1440	100	0.005
Grizzly Bay at Dolphin (602)	18400	22.0	23.9	7.0	8.7	7.75	7.92	2120	98	0.003
Suisun Bay off Chipps Island (508)	11730	22.1	23.8	7.4	8.3	7.81	7.92	1360	90	0.004
Field Dup.: Rough and Ready DWR station, Stockton	823	22.0	24.1	7.2	8.4	7.95	8.13	184	114	0.005
DIEPAMHR + 25 ppb PBO	381	22.1	23.6	7.5	8.4	7.82	8.12	-	-	-
High E.C Control @ 14.16 mS/cm + 25 ppb PBO	13630	22.1	23.9	7.3	8.7	7.77	7.86	-	-	-
High E.C. Control @ 19.39 mS/cm + 25 ppb PBO	19385	22.0	24.0	7.2	8.4	7.79	7.89	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	842	22.1	23.9	7.3	8.6	7.87	8.24	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	13355	22.0	23.9	7.2	8.8	7.69	8.21	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	288	22.1	23.8	6.9	8.4	7.88	8.04	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	12020	22.0	23.7	7.1	8.3	7.74	7.99	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	18250	22.0	23.9	7.0	8.6	7.73	7.88	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	11525	22.0	23.7	7.1	8.7	7.80	7.95	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 56-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/05/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/04/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
Confluence of Lindsey Sl. and Cache Sl.	98	2.5	98	2.3	NS
Upper Cache Slough at mouth of Ulatis Creek	98	2.5	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	98	2.3	NS
San Joaquin River at Potato Slough (815)	98	2.5	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	98	2.5	NS
Old River, western arm at railroad bridge (902)	98	2.3	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.041	0.008	0.035	0.006	NS
Confluence of Lindsey Sl. and Cache Sl.	0.065	0.005	0.047	0.005	S (72%)*
Upper Cache Slough at mouth of Ulatis Creek	0.091	0.012	0.064	0.011	NS
Sacramento River at tip of Grand Island (711)	0.082	0.011	0.080	0.006	NS
San Joaquin River at Potato Slough (815)	0.086	0.006	0.074	0.008	NS
Old River at mouth of Holland Cut (915)	0.083	0.010	0.086	0.009	NS
Sacramento R. Deep Water Channel, Light 55	0.062	0.003	0.068	0.003	NS
Old River, western arm at railroad bridge (902)	0.080	0.010	0.092	0.008	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 56-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/04/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. and Cache Sl.	235	12.2	7.26	10.4	6.8	0.42	0.002
Upper Cache Slough at mouth of Ulatis Creek	432	11.5	7.52	11.3	18.7	0.07	0.000
Sacramento River at tip of Grand Island (711)	323	12.4	7.27	10.2	5.3	0.38	0.001
San Joaquin River at Potato Slough (815)	412	12.9	7.11	9.6	3.7	0.24	0.001
Old River at mouth of Holland Cut (915)	630	12.9	7.19	9.8	3.5	0.06	0.000
Sacramento R. Deep Water Channel, Light 55	251	12.2	7.30	10.4	8.2	0.33	0.001
Old River, western arm at railroad bridge (902)	818	12.6	7.18	10.4	3.1	0.07	0.000

Table B 56-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/05/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/04/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	339	21.6	22.7	7.6	8.4	7.70	8.05	100	60	-
Confluence of Lindsey Sl. and Cache Sl.	235	21.9	22.9	7.6	8.7	7.83	8.16	84	86	0.018
Upper Cache Slough at mouth of Ulatis Creek	431	22.0	23.0	7.2	8.6	8.01	8.24	140	122	0.003
Sacramento River at tip of Grand Island (711)	316	21.9	23.2	7.2	8.8	7.85	8.12	92	84	0.014
San Joaquin River at Potato Slough (815)	413	21.8	23.1	7.1	8.4	7.79	8.11	100	80	0.007
Old River at mouth of Holland Cut (915)	674	21.9	23.1	7.2	8.6	7.87	8.07	100	76	0.002
Sacramento R. Deep Water Channel, Light 55	250	21.9	23.3	7.2	8.8	7.87	8.13	84	88	0.015
Old River, western arm at railroad bridge (902)	825	22.1	23.4	7.5	8.6	7.81	8.03	156	76	0.002
DIEPAMHR + 25 ppb PBO	348	21.7	22.6	7.4	8.7	7.82	8.06	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	234	21.7	23.0	7.2	8.6	7.86	8.14	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	432	21.7	22.9	7.4	8.9	8.06	8.25	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	320	21.7	23.1	7.0	8.9	7.85	8.12	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	420	21.8	23.0	7.3	8.9	7.86	8.09	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	652	21.5	23.0	7.6	8.8	7.89	8.09	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	239	21.9	23.1	7.1	8.9	7.85	8.14	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	798	21.8	23.3	7.7	8.8	7.87	8.02	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 57-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/18/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/16/08 - 12/17/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC Control @ 123.6 µS/cm	98	2.5	92	5.3	NS
High EC Control @ 12.92 mS/cm	100	0.0	98	2.5	NS
High EC Control @ 20.46 mS/cm	98	2.5	95	2.9	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station[3]	98	2.5	100	0.0	NS
Rough and Ready DWR station, Stockton	98	2.5	100	0.0	NS
Suisun Bay off Chipps Island (508)[4]	98	2.5	100	0.0	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	97	2.8	98	2.5	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.029	0.005	0.038	0.004	NS
Low EC Control @ 123.6 µS/cm	0.026	0.001	0.032	0.003	NS
High EC Control @ 12.92 mS/cm	0.033	0.002	0.023*	0.005	NS
High EC Control @ 20.46 mS/cm	0.025	0.003	0.015**	0.004	NS
Suisun Slough at Rush Ranch	0.083	0.007	0.065	0.006	NS
Sacramento River at Hood DWR Station[3]	0.066	0.005	0.070	0.004	NS
Rough and Ready DWR station, Stockton	0.077	0.004	0.069	0.004	NS
Suisun Bay off Chipps Island (508)[4]	0.046	0.004	0.035	0.007	NS
Montezuma Slough at Nurse Slough (609)[4]	0.049	0.004	0.039	0.005	NS
Grizzly Bay at Dolphin (602)[5]	0.028	0.006	0.015	0.003	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	0.059	0.003	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 12.92 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 20.46 mS/cm.

Table B 57-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/16/08-12/17/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	13280	7.1	7.31	9.8	16.3	0.19	0.000
Sacramento River at Hood DWR Station	229	9.1	7.44	11.2	8.7	0.59	0.003
Rough and Ready DWR station, Stockton	960	10.5	7.66	10.1	9.2	0.17	0.001
Suisun Bay off Chipps Island (508)	12360	9.6	7.68	11.1	13.7	0.17	0.001
Montezuma Slough at Nurse Slough (609)	12360	8.4	7.54	10.8	23.3	0.19	0.001
Grizzly Bay at Dolphin (602)	19900	9.1	7.77	11.0	11.1	0.18	0.001
Field Dup.: Montezuma Slough at Nurse Slough (609)	12360	8.4	7.54	10.8	18.6	0.19	0.001

Table B 57-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/18/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/16/08-12/17/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	352	21.8	21.8	7.4	8.5	7.85	8.18	96	60	-
Low EC Control @ 123.6 µS/cm	132	21.6	21.8	7.4	8.7	7.47	7.79	40	22	-
High EC Control @ 12.92 mS/cm	12585	21.8	22.5	7.3	8.2	7.79	7.92	1520	72	-
High EC Control @ 20.46 mS/cm	20325	21.8	22.6	7.6	8.0	7.77	7.89	2520	84	-
Suisun Slough at Rush Ranch	12870	21.7	22.8	7.4	8.5	7.81	8.16	1640	157	0.004
Sacramento River at Hood DWR Station	267	21.6	22.6	6.9	8.8	8.04	8.12	86	92	0.031
Rough and Ready DWR station, Stockton	966	21.6	23.0	7.3	8.6	8.14	8.25	202	113	0.012
Suisun Bay off Chipps Island (508)	12025	21.6	22.6	7.0	8.5	7.88	7.96	1560	94	0.004
Montezuma Slough at Nurse Slough (609)	11715	21.6	22.6	7.3	7.9	7.90	8.01	1600	94	0.006
Grizzly Bay at Dolphin (602)	19855	21.5	22.6	7.1	8.3	7.85	7.91	2560	98	0.004
Field Dup.: Montezuma Slough at Nurse Slough (609)	11365	21.5	23.0	7.3	8.3	7.86	7.98	1520	93	0.005
DIEPAMHR + 25 ppb PBO	1222	21.5	22.2	7.6	8.3	7.84	8.18	-	-	-
Low EC Control @ 123.6 µS/cm + 25 ppb PBO	133	21.5	22.1	7.4	8.4	7.45	7.94	-	-	-
High EC Control @ 12.92 mS/cm + 25 ppb PBO	12430	21.5	22.1	7.3	8.4	7.77	7.95	-	-	-
High EC Control @ 20.46 mS/cm + 25 ppb PBO	20285	21.5	22.2	7.1	8.0	7.78	7.89	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	13100	21.4	22.4	7.2	8.2	7.93	8.13	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	258	21.4	22.0	7.0	8.8	7.96	8.25	-	-	-

Rough and Ready DWR station, Stockton + 25 ppb PBO	957	21.4	22.8	7.3	8.7	8.15	8.20	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	11745	21.4	22.5	7.1	8.3	7.88	7.94	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	11645	21.4	22.9	7.3	8.2	7.86	7.95	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	19555	21.4	22.8	7.0	7.9	7.85	7.95	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 58-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/19/08 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/18/08.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	87	10.6	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.037	0.003	0.053	0.004	NS
Sacramento R. Deep Water Channel, Light 55	0.086	0.003	0.073	0.010	NS
Sacramento River at tip of Grand Island (711)	0.061	0.006	0.073	0.001	NS
Upper Cache Slough at mouth of Ulatis Creek	0.074	0.007	0.077	0.008	NS
Confluence of Lindsey Sl. and Cache Sl.	0.075	0.005	0.076	0.008	NS
San Joaquin River at Potato Slough (815)	0.093	0.004	0.089	0.006	NS
Old River, western arm at railroad bridge (902)	0.093	0.003	0.096	0.005	NS
Old River at mouth of Holland Cut (915)	0.096	0.009	0.083	0.003	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 58-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/18/08.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	268	7.9	7.78	12.0	9.9	0.28	0.002
Sacramento River at tip of Grand Island (711)	259	8.1	7.65	11.5	6.2	0.51	0.003
Upper Cache Slough at mouth of Ulatis Creek	486	6.8	8.09	12.4	14.9	0.03	0.000
Confluence of Lindsey Sl. and Cache Sl.	266	7.6	7.78	12.1	8.3	0.34	0.003
San Joaquin River at Potato Slough (815)	436	8.7	7.60	11.5	5.0	0.24	0.001
Old River, western arm at railroad bridge (902)	953	7.4	7.83	12.3	4.4	0.05	0.000
Old River at mouth of Holland Cut (915)	737	7.9	7.80	12.3	4.1	0.03	0.000

Table B 58-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/19/08 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/18/08.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	331	22.0	22.6	7.7	8.7	7.82	8.06	96	60	-
Sacramento R. Deep Water Channel, Light 55	262	22.2	22.8	7.5	8.6	7.96	8.12	104	96	0.011
Sacramento River at tip of Grand Island (711)	249	22.4	23.2	7.6	8.6	8.00	8.11	88	94	0.023
Upper Cache Slough at mouth of Ulatis Creek	492	22.4	23.9	7.6	8.6	8.14	8.32	152	136	0.002
Confluence of Lindsey Sl. and Cache Sl.	254	22.4	23.7	7.6	8.6	7.96	8.11	96	98	0.014
San Joaquin River at Potato Slough (815)	420	22.4	23.8	7.7	8.7	7.91	8.07	108	88	0.009
Old River, western arm at railroad bridge (902)	929	22.3	24.6	7.8	8.8	7.89	8.07	152	88	0.002
Old River at mouth of Holland Cut (915)	723	22.3	24.4	7.7	8.6	7.82	8.10	132	84	0.001
DIEPAMHR + 25 ppb PBO	332	22.3	23.4	7.7	8.6	7.83	8.01	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	259	22.3	23.3	7.6	8.8	7.91	8.15	-	-	-

Sacramento River at tip of Grand Island (711) + 25 ppb PBO	248	22.3	23.7	7.6	8.7	7.87	8.09	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	485	22.2	23.5	7.7	8.8	8.06	8.32	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	260	22.2	23.8	7.7	8.7	8.02	8.12	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	424	22.1	23.7	7.7	8.9	7.95	8.09	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	938	22.2	23.9	7.7	8.6	7.90	8.09	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	719	22.2	23.6	7.8	8.6	7.88	8.12	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 59-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/08/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/06/09 - 1/07/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
High EC Control @ 12.46 mS/cm	98	2.5	100	0.0	NS
High EC Control @ 19.42 mS/cm	98	2.5	98	2.5	NS
Suisun Slough at Rush Ranch[3]	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	98	2.5	100	0.0	NS
Napa River at River Park Blvd.[4]	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)[3]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	98	2.5	93	4.8	NS
Field Dup.: Grizzly Bay at Dolphin (602)[4]	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.042	0.006	0.076	0.009	S (181%)*
High EC Control @ 12.46 mS/cm	0.037	0.005	0.061	0.007	S (165%)*
High EC Control @ 19.42 mS/cm	0.065	0.003	0.038	0.013	NS
Suisun Slough at Rush Ranch[3]	0.105	0.011	0.078	0.010	NS
Rough and Ready DWR station, Stockton	0.117	0.006	0.064	0.015	S (55%)*
Sacramento River at Hood DWR Station	0.100	0.004	0.088	0.005	NS
Napa River at River Park Blvd.[4]	0.032	0.007	0.041	0.005	NS
Suisun Bay off Chipps Island (508)[3]	0.066	0.006	0.106	0.008	S (161%)**
Grizzly Bay at Dolphin (602)[4]	0.028†	0.006	0.069	0.008	S (246%)**

Field Dup.: Grizzly Bay at Dolphin (602)[4]	0.047	0.014	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC Control @ 12.46 mS/cm.

4. These high conductivity samples were compared to the High EC Control @ 19.42 mS/cm.

†. This treatment showed lower weight compared to the High EC Control, but not compared to the normal EC Control.

Table B 59-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/06/09 - 1/07/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	11140	8.5	7.43	11.9	23.8	0.19	0.001
Rough and Ready DWR station, Stockton	983	8.7	7.32	11.2	5.6	0.10	0.000
Sacramento River at Hood DWR Station	216	8.2	7.25	11.3	13.0	0.46	0.002
Napa River at River Park Blvd.	18370	9.6	7.24	11.4	38.6	0.19	0.001
Suisun Bay off Chipps Island (508)	12330	8.3	7.37	10.2	13.1	0.26	0.001
Grizzly Bay at Dolphin (602)	19800	8.6	7.58	11.5	13.9	0.24	0.001
Field Dup.: Grizzly Bay at Dolphin (602)	19800	8.6	7.58	11.5	13.0	0.25	0.001

Table B 59-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 1/08/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/06/09 - 1/07/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	355	21.0	23.4	7.2	8.7	7.80	7.97	104	62	-
High EC Control @ 12.46 mS/cm	11840	21.4	24.0	7.2	8.5	7.75	7.82	1380	74	-
High EC Control @ 19.42 mS/cm	17925	21.1	24.1	6.6	8.4	7.74	7.83	2200	83	-
Suisun Slough at Rush Ranch	10520	20.7	23.9	6.4	8.4	7.75	8.14	1320	164	0.004

Rough and Ready DWR station, Stockton	988	20.9	23.4	7.1	8.9	7.97	8.15	200	118	0.004
Sacramento River at Hood DWR Station	262	21.0	23.8	7.5	8.7	7.84	8.02	80	88	0.017
Napa River at River Park Blvd.	17400	20.9	24.1	7.6	8.4	7.62	7.91	2160	116	0.003
Suisun Bay off Chipps Island (508)	11545	20.8	23.4	7.6	8.5	7.74	7.93	1380	96	0.005
Grizzly Bay at Dolphin (602)	18230	20.5	23.7	6.7	8.4	7.72	7.86	2280	102	0.004
Field Dup.: Grizzly Bay at Dolphin (602)	18120	20.7	23.6	7.0	8.3	7.74	7.87	2180	102	0.005
DIEPAMHR + 25 ppb PBO	395	20.8	22.7	7.3	8.5	7.80	8.02	-	-	-
High EC Control @ 12.46 mS/cm + 25 ppb PBO	11485	20.5	22.7	7.3	8.5	7.76	7.82	-	-	-
High EC Control @ 19.42 mS/cm + 25 ppb PBO	18055	20.7	23.1	6.6	8.3	7.74	7.82	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	10140	20.4	22.6	7.5	8.4	7.70	8.14	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	978	20.6	22.8	7.7	8.7	7.98	8.15	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	262	20.5	22.9	7.5	8.7	7.85	8.02	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	17070	20.5	22.7	7.6	8.5	7.66	7.89	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	11135	20.2	22.4	7.0	8.6	7.76	7.92	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	18165	21.1	22.6	6.8	8.5	7.75	7.87	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 60-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/09/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/08/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	97	2.8	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.	98	2.5	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Trip Blank	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]

	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.069	0.002	0.056	0.008	NS
Sacramento R. Deep Water Channel, Light 55	0.105	0.008	0.106	0.008	NS
Sacramento River at tip of Grand Island (711)	0.085	0.012	0.097	0.014	NS
Upper Cache Slough at mouth of Ulatis Creek	0.124	0.008	0.107	0.004	NS
Confluence of Lindsey Sl. And Cache Sl.	0.111	0.010	0.096	0.010	NS
San Joaquin River at Potato Slough (815)	0.130	0.011	0.126	0.018	NS
Old River, western arm at railroad bridge (902)	0.129	0.007	0.129	0.006	NS
Old River at mouth of Holland Cut (915)	0.125	0.011	0.119	0.002	NS
Trip Blank	0.063	0.004	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 60-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/08/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	297	7.9	7.52	12.5	13.0	0.31	0.002
Sacramento River at tip of Grand Island (711)	313	7.9	7.42	12.1	11.2	0.39	0.002
Upper Cache Slough at mouth of Ulatis Creek	444	7.3	7.46	12.7	15.6	0.10	0.000
Confluence of Lindsey Sl. And Cache Sl.	261	7.9	7.34	12.1	11.0	0.39	0.001
San Joaquin River at Potato Slough (815)	474	7.8	7.24	12.0	4.7	0.25	0.001
Old River, western arm at railroad bridge (902)	784	7.6	7.48	11.8	4.5	0.12	0.001
Old River at mouth of Holland Cut (915)	745	7.6	7.47	12.6	3.8	0.12	0.000
Trip Blank	363	14.9	7.94	9.6	0.1	0.00	0.000

Table B 60-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 1/09/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/08/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	329	21.2	22.6	7.0	8.3	7.76	8.04	104	62	-
Sacramento R. Deep Water Channel, Light 55	280	21.7	22.7	7.6	8.7	7.90	8.17	104	104	0.017
Sacramento River at tip of Grand Island (711)	258	21.7	23.1	7.3	8.7	7.83	8.18	84	86	0.012
Upper Cache Slough at mouth of Ulatis Creek	438	22.4	23.2	7.2	8.6	8.10	8.29	144	132	0.007
Confluence of Lindsey Sl. And Cache Sl.	245	21.1	22.7	7.4	8.5	7.85	8.11	94	97	0.021
San Joaquin River at Potato Slough (815)	433	22.5	22.8	6.9	8.6	7.79	8.15	100	84	0.013
Old River, western arm at railroad bridge (902)	715	21.9	22.5	7.1	8.6	7.91	8.06	136	88	0.005
Old River at mouth of Holland Cut (915)	691	22.2	22.6	7.5	8.4	7.90	8.11	132	85	0.006
Trip Blank	336	22.7	22.8	7.1	8.4	7.75	8.07	108	58	0.000
DIEPAMHR + 25 ppb PBO	340	22.7	22.7	7.6	8.2	7.76	8.08	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	289	22.4	23.0	7.5	8.3	7.90	8.15	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	278	22.7	22.9	7.5	8.5	7.80	8.11	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	448	22.7	22.9	6.8	8.8	8.05	8.27	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	256	23.1	23.2	7.3	8.6	7.80	8.13	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	460	22.9	22.9	7.3	8.5	7.82	8.22	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	756	23.2	23.2	7.4	8.6	7.89	8.06	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	733	22.6	23.1	7.4	8.6	7.89	8.08	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 61-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/22/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/20/09 - 1/21/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
High EC Control @ 12.68 mS/cm	100	0.0	98	2.5	NS
High EC Control @ 20.85 mS/cm	92	4.8	78*	4.8	NS
Suisun Slough at Rush Ranch[3]	100	0.0	100	0.0	NS

Rough and Ready DWR station, Stockton	98	2.5	100	0.0	NS
Napa River at River Park Blvd.[4]	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)[3]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[4]	100	0.0	97	2.8	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Bottle Blank	100	0.0	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.075	0.008	0.067	0.009	NS
High EC Control @ 12.68 mS/cm	0.054*	0.003	0.040	0.005	S* (74%)
High EC Control @ 20.85 mS/cm	0.043**	0.003	0.057	0.004	S* (133%)
Suisun Slough at Rush Ranch[3]	0.118	0.003	0.121	0.008	NS
Rough and Ready DWR station, Stockton	0.087	0.011	0.115	0.007	NS
Napa River at River Park Blvd.[4]	0.068	0.009	0.080	0.003	NS
Suisun Bay off Chipps Island (508)[3]	0.045	0.006	0.073	0.004	S** (167%)
Grizzly Bay at Dolphin (602)[4]	0.040	0.005	0.060	0.001	S** (150%)
Montezuma Slough at Nurse Slough (609)	0.110	0.008	0.123	0.005	NS
Bottle Blank	0.062	0.005	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC Control @ 12.68 mS/cm.

4. These high conductivity samples were compared to the High EC Control @ 20.85 mS/cm.

Table B 61-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/20/09 - 1/21/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	11780	10.3	7.24	9.8	20.5	0.17	0.000
Rough and Ready DWR station, Stockton	1022	9.8	7.31	11.3	2.4	0.09	0.000

Napa River at River Park Blvd.	20870	11.9	7.46	10.4	36.7	0.11	0.000
Suisun Bay off Chipps Island (508)	12440	9.3	7.65	11.4	9.1	0.24	0.001
Grizzly Bay at Dolphin (602)	19140	9.6	7.69	11.7	8.3	0.22	0.001
Montezuma Slough at Nurse Slough (609)	7870	9.5	7.40	11.9	24.4	0.25	0.001
Bottle Blank	-	-	-	-	0.4	0.01	-

Table B 61-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 1/22/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/20/09 - 1/21/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	19.5	23.6	7.3	8.3	7.85	8.11	100	60	-
High EC Control @ 12.68 mS/cm	11945	19.3	23.5	7.1	8.8	7.74	7.98	1400	74	-
High EC Control @ 20.85 mS/cm	20050	20.3	23.5	7.2	8.3	7.73	7.98	2360	86	-
Suisun Slough at Rush Ranch	11210	20.4	23.2	7.2	8.6	7.60	8.23	1360	152	0.002
Rough and Ready DWR station, Stockton	1072	20.9	23.6	7.1	8.3	8.03	8.18	204	116	0.004
Napa River at River Park Blvd.	20080	21.0	23.6	6.8	8.5	7.63	8.00	2360	122	0.002
Suisun Bay off Chipps Island (508)	11900	20.0	23.5	6.9	8.5	7.72	8.02	1440	96	0.004
Grizzly Bay at Dolphin (602)	18730	21.5	23.7	7.0	8.3	7.81	7.94	2280	102	0.005
Montezuma Slough at Nurse Slough (609)	7660	21.0	23.7	6.9	8.5	7.77	8.02	880	96	0.005
Bottle Blank	367	20.8	23.9	7.1	8.9	7.83	8.09	108	58	0.001
DIEPAMHR + 25 ppb PBO	365	21.2	22.9	7.2	8.3	7.86	8.03	-	-	-
High EC Control @ 12.68 mS/cm + 25 ppb PBO	12215	21.9	22.9	7.1	8.2	7.74	7.95	-	-	-
High EC Control @ 20.85 mS/cm + 25 ppb PBO	20285	21.3	23.3	7.0	8.2	7.76	7.93	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	11330	21.0	23.3	6.8	8.3	7.66	8.15	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	1066	21.9	23.4	6.9	8.7	8.10	8.24	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	20315	21.6	23.3	6.8	8.0	7.59	7.97	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	11820	21.3	23.4	7.0	8.4	7.84	7.99	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	18775	22.0	23.3	7.1	8.0	7.71	7.95	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	7750	21.4	23.6	6.9	8.3	7.88	8.05	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 62-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/23/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/22/09 - 1/23/09.

Treatment	Survival (%)[1]	
	Unmanipulated	25 ppb PBO added

	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	4.8	95	3.1	NS
Low EC Control @ 136.5 uS/cm	98	2.3	97	2.8	NS
Confluence of Lindsey Sl. And Cache Sl.	98	2.5	100	0.0	NS
Old River at mouth of Holland Cut (915)	98	2.5	100	0.0	NS
San Joaquin River at Potato Slough (815)	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	98	2.5	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	95	2.9	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station[3]	98	2.5	100	0.0	NS
Field Dup.: Sacramento River at tip of Grand Island (711)	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.075	0.006	0.053	0.009	NS
Low EC Control @ 136.5 uS/cm	0.112	0.005	0.067	0.007	S** (60%)
Confluence of Lindsey Sl. And Cache Sl.	0.115	0.018	0.105	0.013	NS
Old River at mouth of Holland Cut (915)	0.084	0.016	0.127	0.005	S* (151%)
San Joaquin River at Potato Slough (815)	0.122	0.006	0.126	0.006	NS
Upper Cache Slough at mouth of Ulatis Creek	0.125	0.012	0.135	0.012	NS
Sacramento R. Deep Water Channel, Light 55	0.115	0.005	0.083	0.013	NS
Old River, western arm at railroad bridge (902)	0.127	0.006	0.075	0.008	S** (59%)
Sacramento River at tip of Grand Island (711)	0.107	0.006	0.078	0.008	S* (73%)
Sacramento River at Hood DWR Station[3]	0.134	0.008	0.093	0.013	S* (69%)
Field Dup.: Sacramento River at tip of Grand Island (711)	0.098	0.009	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

Table B 62-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/22/09 - 1/23/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Confluence of Lindsey Sl. And Cache Sl.	271	10.2	7.61	11.3	6.4	0.35	0.003
Old River at mouth of Holland Cut (915)	741	9.5	7.51	11.5	4.0	0.04	0.000
San Joaquin River at Potato Slough (815)	557	9.5	7.42	11.4	5.1	0.18	0.001
Upper Cache Slough at mouth of Ulatis Creek	566	9.8	7.95	11.5	9.1	0.00	0.000
Sacramento R. Deep Water Channel, Light 55	303	10.0	7.90	11.2	14.1	0.25	0.003
Old River, western arm at railroad bridge (902)	830	9.4	7.52	11.4	4.2	0.05	0.000
Sacramento River at tip of Grand Island (711)	266	10.1	7.51	11.0	4.3	0.45	0.003
Sacramento River at Hood DWR Station	207	11.0	7.49	10.4	8.9	0.49	0.003
Field Dup.: Sacramento River at tip of Grand Island (711)	266	10.1	7.51	11.0	4.4	0.39	0.002

Table B 62-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 1/23/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 1/22/09 - 1/23/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	356	22.6	23.4	7.1	8.6	7.84	8.04	100	60	-
Low EC Control @ 136.5 uS/cm	154	22.5	23.8	7.3	8.8	7.45	7.87	44	24	-
Confluence of Lindsey Sl. And Cache Sl.	278	22.7	23.4	6.8	8.9	8.00	8.14	92	99	0.020
Old River at mouth of Holland Cut (915)	742	22.7	23.7	7.0	8.9	7.95	8.08	132	98	0.002
San Joaquin River at Potato Slough (815)	557	22.8	23.2	6.8	8.9	7.88	8.04	116	88	0.006
Upper Cache Slough at mouth of Ulatis Creek	569	22.8	23.0	7.1	8.9	8.07	8.34	168	150	0.000
Sacramento R. Deep Water Channel, Light 55	318	22.7	23.4	6.9	8.8	8.00	8.11	92	104	0.011
Old River, western arm at railroad bridge (902)	836	22.8	23.7	6.9	8.8	7.96	8.08	140	88	0.002
Sacramento River at tip of Grand Island (711)	258	22.8	23.7	6.7	8.9	7.84	8.00	84	88	0.014
Sacramento River at Hood DWR Station	217	22.8	23.5	6.9	8.7	7.60	8.01	72	78	0.009
Field Dup.: Sacramento River at tip of Grand Island (711)	278	22.8	23.6	6.8	8.6	7.90	8.05	84	81	0.020
DIEPAMHR + 25 ppb PBO	345	22.8	23.0	7.0	8.4	7.81	8.01	-	-	-
Low EC Control @ 136.5 uS/cm + 25 ppb PBO	156	22.8	23.5	7.1	8.7	7.49	7.86	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	486	22.7	22.9	6.8	8.8	7.95	8.17	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	736	22.8	22.9	7.1	8.9	7.98	8.09	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	567	22.9	22.9	6.9	8.7	7.89	8.02	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	559	22.2	22.8	6.9	8.6	8.09	8.34	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	318	22.5	22.8	6.9	8.5	8.02	8.17	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	828	22.3	22.8	7.7	8.5	7.95	8.07	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	247	22.6	22.9	6.9	8.6	7.93	8.07	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	230	22.4	22.9	6.8	8.7	7.59	8.02	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 63-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/05/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/03/09 - 2/04/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	3.1	98	2.3	NS
High EC Control @ 10.21 mS/cm	100	0.0	100	0.0	NS
High EC Control @ 20.48 mS/cm	69**	6.8	83*	3.6	NS
Napa River at River Park Blvd.[4]	98	2.5	95	2.8	NS
Sacramento River at Hood DWR Station	95	2.9	97	2.8	NS
Suisun Slough at Rush Ranch[3]	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
San Joaquin River at Potato Slough (815)	98	2.5	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	95	2.9	98	2.5	NS
Confluence of Lindsey Sl. And Cache Sl.	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Field Dup.: Sacramento R. Deep Water Channel, Light 55	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.066	0.009	0.052	0.003	NS
High EC Control @ 10.21 mS/cm	0.057	0.004	0.028*	0.008	S* (49%)
High EC Control @ 20.48 mS/cm	0.064	0.008	0.025***	0.002	S** (39%)
Napa River at River Park Blvd.[4]	0.066	0.007	0.022	0.012	S* (33%)
Sacramento River at Hood DWR Station	0.108	0.012	0.069	0.012	NS
Suisun Slough at Rush Ranch[3]	0.068	0.006	0.051	0.004	NS
Rough and Ready DWR station, Stockton	0.088	0.001	0.092	0.005	NS
San Joaquin River at Potato Slough (815)	0.117	0.012	0.087	0.006	NS
Sacramento River at tip of Grand Island (711)	0.104	0.005	0.087	0.014	NS
Upper Cache Slough at mouth of Ulatis Creek	0.121	0.011	0.063	0.005	S** (52%)
Old River, western arm at railroad bridge (902)	0.119	0.014	0.044	0.012	S** (37%)
Confluence of Lindsey Sl. And Cache Sl.	0.105	0.004	0.060	0.002	S*** (57%)
Old River at mouth of Holland Cut (915)	0.097	0.014	0.062	0.006	NS
Sacramento R. Deep Water Channel, Light 55	0.079	0.005	0.050	0.005	S** (63%)
Field Dup.: Sacramento R. Deep Water Channel, Light 55 †	0.051	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control @ 10.21 mS/cm

4. This high conductivity sample was compared to the High EC Control @ 20.48 mS/cm

†. The mean weight of animals exposed to the Field Duplicate of the Light 55 site was significantly lower than that of animals exposed to the original sample.

Table B 63-2. Water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/03/09 - 2/04/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Napa River at River Park Blvd.	20180	12.6	7.48	11.2	8.1	0.11	0.001
Sacramento River at Hood DWR Station	303	10.6	7.43	10.5	12.8	0.44	0.002
Suisun Slough at Rush Ranch	10090	11.5	7.45	11.1	24.0	0.10	0.000
Rough and Ready DWR station, Stockton	1045	11.0	7.89	11.3	3.7	0.05	0.001
San Joaquin River at Potato Slough (815)	572	10.5	7.56	11.4	4.0	0.16	0.001
Sacramento River at tip of Grand Island (711)	417	10.9	7.68	10.8	5.3	0.26	0.002
Upper Cache Slough at mouth of Ulatis Creek	490	10.7	8.40	13.8	9.1	0.00	0.000
Old River, western arm at railroad bridge (902)	723	10.9	7.60	11.1	3.8	0.06	0.000
Confluence of Lindsey Sl. And Cache Sl.	260	10.7	7.53	10.9	7.1	0.35	0.002
Old River at mouth of Holland Cut (915)	664	10.7	7.63	11.1	3.1	0.02	0.000
Sacramento R. Deep Water Channel, Light 55	278	10.6	7.57	11.5	8.2	0.33	0.002
Field Dup.: Sacramento R. Deep Water Channel, Light 55	278	10.6	7.57	11.5	7.6	0.38	0.003

Table 63-3. Water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/05/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/03/09 - 2/04/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	20.0	23.1	7.5	8.5	7.76	8.07	108	60	-
High EC Control @ 10.21 mS/cm	9570	19.7	23.5	7.6	8.6	7.80	8.08	1160	74	-
High EC Control @ 20.48 mS/cm	19625	20.5	23.3	7.4	8.1	7.79	8.04	2400	88	-
Napa River at River Park Blvd.	18730	20.9	23.3	7.0	8.1	7.72	8.19	2360	126	0.002
Sacramento River at Hood DWR Station	249	20.6	23.5	7.4	8.3	7.97	8.15	80	92	0.019
Suisun Slough at Rush Ranch	9445	20.4	23.4	7.3	8.3	7.77	8.37	1200	164	0.002
Rough and Ready DWR station, Stockton	967	21.1	23.2	7.4	8.3	8.09	8.32	212	116	0.003
San Joaquin River at Potato Slough (815)	543	20.1	23.3	7.6	8.4	7.80	8.26	124	94	0.004
Sacramento River at tip of Grand Island (711)	376	20.4	23.3	7.4	8.3	8.03	8.27	100	96	0.013
Upper Cache Slough at mouth of Ulatis Creek	474	20.8	23.3	7.5	8.5	8.23	8.55	148	146	0.000
Old River, western arm at railroad bridge (902)	707	21.2	23.4	7.7	8.6	7.90	8.21	140	92	0.002
Confluence of Lindsey Sl. And Cache Sl.	261	21.1	23.1	7.5	8.6	8.00	8.22	96	100	0.021
Old River at mouth of Holland Cut (915)	680	21.3	23.4	7.6	8.4	7.96	8.26	140	92	0.001
Sacramento R. Deep Water Channel, Light 55	275	21.1	23.4	7.5	8.6	8.07	8.90	104	112	0.021
Field Dup.: Sacramento R. Deep Water Channel, Light 55	268	21.2	23.4	7.2	8.3	8.02	8.29	96	104	0.018
DIEPAMHR + 25 ppb PBO	342	21.1	23.0	7.6	8.6	7.79	8.12	-	-	-
High EC Control @ 10.21 mS/cm + 25 ppb PBO	9685	21.4	23.2	7.6	8.3	7.80	8.05	-	-	-
High EC Control @ 20.48 mS/cm + 25 ppb PBO	19620	21.1	23.3	7.4	7.9	7.81	8.04	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	18885	21.3	23.4	7.2	8.1	7.81	8.19	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	236.6	21.1	23.3	7.4	8.5	7.94	8.19	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	9530	21.7	23.1	7.5	8.4	7.84	8.32	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	1011	20.9	23.1	7.6	8.6	8.08	8.36	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	549	21.5	23.0	7.6	8.8	7.98	8.22	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	376.85	21.3	23.5	7.4	8.8	7.96	8.22	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	487.65	21.6	23.1	7.5	8.4	8.23	8.54	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	716	21.4	22.8	7.6	8.6	7.95	8.22	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	266.3	21.3	23.7	7.4	8.7	8.00	8.21	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	709	21.4	23.7	7.3	8.3	8.03	8.27	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	284.5	21.4	23.8	7.3	8.6	8.00	8.30	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 64-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/06/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/05/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	95	2.9	NS
High EC Control @ 13.57 mS/cm	98	2.5	97	2.8	NS
High EC Control @ 19.22 mS/cm	80	9.1	79	9.4	NS
Suisun Bay off Chipps Island (508)[3]	100	0.0	97	3.1	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	98	2.5	NS
Grizzly Bay at Dolphin (602)[4]	94	3.4	98	2.5	NS
Trip Blank	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.004	0.027	0.006	S* (59%)
High EC Control @ 13.57 mS/cm	0.029*	0.006	0.034	0.004	NS
High EC Control @ 19.22 mS/cm	0.025**	0.005	0.035	0.011	NS
Suisun Bay off Chipps Island (508)[3]	0.028	0.004	0.046	0.003	S* (164%)
Montezuma Slough at Nurse Slough (609)	0.042	0.007	0.038	0.009	NS
Grizzly Bay at Dolphin (602)[4]	0.039	0.009	0.034	0.007	NS
Trip Blank	0.049	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control @ 13.57 mS/cm.

4. This high conductivity sample was compared to the High EC Control @ 19.22 mS/cm.

Table B 64-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/05/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^oC)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	12810	10.6	7.70	10.8	18.4	0.25	0.002
Montezuma Slough at Nurse Slough (609)	5140	10.7	7.55	10.8	29.0	0.27	0.001
Grizzly Bay at Dolphin (602)	17210	10.8	7.79	11.0	13.9	0.21	0.002
Trip Blank	345	16.1	8.01	10.1	0.3	0.00	0.000

Table B 64-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/06/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/05/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	327	22.1	24.1	7.7	8.2	7.83	8.09	108	60	-
High EC Control @ 13.57 mS/cm	13030	19.9	23.9	7.4	8.6	7.77	7.84	1760	80	-
High EC Control @ 19.22 mS/cm	18995	22.5	23.9	7.2	8.1	7.77	7.84	2280	86	-
Suisun Bay off Chipps Island (508)	13075	22.2	23.1	7.4	8.2	7.73	7.95	1800	106	0.005
Montezuma Slough at Nurse Slough (609)	5030	22.4	23.7	7.4	8.1	7.83	8.02	680	100	0.007
Grizzly Bay at Dolphin (602)	17090	21.8	23.0	7.0	8.1	7.71	7.94	2200	106	0.003
Trip Blank	355	22.5	23.9	7.6	8.6	7.80	8.15	108	48	0.000
DIEPAMHR + 25 ppb PBO	327	22.1	22.5	7.1	8.5	7.78	8.06	-	-	-
High EC Control @ 13.57 mS/cm + 25 ppb PBO	13090	22.1	23.3	7.4	8.2	7.77	7.82	-	-	-
High EC Control @ 19.22 mS/cm + 25 ppb PBO	18380	22.0	23.1	7.1	8.1	7.78	7.86	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	12365	20.9	23.6	7.2	8.5	7.77	7.96	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	5006	21.5	23.2	7.6	8.2	7.91	8.00	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16875	20.4	23.0	7.2	8.2	7.74	7.94	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 65-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/19/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/17/09 - 2/18/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	97	2.8	NS
High EC Control @ 12.50 mS/cm	97	2.8	92	2.7	NS
High EC Control @ 21.92 mS/cm	69*	8.1	73	13.0	NS
High EC Control @ 24.63 mS/cm	54**	10.9	32*	10.5	NS
Napa River at River Park Blvd.	94	6.3	94	6.3	NS
Sacramento River at Hood DWR Station	95	2.9	93	4.8	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	95	5.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	98	2.3	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[4]	93	2.5	98	2.5	NS
Grizzly Bay at Dolphin (602)[3]	100	0.0	100	0.0	NS
Napa River at Vallejo Seawall (340)[5]	91	6.0	88	7.5	NS
Field Dup.: Rough and Ready DWR station, Stockton	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.039	0.004	0.032	0.006	NS
High EC Control @ 12.50 mS/cm	0.019**	0.003	0.026	0.005	NS
High EC Control @ 21.92 mS/cm	0.008***	0.002	0.009*	0.000	NS
High EC Control @ 24.63 mS/cm	0.025*	0.002	0.041	0.021	NS
Napa River at River Park Blvd.	0.052	0.002	0.044	0.004	NS
Sacramento River at Hood DWR Station	0.051	0.004	0.060	0.004	NS
Suisun Slough at Rush Ranch	0.035	0.006	0.060	0.001	S** (171%)
Rough and Ready DWR station, Stockton	0.040	0.003	0.050	0.004	NS
Suisun Bay off Chipps Island (508)	0.046	0.009	0.045	0.008	NS
Montezuma Slough at Nurse Slough (609)	0.036	0.004	0.043	0.003	NS
Carquinez Strait, West of Benicia army dock (405)[4]	0.020	0.003	0.033	0.003	NS
Grizzly Bay at Dolphin (602)[3]	0.031	0.003	0.023	0.003	NS

Napa River at Vallejo Seawall (340)[5]	0.023	0.004	0.052	0.007	S* (226%)
Field Dup.: Rough and Ready DWR station, Stockton	0.067	0.012	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 65-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/17/09 - 2/18/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Napa River at River Park Blvd.	454	10.0	7.31	11.4	713.3	0.35	0.001
Sacramento River at Hood DWR Station	196	9.5	7.55	12.0	20.2	0.06	0.000
Suisun Slough at Rush Ranch	7310	9.9	7.47	10.4	41.4	0.08	0.000
Rough and Ready DWR station, Stockton	1107	11.0	7.93	11.2	3.7	0.43	0.006
Suisun Bay off Chipps Island (508)	6780	9.9	7.87	11.7	10.7	0.23	0.002
Montezuma Slough at Nurse Slough (609)	8000	9.8	7.65	11.4	25.0	0.21	0.001
Carquinez Strait, West of Benicia army dock (405)	23650	10.2	7.83	11.0	24.4	0.22	0.002
Grizzly Bay at Dolphin (602)	12200	10.0	7.85	11.6	13.1	0.23	0.002
Napa River at Vallejo Seawall (340)	22400	10.0	7.88	10.8	44.2	0.23	0.002
Field Dup.: Rough and Ready DWR station, Stockton	1107	11.0	7.93	11.2	3.5	0.06	0.001

Table B 65-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/19/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/17/09 - 2/18/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	22.6	23.8	7.5	8.0	7.80	8.10	100	62	-
High EC Control @ 12.50 mS/cm	12110	22.7	24.0	7.3	8.0	7.76	7.90	1440	70	-
High EC Control @ 21.92 mS/cm	21710	22.5	24.1	7.1	7.7	7.38	7.82	2520	84	-
High EC Control @ 24.63 mS/cm	23825	22.7	23.9	6.8	7.6	7.69	7.91	2840	86	-
Napa River at River Park Blvd.	474	22.7	24.1	7.6	8.0	7.52	7.81	72	284	0.011
Sacramento River at Hood DWR Station	229	22.7	24.3	7.2	8.0	7.82	8.10	72	78	0.004
Suisun Slough at Rush Ranch	7045	22.7	23.8	7.3	8.0	7.16	8.17	840	172	0.003
Rough and Ready DWR station, Stockton	1102	22.7	23.5	7.3	8.4	7.16	8.18	212	240	0.027
Suisun Bay off Chipps Island (508)	6310	22.6	23.4	7.3	8.4	7.87	7.95	840	100	0.007
Montezuma Slough at Nurse Slough (609)	7595	22.6	23.8	7.3	8.2	7.84	7.99	880	92	0.008
Carquinez Strait, West of Benicia army dock (405)	20210	22.7	23.5	7.0	7.7	7.70	7.92	2400	104	0.006
Grizzly Bay at Dolphin (602)	11600	22.7	24.0	7.3	8.2	7.85	7.94	1480	102	0.007
Napa River at Vallejo Seawall (340)	22665	22.6	23.3	6.9	7.7	7.75	7.83	2760	104	0.005
Field Dup.: Rough and Ready DWR station, Stockton	1091	22.7	23.8	7.5	8.4	8.05	8.29	220	120	0.005
DIEPAMHR + 25 ppb PBO	1791	22.6	22.9	7.6	8.3	7.85	8.06	-	-	-
High EC Control @ 12.50 mS/cm + 25 ppb PBO	11925	22.6	23.3	7.4	8.0	7.74	7.92	-	-	-
High EC Control @ 21.92 mS/cm + 25 ppb PBO	21195	22.6	23.5	7.0	7.8	7.69	7.89	-	-	-
High EC Control @ 24.63 mS/cm + 25 ppb PBO	23640	22.6	23.3	6.9	7.7	7.68	7.91	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	450	22.6	23.2	7.5	8.2	7.56	7.87	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	209	22.7	23.3	7.1	8.2	7.84	8.19	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	6980	22.6	23.4	7.3	8.1	7.96	8.17	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	1079	22.5	23.5	7.3	8.3	8.08	8.20	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6445	22.7	23.0	7.3	8.0	7.86	8.06	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	7605	22.6	23.2	7.3	8.1	7.84	7.90	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	19965	22.7	23.5	6.9	7.8	7.73	7.88	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	11825	22.6	23.2	7.3	8.2	7.84	7.95	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	23020	22.6	23.2	6.9	7.8	7.75	7.84	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 66-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 2/20/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/19/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	4.8	98	2.5	NS
Low EC Control @ 152.2 uS/cm	86	5.5	98	2.5	NS
Sacramento R. Deep Water Channel, Light 55	83	13.7	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	95	3.1	70	23.4	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	95	2.9	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	98	2.5	95	3.1	NS
Old River at mouth of Holland Cut (915)	100	0.0	89	11.1	NS
Confluence of Linsey Sl. And Cache Sl.	100	0.0	95	2.9	NS
Bottle Blank	97	2.8	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.034	0.006	0.030	0.006	NS
Low EC Control @ 152.2 uS/cm	0.042	0.003	0.034	0.003	NS
Sacramento R. Deep Water Channel, Light 55	0.084	0.005	0.094	0.015	NS
Sacramento River at tip of Grand Island (711)[3]	0.055	0.012	0.068	0.006	NS
Old River, western arm at railroad bridge (902)	0.077	0.002	0.077	0.013	NS
San Joaquin River at Potato Slough (815)	0.056	0.005	0.098	0.007	S** (175%)
Upper Cache Slough at mouth of Ulatis Creek	0.074	0.008	0.042	0.006	S* (57%)
Old River at mouth of Holland Cut (915)	0.090	0.010	0.098	0.007	NS
Confluence of Linsey Sl. And Cache Sl.	0.085	0.010	0.143	0.060	NS
Bottle Blank	0.035	0.002	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

Table B 66-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/19/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	385	9.5	8.03	11.5	17.4	0.19	0.003
Sacramento River at tip of Grand Island (711)	145	8.9	7.38	11.0	82.8	0.33	0.001
Old River, western arm at railroad bridge (902)	590	10.5	7.88	11.3	5.1	0.09	0.001
San Joaquin River at Potato Slough (815)	354	10.5	7.74	11.0	5.6	0.25	0.002
Upper Cache Slough at mouth of Ulatis Creek	377	9.7	7.81	10.0	138.3	0.23	0.002
Old River at mouth of Holland Cut (915)	628	10.1	7.80	10.6	4.4	0.08	0.001
Confluence of Lindsey Sl. And Cache Sl.	300	9.3	7.82	11.0	30.8	0.23	0.002
Bottle Blank	-	-	-	-	0.2	0.00	-

Table B 66-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 2/20/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 2/19/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	326	21.1	23.9	7.6	8.0	7.78	8.04	100	62	-
Low EC Control @ 152.2 uS/cm	149	20.8	23.6	7.6	8.4	7.46	7.81	44	26	-
Sacramento R. Deep Water Channel, Light 55	365	22.2	23.4	7.3	8.2	8.05	8.28	120	104	0.015
Sacramento River at tip of Grand Island (711)	143	22.2	23.8	7.5	8.2	7.62	7.80	60	52	0.010
Old River, western arm at railroad bridge (902)	557	22.3	23.9	7.3	8.4	7.91	8.00	124	90	0.004
San Joaquin River at Potato Slough (815)	340	22.2	23.6	7.4	8.4	7.83	8.00	100	86	0.008
Upper Cache Slough at mouth of Ulatis Creek	369	22.2	23.7	7.3	8.3	7.92	8.12	124	100	0.012
Old River at mouth of Holland Cut (915)	604	22.0	23.5	7.5	8.2	7.92	8.05	128	90	0.003
Confluence of Lindsey Sl. And Cache Sl.	292	22.4	23.6	7.5	8.3	7.96	8.09	100	108	0.010
Bottle Blank	338	22.5	23.5	7.5	8.2	7.77	8.02	104	58	0.000
DIEPAMHR + 25 ppb PBO	330	22.4	22.4	7.4	8.2	7.78	8.01	-	-	-
Low EC Control @ 152.2 uS/cm + 25 ppb PBO	149	22.3	22.4	7.4	8.1	7.48	7.81	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	362	22.2	22.4	7.4	8.3	8.08	8.17	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	141	22.3	22.3	7.4	8.3	7.71	7.82	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	556	22.1	22.1	7.3	8.2	7.95	8.03	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	336	21.9	22.0	7.4	8.3	7.84	8.02	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	359	21.9	22.1	7.4	8.0	7.91	8.09	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	590	21.5	22.3	7.5	8.1	7.92	8.05	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	289	21.7	22.1	7.4	8.4	7.95	8.08	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 67-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/05/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/03/09 - 3/04/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	98	2.5	NS
Napa River at River Park Blvd.	98	2.5	98	2.5	NS
Sacramento River at Hood DWR Station	100	0.0	98	2.3	NS
Suisun Slough at Rush Ranch	100	0.0	98	2.5	NS
Rough and Ready DWR station, Stockton	98	2.5	93	4.8	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)	98	2.5	98	2.5	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Napa River at Vallejo Seawall (340)	98	2.5	100	0.0	NS
Field Dup.: Napa River at Vallejo Seawall (340)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.057	0.007	0.046	0.005	NS
Napa River at River Park Blvd.	0.128	0.005	0.102	0.013	NS
Sacramento River at Hood DWR Station	0.099	0.010	0.072	0.008	NS
Suisun Slough at Rush Ranch	0.100	0.004	0.087	0.013	NS
Rough and Ready DWR station, Stockton	0.126	0.008	0.106	0.008	NS
Suisun Bay off Chipps Island (508)	0.131	0.006	0.083	0.013	S* (63%)
Montezuma Slough at Nurse Slough (609)	0.123	0.005	0.093	0.014	NS
Carquinez Strait, West of Benicia army dock (405)	0.045	0.004	0.054	0.004	NS
Grizzly Bay at Dolphin (602)	0.100	0.007	0.101	0.006	NS
Napa River at Vallejo Seawall (340)	0.040	0.010	0.065	0.008	NS
Field Dup.: Napa River at Vallejo Seawall (340)	0.034*	0.009	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 67-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/03/09 - 3/04/09

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Napa River at River Park Blvd.	237	12.0	7.33	10.7	88.9	0.09	0.000
Sacramento River at Hood DWR Station	187	12.8	7.28	9.5	43.9	0.25	0.001
Suisun Slough at Rush Ranch	2673	12.6	7.26	8.3	63.9	0.19	0.001
Rough and Ready DWR station, Stockton	878	13.2	7.42	8.7	5.8	0.15	0.001
Suisun Bay off Chipps Island (508)	401	12.1	7.35	10.4	39.8	0.16	0.001
Montezuma Slough at Nurse Slough (609)	2229	12.8	7.14	11.6	68.9	0.24	0.001
Carquinez Strait, West of Benicia army dock (405)	6510	11.9	7.47	13.0	115.3	0.24	0.001
Grizzly Bay at Dolphin (602)	1060	11.9	7.64	13.4	90.8	0.18	0.001
Napa River at Vallejo Seawall (340)	9460	11.9	7.52	13.0	77.9	0.23	0.001
Field Dup.: Napa River at Vallejo Seawall (340)	9460	11.9	7.52	13.0	76.2	0.23	0.001

Table B 67-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/05/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/03/09 - 3/04/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	333	21.6	22.9	7.7	8.7	7.78	8.09	100	56	-
Napa River at River Park Blvd.	230	21.9	23.1	7.8	8.8	7.68	7.87	70	54	0.002
Sacramento River at Hood DWR Station	180	21.9	23.6	7.5	8.5	7.79	7.98	72	74	0.009
Suisun Slough at Rush Ranch	2556	21.9	23.9	7.6	8.7	7.70	8.14	380	130	0.004
Rough and Ready DWR station, Stockton	844	21.3	23.8	7.5	8.6	7.88	8.15	186	110	0.005
Suisun Bay off Chipps Island (508)	394	22.3	24.0	7.6	8.7	7.86	8.00	96	74	0.006
Montezuma Slough at Nurse Slough (609)	2159	21.6	23.7	7.5	8.5	7.05	7.94	292	80	0.006
Carquinez Strait, West of Benicia army dock (405)	6160	22.4	23.8	7.4	8.4	7.82	7.92	800	88	0.006
Grizzly Bay at Dolphin (602)	972	21.6	23.7	7.4	8.8	7.90	8.05	152	74	0.009
Napa River at Vallejo Seawall (340)	9110	22.1	23.9	7.6	8.9	7.78	7.90	1040	92	0.005
Field Dup.: Napa River at Vallejo Seawall (340)	8850	21.7	24.0	7.2	8.6	7.81	7.90	1160	94	0.006
DIEPAMHR + 25 ppb PBO	345	22.3	23.5	7.6	8.2	7.80	8.06	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	228	22.0	23.3	7.5	8.6	7.69	7.89	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	185	22.7	23.8	7.4	8.5	7.75	7.96	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	2608	22.0	23.6	7.5	8.5	7.88	8.15	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	847	21.9	24.0	7.4	8.6	7.95	8.14	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	397	22.5	23.7	7.6	8.9	7.83	7.97	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	2121	21.6	24.1	7.3	8.6	7.78	7.92	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	6175	22.4	24.1	7.4	8.4	7.82	7.94	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	966	21.9	24.0	7.6	8.6	7.87	8.00	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	9015	21.5	23.8	7.7	8.5	7.81	7.91	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 68-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/06/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/05/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	95	5.0	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	100	0.0	NS
Sacramento River at tip of Grand Island (711)	86	14.3	95	3.1	NS
Upper Cache Slough at mouth of Ulatis Creek	97	3.1	95	2.9	NS
Confluence of Linsey Sl. And Cache Sl.	98	2.5	95	2.9	NS
San Joaquin River at Potato Slough (815)	97	2.8	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	98	2.5	98	2.5	NS
Trip Blank	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.045	0.002	0.060	0.026	NS
Sacramento R. Deep Water Channel, Light 55	0.089	0.005	0.094	0.009	NS
Sacramento River at tip of Grand Island (711)	0.064	0.009	0.040	0.007	NS
Upper Cache Slough at mouth of Ulatis Creek	0.073	0.004	0.040	0.005	S** (55%)
Confluence of Linsey Sl. And Cache Sl.	0.083	0.009	0.068	0.004	NS
San Joaquin River at Potato Slough (815)	0.089	0.008	0.094	0.008	NS
Old River, western arm at railroad bridge (902)	0.101	0.007	0.086	0.009	NS
Old River at mouth of Holland Cut (915)	0.085	0.010	0.055	0.007	NS
Trip Blank	0.056	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 68-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/05/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	258	11.7	7.44	10.1	45.8	0.15	0.001
Sacramento River at tip of Grand Island (711)	137	11.4	7.10	10.1	146.3	0.20	0.000
Upper Cache Slough at mouth of Ulatis Creek	343	11.4	7.48	9.3	151.3	0.21	0.001
Confluence of Linsey Sl. And Cache Sl.	211	11.7	7.35	10.1	37.8	0.14	0.001
San Joaquin River at Potato Slough (815)	209	12.5	7.39	9.7	16.7	0.15	0.001
Old River, western arm at railroad bridge (902)	337	12.3	7.48	10.3	12.0	0.08	0.000
Old River at mouth of Holland Cut (915)	425	12.6	7.42	10.3	9.2	0.07	0.000
Trip Blank	335	16.9	8.03	9.0	0.3	0.00	0.000

Table B 68-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/06/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/05/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	344	22.4	24.0	7.1	8.2	7.77	8.04	100	56	-
Sacramento R. Deep Water Channel, Light 55	261	22.4	23.9	7.3	8.3	7.83	7.94	106	90	0.005
Sacramento River at tip of Grand Island (711)	136	22.4	23.9	7.6	8.5	7.63	7.82	68	54	0.006
Upper Cache Slough at mouth of Ulatis Creek	347	22.4	23.9	7.3	8.2	7.96	8.08	128	112	0.009
Confluence of Linsey Sl. And Cache Sl.	215	22.2	23.9	7.3	8.3	7.83	7.94	78	78	0.005
San Joaquin River at Potato Slough (815)	216	22.1	24.0	7.2	8.5	7.73	7.83	84	60	0.004
Old River, western arm at railroad bridge (902)	344	22.2	24.3	7.6	8.2	7.87	7.94	84	88	0.003
Old River at mouth of Holland Cut (915)	423	22.2	24.0	7.5	8.5	7.86	7.95	108	84	0.003
Trip Blank	348	22.3	24.1	7.0	8.5	7.74	8.03	110	64	0.000
DIEPAMHR + 25 ppb PBO	343	22.2	22.9	7.4	8.1	7.73	8.03	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	259	22.2	22.9	7.2	8.6	7.83	7.99	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	135	22.2	22.8	7.4	8.4	7.66	7.86	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	339	22.2	22.7	7.4	8.5	8.00	8.14	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	212	22.2	22.6	7.6	8.8	7.83	7.98	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	210	22.2	22.4	7.5	8.6	7.78	7.85	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	340	22.2	22.4	7.0	8.4	7.86	7.92	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	412	22.0	22.4	7.4	8.5	7.88	8.02	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 69-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/19/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/17/09 - 3/18/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.8	98	2.5	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	91	6.4	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)	98	2.5	100	0.0	NS
Napa River at Vallejo Seawall (340)	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.	98	2.5	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.048	0.009	0.063	0.011	NS
Suisun Bay off Chipps Island (508)	0.098	0.006	0.074	0.009	NS
Montezuma Slough at Nurse Slough (609)	0.068	0.009	0.058	0.006	NS
Grizzly Bay at Dolphin (602)	0.077	0.004	0.071	0.007	NS
Carquinez Strait, West of Benicia army dock (405)	0.075	0.005	0.061	0.003	S* (81%)
Napa River at Vallejo Seawall (340)	0.073	0.002	0.057	0.005	S* (78%)
Rough and Ready DWR station, Stockton	0.093	0.006	0.064	0.007	S* (69%)
Confluence of Lindsey Sl. and Cache Sl.	0.062	0.009	0.065	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.069	0.002	0.077	0.008	NS
Sacramento R. Deep Water Channel, Light 55	0.072	0.004	0.097	0.003	S** (135%)

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 69-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/17/09 - 3/18/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	358	13.6	6.91	10.3	38.4	0.13	0.000
Montezuma Slough at Nurse Slough (609)	2730	14.0	6.99	9.7	65.7	0.24	0.001
Grizzly Bay at Dolphin (602)	425	13.8	6.75	10.5	71.8	0.15	0.000
Carquinez Strait, West of Benicia army dock (405)	6750	13.2	7.14	10.5	97.9	0.20	0.001
Napa River at Vallejo Seawall (340)	11210	13.2	7.02	10.3	74.8	0.15	0.000
Rough and Ready DWR station, Stockton	740	15.7	7.68	8.5	6.0	0.08	0.001
Confluence of Lindsey Sl. and Cache Sl.	354	14.3	7.38	10.0	14.7	0.24	0.002
Upper Cache Slough at mouth of Ulatis Creek	614	14.3	7.97	9.9	32.1	0.08	0.002
Sacramento R. Deep Water Channel, Light 55	369	13.0	7.79	10.0	18.7	0.18	0.003

Table B 69-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/19/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/17/09 - 3/18/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	332	21.8	23.5	7.6	8.4	7.77	8.10	100	58	-
Suisun Bay off Chipps Island (508)	370	21.7	23.7	7.6	8.4	7.81	8.04	92	72	0.006
Montezuma Slough at Nurse Slough (609)	2587	21.6	23.9	7.5	8.4	7.77	7.86	380	78	0.007
Grizzly Bay at Dolphin (602)	420	21.6	23.8	7.6	8.5	7.86	8.06	320	72	0.008
Carquinez Strait, West of Benicia army dock (405)	6590	21.3	24.0	7.5	8.6	7.77	7.88	800	80	0.005
Napa River at Vallejo Seawall (340)	10390	21.6	24.3	7.3	8.7	7.76	7.91	1260	88	0.005
Rough and Ready DWR station, Stockton	723	21.5	23.6	7.2	8.4	7.98	8.14	176	104	0.004
Confluence of Lindsey Sl. and Cache Sl.	283	21.5	24.2	7.5	8.8	7.89	8.18	100	100	0.016
Upper Cache Slough at mouth of Ulatis Creek	577	21.4	23.8	7.6	8.7	8.14	8.38	212	180	0.005
Sacramento R. Deep Water Channel, Light 55	355	21.5	23.6	7.5	8.4	8.04	8.21	124	124	0.013
DIEPAMHR + 25 ppb PBO	332	21.5	23.0	7.8	8.1	7.80	8.09	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	352	21.9	23.2	7.5	8.6	7.81	8.02	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	2530	21.7	23.1	7.5	8.3	7.70	7.84	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	418	21.9	23.2	7.6	8.5	7.84	8.08	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	6410	21.7	23.0	6.3	8.2	7.54	7.91	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	10275	21.7	23.4	7.3	8.2	7.73	7.83	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	710	21.5	23.4	7.7	8.5	7.94	8.15	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	286	21.4	23.4	7.6	8.7	7.90	8.23	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	575	21.2	23.5	7.6	8.9	8.27	8.37	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	357	21.5	23.6	7.4	8.6	8.00	8.26	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 70-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 3/20/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/18/09 - 3/19/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	2.6	94	5.6	NS
Sacramento River at tip of Grand Island (711)	95	2.9	95	2.9	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	98	2.5	NS
Napa River at River Park Blvd.	100	0.0	100	0.0	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	95	5.0	95	2.9	NS
Instant Ocean Control @ 150 mS/cm	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.026	0.005	0.046	0.005	S* (177%)
Sacramento River at tip of Grand Island (711)	0.061	0.005	0.061	0.008	NS
San Joaquin River at Potato Slough (815)	0.046	0.004	0.087	0.007	S** (189%)
Old River, western arm at railroad bridge (902)	0.064	0.013	0.065	0.010	NS
Old River at mouth of Holland Cut (915)	0.093	0.006	0.069	0.004	S* (74%)
Napa River at River Park Blvd.	0.084	0.011	0.100	0.012	NS
Suisun Slough at Rush Ranch	0.074	0.005	0.093	0.006	S* (126%)
Sacramento River at Hood DWR Station	0.092	0.003	0.067	0.006	S* (73%)
Instant Ocean Control @ 150 mS/cm	0.033	0.004	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 70-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/18/09 - 3/19/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River at tip of Grand Island (711)	210	14.1	7.16	10.1	5.9	0.34	0.001
San Joaquin River at Potato Slough (815)	218	14.4	6.94	10.0	10.3	0.11	0.000
Old River, western arm at railroad bridge (902)	258	14.8	7.39	10.1	10.9	0.05	0.000
Old River at mouth of Holland Cut (915)	319	14.8	7.21	9.8	7.6	0.03	0.000
Napa River at River Park Blvd.	466	16.6	7.96	10.5	42.3	0.05	0.001
Suisun Slough at Rush Ranch	4106	19.0	7.42	9.2	98.5	0.16	0.001
Sacramento River at Hood DWR Station	197	14.4	7.14	9.9	5.4	0.46	0.002

Table B 70-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 3/20/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/18/09 - 3/19/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	334	22.1	23.9	7.6	8.4	7.29	8.14	100	58	-
Sacramento River at tip of Grand Island (711)	199	22.1	23.8	7.4	8.4	7.29	8.08	80	78	0.015
San Joaquin River at Potato Slough (815)	206	22.3	24.0	7.3	8.7	7.20	8.17	84	68	0.004
Old River, western arm at railroad bridge (902)	254	22.3	23.6	7.5	8.8	7.27	8.14	84	68	0.002
Old River at mouth of Holland Cut (915)	286	22.3	23.8	7.3	8.5	7.34	8.11	88	70	0.000
Napa River at River Park Blvd.	453	22.4	23.8	7.3	8.9	7.51	8.20	88	96	0.003
Suisun Slough at Rush Ranch	3885	22.3	23.9	6.9	8.4	7.85	8.31	620	222	0.009
Sacramento River at Hood DWR Station	219	22.4	24.0	6.9	8.7	7.28	8.22	72	80	0.029
Instant Ocean Control @ 150 mS/cm	156	22.3	23.5	7.5	8.3	5.94	8.69	40	5	-
DIEPAMHR + 25 ppb PBO	338	22.2	23.3	7.4	8.5	7.33	8.26	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	204	22.3	23.5	7.6	8.5	7.39	8.25	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	207	22.4	23.6	7.4	8.7	7.18	8.15	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	244	22.5	23.7	7.3	8.7	7.29	8.10	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	289	22.3	23.4	7.2	8.6	7.34	8.14	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	450	22.3	23.7	7.3	8.6	7.51	8.23	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4056	22.4	23.4	7.2	8.3	7.90	8.31	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	200	22.5	23.6	6.9	8.5	7.31	8.24	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 71-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/02/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/31/09 - 4/01/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	5.0	95	3.1	NS
High EC Control @ 19.70 mS/cm	89	4.2	89	7.0	NS
Sacramento River at Hood DWR Station	100	0.0	94	5.6	NS
Napa River at River Park Blvd.	98	2.5	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	95	2.9	100	0.0	NS
Suisun Bay off Chipps Island (508)	98	2.1	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)	94	3.7	94	3.4	NS
Napa River at Vallejo Seawall (340)	100	0.0	95	3.1	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.032	0.003	0.046	0.007	NS
High EC Control @ 19.70 mS/cm	0.032	0.005	0.039	0.009	NS
Sacramento River at Hood DWR Station	0.064	0.005	0.079	0.003	NS
Napa River at River Park Blvd.	0.084	0.005	0.073	0.005	NS
Suisun Slough at Rush Ranch	0.074	0.008	0.091	0.007	NS
Rough and Ready DWR station, Stockton	0.094	0.008	0.102	0.010	NS
Grizzly Bay at Dolphin (602)	0.094	0.006	0.085	0.010	NS
Montezuma Slough at Nurse Slough (609)	0.088	0.003	0.091	0.002	NS
Suisun Bay off Chipps Island (508)	0.087	0.008	0.130	0.017	NS
Carquinez Strait, West of Benicia army dock (405)	0.046	0.007	0.056	0.007	NS
Napa River at Vallejo Seawall (340)	0.059	0.009	0.053	0.003	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 71-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/31/09 - 4/01/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	178	14.7	6.91	9.9	6.9	0.43	0.001
Napa River at River Park Blvd.	1430	17.4	7.77	9.6	105.0	0.22	0.004
Suisun Slough at Rush Ranch	3805	16.6	7.45	9.0	343.0	0.27	0.002
Rough and Ready DWR station, Stockton	913	16.3	7.94	10.1	7.2	0.02	0.000
Grizzly Bay at Dolphin (602)	5260	16.9	7.67	10.0	68.4	0.10	0.001
Montezuma Slough at Nurse Slough (609)	3439	15.9	7.12	9.0	80.3	0.25	0.001
Suisun Bay off Chipps Island (508)	5300	14.8	7.55	10.3	40.4	0.16	0.001
Carquinez Strait, West of Benicia army dock (405)	17740	15.7	7.53	9.8	155.7	0.21	0.001
Napa River at Vallejo Seawall (340)	18760	15.6	6.94	9.6	37.5	0.12	0.000

Table B 71-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/02/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 3/01/09 - 4/01/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	334	22.8	22.8	7.4	8.2	7.77	8.06	100	56	-
High EC Control @ 19.70 mS/cm	19135	22.4	23.1	7.0	8.2	7.72	7.78	2100	82	-
Sacramento River at Hood DWR Station	218	22.8	23.1	7.0	8.5	7.63	8.13	64	72	0.012
Napa River at River Park Blvd.	1325	22.1	23.1	7.3	8.5	7.89	8.12	240	118	0.007
Suisun Slough at Rush Ranch	3705	22.5	23.1	7.4	7.9	7.85	8.27	496	176	0.007
Rough and Ready DWR station, Stockton	931	23.1	23.1	7.3	8.3	7.95	8.14	164	104	0.001
Grizzly Bay at Dolphin (602)	4760	23.1	23.1	7.4	8.1	7.83	7.96	500	86	0.003
Montezuma Slough at Nurse Slough (609)	3382	22.7	23.1	7.4	8.4	7.71	8.00	388	84	0.005
Suisun Bay off Chipps Island (508)	5255	23.1	23.7	7.5	7.9	7.82	7.99	564	86	0.004
Carquinez Strait, West of Benicia army dock (405)	16675	23.1	23.4	7.1	8.1	7.65	7.88	1860	98	0.004
Napa River at Vallejo Seawall (340)	18515	23.1	23.9	7.2	7.7	7.65	7.92	1996	94	0.002
DIEPAMHR + 25 ppb PBO	391	22.6	23.0	7.3	7.9	7.77	8.03	-	-	-
High EC Control @ 19.70 mS/cm + 25 ppb PBO	19055	22.9	23.2	6.9	7.8	7.73	7.80	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	240	23.1	23.8	7.2	8.1	7.70	7.97	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	1362	23.2	23.4	7.4	8.2	7.93	8.15	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	3699	23.1	23.9	7.2	8.2	7.89	8.27	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	916	23.1	23.5	7.3	8.5	7.96	8.17	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	4656	23.1	24.1	7.3	8.1	7.81	7.95	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3458	23.5	23.5	7.0	8.5	7.76	7.98	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5165	23.3	24.0	7.1	8.3	7.81	7.96	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	16845	23.2	23.6	6.9	8.3	7.66	7.87	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	18575	23.2	23.9	7.0	8.1	7.70	7.87	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 72-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/03/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/02/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	76	17.9	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	98	2.5	NS
Confluence of Linsey Sl. And Cache Sl.	98	2.5	98	2.5	NS
Sacramento River at tip of Grand Island (711)	95	2.9	98	2.5	NS
San Joaquin River at Potato Slough (815)	98	2.5	98	2.5	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	98	2.5	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.050	0.008	0.050	0.012	NS
Sacramento R. Deep Water Channel, Light 55	0.068	0.022	0.112	0.005	NS
Upper Cache Slough at mouth of Ulatis Creek	0.036	0.005	0.106	0.005	S*** (294%)
Confluence of Linsey Sl. And Cache Sl.	0.083	0.006	0.088	0.005	NS
Sacramento River at tip of Grand Island (711)	0.076	0.002	0.088	0.007	NS
San Joaquin River at Potato Slough (815)	0.090	0.003	0.105	0.006	NS
Old River, western arm at railroad bridge (902)	0.090	0.007	0.124	0.007	S* (138%)
Old River at mouth of Holland Cut (915)	0.100	0.013	0.105	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 72-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/02/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	283	14.9	7.02	10.1	19.5	0.26	0.001
Upper Cache Slough at mouth of Ulatis Creek	605	15.3	7.96	10.2	29.3	0.04	0.001
Confluence of Linsey Sl. And Cache Sl.	272	15.5	6.90	9.9	14.2	0.28	0.001
Sacramento River at tip of Grand Island (711)	217	16.3	7.38	9.7	8.5	0.38	0.003
San Joaquin River at Potato Slough (815)	232	16.0	7.50	10.0	9.6	0.10	0.001
Old River, western arm at railroad bridge (902)	262	15.9	7.49	9.7	12.3	0.04	0.000
Old River at mouth of Holland Cut (915)	268	15.9	7.41	9.8	9.0	0.01	0.000

Table B 72-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/03/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/02/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	22.1	23.5	7.5	8.5	7.69	8.12	100	56	-
Sacramento R. Deep Water Channel, Light 55	264	22.3	23.2	7.3	8.9	7.78	8.10	104	92	0.012
Upper Cache Slough at mouth of Ulatis Creek	571	22.3	23.5	7.3	8.6	8.24	8.39	196	172	0.003
Confluence of Linsey Sl. And Cache Sl.	248	22.6	23.4	7.0	8.8	7.79	8.13	92	88	0.017
Sacramento River at tip of Grand Island (711)	196	22.7	23.5	7.3	8.8	7.72	8.04	80	74	0.019
San Joaquin River at Potato Slough (815)	222	22.6	23.5	7.3	8.3	7.72	8.05	100	72	0.005
Old River, western arm at railroad bridge (902)	253	22.7	23.4	7.5	8.8	7.79	8.06	84	72	0.002
Old River at mouth of Holland Cut (915)	256	22.7	23.3	7.4	8.8	7.75	8.07	88	74	0.001
DIEPAMHR + 25 ppb PBO	334	22.7	23.5	7.6	8.3	7.72	8.05	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	258	22.6	23.1	7.0	8.4	7.74	8.06	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	567	22.7	23.3	7.2	8.5	8.23	8.37	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	245	22.6	22.8	7.0	8.5	7.79	8.05	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	197	22.7	23.1	7.3	8.5	7.19	8.07	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	232	22.6	23.2	7.3	8.4	7.74	8.05	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	253	22.6	22.9	7.4	9.0	7.81	8.12	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb	258	22.7	23.1	7.2	8.8	7.78	7.97	-	-	-

PBO

Table B 73-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/16/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/14/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	83	11.1	NS
High EC Control @ 19.88 mS/cm	87	6.3	81	10.8	NS
Rough and Ready DWR station, Stockton	100	0.0	97	2.8	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	95	2.9	NS
Grizzly Bay at Dolphin (602)	95	2.7	100	0.0	NS
Napa River at Vallejo Seawall (340)[3]	95	3.1	88	4.8	NS
Carquinez Strait, West of Benicia army dock (405)	100	0.0	98	2.5	NS
Suisun Bay off Chipps Island (508)	98	2.3	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.003	0.033	0.005	S*
High EC Control @ 19.88 mS/cm	0.023**	0.006	0.008**	0.001	S*
Rough and Ready DWR station, Stockton	0.095	0.005	0.105	0.006	NS
Montezuma Slough at Nurse Slough (609)	0.072	0.009	0.065	0.013	NS
Grizzly Bay at Dolphin (602)	0.044	0.007	0.049	0.003	NS
Napa River at Vallejo Seawall (340)[3]	0.052	0.004	0.032	0.007	S*
Carquinez Strait, West of Benicia army dock (405)	0.030*	0.007	0.044	0.008	NS
Suisun Bay off Chipps Island (508)	0.095	0.013	0.070	0.007	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard single-concentration statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control.

Table B 73-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/14/09 - 4/15/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Rough and Ready DWR station, Stockton	914	16.9	7.72	8.0	10.2	0.15	0.002
Montezuma Slough at Nurse Slough (609)	3895	15.4	7.05	9.3	93.5	0.34	0.001
Grizzly Bay at Dolphin (602)	5620	15.6	7.54	10.0	234.0	0.32	0.002
Napa River at Vallejo Seawall (340)	19420	14.0	6.99	10.2	46.3	0.59	0.001
Carquinez Strait, West of Benicia army dock (405)	9520	14.3	7.32	10.1	146.0	0.62	0.002
Suisun Bay off Chipps Island (508)	597	14.9	7.14	10.2	26.8	0.31	0.001

Table B 73-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/16/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/14/09-4/15/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	331	22.0	23.4	7.6	8.4	7.73	8.02	100	56	-
High EC Control @ 19.88 mS/cm	19135	21.6	23.5	7.5	8.6	7.58	7.87	2680	82	-
Rough and Ready DWR station, Stockton	877	21.5	23.2	7.5	8.8	8.03	8.24	190	112	0.010
Montezuma Slough at Nurse Slough (609)	3577	20.2	23.4	7.4	8.4	7.82	8.01	452	88	0.013
Grizzly Bay at Dolphin (602)	6280	21.9	23.3	7.8	8.5	7.83	8.10	704	86	0.015
Napa River at Vallejo Seawall (340)	18650	22.6	23.2	6.4	8.1	7.56	7.91	2340	100	0.015
Carquinez Strait, West of Benicia army dock (405)	8875	22.7	23.1	7.4	8.5	7.80	8.02	1004	88	0.022
Suisun Bay off Chipps Island (508)	510	22.5	22.9	7.2	8.5	7.80	8.22	98	76	0.021
DIEPAMHR + 25 ppb PBO	338	22.5	22.5	7.7	8.6	7.83	8.12	-	-	-
High EC Control @ 19.88 mS/cm + 25 ppb PBO	19215	22.7	23.5	7.2	8.1	7.56	7.86	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	917	22.7	24.4	7.4	8.8	8.00	8.32	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3754	22.6	24.4	7.3	8.7	7.83	8.03	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	7805	22.7	23.7	7.6	8.4	7.88	8.03	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	18885	22.6	24.8	7.1	8.5	7.77	7.95	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	8820	22.7	24.2	7.6	8.4	7.79	7.97	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	524	22.6	24.1	7.1	8.6	7.82	8.21	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 74-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/17/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/15/09 - 4/16/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC control @147.3 uS/cm	100	0.0	94	3.2	NS
Sacramento R. Deep Water Channel, Light 55[3]	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	95	5.0	93	2.5	NS
Confluence of Linsey Sl. And Cache Sl.	98	2.5	95	2.9	NS
Suisun Slough at Rush Ranch	100	0.0	98	2.5	NS
Napa River at River Park Blvd.	100	0.0	95	2.9	NS
Sacramento River at tip of Grand Island (711)	95	2.8	93	4.8	NS
Sacramento River at Hood DWR Station[3]	97	2.8	95	2.9	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.065	0.006	0.056	0.001	NS
Low EC control @147.3 uS/cm	0.049*	0.005	0.033**	0.005	NS
Sacramento R. Deep Water Channel, Light 55[3]	0.092	0.010	0.092	0.015	NS
Upper Cache Slough at mouth of Ulatis Creek	0.101	0.011	0.096	0.009	NS
Confluence of Linsey Sl. And Cache Sl.	0.083	0.010	0.083	0.007	NS
Suisun Slough at Rush Ranch	0.050	0.014	0.090	0.005	S* (180%)
Napa River at River Park Blvd.	0.088	0.009	0.093	0.014	NS
Sacramento River at tip of Grand Island (711)	0.081	0.014	0.086	0.015	NS
Sacramento River at Hood DWR Station[3]	0.075	0.016	0.079	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low EC samples were compared to the Low EC Control.

Table B 74-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/15/09 - 4/16/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	409	15.5	7.23	9.5	18.0	0.14	0.001
Upper Cache Slough at mouth of Ulatis Creek	674	15.3	8.61	11.0	46.1	0.08	0.007
Confluence of Linsey Sl. And Cache Sl.	371	15.3	7.23	11.0	30.0	0.16	0.001
Suisun Slough at Rush Ranch	4816	16.9	7.53	8.8	395.3	0.46	0.004
Napa River at River Park Blvd.	3892	17.9	7.98	9.9	12.7	0.09	0.002
Sacramento River at tip of Grand Island (711)	148	15.6	7.03	10.0	23.9	0.42	0.001
Sacramento River at Hood DWR Station	148	14.4	6.85	10.0	7.8	0.52	0.001

Table B 74-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/17/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/15/09 - 4/16/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	326	22.7	23.4	7.7	8.2	7.81	8.01	104	60	-
Low EC control @147.3 uS/cm	155	22.6	23.2	7.6	8.9	7.55	7.85	44	26	-
Sacramento R. Deep Water Channel, Light 55	402	22.8	23.9	7.6	8.8	8.06	8.17	124	108	0.007
Upper Cache Slough at mouth of Ulatis Creek	675	22.7	23.5	7.5	8.6	8.35	8.47	226	204	0.010
Confluence of Linsey Sl. And Cache Sl.	366	22.7	24.3	7.3	8.5	8.00	8.20	114	118	0.009
Suisun Slough at Rush Ranch	4797	22.7	23.9	7.4	8.7	7.90	8.40	650	248	0.014
Napa River at River Park Blvd.	3703	22.8	23.9	7.6	8.5	7.97	8.16	480	120	0.003
Sacramento River at tip of Grand Island (711)	154	22.7	23.7	7.4	8.9	7.71	7.95	56	58	0.018
Sacramento River at Hood DWR Station	151	22.7	24.1	7.4	8.8	7.71	7.90	52	52	0.015
DIEPAMHR + 25 ppb PBO	346	22.7	23.6	7.6	8.5	7.80	8.01	-	-	-
Low EC control @147.3 uS/cm 25 ppb PBO	156	22.8	23.4	7.6	8.9	7.55	7.81	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	405	22.7	23.9	7.7	8.8	8.13	8.40	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	677	22.7	23.6	7.5	8.7	8.34	8.49	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	369	22.7	24.1	7.4	8.7	8.10	8.23	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4806	22.7	23.7	7.4	8.7	7.78	8.39	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	3698	22.8	24.1	7.6	8.4	7.96	8.13	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	155	23.1	23.8	7.4	8.7	7.78	7.93	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	153	23.2	23.9	7.4	8.9	7.68	7.92	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 75-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/24/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/23/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	98	2.5	NS
Low EC Control @ 191.2 µS/cm	89	0.3	98	2.5	NS
Old River at mouth of Holland Cut (915)	90	10.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	95	2.9	97	2.8	NS
Old River, western arm at railroad bridge (902)	100	0.0	95	2.9	NS
Field Dup: Old River, western arm at railroad bridge (902)	98	2.5	-	-	NA
Bottle Blank: DIEPAMHR	84	5.2	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.084	0.005	0.025	0.005	S*** (30%)
Low EC Control @ 191.2 µS/cm	0.061	0.004	0.031	0.002	S*** (51%)
Old River at mouth of Holland Cut (915)	0.087	0.007	0.058	0.007	S* (67%)
San Joaquin River at Potato Slough (815)	0.069	0.007	0.054	0.005	NS
Old River, western arm at railroad bridge (902)	0.068	0.004	0.045	0.003	S** (66%)
Field Dup: Old River, western arm at railroad bridge (902)	0.061	0.007	-	-	NA
Bottle Blank: DIEPAMHR	0.057**	0.003	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
   Unmanipulated samples were analyzed using one-way ANOVA and Tukey's Multiple Comparison Procedure ($P < 0.05$).
   Samples with PBO additions were analyzed using two-way ANOVA and Tukey's Multiple Comparison Procedure ($P < 0.05$).
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

Table B 75-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/23/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
San Joaquin River at Potato Slough (815)	181	18.2	7.16	9.9	7.0	0.10	0.000
Old River, western arm at railroad bridge (902)	252	20.5	7.24	9.4	6.8	0.06	0.000
Old River at mouth of Holland Cut (915)	292	20.5	7.19	9.0	6.4	0.03	0.000
Field Dup: Old River, western arm at railroad bridge (902)	252	20.5	7.24	9.4	7.4	0.06	0.000

Table B 75-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/24/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/23/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	339	22.7	24.4	7.4	8.5	7.80	8.11	-	-	-
Low EC Control @ 191.2 µS/cm	209	22.7	24.1	7.5	8.7	7.64	7.98	64	34	-
Old River at mouth of Holland Cut (915)	230	22.8	24.4	7.3	8.9	7.87	8.09	84	72	0.002
San Joaquin River at Potato Slough (815)	187	22.7	24.2	7.3	8.5	7.78	8.03	72	64	0.005
Old River, western arm at railroad bridge (902)	243	22.6	24.3	7.5	8.4	7.88	8.10	84	70	0.004
Field Dup: Old River, western arm at railroad bridge (902)	244	22.5	24.4	7.3	8.8	7.83	8.10	80	70	0.001
Bottle Blank: DIEPAMHR	334	22.6	24.2	7.5	8.6	7.76	8.08	64	58	0.003
DIEPAMHR + 25 ppb PBO	335	22.7	24.2	7.4	8.4	7.79	8.10	-	-	-
Low EC Control @ 191.2 µS/cm + 25 ppb PBO	209	22.7	24.2	7.5	8.9	7.69	7.96	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	283	22.8	24.1	7.3	8.9	7.73	8.06	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	184	22.7	24.1	7.2	8.9	7.74	7.96	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	245	22.6	24.0	7.4	8.6	7.83	8.13	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 76-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/30/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/28/09 - 4/29/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	94	3.2	NS
Low EC Control @ 129.1 µS/cm	98	2.5	98	2.5	NS
High EC Control @ 15.30 mS/cm	95	2.9	100	0.0	NS
High EC Control @ 25.00 mS/cm	79*	4.8	82	7.7	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Napa River at River Park Blvd.	100	0.0	97	2.8	NS
Sacramento River at Hood DWR Station[3]	100	0.0	92	5.3	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[4]	100	0.0	98	2.5	NS
Suisun Bay off Chipps Island (508)	98	2.3	100	0.0	NS
Montezuma Slough at Nurse Slough (609)	97	2.8	100	0.0	NS
Grizzly Bay at Dolphin (602)	98	2.5	95	2.8	NS
Napa River at Vallejo Seawall (340)[5]	90	5.5	95	3.1	NS
Trip Blank: DIEPAMHR	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.055	0.009	0.069	0.006	NS
Low EC Control @ 129.1 µS/cm	0.055	0.002	0.057	0.006	NS
High EC Control @ 15.30 mS/cm	0.036	0.006	0.045*	0.005	NS
High EC Control @ 25.00 mS/cm	0.020	0.005	0.034*	0.012	NS
Suisun Slough at Rush Ranch	0.090	0.006	0.119	0.006	S* (132%)
Napa River at River Park Blvd.	0.087	0.015	0.107	0.009	NS
Sacramento River at Hood DWR Station[3]	0.077	0.005	0.099	0.005	S* (129%)
Rough and Ready DWR station, Stockton	0.100	0.009	0.120	0.009	NS
Carquinez Strait, West of Benicia army dock (405)[4]	0.061	0.003	0.069	0.004	NS
Suisun Bay off Chipps Island (508)	0.098	0.002	0.106	0.011	NS
Montezuma Slough at Nurse Slough (609)	0.113	0.014	0.099	0.007	NS
Grizzly Bay at Dolphin (602)	0.054	0.007	0.081	0.004	S* (150%)
Napa River at Vallejo Seawall (340)[5]	0.048	0.007	0.070	0.005	S* (146%)
Trip Blank: DIEPAMHR	0.068	0.008	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.
*: $P < 0.05$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 15.30 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 25.00 mS/cm.

Table B 76-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/28/09 - 4/29/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	4772	14.7	7.01	8.9	71.4	0.14	0.000
Napa River at River Park Blvd.	9100	17.5	7.27	10.0	33.1	0.00	0.000
Sacramento River at Hood DWR Station	120	16.4	7.08	8.7	12.7	0.02	0.000
Rough and Ready DWR station, Stockton	690	18.8	7.74	7.5	12.6	0.13	0.002
Carquinez Strait, West of Benicia army dock (405)	15240	15.0	7.55	10.0	424.3	0.37	0.002
Suisun Bay off Chipps Island (508)	4810	15.4	7.51	10.0	37.0	0.13	0.001
Montezuma Slough at Nurse Slough (609)	4000	16.5	7.01	9.3	119.7	0.17	0.000
Grizzly Bay at Dolphin (602)	8380	15.3	7.48	10.0	379.0	0.33	0.002
Napa River at Vallejo Seawall (340)	24360	14.4	7.49	9.7	57.3	0.11	0.001
Trip Blank: DIEPAMHR	-	-	-	-	0.4	0.00	-

Table B 76-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 4/30/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/28/09 - 4/29/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	332	22.8	24.1	7.3	8.2	7.70	8.26	124	58	-
Low EC Control @ 129.1 µS/cm	132	22.8	23.6	7.2	8.6	7.43	8.20	36	20	-
High EC Control @ 15.30 mS/cm	14790	22.9	23.9	7.2	8.3	7.68	7.99	1680	70	-
High EC Control @ 25.00 mS/cm	24215	22.8	24.0	7.1	7.8	7.72	7.93	3080	80	-
Suisun Slough at Rush Ranch	4586	22.8	24.0	7.5	8.4	8.11	8.15	640	158	0.007
Napa River at River Park Blvd.	4892	22.7	24.0	7.1	8.6	7.79	7.96	1200	128	0.000
Sacramento River at Hood DWR Station	235	22.7	24.1	7.0	8.7	7.62	8.11	48	51	0.001
Rough and Ready DWR station, Stockton	863	22.7	23.6	7.2	8.5	7.80	8.07	144	93	0.007
Carquinez Strait, West of Benicia army dock (405)	14030	22.7	22.8	7.2	8.2	7.68	7.88	1720	88	0.009
Suisun Bay off Chipps Island (508)	4674	22.7	23.9	7.4	8.7	7.71	8.01	520	74	0.005
Montezuma Slough at Nurse Slough (609)	3830	22.8	23.4	7.4	8.3	7.85	7.93	500	86	0.006
Grizzly Bay at Dolphin (602)	7910	22.9	23.8	7.4	8.2	7.75	8.07	1000	82	0.014
Napa River at Vallejo Seawall (340)	22870	22.8	23.8	6.9	7.6	7.64	7.87	2880	102	0.003
Trip Blank: DIEPAMHR	446	22.9	23.9	7.3	8.6	7.73	8.16	100	57	0.000
DIEPAMHR + 25 ppb PBO	339	22.5	22.8	7.3	8.4	7.70	8.03	-	-	-
Low EC Control @ 129.1 µS/cm + 25 ppb PBO	161	22.5	22.8	7.2	8.5	7.44	8.12	-	-	-
High EC Control @ 15.30 mS/cm + 25 ppb PBO	14580	22.4	22.9	7.3	8.2	7.67	7.91	-	-	-
High EC Control @ 25.00 mS/cm + 25 ppb PBO	23910	22.5	22.9	7.0	8.0	7.75	7.96	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4550	22.4	22.9	7.4	8.6	7.92	8.21	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	4820	22.3	22.9	7.3	8.8	7.86	7.97	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	166	22.2	22.9	7.1	8.6	7.52	8.16	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	699	22.1	22.8	7.3	8.6	7.82	8.01	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	14075	22.0	22.8	7.1	8.1	7.72	7.91	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	4428	21.9	22.8	7.4	8.9	7.72	7.98	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3710.5	21.8	22.8	7.2	8.3	7.81	7.93	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	7890	21.9	22.9	7.5	8.3	7.74	7.94	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	22215	21.4	22.8	6.7	8.4	7.62	7.88	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 77-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/01/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/30/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
Low EC Control @ 120.5 uS/cm	97	2.8	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.	100	0.0	98	2.5	NS
Sacramento River at tip of Grand Island (711)	97	2.8	98	2.5	NS
San Joaquin River at Potato Slough	98	2.5	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.057	0.004	0.048	0.001	S*
Low EC Control @ 120.5 uS/cm	0.051	0.006	0.025**	0.004	S**
Sacramento R. Deep Water Channel, Light 55	0.095	0.005	0.090	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.083	0.009	0.087	0.005	NS
Confluence of Lindsey Sl. and Cache Sl.	0.106	0.006	0.085	0.009	S*
Sacramento River at tip of Grand Island (711)	0.092	0.008	0.093	0.005	NS
San Joaquin River at Potato Slough	0.105	0.006	0.114	0.010	NS
Old River, western arm at railroad bridge (902)	0.109	0.006	0.112	0.009	NS
Old River at mouth of Holland Cut (915)	0.118	0.010	0.116	0.003	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 77-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/30/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	236	16.6	7.25	9.4	31.2	0.16	0.001
Upper Cache Slough at mouth of Ulatis Creek	329	16.8	6.88	9.9	45.9	0.03	0.000
Confluence of Lindsey Sl. and Cache Sl.	246	16.8	6.80	9.5	27.5	0.20	0.000
Sacramento River at tip of Grand Island (711)	120	17.1	6.88	9.8	10.1	0.04	0.000
San Joaquin River at Potato Slough (815)	196	19.0	6.82	10.0	4.4	0.07	0.000
Old River, western arm at railroad bridge (902)	243	18.3	6.81	9.3	6.1	0.04	0.000
Old River at mouth of Holland Cut (915)	294	19.2	6.86	9.3	5.9	0.02	0.000

Table B 77-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/1/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 4/30/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	337	23.3	23.8	7.4	8.3	7.66	8.10	124	58	-
Low EC Control @ 120.5 uS/cm	125	23.2	23.8	7.2	8.6	7.29	8.05	44	20	-
Sacramento R. Deep Water Channel, Light 55	261	23.3	23.7	7.1	8.7	7.75	8.13	84	78	0.010
Upper Cache Slough at mouth of Ulatis Creek	320	23.4	23.9	7.3	8.3	7.95	8.24	100	102	0.002
Confluence of Lindsey Sl. and Cache Sl.	203	23.3	23.7	7.2	8.9	7.74	8.19	64	74	0.014
Sacramento River at tip of Grand Island (711)	120	23.3	23.8	6.9	8.4	7.52	8.11	48	46	0.002
San Joaquin River at Potato Slough (815)	195	23.1	23.7	7.2	8.8	7.73	8.14	64	66	0.004
Old River, western arm at railroad bridge (902)	240	23.3	23.9	7.3	8.5	7.75	8.20	56	74	0.003
Old River at mouth of Holland Cut (915)	289	23.3	23.7	7.2	8.4	7.79	8.17	88	78	0.001
DIEPAMHR + 25 ppb PBO	335	22.0	23.9	7.4	8.5	7.70	8.06	-	-	-
Low EC Control @ 120.5 uS/cm + 25 ppb PBO	117	22.0	23.6	7.2	8.5	7.29	7.95	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	245	22.2	23.8	7.1	8.4	7.72	8.13	-	-	-
Upper Cache Slough at mouth of Ulatis Creek (815) + 25 ppb PBO	303	21.8	23.7	7.2	8.6	7.97	8.29	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	189	21.7	23.9	7.3	8.6	7.75	8.14	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	112	21.8	23.7	7.0	8.6	7.57	8.10	-	-	-
San Joaquin River at Potato Slough + 25 ppb PBO	184	21.8	23.9	7.3	8.9	7.74	7.99	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	231	21.8	23.9	7.3	8.6	7.78	8.09	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	275	22.0	24.0	7.3	8.7	7.77	8.08	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 78-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/14/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/09-5/13/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	5.0	-	-	-
Low EC Control @ 119.2 µS	90	5.8	-	-	-
High EC Control @ 17.30 mS	78	11.9	-	-	-
Napa River, near River Park Blvd.	98	2.5	-	-	-
Suisun Slough at Rush Ranch	95	2.8	-	-	-
Sacramento River at Hood DWR Station	72	8.7	-	-	-
Rough and Ready DWR station, Stockton	98	2.5	-	-	-
Napa River at Vallejo Seawall (340)	57	4.1	-	-	-

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.081	0.008	-	-	-
Low EC Control @ 119.2 µS	0.053	0.009	-	-	-
High EC Control @ 17.30 mS	0.051	0.004	-	-	-
Napa River, near River Park Blvd.	0.067	0.011	-	-	-
Suisun Slough at Rush Ranch	0.072	0.008	-	-	-
Sacramento River at Hood DWR Station	0.054	0.008	-	-	-
Rough and Ready DWR station, Stockton	0.095	0.003	-	-	-
Napa River at Vallejo Seawall (340)	0.099	0.021	-	-	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
   Unmanipulated samples were analyzed using one-way ANOVA and Tukey's Multiple Comparison Procedure ($P < 0.05$).
   Samples with PBO additions were analyzed using two-way ANOVA and Tukey's Multiple Comparison Procedure ($P < 0.05$).
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

* This test exhibited contamination in the PBO-manipulated samples, due to contamination of the PBO stock solution. This test was reset up on 5/16/09.

Table B 78-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/09-5/13/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Napa River, near River Park Blvd.	5780	20.8	6.51	10.6	47.8	0.14	0.005
Suisun Slough at Rush Ranch	4863	19.0	6.51	9.8	62.3	0.32	0.017
Sacramento River at Hood DWR Station	116	19.3	6.89	11.4	21.5	0.21	0.010
Rough and Ready DWR station, Stockton	491	21.3	7.43	6.9	9.6	0.09	0.003
Napa River at Vallejo Seawall (340)	16330	17.5	6.91	9.2	77.5	0.13	0.003

Table B 78-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/14/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/09-5/13/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	22.9	23.4	7.6	8.5	7.71	8.07	108	60	-
Low EC Control @ 119.2 µS	122	23.0	23.3	7.5	8.6	7.27	7.91	32	22	-
High EC Control @ 17.30 mS	16615	23.1	23.9	7.2	8.7	7.66	7.85	2040	82	-
Napa River, near River Park Blvd.	5530	23.0	23.6	6.9	8.4	7.86	8.01	652	116	0.004
Suisun Slough at Rush Ranch	4675	23.1	23.8	6.9	8.3	7.91	8.18	584	198	0.010
Sacramento River at Hood DWR Station	131	23.4	23.6	6.9	8.5	7.48	7.82	44	50	0.007
Rough and Ready DWR station, Stockton	477	23.2	23.8	7.0	8.5	7.67	8.04	112	70	0.004
Napa River at Vallejo Seawall (340)	15380	23.1	23.6	6.9	8.2	7.67	7.89	1920	94	0.008

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 79-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/15/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/14/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	91	5.9	58	25.0	NS
Confluence of Lindsey Sl. and Cache Sl.	95	2.9	87	9.4	NS
Sacramento R. Deep Water Channel, Light 55	92	5.3	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.073	0.005	0.076	0.008	NS
Confluence of Lindsey Sl. and Cache Sl.	0.090	0.007	0.089	0.010	NS
Sacramento R. Deep Water Channel, Light 55	0.098	0.005	0.109	0.008	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 79-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/14/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^oC)	pH	DO (mg/L)			
Confluence of Lindsey Sl. and Cache Sl.	207	20.7	7.29	11.0	132.7	0.16	0.001
Sacramento R. Deep Water Channel, Light 55	261	21.8	7.82	8.8	96.9	0.17	0.005

Table B 79-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/15/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/14/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	359	23.4	24.3	7.4	8.6	7.70	8.00	80	58	-
Confluence of Lindsey Sl. and Cache Sl.	254	23.5	24.2	7.3	8.6	7.70	8.17	76	74	0.011
Sacramento R. Deep Water Channel, Light 55	291	23.6	24.2	7.4	8.5	7.61	8.03	76	72	0.009
DIEPAMHR + 25 ppb PBO	362	23.4	24.0	7.3	8.5	7.72	8.02	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	245	23.9	24.0	7.2	8.7	7.72	8.18	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	290	24.0	24.3	7.1	8.7	7.69	8.02	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 80-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/16/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/09 - 5/13/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	87	9.4	NS
Low EC Control @ 119.2 µS/cm	100	0.0	87	6.3	NS
High EC Control @ 17.30 mS/cm	73*	6.0	73	11.1	NS
Napa River at River Park Blvd.	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	97	2.8	NS
Sacramento River at Hood DWR Station[3]	90	4.1	81	3.3	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Napa River at Vallejo Seawall (340)[4]	61	10.1	14**	9.0	S*

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.062	0.006	0.047	0.003	S*
Low EC Control @ 119.2 µS/cm	0.049	0.006	0.045	0.006	NS
High EC Control @ 17.30 mS/cm	0.039*	0.005	0.027**	0.004	NS
Napa River at River Park Blvd.	0.099	0.007	0.069	0.002	S**
Suisun Slough at Rush Ranch	0.101	0.006	0.089	0.012	NS
Sacramento River at Hood DWR Station[3]	0.070	0.008	0.043	0.007	S*
Rough and Ready DWR station, Stockton	0.085	0.004	0.084	0.007	NS
Napa River at Vallejo Seawall (340)[4]	0.063	0.006	0.097	0.013	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control.

Table B 80-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/09 - 5/13/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Napa River at River Park Blvd.	5780	20.8	6.51	10.6	47.8	0.14	0.000
Suisun Slough at Rush Ranch	4863	19.0	6.51	9.8	62.3	0.32	0.000
Sacramento River at Hood DWR Station	116	19.3	6.89	11.4	21.5	0.21	0.001
Rough and Ready DWR station, Stockton	491	21.3	7.43	6.9	9.6	0.09	0.001
Napa River at Vallejo Seawall (340)	16330	17.5	6.91	9.2	77.5	0.13	0.000

Table B 80-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/16/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/12/09 - 5/13/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	23.9	24.0	7.5	8.5	7.72	8.06	108	60	-
Low EC Control @ 119.2 µS/cm	127	23.7	24.1	7.4	8.5	7.30	7.82	32	22	-
High EC Control @ 17.30 mS/cm	16505	23.9	24.1	6.9	8.1	7.56	7.82	2040	82	-
Napa River at River Park Blvd.	5410	23.8	24.0	6.9	8.2	7.78	7.98	652	116	0.005
Suisun Slough at Rush Ranch	4550	23.9	24.0	6.9	8.5	8.01	8.19	384	198	0.017
Sacramento River at Hood DWR Station	124	23.7	24.0	7.0	8.4	7.34	7.99	44	50	0.010
Rough and Ready DWR station, Stockton	483	23.9	24.1	7.2	8.4	7.66	7.91	112	70	0.003
Napa River at Vallejo Seawall (340)	15320	23.7	24.0	6.6	8.1	7.58	7.81	1920	94	0.003
DIEPAMHR + 25 ppb PBO	239	23.7	23.7	7.2	8.5	7.67	7.84	-	-	-
Low EC Control @ 119.2 µS/cm + 25 ppb PBO	240	23.6	24.0	7.4	8.5	7.37	8.08	-	-	-
High EC Control @ 17.30 mS/cm + 25 ppb PBO	16445	23.9	24.0	6.7	8.0	7.60	7.84	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	5330	23.8	24.0	7.2	8.4	7.78	7.98	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4552	23.8	24.3	6.9	8.3	7.99	8.20	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	149	23.8	24.2	6.9	8.7	7.44	7.83	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	485	23.9	24.2	7.0	8.5	7.65	7.94	-	-	-
Napa River at Vallejo Seawall	15325	23.6	24.1	6.8	8.2	7.68	7.78	-	-	-

(340) + 25 ppb PBO

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 81-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/20/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/18/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
High EC Control @ 20360 uS/cm	100	0.0	93	4.8	NS
Grizzly Bay at Dolphin (602)	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[3]	88	7.5	93	4.8	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.071	0.002	0.081	0.005	NS
High EC Control @ 20360 uS/cm	0.035*	0.012	0.051**	0.005	NS
Grizzly Bay at Dolphin (602)	0.096	0.002	0.103	0.007	NS
Suisun Bay off Chipps Island (508)	0.087	0.008	0.111	0.010	NS
Carquinez Strait, West of Benicia army dock (405)[3]	0.053	0.007	0.058	0.002	NS
Montezuma Slough at Nurse Slough (609)	0.106	0.009	0.102	0.004	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This high conductivity sample was compared to the High EC Control.

Table B 81-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/18/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Grizzly Bay at Dolphin (602)	6250	19.7	7.95	9.0	54.5	0.09	0.003
Suisun Bay off Chipps Island (508)	2366	19.5	6.98	9.0	28.3	0.00	0.000
Carquinez Strait, West of Benicia army dock (405)	19550	18.3	7.38	9.3	10.5	0.00	0.000
Montezuma Slough at Nurse Slough (609)	3368	21.4	7.66	8.2	47.0	0.00	0.000

Table B 81-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/20/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/18/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	340	22.9	23.5	7.4	8.4	7.74	8.20	104	60	-
High EC Control @ 20360 uS/cm	19550	23.6	23.6	7.0	8.4	7.63	7.85	2400	90	-
Grizzly Bay at Dolphin (602)	6135	23.0	23.6	7.4	8.4	7.63	7.97	760	76	0.003
Suisun Bay off Chipps Island (508)	2237	23.4	23.6	7.5	8.8	7.65	8.06	256	64	0.000
Carquinez Strait, West of Benicia army dock (405)	18545	23.4	23.6	7.0	8.4	7.66	7.84	2200	94	0.000
Montezuma Slough at Nurse Slough (609)	3159	23.5	23.7	6.8	8.5	7.64	8.07	360	84	0.000
DIEPAMHR + 25 ppb PBO	331	23.1	23.4	7.3	8.4	7.72	8.05	-	-	-

High EC Control @ 20360 uS/cm + 25 ppb PBO	19385	23.2	23.5	6.9	8.0	7.58	7.78	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	5685	23.0	23.9	7.3	8.3	7.66	7.90	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	2217	23.0	24.0	7.1	8.9	7.68	7.97	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	18285	23.0	24.4	7.0	8.9	7.65	7.82	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3173	23.2	23.6	7.4	8.5	7.69	8.01	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 82-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/21/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/20/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	97	2.8	97	2.8	NS
Low EC Control @ 149.4 µS/cm	98	2.5	95	2.9	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	100	0.0	93	4.8	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Bottle Blank (amber cubitainer)	100	0.0	-	-	NA
Bottle Blank (clear cubitainer)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]

	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.061	0.008	0.077	0.010	NS
Low EC Control @ 149.4 µS/cm	0.073	0.006	0.065	0.006	NS
Upper Cache Slough at mouth of Ulatis Creek	0.102	0.007	0.097	0.004	NS
Sacramento River at tip of Grand Island (711)	0.091	0.008	0.089	0.003	NS
San Joaquin River at Potato Slough (815)	0.082	0.009	0.095	0.010	NS
Old River, western arm at railroad bridge (902)	0.078	0.005	0.097	0.005	NS
Old River at mouth of Holland Cut (915)	0.087	0.011	0.104	0.009	NS
Bottle Blank (amber cubitainer)	0.067	0.003	-	-	NA
Bottle Blank (clear cubitainer)	0.065	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 82-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/20/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	282	19.9	7.24	8.3	56.6	0.09	0.001
Sacramento River at tip of Grand Island (711)	144	20.7	6.61	8.4	8.0	0.38	0.001
San Joaquin River at Potato Slough (815)	205	21.8	6.58	8.4	7.5	0.10	0.000
Old River, western arm at railroad bridge (902)	229	21.8	6.58	8.4	6.6	0.08	0.000
Old River at mouth of Holland Cut (915)	320	22.7	6.43	8.3	4.7	0.03	0.000
Bottle Blank (amber cubitainer)	-	-	-	-	-	0.05	-
Bottle Blank (clear cubitainer)	-	-	-	-	-	0.03	-

Table B 82-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/21/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/20/09.

Treatment	Laboratory Chemistry	Hardness	Alkalinity	Unionized

	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH	(mg/L as $CaCO_3$)	(mg/L as $CaCO_3$)	Ammonia (mg/L)[1]
DIEPAMHR	334	23.0	24.5	7.4	8.6	7.68	8.03	104	60	-
Low EC Control @ 149.4 µS/cm	145	23.2	24.0	7.2	8.6	7.33	7.69	44	28	-
Upper Cache Slough at mouth of Ulatis Creek	236	23.0	24.5	7.1	8.8	7.83	8.19	108	92	0.006
Sacramento River at tip of Grand Island (711)	103	22.4	24.4	6.9	8.7	7.46	7.91	48	56	0.014
San Joaquin River at Potato Slough (815)	183	22.8	24.1	7.0	8.8	7.58	7.99	60	58	0.004
Old River, western arm at railroad bridge (902)	167	23.7	24.1	7.0	8.7	7.64	8.03	72	64	0.004
Old River at mouth of Holland Cut (915)	242	23.0	24.2	6.9	8.7	7.65	8.11	84	76	0.002
Bottle Blank (amber cubitainer)	261	22.9	24.8	7.3	8.7	7.75	8.05	104	60	0.002
Bottle Blank (clear cubitainer)	313	22.6	24.6	7.4	8.7	7.68	8.03	104	60	0.001
DIEPAMHR + 25 ppb PBO	329	22.5	24.4	7.4	8.5	7.71	8.06	-	-	-
Low EC Control @ 149.4 µS/cm + 25 ppb PBO	144	22.3	23.8	7.3	8.6	7.32	7.76	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	235	22.1	24.5	7.1	8.6	7.81	8.18	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	134	22.1	24.4	6.8	8.6	7.46	7.93	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	221	22.2	24.4	7.1	8.6	7.60	7.96	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	205	22.6	25.1	7.0	8.8	7.62	8.04	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	280	22.1	25.5	7.0	8.8	7.74	8.07	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 83-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/28/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/26/09 - 5/27/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	3.1	100	0.0	NS
Low EC Control @ 157.5 µS/cm	100	0.0	100	0.0	NS
High EC Control @ 14.50 mS/cm	100	0.0	98	2.5	NS
High EC Control @ 23.36 mS/cm	94	3.3	94	6.3	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Napa River at River Park Blvd.	100	0.0	98	2.5	NS
Sacramento River at Hood DWR Station[3]	94	3.3	98	2.5	NS
Grizzly Bay at Dolphin (602)	97	2.8	98	2.5	NS
Suisun Bay off Chipps Island (508)	100	0.0	98	2.5	NS
Napa River at Vallejo Seawall (340)[5]	90	5.8	94	3.2	NS
Montezuma Slough at Nurse Slough (609)	98	2.5	98	2.5	NS
Carquinez Strait, West of Benicia army dock (405)[4]	98	2.5	100	0.0	NS
Bottle Blank: DIEPAMHR	100	0.0	-	-	NA
Field Dup.: Suisun Slough at Rush Ranch	98	2.5	-	-	NA

Field Dup.: Montezuma Slough at Nurse Slough (609)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.035	0.006	0.078	0.006	S** (223%)
Low EC Control @ 157.5 µS/cm	0.036	0.005	0.045	0.008	NS
High EC Control @ 14.50 mS/cm	0.037	0.003	0.055	0.004	S** (149%)
High EC Control @ 23.36 mS/cm	0.037	0.006	0.036	0.007	NS
Suisun Slough at Rush Ranch	0.097	0.010	0.123	0.008	S* (127%)
Napa River at River Park Blvd.	0.093	0.011	0.084	0.006	NS
Sacramento River at Hood DWR Station[3]	0.087	0.006	0.090	0.008	NS
Grizzly Bay at Dolphin (602)	0.087	0.010	0.097	0.005	NS
Suisun Bay off Chipps Island (508)	0.080	0.003	0.098	0.005	S* (123%)
Napa River at Vallejo Seawall (340)[5]	0.048	0.004	0.055	0.005	NS
Montezuma Slough at Nurse Slough (609)	0.090	0.001	0.075	0.005	S* (83%)
Carquinez Strait, West of Benicia army dock (405)[4]	0.073	0.000	0.117	0.041	NS
Bottle Blank: DIEPAMHR	0.070	0.008	-	-	NA
Field Dup.: Suisun Slough at Rush Ranch	0.112	0.009	-	-	NA
Field Dup.: Montezuma Slough at Nurse Slough (609)	0.103	0.008	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.
*: $P < 0.05$
**: $P < 0.01$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 14.50 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 23.36 mS/cm.

Table B 83-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/26/09 - 5/27/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	4755	18.5	6.82	7.1	54.7	0.12	0.000
Napa River at River Park Blvd.	10530	20.1	6.86	8.5	13.0	0.11	0.000
Sacramento River at Hood DWR Station	152	20.7	6.55	8.3	15.3	0.33	0.000
Grizzly Bay at Dolphin (602)	8100	22.1	6.80	9.1	28.4	0.06	0.000
Suisun Bay off Chipps Island (508)	3924	19.5	6.54	9.1	36.9	0.09	0.000
Napa River at Vallejo Seawall (340)	22870	18.6	6.58	8.7	32.8	0.09	0.000
Montezuma Slough at Nurse Slough (609)	3446	21.1	6.66	8.1	137.7	0.16	0.000
Carquinez Strait, West of Benicia army dock (405)	14080	18.5	7.45	9.2	288.7	0.21	0.001
Field Dup.: Suisun Slough at Rush Ranch	4755	18.5	6.82	7.1	47.7	0.07	0.000
Field Dup.: Montezuma Slough at Nurse Slough (609)	3446	21.1	6.66	8.1	138.0	0.15	0.000

Table B 83-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/28/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/26/09 - 5/27/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	332	23.5	23.7	7.5	8.6	7.59	8.18	104	60	-
Low EC Control @ 157.5 µS/cm	157	23.6	23.6	7.6	8.8	7.42	7.97	52	26	-
High EC Control @ 14.50 mS/cm	14125	23.6	23.6	7.1	8.1	7.65	7.89	1720	74	-
High EC Control @ 23.36 mS/cm	22435	23.4	23.7	7.1	8.1	7.72	7.87	2760	90	-
Suisun Slough at Rush Ranch	4504	23.5	23.9	7.3	8.5	7.81	8.13	520	142	0.003
Napa River at River Park Blvd.	10125	23.4	23.7	7.0	8.6	7.84	7.98	1240	128	0.003
Sacramento River at Hood DWR Station	146	23.5	23.7	7.1	8.4	7.62	7.82	52	54	0.010
Grizzly Bay at Dolphin (602)	7690	23.4	23.7	7.3	8.4	7.67	7.92	960	68	0.002
Suisun Bay off Chipps Island (508)	4089	23.3	23.7	7.4	8.6	7.65	7.89	500	64	0.003
Napa River at Vallejo Seawall (340)	21675	23.2	23.8	6.8	8.3	7.67	7.81	2640	100	0.001
Montezuma Slough at Nurse Slough (609)	3253	23.2	23.8	7.4	8.4	7.80	7.94	420	92	0.005
Carquinez Strait, West of Benicia army dock (405)	13450	23.2	23.7	7.2	8.1	7.61	7.81	1600	94	0.005
Bottle Blank 052609	343	23.2	23.8	7.5	8.6	7.77	8.18	104	60	-
Field Dup.: Suisun Slough at Rush Ranch	4542	23.2	23.8	7.3	8.7	7.90	8.13	52	154	0.002
Field Dup.: Montezuma Slough at Nurse Slough (609)	3292	23.2	23.8	7.5	8.9	7.78	7.96	420	84	0.006
DIEPAMHR + 25 ppb PBO	339	23.1	23.5	7.5	8.7	7.73	8.24	-	-	-
Low EC Control @ 157.5 µS/cm + 25 ppb PBO	160	23.1	23.5	7.7	8.9	7.46	8.01	-	-	-
High EC Control @ 14.50 mS/cm + 25 ppb PBO	13795	23.0	23.6	7.0	8.4	7.59	7.90	-	-	-
High EC Control @ 23.36 mS/cm + 25 ppb PBO	22405	23.1	23.7	6.9	8.2	7.65	7.88	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4537.5	23.0	23.8	7.5	8.8	7.81	8.14	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	10045	23.0	23.9	7.4	8.7	7.90	8.00	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	159.2	23.0	23.8	7.3	8.8	7.63	8.00	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	7665	23.1	24.0	7.4	8.9	7.65	7.80	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	4036	23.0	24.1	7.4	8.8	7.60	7.94	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	21460	23.1	24.0	6.8	8.4	7.68	7.79	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	3294.5	23.0	23.8	7.6	8.8	7.81	8.07	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	13630	23.0	23.9	7.12	8.6	7.61	7.85	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 84-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 5/29/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/27/09 and 5/28/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
Low EC Control @ 139.6 µS/cm	95	3.1	98	2.5	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
Sacramento R. Deep Water Channel, Light 55[3]	98	2.5	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	100	0.0	98	2.5	NS
Sacramento River at tip of Grand Island (711)[3]	93	2.5	98	2.5	NS
Old River at mouth of Holland Cut (915)	95	2.9	100	0.0	NS
San Joaquin River at Potato Slough (815)[3]	98	2.5	100	0.0	NS
Old River, western arm at railroad bridge (902)[3]	100	0.0	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.030	0.005	0.034	0.004	NS
Low EC Control @ 139.6 µS/cm	0.036	0.002	0.036	0.006	NS
Rough and Ready DWR station, Stockton	0.093	0.009	0.087	0.012	NS
Sacramento R. Deep Water Channel, Light 55[3]	0.082	0.008	0.075	0.011	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	0.068	0.010	0.081	0.008	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.082	0.003	0.083	0.006	NS
Sacramento River at tip of Grand Island (711)[3]	0.045	0.009	0.074	0.014	NS
Old River at mouth of Holland Cut (915)	0.094	0.009	0.094	0.006	NS
San Joaquin River at Potato Slough (815)[3]	0.079	0.030	0.085	0.009	NS
Old River, western arm at railroad bridge (902)[3]	0.091	0.011	0.100	0.013	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 84-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/27/09 - 5/28/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Rough and Ready DWR station, Stockton	435	25.8	7.08	6.0	13.3	0.09	0.001
Sacramento R. Deep Water Channel, Light 55	215	20.9	7.39	8.4	32.2	0.14	0.001
Confluence of Lindsey Sl. and Cache Sl.	188	21.1	7.52	8.4	37.8	0.11	0.001
Upper Cache Slough at mouth of Ulatis Creek	243	21.2	7.50	8.4	63.5	0.04	0.001
Sacramento River at tip of Grand Island (711)	151	21.8	7.54	8.4	11.6	0.22	0.003
Old River at mouth of Holland Cut (915)	286	24.1	7.18	7.7	6.4	0.00	0.000
San Joaquin River at Potato Slough (815)	176	22.7	7.27	8.2	6.3	0.00	0.000
Old River, western arm at railroad bridge (902)	231	23.6	7.29	8.0	7.2	0.00	0.000

Table B 84-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 5/29/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 5/27/09 - 5/28/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	339	23.1	23.5	7.3	8.4	7.66	8.08	108	62	-
Low EC Control @ 139.6 µS/cm	145	23.3	23.6	7.2	8.8	7.37	7.83	40	25	-
Rough and Ready DWR station, Stockton	422	23.3	23.5	7.0	8.7	7.70	7.82	96	68	0.002
Sacramento R. Deep Water Channel, Light 55	194	23.3	23.6	6.9	8.7	7.70	7.94	64	66	0.006
Confluence of Lindsey Sl. and Cache Sl.	177	23.3	23.5	6.6	8.7	7.70	7.96	64	62	0.005
Upper Cache Slough at mouth of Ulatis Creek	229	23.3	23.5	6.4	8.9	7.75	8.00	76	80	0.002
Sacramento River at tip of Grand Island (711)	145	23.3	23.5	6.9	8.5	7.62	7.75	52	54	0.006
Old River at mouth of Holland Cut (915)	271	23.3	23.5	6.3	8.6	7.80	7.87	84	70	0.000
San Joaquin River at Potato Slough (815)	172	23.3	23.5	6.4	8.8	7.62	7.92	56	52	0.000
Old River, western arm at railroad bridge (902)	214	23.3	23.5	6.3	8.8	7.69	7.94	68	60	0.000
DIEPAMHR + 25 ppb PBO	338	23.4	23.5	7.0	8.8	7.65	8.09	-	-	-
Low EC Control @ 139.6 µS/cm + 25 ppb PBO	146	23.4	23.5	6.7	8.6	7.31	7.84	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	423	23.3	23.5	6.7	8.4	7.71	7.80	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	197	23.5	23.5	6.4	8.8	7.69	7.93	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	181	23.4	23.5	6.6	8.6	7.70	7.96	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	232	23.4	23.5	6.4	8.8	7.77	8.10	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	144	23.6	23.9	6.3	8.4	7.61	8.00	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	266	23.6	23.7	6.2	8.9	7.77	8.40	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	164	23.7	23.7	6.2	8.5	7.61	7.90	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	209	23.6	23.8	6.1	8.7	7.74	7.99	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 85-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/11/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/09/09 - 6/10/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	98	2.5	NS
Low EC Control @ 161.5 µS/cm	90	7.1	95	3.1	NS
High EC Control @ 14.06 mS/cm	95	3.1	95	2.9	NS
High EC Control @ 23.81 mS/cm	73	4.8	78	3.9	NS
Suisun Slough at Rush Ranch	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station[3]	87	4.7	74	6.6	NS
Napa River at River Park Blvd.[4]	98	2.5	95	2.8	NS
Rough and Ready DWR station, Stockton	100	0.0	95	5.0	NS
Napa River at Vallejo Seawall (340)[5]	74	1.6	91	5.4	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	98	2.5	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)	97	2.8	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[4]	100	0.0	98	2.5	NS
Trip Blank: DIEPAMHR	97	3.1	-	-	NA
Bottle Blank: DIEPAMHR	92	2.6	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.009	0.042	0.004	NS
Low EC Control @ 161.5 µS/cm	0.044	0.003	0.036	0.007	NS
High EC Control @ 14.06 mS/cm	0.048	0.006	0.045	0.008	NS
High EC Control @ 23.81 mS/cm	0.033	0.002	0.028	0.004	NS
Suisun Slough at Rush Ranch	0.070	0.005	0.074	0.007	NS
Sacramento River at Hood DWR Station[3]	0.062	0.006	0.051	0.012	NS
Napa River at River Park Blvd.[4]	0.053	0.001	0.040	0.003	S** (75%)
Rough and Ready DWR station, Stockton	0.058	0.009	0.062	0.004	NS
Napa River at Vallejo Seawall (340)[5]	0.038	0.006	0.028	0.003	NS
Montezuma Slough at Nurse Slough (609)	0.068	0.006	0.064	0.005	NS
Suisun Bay off Chipps Island (508)	0.066	0.003	0.063	0.004	NS
Grizzly Bay at Dolphin (602)	0.066	0.011	0.065	0.006	NS
Carquinez Strait, West of Benicia army dock (405)[4]	0.048	0.005	0.057	0.003	NS
Trip Blank: DIEPAMHR	0.040	0.004	-	-	NA
Bottle Blank: DIEPAMHR	0.038	0.007	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
*: $P < 0.05$
**: $P < 0.01$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. These high conductivity samples were compared to the High EC Control @ 14.06 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 23.81 mS/cm.

Table B 85-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/9/09 - 6/10/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	5680	18.0	7.37	7.2	51.3	0.09	0.001
Sacramento River at Hood DWR Station	171	21.3	7.48	8.3	16.4	0.33	0.004
Napa River at River Park Blvd.	13480	21.0	7.85	8.8	18.7	0.03	0.001
Rough and Ready DWR station, Stockton	552	23.3	7.51	6.2	12.7	0.07	0.001
Napa River at Vallejo Seawall (340)	23140	18.1	7.78	8.8	21.3	0.10	0.001
Montezuma Slough at Nurse Slough (609)	4481	19.6	7.70	8.5	63.5	0.12	0.002
Suisun Bay off Chipps Island (508)	2506	19.0	7.85	9.2	30.4	0.12	0.003
Grizzly Bay at Dolphin (602)	7520	18.7	8.00	9.3	129.3	0.13	0.003
Carquinez Strait, West of Benicia army dock (405)	12010	18.1	7.84	9.2	105.7	0.17	0.003
Trip Blank: DIEPAMHR	-	-	-	-	0.5	0.03	-
Bottle Blank: DIEPAMHR	-	-	-	-	0.3	0.04	-

Table B 85-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/11/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/9/09 - 6/10/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	335	23.0	23.7	7.5	8.4	7.81	8.24	88	60	-
Low EC Control @ 161.5 µS/cm	157	23.0	23.4	7.6	8.6	7.43	8.27	48	22	-
High EC Control @ 14.06 mS/cm	13325	23.0	23.9	7.4	8.2	7.67	8.00	1640	96	-
High EC Control @ 23.81 mS/cm	22670	23.0	23.5	7.0	7.9	7.63	8.00	2800	88	-
Suisun Slough at Rush Ranch	5300	23.0	23.8	7.4	8.7	8.04	8.25	620	160	0.004
Sacramento River at Hood DWR Station	163	23.1	23.5	7.1	8.7	7.67	8.16	60	68	0.021
Napa River at River Park Blvd.	12740	23.1	24.0	7.0	8.3	7.94	8.07	1560	136	0.001
Rough and Ready DWR station, Stockton	545	23.0	23.7	7.2	8.7	7.82	8.20	148	76	0.005
Napa River at Vallejo Seawall (340)	22180	23.0	24.2	6.5	8.2	7.67	7.90	2760	108	0.002
Montezuma Slough at Nurse Slough (609)	4412	23.0	23.9	7.4	8.5	7.62	8.10	480	84	0.006
Suisun Bay off Chipps Island (508)	2269	23.1	24.2	7.6	8.4	7.80	8.03	272	74	0.005
Grizzly Bay at Dolphin (602)	7445	23.1	23.8	7.4	8.9	7.70	7.98	920	76	0.005
Carquinez Strait, West of Benicia army dock (405)	12135	23.1	24.1	7.0	8.2	7.69	7.90	1360	80	0.005
Trip Blank: DIEPAMHR	351	23.1	23.5	7.4	8.7	7.85	8.24	104	62	0.002
Bottle Blank: DIEPAMHR	338	23.1	24.2	7.5	8.6	7.80	8.17	104	64	0.003
DIEPAMHR + 25 ppb PBO	338	23.2	23.9	7.4	8.3	7.82	8.22	-	-	-
Low EC Control @ 161.5 µS/cm + 25 ppb PBO	160	23.2	24.0	7.5	8.4	7.46	8.16	-	-	-
High EC Control @ 14.06 mS/cm + 25 ppb PBO	13375	23.2	23.9	7.3	8.1	7.70	7.98	-	-	-
High EC Control @ 23.81 mS/cm + 25 ppb PBO	22580	23.2	24.1	7.1	8.3	7.74	8.02	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	5380	23.2	24.0	7.4	8.2	8.09	8.29	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	163.85	23.3	24.2	7.1	8.9	7.65	8.09	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	12835	23.3	24.0	7.0	8.2	7.93	8.03	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	531.5	23.4	24.2	7.3	8.5	7.83	8.04	-	-	-
Napa River at Vallejo Seawall (340) + 25 ppb PBO	22175	23.3	24.1	6.7	8.3	7.70	7.83	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	4334.5	23.4	24.1	7.4	8.5	7.86	8.02	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	2249.5	23.3	24.2	7.4	8.2	7.77	8.09	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	7420	23.4	23.9	7.5	8.2	7.60	7.97	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	12080	23.4	24.1	7.2	8.4	7.72	7.96	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 86-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/12/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/11/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	87	3.0	95	2.9	S* (109%)
Low EC Control @ 168.2 µS/cm	90	4.1	84*	3.2	NS
Sacramento R. Deep Water Channel, Light 55	95	5.0	89	4.1	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	92	5.3	82	2.6	NS
Confluence of Linsey Sl. And Cache Sl.[3]	81	11.2	95	3.1	NS
Sacramento River at tip of Grand Island (711)[3]	78	5.7	72	8.4	NS
San Joaquin River at Potato Slough (815)[3]	93	7.5	93	2.5	NS
Old River, western arm at railroad bridge (902)[3]	98	2.5	84	5.2	NS
Old River at mouth of Holland Cut (915)	92	5.3	90	7.1	NS
Field Dup.: San Joaquin River at Potato Slough (815)[3]	92	5.3	-	-	NA
Bottle Blank: DIEPAMHR	84	2.6	-	-	NA
Bottle Blank: Clear Plastic	86	5.9	-	-	NA
Bottle Blank: Amber Plastic	95	5.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.027	0.009	0.037	0.003	NS
Low EC Control @ 168.2 µS/cm	0.029	0.008	0.042	0.007	NS
Sacramento R. Deep Water Channel, Light 55	0.086	0.006	0.064	0.002	S* (74%)
Upper Cache Slough at mouth of Ulatis Creek[3]	0.075	0.014	0.084	0.012	NS
Confluence of Linsey Sl. And Cache Sl.[3]	0.067	0.003	0.068	0.006	NS
Sacramento River at tip of Grand Island (711)[3]	0.056	0.006	0.073	0.009	NS
San Joaquin River at Potato Slough (815)[3]	0.079	0.005	0.091	0.009	NS
Old River, western arm at railroad bridge (902)[3]	0.081	0.004	0.060	0.009	S* (74%)
Old River at mouth of Holland Cut (915)	0.070	0.003	0.078	0.004	NS
Field Dup.: San Joaquin River at Potato Slough (815)[3]	0.045	0.009	-	-	NA
Bottle Blank: DIEPAMHR	0.048	0.006	-	-	NA
Bottle Blank: Clear Plastic	0.043	0.007	-	-	NA
Bottle Blank: Amber Plastic	0.060	0.003	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 86-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/11/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	255	19.6	7.96	8.9	44.7	0.10	0.003
Upper Cache Slough at mouth of Ulatis Creek	214	18.9	7.96	9.0	101.9	0.08	0.002
Confluence of Lindsey Sl. And Cache Sl.	183	19.2	7.86	8.8	51.3	0.07	0.002
Sacramento River at tip of Grand Island (711)	170	20.2	7.66	8.6	11.4	0.10	0.002
San Joaquin River at Potato Slough (815)	182	20.7	7.87	8.9	6.7	0.00	0.000
Old River, western arm at railroad bridge (902)	213	21.7	7.80	8.5	6.3	0.00	0.000
Old River at mouth of Holland Cut (915)	271	22.1	7.80	8.1	5.2	0.00	0.000
Field Dup.: San Joaquin River at Potato Slough (815)	182	20.7	7.87	8.9	6.3	0.00	0.000
Bottle Blank: DIEPAMHR	-	-	-	-	0.5	0.00	-
Bottle Blank: Clear Plastic	-	-	-	-	-	-	-
Bottle Blank: Amber Plastic	-	-	-	-	-	-	-

Table B 86-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/12/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/11/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	337	22.8	24.3	7.3	8.1	7.72	8.11	88	60	-
Low EC Control @ 168.2 µS/cm	172	22.8	24.2	7.2	8.4	7.54	7.97	52	30	-
Sacramento R. Deep Water Channel, Light 55	248	22.8	24.4	7.2	8.3	7.64	8.10	76	72	0.006
Upper Cache Slough at mouth of Ulatis Creek	199	22.8	24.3	7.4	8.4	7.78	8.22	68	70	0.006
Confluence of Linsey Sl. And Cache Sl.	180	22.9	24.3	7.2	8.4	7.71	8.08	64	64	0.004
Sacramento River at tip of Grand Island (711)	163	23.0	24.4	7.1	8.3	7.68	8.03	56	64	0.005
San Joaquin River at Potato Slough (815)	178	22.9	24.4	7.1	8.4	7.63	8.09	64	56	0.000
Old River, western arm at railroad bridge (902)	210	22.9	24.4	7.3	8.2	7.71	8.12	60	60	0.000
Old River at mouth of Holland Cut (915)	261	23.0	24.3	7.4	8.4	7.74	8.06	72	62	0.000
Field Dup.: San Joaquin River at Potato Slough (815)	181	23.1	24.4	7.1	8.7	7.69	7.96	60	58	0.000
Bottle Blank: DIEPAMHR	340	23.1	24.3	7.3	8.3	7.76	8.11	104	58	0.000
Bottle Blank: Clear Plastic	339	23.2	24.3	7.5	8.4	7.76	8.10	88	60	-
Bottle Blank: Amber Plastic	342	23.2	24.4	7.4	8.8	7.76	8.11	88	60	-
DIEPAMHR + 25 ppb PBO	339	23.2	23.7	7.2	8.2	7.78	8.19	-	-	-
Low EC Control @ 168.2 µS/cm + 25 ppb PBO	172	23.3	23.6	7.3	8.5	7.48	7.94	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	246	23.3	23.9	7.4	8.2	7.78	8.13	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	201	23.3	23.9	7.6	8.7	7.79	8.20	-	-	-
Confluence of Linsey Sl. And Cache Sl. + 25 ppb PBO	180	23.5	23.7	7.3	8.3	7.73	8.11	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	163	23.4	23.9	7.3	8.6	7.66	8.06	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	179	23.5	23.9	7.3	8.4	7.71	8.08	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	208	23.6	23.9	7.3	8.4	7.74	8.02	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	264	23.6	23.8	7.3	8.4	7.78	8.06	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 87-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/25/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/23/09 - 6/24/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	2.7	95	2.9	NS
Low EC Control @ 140.9 µS/cm	95	2.6	91	5.1	NS
High EC Control @ 12.53 mS/cm	100	0.0	95	5.0	NS
High EC Control @ 17.69 mS/cm	98	2.5	93	4.4	NS
High EC Control @ 20.23 mS/cm	80	12.2	79	4.1	NS
Napa River, near River Park Blvd. [5]	92	5.3	93	7.5	NS
Suisun Slough @ Rush Ranch	98	2.5	97	2.8	NS
Rough and Ready DWR Station, Stockton	97	2.8	100	0.0	NS
Sacramento River at Hood DWR Station [3]	87*	3.0	66**	6.1	S* (76%)
Carquinez Strait, West of Benicia army dock (405) [6]	87	10.2	90	6.7	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602) [4]	97	2.8	100	0.0	NS
Trip Blank (DIEPAMHR)	97	2.8	-	-	NA
Trip Blank (DIEPAMHR)	98	2.5	-	-	NA
Field Dup: Carquinez Strait, West of Benicia army dock (405) [6]	91	5.4	-	-	NA
Field Dup: Suisun Bay off Chipps Island (508)	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.041	0.012	0.049	0.004	NS
Low EC Control @ 140.9 µS/cm	0.041	0.004	0.042	0.005	NS
High EC Control @ 12.53 mS/cm	0.044	0.006	0.048	0.006	NS
High EC Control @ 17.69 mS/cm	0.037	0.004	0.042	0.005	NS
High EC Control @ 20.23 mS/cm	0.037	0.001	0.028	0.006	NS
Napa River, near River Park Blvd. [5]	0.043	0.005	0.042	0.005	NS
Suisun Slough @ Rush Ranch	0.089	0.011	0.093	0.017	NS
Rough and Ready DWR Station, Stockton	0.075	0.005	0.133	0.029	NS
Sacramento River at Hood DWR Station [3]	0.035	0.006	0.068	0.015	NS
Carquinez Strait, West of Benicia army dock (405) [6]	0.043	0.012	0.026	0.007	NS
Montezuma Slough at Nurse Slough (609)	0.063	0.005	0.060	0.007	NS
Suisun Bay off Chipps Island (508)	0.052	0.009	0.047	0.010	NS
Grizzly Bay at Dolphin (602) [4]	0.068	0.004	0.060	0.004	NS
Trip Blank (DIEPAMHR)	0.061	0.005	-	-	NA
Trip Blank (DIEPAMHR)	0.046	0.005	-	-	NA
Field Dup: Carquinez Strait, West of Benicia army dock (405) [6]	0.057	0.006	-	-	NA
Field Dup: Suisun Bay off Chipps Island (508)	0.061	0.012	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
*: $P < 0.05$
**: $P < 0.01$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 12.53 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 17.69 mS/cm.
6. These high conductivity samples were compared to the High EC Control @ 20.23 mS/cm.

Table B 87-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/23/09 - 6/24/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Napa River, Near River Park Blvd.	17150	22.3	7.51	6.9	14.0	0.04	0.000
Suisun Slough at Rush Ranch	6460	20.4	7.13	5.5	51.1	0.15	0.001
Rough and Ready DWR Station, Stockton	607	24.2	7.34	6.0	11.5	0.09	0.001
Sacramento River at Hood DWR Station	149	23.2	7.11	7.5	20.4	0.30	0.002
Carquinez Strait, west of Benicia army dock (405)	19430	19.7	7.45	8.9	240.7	0.20	0.001
Montezuma Slough at Nurse Slough (609)	5750	22.0	7.46	7.5	73.6	0.11	0.001
Suisun Bay, off Chipps Island (508)	8510	20.5	7.60	8.8	24.6	0.08	0.001
Grizzly Bay at Dolphin (602)	11900	21.1	7.75	8.9	177.3	0.17	0.004
Trip Blank (DIEPAMHR) 6/23/09	-	-	-	-	0.4	0.02	-
Trip Blank (DIEPAMHR) 6/24/09	-	-	-	-	0.3	0.00	-
Field Dup: Carquinez Strait, west of Benicia army dock (405)	19430	19.7	7.45	8.9	276.3	0.27	0.002
Field Dup: Suisun Bay, off Chipps Island (508)	8510	20.5	7.60	8.8	24.4	0.10	0.001

Table B 87-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/25/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/23/09 - 6/24/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	280	22.7	23.2	7.1	8.4	6.90	8.13	100	58	-
Low EC Control @ 140.9 µS	149	22.8	23.1	7.4	8.7	6.98	7.84	40	26	-
High EC Control @ 12.53 mS	11240	22.9	23.3	7.3	8.6	6.90	7.91	1440	74	-
High EC Control @ 17.69 mS	16970	22.9	23.6	7.1	8.6	6.99	8.00	1960	84	-
High EC Control @ 20.23 mS	19720	22.8	23.4	7.2	8.3	7.20	7.99	2360	84	-
Napa River, near River Park Blvd.	16855	22.9	23.8	7.0	8.5	7.42	7.75	2280	134	0.001
Suisun Slough @ Rush Ranch	6265	22.9	23.9	7.0	8.5	7.56	7.97	710	138	0.004
Rough and Ready DWR Station, Stockton	626	22.9	23.7	7.3	8.9	7.50	8.00	130	82	0.004
Sacramento River at Hood DWR Station	148	22.9	23.7	6.9	8.9	7.07	7.67	48	54	0.007
Carquinez Strait, West of Benicia army dock (405)	18475	22.9	23.6	6.6	8.0	7.04	7.78	2160	86	0.004
Montezuma Slough at Nurse Slough (609)	5585	22.6	23.6	7.4	8.8	7.39	7.78	620	92	0.003
Suisun Bay off Chipps Island (508)	7740	22.9	23.5	5.9	8.5	7.15	7.81	840	70	0.002
Grizzly Bay at Dolphin (602)	11470	22.8	23.5	7.0	8.9	7.26	7.85	1320	76	0.004
Trip Blank (DIEPAMHR)	417	22.9	23.7	7.5	8.7	7.28	8.25	104	58	0.002
Trip Blank (DIEPAMHR)	390	22.9	24.1	7.1	8.6	7.37	8.25	100	58	0.000
Field Dup: Carquinez Strait, West of Benicia army dock (405)	18880	22.9	24.3	7.0	8.4	7.25	7.75	2160	84	0.005
Field Dup: Suisun Bay off Chipps Island (508)	8180	23.0	23.4	7.2	8.7	7.25	7.77	840	70	0.002
DIEPAMHR + 25 ppb PBO	410	22.8	23.0	7.3	8.3	7.13	8.13	-	-	-
Low EC Control @ 140.9 µS + 25 ppb PBO	161	22.5	23.1	7.1	8.6	7.13	7.92	-	-	-
High EC Control @ 12.53 mS + 25 ppb PBO	12060	23.1	23.2	6.9	8.5	6.94	7.97	-	-	-
High EC Control @ 17.69 mS + 25 ppb PBO	16970	23.0	23.1	6.9	8.7	7.23	7.97	-	-	-
High EC Control @ 20.23 mS + 25 ppb PBO	19670	23.2	23.3	7.0	8.4	7.29	8.00	-	-	-
Napa River, near River Park Blvd. + 25 ppb PBO	16855	23.2	23.2	6.8	8.3	7.37	7.83	-	-	-
Suisun Slough @ Rush Ranch + 25 ppb PBO	6395	23.2	23.3	7.0	8.8	7.46	7.96	-	-	-
Rough and Ready DWR Station, Stockton + 25 ppb PBO	630	23.0	23.2	7.3	8.5	7.26	8.14	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	151	23.2	23.6	7.0	8.5	7.15	7.89	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	18965	23.2	23.8	6.6	8.0	7.11	7.77	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	5640	23.3	23.3	7.4	8.5	7.32	7.81	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	8000	23.2	23.8	7.1	8.8	7.18	8.83	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	11490	23.3	23.4	7.0	8.5	7.30	7.90	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 88-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 6/26/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/25/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	97	3.1	95	2.8	NS
Low EC Control @ 132.6 µS/cm	89	6.4	77	6.1	NS
Sacramento River Deep Water Channel, Light 55	87	3.0	88	4.8	NS
Upper Cache Slough at mouth of Ulatis Creek	84	7.1	74	11.6	NS
Confluence of Lindsey Sl. and Cache Sl.	74	15.4	89	0.6	NS
Sacramento River at tip of Grand Island (711) [3]	45**	7.6	61*	4.2	NS
San Joaquin River at Potato Slough (815)	85	11.9	84	9.7	NS
Old River, western arm at railroad bridge (902)	90	7.1	85*	4.2	NS
Old River at mouth of Holland Cut (915)	85	6.4	88	7.5	NS
Bottle Blank Clear (cubitainer)	78	7.9	-	-	NS
Bottle Blank Amber (cubitainer)	93	2.5	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.010	0.044	0.005	NS
Low EC Control @ 132.6 µS/cm	0.042	0.007	0.035	0.003	NS
Sacramento River Deep Water Channel, Light 55	0.072	0.011	0.057	0.002	NS
Upper Cache Slough at mouth of Ulatis Creek	0.085	0.005	0.072	0.004	NS
Confluence of Lindsey Sl. and Cache Sl.	0.083	0.007	0.043	0.007	S** (52%)
Sacramento River at tip of Grand Island (711) [3]	0.075	0.013	0.054	0.011	NS
San Joaquin River at Potato Slough (815)	0.067	0.009	0.058	0.006	NS
Old River, western arm at railroad bridge (902)	0.061	0.009	0.077	0.009	NS
Old River at mouth of Holland Cut (915)	0.055	0.010	0.078	0.007	S* (142%)
Bottle Blank Clear (cubitainer)	0.038	0.010	-	-	NS
Bottle Blank Amber (cubitainer)	0.026	0.003	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control @ 312.6 uS.

Table B 88-2. Summary of water chemistry at field conditions of samples collected by the the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/25/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River, Deep Water Channel, Light 55	246	22.0	7.69	8.5	29.7	0.05	0.001
Upper Cache Slough at Mouth of Ulatis Creek	207	20.9	7.62	8.8	60.8	0.04	0.001
Confluence of Lindsey Sl. and Cache Sl.	188	22.1	7.50	8.6	27.9	0.10	0.001
Sacramento River at tip of Grand Island (711)	134	23.2	7.37	8.1	10.6	0.19	0.002
San Joaquin River at Potato Slough (815)	182	21.9	7.47	8.5	6.3	0.03	0.000
Old River, western arm at railroad bridge (902)	204	22.4	7.90	8.5	5.3	0.03	0.001
Old River at mouth of Holland Cut (915)	217	23.3	7.63	7.9	4.3	0.01	0.000

Table B 88-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 6/26/09 of samples collected by the the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 6/25/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	334	22.5	23.1	6.8	8.3	7.52	8.02	-	-	-
Low EC Control @ 132.6 µS/cm	128	22.5	23.4	7.3	8.4	7.26	7.79	40	26	-
Sacramento River Deep Water Channel, Light 55	232	22.6	23.2	6.5	8.5	7.57	8.04	76	74	0.002
Upper Cache Slough at mouth of Ulatis Creek	196	22.3	23.3	7.0	8.6	7.43	8.08	68	74	0.002
Confluence of Lindsey Sl. and Cache Sl.	174	22.5	23.2	6.7	8.6	7.42	7.97	72	66	0.004
Sacramento River at tip of Grand Island (711)	127	22.3	23.3	6.9	8.4	7.39	7.80	60	52	0.006
San Joaquin River at Potato Slough (815)	171	22.3	22.9	6.9	8.7	7.41	8.02	64	60	0.001
Old River, western arm at railroad bridge (902)	194	22.5	23.4	6.8	8.5	7.42	8.00	60	58	0.001
Old River at mouth of Holland Cut (915)	217	22.8	23.3	7.0	8.4	7.53	7.93	72	58	0.000
Bottle Blank Clear (cubitainer)	324	22.4	23.1	6.9	8.5	7.44	8.06	-	-	-
Bottle Blank Amber (cubitainer)	325	22.8	23.2	7.1	8.6	7.39	8.08	-	-	-
DIEPAMHR + 25 ppb PBO	325	22.5	23.3	7.1	8.3	7.59	8.06	-	-	-
Low EC Control @ 132.6 µS + 25 ppb PBO	134	22.2	23.6	7.1	8.5	7.23	7.75	-	-	-
Sacramento River Deep Water Channel, Light 55 + 25 ppb PBO	234	22.7	23.4	6.4	8.6	7.55	8.00	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	191	22.3	22.4	6.9	8.5	7.40	8.02	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	172	22.4	23.5	6.9	8.5	7.46	7.99	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	131	22.4	23.5	7.2	8.7	7.41	7.89	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	180	22.5	23.3	6.6	8.7	7.33	8.07	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	212	22.8	23.6	7.0	8.5	7.38	7.95	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	194	22.3	23.3	6.8	8.8	7.53	8.00	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 89-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/09/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/07/09-7/08/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
Low EC Control @ 122.9 µS/cm	98	2.5	98	2.5	NS
High EC Control @ 11.68 mS/cm	100	0.0	100	0.0	NS
High EC Control @ 21.28 mS/cm	89	7.9	93	2.5	NS
Napa River, near River Park Blvd. [5]	98	2.5	97	3.1	NS
Sacramento River at Hood DWR Station [3]	95	2.9	98	2.5	NS
Rough and Ready DWR Station, Stockton	98	2.5	98	2.5	NS
Suisun Slough @ Rush Ranch	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	97	2.8	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602) [4]	95	2.9	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405) [5]	79	7.2	87	5.1	NS
Field Dup: Napa River, near River Park Blvd. [5]	92	8.3	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.067	0.004	0.077	0.004	NS
Low EC Control @ 122.9 µS/cm	0.057	0.006	0.058*	0.004	NS
High EC Control @ 11.68 mS/cm	0.051*	0.005	0.057**	0.001	NS
High EC Control @ 21.28 mS/cm	0.031***	0.001	0.033***	0.005	NS
Napa River, near River Park Blvd. [5]	0.039	0.004	0.012*	0.002	S* (31%)
Sacramento River at Hood DWR Station [3]	0.094	0.005	0.056	0.006	S** (60%)
Rough and Ready DWR Station, Stockton	0.109	0.010	0.089	0.009	NS
Suisun Slough @ Rush Ranch	0.109	0.010	0.104	0.008	NS
Suisun Bay off Chipps Island (508)	0.097	0.004	0.109	0.015	NS
Montezuma Slough at Nurse Slough (609)	0.102	0.006	0.097	0.006	NS
Grizzly Bay at Dolphin (602) [4]	0.079	0.004	0.081	0.004	NS
Carquinez Strait, West of Benicia army dock (405) [5]	0.069	0.005	0.061	0.003	NS
Field Dup: Napa River, near River Park Blvd. [5]	0.044	0.001	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 11.68 mS/cm.

5. These high conductivity samples were compared to the High EC Control @ 21.28 mS/cm.

Table B 89-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/7/09 - 7/8/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Napa River, near River Park Blvd.	20510	21.3	7.47	7.6	11.6	0.16	0.001
Sacramento River at Hood DWR Station	146	21.6	6.93	8.4	17.2	0.19	0.001
Rough and Ready DWR Station, Stockton	584	25.2	7.15	7.8	7.7	0.07	0.001
Suisun Slough @ Rush Ranch	7520	17.3	7.07	7.5	55.0	0.19	0.001
Suisun Bay off Chipps Island (508)	6050	19.7	7.49	9.0	19.5	0.07	0.001
Montezuma Slough at Nurse Slough (609)	6470	20.8	7.44	8.2	38.7	0.06	0.001
Grizzly Bay at Dolphin (602)	13140	19.6	7.62	9.1	87.0	0.13	0.001
Carquinez Strait, West of Benicia army dock (405)	19350	18.9	7.41	9.0	124.7	0.18	0.001
Field Dup: Napa River, near River Park Blvd.	20510	21.3	7.47	7.6	11.9	0.04	0.000

Table B 89-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/9/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/7/09 - 7/8/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	351	23.9	24.1	7.0	8.6	7.68	8.21	100	58	-
Low EC Control @ 122.9 µS/cm	140	23.8	23.9	7.1	8.7	7.32	7.85	40	28	-
High EC Control @ 11.68 mS/cm	11265	24.0	24.0	6.8	8.3	7.54	7.92	1320	76	-
High EC Control @ 21.28 mS/cm	21085	24.0	24.2	6.0	8.6	7.47	7.94	2520	84	-
Napa River, near River Park Blvd.	19620	23.8	24.2	6.2	8.4	7.64	7.83	2480	134	0.002
Sacramento River at Hood DWR Station	136	23.8	24.2	6.4	8.8	7.44	7.72	64	50	0.005
Rough and Ready DWR Station, Stockton	571	23.7	24.2	7.0	8.5	7.78	7.90	130	82	0.002
Suisun Slough @ Rush Ranch	7090	23.9	24.2	7.0	8.3	7.73	8.06	920	164	0.004
Suisun Bay off Chipps Island (508)	5815	23.9	24.2	6.9	8.7	6.78	7.82	640	74	0.002
Montezuma Slough at Nurse Slough (609)	6070	23.9	24.2	6.8	8.4	7.73	7.91	700	94	0.002
Grizzly Bay at Dolphin (602)	12605	23.9	24.2	6.9	8.3	7.60	7.86	1480	86	0.003
Carquinez Strait, West of Benicia army dock (405)	18300	23.8	24.4	6.6	8.3	7.60	7.77	2200	86	0.004
Field Dup: Napa River, near River Park Blvd.	19760	23.7	24.3	6.6	8.8	7.58	7.85	2440	134	0.001
DIEPAMHR	340	22.9	24.3	7.2	8.6	7.70	8.00	-	-	-
Low EC Control @ 122.9 µS/cm	155	23.0	24.3	7.1	8.6	7.33	7.82	-	-	-
High EC Control @ 11.68 mS/cm	11130	23.0	24.3	6.9	8.6	7.52	7.74	-	-	-
High EC Control @ 21.28 mS/cm	20815	23.4	24.5	6.2	8.0	7.52	7.73	-	-	-
Napa River, near River Park Blvd.	19455	23.6	24.2	6.4	8.2	7.56	7.81	-	-	-
Sacramento River at Hood DWR Station	646	22.8	24.3	6.5	8.7	7.38	7.82	-	-	-
Rough and Ready DWR Station, Stockton	584	23.6	24.3	6.9	8.4	7.76	7.90	-	-	-
Suisun Slough @ Rush Ranch	7156	23.4	24.2	6.4	8.3	7.73	8.05	-	-	-
Suisun Bay off Chipps Island (508)	5700	22.6	24.5	7.1	8.6	7.56	7.80	-	-	-
Montezuma Slough at Nurse Slough (609)	6020	22.5	24.3	7.0	8.5	7.72	7.83	-	-	-
Grizzly Bay at Dolphin (602)	12615	23.5	24.5	7.0	8.3	7.67	7.75	-	-	-
Carquinez Strait, West of Benicia army dock (405)	18285	22.6	24.3	6.6	8.4	7.61	7.70	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 90-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/10/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/09/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NA
Low EC Control @ 167.1 µS/cm	100	0.0	98	2.5	NA
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NA
Upper Cache Slough at mouth of Ulatis Creek[3]	100	0.0	100	0.0	NA
Confluence of Lindsey Sl. And Cache Sl.[3]	95	4.5	90	3.5	NA
Sacramento River at tip of Grand Island (711)[3]	93	3.3	83*	2.2	NA
San Joaquin River at Potato Slough (815)	98	2.5	98	2.3	NA
Old River, western arm at railroad bridge (902)	98	2.5	100	0.0	NA
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NA
Trip Blank: DIEPAMHR	95	2.9	-	-	NA
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.[3]	92	4.8	-	-	NA
Bottle Blank: DIEPAMHR	92	5.3	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.068	0.004	0.051	0.008	S* (75%)
Low EC Control @ 167.1 µS/cm	0.063	0.009	0.027*	0.003	S** (40%)
Sacramento R. Deep Water Channel, Light 55	0.106	0.010	0.087	0.007	NA
Upper Cache Slough at mouth of Ulatis Creek[3]	0.075	0.006	0.064	0.005	NA
Confluence of Lindsey Sl. And Cache Sl.[3]	0.083	0.003	0.086	0.006	NA
Sacramento River at tip of Grand Island (711)[3]	0.032	0.014	0.055	0.007	NA
San Joaquin River at Potato Slough (815)	0.064	0.006	0.069	0.002	NA
Old River, western arm at railroad bridge (902)	0.084	0.014	0.089	0.003	NA
Old River at mouth of Holland Cut (915)	0.112	0.005	0.081	0.010	S* (72%)
Trip Blank: DIEPAMHR	0.067	0.005	-	-	NA
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.[3]	0.094	0.009	-	-	NA
Bottle Blank: DIEPAMHR	0.057	0.007	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

Table B 90-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/09/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	244	21.0	8.14	8.5	37.1	0.09	0.005
Upper Cache Slough at mouth of Ulatis Creek	186	19.6	7.79	8.7	77.1	0.10	0.002
Confluence of Lindsey Sl. And Cache Sl.	155	20.4	7.66	8.6	41.9	0.19	0.003
Sacramento River at tip of Grand Island (711)	117	22.1	7.36	8.3	20.3	0.22	0.002
San Joaquin River at Potato Slough (815)	160	22.6	7.49	8.2	6.3	0.21	0.003
Old River, western arm at railroad bridge (902)	253	23.1	7.66	8.3	4.6	0.09	0.002
Old River at mouth of Holland Cut (915)	241	23.2	7.66	8.1	4.8	0.04	0.001
Trip Blank	-	-	-	-	0.4	0.03	-
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.	155	20.4	7.66	8.6	44.3	0.20	0.003
Bottle Blank	-	-	-	-	0.3	0.02	-

Table B 90-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/10/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/09/09.

Treatment	Laboratory Chemistry								Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	SC (uS/cm)	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	325	316	23.7	23.7	7.0	8.5	7.65	8.10	100	58	-
Low EC Control @ 167.1 µS/cm	176	171	23.6	23.8	7.1	8.6	7.40	7.92	56	30	-
Sacramento R. Deep Water Channel, Light 55	249	242	23.6	23.8	7.1	8.5	7.71	8.06	92	74	0.005
Upper Cache Slough at mouth of Ulatis Creek	189	184	23.6	23.7	7.0	8.8	7.72	8.02	76	70	0.005
Confluence of Lindsey Sl. And Cache Sl.	157	153	23.5	23.7	7.2	8.5	7.59	7.97	56	58	0.008
Sacramento River at tip of Grand Island (711)	121	117	23.6	23.7	6.9	8.9	7.54	7.89	48	48	0.008
San Joaquin River at Potato Slough (815)	216	210	23.6	23.6	7.0	8.9	7.59	7.87	48	52	0.007
Old River, western arm at railroad bridge (902)	254	245	22.7	23.6	7.0	8.8	7.68	8.11	76	58	0.005
Old River at mouth of Holland Cut (915)	243	237	23.5	23.6	6.9	8.5	7.58	8.11	64	60	0.002
Trip Blank	346	336	23.6	23.8	7.3	8.5	7.66	8.07	100	60	0.002
Field Dup.: Confluence of Lindsey Sl. And Cache Sl.	156	152	23.3	23.5	7.2	8.8	7.66	7.97	68	58	0.009
Bottle Blank	346	339	23.5	24.7	7.3	8.2	7.69	8.07	100	58	0.001
DIEPAMHR + 25 ppb PBO	322	310	23.1	23.6	7.2	8.2	7.65	8.06	-	-	-
Low EC Control @ 167.1 µS/cm + 25 ppb PBO	175	170	23.6	23.6	7.3	8.6	6.70	7.87	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	248	241	23.4	23.6	7.1	8.5	7.72	8.05	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	187	184	23.7	23.9	7.2	8.4	7.74	8.12	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	157	154	23.8	24.2	7.1	8.7	7.62	7.96	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	120	117	23.8	24.1	7.0	8.4	7.55	7.91	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	163	160	23.5	24.9	6.9	8.6	7.58	7.92	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	258	254	23.9	24.4	7.1	8.8	7.65	8.05	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	242	238	23.6	24.8	6.9	8.7	7.62	8.05	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 91-1. Summary of 10-day H. azteca water column toxicity test initiated on 7/22/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/207/09-7/21/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
Low EC Control @ 112.0 µS/cm	100	0.0	100	0.0	NS
High EC Control @ 18.56 mS/cm	97	2.8	100	0.0	NS
High EC Control @ 23.47 mS/cm	93	7.5	95	2.9	NS
Suisun Bay off Chipps Island (508)	98	2.5	95	2.9	NS
Montezuma Slough at Nurse Slough (609)	98	2.3	98	2.5	NS
Grizzly Bay at Dolphin (602) [4]	93	4.8	82*	4.3	NS
Carquinez Strait, West of Benecia army dock (405) [5]	90	4.1	84	9.7	NS
Old River at mouth of Holland Cut (915)	92	2.7	100	0.0	NS
Sacramento River at tip of Grand Island (711) [3]	98	2.5	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento River Deep Water Channel, Light 55	98	2.5	98	2.5	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.072	0.008	0.063	0.008	NS
Low EC Control @ 112.0 µS/cm	0.052	0.011	0.054	0.004	NS
High EC Control @ 18.56 mS/cm	0.058	0.004	0.043*	0.005	S*
High EC Control @ 23.47 mS/cm	0.028	0.008	0.038*	0.003	NS
Suisun Bay off Chipps Island (508)	0.116	0.006	0.113	0.011	NS
Montezuma Slough at Nurse Slough (609)	0.116	0.006	0.116	0.007	NS
Grizzly Bay at Dolphin (602) [4]	0.046*	0.001	0.074	0.005	S***
Carquinez Strait, West of Benecia army dock (405) [5]	0.031	0.006	0.066	0.007	S**
Old River at mouth of Holland Cut (915)	0.120	0.009	0.109	0.007	NS
Sacramento River at tip of Grand Island (711) [3]	0.087	0.003	0.090	0.005	NS
Old River, western arm at railroad bridge (902)	0.124	0.003	0.107	0.008	NS
Confluence of Lindsey Sl. and Cache Sl.	0.105	0.011	0.092	0.005	NS
San Joaquin River at Potato Slough (815)	0.125	0.002	0.134	0.006	NS
Upper Cache Slough at mouth of Ulatis Creek	0.101	0.008	0.088	0.005	NS
Sacramento River Deep Water Channel, Light 55	0.128	0.005	0.117	0.003	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
*: $P < 0.05$
**: $P < 0.01$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 18.56 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 23.47 mS/cm.

Table B 91-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/20/09 - 7/21/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	4457	21.7	7.43	8.5	16.0	0.07	0.001
Montezuma Slough at Nurse Slough (609)	6970	22.4	7.41	7.4	31.7	0.05	0.000
Grizzly Bay at Dolphin (602)	17770	20.3	7.73	8.6	215.7	0.19	0.003
Carquinez Strait, West of Benecia army dock (405)	22330	19.9	7.69	8.3	45.1	0.07	0.001
Old River at mouth of Holland Cut (915)	322	24.3	7.56	8.0	4.5	0.00	0.000
Sacramento River at tip of Grand Island (711)	111	21.3	7.26	8.4	22.1	0.08	0.001
Old River, western arm at railroad bridge (902)	386	23.9	7.65	8.4	4.2	0.00	0.000
Confluence of Lindsey Sl. and Cache Sl.	163	19.8	7.57	9.0	36.3	0.09	0.001
San Joaquin River at Potato Slough (815)	244	22.4	7.48	8.2	6.1	0.03	0.000
Upper Cache Slough at mouth of Ulatis Creek	136	20.2	7.32	8.8	68.2	0.04	0.000
Sacramento River Deep Water Channel, Light 55	249	21.6	7.62	8.3	24.4	0.04	0.001

Table B 91-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/22/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/20/09 - 7/21/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	345	23.3	24.3	7.1	8.1	7.63	7.95	100	58	-
Low EC Control @ 112.0 µS/cm	126	23.3	24.3	7.2	8.4	7.27	7.76	44	20	-
High EC Control @ 18.56 mS/cm	17540	23.3	24.3	7.0	8.2	7.53	7.97	2120	86	-
High EC Control @ 23.47 mS/cm	22445	23.8	24.3	6.9	8.6	7.52	7.95	2880	96	-
Suisun Bay off Chipps Island (508)	4198	23.3	24.3	7.2	8.6	7.52	7.95	464	64	0.003
Montezuma Slough at Nurse Slough (609)	6575	23.4	24.3	7.0	8.2	7.66	7.94	800	94	0.002
Grizzly Bay at Dolphin (602)	17060	23.3	24.3	6.8	8.3	7.59	7.86	2000	82	0.005
Carquinez Strait, West of Benecia army dock (405)	21390	23.3	24.0	6.6	8.8	7.53	7.84	2560	86	0.002
Old River at mouth of Holland Cut (915)	354	23.4	24.2	7.1	8.2	7.57	8.15	72	54	0.000
Sacramento River at tip of Grand Island (711)	125	23.4	24.2	6.6	8.1	7.43	8.05	48	48	0.004
Old River, western arm at railroad bridge (902)	392	23.3	24.0	7.3	8.4	7.54	8.10	80	54	0.000
Confluence of Lindsey Sl. and Cache Sl.	151	23.3	24.1	7.3	8.3	7.59	8.09	56	54	0.005
San Joaquin River at Potato Slough (815)	251	23.3	24.2	6.5	8.0	7.53	8.03	64	50	0.002
Upper Cache Slough at mouth of Ulatis Creek	180	23.2	24.2	7.3	8.2	7.69	8.11	72	70	0.002
Sacramento River Deep Water Channel, Light 55	261	23.2	23.9	7.1	8.2	7.64	8.13	84	66	0.002
DIEPAMHR + 25 ppb PBO	345	23.3	23.8	7.0	8.1	7.63	8.10	-	-	-
Low EC Control @ 112.0 µS/cm + 25 ppb PBO	130	23.3	23.8	7.3	8.0	7.23	7.71	-	-	-
High EC Control @ 18.56 mS/cm + 25 ppb PBO	17595	23.3	23.8	6.9	7.9	7.53	7.98	-	-	-
High EC Control @ 23.47 mS/cm + 25 ppb PBO	21850	23.3	23.8	6.3	7.9	7.44	7.94	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	4193	23.3	23.9	6.2	8.3	7.41	7.91	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	6575	23.3	23.8	6.9	8.4	7.64	7.97	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16945	23.3	23.7	6.9	8.0	7.56	7.84	-	-	-
Carquinez Strait, West of Benecia army dock (405) + 25 ppb PBO	21255	23.3	23.8	6.8	8.0	7.55	7.86	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	351	23.3	23.7	7.2	8.3	7.57	8.06	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	138	23.3	23.7	6.8	8.5	7.45	7.96	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	387	23.2	23.7	6.8	8.3	7.49	8.09	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	151	23.2	23.7	7.2	8.2	7.55	8.06	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	251	23.2	23.6	6.7	8.5	7.54	8.04	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	176	23.2	23.6	7.1	8.2	7.66	8.07	-	-	-
Sacramento River Deep Water Channel, Light 55 + 25 ppb PBO	258	23.3	23.5	7.0	8.4	7.60	8.06	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 92-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 7/23/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/22/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC Control @ 123.2 µS/cm	100	0.0	100	0.0	NS
High EC Control @ 23.53 mS/cm	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station [3]	100	0.0	100	0.0	NS
Napa River, near Napa Park Blvd. [4]	98	2.5	98	2.5	NS
Suisun Slough at Rush Ranch	98	2.5	98	2.5	NS
Rough and Ready Island, DWR Station, Stockton	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.070	0.007	0.049	0.007	NS
Low EC Control @ 123.2 µS/cm	0.668	0.015	0.052	0.005	NS
High EC Control @ 23.53 mS/cm	0.042*	0.011	0.035	0.005	NS
Sacramento River at Hood DWR Station [3]	0.076	0.007	0.061	0.008	NS
Napa River, near Napa Park Blvd. [4]	0.054	0.010	0.045	0.005	NS
Suisun Slough at Rush Ranch	0.105	0.008	0.103	0.011	NS
Rough and Ready Island, DWR Station, Stockton	0.111	0.002	0.106	0.013	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control.

Table B 92-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/22/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)[1]	Temp (°C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	-	23.3	7.31	8.0	17.3	0.13	-
Napa River, near Napa Park Blvd.	-	23.9	7.61	7.4	24.0	0.01	-
Suisun Slough at Rush Ranch	-	18.7	7.29	5.9	26.2	0.06	-
Rough and Ready Island, DWR Station, Stockton	-	26.6	7.44	5.6	7.8	0.02	-

1. Field EC meter broken and SC measurements were unable to be obtained.

Table B 92-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 7/23/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 7/22/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[2]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	339	22.3	23.4	7.3	8.8	7.41	8.11	100	58	-
Low EC Control @ 123.2 µS/cm	132	22.3	23.6	7.2	8.5	6.90	7.90	36	24	-
High EC Control @ 23.53 mS/cm	21835	22.2	23.2	6.7	8.6	7.30	7.89	2720	78	-
Sacramento River at Hood DWR Statio	135	22.0	23.2	7.3	8.8	7.17	8.12	48	50	0.008
Napa River, near Napa Park Blvd.	21275	22.4	23.3	6.7	8.7	7.44	7.84	2760	134	0.000
Suisun Slough at Rush Ranch	8165	22.3	23.2	7.2	8.8	7.60	8.02	1160	138	0.001
Rough and Ready Island, DWR Station, Stockton	444	22.1	23.0	7.0	8.6	7.48	8.08	116	80	0.001
DIEPAMHR + 25 ppb PBO	333	22.1	23.2	7.4	8.6	7.40	8.14	-	-	-
Low EC Control @ 123.2 µS/cm + 25 ppb PBO	130	22.1	23.3	7.2	8.6	7.02	7.87	-	-	-
High EC Control @ 23.53 mS/cm + 25 ppb PBO	21655	22.3	23.2	6.5	8.5	7.31	7.90	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	134	22.2	23.3	6.7	8.8	7.20	8.02	-	-	-
Napa River, near Napa Park Blvd. + 25 ppb PBO	20890	22.4	23.9	6.2	8.6	7.47	7.91	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	4383	22.2	23.4	7.1	8.8	7.58	8.15	-	-	-
Rough and Ready Island, DWR Station, Stockton + 25 ppb PBO	4401	22.2	23.5	7.1	8.6	7.48	7.98	-	-	-

2: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 93-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/6/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/4/09-8/5/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
Low EC Control @ 140 µS/cm	93	4.8	98	2.5	NS
High EC Control @ 16.00 mS/cm	97	2.8	100	0.0	NS
High EC Control @ 20.00 mS/cm	98	2.5	85	9.6	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	92	5.3	90	4.1	NS
Sacramento River at Hood DWR Station[3]	93	4.8	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	98	2.5	NS
Carquinez Strait, West of Benicia army dock (405)[5]	100	0.0	84	3.2	S* (84%)
Montezuma Slough at Nurse Slough (609)	100	0.0	97	3.1	NS
Grizzly Bay at Dolphin (602)[4]	88	4.5	100	0.0	NS
227 080409 (Bottle Blank)	97	2.8	-	-	NA
447 080409 (Trip Blank)	98	2.5	-	-	NA
337 080509 (Trip Blank)	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.053	0.008	0.048	0.007	NS
Low EC Control @ 140 µS/cm	0.055	0.004	0.032	0.005	S* (58%)
High EC Control @ 16.00 mS/cm	0.035	0.004	0.031*	0.003	NS
High EC Control @ 20.00 mS/cm	0.034*	0.003	0.010**	0.002	S** (29%)
Suisun Bay off Chipps Island (508)	0.064	0.015	0.055	0.006	NS
Rough and Ready DWR station, Stockton	0.089	0.009	0.074	0.009	NS
Sacramento River at Hood DWR Station[3]	0.053	0.002	0.056	0.003	NS
Suisun Slough at Rush Ranch	0.064	0.004	0.069	0.003	NS
Carquinez Strait, West of Benicia army dock (405)[5]	0.049	0.002	0.031	0.007	S* (63%)
Montezuma Slough at Nurse Slough (609)	0.077	0.006	0.066	0.011	NS
Grizzly Bay at Dolphin (602)[4]	0.054	0.006	0.037	0.005	NS
227 080409 (Bottle Blank)	0.059	0.008	-	-	NA
447 080409 (Trip Blank)	0.051	0.007	-	-	NA
337 080509 (Trip Blank)	0.041	0.006	-	-	NA

1. Data were analyzed using USEPA standard statistical protocols. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
*: $P < 0.05$
**: $P < 0.01$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 16.00 mS/cm.
5. These high conductivity samples were compared to the High EC Control @ 20.00 mS/cm.

Table B 93-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/4/09 - 8/5/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	6410	19.8	7.78	9.4	28.7	0.06	0.001
Rough and Ready DWR station, Stockton	423	25.7	7.44	7.4	6.2	0.08	0.001
Sacramento River at Hood DWR Station	168	22.3	7.40	9.6	7.4	0.22	0.002
Suisun Slough at Rush Ranch	10490	17.3	7.28	7.3	22.6	0.09	0.000
Carquinez Strait, West of Benicia army dock (405)	18600	20.4	7.49	9.1	39.4	0.08	0.001
Montezuma Slough at Nurse Slough (609)	8990	20.9	7.44	8.6	19.2	0.04	0.000
Grizzly Bay at Dolphin (602)	15660	20.4	7.74	8.8	124.3	0.13	0.002
227 080409 (Bottle Blank)	-	-	-	-	-	-	-
447 080409 (Trip Blank)	-	-	-	-	0.3	0.03	-
337 080509 (Trip Blank)	-	-	-	-	0.3	0.04	-

Table B 93-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/6/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/4/09 - 8/5/09.

Treatment	Laboratory Chemistry								Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	SC (uS/cm)	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	346.2	335	22.5	24.0	7.4	8.3	7.55	8.12	76	58	-
Low EC Control @ 140 µS/cm	154.05	150	22.5	24.5	7.3	8.5	7.30	7.92	40	22	-
High EC Control @ 16.00 mS/cm	15680	15265	22.7	24.4	7.1	7.9	7.60	7.97	1760	76	-
High EC Control @ 20.00 mS/cm	19785	19225	22.4	22.7	7.0	8.0	7.52	7.95	2320	82	-
Suisun Bay off Chipps Island (508)	6000	5845	22.8	23.1	6.9	8.3	7.40	7.85	660	56	0.002
Rough and Ready DWR station, Stockton	428.4	418	23.1	24.4	7.2	8.4	7.80	7.99	100	76	0.003
Sacramento River at Hood DWR Station	157.4	153	22.9	23.1	7.0	8.4	7.32	7.91	52	64	0.008
Suisun Slough at Rush Ranch	10065	9800	23.1	24.2	7.2	8.7	7.71	8.12	1240	146	0.002
Carquinez Strait, West of Benicia army dock (405)	18480	18015	23.1	24.3	6.9	7.7	7.50	7.81	2120	82	0.002
Montezuma Slough at Nurse Slough (609)	8780	4613	22.7	23.1	7.1	8.1	7.58	7.96	1040	90	0.001
Grizzly Bay at Dolphin (602)	15565	15180	22.7	23.1	7.0	8.1	7.50	7.85	1800	76	0.003
227 080409 (Bottle Blank)	357.5	1825	23.1	24.3	7.4	8.4	7.60	8.18	100	68	-
447 080409 (Trip Blank)	353.75	344	23.2	24.1	7.3	8.7	7.70	8.03	108	64	0.001
337 080509 (Trip Blank)	365.75	357	23.4	24.0	7.5	8.5	7.72	8.04	100	58	0.002
DIEPAMHR + 25 ppb PBO	352.9	341	23.2	23.2	7.4	8.2	7.54	8.06	-	-	-
Low EC Control @ 140 µS/cm + 25 ppb PBO	162.5	156	23.1	23.2	7.0	8.4	7.33	8.07	-	-	-
High EC Control @ 16.00 mS/cm + 25 ppb PBO	14729	14265	23.1	23.2	6.9	8.0	7.50	7.97	-	-	-
High EC Control @ 20.00 mS/cm + 25 ppb PBO	19680	18875	22.9	23.1	6.9	8.0	7.46	7.99	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6185	5965	23.2	23.8	7.3	8.3	7.40	7.87	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	435.55	422	23.2	23.7	7.2	8.4	7.68	8.01	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	169.45	165	23.2	24.1	7.0	8.3	7.36	7.98	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	10100	9865	22.3	23.3	7.0	8.2	7.75	8.10	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	18285	17840	22.5	23.3	6.8	8.0	7.50	7.79	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	9185	8940	23.3	23.9	7.1	8.0	7.54	7.87	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	15385	14795	22.0	23.4	6.8	8.0	7.49	7.85	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 94-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/7/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/6/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	95	2.9	NS
Low EC Control @ 151.9 µS/cm	92	5.3	98	2.5	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	92	8.3	98	2.5	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	95	2.9	97	2.8	NS
Sacramento River at tip of Grand Island (711)[3]	79	4.1	80	12.2	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	98	2.5	100	0.0	NS
Old River at mouth of Holland Cut (915)	95	3.1	100	0.0	NS
Field Dup: Sacramento R. Deep Water Channel, Light 55	98	2.5	-	-	NA
557 080609 (Trip Blank)	95	2.9	-	-	NA
Field Dup.: Old River at mouth of Holland Cut (915)	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.033	0.011	0.045	0.009	NS
Low EC Control @ 151.9 µS/cm	0.033	0.005	0.031	0.005	NS
Sacramento R. Deep Water Channel, Light 55	0.079	0.005	0.076	0.006	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.052	0.007	0.061	0.004	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.060	0.006	0.050	0.008	NS
Sacramento River at tip of Grand Island (711)[3]	0.021	0.006	0.044	0.011	NS
San Joaquin River at Potato Slough (815)	0.072	0.006	0.076	0.008	NS
Old River, western arm at railroad bridge (902)	0.069	0.004	0.074	0.008	NS
Old River at mouth of Holland Cut (915)	0.075	0.006	0.064	0.003	NS
Field Dup: Sacramento R. Deep Water Channel, Light 55	0.091	0.006	-	-	NA
557 080609 (Trip Blank)	0.050	0.002	-	-	NA
Field Dup.: Old River at mouth of Holland Cut (915)	0.082	0.007	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

Table B 94-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/6/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	258	20.7	8.15	9.3	32.0	0.06	0.003
Upper Cache Slough at mouth of Ulatis Creek	182	19.3	7.63	10.4	65.6	0.04	0.001
Confluence of Lindsey Sl. And Cache Sl.	167	19.8	7.55	9.5	41.1	0.05	0.001
Sacramento River at tip of Grand Island (711)	143	21.9	7.50	8.8	6.5	0.07	0.001
San Joaquin River at Potato Slough (815)	313	21.7	7.62	9.2	3.4	0.00	0.000
Old River, western arm at railroad bridge (902)	599	22.7	7.52	8.7	3.4	0.01	0.000
Old River at mouth of Holland Cut (915)	681	22.1	7.87	9.0	3.5	0.00	0.000
Field Dup: Sacramento R. Deep Water Channel, Light 55	258	20.7	8.15	9.3	32.3	0.04	0.002
557 080609 (Trip Blank)	-	-	-	-	0.3	0.00	-
Field Dup.: Old River at mouth of Holland Cut (915)	681	22.1	7.87	9.0	3.2	0.00	0.000

Table B 94-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/7/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/6/09.

Treatment	Laboratory Chemistry								Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	SC (uS/cm)	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	356	347	23.6	23.7	7.2	8.1	7.56	8.14	76	60	-
Low EC Control @ 151.9 µS/cm	153	149	23.6	23.7	7.3	8.2	7.27	7.91	40	24	-
Sacramento R. Deep Water Channel, Light 55	270	263	23.6	23.6	6.8	8.4	7.55	8.10	92	70	0.003
Upper Cache Slough at mouth of Ulatis Creek	176	170	23.6	23.7	7.2	8.3	7.58	8.11	60	62	0.002
Confluence of Lindsey Sl. And Cache Sl.	164	159	23.1	23.5	7.1	8.2	7.50	8.06	60	60	0.003
Sacramento River at tip of Grand Island (711)	143	138	23.2	23.5	7.0	8.3	7.46	8.02	44	52	0.003
San Joaquin River at Potato Slough (815)	299	291	23.6	23.7	7.1	8.3	7.47	8.01	60	52	0.000
Old River, western arm at railroad bridge (902)	671	652	23.5	23.6	7.1	8.4	7.47	8.07	104	50	0.001
Old River at mouth of Holland Cut (915)	539	526	23.4	23.7	7.2	8.5	7.47	8.01	88	54	0.000
Field Dup: Sacramento R. Deep Water Channel, Light 55	271	263	23.5	23.5	7.0	8.4	7.57	8.11	76	68	0.002
557 080609 (Trip Blank)	349	339	23.5	23.8	7.1	8.2	7.56	8.09	104	56	0.000
Field Dup.: Old River at mouth of Holland Cut (915)	678	658	23.5	23.5	7.1	8.3	7.49	8.06	96	52	0.000
DIEPAMHR + 25 ppb PBO	351	339	22.1	23.8	7.2	8.2	7.55	8.14	-	-	-
Low EC Control @ 151.9 µS/cm + 25 ppb PBO	152	146	22.3	23.5	7.2	8.3	7.25	7.87	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	267	257	22.6	23.5	7.2	8.8	7.61	8.11	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	177	171	22.5	23.6	7.2	9.2	7.54	8.12	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	164	159	22.8	23.7	7.2	8.4	7.53	8.10	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	142	139	22.9	23.8	6.9	8.2	7.51	8.12	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	345	337	23.4	23.8	7.1	8.3	7.47	8.08	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	670	654	23.3	23.8	7.1	8.5	7.49	8.07	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	527	512	23.2	23.9	7.0	8.3	7.46	8.01	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 95-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/20/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/18/09 - 8/19/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
Low EC @ 174.9 uS/cm	100	0.0	94	3.3	NS
High EC @ 11.88 mS/cm	100	0.0	98	2.5	NS
High EC @ 18.4 mS/cm	95	2.9	95	5.0	NS
Suisun Slough at Rush Ranch[4]	100	0.0	95	4.5	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
Sacramento River at Hood DWR Station[3]	95	3.1	97	3.1	NS
Grizzly Bay at Dolphin (602)[5]	94	5.6	100	0.0	NS
Suisun Bay off Chipps Island (508)	98	2.5	98	2.5	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.045	0.005	0.027	0.008	NS
Low EC @ 174.9 uS/cm	0.024	0.001	0.027	0.007	NS
High EC @ 11.88 mS/cm	0.036	0.006	0.027	0.006	NS
High EC @ 18.4 mS/cm	0.019	0.004	0.030	0.004	NS
Suisun Slough at Rush Ranch[4]	0.089	0.005	0.076	0.007	NS
Rough and Ready DWR station, Stockton	0.100	0.012	0.066	0.007	S* (66%)
Sacramento River at Hood DWR Station[3]	0.088	0.006	0.079	0.006	NS
Grizzly Bay at Dolphin (602)[5]	0.060	0.005	0.061	0.007	NS
Suisun Bay off Chipps Island (508)	0.058	0.006	0.070	0.011	NS
Montezuma Slough at Nurse Slough (609)[4]	0.075	0.005	0.087	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
*: $P < 0.05$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. These high conductivity samples were compared to the High EC Control @ 11.88 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 18.4 mS/cm.

Table B 95-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/18/09 - 8/19/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	11440	22.1	7.37	6.5	9.4	0.06	0.000
Rough and Ready DWR station, Stockton	490	26.7	7.70	6.7	6.9	0.13	0.004
Sacramento River at Hood DWR Station	167	23.9	7.53	7.9	10.4	0.02	0.000
Grizzly Bay at Dolphin (602)	17960	20.5	7.68	9.0	35.4	0.03	0.000
Suisun Bay off Chipps Island (508)	7580	20.4	7.50	9.1	10.6	0.00	0.000
Montezuma Slough at Nurse Slough (609)	10440	21.6	7.46	8.2	31.4	0.04	0.000

Table B 95-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/20/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/18/09 - 8/19/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	345	23.3	24.0	7.4	8.2	7.71	8.13	104	60	-
Low EC @ 174.9 uS	182	23.3	23.8	7.2	8.4	7.38	7.96	52	30	-
High EC @ 11.88 mS	11180	23.3	23.8	7.2	8.2	7.53	7.97	1440	72	-
High EC @ 18.4 mS	17330	23.3	23.6	6.6	8.3	7.55	8.01	2080	78	-
Suisun Slough at Rush Ranch	10725	23.3	23.6	7.1	8.4	7.84	8.02	1520	152	0.002
Rough and Ready DWR station, Stockton	475	23.3	23.6	7.5	8.8	7.85	8.04	116	84	0.006
Sacramento River at Hood DWR Station	171	23.2	23.4	7.3	8.7	7.65	7.99	60	68	0.001
Grizzly Bay at Dolphin (602)	16675	23.0	23.6	7.0	8.0	7.45	7.80	2040	80	0.001
Suisun Bay off Chipps Island (508)	7085	23.1	23.4	7.3	8.4	7.52	7.85	840	66	0.000
Montezuma Slough at Nurse Slough (609)	9975	23.1	24.3	7.3	8.6	7.61	7.89	1200	94	0.001
DIEPAMHR + 25 ppb PBO	350	23.1	23.6	7.3	8.3	7.72	8.13	-	-	-
Low EC @ 174.9 uS/cm + 25 ppb PBO	184	23.1	23.6	7.2	8.6	7.41	7.92	-	-	-
High EC @ 11.88 mS/cm + 25 ppb PBO	11180	23.1	23.5	6.9	8.4	7.59	7.98	-	-	-
High EC @ 18.4 mS/cm + 25 ppb PBO	17315	23.1	23.5	6.7	8.4	7.55	8.01	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	10555	23.2	23.4	7.2	8.4	7.68	8.03	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	481	23.5	23.9	7.5	8.7	7.74	8.05	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	175	23.4	23.5	7.2	8.6	7.66	7.98	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16580	23.4	23.6	7.1	8.5	7.51	7.81	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	7050	23.4	23.9	7.3	8.4	7.56	7.90	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	9990	23.4	24.0	7.3	8.4	7.67	7.90	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 96-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 8/21/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/20/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	95	2.9	NS
Low EC Control @ 164.4 µS/cm	100	0.0	94	6.3	NS
Sacramento River Deep Water Channel, Light 55	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	90	7.1	98	2.5	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	98	2.5	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	98	2.5	98	2.5	NS
San Joaquin River at Potato Slough (815)	100	0.0	93	7.5	NS
Old River, western arm at railroad bridge (902)	95	2.9	100	0.0	NS
Old River at mouth of Holland Cut (915)	84	15.6	100	0.0	NS
Field Dup: Confluence of Lindsey Sl. and Cache Sl.[3]	98	2.5	-	-	NA
Field Dup: Old River at mouth of Holland Cut (915)	98	2.5	-	-	NA
Bottle Blank: DIEPAMHR	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.030	0.007	0.038	0.002	NS
Low EC Control @ 164.4 µS/cm	0.026	0.005	0.032	0.003	NS
Sacramento River Deep Water Channel, Light 55	0.114	0.007	0.114	0.015	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.082	0.003	0.087	0.004	NS
Confluence of Lindsey Sl. and Cache Sl.[3]	0.101	0.008	0.072	0.008	S* (71%)
Sacramento River at tip of Grand Island (711)[3]	0.079	0.007	0.073	0.013	NS
San Joaquin River at Potato Slough (815)	0.112	0.003	0.065	0.018	S* (58%)
Old River, western arm at railroad bridge (902)	0.083	0.017	0.080	0.012	NS
Old River at mouth of Holland Cut (915)	0.084	0.016	0.089	0.004	NS
Field Dup: Confluence of Lindsey Sl. and Cache Sl.[3]	0.092	0.007	-	-	NA
Field Dup: Old River at mouth of Holland Cut (915)	0.113	0.016	-	-	NA
Bottle Blank: DIEPAMHR	0.033	0.003	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 96-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/20/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento River Deep Water Channel, Light 55	258	21.4	7.97	8.7	28.7	0.06	0.002
Upper Cache Slough at mouth of Ulatis Creek	220	20.1	7.72	9.0	66.9	0.07	0.001
Confluence of Lindsey Sl. and Cache Sl.	209	20.6	7.81	9.0	35.4	0.08	0.002
Sacramento River at tip of Grand Island (711)	255	22.5	7.52	8.5	8.6	0.10	0.001
San Joaquin River at Potato Slough (815)	394	22.7	7.50	8.6	4.1	0.03	0.000
Old River, western arm at railroad bridge (902)	720	23.2	7.92	8.5	3.5	0.00	0.000
Old River at mouth of Holland Cut (915)	643	24.2	7.74	8.3	3.7	0.00	0.000
Field Dup: Confluence of Lindsey Sl. and Cache Sl.	209	20.6	7.81	9.0	33.9	0.11	0.003
Field Dup: Old River at mouth of Holland Cut (915)	643	24.2	7.74	8.3	3.7	0.00	0.000

Table B 96-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 8/21/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 8/20/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	360	24.5	24.5	7.2	8.1	7.53	8.09	104	60	-
Low EC Control @ 164.4 µS/cm	180	24.2	24.4	7.1	8.7	7.28	7.81	52	28	-
Sacramento River Deep Water Channel, Light 55	271	24.0	24.6	7.1	8.7	7.55	8.05	80	74	0.003
Upper Cache Slough at mouth of Ulatis Creek	190	24.0	24.4	7.1	8.8	7.57	8.04	68	68	0.004
Confluence of Lindsey Sl. and Cache Sl.	185	23.9	24.0	7.1	8.4	7.51	8.04	68	68	0.004
Sacramento River at tip of Grand Island (711)	174	23.9	24.4	7.0	8.6	7.43	7.97	60	68	0.005
San Joaquin River at Potato Slough (815)	362	24.1	24.4	7.1	8.7	7.50	7.97	76	60	0.001
Old River, western arm at railroad bridge (902)	668	24.0	24.4	7.2	8.4	7.73	8.07	100	56	0.000
Old River at mouth of Holland Cut (915)	589	23.9	24.4	6.5	8.5	7.49	8.01	100	58	0.000
Field Dup: Confluence of Lindsey Sl. and Cache Sl.	187	23.9	24.2	7.2	8.7	7.64	8.16	68	66	0.007
Field Dup: Old River at mouth of Holland Cut (915)	587	23.9	24.5	7.1	8.7	7.46	7.97	96	56	0.000
Bottle Blank: DIEPAMHR	355	23.9	24.3	7.3	8.3	7.56	8.08	116	58	0.001
DIEPAMHR + 25 ppb PBO	351	23.9	24.0	7.1	8.3	7.59	8.09	-	-	-
Low EC Control @ 164.4 µS/cm + 25 ppb PBO	179	23.9	24.0	7.1	8.5	7.26	7.82	-	-	-
Sacramento River Deep Water Channel, Light 55 + 25 ppb PBO	267	23.9	24.2	7.0	8.7	7.62	8.05	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	189	23.9	24.2	7.3	8.5	7.61	8.05	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	186	24.0	24.2	7.3	8.4	7.52	8.05	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	170	24.1	24.1	6.8	8.7	7.44	8.14	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	364	24.2	24.3	7.1	8.4	7.56	7.97	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	667	24.3	24.3	7.0	8.4	7.52	8.07	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	587	24.1	24.4	7.5	8.3	7.51	8.00	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 97-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/03/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/01/09 - 9/02/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
Low EC Control @ 180.1 uS/cm	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	93	4.4	98	2.5	NS
Sacramento River at tip of Grand Island (711)[3]	98	2.5	90	4.1	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	98	2.3	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
337 (Trip Blank)	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.077	0.005	0.062	0.002	S* (81%)
Low EC Control @ 180.1 uS/cm	0.061	0.006	0.064	0.003	NS
Sacramento R. Deep Water Channel, Light 55	0.117	0.008	0.117	0.009	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.121	0.004	0.096	0.003	S** (79%)
Confluence of Lindsey Sl. And Cache Sl.[3]	0.138	0.002	0.100	0.005	S*** (72%)
Sacramento River at tip of Grand Island (711)[3]	0.111	0.010	0.108	0.003	NS
San Joaquin River at Potato Slough (815)	0.120	0.004	0.105	0.005	S* (88%)
Old River, western arm at railroad bridge (902)	0.112	0.027	0.106	0.007	NS
Old River at mouth of Holland Cut (915)	0.136	0.011	0.102	0.008	S* (75%)
Suisun Bay off Chipps Island (508)	0.105	0.016	0.091	0.007	NS
337 (Trip Blank)	0.062	0.004	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed usign USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 97-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/01/09 - 9/02/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	357	21.8	8.03	8.4	32.6	0.04	0.002
Upper Cache Slough at mouth of Ulatis Creek	227	20.6	7.78	8.7	45.9	0.07	0.002
Confluence of Lindsey Sl. And Cache Sl.	417	21.3	7.64	8.6	23.3	0.09	0.002
Sacramento River at tip of Grand Island (711)	197	22.1	7.63	8.3	4.0	0.09	0.002
San Joaquin River at Potato Slough (815)	333	23.3	7.36	8.2	2.3	0.02	0.000
Old River, western arm at railroad bridge (902)	853	24.5	8.21	8.3	1.8	0.00	0.000
Old River at mouth of Holland Cut (915)	846	25.1	7.77	8.1	1.9	0.00	0.000
Suisun Bay off Chipps Island (508)	6180	21.2	7.69	8.5	10.9	0.07	0.001
337 (Trip Blank)	-	-	-	-	0.3	0.05	-

Table B 97-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/03/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/01/09 - 9/02/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	22.7	24.3	7.1	8.2	7.60	8.14	104	56	-
Low EC Control @ 180.1 uS/cm	939	22.8	24.3	7.4	8.4	7.55	8.02	-	-	-
Sacramento R. Deep Water Channel, Light 55	322	22.9	24.4	7.0	8.9	7.86	8.15	88	80	0.003
Upper Cache Slough at mouth of Ulatis Creek	208	22.9	24.4	7.4	8.6	7.99	8.21	72	78	0.005
Confluence of Lindsey Sl. And Cache Sl.	186	22.9	24.2	7.0	8.8	7.80	8.19	54	72	0.007
Sacramento River at tip of Grand Island (711)	177	22.9	24.3	7.0	8.7	7.81	8.02	76	70	0.005
San Joaquin River at Potato Slough (815)	318	22.9	24.2	7.3	8.4	7.81	8.06	72	68	0.001
Old River, western arm at railroad bridge (902)	678	22.9	24.3	7.0	8.6	7.67	8.21	104	62	0.000
Old River at mouth of Holland Cut (915)	575	22.9	24.3	7.0	8.5	7.66	8.10	96	62	0.000
Suisun Bay off Chipps Island (508)	5725	22.9	24.3	6.7	8.7	7.46	7.98	640	68	0.003
337 (Trip Blank)	336	22.9	24.3	7.5	8.7	7.74	8.15	108	54	0.003
DIEPAMHR + 25 ppb PBO	337	22.9	24.2	7.3	8.3	7.63	8.14	-	-	-
Low EC Control @ 180.1 uS/cm + 25 ppb PBO	961	22.9	24.3	7.6	8.5	7.60	7.95	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	321	22.9	24.4	7.2	8.5	7.96	8.14	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	208	22.9	24.4	7.3	8.8	7.96	8.17	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	188	23.0	24.4	7.1	8.7	7.85	8.16	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	177	23.0	24.5	6.8	8.8	7.78	8.15	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	316	23.1	24.3	7.5	8.9	7.74	8.08	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	679	23.3	24.3	7.0	8.6	7.61	8.21	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	577.5	23.3	24.4	7.0	8.5	7.65	8.08	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	5725	23.1	24.3	6.9	8.7	7.48	7.90	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 98-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/04/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/02/09 - 9/03/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	88	2.5	S* (88%)
Low EC Control @ 177.7 uS/cm	98	2.5	98	2.5	NS
High EC Control @ 13.40 mS/cm	100	0.0	88	12.5	NS
High EC Control @ 17.40 mS/cm	100	0.0	92	5.3	NS
High EC Control @ 24.10 mS/cm	81	7.9	48	19.7	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602) [5]	100	0.0	88	6.3	NS
Carquinez Strait, West of Benicia army dock (405) [6]	85	11.9	48	9.3	S* (56%)
Sacramento River at Hood DWR Station [3]	100	0.0	95	5.0	NS
Rough and Ready Island, DWR Station, Stockton	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch [4]	100	0.0	88	12.5	NS
Field Dup: Sacramento River at Hood DWR Station [3]	95	2.9	-	-	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.054	0.011	0.042	0.006	NS
Low EC Control @ 177.7 uS/cm	0.042	0.003	0.029	0.012	NS
High EC Control @ 13.40 mS/cm	0.036	0.003	0.033	0.003	NS
High EC Control @ 17.40 mS/cm	0.028*	0.002	0.020*	0.005	NS
High EC Control @ 24.10 mS/cm	0.025*	0.003	0.021*	0.003	NS
Montezuma Slough at Nurse Slough (609)	0.072	0.009	0.061	0.005	NS
Grizzly Bay at Dolphin (602) [5]	0.056	0.008	0.048	0.004	NS
Carquinez Strait, West of Benicia army dock (405) [6]	0.052	0.006	0.055	0.007	NS
Sacramento River at Hood DWR Station [3]	0.079	0.006	0.087	0.012	NS
Rough and Ready Island, DWR Station, Stockton	0.112	0.008	0.098	0.008	NS
Suisun Slough at Rush Ranch [4]	0.082	0.005	0.082	0.011	NS
Field Dup: Sacramento River at Hood DWR Station [3]	0.087	0.007	-	-	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.
*: $P < 0.05$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 13.40 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 17.40 mS/cm.
6. This high conductivity sample was compared to the High EC Control @ 24.10 mS/cm.

Table B 98-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/02/09 - 9/03/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Montezuma Slough at Nurse Slough (609)	11750	22.8	7.55	7.4	13.0	0.06	0.001
Grizzly Bay at Dolphin (602)	17400	21.7	7.70	8.7	12.7	0.04	0.001
Carquinez Strait, West of Benicia army dock (405)	23720	20.6	7.89	8.1	19.6	0.09	0.002
Sacramento River at Hood DWR Station	188	23.3	7.64	7.6	10.9	0.06	0.003
Rough and Ready Island, DWR Station, Stockton	576	26.9	7.61	7.4	8.4	0.00	0.000
Suisun Slough at Rush Ranch	12810	19.7	7.28	7.3	19.2	0.00	0.000
Field Dup: Sacramento River at Hood DWR Station	188	23.3	7.64	7.6	103.0	0.00	0.000

Table B 98-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/04/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/02/09 - 9/03/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	348	23.1	24.2	7.5	8.3	7.65	8.10	104	56	-
Low EC Control @ 177.7 uS/cm	182	23.0	24.4	7.6	8.8	7.54	7.89	64	28	-
High EC Control @ 13.40 mS/cm	12695	22.9	24.3	7.4	8.0	7.56	7.98	1640	66	-
High EC Control @ 17.40 mS/cm	16660	22.8	24.3	7.2	8.1	7.64	7.98	1920	78	-
High EC Control @ 24.10 mS/cm	22370	22.7	23.9	7.1	7.6	7.67	7.99	2720	86	-
Montezuma Slough at Nurse Slough (609)	11120	22.7	23.8	7.3	8.3	7.71	7.88	1232	94	0.001
Grizzly Bay at Dolphin (602)	16210	22.7	24.2	7.2	8.1	7.59	7.79	1880	80	0.001
Carquinez Strait, West of Benicia army dock (405)	22980	22.7	23.8	6.6	8.1	7.33	7.78	2720	86	0.002
Sacramento River at Hood DWR Station	220	22.9	24.0	7.1	8.5	7.77	8.02	72	72	0.003
Rough and Ready Island, DWR Station, Stockton	575	22.9	24.0	7.3	8.5	7.86	7.99	132	82	0.000
Suisun Slough at Rush Ranch	12290	22.9	24.0	6.9	8.4	7.61	8.02	1520	152	0.000
Field Dup: Sacramento River at Hood DWR Station	210	22.8	24.7	7.1	8.7	7.68	7.91	72	70	0.000
DIEPAMHR + 25 ppb PBO	345	23.0	24.2	7.6	8.2	7.68	8.12	-	-	-
Low EC Control @ 177.7 uS/cm + 25 ppb PBO	187	23.0	23.8	7.5	8.5	7.57	7.88	-	-	-
High EC Control @ 13.40 mS/cm + 25 ppb PBO	12620	22.9	24.0	7.4	8.1	7.60	7.98	-	-	-
High EC Control @ 17.40 mS/cm + 25 ppb PBO	16560	22.9	24.3	7.2	8.0	7.60	7.98	-	-	-
High EC Control @ 24.10 mS/cm + 25 ppb PBO	23230	23.0	24.4	7.1	7.8	7.69	7.99	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	11250	22.9	24.1	7.2	8.2	7.70	7.88	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16700	22.9	24.3	7.3	7.9	7.61	7.85	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	22355	22.8	24.1	6.6	7.7	7.53	7.81	-	-	-

Sacramento River at Hood DWR Station + 25 ppb PBO	224	22.8	24.1	7.0	8.5	7.78	8.06	-	-	-
Rough and Ready Island, DWR Station, Stockton + 25 ppb PBO	582	22.9	24.2	7.3	8.5	7.83	8.01	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12245	22.9	24.3	7.2	8.3	7.55	8.06	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 99-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/17/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/15/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	100	0.0	NS
Low EC Control @ 193.1 µS/cm	100	0.0	95	5.0	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	100	0.0	93	4.8	NS
Old River at mouth of Holland Cut (915)	98	2.5	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	98	2.5	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.3	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	98	2.5	NS
Field Dup.: Old River at mouth of Holland Cut (915)	100	0.0	-	-	NA
337 091509 Trip Blank	95	5.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.043	0.008	0.032	0.005	NS
Low EC Control @ 193.1 µS/cm	0.042	0.007	0.033	0.003	NS
Upper Cache Slough at mouth of Ulatis Creek[3]	0.089	0.006	0.101	0.011	NS
Old River at mouth of Holland Cut (915)	0.106	0.008	0.093	0.008	NS
Sacramento River at tip of Grand Island (711)[3]	0.100	0.005	0.075	0.009	S* (75%)
Confluence of Lindsey Sl. And Cache Sl.[3]	0.090	0.008	0.089	0.015	NS
San Joaquin River at Potato Slough (815)	0.101	0.006	0.069	0.012	NS
Old River, western arm at railroad bridge (902)	0.097	0.006	0.109	0.004	NS
Sacramento R. Deep Water Channel, Light 55	0.106	0.002	0.092	0.007	NS
Field Dup.: Old River at mouth of Holland Cut (915)	0.103	0.009	-	-	NA
337 091509 Trip Blank	0.051	0.010	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 99-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/15/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	245	21.1	7.77	8.5	33.7	0.04	0.001
Old River at mouth of Holland Cut (915)	677	23.4	7.63	8.2	2.4	0.01	0.000
Sacramento River at tip of Grand Island (711)	196	22.3	7.51	8.1	4.3	0.22	0.003
Confluence of Lindsey Sl. And Cache Sl.	234	20.8	7.79	8.4	25.0	0.09	0.002
San Joaquin River at Potato Slough (815)	449	22.6	7.53	8.2	3.4	0.04	0.001
Old River, western arm at railroad bridge (902)	780	23.0	8.00	8.9	2.2	0.00	0.000
Sacramento R. Deep Water Channel, Light 55	366	21.7	7.78	8.5	22.8	0.03	0.001
Field Dup.: Old River at mouth of Holland Cut (915)	677	23.4	7.63	8.2	2.6	0.00	0.000
337 091509 Trip Blank	-	-	-	-	0.3	0.03	-

Table B 99-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/17/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/15/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	341	23.0	24.6	7.1	8.3	7.48	8.01	104	62	-
Low EC Control @ 193.1 µS/cm	192	22.9	24.7	7.1	8.5	7.28	7.86	56	34	-
Upper Cache Slough at mouth of Ulatis Creek	229	22.9	24.3	7.2	8.7	7.59	8.03	80	86	0.002
Old River at mouth of Holland Cut (915)	640	22.9	24.4	7.1	8.7	7.42	7.99	108	70	0.000
Sacramento River at tip of Grand Island (711)	194	22.9	24.2	7.0	8.8	7.51	7.90	68	74	0.008
Confluence of Lindsey Sl. And Cache Sl.	218	22.9	24.4	7.3	8.7	7.45	8.07	76	80	0.005
San Joaquin River at Potato Slough (815)	437	23.0	24.5	7.2	8.6	7.50	8.04	92	72	0.002
Old River, western arm at railroad bridge (902)	737	23.0	24.6	7.2	8.8	7.52	8.10	116	68	0.000
Sacramento R. Deep Water Channel, Light 55	343	22.9	24.5	7.2	8.8	7.62	8.15	96	86	0.002
Field Dup.: Old River at mouth of Holland Cut (915)	639	22.9	24.5	7.1	8.4	7.51	8.01	104	70	0.000
337 091509 Trip Blank	336	23.0	24.5	7.3	8.5	7.53	8.02	104	56	0.002
DIEPAMHR + 25 ppb PBO	340	23.1	24.1	7.2	8.3	7.42	8.04	-	-	-
Low EC Control @ 193.1 µS/cm + 25 ppb PBO	188	23.0	24.2	7.1	8.8	7.25	7.86	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	222	23.0	24.2	7.1	8.6	7.59	8.13	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	635	22.9	24.2	7.1	8.4	7.44	7.98	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	180	23.0	24.1	7.1	8.6	7.44	8.01	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	204	23.2	24.3	7.2	8.5	7.54	8.02	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	439	23.0	24.3	7.2	8.4	7.49	8.00	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	732	23.2	24.2	7.2	8.8	7.60	8.00	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	344	23.0	24.4	7.2	8.2	7.63	8.11	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 100-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 9/18/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/16/09 - 9/17/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	91	3.0	97	2.8	NS
Low EC Control @ 193.9 µS/cm	94	3.4	100	0.0	NS
High EC Control @ 14.35 mS/cm	100	0.0	97	2.8	NS
High EC Control @ 18.20 mS/cm	98	2.5	100	0.0	NS
High EC Control @ 25.07 mS/cm	64	3.1	86	10.5	NS
Grizzly Bay at Dolphin (602)[5]	95	2.9	87*	2.4	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Montezuma Slough at Nurse Slough (609)[4]	98	2.5	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[6]	78	7.5	69	8.5	NS
Suisun Slough at Rush Ranch	98	2.5	100	0.0	NS
Sacramento River at Hood DWR Station[3]	98	2.5	100	0.0	NS
Rough and Ready DWR station, Stockton	98	2.5	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.060	0.011	0.070	0.006	NS
Low EC Control @ 193.9 µS/cm	0.059	0.004	0.076	0.010	NS
High EC Control @ 14.35 mS/cm	0.078	0.004	0.049*	0.004	S** (63%)
High EC Control @ 18.20 mS/cm	0.055	0.003	0.051*	0.002	NS
High EC Control @ 25.07 mS/cm	0.032*	0.004	0.051	0.012	NS
Grizzly Bay at Dolphin (602)[5]	0.067	0.001	0.049	0.007	NS
Suisun Bay off Chipps Island (508)	0.103	0.007	0.084	0.012	NS
Montezuma Slough at Nurse Slough (609)[4]	0.079	0.006	0.074	0.006	NS
Carquinez Strait, West of Benicia army dock (405)[6]	0.057	0.005	0.040	0.013	NS
Suisun Slough at Rush Ranch	0.099	0.004	0.082	0.003	S* (83%)
Sacramento River at Hood DWR Station[3]	0.104	0.002	0.081	0.003	S** (78%)
Rough and Ready DWR station, Stockton	0.135	0.004	0.117	0.003	S* (87%)

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.
 *: $P < 0.05$
 **: $P < 0.01$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. These treatments were compared to the Low EC Control.
4. These treatments were compared to the High EC Control @ 14.35 mS/cm.
5. These treatments were compared to the High EC Control @ 18.2 mS/cm.
6. These treatments were compared to the High EC Control @ 25.07 mS/cm.

Table B 100-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/16/09 - 9/17/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Grizzly Bay at Dolphin (602)	17710	20.6	7.46	8.7	21.1	0.08	0.001
Suisun Bay off Chipps Island (508)	6220	20.5	7.53	8.9	9.3	0.09	0.001
Montezuma Slough at Nurse Slough (609)	13010	21.8	7.44	8.0	23.5	0.15	0.001
Carquinez Strait, West of Benicia army dock (405)	24290	20.5	7.62	8.4	29.5	0.18	0.002
Suisun Slough at Rush Ranch	13730	18.7	7.13	7.4	40.8	0.19	0.001
Sacramento River at Hood DWR Station	192	22.0	7.49	8.0	9.6	0.32	0.004
Rough and Ready DWR station, Stockton	572	24.3	7.44	7.2	8.9	0.10	0.001

Table B 100-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 9/18/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/16/09 - 9/17/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	347	22.7	23.9	7.6	8.7	7.66	8.02	104	62	-
Low EC Control @ 193.9 µS/cm	191	22.6	24.0	7.5	8.8	7.47	7.80	64	30	-
High EC Control @ 14.35 mS/cm	13350	22.4	24.0	7.2	8.8	7.63	7.76	1680	74	-
High EC Control @ 18.20 mS/cm	17265	22.5	24.4	7.2	8.4	7.61	7.77	2120	78	-
High EC Control @ 25.07 mS/cm	24035	22.6	24.3	6.8	8.5	7.63	7.77	2920	84	-
Grizzly Bay at Dolphin (602)	16905	22.5	24.4	7.2	8.8	7.63	7.79	2720	82	0.002
Suisun Bay off Chipps Island (508)	5890	22.4	24.3	7.3	8.7	7.60	7.90	720	74	0.003
Montezuma Slough at Nurse Slough (609)	12440	22.3	23.9	7.3	8.6	7.68	7.80	1480	116	0.003
Carquinez Strait, West of Benicia army dock (405)	23320	22.5	24.3	6.8	8.8	7.60	7.79	2080	92	0.004
Suisun Slough at Rush Ranch	13130	22.5	24.4	6.9	8.9	7.87	8.04	160	150	0.005
Sacramento River at Hood DWR Station	197	22.1	24.3	6.8	8.6	7.74	8.20	72	74	0.024
Rough and Ready DWR station, Stockton	555	22.1	24.2	7.4	8.9	7.72	8.09	120	82	0.006
DIEPAMHR	347	22.6	23.9	7.5	8.7	7.54	8.08	-	-	-
Low EC Control @ 193.9 µS/cm	201	22.6	23.8	7.4	8.8	7.42	7.87	-	-	-
High EC Control @ 14.35 mS/cm	13500	22.5	23.8	7.1	8.4	7.64	8.66	-	-	-
High EC Control @ 18.20 mS/cm	17295	22.5	23.7	7.1	8.4	7.67	7.82	-	-	-
High EC Control @ 25.07 mS/cm	23420	22.6	23.7	6.7	8.3	7.65	7.73	-	-	-
Grizzly Bay at Dolphin (602)	16585	22.4	23.7	6.9	8.1	7.62	7.84	-	-	-
Suisun Bay off Chipps Island (508)	5855	22.4	23.6	7.3	8.5	7.55	7.92	-	-	-
Montezuma Slough at Nurse Slough (609)	12440	22.4	23.7	7.2	8.5	7.76	7.84	-	-	-
Carquinez Strait, West of Benicia army dock (405)	23025	22.5	23.6	6.9	8.1	7.63	7.76	-	-	-
Suisun Slough at Rush Ranch	13000	22.5	23.9	7.0	8.9	7.53	8.03	-	-	-
Sacramento River at Hood DWR Station	197.2	22.5	23.5	6.9	8.7	7.71	8.30	-	-	-
Rough and Ready DWR station, Stockton	543.5	22.4	23.6	7.3	8.7	7.72	7.97	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 101-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/01/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/29/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	93	7.5	100	0.0	NS
Low EC Control @ 177.9 µS	98	2.5	98	2.5	NS
Sacramento River Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. and Cache Sl.	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)[3]	98	2.5	93	2.5	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	98	2.5	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.049	0.009	0.044	0.004	NS
Low EC Control @ 177.9 µS	0.046	0.007	0.056	0.008	NS
Sacramento River Deep Water Channel, Light 55	0.096	0.006	0.096	0.007	NS
Upper Cache Slough at mouth of Ulatis Creek	0.084	0.013	0.082	0.013	NS
Confluence of Lindsey Sl. and Cache Sl.	0.070	0.012	0.084	0.006	NS
Sacramento River at tip of Grand Island (711)[3]	0.056	0.005	0.068	0.004	NS
San Joaquin River at Potato Slough (815)	0.083	0.010	0.092	0.004	NS
Old River, western arm at railroad bridge (902)	0.093	0.003	0.081	0.011	NS
Old River at mouth of Holland Cut (915)	0.070	0.012	0.088	0.006	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Samples were evaluated using standard USEPA single-concentration statistical procedures.
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.

Table B 101-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/29/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River Deep Water Channel, Light 55	295	21.1	7.15	8.7	22.0	0.06	0.000
Upper Cache Slough at mouth of Ulatis Creek	241	18.7	7.48	9.5	55.9	0.07	0.001
Confluence of Lindsey Sl. and Cache Sl.	219	19.6	7.46	9.0	34.1	0.11	0.001
Sacramento River at tip of Grand Island (711)	174	20.4	7.40	8.8	4.5	0.48	0.005
San Joaquin River at Potato Slough (815)	336	21.7	7.35	8.4	3.2	0.08	0.001
Old River, western arm at railroad bridge (902)	656	22.1	7.45	8.7	4.9	0.03	0.000
Old River at mouth of Holland Cut (915)	598	22.3	7.43	8.4	3.2	0.04	0.000

Table B 101-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/01/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/29/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	340	22.2	23.7	7.8	8.3	7.73	8.15	102	60	-
Low EC Control @ 177.9 µS	177	22.2	24.0	7.7	8.5	7.49	7.95	52	32	-
Sacramento River Deep Water Channel, Light 55	289	22.3	23.8	7.3	8.8	7.90	8.16	88	86	0.004
Upper Cache Slough at mouth of Ulatis Creek	230	22.1	23.7	7.6	8.4	7.95	8.21	80	91	0.005
Confluence of Lindsey Sl. and Cache Sl.	211	22.6	23.8	7.5	8.3	7.87	8.14	74	83	0.007
Sacramento River at tip of Grand Island (711)	171	22.5	23.9	7.5	8.5	7.67	7.93	60	70	0.019
San Joaquin River at Potato Slough (815)	333	22.5	23.8	7.4	8.6	7.88	8.06	80	78	0.004
Old River, western arm at railroad bridge (902)	612	22.4	23.9	7.5	8.6	7.85	8.10	108	78	0.002
Old River at mouth of Holland Cut (915)	598	22.7	23.7	7.4	8.4	7.87	8.15	106	82	0.002
DIEPAMHR + 25 ppb PBO	335	22.6	23.1	7.3	8.2	7.76	8.14	-	-	-
Low EC Control @ 177.9 µS + 25 ppb PBO	176	22.6	23.3	7.6	8.6	7.49	7.95	-	-	-
Sacramento River Deep Water Channel, Light 55 + 25 ppb PBO	292	22.5	23.4	7.3	8.6	7.93	8.13	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	232	22.6	23.5	7.5	8.4	7.93	8.17	-	-	-
Confluence of Lindsey Sl. and Cache Sl. + 25 ppb PBO	211	22.5	23.6	7.6	8.5	7.88	8.13	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	171	22.5	23.6	7.5	8.3	7.72	8.08	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	331	22.5	23.7	7.4	8.4	7.87	8.14	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	648	22.6	23.8	7.5	8.5	7.80	8.10	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	598	22.6	23.8	7.4	8.3	7.85	8.14	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 102-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/02/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/30/09 - 10/01/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
Low EC Control @ 166.3 µS/cm	98	2.3	100	0.0	NS
High EC Control @ 15.63 mS/cm	93	4.8	95	2.9	NS
High EC Control @ 19.62 mS/cm	100	0.0	93	4.8	NS
Montezuma Slough at Nurse Slough (609)[4]	95	5.0	90	7.1	NS
Grizzly Bay at Dolphin (602)[5]	95	3.1	81	7.4	NS
Suisun Bay off Chipps Island (508)[3]	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Suisun Slough at Rush Ranch[4]	95	2.6	98	2.5	NS
Bottle Blank: DIEPAMHR	92	5.3	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.042	0.012	0.052	0.004	NS
Low EC Control @ 166.3 µS/cm	0.038	0.001	0.041	0.006	NS
High EC Control @ 15.63 mS/cm	0.036	0.005	0.032*	0.000	NS
High EC Control @ 19.62 mS/cm	0.043	0.006	0.030*	0.002	NS
Montezuma Slough at Nurse Slough (609)[4]	0.064	0.006	0.067	0.004	NS
Grizzly Bay at Dolphin (602)[5]	0.051	0.004	0.054	0.008	NS
Suisun Bay off Chipps Island (508)[3]	0.067	0.009	0.063	0.004	NS
Sacramento River at Hood DWR Station	0.051	0.009	0.077	0.004	S* (151%)
Rough and Ready DWR station, Stockton	0.110	0.002	0.103	0.007	NS
Suisun Slough at Rush Ranch[4]	0.065	0.006	0.075	0.009	NS
Bottle Blank: DIEPAMHR	0.054	0.010	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Samples were evaluated using standard USEPA single-concentration statistical procedures.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

*: $P < 0.05$

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 15.63 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 19.62 mS/cm.

Table B 102-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/30/09 - 10/01/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Montezuma Slough at Nurse Slough (609)	14120	20.0	7.30	8.2	15.8	0.11	0.001
Grizzly Bay at Dolphin (602)	18240	19.0	7.47	8.8	16.0	0.15	0.001
Suisun Bay off Chipps Island (508)	6640	20.0	7.26	8.8	7.9	0.10	0.001
Sacramento River at Hood DWR Station	161	19.7	7.44	8.0	5.8	0.34	0.003
Rough and Ready DWR station, Stockton	521	22.2	7.28	6.9	8.4	0.09	0.001
Suisun Slough at Rush Ranch	14660	13.3	7.07	7.4	28.6	0.14	0.000
Bottle Blank: DIEPAMHR	-	-	-	-	0.3	0.06	-

Table B 102-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/2/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 9/30/09-10/1/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	337	22.8	23.6	7.2	8.5	7.72	8.08	102	60	-
Low EC Control @ 166.3 µS	171	22.8	23.7	7.1	8.7	7.48	7.88	52	30	-
High EC Control @ 15.63 mS	15105	22.9	24.0	7.2	8.3	7.68	7.83	1920	78	-
High EC Control @ 19.62 mS	18495	22.7	23.5	7.1	8.4	7.65	7.83	2360	80	-
Montezuma Slough at Nurse Slough (609)	13620	22.6	23.9	7.0	8.4	7.77	7.92	1760	104	0.002
Grizzly Bay at Dolphin (602)	17510	22.7	23.4	6.9	8.7	7.71	7.92	1640	88	0.003
Suisun Bay off Chipps Island (508)	6340	22.7	23.9	7.1	8.8	7.73	7.90	760	80	0.003
Sacramento River at Hood DWR Station	170	22.7	24.3	7.0	8.6	7.39	8.01	60	64	0.017
Rough and Ready Island, DWR Station, Stockton	521	22.7	24.2	7.1	8.9	7.87	8.03	120	86	0.004
Suisun Slough at Rush Ranch	13930	22.7	24.2	7.1	8.5	7.63	8.18	1400	190	0.002
Bottle Blank: DIEPAMHR	345	22.4	24.3	7.2	8.7	7.77	8.06	124	58	0.003
DIEPAMHR + 25 ppb PBO	341	22.5	23.8	7.0	8.2	7.74	8.03	-	-	-
Low EC Control @ 166.3 µS + 25 ppb PBO	175	22.6	23.5	7.3	8.9	7.46	7.82	-	-	-
High EC Control @ 15.63 mS + 25 ppb PBO	15350	22.6	23.4	7.1	8.5	7.61	7.84	-	-	-
High EC Control @ 19.62 mS + 25 ppb PBO	18940	22.6	23.5	6.9	8.2	7.69	7.77	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	13515	22.5	23.4	7.1	8.6	7.76	7.96	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	17280	22.6	23.5	6.9	8.2	7.72	7.89	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	6350	22.5	23.4	7.1	8.7	7.72	7.92	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	192	22.7	23.4	6.7	8.7	7.65	8.06	-	-	-
Rough and Ready Island, DWR Station, Stockton + 25 ppb PBO	525	22.5	23.3	7.4	8.6	7.91	8.09	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	13910	22.6	23.3	6.8	8.6	7.78	8.80	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 103-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/15/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/14/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
Low EC Control @ 136.6 µS/cm	100	0.0	100	0.0	NS
High EC Control @ 16.19 mS/cm	100	0.0	100	0.0	NS
High EC Control @ 20.97 mS/cm	98	2.5	95	2.9	NS
Sacramento River at Hood DWR Station[3]	87	6.3	94	3.3	NS
Napa River at River Park Blvd.	100	0.0	97	2.8	NS
Montezuma Slough at Nurse Slough (609)[4]	98	2.5	100	0.0	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	100	0.0	95	2.9	NS
Bottle Blank: DIEPAMHR	100	0.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.037	0.005	0.044	0.003	NS
Low EC Control @ 136.6 µS/cm	0.039	0.002	0.034	0.004	NS
High EC Control @ 16.19 mS/cm	0.035	0.002	0.036	0.004	NS
High EC Control @ 20.97 mS/cm	0.029	0.007	0.032*	0.002	NS
Sacramento River at Hood DWR Station[3]	0.036	0.004	0.027	0.005	NS
Napa River at River Park Blvd.	0.069	0.007	0.055	0.005	NS
Montezuma Slough at Nurse Slough (609)[4]	0.066	0.008	0.070	0.002	NS
Suisun Bay off Chipps Island (508)	0.062	0.007	0.064	0.003	NS
Grizzly Bay at Dolphin (602)[5]	0.044	0.002	0.050	0.004	NS
Bottle Blank: DIEPAMHR	0.047	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Samples were evaluated using standard USEPA single-concentration statistical procedures.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

*: $P < 0.05$

3. This low conductivity sample was compared to the Low EC Control.

4. This high conductivity sample was compared to the High EC Control @ 16.19 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 20.97 mS/cm.

Table B 103-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/14/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Sacramento River at Hood DWR Station	257	16.7	7.42	8.3	7.7	0.38	0.003
Napa River at River Park Blvd.	5320	15.4	7.20	7.9	67.2	0.22	0.001
Montezuma Slough at Nurse Slough (609)	15450	16.5	7.12	9.2	15.4	0.21	0.001
Suisun Bay off Chipps Island (508)	9090	16.5	7.18	9.4	10.4	0.11	0.000
Grizzly Bay at Dolphin (602)	20170	16.4	7.46	9.8	21.5	0.11	0.001

Table B 103-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/15/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/14/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	345	24.0	24.0	7.2	8.1	7.69	8.18	100	60	-
Low EC Control @ 136.6 µS/cm	142	23.1	23.9	7.1	8.7	7.32	8.00	40	26	-
High EC Control @ 16.19 mS/cm	15490	22.9	24.1	7.0	8.4	7.63	7.80	1840	84	-
High EC Control @ 20.97 mS/cm	20320	22.9	23.8	6.9	8.0	7.62	7.78	2400	92	-
Sacramento River at Hood DWR Station	140	23.0	24.0	6.1	8.7	7.43	7.78	52	52	0.011
Napa River at River Park Blvd.	4891	23.0	23.3	6.8	8.3	7.35	7.56	520	48	0.002
Montezuma Slough at Nurse Slough (609)	14965	23.0	23.6	6.8	8.0	7.69	7.81	1760	90	0.004
Suisun Bay off Chipps Island (508)	9615	23.0	23.2	7.0	8.4	7.67	7.86	1040	86	0.002
Grizzly Bay at Dolphin (602)	19340	23.0	24.0	6.9	7.9	7.61	7.81	2280	98	0.002
Bottle Blank: DIEPAMHR	368	22.9	23.6	7.1	8.2	7.77	8.20	112	60	-
DIEPAMHR + 25 ppb PBO	368	22.7	23.0	6.9	8.2	7.63	8.13	-	-	-
Low EC Control @ 136.6 µS/cm + 25 ppb PBO	151	23.1	23.5	7.0	8.9	7.18	7.96	-	-	-
High EC Control @ 16.19 mS/cm + 25 ppb PBO	15630	23.0	23.4	6.8	8.2	7.65	7.83	-	-	-
High EC Control @ 20.97 mS/cm + 25 ppb PBO	19975	23.1	23.1	6.8	8.0	7.60	7.79	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	165	23.1	24.3	6.4	8.6	7.41	7.95	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	5005	23.1	24.2	7.0	8.2	7.37	7.58	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	14880	23.2	23.8	6.7	7.7	7.64	7.79	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	9840	23.2	24.2	7.1	8.4	7.63	7.92	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	19565	23.3	24.0	7.0	7.9	7.60	7.82	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 104-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/16/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/15/09 - 10/16/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR [Control for group A]	93	7.5	92	4.8	NS
Low EC Control @ 95.0 µS/cm [A]	93	4.8	77	10.3	NS
DIEPAMHR [Control for group B]	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek [A]	98	2.5	10***	6.1	S* (10%)
Confluence of Lindsey Sl. And Cache Sl. [A]	100	0.0	97	2.8	NS
Sacramento River at tip of Grand Island (711)[3] [A]	100	0.0	89	6.1	NS
Old River, western arm at railroad bridge (902) [B]	100	0.0	98	2.5	NS
San Joaquin River at Potato Slough (815)[3] [B]	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55 [A]	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915) [B]	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch [B]	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton [B]	100	0.0	86	5.4	NS
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek [A]	95	2.9	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR [Control for group A]	0.038	0.004	0.044	0.002	NS
Low EC Control @ 95.0 µS/cm [A]	0.018**	0.003	0.038	0.004	S** (211%)
DIEPAMHR [Control for group B]	0.049	0.009	0.032	0.007	NS
Upper Cache Slough at mouth of Ulatis Creek [A]	0.039	0.007	0.045	0.005	NS
Confluence of Lindsey Sl. And Cache Sl. [A]	0.083	0.005	0.062	0.004	S* (75%)
Sacramento River at tip of Grand Island (711)[3] [A]	0.061	0.007	0.055	0.007	NS
Old River, western arm at railroad bridge (902) [B]	0.088	0.007	0.049	0.006	S** (56%)
San Joaquin River at Potato Slough (815)[3] [B]	0.066	0.010	0.074	0.014	NS
Sacramento R. Deep Water Channel, Light 55 [A]	0.081	0.003	0.089	0.013	NS
Old River at mouth of Holland Cut (915) [B]	0.080	0.010	0.066	0.008	NS
Suisun Slough at Rush Ranch [B]	0.073	0.009	0.085	0.013	NS
Rough and Ready DWR station, Stockton [B]	0.085	0.020	0.036	0.007	NS
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek [A]	0.053	0.007	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Samples were evaluated using standard USEPA single-concentration statistical procedures.
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
*: $P < 0.05$
**: $P < 0.01$
***: $P < 0.001$
3. This low conductivity sample was compared to the Low EC Control.

Table B 104-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/15/09 - 10/16/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	290	16.4	7.26	6.4	163.7	0.22	0.001
Confluence of Lindsey Sl. And Cache Sl.	220	16.8	7.53	9.3	50.7	0.11	0.001
Sacramento River at tip of Grand Island (711)	135	17.4	7.56	9.4	2.9	0.39	0.004
Old River, western arm at railroad bridge (902)	540	17.7	7.47	9.4	2.5	0.04	0.000
San Joaquin River at Potato Slough (815)	170	17.4	7.41	8.9	2.6	0.23	0.002
Sacramento R. Deep Water Channel, Light 55	320	17.1	7.31	9.4	40.7	0.06	0.000
Old River at mouth of Holland Cut (915)	550	17.9	7.40	9.2	3.5	0.02	0.000
Suisun Slough at Rush Ranch	9540	14.8	7.24	6.3	21.7	0.13	0.000
Rough and Ready DWR station, Stockton	522	18.6	7.20	8.5	5.2	0.09	0.000
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek	290	16.4	7.26	6.4	164.0	0.19	0.001

Table B 104-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/16/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/15/09 - 10/16/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR [Control for group A]	339	22.9	23.6	6.9	8.3	7.58	8.74	100	60	-
Low EC Control @ 95.0 µS/cm [A]	111	23.0	23.5	6.8	8.2	7.28	7.81	32	24	-
DIEPAMHR [Control for group B]	336	23.0	23.5	7.3	8.2	7.73	8.74	100	60	-
Upper Cache Slough at mouth of Ulatis Creek [A]	279	23.1	23.8	7.0	8.1	7.61	8.00	108	88	0.004
Confluence of Lindsey Sl. And Cache Sl. [A]	218	23.1	23.6	7.4	8.4	7.79	8.00	80	78	0.004
Sacramento River at tip of Grand Island (711)[3] [A]	137	23.1	23.2	7.0	8.6	7.57	7.83	60	56	0.012
Old River, western arm at railroad bridge (902) [B]	524	23.0	23.7	7.3	8.5	7.76	7.98	96	76	0.002
San Joaquin River at Potato Slough (815)[3] [B]	160	23.1	24.2	7.2	8.6	7.50	7.85	60	58	0.006
Sacramento R. Deep Water Channel, Light 55 [A]	310	23.1	23.9	6.9	8.3	7.77	8.06	88	84	0.003
Old River at mouth of Holland Cut (915) [B]	543	23.1	23.4	7.4	8.6	7.75	8.05	108	82	0.001
Suisun Slough at Rush Ranch [B]	9355	23.1	24.3	7.2	8.3	7.47	8.08	1160	138	0.001
Rough and Ready DWR station, Stockton [B]	526	23.1	24.3	7.2	8.2	7.80	8.12	124	90	0.004
Field Dup.: Upper Cache Slough at mouth of Ulatis Creek [A]	290	23.1	24.2	7.0	8.1	7.70	8.04	108	88	0.005
DIEPAMHR [Control for group A] + 25 ppb PBO	343	23.2	23.9	6.9	8.2	7.69	8.10	-	-	-
Low EC Control @ 95.0 µS/cm [A] + 25 ppb PBO	110	23.2	24.0	6.9	8.2	7.31	7.77	-	-	-
DIEPAMHR [Control for group B] + 25 ppb PBO	339	23.3	23.3	7.2	8.1	7.62	8.77	-	-	-
Upper Cache Slough at mouth of Ulatis Creek [A] + 25 ppb PBO	288	23.3	24.2	7.1	8.7	7.74	7.88	-	-	-
Confluence of Lindsey Sl. And Cache Sl. [A] + 25 ppb PBO	223	23.3	24.1	7.3	8.3	7.82	8.03	-	-	-
Sacramento River at tip of Grand Island (711)[3] [A] + 25 ppb PBO	137	23.3	24.3	7.1	8.3	7.58	7.87	-	-	-
Old River, western arm at railroad bridge (902) [B] + 25 ppb PBO	533	23.3	24.1	7.3	8.0	7.74	8.10	-	-	-
San Joaquin River at Potato Slough (815)[3] [B] + 25 ppb PBO	162	23.3	24.3	7.0	8.3	7.55	8.10	-	-	-
Sacramento R. Deep Water Channel, Light 55 [A] + 25 ppb PBO	316	23.3	24.3	7.0	8.3	7.74	8.22	-	-	-
Old River at mouth of Holland Cut (915) [B] + 25 ppb PBO	550	23.3	24.3	7.2	8.7	7.79	8.17	-	-	-
Suisun Slough at Rush Ranch [B] + 25 ppb PBO	9335	23.4	24.2	7.5	8.3	7.85	8.10	-	-	-
Rough and Ready DWR station, Stockton [B] + 25 ppb PBO	524	23.5	24.1	7.3	8.4	7.80	8.13	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 105-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/29/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/27/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	93	4.8	100	0.0	NS
Low EC Control @ 180.9 µS/cm	95	2.9	93	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	93	4.8	NS
Sacramento River at tip of Grand Island (711)[3]	95	2.9	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)[3]	98	2.5	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	100	0.0	100	0.0	NS
Bottle Blank	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.055	0.008	0.045	0.007	NS
Low EC Control @ 180.9 µS/cm	0.027*	0.007	0.038	0.010	NS
Upper Cache Slough at mouth of Ulatis Creek	0.072	0.004	0.077	0.003	NS
Sacramento R. Deep Water Channel, Light 55	0.070	0.004	0.076	0.007	NS
Sacramento River at tip of Grand Island (711)[3]	0.051	0.013	0.073	0.006	NS
Old River at mouth of Holland Cut (915)	0.061	0.005	0.116	0.011	S** (190%)
Old River, western arm at railroad bridge (902)	0.088	0.007	0.098	0.009	NS
San Joaquin River at Potato Slough (815)[3]	0.067	0.007	0.094	0.009	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.100	0.005	0.080	0.011	NS
Bottle Blank	0.060	0.006	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 105-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/27/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	487	15.9	7.14	7.8	42.7	0.25	0.001
Sacramento R. Deep Water Channel, Light 55	337	16.8	7.83	9.0	17.8	0.04	0.001
Sacramento River at tip of Grand Island (711)	176	16.6	7.77	9.1	2.6	0.56	0.009
Old River at mouth of Holland Cut (915)	428	17.1	7.41	9.6	2.4	0.05	0.000
Old River, western arm at railroad bridge (902)	534	16.6	7.72	9.7	18.8	0.06	0.001
San Joaquin River at Potato Slough (815)	242	16.5	7.31	9.0	1.9	0.13	0.001
Confluence of Lindsey Sl. And Cache Sl.	214	17.0	7.38	9.3	20.3	0.19	0.001
Bottle Blank: DIEPAMHR	-	-	-	-	0.1	0.03	-

Table B 105-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/29/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/27/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	349	21.3	22.8	7.8	8.7	7.73	8.17	100	52	-
Low EC Control @ 180.9 µS/cm	193	22.7	23.0	7.7	8.7	7.47	7.99	60	30	-
Upper Cache Slough at mouth of Ulatis Creek	534	22.6	22.7	7.4	8.7	8.03	8.20	152	130	0.014
Sacramento R. Deep Water Channel, Light 55	342	22.8	23.2	7.7	8.6	7.82	8.13	104	82	0.002
Sacramento River at tip of Grand Island (711)	196	22.7	23.0	7.6	8.8	7.64	8.12	60	60	0.032
Old River at mouth of Holland Cut (915)	460	22.7	23.9	7.6	8.6	7.70	8.13	92	64	0.003
Old River, western arm at railroad bridge (902)	569	22.7	23.6	7.6	8.7	7.67	8.14	92	64	0.004
San Joaquin River at Potato Slough (815)	234	22.7	23.6	7.5	8.7	7.67	8.10	64	56	0.007
Confluence of Lindsey Sl. And Cache Sl.	234	22.7	23.3	7.4	8.7	7.71	8.18	76	58	0.013
Bottle Blank: DIEPAMHR	378	22.7	23.4	7.7	8.5	7.70	8.12	108	68	0.002
DIEPAMHR + 25 ppb PBO	376	22.6	23.0	7.8	8.7	7.72	8.11	-	-	-
Low EC Control @ 180.9 µS/cm + 25 ppb PBO	212	22.7	23.8	7.6	8.9	7.46	7.96	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	544	22.7	23.5	7.5	8.9	8.04	8.26	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	297	22.6	23.2	7.8	8.9	7.85	8.22	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	182	22.7	23.6	7.7	8.6	7.61	8.04	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	433	22.7	22.9	7.6	8.8	7.68	8.13	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	553	22.8	23.6	7.6	8.9	7.68	8.13	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	238	22.7	23.7	7.6	8.7	7.72	7.85	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	216	22.5	23.5	7.6	8.4	7.70	8.17	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 106-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 10/30/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/28/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	100	0.0	NS
Low EC Control @ 168.6 µS/cm	100	0.0	98	2.5	NS
High EC Control @ 14.71 mS/cm	100	0.0	100	0.0	NS
High EC Control @ 17.19 mS/cm	93	4.8	84	10.8	NS
High EC Control @ 24.53 mS/cm	82	3.1	61*	2.3	S** (74%)
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	100	0.0	95	2.9	NS
Suisun Bay off Chipps Island (508)	98	2.5	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[6]	82	4.5	50	10.0	S* (61%)
Suisun Slough at Rush Ranch[4]	100	0.0	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Napa River at River Park Blvd.[6]	95	3.1	93	4.8	NS
Sacramento River at Hood DWR Station[3]	100	0.0	90	4.1	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	100	0.0	-	-	NA
Field Dup.: Napa River at River Park Blvd.[6]	98	2.5	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.050	0.007	0.042	0.008	NS
Low EC Control @ 168.6 µS/cm	0.032*	0.006	0.033	0.002	NS
High EC Control @ 14.71 mS/cm	0.043	0.004	0.036	0.006	NS
High EC Control @ 17.19 mS/cm	0.030*	0.005	0.047	0.006	NS
High EC Control @ 24.53 mS/cm	0.036	0.012	0.035	0.007	NS
Montezuma Slough at Nurse Slough (609)[4]	0.060	0.005	0.064	0.005	NS
Grizzly Bay at Dolphin (602)[5]	0.056	0.006	0.061	0.002	NS
Suisun Bay off Chipps Island (508)	0.075	0.007	0.078	0.008	NS
Carquinez Strait, West of Benicia army dock (405)[6]	0.044	0.006	0.022	0.006	NS
Suisun Slough at Rush Ranch[4]	0.077	0.005	0.084	0.008	NS
Rough and Ready DWR station, Stockton	0.102	0.006	0.099	0.007	NS
Napa River at River Park Blvd.[6]	0.035	0.005	0.032	0.004	NS
Sacramento River at Hood DWR Station[3]	0.032	0.005	0.028	0.006	NS
Field Dup.: Montezuma Slough at Nurse Slough (609)[4]	0.078	0.009	-	-	NA
Field Dup.: Napa River at River Park Blvd.[6]	0.034	0.005	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

*: $P < 0.05$

**: $P < 0.01$

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. This low conductivity sample was compared to the Low EC Control.

4. These high conductivity samples were compared to the High EC Control @ 14.71 mS/cm.

5. This high conductivity sample was compared to the High EC Control @ 17.19 mS/cm.

6. These high conductivity samples were compared to the High EC Control @ 24.53 mS/cm.

Table B 106-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/28/09 - 10/29/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Montezuma Slough at Nurse Slough (609)	13700	15.5	6.86	9.4	18.7	0.25	0.000
Grizzly Bay at Dolphin (602)	16330	14.0	7.16	10.1	66.2	0.20	0.001
Suisun Bay off Chipps Island (508)	4434	14.0	7.42	9.8	48.6	0.16	0.001
Carquinez Strait, West of Benicia army dock (405)	23330	14.8	6.99	9.5	18.6	0.15	0.000
Suisun Slough at Rush Ranch	12440	15.6	7.02	6.9	39.8	0.32	0.001
Rough and Ready DWR station, Stockton	395	15.4	7.33	9.6	4.4	0.00	0.000
Napa River at River Park Blvd.	21920	14.6	7.17	6.1	13.2	0.44	0.001
Sacramento River at Hood DWR Station	161	14.8	7.29	9.0	6.2	0.34	0.002
Field Dup.: Montezuma Slough at Nurse Slough (609)	13700	15.5	6.86	9.4	20.6	0.23	0.000
Field Dup.: Napa River at River Park Blvd.	21920	14.6	7.17	6.1	18.1	0.42	0.001

Table B 106-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 10/30/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 10/28/09 - 10/29/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	365	22.2	22.8	7.6	8.7	7.76	8.02	100	52	-
Low EC Control @ 168.6 µS/cm	209	22.1	23.2	7.7	8.9	7.53	7.91	60	30	-
High EC Control @ 14.71 mS/cm	13920	22.2	23.0	7.2	8.8	7.73	7.80	1680	74	-
High EC Control @ 17.19 mS/cm	16320	22.2	23.0	7.4	8.6	7.72	7.84	2000	74	-
High EC Control @ 24.53 mS/cm	23185	22.2	22.7	7.1	8.9	7.77	7.82	2840	84	-
Montezuma Slough at Nurse Slough (609)	13470	22.2	22.6	7.3	8.6	7.74	7.86	1600	90	0.004
Grizzly Bay at Dolphin (602)	15780	22.3	23.4	7.3	8.9	7.74	7.84	1880	80	0.004
Suisun Bay off Chipps Island (508)	4347	22.2	23.2	7.5	8.8	7.73	7.91	540	72	0.005
Carquinez Strait, West of Benicia army dock (405)	22705	22.6	23.1	6.9	8.8	7.65	7.80	2760	90	0.003
Suisun Slough at Rush Ranch	11805	22.6	23.1	7.2	8.5	7.31	8.38	1560	274	0.002
Rough and Ready DWR station, Stockton	435	22.3	23.1	7.5	8.7	7.77	8.19	92	70	0.000
Napa River at River Park Blvd.	20440	22.7	23.4	7.1	8.6	7.65	7.83	2600	108	0.006
Sacramento River at Hood DWR Station	205	21.6	22.2	7.5	8.7	7.71	7.88	56	60	0.008
Field Dup.: Montezuma Slough at Nurse Slough (609)	13205	22.3	22.7	7.4	8.8	7.74	7.84	1640	86	0.005
Field Dup.: Napa River at River Park Blvd.	20800	22.3	22.8	7.1	8.8	7.73	7.87	2560	104	0.007
DIEPAMHR + 25 ppb PBO	358	22.4	22.6	7.8	8.9	7.78	8.12	-	-	-
Low EC Control @ 168.6 µS/cm + 25 ppb PBO	221	22.3	22.4	7.8	8.9	7.46	7.96	-	-	-
High EC Control @ 14.71 mS/cm + 25 ppb PBO	14045	22.4	22.5	7.5	8.8	7.73	7.84	-	-	-
High EC Control @ 17.19 mS/cm + 25 ppb PBO	16930	22.4	22.9	7.4	8.5	7.74	7.86	-	-	-
High EC Control @ 24.53 mS/cm + 25 ppb PBO	23405	22.4	23.4	7.0	8.3	7.71	7.84	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	13360	22.4	23.0	7.3	8.5	7.77	7.86	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	16060	22.4	23.6	7.3	8.4	7.73	7.91	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	4463	22.4	23.5	7.4	8.9	7.78	7.98	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	22675	22.4	23.4	7.0	8.3	7.66	7.90	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12130	22.5	23.7	7.3	8.5	7.41	8.38	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	499.9	22.5	23.8	7.2	8.9	7.82	8.11	-	-	-
Napa River at River Park Blvd. + 25 pbb PBO	21275	22.5	23.8	7.1	8.9	7.68	7.84	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	202.9	22.5	24.0	7.6	8.7	7.73	8.20	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 107-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 11/11/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/09/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	98	2.5	98	2.5	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	95	2.9	NS
Sacramento River at tip of Grand Island (711)	98	2.5	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.055	0.004	0.049	0.002	NS
San Joaquin River at Potato Slough (815)	0.107	0.014	0.090	0.002	NS
Confluence of Lindsey Sl. And Cache Sl.	0.081	0.009	0.101	0.005	NS
Old River at mouth of Holland Cut (915)	0.117	0.008	0.092	0.018	NS
Upper Cache Slough at mouth of Ulatis Creek	0.108	0.004	0.122	0.009	NS
Sacramento R. Deep Water Channel, Light 55	0.090	0.012	0.085	0.008	NS
Sacramento River at tip of Grand Island (711)	0.087	0.004	0.106	0.010	NS
Old River, western arm at railroad bridge (902)	0.097	0.009	0.110	0.005	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 107-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/9/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
San Joaquin River at Potato Slough (815)	305	15.5	8.55	9.6	2.3	0.13	0.011
Confluence of Lindsey Sl. And Cache Sl.	191	14.7	8.59	9.4	9.4	0.28	0.025
Old River at mouth of Holland Cut (915)	433	15.4	8.61	9.8	2.6	0.02	0.002
Upper Cache Slough at mouth of Ulatis Creek	402	14.5	8.38	8.7	25.4	0.18	0.010
Sacramento R. Deep Water Channel, Light 55	215	14.7	8.38	9.2	12.0	0.24	0.014
Sacramento River at tip of Grand Island (711)	206	14.9	8.60	9.4	7.0	0.23	0.021
Old River, western arm at railroad bridge (902)	518	15.1	8.58	10.2	2.0	0.04	0.003

Table B 107-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 11/11/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/9/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	20.1	23.7	7.5	8.5	7.77	8.05	104	64	-
San Joaquin River at Potato Slough (815)	256	20.5	23.9	7.3	8.5	7.73	7.94	104	60	0.005
Confluence of Lindsey Sl. And Cache Sl.	187	20.9	23.7	7.4	8.6	7.65	7.96	84	68	0.010
Old River at mouth of Holland Cut (915)	423	21.1	24.0	7.3	8.5	7.74	7.94	120	64	0.001
Upper Cache Slough at mouth of Ulatis Creek	406	21.5	23.8	7.1	8.3	8.01	8.21	128	110	0.008
Sacramento R. Deep Water Channel, Light 55	209	21.0	24.1	7.2	8.4	7.75	8.03	80	70	0.012
Sacramento River at tip of Grand Island (711)	214	21.8	24.2	7.1	8.7	7.66	8.03	96	64	0.012
Old River, western arm at railroad bridge (902)	528	21.9	23.9	7.2	8.3	7.75	8.02	108	64	0.002
DIEPAMHR + 25 ppb PBO	343	21.4	22.4	7.1	8.4	7.73	8.04	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	257	21.3	22.8	7.2	8.4	7.63	7.94	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	193	21.9	22.7	7.2	8.4	7.66	7.98	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	429	21.0	23.0	7.3	8.5	7.76	7.97	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	411	22.1	23.0	7.0	8.4	8.02	8.21	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	209	22.4	23.3	7.2	8.4	7.77	7.99	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	207	21.2	23.1	6.9	8.5	7.69	7.95	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	543	22.6	23.5	7.2	8.4	7.73	8.03	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 108-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 11/12/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/10/09 and 11/12/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	95	2.9	NS
Low EC @ 181.5 uS/cm	100	0.0	95	2.9	NS
High EC @ 14.98 mS/cm	100	0.0	100	0.0	NS
High EC @ 18.98 mS/cm	98	2.5	90	4.1	NS
High EC @ 24.24 mS/cm	79	10.0	73**	4.3	NS
Grizzly Bay at Dolphin (602)[5]	100	0.0	95	3.1	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Carquinez Strait, West of Benicia army dock (405)[6]	75	10.4	61	10.7	NS
Montezuma Slough at Nurse Slough (609)[4]	100	0.0	100	0.0	NS
Suisun Slough at Rush Ranch[4]	98	2.5	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	100	0.0	NS
Napa River at River Park Blvd.[6]	77	6.2	79	10.7	NS
Sacramento River at Hood DWR Station[3]	100	0.0	98	2.5	NS
Field Dup.: Carquinez Strait, West of Benicia army dock (405)[6]	71	8.0	-	-	NA

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.046	0.005	0.043	0.006	NS
Low EC @ 181.5 uS/cm	0.025*	0.003	0.030	0.003	NS
High EC @ 14.98 mS/cm	0.024*	0.006	0.025*	0.008	NS
High EC @ 18.98 mS/cm	0.035	0.004	0.031	0.003	NS
High EC @ 24.24 mS/cm	0.030*	0.005	0.034	0.003	NS
Grizzly Bay at Dolphin (602)[5]	0.035	0.005	0.055	0.006	S*
Suisun Bay off Chipps Island (508)	0.091	0.007	0.098	0.007	NS
Carquinez Strait, West of Benicia army dock (405)[6]	0.032	0.009	0.042	0.007	NS
Montezuma Slough at Nurse Slough (609)[4]	0.042	0.004	0.055	0.005	NS
Suisun Slough at Rush Ranch[4]	0.073	0.012	0.088	0.007	NS
Rough and Ready DWR station, Stockton	0.102	0.009	0.113	0.004	NS
Napa River at River Park Blvd.[6]	0.027	0.007	0.040	0.001	NS
Sacramento River at Hood DWR Station[3]	0.061	0.005	0.072	0.004	NS
Field Dup.: Carquinez Strait, West of Benicia army dock (405)[6]	0.030	0.003	-	-	NA

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.
*: $P < 0.05$
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. This low conductivity sample was compared to the Low EC Control.
4. This high conductivity sample was compared to the High EC Control @ 14.98 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 18.98 mS/cm.

6. This high conductivity sample was compared to the High EC Control @ 24.24 mS/cm.

Table B 108-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/12/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Grizzly Bay at Dolphin (602)	17930	15.4	7.38	9.6	12.2	0.09	0.000
Suisun Bay off Chipps Island (508)	9710	15.3	7.58	9.7	16.2	0.12	0.001
Carquinez Strait, West of Benicia army dock (405)	22400	15.3	7.34	9.5	14.4	0.12	0.000
Montezuma Slough at Nurse Slough (609)	14260	15.7	7.40	7.5	11.9	0.34	0.002
Suisun Slough at Rush Ranch	12340	14.1	7.23	6.9	27.1	0.23	0.001
Rough and Ready DWR station, Stockton	495	15.3	7.54	8.9	5.0	0.07	0.001
Napa River at River Park Blvd.	24240	15.4	7.40	7.9	19.9	0.26	0.001
Sacramento River at Hood DWR Station	182	14.7	7.40	9.4	4.8	0.54	0.003
Field Dup.: Carquinez Strait, West of Benicia army dock (405)	22400	15.3	7.34	9.5	14.0	0.15	0.001

Table B 108-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 11/12/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 11/10/09 - 11/12/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	353	22.2	23.9	7.8	8.3	7.74	8.07	104	64	-
Low EC @ 181.5 uS/cm	215	22.5	22.9	7.8	8.5	7.55	7.80	64	18	-
High EC @ 14.98 mS/cm	15020	22.6	23.1	7.6	8.1	7.67	7.77	1680	84	-
High EC @ 18.98 mS/cm	19430	22.6	22.8	7.5	8.1	7.69	7.89	2320	78	-
High EC @ 24.24 mS/cm	24110	22.6	23.2	7.2	8.2	7.66	7.81	3000	84	-
Grizzly Bay at Dolphin (602)	17900	22.7	24.1	7.0	8.2	7.66	7.82	1960	86	0.001
Suisun Bay off Chipps Island (508)	9265	22.6	24.1	7.4	8.3	7.71	7.86	1000	74	0.002
Carquinez Strait, West of Benicia army dock (405)	23105	22.6	24.0	7.1	8.3	7.58	7.87	2840	92	0.002
Montezuma Slough at Nurse Slough (609)	14220	22.6	24.0	7.3	8.4	7.36	7.89	1560	98	0.003
Suisun Slough at Rush Ranch	12165	22.6	23.9	7.3	8.2	7.29	8.14	1440	160	0.002
Rough and Ready DWR station, Stockton	498	22.6	23.7	7.7	8.5	7.64	8.05	100	76	0.001
Napa River at River Park Blvd.	23865	22.6	24.0	7.2	8.2	7.34	7.88	2760	116	0.002
Sacramento River at Hood DWR Station	10098	22.6	23.7	7.4	8.9	7.53	7.94	60	66	0.009
Field Dup.: Carquinez Strait, West of Benicia army dock (405)	22695	22.6	24.3	7.2	8.7	7.60	7.83	2360	96	0.002
DIEPAMHR + 25 ppb PBO	378	22.6	24.3	7.8	8.3	7.79	8.01	-	-	-
Low EC @ 181.5 uS/cm + 25 ppb PBO	205	22.4	22.6	7.8	8.4	7.54	7.86	-	-	-
High EC @ 14.98 mS/cm + 25 ppb PBO	7360	22.7	23.1	7.7	8.1	7.72	7.80	-	-	-
High EC @ 18.98 mS/cm + 25 ppb PBO	18960	22.9	23.0	7.1	8.2	7.70	7.80	-	-	-
High EC @ 24.24 mS/cm + 25 ppb PBO	23985	23.0	23.1	6.9	7.9	7.68	7.82	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	17595	22.6	24.0	7.6	8.1	7.67	7.83	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	9240	23.0	23.9	7.4	8.4	7.70	7.84	-	-	-
Carquinez Strait, West of Benicia army dock (405) + 25 ppb PBO	23035	23.5	23.6	7.0	8.0	7.67	7.85	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	79035	22.7	24.0	7.4	8.2	7.33	7.89	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12140	22.8	22.8	7.4	8.2	7.35	8.14	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	598	22.8	23.0	7.3	8.5	7.71	7.96	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	23200	23.1	23.6	7.0	7.9	7.36	7.89	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	201.9	22.7	23.3	7.6	8.6	7.59	7.94	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 109-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/3/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/1/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	94	3.2	95	5.0	NS
Low EC Control @ 211.7 µS/cm	98	2.5	98	2.5	NS
Old River at mouth of Holland Cut (915)	98	2.5	100	0.0	NS
Upper Cache Slough at mouth of Ulatis Creek	98	2.5	100	0.0	NS
Old River, western arm at railroad bridge (902)	98	2.5	98	2.5	NS
Sacramento River at tip of Grand Island (711)[3]	100	0.0	100	0.0	NS
San Joaquin River at Potato Slough (815)	98	2.5	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	100	0.0	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.037	0.005	0.041	0.003	NS
Low EC Control @ 211.7 µS/cm	0.033	0.003	0.041	0.004	NS
Old River at mouth of Holland Cut (915)	0.078	0.008	0.096	0.004	NS
Upper Cache Slough at mouth of Ulatis Creek	0.083	0.006	0.094	0.006	NS
Old River, western arm at railroad bridge (902)	0.086	0.004	0.099	0.005	NS
Sacramento River at tip of Grand Island (711)[3]	0.075	0.004	0.075	0.005	NS
San Joaquin River at Potato Slough (815)	0.086	0.009	0.085	0.007	NS
Confluence of Lindsey Sl. And Cache Sl.[3]	0.081	0.007	0.065	0.004	NS
Sacramento R. Deep Water Channel, Light 55	0.074	0.006	0.099	0.007	S* (134%)

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These low conductivity samples were compared to the Low EC Control.

Table B 109-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/1/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Old River at mouth of Holland Cut (915)	462	11.0	7.63	11.2	11.0	0.06	0.000
Upper Cache Slough at mouth of Ulatis Creek	376	10.2	7.90	11.8	22.6	0.08	0.001
Old River, western arm at railroad bridge (902)	563	11.0	7.61	11.0	9.6	0.08	0.001
Sacramento River at tip of Grand Island (711)	215	10.8	7.60	10.0	5.4	0.36	0.003
San Joaquin River at Potato Slough (815)	318	11.3	7.66	11.2	4.8	0.13	0.001
Confluence of Lindsey Sl. And Cache Sl.	229	10.6	7.61	11.1	18.4	0.29	0.002
Sacramento R. Deep Water Channel, Light 55	281	10.7	7.83	11.2	18.0	0.13	0.002

Table B 109-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/3/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/1/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	345	22.3	23.3	7.8	8.7	7.86	8.04	100	58	-
Low EC Control @ 211.7 µS/cm	227	22.8	23.8	7.5	8.7	7.70	7.96	88	36	-
Old River at mouth of Holland Cut (915)	458	22.8	23.5	7.7	8.7	7.80	8.07	96	68	0.002
Upper Cache Slough at mouth of Ulatis Creek	400	22.7	23.9	7.8	8.7	8.06	8.27	120	110	0.004
Old River, western arm at railroad bridge (902)	554	22.7	23.7	7.6	8.8	7.89	8.03	100	66	0.003
Sacramento River at tip of Grand Island (711)	205	22.6	23.4	7.7	8.7	7.85	8.10	76	76	0.016
San Joaquin River at Potato Slough (815)	320	22.6	24.1	7.4	8.7	7.82	8.04	84	70	0.005
Confluence of Lindsey Sl. And Cache Sl.	226	22.6	24.2	7.6	8.8	7.86	8.13	88	84	0.015
Sacramento R. Deep Water Channel, Light 55	287	22.9	23.8	7.6	8.7	7.97	8.15	94	86	0.007
DIEPAMHR + 25 ppb PBO	343	22.1	22.9	7.5	8.8	7.82	8.06	-	-	-
Low EC Control @ 211.7 µS/cm + 25 ppb PBO	216	22.5	22.9	7.7	8.9	7.74	7.89	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	452	22.4	22.9	7.7	8.9	7.88	8.05	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	387	22.3	22.9	7.8	8.8	8.12	8.25	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	553	22.1	23.0	7.8	8.7	7.88	8.08	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	214	22.2	23.0	7.7	8.9	7.91	8.10	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	318	22.2	23.0	7.7	8.7	7.87	8.03	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	229	22.1	23.1	7.7	8.9	7.92	8.17	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	279	22.1	23.0	7.6	8.8	8.00	8.14	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 110-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/04/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/02/09 - 12/03/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
High EC Control @ 13.22 mS/cm	100	0.0	100	0.0	NS
High EC Control @ 24.40 mS/cm	95	3.1	86*	2.9	NS
Montezuma Slough at Nurse Slough (609)[3]	98	2.5	98	2.5	NS
Grizzly Bay at Dolphin (602)[4]	95	2.9	93	2.5	NS
Suisun Bay off Chipps Island (508)[3]	98	2.5	100	0.0	NS
Rough and Ready DWR station, Stockton	98	2.5	98	2.5	NS
Suisun Slough at Rush Ranch[3]	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	100	0.0	100	0.0	NS
Napa River at River Park Blvd.[4]	100	0.0	92	4.8	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.051	0.005	0.050	0.006	NS
High EC Control @ 13.22 mS/cm	0.043	0.003	0.040	0.005	NS
High EC Control @ 24.40 mS/cm	0.036*	0.004	0.035	0.008	NS
Montezuma Slough at Nurse Slough (609)[3]	0.079	0.011	0.087	0.007	NS
Grizzly Bay at Dolphin (602)[4]	0.047	0.005	0.049	0.007	NS
Suisun Bay off Chipps Island (508)[3]	0.070	0.007	0.087	0.006	NS
Rough and Ready DWR station, Stockton	0.127	0.018	0.105	0.010	NS
Suisun Slough at Rush Ranch[3]	0.124	0.012	0.078	0.005	S* (63%)
Sacramento River at Hood DWR Station	0.101	0.004	0.084	0.007	S* (83%)
Napa River at River Park Blvd.[4]	0.045	0.003	0.049	0.005	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

3. These high conductivity samples were compared to the High EC control @ 13.22 mS/cm.

4. These high conductivity samples were compared to the High EC control @ 24.40 mS/cm.

Table B 110-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/2/09 - 12/3/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Montezuma Slough at Nurse Slough (609)	13340	10.7	7.68	10.0	25.5	0.36	0.002
Grizzly Bay at Dolphin (602)	23510	11.4	7.81	10.5	15.0	0.18	0.002
Suisun Bay off Chipps Island (508)	12060	11.4	7.84	10.7	8.2	0.16	0.002
Rough and Ready DWR station, Stockton	707	11.9	7.68	10.9	2.6	0.10	0.001
Suisun Slough at Rush Ranch	13000	7.8	7.23	11.3	11.6	0.15	0.000
Sacramento River at Hood DWR Station	205	11.2	7.60	11.0	6.5	0.55	0.004
Napa River at River Park Blvd.	23040	10.2	7.59	11.3	4.2	0.10	0.000

Table B 110-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/4/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/2/09 - 12/3/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	23.1	23.5	7.4	8.9	7.85	7.99	100	58	-
High EC Control @ 13.22 mS/cm	13185	23.1	23.2	7.5	8.8	7.70	7.84	1720	72	-
High EC Control @ 24.40 mS/cm	24025	23.2	23.6	7.2	8.3	7.62	7.83	2880	82	-
Montezuma Slough at Nurse Slough (609)	12615	23.1	23.4	7.2	8.8	7.59	7.93	1680	98	0.005
Grizzly Bay at Dolphin (602)	22985	23.2	23.6	7.0	8.5	7.58	7.90	2800	92	0.002
Suisun Bay off Chipps Island (508)	11880	23.2	23.4	7.2	8.5	7.75	7.86	2120	80	0.003
Rough and Ready DWR station, Stockton	700	23.2	23.6	7.4	8.9	7.88	8.15	204	92	0.003
Suisun Slough at Rush Ranch	12570	23.2	24.1	7.1	8.8	7.41	8.17	1880	162	0.001
Sacramento River at Hood DWR Station	206	23.2	23.9	7.3	8.9	7.84	8.02	100	76	0.019
Napa River at River Park Blvd.	22590	23.2	24.1	6.9	8.5	7.56	7.97	2800	120	0.001
DIEPAMHR + 25 ppb PBO	354	23.3	23.4	7.6	8.9	7.86	8.06	-	-	-
High EC Control @ 13.22 mS/cm + 25 ppb PBO	13180	23.2	24.0	7.5	8.9	7.67	7.93	-	-	-
High EC Control @ 24.40 mS/cm + 25 ppb PBO	23780	23.0	23.3	7.1	8.5	7.63	7.88	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	12395	23.2	23.5	7.1	8.6	7.71	7.94	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	23565	23.3	23.3	7.0	8.2	7.59	7.90	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	11855	23.4	23.8	7.3	8.3	7.75	7.89	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	708	23.2	23.4	7.6	8.8	7.93	8.14	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	12735	23.3	23.4	7.2	8.5	7.51	8.17	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	215	23.7	23.9	7.3	8.6	7.78	8.04	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	22360	23.3	23.5	7.0	8.4	7.63	7.98	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 111-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/17/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/15/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	2.6	100	0.0	NS
Sacramento R. Deep Water Channel, Light 55	98	2.5	94	3.2	NS
Confluence of Lindsey Sl. And Cache Sl.	100	0.0	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	90	0.4	90	4.1	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	100	0.0	100	0.0	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.034	0.003	0.030	0.005	NS
Sacramento R. Deep Water Channel, Light 55	0.068	0.004	0.043	0.005	S** (63%)
Confluence of Lindsey Sl. And Cache Sl.	0.065	0.005	0.049	0.006	NS
Upper Cache Slough at mouth of Ulatis Creek	0.083	0.008	0.061	0.007	NS
Sacramento River at tip of Grand Island (711)	0.076	0.011	0.053	0.004	NS
San Joaquin River at Potato Slough (815)	0.074	0.007	0.082	0.006	NS
Old River at mouth of Holland Cut (915)	0.070	0.002	0.061	0.005	NS
Old River, western arm at railroad bridge (902)	0.064	0.014	0.061	0.010	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

**: $P < 0.01$

Table B 111-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/15/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Sacramento R. Deep Water Channel, Light 55	291	8.9	7.59	11.5	9.6	0.12	0.001
Confluence of Lindsey Sl. And Cache Sl.	235	8.5	7.59	11.6	7.9	0.34	0.002
Upper Cache Slough at mouth of Ulatis Creek	503	8.4	7.91	11.8	10.9	0.06	0.001
Sacramento River at tip of Grand Island (711)	216	8.5	7.60	11.7	6.6	0.41	0.003
San Joaquin River at Potato Slough (815)	363	9.0	7.61	11.7	4.7	0.22	0.001
Old River at mouth of Holland Cut (915)	586	9.1	7.67	11.6	2.7	0.06	0.000
Old River, western arm at railroad bridge (902)	758	9.4	7.70	11.3	2.6	0.09	0.001

Table B 111-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/17/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/15/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	351	23.2	24.7	7.7	8.3	7.75	8.07	108	58	-
Sacramento R. Deep Water Channel, Light 55	297	23.0	25.1	7.3	8.6	7.85	8.12	92	86	0.008
Confluence of Lindsey Sl. And Cache Sl.	240	22.7	24.8	7.6	8.7	7.83	8.07	84	86	0.020
Upper Cache Slough at mouth of Ulatis Creek	517	22.7	25.0	7.0	8.8	8.09	8.23	152	130	0.005
Sacramento River at tip of Grand Island (711)	219	22.7	24.8	7.6	8.8	7.83	8.08	84	80	0.024
San Joaquin River at Potato Slough (815)	319	22.6	24.6	7.5	8.6	7.82	8.05	88	78	0.012
Old River at mouth of Holland Cut (915)	595	22.6	24.7	7.8	8.9	7.79	8.03	104	70	0.003
Old River, western arm at railroad bridge (902)	780	22.7	24.9	7.2	8.7	7.80	8.09	124	74	0.005
DIEPAMHR + 25 ppb PBO	355	22.7	24.8	7.8	8.4	7.77	8.07	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	298	22.7	24.8	7.2	8.8	7.86	8.11	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	239	22.7	24.7	7.4	8.6	7.87	8.11	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	517	22.9	25.0	7.6	8.9	8.11	8.28	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	231	23.1	24.5	7.5	8.5	7.84	8.08	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	369	23.4	24.9	7.3	8.8	7.84	8.04	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	583	23.4	24.9	7.6	8.9	7.78	8.07	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	772	23.2	24.9	7.4	8.9	7.72	8.07	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 112-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/18/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/16/09 - 12/17/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	92	2.6	87	2.3	NS
High EC Control @ 14.39 mS/cm	97	2.8	89	4.5	NS
High EC Control @ 18.34 mS/cm	100	0.0	80	9.0	NS
High EC Control @ 20.27 mS/cm	84	6.6	82	4.5	NS
Suisun Bay off Chipps Island (508)	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	90	4.1	92	2.6	NS
Montezuma Slough at Nurse Slough (609)[3]	100	0.0	95	2.9	NS
Napa River at River Park Blvd.[4]	95	2.9	100	0.0	NS
Sacramento River at Hood DWR Station	95	2.9	100	0.0	NS
Rough and Ready DWR station, Stockton	100	0.0	98	2.5	NS
Suisun Slough at Rush Ranch	100	0.0	95	2.9	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.045	0.006	0.037	0.008	NS
High EC Control @ 14.39 mS/cm	0.031	0.005	0.024	0.003	NS
High EC Control @ 18.34 mS/cm	0.033	0.004	0.023	0.007	NS
High EC Control @ 20.27 mS/cm	0.019**	0.003	0.024	0.006	NS
Suisun Bay off Chipps Island (508)	0.048	0.005	0.045	0.004	NS
Grizzly Bay at Dolphin (602)[5]	0.040	0.006	0.046	0.003	NS
Montezuma Slough at Nurse Slough (609)[3]	0.061	0.009	0.047	0.005	NS
Napa River at River Park Blvd.[4]	0.042	0.006	0.046	0.002	NS
Sacramento River at Hood DWR Station	0.092	0.011	0.084	0.012	NS
Rough and Ready DWR station, Stockton	0.065	0.002	0.071	0.004	NS
Suisun Slough at Rush Ranch	0.062	0.002	0.076	0.001	S** (123%)

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Samples were evaluated using standard USEPA single-concentration statistical procedures.
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
*: $P < 0.05$
**: $P < 0.01$
3. This low conductivity sample was compared to the High EC Control @ 14.39 mS/cm.
4. This high conductivity sample was compared to the High EC Control @ 18.34 mS/cm.
5. This high conductivity sample was compared to the High EC Control @ 20.27 mS/cm.

Table B 112-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/16/09 - 12/17/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (°C)	pH	DO (mg/L)			
Suisun Bay off Chipps Island (508)	7980	9.8	7.81	11.0	11.7	0.20	0.002
Grizzly Bay at Dolphin (602)	20040	9.9	7.79	10.0	9.1	0.16	0.001
Montezuma Slough at Nurse Slough (609)	14010	9.3	7.59		29.7	0.31	0.002
Napa River at River Park Blvd.	17830	9.7	7.36	9.9	5.3	0.13	0.000
Sacramento River at Hood DWR Station	220	10.8	7.67	10.8	17.9	0.39	0.003
Rough and Ready DWR station, Stockton	859	10.4	7.65	10.8	2.4	0.21	0.002
Suisun Slough at Rush Ranch	11590	9.2	7.22	9.4	15.1	0.09	0.000

Table B 112-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/18/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/16/09 - 12/17/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	342	21.7	23.2	7.8	8.5	7.84	8.01	108	58	-
High EC Control @ 14.39 mS/cm	14520	22.3	24.5	7.5	8.4	7.76	8.04	1760	76	-
High EC Control @ 18.34 mS/cm	18655	22.7	24.0	7.6	8.3	7.73	7.92	2200	86	-
High EC Control @ 20.27 mS/cm	20255	22.6	24.1	7.6	8.3	7.78	7.94	2520	62	-
Suisun Bay off Chipps Island (508)	8560	22.6	24.1	7.7	8.5	7.78	7.98	888	88	0.005
Grizzly Bay at Dolphin (602)	19265	22.7	24.7	7.5	8.6	7.70	7.95	2320	98	0.003
Montezuma Slough at Nurse Slough (609)	13890	22.6	24.4	7.5	8.5	7.67	7.97	1760	102	0.005
Napa River at River Park Blvd.	17315	22.3	24.7	7.5	8.9	7.62	8.04	2120	126	0.002
Sacramento River at Hood DWR Station	239	22.5	24.6	7.8	8.4	7.90	8.12	84	90	0.016
Rough and Ready DWR station, Stockton	6262	22.3	24.9	7.8	8.7	7.92	8.19	172	100	0.008
Suisun Slough at Rush Ranch	6042	22.4	24.6	7.6	8.2	7.59	8.25	1480	180	0.001
DIEPAMHR + 25 ppb PBO	618	22.3	24.2	8.0	8.5	7.78	8.03	-	-	-
High EC Control @ 14.39 mS/cm + 25 ppb PBO	14085	22.4	24.6	7.2	8.6	7.72	8.08	-	-	-
High EC Control @ 18.34 mS/cm + 25 ppb PBO	18780	22.2	24.7	7.6	8.4	7.77	7.95	-	-	-
High EC Control @ 20.27 mS/cm + 25 ppb PBO	19975	22.3	24.6	7.4	8.5	7.77	7.94	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	8495	22.2	24.2	7.6	8.4	7.84	7.98	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	19420	22.2	24.5	7.5	8.6	7.79	7.93	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	13695	22.4	24.3	7.3	8.5	7.79	7.98	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	17245	22.1	24.8	7.4	8.5	7.70	8.05	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	259	22.4	24.4	7.6	8.6	7.91	8.12	-	-	-
Rough and Ready DWR station, Stockton + 25 ppb PBO	899	22.3	24.9	7.5	8.6	7.98	8.20	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	11520	22.3	24.4	7.3	8.6	7.70	8.25	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 113-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/30/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/28/09 - 12/29/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	100	0.0	98	2.5	NS
High E.C. Control @ 12.52 mS/cm	100	0.0	100	0.0	NS
High E.C. Control @ 20.15 mS/cm	97	2.8	98	2.5	NS
High E.C. Control @ 25.23 mS/cm	100	0.0	90	7.1	NS
Suisun Slough at Rush Ranch[3]	100	0.0	98	2.5	NS
Rough and Ready Island, DWR Station, Stockton	100	0.0	100	0.0	NS
Sacramento River at Hood DWR Station	100	0.0	100	0.0	NS
Napa River at River Park Blvd.[4]	100	0.0	100	0.0	NS
Grizzly Bay at Dolphin (602)[5]	100	0.0	90	4.1	NS
Montezuma Slough at Nurse Slough (609)	100	0.0	100	0.0	NS
Suisun Bay off Chipps Island (508)[3]	100	0.0	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.054	0.005	0.052	0.003	NS
High E.C. Control @ 12.52 mS/cm	0.029**	0.003	0.034*	0.004	NS
High E.C. Control @ 20.15 mS/cm	0.022**	0.005	0.036*	0.005	NS
High E.C. Control @ 25.23 mS/cm	0.025*	0.007	0.030*	0.006	NS
Suisun Slough at Rush Ranch[3]	0.095	0.005	0.092	0.003	NS
Rough and Ready Island, DWR Station, Stockton	0.087	0.005	0.078	0.007	NS
Sacramento River at Hood DWR Station	0.101	0.004	0.103	0.005	NS
Napa River at River Park Blvd.[4]	0.062	0.015	0.069	0.007	NS
Grizzly Bay at Dolphin (602)[5]	0.051	0.006	0.038	0.005	NS
Montezuma Slough at Nurse Slough (609)	0.089	0.007	0.086	0.008	NS
Suisun Bay off Chipps Island (508)[3]	0.078	0.006	0.080	0.005	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
   Unmanipulated samples were analyzed using one-way ANOVA and Tukey's Multiple Comparison Procedure ($P < 0.05$).
   Samples with PBO additions were analyzed using two-way ANOVA and Tukey's Multiple Comparison Procedure ($P < 0.05$).
2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.
3. These high conductivity samples were compared to the High EC Control @ 12.52 mS/cm.
4. These high conductivity samples were compared to the High EC Control @ 20.15 mS/cm.
5. These high conductivity samples were compared to the High EC Control @ 25.23 mS/cm.

*: $P < 0.05$

**: $P < 0.01$

Table B 113-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/28/09 - 12/29/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (ºC)	pH	DO (mg/L)			
Suisun Slough at Rush Ranch	11980	8.4	7.28	9.0	16.7	0.12	0.000
Rough and Ready Island, DWR Station, Stockton	831	9.5	7.56	10.7	2.3	0.15	0.001
Sacramento River at Hood DWR Station	214	8.9	7.37	11.2	8.1	0.44	0.002
Napa River at River Park Blvd.	19120	9.9	7.64	11.4	27.5	0.08	0.000
Grizzly Bay at Dolphin (602)	23550	9.5	7.65	11.4	12.1	0.19	0.001
Montezuma Slough at Nurse Slough (609)	8670	9.2	7.22	11.2	19.5	0.28	0.001
Suisun Bay off Chipps Island (508)	11880	9.0	7.36	11.8	7.8	0.24	0.001

Table B 113-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/30/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/28/09 - 12/29/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	350	21.9	23.6	7.5	8.4	7.73	8.12	104	54	-
High E.C. Control @ 12.52 mS/cm	12025	21.5	23.7	7.4	8.4	7.67	7.83	1600	78	-
High E.C. Control @ 20.15 mS/cm	19445	21.1	23.9	7.3	8.0	7.69	7.80	2640	88	-
High E.C. Control @ 25.23 mS/cm	24550	21.2	23.7	7.1	8.1	7.72	7.82	3320	94	-
Suisun Slough at Rush Ranch	11625	21.9	23.7	7.4	8.2	7.77	8.09	1560	166	0.003
Rough and Ready Island, DWR Station, Stockton	894	22.5	23.9	7.7	8.6	7.95	8.15	192	112	0.009
Sacramento River at Hood DWR Station	250	22.6	24.1	6.9	8.5	7.78	8.04	96	88	0.023
Napa River at River Park Blvd.	18915	22.6	23.9	6.9	8.2	7.79	7.90	2480	132	0.002
Grizzly Bay at Dolphin (602)	23445	22.7	23.6	7.1	8.2	7.76	7.88	3040	106	0.004
Montezuma Slough at Nurse Slough (609)	8470	22.6	23.9	7.1	8.2	7.80	7.92	1200	102	0.007
Suisun Bay off Chipps Island (508)	11650	22.6	23.9	7.3	8.5	7.77	7.88	1480	98	0.006
DIEPAMHR + 25 ppb PBO	437	22.6	23.1	7.7	8.2	7.74	8.13	-	-	-
High E.C. Control @ 12.52 mS/cm + 25 ppb PBO	12450	22.6	23.1	7.3	8.4	7.67	7.85	-	-	-
High E.C. Control @ 20.15 mS/cm + 25 ppb PBO	20015	22.6	23.5	7.1	8.1	7.72	7.81	-	-	-
High E.C. Control @ 25.23 mS/cm + 25 ppb PBO	25395	22.6	23.4	7.1	8.2	7.75	7.80	-	-	-
Suisun Slough at Rush Ranch + 25 ppb PBO	11850	22.6	23.9	7.2	8.2	7.85	8.07	-	-	-
Rough and Ready Island, DWR Station, Stockton + 25 ppb PBO	900	22.6	23.8	7.6	8.8	7.92	8.79	-	-	-
Sacramento River at Hood DWR Station + 25 ppb PBO	270	22.5	23.9	7.5	8.5	7.79	8.10	-	-	-
Napa River at River Park Blvd. + 25 ppb PBO	18910	22.5	23.7	7.0	8.2	7.85	7.89	-	-	-
Grizzly Bay at Dolphin (602) + 25 ppb PBO	23600	22.5	24.1	7.1	8.2	7.76	7.83	-	-	-
Montezuma Slough at Nurse Slough (609) + 25 ppb PBO	8565	22.5	23.9	7.3	8.3	7.82	7.91	-	-	-
Suisun Bay off Chipps Island (508) + 25 ppb PBO	11710	22.6	23.8	7.2	8.4	7.80	7.95	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table B 114-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/31/09 examining the toxicity of samples collected by the UC Davis Aquatic Toxicology Laboratory and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/30/09.

Treatment	Survival (%)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	95	2.9	98	2.5	NS
Upper Cache Slough at mouth of Ulatis Creek	100	0.0	98	2.5	NS
Sacramento R. Deep Water Channel, Light 55	100	0.0	100	0.0	NS
Confluence of Lindsey Sl. And Cache Sl.	100	0.0	98	2.5	NS
Old River, western arm at railroad bridge (902)	100	0.0	100	0.0	NS
Sacramento River at tip of Grand Island (711)	98	2.5	100	0.0	NS
San Joaquin River at Potato Slough (815)	100	0.0	100	0.0	NS
Old River at mouth of Holland Cut (915)	95	2.9	100	0.0	NS

Treatment	Weight (mg/surviving individual)[1]				
	Unmanipulated		25 ppb PBO added		
	mean	se	mean	se	vs Non-PBO[2]
DIEPAMHR	0.051	0.004	0.088	0.016	NS
Upper Cache Slough at mouth of Ulatis Creek	0.117	0.011	0.113	0.005	NS
Sacramento R. Deep Water Channel, Light 55	0.113	0.006	0.116	0.006	NS
Confluence of Lindsey Sl. And Cache Sl.	0.096	0.010	0.127	0.008	S* (132%)
Old River, western arm at railroad bridge (902)	0.124	0.005	0.122	0.013	NS
Sacramento River at tip of Grand Island (711)	0.117	0.005	0.145	0.011	NS
San Joaquin River at Potato Slough (815)	0.135	0.015	0.129	0.013	NS
Old River at mouth of Holland Cut (915)	0.131	0.008	0.126	0.008	NS

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

2. NS: Nonsignificant, S: Significant (% non-PBO mean), NA: Not applicable.

Table B 114-2. Summary of water chemistry at field conditions of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/30/09.

Treatment	Field Chemistry				Turbidity (NTU)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	SC (uS/cm)	Temp (^{o}C)	pH	DO (mg/L)			
Upper Cache Slough at mouth of Ulatis Creek	565	8.1	7.34	12.1	11.5	0.02	0.000
Sacramento R. Deep Water Channel, Light 55	324	8.9	7.10	11.0	11.6	0.13	0.000
Confluence of Lindsey Sl. And Cache Sl.	293	8.6	7.42	11.9	7.6	0.24	0.001
Old River, western arm at railroad bridge (902)	854	8.7	7.30	12.1	3.3	0.10	0.000
Sacramento River at tip of Grand Island (711)	220	8.4	7.21	12.1	6.5	0.43	0.001
San Joaquin River at Potato Slough (815)	446	8.9	7.26	11.7	4.0	0.18	0.001
Old River at mouth of Holland Cut (915)	719	8.7	7.32	12.2	2.4	0.09	0.000

Table B 114-3. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/31/09 of samples collected by the UC Davis Aquatic Toxicology Laboratory (UCDATL) and the California Department of Fish and Game (CDFG) for the Department of Water Resources (DWR) on 12/30/09.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH			
DIEPAMHR	351	22.6	24.5	7.7	8.3	7.75	7.99	104	54	-
Upper Cache Slough at mouth of Ulatis Creek	559	22.8	24.6	7.6	8.5	8.12	8.27	180	158	0.001
Sacramento R. Deep Water Channel, Light 55	333	22.8	24.7	7.7	8.6	7.97	8.14	112	112	0.009
Confluence of Lindsey Sl. And Cache Sl.	291	22.8	24.8	7.7	8.3	7.95	8.13	116	110	0.014
Old River, western arm at railroad bridge (902)	872	22.8	24.8	7.7	8.4	7.88	8.07	156	88	0.005
Sacramento River at tip of Grand Island (711)	215	22.8	24.8	7.6	8.4	7.83	8.11	88	92	0.020
San Joaquin River at Potato Slough (815)	476	22.8	24.9	7.6	8.5	7.86	8.08	108	92	0.010
Old River at mouth of Holland Cut (915)	719	22.8	24.8	7.7	8.5	7.85	8.01	152	86	0.004
DIEPAMHR + 25 ppb PBO	346	22.8	24.1	7.7	8.3	7.71	8.00	-	-	-
Upper Cache Slough at mouth of Ulatis Creek + 25 ppb PBO	551	22.8	24.0	7.7	8.4	8.14	8.29	-	-	-
Sacramento R. Deep Water Channel, Light 55 + 25 ppb PBO	329	22.8	24.4	7.5	8.3	7.98	8.15	-	-	-
Confluence of Lindsey Sl. And Cache Sl. + 25 ppb PBO	287	22.8	23.8	7.7	8.3	7.95	8.14	-	-	-
Old River, western arm at railroad bridge (902) + 25 ppb PBO	869	22.9	24.0	7.7	8.3	7.85	8.01	-	-	-
Sacramento River at tip of Grand Island (711) + 25 ppb PBO	215	22.9	24.0	7.6	8.5	7.85	8.06	-	-	-
San Joaquin River at Potato Slough (815) + 25 ppb PBO	480	23.3	24.0	7.7	8.3	7.83	8.02	-	-	-
Old River at mouth of Holland Cut (915) + 25 ppb PBO	728	23.1	24.0	7.7	8.5	7.88	8.02	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Appendix C

Summary Tables:

H. transpacificus Ambient Toxicity Tests

Table C 1-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 3/27/08 evaluating the toxicity of Sacramento River and Delta water samples collected on 3/25/08 - 3/27/08.[1]

Treatment	Survival (%)[2]	
	mean	se
Low EC Control	48.7	5.8
Hatchery Rearing Control	58.3	6.8
High EC Control	82.6	5.6
Low Turbidity Control	56.3	4.4
Suisun Bay at Public Suisun Dock[4]	91.8	3.4
Sacramento River at Hood DWR Station[3]	25.0	11.9
Sacramento R. Deep Water Channel, Light 55[3]	91.7	8.3
Confluence of Lindsey Sl. And Cache Sl.[3]	59.3	6.9
Rough and Ready DWR station, Stockton[3]	42.4	11.0
Napa River at Vallejo Seawall (340)[5]	89.7	4.8

Tukey's MSD: 35.7%

Tukey's PMSD (% of Hatchery Control): 61.1%

1. Smelt used in this experiment were 28 days old at test initiation.

2. Highlighted areas indicate significant reductions in survival compared to the EC-specific control. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure.

3. These low conductivity samples were compared to the Low EC control.

4. This intermediate conductivity sample was compared to the hatchery rearing water control.

5. This high conductivity sample was compared to the High EC control.

Table C 1-2. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 3/27/09, evaluating the toxicity of Sacramento River and Delta water samples collected 3/25/08-3/27/08.

Sample	Collection Date and Time	Field Chemistry				
		SC (uS/cm)	EC (uS/cm)	Temp (^{o}C)	DO (mg/L)	pH
Suisun Bay at Public Suisun Dock	3/26/2008 10:15	3759	2842	12.8	8.6	7.97
Sacramento River at Hood DWR Station	3/25/2008 14:00	1045	880	17.1	9.2	7.91
Sacramento R. Deep Water Channel, Light 55	3/26/2008 10:00	364	290	14.8	10.2	8.18
Confluence of Lindsey Sl. And Cache Sl.	3/26/2008 11:05	459	368	15.1	10.1	8.25
Rough and Ready DWR station, Stockton	3/25/2008 10:30	207	173	16.8	8.9	8.10
Napa River at Vallejo Seawall (340)	3/27/2008 10:30	18580	14084	12.9	10.6	8.03

Table C 1-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 3/27/08 evaluating the toxicity of Sacramento River and Delta water samples collected on 3/25/08 - 3/27/08.

Treatment	Temp (ºC)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	16.3	0.9	8	226	43	8	9.3	0.4	8
Hatchery Rearing Control	16.4	0.7	8	2149	48	8	9.4	0.4	8
High EC Control	16.4	0.8	8	3793	68	8	9.6	0.5	8
Low Turbidity Control	16.5	0.7	8	2199	54	8	9.7	0.3	8
Suisun Bay at Public Suisun Dock	16.3	0.8	8	2982	47	8	9.7	0.2	8
Sacramento River at Hood DWR Station	16.4	0.7	8	199	54	8	9.9	0.2	8
Sacramento R. Deep Water Channel, Light 55	16.3	0.8	8	323	44	8	10.0	0.2	8
Confluence of Lindsey Sl. And Cache Sl.	16.4	0.6	8	335	57	8	9.9	0.2	8
Rough and Ready DWR station, Stockton	16.4	0.7	8	735	32	8	10.0	0.2	8
Napa River at Vallejo Seawall (340)	16.5	0.7	8	14389	248	8	9.7	0.3	8

Treatment	pH			Turbidity (NTU)			Ammonia Nitrogen (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	7.68	0.15	8	4.9	1.5	4	0.24	0.24	3
Hatchery Rearing Control	7.91	0.10	8	4.0	1.4	4	0.19	0.11	3
High EC Control	7.93	0.11	8	4.9	1.7	4	0.16	0.06	3
Low Turbidity Control	7.93	0.09	8	4.7	1.9	4	0.17	0.14	3
Suisun Bay at Public Suisun Dock	7.91	0.11	8	16.1	1.4	4	0.15	0.06	4
Sacramento River at Hood DWR Station	7.98	0.06	8	2.3	0.8	4	0.38	0.05	4
Sacramento R. Deep Water Channel, Light 55	8.15	0.07	8	13.1	2.4	4	0.21	0.02	4
Confluence of Lindsey Sl. And Cache Sl.	8.12	0.04	8	11.1	1.6	4	0.24	0.02	4
Rough and Ready DWR station, Stockton	8.11	0.08	8	2.6	0.9	4	0.14	0.05	4
Napa River at Vallejo Seawall (340)	7.92	0.07	8	5.1	2.0	4	0.08	0.01	4

Treatment	Un-ionized Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*		
Low EC Control	0.003	0.002	3	-	-
Hatchery Rearing Control	0.004	0.002	3	-	-
High EC Control	0.004	0.001	3	-	-
Low Turbidity Control	0.004	0.0025	3	-	-
Suisun Bay at Public Suisun Dock	0.003	0.002	4	528	184
Sacramento River at Hood DWR Station	0.010	0.001	4	84	78
Sacramento R. Deep Water Channel, Light 55	0.008	0.003	4	132	124
Confluence of Lindsey Sl. And Cache Sl.	0.009	0.001	4	128	126
Rough and Ready DWR station, Stockton	0.005	0.003	4	200	126
Napa River at Vallejo Seawall (340)	0.001	0.000	4	4880	108

Table C 2-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/10/08 evaluating the toxicity of Sacramento River and Delta water samples collected 4/8/08 - 4/10/08.[1]

Treatment	Survival (%)[2]	
	mean	se
Low EC Control	60.0	4.7
Suisun Bay at Public Suisun Dock[4]	87.5	8.0
Sacramento River at Hood DWR Station[5]	34.5	13.3
Sacramento R. Deep Water Channel, Light 55[3]	72.9	9.2
Confluence of Lindsey Sl. And Cache Sl.[3]	67.8	9.6
Rough and Ready DWR station, Stockton[5]	47.9	9.8
Mid EC Control	72.9	6.3
High EC Control	77.3	5.8
Napa River at Vallejo Seawall (340)[4]	95.8	2.4
Low Turbidity Control	27.1	8.6

1. Smelt used in this experiment were 38 days old at test initiation.
2. Highlighted areas indicate significant reductions in survival compared to the appropriate EC-specific control. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure.
3. These low conductivity samples were compared to the Low EC control.
4. This high conductivity sample was compared to the High EC control.
5. This low turbidity sample was compared to the low turbidity control.

	MSD	**PMSD†**
Survival (%)	**40.1**	**55.0**

†. Calculated as % of Hatchery Water control

Table C 2-2. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/10/08, evaluating the toxicity of Sacramento River and Delta water samples collected on 4/08/08 - 4/10/08.

Sample	Collection Date and Time	Field Chemistry				
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH
Suisun Bay at Public Suisun Dock	4/9/2008 11:30	4603	3636	14.5	8.6	7.15
Sacramento River at Hood DWR Station	4/8/2008 14:30	221.3	184	16.6	9.3	8.05
Sacramento R. Deep Water Channel, Light 55	4/9/2008 10:50	395.5	312	14.4	10.6	8.24
Confluence of Lindsey Sl. And Cache Sl.	4/9/2008 11:50	358.8	283	14.4	10.5	8.23
Rough and Ready DWR station, Stockton	4/8/2008 11:00	716	589	16.1	9.8	7.97
Napa River at Vallejo Seawall (340)	4/10/2008 12:15	23250	18321	14.4	10.0	7.92

Sample	Turbidity (NTU)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
Suisun Bay at Public Suisun Dock	84.6	0.04	0.000
Sacramento River at Hood DWR Station	8.1	0.59	0.019
Sacramento R. Deep Water Channel, Light 55	28.9	0.15	0.006
Confluence of Lindsey Sl. And Cache Sl.	29.4	0.21	0.008
Rough and Ready DWR station, Stockton	11.1	0.07	0.002
Napa River at Vallejo Seawall (340)	22.4	0.00	0.000

1. This unionized ammonia measurement was calculated from ammonia nitrogen measured at sample receipt and water chemistry measured at sample collection.

Table C 2-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/10/08 evaluating the toxicity of Sacramento River and Delta water samples collected 4/8/08 - 4/10/08.

Treatment	Temp (°C)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	16.8	0.4	8	241	60	8	9.2	0.5	8
Suisun Bay at Public Suisun Dock	16.4	0.7	8	3310	101	8	9.5	0.3	8
Sacramento River at Hood DWR Station	16.2	0.8	8	214	63	8	9.6	0.5	8
Sacramento R. Deep Water Channel, Light 55	16.1	0.7	8	334	63	8	9.8	0.3	8
Confluence of Lindsey Sl. And Cache Sl.	16.3	0.7	8	305	37	8	9.8	0.1	8
Rough and Ready DWR station, Stockton	16.1	0.7	8	593	46	8	9.8	0.3	8
Mid EC Control	16.5	0.5	8	639	54	8	9.3	0.3	8
High EC Control	16.5	0.4	8	3281	102	8	9.3	0.3	8
Napa River at Vallejo Seawall (340)	16.4	0.6	8	16830	1565	8	9.6	0.2	8
Low Turbidity Control	16.6	0.4	8	666	49	8	9.6	0.3	8

Treatment	pH			Turbidity (NTU)			Un-ionized Ammonia (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	7.62	0.12	8	5.8	1.4	6	0.005	0.005	3
Suisun Bay at Public Suisun Dock	7.85	0.20	8	27.0	25.5	7	0.001	0.001	4
Sacramento River at Hood DWR Station	7.85	0.11	8	3.6	2.2	7	0.009	0.003	4
Sacramento R. Deep Water Channel, Light 55	8.02	0.07	8	11.6	7.4	7	0.005	0.003	4
Confluence of Lindsey Sl. And Cache Sl.	8.11	0.07	8	12.2	7.7	7	0.008	0.003	4
Rough and Ready DWR station, Stockton	7.97	0.09	8	4.3	3.1	7	0.003	0.002	4
Mid EC Control	7.82	0.08	8	5.5	1.4	6	0.005	0.004	3
High EC Control	7.78	0.12	8	4.2	1.1	6	0.003	0.003	3
Napa River at Vallejo Seawall (340)	7.81	0.09	8	9.6	6.1	7	0.000	0.000	4
Low Turbidity Control	7.76	0.13	8	2.3	2.2	7	0.001	0.0013	3

Treatment	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
Low EC Control	-	-
Suisun Bay at Public Suisun Dock	564	168
Sacramento River at Hood DWR Station	84	98
Sacramento R. Deep Water Channel, Light 55	124	119
Confluence of Lindsey Sl. And Cache Sl.	120	117
Rough and Ready DWR station, Stockton	156	96
Mid EC Control	-	-
High EC Control	-	-
Napa River at Vallejo Seawall (340)	2640	112
Low Turbidity Control	-	-

Table C 3-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/24/08 evaluating the toxicity of Sacramento River and Delta water samples collected 4/22/08 - 4/24/08.[1]

Treatment	Survival (%)[1]	
	mean	se
Low EC Control	37.7	3.9
Suisun at Rush Ranch[5]	97.7	2.3
Sacramento River at Hood DWR Station[3,6,7]	20.2	4.9
Sacramento River, Deep Water Channel, Light 55[3]	52.1	9.5
Confluence of Lindsey Slough and Cache Slough (CL)[3]	61.9	7.1
Rough and Ready DWR Station, Stockton[4]	51.3	6.6
Mid EC Control	38.3	15.4
High EC Control	60.8	14.8
Napa River at Vallejo Seawall (340)[5]	76.1	2.0
Low Turbidity Control	50.0	11.4

1. Smelt used in this experiment were 37 days old at test initiation.

2. Highlighted areas indicate significant reductions in survival compared to the appropriate EC-specific and turbidity-specific controls. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure.

3. These low conductivity samples were compared to the Low EC control.

4. This intermediate conductivity sample was compared to the Mid EC control.

5. This high conductivity sample was compared to the High EC control.

6. This low turbidity sample was compared to the low turbidity control.

7. Hood showed lower survival than both the low EC control and the low turbidity control according to USEPA statistical protocols, but not when examined with Tukey's multiple comparison procedure.

	MSD	**PMSD†**
Survival (%)	**43.7**	**114.2**

†. Calculated as % of Mid EC control

Table C 3-2. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated on 4/24/08, evaluating the toxicity of Sacramento River and Delta water samples collected 4/22/08-4/24/08.

Sample	Collection Date and Time	Field Chemistry				
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH
Suisun at Rush Ranch	4/23/2008 10:50	4864	3901	15.1	7.0	7.38
Sacramento River at Hood DWR Station	4/22/2008 13:00	170	142	16.8	9.3	7.75
Sacramento River, Deep Water Channel, Light 55	4/23/2008 10:20	347	284	15.9	10.1	8.36
Confluence of Lindsey Slough and Cache Slough	4/23/2008 11:15	359	291	15.5	10.2	8.29
Rough and Ready DWR Station, Stockton	4/22/2008 10:30	579	494	17.7	7.9	7.89
Napa River at Vallejo Seawall (340)	4/24/2008 12:25	22080	17700	15.1	10.2	7.92

Sample	Turbidity (NTU)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
Suisun at Rush Ranch	74.5	0.14	0.001
Sacramento River at Hood DWR Station	18.8	0.4	0.007
Sacramento River, Deep Water Channel, Light 55	27	0.13	0.008
Confluence of Lindsey Slough and Cache Slough	31.3	0.17	0.008
Rough and Ready DWR Station, Stockton	34.2	0.17	0.004
Napa River at Vallejo Seawall (340)	18.5	0.09	0.001

Table C 3-3. Chemistry of sample waters examined in a *Hypomesus* (Delta Smelt) 7-day test initiated 4/24/08 evaluating the toxicity of Sacramento River and Delta water samples collected 4/22/08 - 4/24/08.

Treatment	Temp (°C)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	16.6	0.3	8	197	57	8	9.1	0.4	8
Suisun at Rush Ranch	16.4	0.4	8	3686	74	8	9.6	0.4	8
Sacramento River at Hood DWR Station	16.2	0.3	8	165	43	8	9.7	0.2	8
Sacramento River, Deep Water Channel, Light 55	16.1	0.3	8	289	34	8	9.8	0.3	8
Confluence of Lindsey Slough and Cache Slough	16.1	0.4	8	259	42	8	9.6	0.4	8
Rough and Ready DWR Station, Stockton	16.3	0.4	8	476	32	8	9.6	0.3	8
Mid EC Control	16.2	0.3	8	478	42	8	9.7	0.3	8
High EC Control	16.3	0.3	8	3237	1198	8	9.7	0.3	8
Napa River at Vallejo Seawall (340)	16.2	0.3	8	17404	1340	8	9.3	0.3	8
Low Turbidity Control	16.6	0.3	8	3728	67	8	9.5	0.2	8

Treatment	pH			Turbidity (NTU)			Ammonia Nitrogen (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	7.69	0.23	8	4.8	1.7	7	0.348	0.2412	4
Suisun at Rush Ranch	7.95	0.20	8	19.5	4.4	7	0.106	0.0321	5
Sacramento River at Hood DWR Station	7.92	0.17	8	2.7	0.8	7	0.292	0.1152	5
Sacramento River, Deep Water Channel, Light 55	8.10	0.09	8	10.4	1.3	7	0.132	0.0239	5
Confluence of Lindsey Slough and Cache Slough	8.08	0.08	8	11.2	1.9	7	0.156	0.0152	5
Rough and Ready DWR Station, Stockton	8.01	0.10	8	5.6	1.3	7	0.156	0.0195	5
Mid EC Control	8.05	0.09	8	5.3	2.1	7	0.073	0.005	4
High EC Control	8.00	0.08	8	5.0	2.4	7	0.080	0.0082	4
Napa River at Vallejo Seawall (340)	7.81	0.07	8	5.4	1.7	7	0.066	0.0182	5
Low Turbidity Control	7.84	0.15	8	2.6	0.9	7	0.043	0.010	4

Treatment	Unionized Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*		
Low EC Control	0.004	0.003	4	-	-
Suisun at Rush Ranch	0.002	0.001	5	632	192
Sacramento River at Hood DWR Station	0.006	0.002	5	56	62
Sacramento River, Deep Water Channel, Light 55	0.004	0.001	5	116	114
Confluence of Lindsey Slough and Cache Slough	0.005	0.001	5	96	108
Rough and Ready DWR Station, Stockton	0.004	0.001	5	124	88
Mid EC Control	0.002	0.000	4	-	-
High EC Control	0.002	0.001	4	-	-
Napa River at Vallejo Seawall (340)	0.001	0.000	5	2368	116
Low Turbidity Control	0.001	0.000	4	-	-

Table C 4-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/22/08 evaluating the toxicity of ambient water samples from the Sacramento River and Delta collected on 5/20/08 - 5/22/08.[1]

Treatment	Survival (%)[2]	
	mean	se
Low EC Control	75.0	2.9
Sacramento River at Hood DWR Station[3,6]	46.1	10.6
Confluence of Lindsey Sl. And Cache Sl.[3]	71.3	10.9
Sacramento R. Deep Water Channel, Light 55[3]	77.5	6.3
Hatchery Control	75.0	9.6
Rough and Ready DWR station, Stockton[4]	55.0	6.5
High EC Control	88.8	5.2
Low Turbidity Control (High EC)	69.2	14.7
Suisun Slough at Rush Ranch[5]	85.0	6.5
Napa River at Vallejo Seawall (340)[5]	92.5	4.8

1. Smelt used in this experiment were 57 days old at test initiation.
2. Highlighted areas indicate significant reductions in survival compared to the appropriate EC-specific control. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure.
3. These low conductivity samples were compared to the Low EC control.
4. This intermediate conductivity sample was compared to the hatchery rearing water control.
5. These high conductivity samples were compared to the High EC control.
6. This sample was found to have reduced survival when evaluated by USEPA statistical protocols, but not when evaluated by Tukey's multiple comparison procedure.

	MSD	**PMSD†**
Survival (%)	**37.2**	**49.6**

†. Calculated as % of Hatchery Water control

Table C 4-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated on 5/22/08, evaluating the toxicity of Sacramento River and Delta water samples collected on 5/20/08 - 5/22/08.

Sample	Collection Date and Time	SC (uS/cm)	EC (uS/cm)	Temp (ºC)	DO (mg/L)	pH
Sacramento River at Hood DWR Station	5/20/2008 12:00	180.2	177	24.1	7.9	7.32
Confluence of Lindsey Sl. And Cache Sl.	5/21/2008 11:00	242.8	216	19.5	8.7	7.22
Sacramento R. Deep Water Channel, Light 55	5/21/2008 9:40	280.3	256	20.7	8.8	7.47
Rough and Ready DWR station, Stockton	5/20/2008 10:00	400.6	385	23.1	7.3	7.08
Suisun Slough at Rush Ranch	5/21/2008 8:20	6870	5757	16.9	6.7	7.38
Napa River at Vallejo Seawall (340)	5/22/2008 10:40	27910	23724	17.5	9.4	7.81

Sample	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)	Turbidity (NTU)
Sacramento River at Hood DWR Station	0.41	0.004	17
Confluence of Lindsey Sl. And Cache Sl.	0.23	0.001	72
Sacramento R. Deep Water Channel, Light 55	0.17	0.002	40
Rough and Ready DWR station, Stockton	0.07	0.000	12
Suisun Slough at Rush Ranch	0.11	0.001	47
Napa River at Vallejo Seawall (340)	0.15	0.002	114

Table C 4-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/22/08 evaluating the toxicity of Sacramento River and Delta water samples collected on 5/20/08 - 5/22/08.

Treatment	Temp (°C)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	17.1	0.3	8	187	28	8	8.9	0.3	8
Suisun Slough at Rush Ranch	16.8	0.5	8	5733	250	8	8.7	0.7	8
Sacramento River at Hood DWR Station	16.5	0.5	8	163	28	8	9.3	0.5	8
Sacramento R. Deep Water Channel, Light 55	16.7	0.2	8	239	25	8	9.4	0.2	8
Confluence of Lindsey Sl. And Cache Sl.	16.7	0.4	8	227	30	8	9.7	0.2	8
Rough and Ready DWR station, Stockton	16.7	0.4	8	339	41	8	9.3	0.5	8
Hatchery Control	17.0	0.2	8	369	39	8	9.2	0.2	8
High EC Control	16.9	0.4	8	5825	400	8	9.3	0.2	8
Napa River at Vallejo Seawall (340)	16.6	0.5	8	22443	630	8	8.9	0.3	8
Low Turbidity Control	17.1	0.3	8	5707	235	8	9.3	0.2	8

Treatment	pH			Turbidity (NTU)			Ammonia Nitrogen (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	7.61	0.21	8	7.8	0.9	6	0.37	0.33	4
Suisun Slough at Rush Ranch	7.67	0.39	8	13.0	1.3	6	0.11	0.03	4
Sacramento River at Hood DWR Station	7.79	0.16	8	4.1	0.6	6	0.25	0.09	4
Sacramento R. Deep Water Channel, Light 55	7.98	0.19	8	14.3	0.4	6	0.18	0.02	4
Confluence of Lindsey Sl. And Cache Sl.	8.02	0.17	8	19.5	0.8	6	0.22	0.02	4
Rough and Ready DWR station, Stockton	7.81	0.08	8	5.1	0.7	6	0.13	0.04	4
Hatchery Control	7.75	0.07	8	6.6	1.0	6	0.28	0.24	4
High EC Control	7.79	0.20	8	4.9	0.7	6	0.12	0.11	4
Napa River at Vallejo Seawall (340)	7.76	0.30	8	10.0	1.7	6	0.06	0.05	4
Low Turbidity Control	7.84	0.25	8	3.2	0.5	6	0.12	0.07	4

Treatment	Unionized Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*		
Low EC Control	0.004	0.003	4	-	-
Suisun Slough at Rush Ranch	0.002	0.001	4	800	168
Sacramento River at Hood DWR Station	0.005	0.002	4	64	66
Sacramento R. Deep Water Channel, Light 55	0.005	0.001	4	88	92
Confluence of Lindsey Sl. And Cache Sl.	0.007	0.001	4	80	88
Rough and Ready DWR station, Stockton	0.003	0.001	4	88	64
Hatchery Control	0.004	0.004	4	-	-
High EC Control	0.002	0.002	4	-	-
Napa River at Vallejo Seawall (340)	0.001	0.001	4	3120	118
Low Turbidity Control	0.002	0.0014	4	-	-

Table C 5-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 3/19/09 evaluating the toxicity of ambient water samples collected on 3/17/09, 3/18/09 and 3/19/09. Test animals were 30 days old at test initiation.

Treatment	Survival (%)		EC-specific Statistical Results[1]
	mean	se	
Low EC Control	8.3	5.3	A
Low EC Low Turbidity Control	2.8	2.8	A
Hood[2]	8.7	2.9	A
Light 55[2]	23.6	9.2	A
Cache Lindsey[2]	2.8	2.8	A
Mid EC Control	15.3	6.4	A
Rough and Ready Island[3]	2.8	2.8	A
High EC Control	18.6	7.9	B
High EC Low Turbidity Control	18.1	6.4	B
Suisun[4]	95.0	5.0	A
340[4]	88.8	4.1	A

1. Data were analyzed using separate statistical tests for each EC bracket (low, mid, high). The low and high EC brackets were examined using Tukey's tests, while the intermediate EC bracket was examined using a T-test (all tests were two-tailed, $\alpha = 0.05$). Statistically different groups of treatments are identified by different letters. Due to the poor performance of the controls, USEPA standard statistics were not performed.

2. These low conductivity samples were compared to the Low EC controls.

3. This intermediate conductivity sample was compared to the Mid EC Control.

4. These high conductivity samples were compared to the High EC controls.

	Survival (%) MSD
Low Conductivity	22.8
Mid Conductivity	17.1
High Conductivity	25.3

Table C 5-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated on 3/19/09, evaluating the toxicity of Sacramento River and Delta water samples collected 3/17/09-3/19/09.

Sample	Collection Date and Time	Field Chemistry				
		SC (uS/cm)	EC (uS/cm)	Temp (^{o}C)	DO (mg/L)	pH
Suisun Slough at Rush Ranch	3/18/2009 16:50	4106	3642	19.0	9.2	7.42
Sacramento River at Hood DWR Station	3/19/2009 9:30	197	157	14.4	9.9	7.14
Sacramento R. Deep Water Channel, Light 55	3/18/2009 10:10	369	290	13.0	10.0	7.79
Confluence of Lindsey Sl. And Cache Sl.	3/18/2009 11:10	354	281	14.3	10.0	7.38
Rough and Ready DWR station, Stockton	3/17/2009 16:00	740	604	15.7	8.5	7.68
Napa River at Vallejo Seawall (340)	3/17/2009 10:40	11,210	8,680	13.2	10.3	7.02

Table C 5-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 3/19/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 3/17/09 - 3/19/09.

Treatment	Temp (°C)			EC (uS/cm)			SC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	16.3	0.9	8	172	9	8	206	12	8	9.1	0.3	8
Suisun	16.1	1.1	8	3234	148	8	3922	156	8	8.9	0.2	8
Hood	16.0	1.0	8	167	10	8	201	13	8	9.4	0.3	8
Light 55	16.0	1.0	8	296	6	8	357	3	8	9.3	0.2	8
Cache Lindsey	16.0	1.0	8	235	6	8	284	3	8	9.3	0.1	8
Rough and Ready Island	16.1	1.1	8	602	19	8	724	6	8	9.3	0.4	8
Mid EC Control	16.3	0.9	8	661	15	8	792	7	8	8.9	0.4	8
High EC Control	16.4	1.0	8	3192	147	8	3824	139	8	9.0	0.4	8
340	16.2	1.1	8	8531	321	8	10224	262	8	9.1	0.4	8
Low EC Low Turbidity Control	16.3	1.0	8	180	28	8	215	31	8	9.1	0.3	8
Low Turbidity Control	16.3	1.0	8	3247	139	8	3886	146	8	9.1	0.4	8

Treatment	pH			Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Turbidity (NTU)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*		
Low EC Control	7.81	0.13	8	0.52	0.38	4	0.010	0.008	4	5.57	1.49	7	-	-
Suisun	7.93	0.26	8	0.15	0.02	5	0.004	0.002	5	32.66	2.90	7	620	222
Hood	7.99	0.22	8	0.41	0.07	5	0.011	0.005	5	3.36	0.73	7	72	80
Light 55	8.16	0.16	8	0.19	0.02	5	0.008	0.003	5	7.14	0.86	7	124	124
Cache Lindsey	8.10	0.19	8	0.26	0.04	5	0.009	0.004	5	5.10	0.90	7	100	100
Rough and Ready Island	7.98	0.21	8	0.12	0.03	5	0.003	0.002	5	2.60	0.81	7	176	104
Mid EC Control	7.95	0.06	8	0.35	0.19	4	0.008	0.004	4	5.10	1.40	7	-	-
High EC Control	7.89	0.05	8	0.20	0.06	4	0.004	0.001	4	3.58	1.14	7	-	-
340	7.84	0.09	8	0.12	0.03	5	0.002	0.000	5	10.30	3.73	7	1260	88
Low EC Low Turbidity Control	7.92	0.12	8	0.23	0.10	4	0.006	0.005	4	3.24	1.05	7	-	-
Low Turbidity Control	7.87	0.03	8	0.13	0.03	4	0.002	0.000	4	2.13	1.68	7	-	-

Table C 6-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/02/09 evaluating the toxicity of ambient water samples collected on 3/31/09 - 4/02/09. Test organisms were 44 days old at test initiation.

Treatment	96-hr Survival (%)[1]					7-day Survival (%)[1]				
			USEPA Statistics					USEPA Statistics		
	Mean	SE	v. SC-specific control	v. SC-specific low turbidity control	SC-specific Tukeys Result	Mean	SE	v. SC-specific control	v. SC-specific low turbidity control	SC-specific Tukeys Result
Low SC Control	85.0	6.5	-	-	A	70.0	8.2	-	-	A
Low SC Low Turbidity Control	66.8	5.8	S*	-	A B	43.0	6.0	S*	-	A B
Low SC Control + Tannins	31.8	2.8	S***	S**	C	2.5	2.5	S*	S*	C
Sacramento River at Hood DWR Station[2]	51.0	12.0	S*	NS	B C	19.5	6.1	S**	S*	B C
Sacramento R. Deep Water Channel, Light 55[2]	69.3	5.4	NS	NS	A B	40.7	3.2	S*	NS	A B
Confluence of Lindsey Sl. And Cache Sl.[2]	53.6	8.7	S*	NS	A B C	25.0	11.4	S*	NS	B C
Mid EC Control	81.4	3.7	-	-	A	69.5	4.9	-	-	A
Rough and Ready DWR station, Stockton[3]	43.0	6.5	S**	-	B	9.3	3.7	S***	-	B
High SC Control	86.1	5.8	-	-	A	64.5	12.8	-	-	A
High SC Low Turbidity Control	81.6	13.1	NS	-	A	61.6	11.2	NS	-	A
Suisun Slough at Rush Ranch[4]	97.7	2.3	NS	NS	A	95.5	2.6	NS	NS	A
Napa River at Vallejo Seawall (340)[4]	88.6	8.6	NS	NS	A	74.8	9.2	NS	NS	A

1. Data were analyzed using a separate statistical tests for each EC bracket (low, mid, high), and both standard USEPA statistics (one-tailed $\alpha = 0.05$) and ANOVA with Tukeys multiple comparison (two-tailed $\alpha = 0.05$) were performed. The intermediate EC bracket was examined using a T-test instead of Tukey's test. Statistically different groups of treatments are identified by highlighting (USEPA) and by different letters (Tukey).

*: $P < 0.05$

**: $P < 0.01$

***: $P < 0.001$

2. These low conductivity samples were compared to the Low EC controls.

3. This intermediate conductivity sample was compared to the Mid EC Control.

4. These high conductivity samples were compared to the High EC controls.

	Tukey's test MSD	
	96-hr Survival (%)	7-day Survival (%)
Low Conductivity	29.6	27.5
Mid Conductivity	14.6	11.9
High Conductivity	30.5	35.3

Table C 6-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated on 4/02/09, evaluating the toxicity of Sacramento River and Delta water samples collected 3/31/09 - 4/02/09.

Sample	Collection Date and Time	Field Chemistry						
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH	Ammonia Nitrogen (mg/L)[1]	Unionized Ammonia (mg/L)[1]
Sacramento River at Hood DWR Station	3/31/2009 8:40	177.8	141.2	14.7	9.9	6.91	0.43	0.001
Sacramento R. Deep Water Channel, Light 55	4/2/2009 10:00	283.4	226.2	14.9	10.1	7.02	0.26	0.001
Confluence of Lindsey Sl. And Cache Sl.	4/2/2009 11:15	271.6	220.0	15.5	9.9	6.90	0.28	0.001
Rough and Ready DWR station, Stockton	3/31/2009 13:20	913	754	16.3	10.1	7.94	0.02	0.000
Suisun Slough at Rush Ranch	3/31/2009 12:45	3805	3166	16.6	9.0	7.45	0.27	0.002
Napa River at Vallejo Seawall (340)	4/1/2009 12:15	18760	15233	15.6	9.6	6.94	0.12	0.000

1. Ammonia nitrogen was measured upon sample receipt, and unionized ammonia was calculated using ammonia measured upon receipt and other chemistry measured at sample collection.

Table C 6-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/02/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 3/31/09 - 4/02/09.

Treatment	Temp (°C)			EC (uS/cm)			SC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low SC Control	16.2	0.6	8	165	16	8	197	18	8	9.6	0.3	8
Low SC Low Turbidity Control	16.2	0.6	8	198	46	8	238	54	8	9.7	0.2	8
Low SC Control + Tannins	16.3	0.6	8	174	25	8	208	29	8	9.8	0.2	8
Sacramento River at Hood DWR Station	16.1	0.7	8	165	26	8	199	31	8	9.8	0.3	8
Sacramento R. Deep Water Channel, Light 55	16.2	0.7	8	238	22	8	286	26	8	9.8	0.3	8
Confluence of Lindsey Sl. And Cache Sl.	16.1	0.6	8	227	24	8	272	29	8	9.8	0.3	8
Mid SC Control	16.5	0.3	8	789	21	8	941	22	8	9.6	0.3	8
Rough and Ready DWR station, Stockton	16.1	0.7	8	748	20	8	901	20	8	9.9	0.2	8
High SC Control	16.5	0.3	8	3158	73	8	3776	80	8	9.6	0.3	8
High SC Low Turbidity Control	16.6	0.4	8	3229	77	8	3848	72	8	9.6	0.3	8
Suisun Slough at Rush Ranch	16.2	0.5	8	3063	43	8	3683	53	8	9.5	0.5	8
Napa River at Vallejo Seawall (340)	16.1	0.6	8	15134	543	8	18245	520	8	9.4	0.5	8

Treatment	pH			Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Turbidity (NTU)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*		
Low SC Control	7.82	0.10	8	0.38	0.29	4	0.006	0.005	4	4.47	1.79	8	-	-
Low SC Low Turbidity Control	7.92	0.10	8	0.17	0.13	4	0.003	0.002	4	3.52	1.24	8	-	-
Low SC Control + Tannins	7.88	0.10	8	0.06	0.05	4	0.001	0.001	4	1.94	0.56	8	-	-
Sacramento River at Hood DWR Station	8.01	0.22	8	0.32	0.09	4	0.011	0.004	4	2.72	1.92	8	64	72
Sacramento R. Deep Water Channel, Light 55	8.11	0.15	8	0.27	0.03	4	0.011	0.001	4	5.19	0.99	7	104	92
Confluence of Lindsey Sl. And Cache Sl.	8.10	0.15	8	0.28	0.04	4	0.010	0.002	4	4.57	0.86	7	92	88
Mid EC Control	8.02	0.12	8	0.14	0.07	4	0.004	0.001	4	8.22	4.76	8	-	-
Rough and Ready DWR station, Stockton	8.12	0.11	8	0.09	0.04	4	0.003	0.002	4	3.21	1.91	8	164	104
High SC Control	7.96	0.07	8	0.18	0.11	4	0.004	0.002	4	6.66	4.89	8	-	-
High SC Low Turbidity Control	8.03	0.07	8	0.13	0.05	4	0.003	0.002	4	2.21	1.92	8	-	-
Suisun Slough at Rush Ranch	8.06	0.24	8	0.11	0.05	4	0.004	0.002	4	78.16	108.08	8	496	176
Napa River at Vallejo Seawall (340)	7.83	0.12	8	0.11	0.02	4	0.002	0.000	4	10.68	11.12	8	1996	94

Table C 7-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/16/09 evaluating the toxicity of ambient water samples collected on 4/14/09 - 4/16/09. Test animals were 54 days old at test initiation.

Treatment	96-hr Survival (%)[1]					7-day Survival (%)[1]				
			USEPA Statistics					USEPA Statistics		
	Mean	SE	v. SC-specific control	v. SC-specific low turbidity control	SC-specific Tukeys Result	Mean	SE	v. SC-specific control	v. SC-specific low turbidity control	SC-specific Tukeys Result
Low EC Control	84.7	2.7	-	-	A	58.9	7.2	-	-	A B
Low EC / Low Turbidity Control	46.7	5.4	S***	-	B	27.4	4.0	S**	-	B
Low EC Control + Antibiotics	65.0	12.6	NS	NS	A B	65.0	12.6	NS	NS	A
Sacramento River at Hood DWR Station	67.0	8.1	S*	NS	A B	30.1	6.6	S*	NS	A B
Sacramento R. Deep Water Channel, Light 55	71.4	10.0	NS	NS	A B	55.8	7.9	NS	NS	A B
Confluence of Lindsey Sl. And Cache Sl.	55.3	2.0	S***	NS	A B	46.9	8.5	NS	NS	A B
Mid EC Control	75.6	3.0	-	-	A	67.5	4.6	-	-	A
Rough and Ready DWR station, Stockton	59.8	7.1	S*	-	A	42.2	3.6	S**	-	B
High EC Control	82.5	4.8	-	-	A B	70.0	5.8	-	-	A B
High EC / Low Turbidity Control	83.3	5.6	NS	-	A B	61.9	3.8	NS	-	B
Suisun Slough at Rush Ranch	94.7	3.1	NS	NS	A	92.2	2.6	NS	NS	A
Napa River at Vallejo Seawall (340)	62.2	10.9	S*	NS	B	62.2	10.9	NS	NS	B

1. Data were analyzed using a separate statistical tests for each EC bracket (low, mid, high). Significant reductions in survival compared to EC-specific controls according to USEPA statistics are indicated by shaded cells, groups of treatments found to be significantly different by Tukey's tests are identified by different letters.

2. These low conductivity samples were compared to the Low EC controls.

3. This intermediate conductivity sample was compared to the Mid EC Control.

4. These high conductivity samples were compared to the High EC controls.

	Tukey's Tests Survival (%) MSDs	
	96-hrs	7-days
Low Conductivity	35.0	36.8
Mid Conductivity	18.9	14.3
High Conductivity	24.8	27.5

Table C 7-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/16/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 4/14/09 - 4/16/09 .

Sample	Collection Date and Time	Field Chemistry						
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH	Ammonia Nitrogen (mg/L)[1]	Unionized Ammonia (mg/L)[1]
Suisun Slough at Rush Ranch	4/15/2009 14:10	4816	4036	16.9	8.8	7.53	0.46	0.004
Sacramento River at Hood DWR Station	4/16/2009 10:15	147.8	116	14.4	10.0	6.85	0.52	0.001
Sacramento R. Deep Water Channel, Light 55	4/15/2009 12:45	408.8	331	15.5	9.5	7.23	0.14	0.001
Confluence of Lindsey Sl. And Cache Sl.	4/15/2009 14:00	674	543	15.3	11.0	7.23	0.16	0.001
Rough and Ready DWR station, Stockton	4/14/2009 13:50	914	766	16.9	8.0	7.72	0.15	0.002
Napa River at Vallejo Seawall (340)	4/14/2009 13:45	19420	15148	14.0	10.2	6.99	0.59	0.001

Table C 7-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/16/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 4/14/09 - 4/16/09.

Treatment	Temp (°C)			EC (uS/cm)			SC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	17.0	0.2	8	160	31	8	189	36	8	10.1	0.6	8
Low EC / Low Turbidity Control	17.0	0.3	8	165	31	8	193	34	8	9.8	0.6	8
Low EC Control + Antibiotics	17.0	0.3	8	201	50	8	236	58	8	9.7	0.6	8
Sacramento River at Hood DWR Station	16.7	0.5	8	143	36	8	169	42	8	10.2	0.5	8
Sacramento R. Deep Water Channel, Light 55	16.7	0.4	8	332	6	8	387	18	8	10.0	0.6	8
Confluence of Lindsey Sl. And Cache Sl.	16.6	0.4	8	301	6	8	358	7	8	10.2	0.6	8
Mid EC Control	16.8	0.4	8	760	64	8	897	70	8	9.3	0.4	8
Rough and Ready DWR station, Stockton	16.6	0.4	8	766	10	8	909	8	8	10.8	2.3	8
High EC Control	16.7	0.6	8	4101	139	8	4857	159	8	9.8	0.5	8
High EC / Low Turbidity Control	16.8	0.5	8	4212	114	8	4943	149	8	9.7	0.5	8
Suisun Slough at Rush Ranch	16.7	0.4	8	4036	106	8	4785	97	8	9.9	0.9	8
Napa River at Vallejo Seawall (340)	16.8	0.4	8	15918	209	8	18785	222	8	9.6	0.4	8

Treatment	pH			Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Turbidity (NTU)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*		
Low EC Control	7.89	0.11	8	0.28	0.16	4	0.006	0.003	4	4.51	0.97	7	-	-
Low EC / Low Turbidity Control	7.89	0.17	8	0.22	0.08	4	0.005	0.002	4	3.47	1.42	7	-	-
Low EC Control + Antibiotics	7.87	0.21	8	0.19	0.02	4	0.005	0.003	4	4.94	0.89	7	-	-
Sacramento River at Hood DWR Station	7.98	0.26	8	0.45	0.09	4	0.017	0.006	4	2.19	0.69	7	52	52
Sacramento R. Deep Water Channel, Light 55	8.20	0.12	8	0.14	0.03	4	0.007	0.002	4	5.58	2.23	7	124	108
Confluence of Lindsey Sl. And Cache Sl.	8.23	0.12	8	0.15	0.04	4	0.008	0.003	4	6.84	1.58	6	114	118
Mid EC Control	8.01	0.12	8	0.34	0.17	4	0.009	0.004	4	4.61	1.43	7	-	-
Rough and Ready DWR station, Stockton	8.13	0.17	8	0.16	0.03	4	0.007	0.002	4	3.20	1.43	8	190	112
High EC Control	7.97	0.08	8	0.29	0.13	4	0.007	0.003	4	5.47	1.26	7	-	-
High EC / Low Turbidity Control	7.95	0.10	8	0.12	0.05	4	0.003	0.001	4	1.78	0.96	7	-	-
Suisun Slough at Rush Ranch	8.15	0.33	8	0.16	0.03	4	0.008	0.002	4	31.39	4.74	7	650	248
Napa River at Vallejo Seawall (340)	7.89	0.14	8	0.11	0.02	4	0.002	0.001	4	7.14	2.65	7	2340	100

Table C 8-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/30/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 4/28/09 - 4/30/09. Smelt were 41 days post hatch at test initiation.

Treatment	96-hr Survival (%)[1]		Comparison to EC-Specific Control	Comparison to EC-specific Low Turbidity Control	7-day Survival (%)[1]		Comparison to EC-Specific Control	Comparison to EC-specific Low Turbidity Control
	Mean	SE			Mean	SE		
Low EC Control: No Antibiotics	79.2	4.8	NS	NS	69.4	5.5	NS	NS
Low EC Control	88.2	7.0	-	-	85.9	8.8	-	-
Low EC / Low Turbidity Control	92.5	4.8	NS	-	85.2	3.0	-	-
Sacramento River at Hood DWR Station[2]	79.5	7.8	NS	NS	55.3	4.4	S*	S**
Sacramento R. Deep Water Channel, Light 55[2]	85.0	5.0	NS	NS	80.2	10.1	NS	NS
Confluence of Lindsey Sl. And Cache Sl.[2]	82.5	6.3	NS	NS	67.5	7.5	NS	S*
Mid-EC Control	88.0	4.6	-	-	76.4	4.6	-	-
Rough and Ready DWR station, Stockton[3]	90.7	6.4	NS	-	88.2	7.0	NS	NS
High EC Control	100.0	0.0	-	-	100.0	0.0	-	-
Low Turbidity Control	88.6	4.4	NS	-	86.1	2.5	-	-
Suisun Slough at Rush Ranch[4]	97.5	2.5	NS	NS	93.1	2.3	NS	NS
Napa River at Vallejo Seawall (340)[4]	97.7	2.3	NS	NS	88.2	7.0	NS	NS

1. Highlighted areas indicate significant reductions in survival, weight or biomass compared to the appropriate EC-specific control. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure. Tukey's procedure did not detect any significant differences.

*: $P < 0.05$

**: $P < 0.01$

2. These low conductivity samples were compared to the Low EC control.

3. This intermediate conductivity sample was compared to the Mid-EC control.

4. This high conductivity sample was compared to the High EC control.

	Tukey's Tests Survival (%) MSDs	
	96-hrs	7-days
Low Conductivity	23.1	27.0
Mid Conductivity	15.2	16.1
High Conductivity	9.9	14.0

Table C 8-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/30/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 4/28/09 - 4/30/09.

Sample	Collection Date and Time	Field Chemistry						
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
Sacramento River at Hood DWR Station	4/28/2009 14:25	119.9	99.3	16.4	8.7	7.08	0.02	0.000
Sacramento R. Deep Water Channel, Light 55	4/30/2009 11:15	236.4	196.7	16.6	9.4	7.25	0.16	0.001
Confluence of Lindsey Sl. And Cache Sl.	4/30/2009 12:40	246.4	206.0	16.8	9.5	6.80	0.20	0.000
Rough and Ready DWR station, Stockton	4/28/2009 15:05	690	604	18.8	7.5	7.74	0.13	0.002
Suisun Slough at Rush Ranch	4/28/2009 10:40	4772	3789	14.7	8.9	7.01	0.14	0.000
Napa River at Vallejo Seawall (340)	4/29/2009 11:15	24360	19196	14.4	9.7	7.49	0.11	0.001

Table C 8-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 4/30/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 4/28/09 - 4/30/09.

Treatment	Temp (°C)			EC (uS/cm)			SC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control: No Antibiotics	17.1	1.3	8	158	43	8	182	52	8	9.4	0.2	8
Low EC Control	17.0	1.2	8	171	30	8	199	37	8	9.6	0.2	8
Low EC / Low Turbidity Control	17.0	1.2	8	179	36	8	207	44	8	9.6	0.2	8
Sacramento River at Hood DWR Station	16.9	1.2	8	150	30	8	175	36	8	9.8	0.2	8
Sacramento R. Deep Water Channel, Light 55	16.8	1.5	7	244	24	8	291	30	8	9.8	0.3	8
Confluence of Lindsey Sl. And Cache Sl.	16.7	1.4	8	243	22	8	287	30	8	9.9	0.3	8
Mid-EC Control	17.0	1.2	8	716	21	8	845	35	8	9.6	0.3	8
Rough and Ready DWR station, Stockton	16.8	1.2	8	602	19	8	713	31	8	9.5	0.6	8
High EC Control	17.0	1.2	8	3975	74	8	4698	80	8	9.6	0.4	8
Low Turbidity Control	16.9	1.2	8	3774	362	8	4626	54	8	9.7	0.3	8
Suisun Slough at Rush Ranch	16.9	1.2	8	3863	56	8	4598	112	8	9.5	0.4	8
Napa River at Vallejo Seawall (340)	16.8	1.4	8	19420	637	8	23134	572	8	9.1	0.4	8

Treatment	pH			Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Turbidity (NTU)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*		
Low EC Control: No Antibiotics	7.77	0.12	8	0.1	0.1	4	0.002	0.002	4	6	2	8	-	-
Low EC Control	7.97	0.20	8	0.1	0.1	4	0.002	0.002	4	7	1	8	-	-
Low EC / Low Turbidity Control	7.95	0.14	8	0.1	0.0	4	0.002	0.002	4	7	1	8	-	-
Sacramento River at Hood DWR Station	7.97	0.06	8	0.0	0.0	4	0.001	0.001	4	5	4	8	48	51
Sacramento R. Deep Water Channel, Light 55	8.02	0.04	8	0.1	0.1	4	0.003	0.003	4	16	7	8	84	78
Confluence of Lindsey Sl. And Cache Sl.	8.06	0.07	8	0.1	0.1	4	0.004	0.003	4	16	5	8	64	74
Mid-EC Control	7.93	0.08	8	0.1	0.1	4	0.003	0.002	4	7	2	8	-	-
Rough and Ready DWR station, Stockton	7.95	0.10	8	0.1	0.1	4	0.003	0.002	4	7	3	8	144	93
High EC Control	7.87	0.05	8	0.1	0.1	4	0.002	0.001	4	6	2	8	-	-
Low Turbidity Control	7.83	0.05	8	0.1	0.1	4	0.001	0.001	4	5	3	8	-	-
Suisun Slough at Rush Ranch	7.90	0.17	8	0.1	0.1	4	0.002	0.001	4	29	17	8	640	158
Napa River at Vallejo Seawall (340)	7.71	0.05	8	0.1	0.1	4	0.001	0.001	4	16	17	8	2880	102

Table C 9-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/14/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 5/12/09 - 5/14/09. Smelt were 41 days post hatch at test initiation.

Treatment	96-hour Survival (%)[1]					7-day Survival (%)[1]				
			USEPA Statistics					USEPA Statistics		
	Mean	SE	v. SC-specific control	v. SC-specific low turbidity control	EC-specific Tukey's Test	Mean	SE	v. SC-specific control	v. SC-specific low turbidity control	EC-specific Tukey's Test
Low EC Control	76.4	9.3	-	-	A B	71.4	11.6	-	-	A
Low EC / Low Turbidity Control	68.8	5.0	NS	-	A B	59.7	7.6	NS	-	A
Sacramento River at Hood DWR Station[2]	62.9	6.0	NS	NS	B	52.3	7.8	NS	NS	A
Sacramento R. Deep Water Channel, Light 55[2]	84.7	6.4	NS	NS	A B	85.5	9.8	NS	NS	A
Confluence of Lindsey Sl. And Cache Sl.[2]	94.7	3.1	NS	NS	A	80.1	5.6	NS	NS	A
Mid-EC Control	80.3	4.5	-	-	A	71.9	3.4	-	-	A
Rough and Ready DWR station, Stockton[3]	56.7*	9.1	S*	-	B	28.1***	7.3	S***	-	B
High EC Control @ 4000 uS/cm	86.4	4.7	-	-	A	80.8	3.9	-	-	A
High EC / Low Turbidity Control	85.4	2.6	NS	-	A	55.2*	10.1	S*	-	A
Suisun Slough at Rush Ranch[4]	80.4	12.8	NS	NS	A	85.7	14.3	NS	NS	A
High EC Control @ 17000 uS/cm	72.1	10.0	-	-	A	62.5	13.0	-	-	A
Napa River at Vallejo Seawall (340)[5]	68.9	5.0	NS	-	A	63.9	3.6	NS	-	A

1. Highlighted areas indicate significant reductions in survival, weight or biomass compared to the appropriate EC-specific control. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure. Tukey's procedure did not detect any significant differences.

2. These low conductivity samples were compared to the Low EC control.

3. This intermediate conductivity sample was compared to the Mid-EC control.

4. This high conductivity sample was compared to the High EC control @ 4000 uS/cm.

5. This high conductivity sample was compared to the High EC Control @ 17,000 uS/cm.

	96-hr Survival (%) MSD	7-day Survival (%) MSD
Low EC	24.0	33.4
Mid EC	19.8	15.6
High EC @ 4000 uS/cm	26.5	34.4
High EC @ 17000 uS/cm	21.6	26.1

Table C 9-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/14/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 5/12/09 - 5/14/09.

Sample	Collection Date and Time	Field Chemistry						
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
Sacramento River at Hood DWR Station	5/12/2009 15:20	116	103	19.3	11.4	6.89	0.21	0.001
Sacramento R. Deep Water Channel, Light 55	5/14/2009 15:20	261	245	21.8	8.8	7.82	0.17	0.005
Confluence of Lindsey Sl. and Cache Sl.	5/14/2009 14:20	207	190	20.7	11.0	7.29	0.16	0.001
Rough and Ready DWR station, Stockton	5/12/2009 14:30	491	455	21.3	6.9	7.43	0.09	0.001
Suisun Slough at Rush Ranch	5/12/2009 11:50	4863	4279	19.0	9.8	6.51	0.32	0.000
Napa River at Vallejo Seawall (340)	5/13/2009 9:15	16330	13881	17.5	9.2	6.91	0.13	0.000

Table C 9-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/14/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 5/12/09 - 5/14/09.

Treatment	Temp (°C)			EC (uS/cm)			SC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	17.0	0.3	8	161	16	8	189	18	8	9.5	0.2	8
Low EC / Low Turbidity Control	16.9	0.6	8	198	115	8	224	125	8	9.5	0.2	8
Sacramento River at Hood DWR Station	16.7	0.3	8	164	55	8	390	562	8	9.8	0.2	8
Sacramento R. Deep Water Channel, Light 55	16.9	0.5	8	265	14	8	316	18	8	9.7	0.3	8
Confluence of Lindsey Sl. and Cache Sl.	16.6	0.4	8	226	23	8	268	27	8	9.8	0.2	8
Mid-EC Control	17.0	0.3	8	506	28	8	596	32	8	9.4	0.2	8
Rough and Ready DWR station, Stockton	16.7	0.4	8	454	28	8	541	35	8	9.4	0.6	8
High EC Control @ 4000 uS/cm	17.0	0.3	8	4019	68	8	4773	92	8	9.6	0.2	8
High EC / Low Turbidity Control	17.0	0.5	8	4060	65	8	4810	71	8	9.4	0.3	8
Suisun Slough at Rush Ranch	16.8	0.3	8	3995	65	8	4767	80	8	9.4	0.7	8
High EC Control @ 17000 uS/cm	17.1	0.5	8	14473	204	8	17058	243	8	9.1	0.4	8
Napa River at Vallejo Seawall (340)	16.8	0.3	8	13404	146	8	15951	155	8	9.4	0.4	8

Treatment	pH			Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Turbidity (NTU)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*		
Low EC Control	7.60	0.25	8	0.2	0.1	4	0.002	0.001	4	6	1	8	-	-
Low EC / Low Turbidity Control	7.80	0.17	8	0.2	0.1	4	0.004	0.005	4	5	2	8	-	-
Sacramento River at Hood DWR Station	7.75	0.23	8	0.2	0.0	4	0.004	0.001	4	12	14	8	44	50
Sacramento R. Deep Water Channel, Light 55	7.98	0.07	8	0.1	0.0	4	0.004	0.002	4	41	25	8	76	72
Confluence of Lindsey Sl. and Cache Sl.	7.98	0.20	8	0.1	0.0	4	0.003	0.002	4	35	39	8	76	74
Mid-EC Control	7.89	0.15	8	0.3	0.1	4	0.006	0.005	4	6	2	8	-	-
Rough and Ready DWR station, Stockton	7.79	0.13	8	0.2	0.0	4	0.004	0.001	4	5	2	8	112	70
High EC Control @ 4000 uS/cm	7.93	0.12	8	0.1	0.1	4	0.003	0.002	4	5	3	8	-	-
High EC / Low Turbidity Control	7.97	0.15	8	0.1	0.0	4	0.003	0.002	4	3	2	8	-	-
Suisun Slough at Rush Ranch	7.80	0.27	8	0.2	0.1	4	0.003	0.002	4	21	17	8	384	198
High EC Control @ 17000 uS/cm	7.90	0.17	8	0.1	0.1	4	0.002	0.002	4	7	2	8	-	-
Napa River at Vallejo Seawall (340)	7.67	0.06	8	0.1	0.0	4	0.001	0.001	4	19	24	8	1920	94

Table C 10-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/28/09 evaluating the toxicity of ambient water samples collected on 5/26/09- 5/28/09. Test animals were 55 days old at test initiation.

Treatment	96-hr Survival (%)		7-day Survival (%)	
	mean	se	mean	se
Low EC Control	79.2	10.7	76.4	10.2
Low EC / Low Turbidity Control	87.5	4.8	75.0	2.9
Sacramento River at Hood DWR Station[2]	89.7	7.1	71.1	4.7
Sacramento R. Deep Water Channel, Light 55[2]	91.9	5.3	86.9	5.1
Confluence of Lindsey Sl. And Cache Sl.[2]	91.3	3.0	81.3	4.4
Mid-EC Control	70.8	8.3	62.8	10.3
Rough and Ready DWR station, Stockton[3]	86.1	8.3	72.8	5.8
High EC Control @ 4000 uS/cm	92.5	2.5	82.5	4.8
High EC / Low Turbidity Control	92.5	4.8	71.4	10.0
Suisun Slough at Rush Ranch[4]	89.2	4.5	86.4	5.4
High EC Control @ 17000 uS/cm	70.8	17.2	68.1	15.8
Napa River at Vallejo Seawall (340)[5]	67.5	4.8	62.5	2.5

1. Highlighted areas indicate significant reductions in survival, weight or biomass compared to the appropriate EC-specific control. Data were analyzed using both USEPA standard single concentration statistical protocols and ANOVA with Tukey's multiple comparison procedure. Neither statistical procedure detected any significant differences.

2. These low conductivity samples were compared to the Low EC control.

3. This intermediate conductivity sample was compared to the Mid-EC control.

4. This high conductivity sample was compared to the High EC control @ 4000 uS/cm.

5. This high conductivity sample was compared to the High EC Control @ 17,000 uS/cm.

	96-hr Survival (%) MSD	7-day Survival (%) MSD
Low EC	29.3	26.2
Mid EC	28.8	28.8
High EC @ 4000 uS/cm	16.1	28.1
High EC @ 17000 uS/cm	54.7	49.0

Table C 10-2. Field chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated on 5/28/09 evaluating the toxicity of Sacramento River and Delta water samples collected 5/26/09 - 5/28/09.

Sample	Collection Date and Time	Field Chemistry				
		SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH
Sacramento River at Hood DWR Station	5/26/2009 13:25	152	139	20.7	8.3	6.55
Sacramento R. Deep Water Channel, Light 55	5/28/2009 10:40	215	198	20.9	8.4	7.39
Confluence of Lindsey Sl. and Cache Sl.	5/28/2009 12:10	118	109	21.1	8.4	7.52
Rough and Ready DWR station, Stockton	5/27/2009 15:30	435	442	25.8	6.0	7.08
Suisun Slough at Rush Ranch	5/26/2009 10:20	4755	4137	18.5	7.1	6.82
Napa River at Vallejo Seawall (340)	5/27/2009 11:25	22870	19943	18.6	8.7	6.58

Table C 10-3. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 7-day test initiated 5/28/09 evaluating the toxicity of Sacramento River and Delta water samples collected on 5/26/09 - 5/28/09.

Treatment	Temp (°C)			EC (uS/cm)			SC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Low EC Control	16.6	0.3	8	144	8	8	171	11	8	9.4	0.4	8
Low EC / Low Turbidity Control	16.4	0.6	8	197	21	8	233	25	8	9.6	0.3	8
Sacramento River at Hood DWR Station	16.4	0.6	8	151	6	8	180	8	8	9.7	0.5	8
Sacramento R. Deep Water Channel, Light 55	16.6	0.5	8	196	11	8	234	15	8	9.7	0.5	8
Confluence of Lindsey Sl. And Cache Sl.	16.5	0.5	8	173	7	8	207	10	8	9.6	0.5	8
Mid-EC Control	16.5	0.3	8	430	24	8	511	27	8	9.7	0.5	8
Rough and Ready DWR station, Stockton	16.4	0.3	8	384	4	8	459	9	8	9.3	1.0	8
High EC Control @ 4000 uS/cm	16.4	0.4	8	4061	115	8	4847	102	8	9.4	0.4	8
High EC / Low Turbidity Control	16.5	0.5	8	3976	122	8	4740	95	8	9.2	0.2	8
Suisun Slough at Rush Ranch	16.5	0.6	8	3843	83	8	4578	75	8	9.3	0.9	8
High EC Control @ 17000 uS/cm	16.4	0.4	8	17080	2945	8	20368	3576	8	9.0	0.4	8
Napa River at Vallejo Seawall (340)	16.2	0.4	8	18059	744	8	21615	723	8	9.1	0.5	8

Treatment	pH			Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Turbidity (NTU)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*		
Low EC Control	7.85	0.45	8	0.15	0.10	4	0.005	0.005	4	11.95	8.11	8	-	-
Low EC / Low Turbidity Control	7.97	0.60	8	0.13	0.11	4	0.004	0.006	4	7.62	1.71	8	-	-
Sacramento River at Hood DWR Station	7.90	0.33	8	0.38	0.08	4	0.013	0.010	4	4.93	1.54	8	52	54
Sacramento R. Deep Water Channel, Light 55	7.97	0.24	8	0.19	0.05	4	0.007	0.004	4	18.22	5.82	8	64	66
Confluence of Lindsey Sl. And Cache Sl.	7.93	0.22	8	0.21	0.05	4	0.007	0.004	4	20.07	7.32	8	64	62
Mid-EC Control	8.04	0.21	8	0.16	0.10	4	0.005	0.003	4	10.52	8.81	8	-	-
Rough and Ready DWR station, Stockton	7.87	0.28	8	0.13	0.06	4	0.004	0.003	4	8.48	1.65	8	96	68
High EC Control @ 4000 uS/cm	7.90	0.20	8	0.13	0.06	4	0.002	0.001	4	10.43	8.04	8	-	-
High EC / Low Turbidity Control	7.75	0.40	8	0.09	0.06	4	0.001	0.001	4	3.87	2.47	8	-	-
Suisun Slough at Rush Ranch	7.68	0.31	8	0.13	0.05	4	0.002	0.001	4	20.09	2.66	8	520	142
High EC Control @ 17000 uS/cm	7.95	0.11	8	0.05	0.04	4	0.001	0.001	4	10.5	8.1	8	-	-
Napa River at Vallejo Seawall (340)	7.71	0.12	8	0.07	0.04	4	0.001	0.001	4	10.89	9.30	8	2640	100

Appendix D

Summary Tables:
In-situ Toxicity Tests

Table D1. 96-hour survival of animals examined in flow-through tests initiated at the DWR Station on the Sacramento River at Hood.

Date	Treatment	*H. transpacificus*		*P. promelas*		*H. azteca*	
		Survival (%)		Survival (%)		Survival (%)	
		Mean	SE	Mean	SE	Mean	SE
3/19/2009	Control	-	-	100	0.0	100	0.0
	Ambient	-	-	85	9.6	95	5.0
4/2/2009	Control	75	4.8	85	9.6	95	5.0
	Ambient	84	10.3	90	5.8	85	9.6
4/16/2009	Control	59	5.0	95	5.0	95	5.0
	Ambient	74	10.5	90	5.8	95	5.0
4/30/2009	Control	47	10.9	95	5.0	100	0.0
	Ambient	43	6.5	100	0.0	100	0.0
5/14/2009	Control	56	18.8	95	5.0	100	0.0
	Ambient	69	12.0	100	0.0	100	0.0
5/28/2009	Control	13	8.0	85	5.0	95	5.0
	Ambient	34	7.9	95	5.0	100	0.0

Table D2. 7-day survival of animals examined in flow-through tests at the DWR Station on the Sacramento River at Hood.

Date	Treatment	*H. transpacificus*		*P. promelas*		*H. azteca*	
		Survival (%)		Survival (%)		Survival (%)	
		Mean	SE	Mean	SE	Mean	SE
3/19/2009	Control	21	5.5	85	15.0	95	5.0
	Ambient	46	8.4	75	15.0	95	5.0
4/2/2009	Control	62	8.8	30	5.8	80	8.2
	Ambient	77	7.0	85	5.0	80	8.2
4/16/2009	Control	29	5.1	95	5.0	90	5.8
	Ambient	64	13.8	85	9.6	85	9.6
4/30/2009	Control	43	13.3	95	5.0	100	0.0
	Ambient	40	6.9	95	5.0	100	0.0
5/14/2009	Control	44	15.7	95	5.0	100	0.0
	Ambient	50	10.2	100	0.0	100	0.0
5/28/2009	Control	4	4.2	85	5.0	95	5.0
	Ambient	27	8.4	85	15.0	90	5.8

Table D3. EC and SC chemistry of water from the Sacramento River in exposure chambers during the 7-day in-situ tests at the Hood DWR Station.

Treatment	EC (uS/cm)					SC (uS/cm)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	153	8	143	162	7	189	8	172	200	14
Ambient Exposure 3/19/2009	140	7	130	153	8	173	7	161	188	13
Control Exposure 4/2/2009	152	13	141	179	7	183	19	159	230	15
Ambient Exposure 4/2/2009	133	11	115	146	7	160	11	140	177	15
Control Exposure 4/16/2009	135	6	126	142	7	153	7	145	167	16
Ambient Exposure 4/16/2009	124	6	117	133	8	148	15	133	194	15
Control Exposure 4/30/2009	111	7	104	123	8	130	7	122	142	14
Ambient Exposure 4/30/2009	104	11	94	119	7	127	9	114	140	15
Control Exposure 5/14/2009	120	7	109	131	8	129	6	118	139	16
Ambient Exposure 5/14/2009	117	12	102	140	8	129	10	114	152	15
Control Exposure 5/28/2009	133	18	111	160	7	148	29	83	211	16
Ambient Exposure 5/28/2009	131	14	114	155	7	137	21	89	170	14

Table D4. Temperature and DO chemistry of water from the Sacramento River in exposure chambers during 7-day in-situ tests at the Hood DWR Station

Treatment	Temperature (ºC)					DO (mg/L)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	15.4	0.4	15.0	15.9	7	9.3	0.5	8.2	9.8	9
Ambient Exposure 3/19/2009	14.8	0.6	14.0	15.5	7	9.1	0.5	8.0	9.4	8
Control Exposure 4/2/2009	15.9	0.4	15.0	16.0	8	9.2	0.3	8.8	9.6	7
Ambient Exposure 4/2/2009	15.3	0.5	15.0	16.0	8	9.0	0.3	8.4	9.5	7
Control Exposure 4/16/2009	18.3	1.8	16.0	20.0	8	8.9	0.5	8.3	9.6	8
Ambient Exposure 4/16/2009	17.4	1.6	15.0	19.0	8	8.6	0.5	7.8	9.0	7
Control Exposure 4/30/2009	16.3	0.7	15.0	17.0	8	9.4	0.3	8.9	9.8	8
Ambient Exposure 4/30/2009	15.5	0.5	15.0	16.0	8	9.3	0.4	8.5	9.6	7
Control Exposure 5/14/2009	20.9	1.0	19.0	22.0	8	8.4	0.1	8.3	8.6	8
Ambient Exposure 5/14/2009	20.1	0.8	19.0	21.0	8	8.2	0.1	8.1	8.5	7
Control Exposure 5/28/2009	21.8	0.5	21.0	22.0	8	8.2	0.2	8.0	8.7	8
Ambient Exposure 5/28/2009	21.0	0.5	20.0	22.0	8	7.7	0.2	7.4	8.1	7

Table D5. pH and turbidity chemistry of water from the Sacramento River in exposure chambers during 7-day in-situ tests at the Hood DWR Station

Treatment	pH					Turbidity (NTU)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	7.35	0.36	6.50	7.76	9	2.26	0.91	0.59	3.24	7
Ambient Exposure 3/19/2009	7.52	0.17	7.17	7.73	8	24.99	9.01	15.90	40.20	7
Control Exposure 4/2/2009	7.35	0.11	7.22	7.48	7	2.05	0.66	1.22	3.28	7
Ambient Exposure 4/2/2009	7.40	0.09	7.26	7.49	7	17.80	8.86	6.55	30.20	7
Control Exposure 4/16/2009	7.57	0.23	7.23	7.96	8	3.72	1.86	1.16	6.24	8
Ambient Exposure 4/16/2009	7.52	0.09	7.34	7.61	7	18.39	8.13	9.25	33.80	7
Control Exposure 4/30/2009	7.56	0.11	7.36	7.67	8	5.49	1.33	3.54	6.97	7
Ambient Exposure 4/30/2009	7.56	0.16	7.37	7.81	7	38.53	19.29	10.90	63.20	6
Control Exposure 5/14/2009	7.36	0.14	7.08	7.49	8	4.44	1.07	2.51	5.71	8
Ambient Exposure 5/14/2009	7.32	0.10	7.16	7.46	7	23.31	8.50	12.50	34.30	7
Control Exposure 5/28/2009	7.43	0.10	7.30	7.57	8	2.67	1.08	1.19	4.03	8
Ambient Exposure 5/28/2009	7.37	0.09	7.25	7.50	7	19.20	5.79	13.70	28.30	7

Table D6. Ammonia-nitrogen and unionized ammonia chemistry of water from the Sacramento River in exposure chambers during 7-day in-situ tests at the Hood DWR Station

Treatment	Ammonia Nitrogen (mg/L)					Unionized Ammonia (mg/L)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	0.21	0.17	0.02	0.49	8	0.002	0.001	0.000	0.003	8
Ambient Exposure 3/19/2009	0.42	0.12	0.28	0.59	7	0.004	0.001	0.002	0.006	7
Control Exposure 4/2/2009	0.15	0.10	0.00	0.26	7	0001	0.001	0.000	0.002	7
Ambient Exposure 4/2/2009	0.42	0.17	0.13	0.64	7	0.003	0.001	0.001	0.005	7
Control Exposure 4/16/2009	0.22	0.17	0.03	0.51	8	0.003	0.002	0.000	0.005	8
Ambient Exposure 4/16/2009	0.37	0.14	0.24	0.66	7	0.004	0.001	0.003	0.005	7
Control Exposure 4/30/2009	0.14	0.11	0.04	0.38	8	0.001	0.001	0.000	0.003	8
Ambient Exposure 4/30/2009	0.22	0.15	0.02	0.45	7	0.002	0.001	0.000	0.004	7
Control Exposure 5/14/2009	0.24	0.16	0.08	0.46	8	0.002	0.002	0.001	0.005	8
Ambient Exposure 5/14/2009	0.29	0.05	0.23	0.35	7	0.002	0.001	0.002	0.004	7
Control Exposure 5/28/2009	0.25	0.18	0.00	0.50	8	0.003	0.002	0.000	0.006	8
Ambient Exposure 5/28/2009	0.32	0.14	0.18	0.53	7	0.003	0.002	0.001	0.006	7

Table D7. Hardness and alkalinity chemistry of water from the Sacramento River in exposure chambers during 7-day in-situ tests at the Hood DWR Station.

Treatment	Hardness (mg/L as $CaCO_3$)					Alkalinity (mg/L as $CaCO_3$)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	41	3	36	44	7	34	9	18	45	7
Ambient Exposure 3/19/2009	69	3	64	72	7	71	3	68	76	7
Control Exposure 4/2/2009	37	5	32	44	7	32	4	26	36	7
Ambient Exposure 4/2/2009	56	6	48	64	7	62	5	56	68	7
Control Exposure 4/16/2009	34	5	24	40	8	29	5	22	36	8
Ambient Exposure 4/16/2009	52	3	48	56	7	53	8	34	58	7
Control Exposure 4/30/2009	25	4	20	32	7	21	5	12	26	7
Ambient Exposure 4/30/2009	49	3	44	52	6	53	4	48	58	6
Control Exposure 5/14/2009	28	10	12	44	8	23	7	12	32	8
Ambient Exposure 5/14/2009	45	4	40	48	7	47	3	44	52	7
Control Exposure 5/28/2009	32	3	28	36	8	27	3	24	32	8
Ambient Exposure 5/28/2009	50	6	44	60	7	53	4	48	60	7

Table D8. 96-hour survival of animals examined in flow-through tests initiated at the Rough and Ready DWR Station, Stockton, CA.

Date	Treatment	*H. transpacificus*		*P. promelas*		*H. azteca*	
		Survival (%)		Survival (%)		Survival (%)	
		Mean	SE	Mean	SE	Mean	SE
3/19/2009	Control	-	-	94	6.3	95	5.0
	Ambient	-	-	80	0.0	100	0.0
4/2/2009	Control	61	8.9	60	8.2	95	5.0
	Ambient	75	6.8	90	10.0	100	0.0
4/16/2009	Control	63	9.7	65	12.6	100	0.0
	Ambient	71	9.8	45	12.6	100	0.0
4/30/2009	Control	79	12.5	75	9.6	95	5.0
	Ambient	61	16.5	70	12.9	100	0.0
5/14/2009	Control	15	9.6	95	5.0	100	0.0
	Ambient	15	8.6	100	0.0	100	0.0
5/28/2009	Control	-	-	100	0.0	100	0.0
	Ambient	-	-	100	0.0	100	0.0

Table D9. 7-day survival of animals examined in flow-through tests initiated at the Rough and Ready DWR Station, Stockton, CA.

Date	Treatment	*H. transpacificus*		*P. promelas*		*H. azteca*	
		Survival (%)		Survival (%)		Survival (%)	
		Mean	SE	Mean	SE	Mean	SE
3/19/2009	Control	22	10.4	71	16.1	95	5.0
	Ambient	35	9.3	65	9.6	100	0.0
4/2/2009	Control	41	7.9	45	5.0	95	5.0
	Ambient	61	9.4	90	10.0	100	0.0
4/16/2009	Control	59	12.4	65	12.6	100	0.0
	Ambient	66	12.5	40	8.2	100	0.0
4/30/2009	Control	68	15.8	70	12.9	90	10.0
	Ambient	47	14.1	70	12.9	85	9.6
5/14/2009	Control	0	0.0	95	5.0	95	5.0
	Ambient	15	8.6	100	0.0	100	0.0
5/28/2009	Control	-	-	100	0.0	100	0.0
	Ambient	-	-	100	0.0	95	5.0

Table D10. EC and SC chemistry of water in exposure chambers during the 7-day in-situ tests at the Rough and Ready DWR Station in Stockton, CA.

Treatment	EC (uS/cm)					SC (uS/cm)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	688	98	584	826	8	803	99	720	970	14
Ambient Exposure 3/19/2009	698	72	615	793	8	836	88	730	948	14
Control Exposure 4/2/2009	787	14	765	812	8	915	13	895	944	15
Ambient Exposure 4/2/2009	783	31	740	851	8	915	29	879	1005	15
Control Exposure 4/16/2009	834	37	795	898	7	899	35	849	958	16
Ambient Exposure 4/16/2009	767	19	729	791	7	852	47	790	925	14
Control Exposure 4/30/2009	591	108	482	832	8	569	199	131	947	16
Ambient Exposure 4/30/2009	490	59	429	589	8	546	65	472	668	15
Control Exposure 5/14/2009	479	93	388	696	8	495	99	410	744	16
Ambient Exposure 5/14/2009	423	29	385	461	8	439	29	405	498	15
Control Exposure 5/28/2009	437	25	407	492	8	440	47	290	508	16
Ambient Exposure 5/28/2009	420	5	415	430	8	416	55	275	446	15

Table D11. Temperature and DO chemistry of water in exposure chambers during the 7-day in-situ tests at the Rough and Ready DWR Station in Stockton, CA.

Treatment	Temperature (ºC)					DO (mg/L)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	16.8	0.9	15.1	17.8	8	9.6	0.4	8.9	10.3	8
Ambient Exposure 3/19/2009	16.2	0.8	15.4	17.8	8	9.0	0.8	7.2	9.6	8
Control Exposure 4/2/2009	17.6	0.5	16.5	18.1	8	9.3	0.4	8.8	9.9	8
Ambient Exposure 4/2/2009	17.0	0.5	16.3	17.5	8	9.4	0.4	8.7	9.9	8
Control Exposure 4/16/2009	19.7	1.9	16.8	22.3	8	8.8	0.5	8.1	9.5	8
Ambient Exposure 4/16/2009	19.0	1.8	16.8	21.8	8	8.7	0.5	7.7	9.1	7
Control Exposure 4/30/2009	19.3	0.5	18.7	20.1	8	8.7	0.2	8.4	8.9	8
Ambient Exposure 4/30/2009	18.7	0.4	18.2	19.5	8	7.2	0.2	7.0	7.5	8
Control Exposure 5/14/2009	23.2	1.0	21.5	24.3	8	8.1	0.3	7.8	8.6	8
Ambient Exposure 5/14/2009	22.7	0.9	21.5	23.9	8	7.1	0.3	6.5	7.4	8
Control Exposure 5/28/2009	24.4	0.2	24.0	24.7	8	8.0	0.2	7.8	8.4	8
Ambient Exposure 5/28/2009	24.0	0.4	23.2	24.4	8	6.1	0.3	5.6	6.5	8

Table D12. pH and turbidity chemistry of water in exposure chambers during 7-day in-situ tests at the Rough and Ready DWR Station in Stockton, CA.

Treatment	pH					Turbidity (NTU)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	7.83	0.12	7.66	7.98	11	4.42	1.70	2.55	8.26	8
Ambient Exposure 3/19/2009	7.69	0.10	7.56	7.85	11	8.67	2.04	6.67	12.50	8
Control Exposure 4/2/2009	7.56	0.19	7.34	7.84	7	2.87	1.04	1.82	4.79	7
Ambient Exposure 4/2/2009	7385	0.08	7.67	7.91	7	12.29	2.30	8.49	15.90	7
Control Exposure 4/16/2009	7.71	0.08	7.60	7.85	8	2.58	0.87	1.60	4.01	8
Ambient Exposure 4/16/2009	7.94	0.11	7.81	8.14	7	9.72	2.42	7.04	13.80	7
Control Exposure 4/30/2009	7.68	0.22	7.50	8.19	8	4.71	1.29	3.61	7.72	8
Ambient Exposure 4/30/2009	7.55	0.11	7.41	7.66	7	13.87	4.44	11.50	23.90	7
Control Exposure 5/14/2009	7.61	0.07	7.54	7.72	8	2.80	1.08	1.43	4.53	8
Ambient Exposure 5/14/2009	7.48	0.04	7.43	7.53	7	10.83	2.35	8.57	14.60	7
Control Exposure 5/28/2009	7.83	0.15	7.61	8.05	8	6.51	4.35	2.46	16.46	8
Ambient Exposure 5/28/2009	7.37	0.06	7.29	7.46	7	17.29	7.65	9.33	33.23	7

Table D13. Ammonia-nitrogen and unionized ammonia chemistry of water in exposure chambers during 7-day in-situ tests at the Rough and Ready Station in Stockton, CA.

Treatment	Ammonia Nitrogen (mg/L)					Unionized Ammonia (mg/L)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	0.15	0.12	0.03	0.34	8	0.003	0.003	0.000	0.009	8
Ambient Exposure 3/19/2009	0.07	0.02	0.06	0.10	8	0.001	0.00	0.001	0.001	8
Control Exposure 4/2/2009	0.27	0.18	0.04	0.52	7	0.002	0.001	0.001	0.003	7
Ambient Exposure 4/2/2009	0.08	0.04	0.04	0.17	7	0.001	0.000	0.001	0.002	7
Control Exposure 4/16/2009	0.30	0.15	0.11	0.50	8	0.005	0.003	0.001	0.010	8
Ambient Exposure 4/16/2009	0.09	0.02	0.05	0.11	7	0.002	0.001	0.001	0.003	7
Control Exposure 4/30/2009	0.28	0.17	0.09	0.53	8	0.004	0.002	0.001	0.007	8
Ambient Exposure 4/30/2009	0.10	0.04	0.07	0.18	7	0.001	0.001	0.001	0.003	7
Control Exposure 5/14/2009	0.22	0.16	0.00	0.49	8	0.004	0.003	0.000	0.009	8
Ambient Exposure 5/14/2009	0.10	0.11	0.00	0.29	7	0.001	0.001	0.000	0.004	7
Control Exposure 5/28/2009	0.12	0.12	0.00	0.30	8	0.003	0.003	0.000	0.008	8
Ambient Exposure 5/28/2009	0.10	0.06	0.05	0.22	7	0.001	0.001	0.001	0.002	7

Table D14. Hardness and alkalinity chemistry in exposure chambers during 7-day in-situ tests at the Rough and Ready DWR Station in Stockton, CA.

Treatment	Hardness (mg/L as $CaCO_3$)					Alkalinity (mg/L as $CaCO_3$)				
	Mean	SD	Min	Max	*N*	Mean	SD	Min	Max	*N*
Control Exposure 3/19/2009	142	16	120	164	7	77	11	56	86	7
Ambient Exposure 3/19/2009	178	11	160	190	7	105	3	102	110	7
Control Exposure 4/2/2009	134	8	124	148	7	68	3	64	72	7
Ambient Exposure 4/2/2009	189	3	184	192	7	112	3	107	116	7
Control Exposure 4/16/2009	143	10	128	160	8	75	10	54	84	8
Ambient Exposure 4/16/2009	181	10	168	196	7	111	3	106	114	7
Control Exposure 4/30/2009	103	16	84	132	7	60	9	48	77	7
Ambient Exposure 4/30/2009	125	12	112	144	6	82	4	76	88	6
Control Exposure 5/14/2009	83	15	72	116	8	52	5	44	60	8
Ambient Exposure 5/14/2009	97	6	88	104	7	67	4	60	72	7
Control Exposure 5/28/2009	100	5	92	108	8	71	4	66	76	8
Ambient Exposure 5/28/2009	95	14	64	104	7	65	7	52	70	7

Appendix E

Summary Tables:

Ambient Toxicity Test

with *Eurytemora affinis*

Table E 1-1. Results of an *E. affinis* 7-day test initiated 5/1/09 evaluating the toxicity of ambient water samples collected on 4/28/09 and 4/30/09.

Treatment	Measured Initial EC	Survival (%)[1]	
		Mean	SE
L16 Media @ 1 ppt	1574	90	10.0
L16 Media @ 1000 µS/cm	825	50	16.7
L16 Media @ 500 µS/cm	441	30	15.3
L16 Media @ 250 µS/cm	248	20	13.3
L16 Media @ 100 µS/cm	131	0	0.0
Sacramento R. Deep Water Channel, Light 55	276	50	22.4
Sacramento River at tip of Grand Island (711)	136	20	13.3
Upper Cache Slough at mouth of Ulatis Creek	325	100	0.0
Sacramento River at Hood DWR Station	124	20	13.3

1. Highlighted cells indicate statistically significant reductions in survival or reproduction compared to the L16 media @ 1 ppt. Ambient samples showed no significant decreases in survival compared to the most appropriate conductivity control waters. Data were analyzed using USEPA standard statistical protocols.

Table E 1-2. Water chemistry at field conditions of ambient delta water samples collected on 4/28/09 and 4/30/09.

Treatment	SC (uS/cm)	EC (uS/cm)	Temp (°C)	pH	DO (mg/L)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]	Turbidity (NTU)
Light 55 043009	236	196	16.6	7.25	9.4	0.16	0.001	31.2
711 043009	120	101	17.1	6.88	9.8	0.04	0.000	10.1
CU 043009	329	275	16.8	6.88	9.9	0.03	0.000	45.9
Hood 042809	120	99	16.4	7.08	8.7	0.02	0.000	12.7

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at sample collection.

Table E 1-3. Water chemistry during an *E. affinis* 7-day test initiated on 5/01/09 evaluating the toxicity of ambient delta water samples collected on 4/28/09 and 4/30/09.

Treatment	Day 0 - Initial					Day 1 - Final				
	SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH	SC (uS/cm)	EC (uS/cm)	Temp (°C)	DO (mg/L)	pH
L16 @ 1 ppt	1920	1574	16.0	10.0	7.99	1930	1567	15.6	9.5	7.87
L 16 @ 1000 µS/cm	1004	825	16.1	9.7	7.97	1003	828	16.3	9.2	7.88
L 16 @ 500 µS/cm	538	441	16.0	9.7	7.97	517	427	16.3	9.9	7.90
L 16 @ 250 µS/cm	304	248	15.8	9.7	8.00	282	232	16.1	9.8	7.85
L 16 @ 100 µS/cm	160	131	15.8	9.6	7.98	129	106	16.0	9.8	7.79
Light 55	335	276	16.2	9.6	8.01	271	225	16.4	9.5	8.05
711	164	136	16.5	10.0	7.90	136	114	17.0	9.5	7.91
CU	393	325	16.4	10.0	8.24	329	276	16.9	9.6	8.17
Hood	150	124	16.5	10.6	8.02	142	121	17.6	9.4	8.00

Appendix F

H. transpacificus

Tests to Determine Effect Concentrations for Select Contaminants

Table F1-1. Results of a *H. transpacificus* (Delta Smelt) 96-hr test initiated 5/14/08 evaluating the toxicity of copper.

Treatment	Initial Total Copper Measured Conc. (ppb)	Initial Dissolved Copper Measured Conc. (ppb)	96-hour Survival (%)[1,2]	
			mean	se
Hatchery Tap Water (HTW)	2.76	2.53	71.3	3.4
HTW + 37.5 ppb Copper	40.4	41.4	77.5	7.5
HTW + 75 ppb Copper	78.2	76.2	47.5	4.8
HTW + 150 ppb Copper	156	153	0.0	0.0
HTW + 300 ppb Copper	312	304	2.5	2.5
HTW + 600 ppb Copper	608	599	0.0	0.0

1. Highlighted areas indicate significant reductions in survival compared to the hatchery tap water control. Data were analyzed using USEPA standard multiple concentration statistical protocols.

2. Smelt used in this experiment were 49 days old at test initiation.

Table F1-2. Nominal and measured 96-hour effect concentrations for copper (ppb) in a larval *H. transpacificus* (delta smelt) test initiated on 5/14/08.

Endpoint	NOEC	LOEC	96-h LC10		96-h LC50		PMSD
			Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Copper (ppb)	37.5	75	45	19 - 55	85	76 - 95	23.5
Measured Total Copper (ppb)	40.4	78.2	49.7	39.9 - 82.3	97.3	76.7 - 113.3	23.5
Measured Dissolved Copper (ppb)	41.4	76.2	50.1	40.9 - 80.1	92.1	74.7 - 110.8	23.5

Table F1-3. Results of a *H. transpacificus* (Delta Smelt) 96-hr test initiated 5/14/08 evaluating the toxicity of cyfluthrin and bifenthrin.

Treatment	Initial Measured Conc. (ppb)	48-hour Final Measured Conc. (ppb)	96-hour Survival (%)[1,2]	
			mean	se
Hatchery Tap Water (HTW)	-	-	71.3	3.4
HTW Solvent Control	ND / ND	ND / ND	62.5	11.1
HTW + 0.125 ppb Cyfluthrin	0.126	0.003	82.5	7.5
HTW + 0.25 ppb Cyfluthrin	0.240	0.005	52.5	18.0
HTW + 0.5 ppb Cyfluthrin	0.407	0.008	45.7	10.2
HTW + 1.0 ppb Cyfluthrin	0.890	0.017	0.0	0.0
HTW + 2.0 ppb Cyfluthrin	1.500	0.050	0.0	0.0
HTW + 0.125 ppb Bifenthrin	0.065	0.005	80.2	5.9
HTW + 0.25 ppb Bifenthrin	0.120	0.011	54.3	13.8
HTW + 0.5 ppb Bifenthrin	0.260	0.020	2.5	2.5
HTW + 1.0 ppb Bifenthrin	0.500	0.043	0.0	0.0
HTW + 2.0 ppb Bifenthrin	1.100	0.140	0.0	0.0

1. Highlighted areas indicate significant reductions in survival compared to the solvent control. Data were analyzed using USEPA standard multiple concentration statistical protocols.

2. Smelt used in this experiment were 49 days old at test initiation.

Table F1-4. Nominal and measured 96-hour effect concentrations for cyfluthrin (ppb) in a larval *H. transpacificus* (delta smelt) test initiated on 5/14/08.

Endpoint	NOEC	LOEC	96-h LC10		96-h LC50		PMSD
			Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Cyfluthrin (ppb)	0.5	1.0	0.160	0.129 - 0.466	0.454	0.393 - 0.523	68.9
Measured Cyfluthrin (ppb)	0.407	0.890	0.260	0.067 - 0.357	0.420	0.261 - 0.558	36.7

Table F1-5. Nominal and measured 96-hour effect concentrations for bifenthrin (ppb) in a larval *H. transpacificus* (delta smelt) test initiated on 5/14/08.

Endpoint	NOEC	LOEC	96-h LC10		96-h LC50		PMSD
			Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Bifenthrin (ppb)	0.25	0.5	0.215	0.140 - 0.262	0.305	0.246 - 0.359	52.7
Measured Bifenthrin (ppb)	0.120	0.260	0.095	0.061 - 0.117	0.143	0.116 - 0.169	38.7

Table F1-6. Chemistry of sample waters examined in a *H. transpacificus* (Delta Smelt) 4-day test initiated 5/14/08 evaluating the toxicity of copper, cyfluthrin and bifenthrin.

Treatment	Temp (°C)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Hatchery Tap Water (HTW)	18.1	1.2	4	750	-	1	9.3	0.5	4
HTW Solvent Control	17.1	1.1	4	747	-	1	8.6	1.6	4
HTW + 37.5 ppb Copper	17.8	0.7	4	746	-	1	9.4	0.3	4
HTW + 75 ppb Copper	17.8	0.7	4	748	-	1	9.4	0.2	4
HTW + 150 ppb Copper	18.0	0.6	4	757	-	1	9.4	0.3	4
HTW + 300 ppb Copper	18.0	0.8	4	741	-	1	9.4	0.2	4
HTW + 600 ppb Copper	18.2	1.2	3	748	-	1	9.5	0.2	3
HTW + 0.125 ppb Cyfluthrin	17.0	0.9	4	744	-	1	9.2	0.6	4
HTW + 0.25 ppb Cyfluthrin	17.2	1.1	4	753	-	1	8.4	1.9	4
HTW + 0.5 ppb Cyfluthrin	17.1	1.0	4	749	-	1	8.9	1.1	4
HTW + 1.0 ppb Cyfluthrin	17.1	0.8	4	750	-	1	8.5	1.7	4
HTW + 2.0 ppb Cyfluthrin	17.1	0.6	4	757	-	1	8.5	1.7	4
HTW + 0.125 ppb Bifenthrin	16.9	0.6	4	751	-	1	9.3	0.5	4
HTW + 0.25 ppb Bifenthrin	16.8	0.6	4	752	-	1	8.9	1.2	4
HTW + 0.5 ppb Bifenthrin	17.3	1.1	4	748	-	1	8.6	1.6	4
HTW + 1.0 ppb Bifenthrin	16.9	0.6	4	752	-	1	8.7	1.7	4
HTW + 2.0 ppb Bifenthrin	17.2	0.6	4	752	-	1	8.8	1.5	4

Treatment	pH			Ammonia Nitrogen (mg/L)			Un-ionized Ammonia (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Hatchery Tap Water (HTW)	7.98	0.23	4	0.06	0.05	4	0.001	0.001	4
HTW Solvent Control	7.84	0.26	4	0.03	0.03	4	0.000	0.000	4
HTW + 37.5 ppb Copper	7.92	0.26	4	0.05	0.05	4	0.001	0.001	4
HTW + 75 ppb Copper	7.90	0.34	4	0.05	0.05	4	0.001	0.001	4
HTW + 150 ppb Copper	7.97	0.18	4	0.04	0.04	4	0.001	0.001	4
HTW + 300 ppb Copper	7.87	0.21	4	0.03	0.04	4	0.001	0.001	4
HTW + 600 ppb Copper	7.82	0.42	3	0.05	0.06	4	0.000	0.000	3
HTW + 0.125 ppb Cyfluthrin	7.94	0.14	4	0.01	0.02	4	0.000	0.000	4
HTW + 0.25 ppb Cyfluthrin	7.83	0.36	4	0.01	0.02	4	0.000	0.000	4
HTW + 0.5 ppb Cyfluthrin	7.88	0.22	4	0.01	0.02	4	0.000	0.000	4
HTW + 1.0 ppb Cyfluthrin	7.80	0.27	4	0.01	0.02	4	0.000	0.000	4
HTW + 2.0 ppb Cyfluthrin	7.83	0.33	4	0.03	0.04	4	0.000	0.000	4
HTW + 0.125 ppb Bifenthrin	7.95	0.11	4	0.01	0.02	4	0.000	0.000	4
HTW + 0.25 ppb Bifenthrin	7.86	0.24	4	0.01	0.02	4	0.000	0.000	4
HTW + 0.5 ppb Bifenthrin	7.85	0.29	4	0.01	0.02	4	0.000	0.000	4
HTW + 1.0 ppb Bifenthrin	7.88	0.33	4	0.01	0.02	4	0.000	0.000	4
HTW + 2.0 ppb Bifenthrin	7.86	0.32	4	0.01	0.02	4	0.000	0.000	4

1. The matrix tested was water from the UC Davis Smelt Hatchery, Tracy, CA (Turbidity: 0.64 NTU, Hardness: 164 mg/L, Alkalinity: 58 mg/L).

Table F2-1. Results of a *H. transpacificus* (Delta Smelt) 7-day test initiated 7/08/09 evaluating the toxicity of ammonia. Test animals were 47 days old at test initiation.

Treatment	Mean Measured Ammonia (mg/L)		96-hr Survival (%)		7-day Survival (%)	
	Total Ammonia Nitrogen	Unionized Ammonia	Mean	SE	Mean	SE
Filtered Hatchery Water @ 900 uS/cm	0.1	0.002	67.5	13.1	15.0	8.7
2.5 ppm Ammonium Chloride	1.9	0.032	75.0	18.9	22.5	7.5
5 ppm Ammonium Chloride	3.7	0.064	80.0	9.1	22.5	4.8
10 ppm Ammonium Chloride	7.1	0.099	61.1	3.2	2.5	2.5
20 ppm Ammonium Chloride	14.4	0.191	27.5	8.5	0.0	0.0
40 ppm Ammonium Chloride	29.0	0.333	0.0	0.0	0.0	0.0
80 ppm Ammonium Chloride	57.8	0.645	0.0	0.0	0.0	0.0

1. The 96-hour endpoint was analyzed using USEPA standard multiple concentration statistical protocols.

Table F2-2. Nominal and measured 96-h effect concentrations of ammonia in a *H. transpacificus* test initiated on 7/08/09.

Analyte	NOEC	LOEC	96-hour LC10		96-hour LC50	
			Estimate	95% C.I.	Estimate	95% C.I.
Nominal NH_4Cl (mg/L)	20	40	7.44	< 2.5 - 13.25	16.45	11.35 - 25.57
Measured Ammonia Nitrogen (mg/L)	14.4	29.0	5.38	< 1.9 - 9.38	11.81	8.09 - 18.47
Measured Unionized Ammonia (mg/L)	0.191	0.333	0.084	< 0.002 - 0.127	0.164	0.119 - 0.239

Table F2-3. Water chemistry during a 7-day *H. transpacificus* toxicity test initiated on 7/8/09 examining the toxicity of esfenvalerate and permethrin.

Treatment	Temp (ºC)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Filtered Hatchery Water @ 900 uS/cm	17.3	0.5	8	758	-	1	8.9	0.7	8
2.5 ppm Ammonium Chloride	17.2	0.6	8	777	-	1	8.8	0.9	8
5 ppm Ammonium Chloride	17.3	0.8	7	792	-	1	8.8	0.7	8
10 ppm Ammonium Chloride	17.2	0.4	8	820	-	1	8.8	0.9	8
20 ppm Ammonium Chloride	17.1	0.5	7	882	-	1	9.0	0.7	7
40 ppm Ammonium Chloride	17.0	0.2	4	1017	-	1	9.3	0.6	4
80 ppm Ammonium Chloride	16.9	0.0	2	1264	-	1	9.4	0.1	2

Treatment	pH			Ammonia Nitrogen (mg/L)			Un-ionized Ammonia (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Filtered Hatchery Water @ 900 uS/cm	7.84	0.18	8	0.09	0.06	8	0.002	0.001	8
2.5 ppm Ammonium Chloride	7.76	0.19	8	1.88	0.08	8	0.032	0.013	8
5 ppm Ammonium Chloride	7.75	0.19	8	3.74	0.13	8	0.064	0.027	8
10 ppm Ammonium Chloride	7.67	0.16	8	7.08	0.72	8	0.099	0.040	8
20 ppm Ammonium Chloride	7.66	0.13	7	14.43	0.49	7	0.191	0.056	7
40 ppm Ammonium Chloride	7.61	0.11	4	28.95	2.22	4	0.333	0.100	4
80 ppm Ammonium Chloride	7.62	0.04	2	57.80	4.81	2	0.645	0.105	2

1. The matrix tested was water from the UC Davis Smelt Hatchery, Tracy, CA (Hardness: 100 mg/L, Alkalinity: 66 mg/L).

Table F-2-4. Results of a larval delta smelt LC50 test initiated 6/24/09 evaluating the toxicity of ammonium-chloride. Test animals were 51 days old at test initiation.

Treatment	Measured Mean Values		96-hr Survival (%)	
	Total Ammonia/um (mg/L)	Un-ionized Ammonia (mg/L)	Mean	SE
Filtered Hatchery Water @ 900 uS/cm	0.1	0.001	67.5	14.9
2.5 ppm Ammonia/um	1.8	0.028	57.5	21.7
5 ppm Ammonia/um	3.2	0.050	60.0	16.8
10 ppm Ammonia/um	7.1	0.091	72.5	2.5
20 ppm Ammonia/um	16.3	0.189	12.5	7.5
40 ppm Ammonia/um	32.3	0.281	0.0	0.0
80 ppm Ammonia/um	66.0	0.420	0.0	0.0
Hatchery Water no antibiotics	0.1	0.001	50.0	10.8
10 ppm Ammonia/um no antibiotics	6.8	0.088	42.5	12.5
20 ppm Ammonia/um no antiobiotics	16.0	0.173	15.0	5.0

Table F-2-5. Effect concentrations for 4 d exposures of 51-d old delta smelt larvae to ammonium-chloride.

Point Estimate	Nominal Total Ammonia/um (mg/L)		Measured Total Ammonia/um (mg/L)		Un-ionized Ammonia (mg/L)	
	Estimate	95% C.I.	Estimate	95% C.I.	Estimate	95% C.I.
96-hr Survival LC10	10.37	< 2.5 - 11.54	7.46	< 1.8 - 8.49	0.096	< 0.001 - 0.111
96-hr Survival LC25	11.93	< 2.5 - 13.63	8.83	< 1.8 - 10.35	0.115	< 0.001 - 0.134
96-hr Survival LC50	15.03	9.18 - 18.84	11.63	6.36 - 15.2	0.147	0.085 - 0.181
96-hr NOEC	10	-	7.14	-	0.091	-
96-hr LOEC	20	-	16.31	-	0.189	-

Table F-2-6. Water quality parameters measured during the 4-day test initiated 6/24/09 with 51-d old delta smelt.

Treatment	Temp (^oC)			DO (mg/L)			pH			EC (uS/cm)	SC (uS/cm)
	Mean	SD	N	Mean	SD	N	Mean	SD	N		
Filtered Hatchery Water @ 900 uS/cm	17.8	1.5	5	9.1	0.6	5	7.70	0.12	5	767	924
2.5 ppm Ammonia/um	18.1	1.7	5	9.2	0.7	5	7.70	0.14	5	782	956
5 ppm Ammonia/um	17.8	1.6	5	9.0	0.8	5	7.68	0.16	5	791	944
10 ppm Ammonia/um	17.7	1.2	5	8.8	1.1	5	7.60	0.18	5	832	1006
20 ppm Ammonia/um	17.7	1.2	5	9.0	0.9	5	7.58	0.10	5	898	1075
40 ppm Ammonia/um	17.1	1.0	2	8.5	1.0	2	7.49	0.08	2	1007	1204
80 ppm Ammonia/um	16.7	1.1	2	8.8	0.8	2	7.38	0.06	2	1247	1508
Filtered Hatchery Water no antibiotics	17.6	1.3	5	8.5	0.9	5	7.70	0.25	5	726	880
10 ppm Ammonia/um no antibiotics	17.7	0.9	5	8.6	0.8	5	7.62	0.15	5	816	970
20 ppm Ammonia/um no antibiotics	17.6	1.1	5	8.6	0.8	5	7.55	0.12	5	870	1047

Treatment	Ammonia Nitrogen (mg/L)			Unionized Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Turbidity (NTU)
	Mean	SD	N	Mean	SD	N			
Filtered Hatchery Water @ 900 uS/cm	0.09	0.06	5	0.001	0.001	5	100	79	0.74
2.5 ppm Ammonia/um	1.81	0.09	5	0.028	0.008	5	-	-	-
5 ppm Ammonia/um	3.18	0.90	5	0.050	0.026	5	-	-	-
10 ppm Ammonia/um	7.14	1.12	5	0.091	0.049	5	-	-	-
20 ppm Ammonia/um	16.31	2.21	5	0.189	0.064	5	-	-	-
40 ppm Ammonia/um	32.26	6.70	2	0.281	0.091	2	-	-	-
80 ppm Ammonia/um	65.96	11.37	2	0.420	0.098	2	-	-	-
Filtered Hatchery Water, no antibiotics	0.09	0.08	5	0.001	0.001	5	-	-	-
10 ppm Ammonia/um, no antibiotics	6.85	0.86	5	0.088	0.034	5	-	-	-
20 ppm Ammonia/um, no antibiotics	16.01	2.32	5	0.173	0.062	5	-	-	-

Table F3-1. Results of a 96-hour acute *H. transpacificus* test initiated on 4/07/10 examining the toxicity of esfenvalerate and permethrin.

Treatment	Measured Pesticide (ppb)	96-hour Survival (%)[1]	
		Mean	SE
Hatchery Tap Water (HTW)	-	95	3
HTW Solvent Control	ND / ND	100	0
HTW + 0.075 ppb Esfenvalerate	0.030	93	5
HTW + 0.150 ppb Esfenvalerate	0.051	93	3
HTW + 0.300 ppb Esfenvalerate	0.135	43	8
HTW + 0.600 ppb Esfenvalerate	0.261	0	0
HTW + 1.200 ppb Esfenvalerate	0.628	0	0
Hatchery Tap Water (HTW)	-	98	3
HTW + 1.25 ppb Permethrin	-	98	3
HTW + 2.5 ppb Permethrin	1.374	100	0
HTW + 5.0 ppb Permethrin	2.557	88	3
HTW + 10.0 ppb Permethrin	4.84	35	10
HTW + 20.0 ppb Permethrin	12.88	3	3
HTW + 40.0 ppb Permethrin	24.94	0	0

1. Highlighted cells indicate significantly reduced survival relative to the solvent control. Data were analyzed using USEPA standard single concentration statistical protocols.

Table F3-2. Isomers of permethrin detected in a 96-hour acute *H. transpacificus* test initiated on 4/07/10.

Treatment	Measured Concentration (ppb)
HTW + 2.5 ppb Permethrin	1.374 (0.520 cis, 0.854 trans)
HTW + 5.0 ppb Permethrin	2.557 (0.987 cis, 1.57 trans)
HTW + 10.0 ppb Permethrin	4.84 (1.89 cis, 2.95 trans)
HTW + 20.0 ppb Permethrin	12.88 (4.87 cis, 8.01 trans)
HTW + 40.0 ppb Permethrin	24.94 (9.54 cis, 15.4 trans)

Table F3-3. Nominal 96-hour effect concentrations of esfenvalerate and permethrin in a *H. transpacificus* test initiated on 4/07/10.

Pesticide	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Esfenfvalerate (ppb)	96-hr Survival	0.150	0.300	0.165	0.144 - 0.180	0.280	0.228 - 0.366	13.8%
Permethrin (ppb)	96-hr Survival	5	10	4.695	3.127 - 5.417	8.295	6.658 - 11.220	12.2%

Table F3-4. Measured 96-hour effect concentrations of esfenvalerate and permethrin in a *H. transpacificus* test initiated on 4/07/10.

Pesticide	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Esfenfvalerate (ppb)	96-hr Survival	0.051	0.135	0.054	0 - 0.058	0.117	0.088 - 0.159	11.3%
Permethrin (ppb)	96-hr Survival	2.557	4.84	2.373	1.783 - 2.825	4.065	3.427 - 5.497	12.5%

Table F3-5. Water chemistry during a 96-hour acute *H. transpacificus* toxicity test initiated on 4/7/10 examining the toxicity of esfenvalerate and permethrin.

Treatment	Temp (°C)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Hatchery Tap Water (HTW)	15.5	0.2	4	749	18	2	9.6	0.3	4
HTW Solvent Control	15.4	0.3	4	751	21	2	9.3	0.4	4
HTW + 0.075 ppb Esfenvalerate	15.5	0.3	4	737	40	2	9.2	0.7	4
HTW + 0.150 ppb Esfenvalerate	15.5	0.3	4	747	23	2	9.4	0.4	4
HTW + 0.300 ppb Esfenvalerate	15.5	0.3	4	739	18	2	9.2	0.5	4
HTW + 0.600 ppb Esfenvalerate	15.4	0.3	4	743	33	2	9.2	0.5	4
HTW + 1.200 ppb Esfenvalerate	15.3	0.3	3	743	31	2	9.5	0.3	3
Hatchery Tap Water (HTW)	15.5	0.4	4	742	28	2	9.6	0.2	4
HTW + 1.25 ppb Permethrin	15.5	0.3	4	748	32	2	9.4	0.3	4
HTW + 2.5 ppb Permethrin	15.4	0.2	4	746	35	2	9.3	0.5	4
HTW + 5.0 ppb Permethrin	15.4	0.3	4	744	33	2	9.4	0.6	4
HTW + 10.0 ppb Permethrin	15.4	0.2	4	741	32	2	9.3	0.5	4
HTW + 20.0 ppb Permethrin	15.5	0.2	4	738	41	2	9.2	0.5	4
HTW + 40.0 ppb Permethrin	15.4	0.3	3	740	38	2	9.6	0.3	3

Treatment	pH			Ammonia Nitrogen (mg/L)			Un-ionized Ammonia (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Hatchery Tap Water (HTW)	8.06	0.10	4	0.11	0.07	3	0.004	0.003	3
HTW Solvent Control	8.00	0.10	4	0.01	0.01	2	0.000	0.000	2
HTW + 0.075 ppb Esfenvalerate	8.02	0.13	4	0.00	0.00	2	0.000	0.000	2
HTW + 0.150 ppb Esfenvalerate	8.02	0.11	4	0.01	0.01	2	0.000	0.000	2
HTW + 0.300 ppb Esfenvalerate	8.01	0.12	4	0.00	0.00	2	0.000	0.000	2
HTW + 0.600 ppb Esfenvalerate	8.01	0.12	4	0.00	-	1	0.000	-	1
HTW + 1.200 ppb Esfenvalerate	8.08	0.11	3	0.00	-	1	0.000	-	1
Hatchery Tap Water (HTW)	8.08	0.10	4	0.11	0.15	2	0.003	0.005	2
HTW + 1.25 ppb Permethrin	8.02	0.13	4	0.00	0.00	2	0.000	0.000	2
HTW + 2.5 ppb Permethrin	8.08	0.14	4	0.01	0.01	2	0.000	0.000	2
HTW + 5.0 ppb Permethrin	8.03	0.12	4	0.00	0.00	2	0.000	0.000	2
HTW + 10.0 ppb Permethrin	8.02	0.13	4	0.00	0.00	2	0.000	0.000	2
HTW + 20.0 ppb Permethrin	8.02	0.13	4	0.00	-	1	0.000	-	1
HTW + 40.0 ppb Permethrin	8.07	0.12	3	0.00	-	1	0.000	-	1

1. The matrix tested was water from the UC Davis Smelt Hatchery, Tracy, CA (Hardness: 164 mg/L, Alkalinity: 92 mg/L).

Table F4-1. Results of a 96-hour acute *H. transpacificus* test initiated on 5/05/10 examining the toxicity of chlorpyrifos.

Treatment	Measured Chlorpyrifos (ppb)	96-hour Survival (%)[1]	
		Mean	SE
Hatchery Tap Water (HTW)	-	95	3
HTW Solvent Control	ND	88	5
HTW + 6.25 ppb Chlorpyrifos	-	92	5
HTW + 12.5 ppb Chlorpyrifos	8.25	90	4
HTW + 25 ppb Chlorpyrifos	14.8	77	5
HTW + 50 ppb Chlorpyrifos	25.2	47	8
HTW + 100 ppb Chlorpyrifos	66.4	28	5
HTW + 200 ppb Chlorpyrifos	156	8	3
HTW + 400 ppb Chlorpyrifos	-	18	8

1. Highlighted cells indicate significantly reduced survival relative to the solvent control. Data were analyzed using USEPA standard single concentration statistical protocols.

Table F4-2. Nominal and measured 96-hour effect concentrations of chlorpyrifos (ppb) in a *H. transpacificus* test initiated on 5/05/10.

Endpoint	NOEC	LOEC	LC10		LC50		PMSD
			Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Chlorpyrifos (ppb)	25	50	13.8	< 6.25 - 38.8	54.7	34.5 - 86.4	21.3%
Measured Chlorpyrifos (ppb)	14.8	25.2	12.8	7.7 - 17.9	27.7	19.0 - 51.2	18.4%

Table F4-3. Water chemistry during a 96-hour acute *H. transpacificus* toxicity test initiated on 5/05/10 examining the toxicity of chlorpyrifos.

Treatment	Temp (°C)			EC (uS/cm)			DO (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Hatchery Tap Water (HTW)	16.4	0.2	4	750	-	1	9.0	0.7	3
HTW Solvent Control	16.4	0.2	4	747	-	1	9.3	0.8	4
HTW + 6.25 ppb Chlorpyrifos	16.4	0.2	4	751	-	1	9.3	0.7	4
HTW + 12.5 ppb Chlorpyrifos	16.4	0.4	4	747	-	1	9.3	0.8	4
HTW + 25 ppb Chlorpyrifos	16.3	0.3	4	742	-	1	9.3	0.7	4
HTW + 50 ppb Chlorpyrifos	16.3	0.2	4	741	-	1	9.3	0.8	4
HTW + 100 ppb Chlorpyrifos	16.3	0.2	4	742	-	1	9.3	0.7	4
HTW + 200 ppb Chlorpyrifos	16.4	0.2	4	744	-	1	9.3	0.8	4
HTW + 400 ppb Chlorpyrifos	16.2	0.1	4	741	-	1	9.3	0.8	4

Treatment	pH			Ammonia Nitrogen (mg/L)			Un-ionized Ammonia (mg/L)		
	Mean	SD	*N*	Mean	SD	*N*	Mean	SD	*N*
Hatchery Tap Water (HTW)	8.17	0.07	4	0.16	0.10	3	0.006	0.003	3
HTW Solvent Control	8.17	0.08	4	0.12	0.16	3	0.004	0.005	3
HTW + 6.25 ppb Chlorpyrifos	8.15	0.08	4	0.13	0.16	3	0.004	0.005	3
HTW + 12.5 ppb Chlorpyrifos	8.15	0.07	4	0.14	0.11	3	0.005	0.003	3
HTW + 25 ppb Chlorpyrifos	8.15	0.08	4	0.12	0.10	3	0.004	0.003	3
HTW + 50 ppb Chlorpyrifos	8.14	0.08	4	0.09	0.11	3	0.003	0.003	3
HTW + 100 ppb Chlorpyrifos	8.16	0.07	4	0.14	0.09	3	0.005	0.003	3
HTW + 200 ppb Chlorpyrifos	8.15	0.08	4	0.07	0.03	3	0.002	0.001	3
HTW + 400 ppb Chlorpyrifos	8.13	0.07	4	0.12	0.07	3	0.004	0.002	3

1. The matrix tested was water from the UC Davis Smelt Hatchery, Tracy, CA (Hardness: 144 mg/L, Alkalinity: 70 mg/L).

Appendix G

P. promelas:

Tests to Determine Effect Concentrations for Select Contaminants

Table G 1-1. Results of a *P. promelas* 7-day test initiated 8/7/08 evaluating the toxicity of copper chloride spiked into laboratory control water and water collected from the UC Davis Smelt Hatchery in Byron, CA.

Treatment	Measured Cu (ppb) *		96 h Survival (%)[1]		7-day Survival (%)[1]		Weight (mg/individual)[1]	
	Total	Dissolved	Mean	SE	Mean	SE	Mean	SE
DIEPAMH	-	-	97.5	2.5	97.5	2.5	0.488	0.021
DIEPAMH @ 900 uS/cm (D900)	-	-	100.0	0.0	100.0	0.0	0.531	0.040
D900 + 15.6 ppb Copper	15.5	14.9	100.0	0.0	100.0	0.0	0.593	0.016
D900 + 31.3 ppb Copper	32.2	31.7	100.0	0.0	100.0	0.0	0.573	0.058
D900 + 62.5 ppb Copper	67.1	60.6	82.5	2.5	67.5	7.5	0.390	0.016
D900 + 125 ppb Copper	129.9	123.3	32.5	6.3	17.5	7.5	0.284	0.086
D900 + 250 ppb Copper	257.9	236.3	0.0	0.0	0.0	0.0	-	-
Hatchery Water @ 900 uS/cm (HW)	2.07	1.72	100.0	0.0	100.0	0.0	0.615	0.035
HW + 15.6 ppb Copper	17.6	16.6	100.0	0.0	100.0	0.0	0.549	0.010
HW + 31.3 ppb Copper	34.3	33.4	100.0	0.0	100.0	0.0	0.512	0.013
HW + 62.5 ppb Copper	69.2	62.3	100.0	0.0	100.0	0.0	0.625	0.029
HW + 125 ppb Copper	132	125	90.0	4.1	75.0	6.5	0.419	0.015
HW + 250 ppb Copper	260	238	35.0	2.9	5.0	2.9	0.380	0.050

*: Copper measurements in DIEPAMH were calculated by subtracting the copper concentrations found in the hatchery water control from the copper concentrations measured in each treatment of the hatchery water dilution series.

1. Highlighted cells indicate significantly reduced survival relative to the solvent control. Data were analyzed using USEPA standard statistical protocols.

Table G 1-2. 96-h and 7-day effect concentrations of copper in a *P. promelas* test initiated on 8/07/08.

Analyte	Endpoint	Matrix	Copper (ppb)					
			NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal Copper (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	31.3	62.5	47	43 - 66	99	87 - 113
		Hatchery Water @ 900 uS/cm	125	250	125	74 - 142	207	180 - 239
	7-day Survival	DIEPAMH @ 900 uS/cm	31.3	62.5	38.9	35 - 48	80.1	70 - 91
		Hatchery Water @ 900 uS/cm	62.5	125	83	72 - 109	154	138 - 172
	7-day Weight	DIEPAMH @ 900 uS/cm	62.5	125	39.7	16 - 44	56.6	48 - 76
		Hatchery Water @ 900 uS/cm	62.5	125	62.36	< 15.6 - 93.4	102	71.1 - 174
Measured Total Copper (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	32.2	67.1	49	45 - 63	103	92 - 122
		Hatchery Water @ 900 uS/cm	132	260	132	81 - 150	216	188 - 248
	7-day Survival	DIEPAMH @ 900 uS/cm	32.2	67.1	40	36 - 50	85	67 - 103
		Hatchery Water @ 900 uS/cm	69.2	132	90	79 - 117	162	146 - 180
	7-day Weight	DIEPAMH @ 900 uS/cm	67.1	129.9	41	12 - 45	58	41 - 75
		Hatchery Water @ 900 uS/cm	69.2	132	72.14	< 17.6 - 100.7	109	78.1 - 182
Measured Dissolved Copper (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	31.7	60.6	46	43 - 58	96	85 - 115
		Hatchery Water @ 900 uS/cm	125	238	125	74 - 141	200	175 - 228
	7-day Survival	DIEPAMH @ 900 uS/cm	31.7	60.6	39	35 - 47	78	60 - 96
		Hatchery Water @ 900 uS/cm	62.3	125	82	72 - 109	151	136 - 168
	7-day Weight	DIEPAMH @ 900 uS/cm	60.6	123.3	39	12 - 42	53	40 - 67
		Hatchery Water @ 900 uS/cm	62.3	125	62.2	< 1.72 - 238	101.9	70.9 - 171.4

Table G 1-3. Water chemistry during a *P. promelas* 7-day test initiated 8/7/08 evaluating the toxicity of copper chloride spiked into laboratory control water and water collected from the UC Davis Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH				
DIEPAMH	285	24.0	25.3	6.5	8.3	7.64	8.12	84	64	0.00	0.000
DIEPAMH @ 900 uS/cm (D900)	846	24.0	25.5	6.6	8.6	7.56	8.00	128	62	0.00	0.000
D900 + 15.6 ppb Copper	856	24.0	25.4	6.8	8.3	7.60	8.01	-	-	-	-
D900 + 31.3 ppb Copper	842	23.9	25.5	6.4	8.4	7.55	8.04	-	-	-	-
D900 + 62.5 ppb Copper	856	23.9	25.6	6.2	8.4	7.52	8.01	-	-	-	-
D900 + 125 ppb Copper	859	23.9	25.5	6.3	8.4	7.56	7.96	-	-	-	-
D900 + 250 ppb Copper	862	23.9	25.2	7.3	8.2	7.77	7.92	-	-	-	-
Hatchery Water @ 900 uS/cm (HW)	859	23.8	25.6	6.4	8.5	7.60	8.01	120	70	0.05	0.002
HW + 15.6 ppb Copper	857	24.0	25.6	6.5	8.4	7.61	8.07	-	-	-	-
HW + 31.3 ppb Copper	871	23.8	25.6	6.5	8.4	7.61	8.04	-	-	-	-
HW + 62.5 ppb Copper	873	24.0	25.6	6.5	8.4	7.63	8.02	-	-	-	-
HW + 125 ppb Copper	859	23.9	25.7	6.1	8.3	7.57	8.05	-	-	-	-
HW + 250 ppb Copper	859	23.9	25.6	6.7	8.4	7.70	8.09	-	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table G 2-1. Results of a *P. promelas* 7-day test initiated 8/19/2008 evaluating the toxicity of chlorpyrifos in laboratory control water and water collected from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Measured Chlorpyrifos (ppb)	96-h Survival (%)[1]		7-day Survival (%)[1]		Weight (mg/individual)[1]	
		Mean	SE	Mean	SE	Mean	SE
DIEPAMH	-	100.0	0.0	97.5	2.5	0.400	0.003
DIEPAMH @ 900 uS/cm (D900)	-	100.0	0.0	100.0	0.0	0.462	0.015
D900 Solvent Control	-	100.0	0.0	100.0	0.0	0.443	0.005
D900 + 25 ppb Chlorpyrifos	-	100.0	0.0	100.0	0.0	0.380	0.028
D900 + 50 ppb Chlorpyrifos	-	100.0	0.0	100.0	0.0	0.369	0.023
D900 + 100 ppb Chlorpyrifos	-	100.0	0.0	97.5	2.5	0.314	0.023
D900 + 200 ppb Chlorpyrifos	-	95.0	2.9	90.0	4.1	0.199	0.012
D900 + 400 ppb Chlorpyrifos	-	72.5	2.5	35.0	8.7	0.204	0.098
Hatchery Water @ 900 uS/cm (HW)	-	97.5	2.5	100.0	0.0	0.450	0.019
HW Solvent Control	-	100.0	0.0	100.0	0.0	0.471	0.044
HW + 25 ppb Chlorpyrifos	21.4	100.0	0.0	100.0	0.0	0.417	0.022
HW + 50 ppb Chlorpyrifos	43.2	100.0	0.0	97.5	2.9	0.386	0.026
HW + 100 ppb Chlorpyrifos	82.4	95.0	5.0	95.0	2.5	0.324	0.033
HW + 200 ppb Chlorpyrifos	144	95.0	2.9	77.5	0.0	0.224	0.034
HW + 400 ppb Chlorpyrifos	311	50.0	10.8	27.5	0.0	0.174	0.015

1. Highlighted cells indicate significantly reduced survival relative to the solvent control. Data were analyzed using USEPA standard statistical protocols.

Table G 2-2. 96-h and 7-day effect concentrations of chlorpyrifos in a *P. promelas* test initiated on 8/19/08.

Analyte	Endpoint	Matrix	Chlorpyrifos (ppb)					
			NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal Chlorpyrifos (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	200	400	233	180 - 272	>400	NA
		Hatchery Water @ 900 uS/cm	200	400	219	189 - 244	>400	NA
	7-day Survival	DIEPAMH @ 900 uS/cm	200	400	196	109 - 227	331.0	272 - 442
		Hatchery Water @ 900 uS/cm	200	400	128	53 -253	295.4	258 - 338
	7-day Weight	DIEPAMH @ 900 uS/cm	50	100	8.8	0.4 - 78.4	79.1	39.5 - 133.4
		Hatchery Water @ 900 uS/cm	50	100	32.6	< 25 - 82.8	85.7	32 - 151
Measured Chlorpyrifos (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	144	311	170	128 - 204	> 311	NA
		Hatchery Water @ 900 uS/cm	144	311	159	137 - 180	> 311	NA
	7-day Survival	DIEPAMH @ 900 uS/cm	144	311	141	90 - 165	252	202 - 347
		Hatchery Water @ 900 uS/cm	144	311	100	48 - 170	222.1	172 - 299
	7-day Weight	DIEPAMH @ 900 uS/cm	43.2	82.4	7.8	0.5 - 67.4	66	35 - 106
		Hatchery Water @ 900 uS/cm	43.2	82.4	28	< 21.4 - 70.2	144	91 - 267

Table G 2-3. Water chemistry data taken during a *P. promelas* 7-day test initiated 8/19/08 comparing the toxicity of chlorpyrifos between laboratory control water and water from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH				
DIEPAMH	319	23.6	25.3	7.1	8.3	7.84	8.22	84	58	0.00	0.000
DIEPAMH @ 900 uS/cm (D900)	891	23.5	25.4	7.2	8.3	7.76	8.17	128	60	0.00	0.000
D900 solvent control	903	23.5	25.4	5.9	8.5	7.51	8.11	-	-	-	-
D900 + 25 ppb Chlorpyrifos	902	23.7	25.6	7.2	8.3	7.70	8.14	-	-	-	-
D900 + 50 ppb Chlorpyrifos	894	23.5	25.7	6.5	8.3	7.70	8.14	-	-	-	-
D900 + 100 ppb Chlorpyrifos	885	23.5	25.6	6.2	8.3	7.65	8.16	-	-	-	-
D900 + 200 ppb Chlorpyrifos	882	23.5	25.6	4.9	8.1	7.51	8.66	-	-	-	-
D900 + 400 ppb Chlorpyrifos	888	23.4	25.8	5.0	8.4	7.51	8.15	-	-	-	-
Hatchery Water @ 900 uS/cm (HW)	886	23.5	25.6	7.1	8.1	7.84	8.04	124	72	0.06	0.003
HW Solvent Control	877	23.6	25.8	4.2	8.4	7.31	8.02	-	-	-	-
HW + 25 ppb Chlorpyrifos	885	23.5	25.8	6.7	8.0	7.77	8.02	-	-	-	-
HW + 50 ppb Chlorpyrifos	874	23.6	25.8	6.6	8.2	7.83	8.04	-	-	-	-
HW + 100 ppb Chlorpyrifos	872	23.5	25.9	6.7	8.1	7.71	8.00	-	-	-	-
HW + 200 ppb Chlorpyrifos	875	23.5	26.1	4.2	8.2	7.52	8.03	-	-	-	-
HW + 400 ppb Chlorpyrifos	882	23.5	25.9	3.8	8.3	7.47	7.99	-	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured upon sample receipt and upon the water chemistry measured at test initiation.

Table G 3-1. Results of a *P. promelas* 7-day test initiated 8/19/2008 evaluating the toxicity of esfenvalerate between laboratory control water and water collected from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Measured Esfenvalerate (ppb)	96-h Survival (%)		7-day Survival (%)		Weight (mg/individual)	
		Mean	SE	Mean	SE	Mean	SE
DIEPAMH	-	100.0	0.0	97.5	2.5	0.465	0.014
DIEPAMH @ 900 uS/cm (D900)	-	100.0	0.0	100.0	0.0	0.411	0.033
D900 solvent control	-	100.0	0.0	100.0	0.0	0.400	0.019
D900 + 0.0625 ppb Esfenvalerate	-	100.0	0.0	100.0	0.0	0.454	0.018
D900 +0.125 ppb Esfenvalerate	-	100.0	0.0	100.0	0.0	0.452	0.028
D900 + 0.250 ppb Esfenvalerate	-	97.5	2.5	97.5	2.5	0.453	0.008
D900 + 0.500 ppb Esfenvalerate	-	100.0	0.0	100.0	0.0	0.512	0.024
D900 +1.000 ppb Esfenvalerate	-	22.5	2.5	5.0	2.9	0.505	0.175
Hatchery Water @ 900 uS/cm (HW)	-	100.0	0.0	100.0	0.0	0.462	0.010
HW Solvent Control	ND	100.0	0.0	97.5	2.5	0.383	0.031
HW + 0.0625 ppb Esfenvalerate	0.049	100.0	0.0	100.0	0.0	0.469	0.018
HW + 0.125 ppb Esfenvalerate	0.150	97.5	2.5	97.5	2.5	0.417	0.025
HW + 0.250 ppb Esfenvalerate	0.208	97.5	2.5	95.0	2.9	0.446	0.025
HW + 0.500 ppb Esfenvalerate	0.500	95.0	2.9	95.0	2.9	0.433	0.034
HW + 1.000 ppb Esfenvalerate	0.920	0.0	0.0	0.0	0.0	-	-

1. Highlighted cells indicate significantly reduced survival relative to the solvent control. Data were analyzed using USEPA standard statistical protocols.

Table G 3-2. 96-h and 7-day effect concentrations of esfenvalerate in a *P. promelas* test initiated on 8/19/08.

Analyte	Endpoint	Matrix	Esfenvalerate (ppb)					
			NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal Esfenvalerate (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	0.500	1.000	0.54	0.52 - 0.55	0.78	0.76 - 0.81
		Hatchery Water @ 900 uS/cm	0.500	1.000	0.52	0.49 - 0.54	0.69	0.67 - 0.71
	7-day Survival	DIEPAMH @ 900 uS/cm	0.500	1.000	0.54	0.52 - 0.54	0.72	0.70 - 0.75
		Hatchery Water @ 900 uS/cm	0.500	1.000	0.52	0.49 - 0.53	0.69	0.67 - 0.71
	7-day Weight	DIEPAMH @ 900 uS/cm	1.000	> 1.000	> 1.000	-	> 1.000	-
		Hatchery Water @ 900 uS/cm	0.500	> 0.500	> 0.500	-	> 0.500	-
Measured Esfenvalerate (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	0.500	0.920	0.54	0.52 - 0.55	0.74	0.72 - 0.76
		Hatchery Water @ 900 uS/cm	0.500	0.920	0.52	0.49 - 0.54	0.67	0.65 - 0.68
	7-day Survival	DIEPAMH @ 900 uS/cm	0.500	0.920	0.53	0.52 - 0.54	0.69	0.67 - 0.71
		Hatchery Water @ 900 uS/cm	0.500	0.920	0.52	0.49 - 0.53	0.67	0.65 - 0.68
	7-day Weight	DIEPAMH @ 900 uS/cm	0.500	0.920	> 0.92	-	> 0.92	-
		Hatchery Water @ 900 uS/cm	0.500	> 0.500	> 0.50	-	> 0.50	-

Table G 3-3. Water chemistry data taken during a *P. promelas* 7-day test initiated 8/19/08 comparing the toxicity of esfenvalerate between laboratory control water and water from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH				
DIEPAMH	293	23.7	26.0	7.1	8.3	7.87	8.15	84	58	0.00	0.000
DIEPAMH @ 900 uS/cm (D900)	879	23.5	26.0	7.3	8.3	7.85	8.11	128	60	0.00	0.000
D900 solvent control	861	23.5	25.8	6.1	8.4	7.67	8.14	-	-	-	-
D900 + 0.0625 ppb Esfenvalerate	884	23.5	25.8	7.1	8.4	7.81	8.13	-	-	-	-
D900 +0.125 ppb Esfenvalerate	878	23.5	25.9	6.0	8.4	7.55	8.15	-	-	-	-
D900 + 0.250 ppb Esfenvalerate	877	23.5	25.9	5.7	8.4	7.61	8.13	-	-	-	-
D900 + 0.500 ppb Esfenvalerate	881	23.5	25.9	4.8	8.4	7.49	8.15	-	-	-	-
D900 +1.000 ppb Esfenvalerate	889	23.5	25.9	5.6	8.4	7.58	8.14	-	-	-	-
Hatchery Water @ 900 uS/cm (HW)	877	23.5	25.9	7.0	8.0	7.87	8.04	124	72	0.06	0.003
HW Solvent Control	884	23.5	25.9	3.8	8.4	7.39	8.00	-	-	-	-
HW + 0.0625 ppb Esfenvalerate	880	23.5	25.9	6.6	8.2	7.85	8.02	-	-	-	-
HW + 0.125 ppb Esfenvalerate	881	23.5	25.9	6.3	8.2	7.09	7.99	-	-	-	-
HW + 0.250 ppb Esfenvalerate	893	23.5	25.9	5.3	8.2	7.56	8.02	-	-	-	-
HW + 0.500 ppb Esfenvalerate	872	23.5	25.9	4.4	8.3	7.46	8.00	-	-	-	-
HW + 1.000 ppb Esfenvalerate	871	23.5	25.7	2.7	8.2	7.29	7.96	-	-	-	-

1: This unionized ammonia reading is based on the ammonia nitrogen measured throughout the duration of the test and upon the water chemistry measured at test initiation.

Table G 4-1. Results of a *P. promelas* 7-day test initiated 9/17/2008 evaluating the toxicity of ammonia chloride spiked into laboratory control water and water collected from the UC Davis Smelt Hatchery in Byron, CA.

Treatment	Measured Ammonia (ppm)		96-h Survival (%)		7-day Survival (%)		Weight (mg/individual)	
	Ammonia Nitrogen	Unionized Ammonia	Mean	SE	Mean	SE	Mean	SE
DIEPAMH	0.0	0.000	100.0	0.0	100.0	0.0	0.420	0.014
DIEPAMH @ 900 uS/cm (D900)	0.0	0.000	100.0	0.0	100.0	0.0	0.431	0.017
D900 + 5 ppm Ammonia	3.5	0.142	100.0	0.0	100.0	0.0	0.441	0.018
D900 + 10 ppm Ammonia	7.3	0.286	100.0	0.0	100.0	0.0	0.432	0.011
D900 + 20 ppm Ammonia	15.0	0.518	100.0	0.0	100.0	0.0	0.460	0.025
D900 + 40 ppm Ammonia	30.8	1.004	45.0	15.5	45.0	15.5	0.420	0.069
D900 + 80 ppm Ammonia	65.2	2.212	0.0	0.0	0.0	0.0	-	-
Hatchery Water @ 900 uS/cm (HW)	0.0	0.001	100.0	0.0	100.0	0.0	0.434	0.018
HW + 5 ppm Ammonia	3.9	0.160	100.0	0.0	100.0	0.0	0.419	0.023
HW + 10 ppm Ammonia	7.7	0.331	100.0	0.0	100.0	0.0	0.412	0.034
HW + 20 ppm Ammonia	15.2	0.629	97.5	2.5	97.5	2.5	0.392	0.017
HW + 40 ppm Ammonia	29.8	1.121	0.0	0.0	0.0	0.0	-	-
HW + 80 ppm Ammonia	60.8	1.697	0.0	0.0	0.0	0.0	-	-

1. Highlighted cells indicate significantly reduced survival relative to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

Table G 4-2. 96-h and 7-day effect concentrations of ammonia in a *P. promelas* test initiated on 9/17/08.

Analyte	Endpoint	Matrix	Ammonia (ppm)					
			NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal Ammonia	96-hr Survival	DIEPAMH @ 900 uS/cm	20	40	22.7	21 - 28	37.6	28 - 57
		Hatchery Water @ 900 uS/cm	20	40	21.1	20 - 22	27.8	27 - 29
	7-day Survival	DIEPAMH @ 900 uS/cm	20	40	22.7	21 - 28	37.6	28 - 57
		Hatchery Water @ 900 uS/cm	20	40	21.1	20 - 22	27.8	27 - 29
	7-day Weight	DIEPAMH @ 900 uS/cm	40	> 40	> 40	NA	> 40	NA
		Hatchery Water @ 900 uS/cm	20	> 20	> 20	NA	> 20	NA
Measured Ammonia Nitrogen	96-hr Survival	DIEPAMH @ 900 uS/cm	15	30.8	17.1	16 - 21	28.9	22 - 45
		Hatchery Water @ 900 uS/cm	15.2	29.8	16	15 - 16	20.9	20 - 21
	7-day Survival	DIEPAMH @ 900 uS/cm	15	30.8	17.1	16 - 21	28.9	22 - 45
		Hatchery Water @ 900 uS/cm	15.2	29.8	16	15 - 16	20.9	20 - 21
	7-day Weight	DIEPAMH @ 900 uS/cm	30.8	> 30.8	> 30.8	NA	> 30.8	NA
		Hatchery Water @ 900 uS/cm	15.2	> 15.2	> 15.2	NA	> 15.2	NA
Measured Unionized Ammonia	96-hr Survival	DIEPAMH @ 900 uS/cm	0.518	1.004	0.597	0.56 - 0.73	0.954	0.75 - 1.54
		Hatchery Water @ 900 uS/cm	0.629	1.121	0.662	0.63 - 0.68	0.853	0.83 - 0.86
	7-day Survival	DIEPAMH @ 900 uS/cm	0.518	1.004	0.597	0.56 - 0.73	0.954	0.75 - 1.54
		Hatchery Water @ 900 uS/cm	0.629	1.121	0.662	0.63 - 0.68	0.853	0.83 - 0.86
	7-day Weight	DIEPAMH @ 900 uS/cm	1.004	> 1.004	> 1.004	NA	> 1.004	NA
		Hatchery Water @ 900 uS/cm	0.629	> 0.629	> 0.629	NA	> 0.629	NA

Table G 4-3. Water chemistry data taken during a *P. promelas* 7-day test initiated 9/17/08 comparing the toxicity of Ammonia between laboratory control water and water from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH				
DIEPAMH	281	23.6	24.3	7.0	8.5	7.69	8.14	88	60	0.00	0.000
DIEPAMH @ 900 uS/cm (D900)	873	23.5	24.3	6.9	8.5	7.64	8.35	132	60	0.00	0.000
D900 + 5 ppm Ammonia	874	23.4	24.4	6.8	8.5	7.66	7.95	-	-	3.54	0.142
D900 + 10 ppm Ammonia	890	23.8	24.5	7.0	8.6	7.66	7.94	-	-	7.28	0.286
D900 + 20 ppm Ammonia	895	23.6	24.3	6.9	8.5	7.62	7.89	-	-	14.96	0.518
D900 + 40 ppm Ammonia	1142	23.8	24.5	7.2	8.6	7.51	7.85	-	-	30.80	1.004
D900 + 80 ppm Ammonia	1470	23.9	25.0	7.2	8.6	7.66	7.86	-	-	65.20	2.212
Hatchery Water @ 900 uS/cm (HW)	857	23.4	24.4	7.0	8.2	7.77	7.96	128	76	0.03	0.001
HW + 5 ppm Ammonia	857	23.6	24.4	7.0	8.4	7.76	7.96	-	-	3.92	0.160
HW + 10 ppm Ammonia	901	23.6	24.4	7.0	8.3	7.74	7.98	-	-	7.68	0.331
HW + 20 ppm Ammonia	975	23.7	24.4	7.0	8.5	7.67	7.96	-	-	15.20	0.629
HW + 40 ppm Ammonia	1170	23.9	25.0	7.0	8.4	7.78	7.90	-	-	29.80	1.121
HW + 80 ppm Ammonia	1421	24.4	24.4	8.3	8.3	7.79	7.79	-	-	60.80	1.697

1: This unionized ammonia reading is based on the ammonia nitrogen measured throughout the duration of the test and upon the water chemistry measured at test initiation.

Table G 5-1. Results of a *P. promelas* 7-day test initiated 9/24/2008 comparing the toxicity of bifenthrin between laboratory control water and water collected from the UC Davis Smelt Hatchery in Byron, CA.

Treatment	Measured Bifenthrin (ppb)	96-hr Survival (%)		7-day Survival (%)		Weight (mg/individual)	
		Mean	SE	Mean	SE	Mean	SE
DIEPAMH (TAC Control)	-	100.0	0.0	100.0	0.0	0.417	0.011
DIEPAMH @ 900 mS/cm	-	100.0	0.0	100.0	0.0	0.412	0.045
DIEPAMH @ 900 mS/cm Solvent Control	-	100.0	0.0	100.0	0.0	0.434	0.017
DIEPAMH @ 900 uS/cm w/ 0.625 ppb Bifenthrin	-	100.0	0.0	97.5	2.5	0.458	0.032
DIEPAMH @ 900 uS/cm w/ 1.25 ppb Bifenthrin	-	90.0	5.8	82.5	6.3	0.418	0.051
DIEPAMH @ 900 uS/cm w/ 2.5 ppb Bifenthrin	-	35.0	10.4	12.5	6.3	0.576	0.105
DIEPAMH @ 900 uS/cm w/ 5 ppb Bifenthrin	-	2.5	2.5	0.0	0.0	-	-
DIEPAMH @ 900 uS/cm w/ 10 ppb Bifenthrin	-	0.0	0.0	0.0	0.0	-	-
Hatchery Water	-	97.5	2.5	97.5	2.5	0.444	0.022
Hatchery Water Solvent Control	0	100.0	0.0	100.0	0.0	0.474	0.004
Hatchery Water w/ 0.625 ppb Bifenthrin	0.400	92.5	2.5	92.5	2.5	0.414	0.022
Hatchery Water w/ 1.25 ppb Bifenthrin	0.700	65.0	15.0	55.0	11.9	0.670	0.066
Hatchery Water w/ 2.5 ppb Bifenthrin	1.40	22.5	14.4	7.5	7.5	0.743	-
Hatchery Water w/ 5 ppb Bifenthrin	2.86	0.0	0.0	0.0	0.0	-	-
Hatchery Water w/ 10 ppb Bifenthrin	5.00	0.0	0.0	0.0	0.0	-	-

1. Highlighted cells indicate significantly reduced survival relative to the solvent control. Data were analyzed using USEPA standard statistical protocols.

Table G 5-2. 96-h and 7-day effect concentrations of bifenthrin in a *P. promelas* test initiated on 9/24/08.

Analyte	Endpoint	Matrix	Bifenthrin (ppb)					
			NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal Bifenthrin	96-hr Survival	DIEPAMH @ 900 uS/cm	1.25	2.5	1.25	0.71 - 1.49	2.10	1.70 - 3.02
		Hatchery Water @ 900 uS/cm	0.625	1.25	0.72	0.57 - 1.16	1.66	0.73 - 2.70
	7-day Survival	DIEPAMH @ 900 uS/cm	1.25	2.5	0.91	0.63 - 1.45	1.76	1.58 - 2.04
		Hatchery Water @ 900 uS/cm	0.625	1.25	0.69	0.58 - 0.91	1.39	0.84 - 1.83
	7-day Weight	DIEPAMH @ 900 uS/cm	2.5	> 2.5	> 2.5	-	> 2.5	-
		Hatchery Water @ 900 uS/cm	1.25	> 1.25	> 1.25	-	> 1.25	-
Measured Bifenthrin	96-hr Survival	DIEPAMH @ 900 uS/cm	0.7	1.4	0.70	0.45 - 0.84	1.19	0.94 - 1.53
		Hatchery Water @ 900 uS/cm	0.4	0.7	0.42	0.39 - 0.53	0.92	0.43 - 1.50
	7-day Survival	DIEPAMH @ 900 uS/cm	0.7	1.4	0.54	0.43 - 0.82	1.00	0.87 - 1.12
		Hatchery Water @ 900 uS/cm	0.4	0.7	0.42	0.39 - 0.48	0.76	0.50 - 1.03
	7-day Weight	DIEPAMH @ 900 uS/cm	1.4	>1.4	> 1.4	-	> 1.4	-
		Hatchery Water @ 900 uS/cm	1.4	>1.4	> 1.4	-	> 1.4	-

Table G 5-3. Water chemistry data taken during a *P. promelas* 7-day test initiated 9/24/08 comparing the toxicity of Bifenthrin between laboratory control water and water from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry						
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMH	276	23.5	24.4	7.6	8.2	7.86	8.11
DIEPAMH @ 900 uS/cm (D900)	870	23.9	24.5	7.3	8.3	7.77	8.02
D900 solvent control	868	23.9	24.3	6.2	8.3	7.50	8.03
D900 + 0.625 ppb Bifenthrin	874	23.8	24.5	6.9	8.6	7.71	7.99
D900 + 1.25 ppb Bifenthrin	862	23.6	24.5	6.2	8.4	7.64	8.03
D900 + 2.5 ppb Bifenthrin	856	23.7	24.6	5.7	8.3	7.57	8.05
D900 + 5 ppb Bifenthrin	865	24.0	24.4	5.7	8.5	7.58	8.09
D900 + 10 ppb Bifenthrin	863	24.1	24.5	5.7	8.5	7.58	8.02
Hatchery Water @ 900 uS/cm (HW)	878	24.0	24.5	7.4	8.4	7.83	8.04
HW Solvent Control	872	23.7	24.7	4.4	8.6	7.47	8.00
HW + 0.625 ppb Bifenthrin	882	24.0	24.7	7.1	8.5	7.80	8.04
HW + 1.25 ppb Bifenthrin	884	24.0	24.5	5.9	8.5	7.66	8.05
HW + 2.5 ppb Bifenthrin	877	24.2	24.5	5.9	8.6	7.62	8.06
HW + 5 ppb Bifenthrin	873	24.4	24.6	4.8	8.4	7.57	8.04
HW + 10 ppb Bifenthrin	880	24.3	24.5	3.9	8.2	7.44	8.05

Table G 6-1. Results of a *P. promelas* 7-day test initiated 7/07/09 evaluating the toxicity of cyfluthrin in laboratory control water and in water collected from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Measured Cyfluthrin (ppb)	96-hr Survival (%)[1]		7 Day Survival (%)[1]		Weight (mg/individual)[1]	
		Mean	SE	Mean	SE	Mean	SE
DIEPAMH	-	100.0	0.0	100.0	0.0	0.561	0.019
DIEPAMH @ 900 uS/cm (D900)	-	97.5	2.5	97.5	2.5	0.666	0.034
D900 Solvent Control	-	100.0	0.0	97.5	2.5	0.621	0.037
D900 + 0.125 ppb Cyfluthrin	-	100.0	0.0	97.5	2.5	0.739	0.033
D900 + 0.250 ppb Cyfluthrin	-	100.0	0.0	100.0	0.0	0.649	0.025
D900 + 0.500 ppb Cyfluthrin	-	100.0	0.0	100.0	0.0	0.683	0.009
D900 + 1.000 ppb Cyfluthrin	-	97.5	2.5	87.5	4.8	0.705	0.016
D900 + 2.000 ppb Cyfluthrin	-	2.5	2.5	0.0	0.0	-	-
Hatchery Water @ 900 uS/cm (HW)	-	97.5	2.5	97.5	2.5	0.739	0.037
HW Solvent Control	ND	100.0	0.0	95.0	2.9	0.585	0.041
HW + 0.125 ppb Cyfluthrin	0.076	100.0	0.0	100.0	0.0	0.632	0.031
HW + 0.250 ppb Cyfluthrin	0.129	97.5	2.5	97.5	2.5	0.691	0.004
HW + 0.500 ppb Cyfluthrin	0.200	100.0	0.0	100.0	0.0	0.647	0.020
HW + 1.000 ppb Cyfluthrin	0.645	95.0	2.9	95.0	2.9	0.668	0.068
HW + 2.000 ppb Cyfluthrin	1.110	0.0	0.0	0.0	0.0	-	-

1. Highlighted areas indicate significant reduction in survival or biomass compared to the DIEPAMH control. Data were analyzed using USEPA standard statistical protocols.

Table G 6-2. Nominal and measured 96-h and 7-day effect concentrations of cyfluthrin in a *P. promelas* test initiated on 7/07/09.

Analyte	Endpoint	Matrix	NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal Cyfluthrin (ppb)	96-hour Survival	DIEPAMHR @ 900 uS/cm	1.00	2.00	1.06	1.00 - 1.09	1.41	1.37 - 1.48
		Hatchery Water	1.00	2.00	1.04	0.98 - 1.09	1.39	1.35 - 1.43
	7-day Survival	DIEPAMHR @ 900 uS/cm	1.00	2.00	0.92	0.59 - 1.14	1.35	1.27 - 1.43
		Hatchery Water	1.00	2.00	1.05	0.99 - 1.09	1.40	1.36 - 1.42
	Weight	DIEPAMHR @ 900 uS/cm	1.00	> 1.00	> 1.00	NA	> 1.00	NA
		Hatchery Water	1.00	> 1.00	> 1.00	NA	> 1.00	NA
Measured Cyfluthrin (ppb)	96-hour Survival	DIEPAMHR @ 900 uS/cm	0.645	1.11	0.67	0.64 - 0.69	0.85	0.83 - 0.88
		Hatchery Water	0.645	1.11	0.66	0.63 - 0.69	0.83	0.81 - 0.85
	7-day Survival	DIEPAMHR @ 900 uS/cm	0.645	1.11	0.56	0.25 - 0.74	0.82	0.77 - 0.85
		Hatchery Water	0.645	1.11	0.67	0.64 - 0.69	0.84	0.82 - 0.85
	Weight	DIEPAMHR @ 900 uS/cm	0.645	> 0.645	> 0.645	-	> 0.645	-
		Hatchery Water	0.645	> 0.645	> 0.645	-	> 0.645	-

Table G 6-3. Water chemistry data taken during a *P. promelas* 7-day test initiated 7/07/09 evaluating the toxicity of Cyfluthrin in laboratory control water and in water collected from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry						
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMH	285	23.6	24.6	7.5	8.6	7.61	8.04
DIEPAMH @ 900 uS/cm (D900)	887	23.5	24.7	7.3	8.5	7.78	8.14
D900 Solvent Control	880	23.6	24.8	5.8	8.5	7.53	8.19
D900 + 0.125 ppb Cyfluthrin	881	23.6	24.9	6.7	8.6	7.67	8.19
D900 + 0.250 ppb Cyfluthrin	879	23.5	24.9	6.5	8.5	7.61	8.18
D900 + 0.500 ppb Cyfluthrin	884	23.5	24.9	6.0	8.6	7.55	8.19
D900 + 1.000 ppb Cyfluthrin	884	23.6	25.0	5.7	8.6	7.40	8.20
D900 + 2.000 ppb Cyfluthrin	892	23.5	24.5	5.0	8.6	7.44	8.08
Hatchery Water @ 900 uS/cm (HW)	882	23.8	25.1	7.3	8.6	7.78	8.09
HW Solvent Control	883	23.7	25.2	4.3	8.6	7.43	8.11
HW + 0.125 ppb Cyfluthrin	884	23.5	25.0	7.1	8.6	7.79	8.09
HW + 0.250 ppb Cyfluthrin	884	23.5	25.0	6.7	8.6	7.64	8.06
HW + 0.500 ppb Cyfluthrin	880	23.8	25.0	5.0	8.5	7.48	8.07
HW + 1.000 ppb Cyfluthrin	883	23.8	25.1	4.3	8.6	7.44	8.09
HW + 2.000 ppb Cyfluthrin	887	23.9	24.4	4.4	8.6	7.42	8.09

Table G 7-1. Results of a *P. promelas* 7-day test initiated 7/07/09 evaluating the toxicity of permethrin in laboratory control water and in water collected from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Measured Total Permethrin (ppb)	96-hr Survival (%)[1]		7 Day Survival (%)[1]		Weight (mg/individual)[1]	
		Mean	SE	Mean	SE	Mean	SE
DIEPAMH	-	100.0	0.0	100.0	0.0	0.759	0.029
DIEPAMH @ 900 uS/cm (D900)	-	97.5	2.5	97.5	2.5	0.664	0.023
D900 Solvent Control	-	100.0	0.0	97.5	2.5	0.754	0.040
D900 + 2 ppb Permethrin	-	100.0	0.0	100.0	0.0	0.757	0.038
D900 + 4 ppb Permethrin	-	100.0	0.0	97.5	2.5	0.844	0.041
D900 + 8 ppb Permethrin	-	72.5	8.5	62.5	11.1	0.915	0.068
D900 + 16 ppb Permethrin	-	0.0	0.0	0.0	0.0	-	-
D900 + 32 ppb Permethrin	-	0.0	0.0	0.0	0.0	-	-
Hatchery Water @ 900 uS/cm (HW)	-	100.0	0.0	100.0	0.0	0.648	0.117
HW Solvent Control	0.00	100.0	0.0	97.5	2.5	0.710	0.042
HW + 2 ppb Permethrin	0.23	97.5	2.5	97.5	2.5	0.773	0.020
HW + 4 ppb Permethrin	0.49	100.0	0.0	100.0	0.0	0.760	0.070
HW + 8 ppb Permethrin	1.20	92.5	4.8	90.0	4.1	0.797	0.034
HW + 16 ppb Permethrin	2.52	0.0	0.0	0.0	0.0	-	-
HW + 32 ppb Permethrin	4.34	0.0	0.0	0.0	0.0	-	-

1. Highlighted areas indicate significant reduction in survival or weight compared to the solvent control. Data were analyzed using USEPA standard statistical protocols.

Table G 7-2. Nominal 96-h and 7-day effect concentrations of permethrin in a *P. promelas* test initiated on 7/07/09.

Analyte	Endpoint	Matrix	Permethrin (ppb)					
					LC10 / EC10		LC50 / EC25	
			NOEC	LOEC	Estimate	95% C.I.	Estimate	95% C.I.
Nominal Permethrin (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	4	8	5.2	4.5 - 7.3	10	8.2 - 11.2
		Hatchery Water @ 900 uS/cm	8	16	8.2	4.2 - 8.8	11.1	10.3 - 11.5
	7-day Survival	DIEPAMH @ 900 uS/cm	4	8	4.8	4.1 - 5.8	9.3	6.0 - 10.9
		Hatchery Water @ 900 uS/cm	8	16	8.0	4.3 - 8.7	10.9	10.3 - 11.5
	7-day Weight	DIEPAMH @ 900 uS/cm	8	> 8	> 8	NA	> 8	NA
		Hatchery Water @ 900 uS/cm	8	> 8	> 8	NA	> 8	NA
Measured Permethrin (ppb)	96-hr Survival	DIEPAMH @ 900 uS/cm	0.49	1.20	0.717	0.583 - 1.061	1.545	1.215 - 1.744
		Hatchery Water @ 900 uS/cm	1.20	2.52	1.226	0.627 - 1.338	1.73	1.633 - 1.806
	7-day Survival	DIEPAMH @ 900 uS/cm	0.49	1.20	0.640	0.505 - 0.814	1.428	0.848 - 1.702
		Hatchery Water @ 900 uS/cm	1.20	2.52	1.215	0.679 - 1.344	1.723	1.612 - 1.810
	7-day Weight	DIEPAMH @ 900 uS/cm	1.20	> 1.20	> 1.20	-	> 1.20	-
		Hatchery Water @ 900 uS/cm	1.20	> 1.20	> 1.20	-	> 1.20	-

Table G 7-3. Isomers of permethrin detected in a 7-day chronic *P. promelas* test initiated on 7/07/09.

Nominal Concentration (ppb)	Measured Concentration (ppb)
HW Solvent Control	ND
HW + 2 ppb Permethrin	0.230 (0.084 cis, 0.146 trans)
HW + 4 ppb Permethrin	0.494 (0.176 cis, 0.318 trans)
HW + 8 ppb Permethrin	1.198 (0.420 cis, 0.778 trans)
HW + 16 ppb Permethrin	2.524 (0.934 cis, 1.590 trans)
HW + 32 ppb Permethrin	4.340 (1.540 cis, 2.800 trans)

Table G 7-4. Water chemistry data taken during a *P. promelas* 7-day test initiated 7/07/09 evaluating the toxicity of permethrin in laboratory control water and in water collected from the UC Davis Delta Smelt Hatchery in Byron, CA.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)[1]
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH				
DIEPAMH	329	23.5	25.1	6.5	8.4	7.55	8.22	80	56	0.00	0.000
DIEPAMH @ 900 uS/cm (D900)	875	23.6	25.1	6.4	8.3	7.50	8.19	120	64	0.02	0.001
D900 Solvent Control	870	23.6	25.1	3.9	8.5	7.25	8.16	-	-	-	-
D900 + 2 ppb Permethrin	872	23.8	25.1	4.1	8.4	7.28	8.18	-	-	-	-
D900 + 4 ppb Permethrin	869	24.0	25.3	4.0	8.3	7.25	8.39	-	-	-	-
D900 + 8 ppb Permethrin	877	24.1	24.7	3.5	8.5	7.23	7.99	-	-	-	-
D900 + 16 ppb Permethrin	877	24.2	24.7	3.9	8.2	7.25	8.01	-	-	-	-
D900 + 32 ppb Permethrin	875	24.2	24.7	3.9	8.3	7.26	8.02	-	-	-	-
Hatchery Water @ 900 uS/cm (HW)	878	24.0	25.4	6.6	8.6	7.56	8.37	128	66	0.05	0.002
HW Solvent Control	880	24.0	25.3	2.8	8.6	7.25	8.20	-	-	-	-
HW + 2 ppb Permethrin	881	23.8	25.4	6.1	8.5	7.48	8.43	-	-	-	-
HW + 4 ppb Permethrin	879	23.8	25.3	4.2	8.4	7.27	8.12	-	-	-	-
HW + 8 ppb Permethrin	882	24.0	25.5	2.5	8.3	7.23	8.11	-	-	-	-
HW + 16 ppb Permethrin	882	24.3	24.8	1.3	8.2	7.11	8.06	-	-	-	-
HW + 32 ppb Permethrin	880	24.2	24.8	1.3	8.2	7.16	8.05	-	-	-	-

Appendix H

H. azteca:

Tests to Determine Effect Concentrations for Select Contaminants

Table H-1-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/12/08 examining the toxicity of cyfluthrin.

Treatment	Measured Cyfluthrin (pptr)	96-hour Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
		mean	se	mean	se	mean	se
DIEPAMHR (Method Control)		100	0.0	97	2.8	0.060	0.006
DIEPAMHR @ 900 uS/cm (D900)		100	0.0	100	0.0	0.057	0.008
D900 Solvent Control		100	0.0	100	0.0	0.042	0.005
D900 w/ 0.977 pptr Cyfluthrin	0.7	98	2.5	98	2.5	0.040	0.006
D900 w/ 1.953 pptr Cyfluthrin	1.2	100	0.0	100	0.0	0.053	0.005
D900 w/ 3.906 pptr Cyfluthrin[2]	2.2	20	8.2	15	9.6	0.067	0.003
D900 w/ 7.813 pptr Cyfluthrin[2]	3.7	3	2.5	3	2.5	0.080	-
D900 w/ 15.625 pptr Cyfluthrin	12.7	0	0.0	0	0.0	-	-
DIEPAMHR @ 900 uS/cm + 25 ppb PBO		100	0.0	98	2.3	0.059	0.006
D900 Solvent Control + 25 ppb PBO		100	0.0	100	0.0	0.052	0.006
D900 w/ .098 pptr Cyfluthrin + 25 ppb PBO	ND	98	2.5	98	2.5	0.052	0.010
D900 w/ 0.977 pptr Cyfluthrin + 25 ppb PBO		95	5.0	75	6.5	0.048	0.005
D900 w/ 3.906 pptr Cyfluthrin + 25 ppb PBO		0	0.0	0	0.0	-	-
Hatchery Water		100	0.0	100	0.0	0.064	0.004
Hatchery Water Solvent Control		98	2.5	98	2.5	0.073	0.004
Hatchery Water w/ 0.977 pptr Cyfluthrin	0.8	98	2.5	98	2.5	0.050	0.003
Hatchery Water w/ 1.953 pptr Cyfluthrin	1.5	72	6.0	65	8.4	0.057	0.004
Hatchery Water w/ 3.906 pptr Cyfluthrin[2]	3.1	20	5.8	8	2.5	0.187	0.020
Hatchery Water w/ 7.813 pptr Cyfluthrin	6.4	0	0.0	0	0.0	-	-
Hatchery Water w/ 15.625 pptr Cyfluthrin	15.7	0	0.0	0	0.0	-	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
2. These treatments were excluded from analysis of weight effects because of the difficulty of weighing a small number of surviving animals.

Table H-1-2. Nominal 96-h and 10-day effect concentrations of cyfluthrin in a *H. azteca* test initiated on 12/12/08.

Endpoint	Matrix	Cyfluthrin (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	1.953	3.906	2.12	2.04 - 2.21	3.04	2.75 - 3.54
	DIEPAMHR @ 900 + 25 ppb PBO	0.977	3.906	1.07	0.26 - 1.22	2.04	1.77 - 2.16
	Hatchery Water	0.977	1.953	1.30	1.01 - 1.83	2.70	2.25 - 3.17
10-day Survival	DIEPAMHR @ 900 uS/cm	1.953	3.906	2.12	2.05 - 2.20	2.97	2.73 - 3.57
	DIEPAMHR @ 900 + 25 ppb PBO	0.098	0.977	0.34	0.12 - 0.80	1.24	0.95 - 1.63
	Hatchery Water	0.977	1.953	1.22	0.99 - 1.58	2.39	1.95 - 2.83
Weight	DIEPAMHR @ 900 uS/cm	1.953	> 1.953	-	-	-	-
	DIEPAMHR @ 900 + 25 ppb PBO	0.977	> 0.977	-	-	-	-
	Hatchery Water	< 0.977	0.977	0.29	0.16 - 0.66	0.88	0.45 - >3.9

Table H-1-3. Measured 96-h and 10-day effect concentrations of cyfluthrin in a *H. azteca* test initiated on 12/12/08.

Endpoint	Matrix	Cyfluthrin (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	1.2	2.2	1.29	1.25 - 1.34	1.77	1.65 - 2.02
	Hatchery Water	0.8	1.5	1.04	0.82 - 1.41	2.12	1.75 - 2.50
10-day Survival	DIEPAMHR @ 900 uS/cm	1.2	2.2	1.29	1.25 - 1.33	1.74	1.61 - 2.04
	Hatchery Water	0.8	1.5	0.98	0.81 - 1.24	1.86	1.50 - 2.22
Weight	DIEPAMHR @ 900 uS/cm	2.2	3.7	-	-	-	-
	Hatchery Water	3.1	> 3.1	-	-	-	-

Table H-1-4. Summary of water chemistry during a *H. azteca* initial screening toxicity test initiated on 12/12/08 examining the toxicity of cyfluthrin.

Treatment	Laboratory Chemistry						
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMHR (Method Control)	346	20.2	24.6	7.2	8.8	7.72	8.03
DIEPAMHR @ 900 uS/cm (D900)	650	20.2	24.8	7.3	8.5	7.70	7.95
D900 Solvent Control	643	20.5	25.0	5.0	8.2	7.41	8.00
D900 w/ 0.977 pptr Cyfluthrin	919	20.1	24.9	6.9	8.6	7.56	7.92
D900 w/ 1.953 pptr Cyfluthrin	916	19.9	24.8	6.9	8.3	7.69	7.95
D900 w/ 3.906 pptr Cyfluthrin	909	20.3	24.9	7.2	8.6	7.74	7.94
D900 w/ 7.813 pptr Cyfluthrin	890	20.3	24.8	6.6	8.4	7.72	7.94
D900 w/ 15.625 pptr Cyfluthrin	833	21.1	23.3	7.9	8.1	7.92	8.07
DIEPAMHR @ 900 uS/cm + 25 ppb PBO	661	19.9	24.6	6.9	8.3	7.63	8.01
D900 Solvent Control + 25 ppb PBO	660	19.9	24.7	5.0	8.5	7.47	7.98
D900 w/ 0.098 pptr Cyfluthrin + 25 ppb PBO	903	19.9	24.6	7.0	8.5	7.71	7.96
D900 w/ 0.977 pptr Cyfluthrin + 25 ppb PBO	898	19.2	24.7	6.8	8.5	7.78	7.96
D900 w/ 3.906 pptr Cyfluthrin + 25 ppb PBO	836	21.4	23.0	8.0	8.1	7.85	8.04
Hatchery Water	885	20.0	24.4	6.7	8.2	7.96	8.09
Hatchery Water Solvent Control	871	19.9	24.5	3.6	8.2	7.49	8.10
Hatchery Water w/ 0.977 pptr Cyfluthrin	888	20.3	24.5	6.7	8.4	7.89	8.13
Hatchery Water w/ 1.953 pptr Cyfluthrin	894	19.4	24.3	7.0	8.4	7.89	8.14
Hatchery Water w/ 3.906 pptr Cyfluthrin	889	20.3	24.3	7.2	8.5	7.94	8.14
Hatchery Water w/ 7.813 pptr Cyfluthrin	846	21.5	23.6	8.0	8.0	8.06	8.25
Hatchery Water w/ 15.625 pptr Cyfluthrin	845	21.3	23.7	8.0	8.1	8.01	8.24

Table H-2-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 12/30/08 examining the toxicity of diazinon.

Treatment	Measured Diazinon (ppb)	96-hr Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
		mean	se	mean	se	mean	se
DIEPAMHR (Method Control)		100	0.0	93	2.5	0.029	0.009
DIEPAMHR @ 900 uS/cm (D900)		100	0.0	100	0.0	0.047	0.002
D900 w/ 0.05% Methanol Control	ND	100	0.0	100	0.0	0.043	0.006
D900 w/ 0.50 ppb Diazinon	0.408	100	0.0	100	0.0	0.040	0.003
D900 w/ 1.00 ppb Diazinon		100	0.0	100	0.0	0.038	0.004
D900 w/ 2.00 ppb Diazinon	2.10	100	0.0	75	9.5	0.019	0.005
D900 w/ 4.00 ppb Diazinon[2]		58	8.5	13	4.8	0.020	0.005
D900 w/ 8.00 ppb Diazinon	9.40	5	3.1	0	0.0	-	-
DIEPAMHR @ 900 uS/cm + 25 ppb PBO		100	0.0	100	0.0	0.035	0.004
D900 w/ 0.05% Methanol Control + 25 ppb PBO		100	0.0	100	0.0	0.036	0.001
D900 w/ 0.40 ppb Diazinon + 25 ppb PBO		100	0.0	100	0.0	0.051	0.005
D900 w/ 4.00 ppb Diazinon + 25 ppb PBO		100	0.0	100	0.0	0.036	0.007
D900 w/ 8.00 ppb Diazinon + 25 ppb PBO		98	2.5	95	2.9	0.021	0.003
Hatchery Water	0.019	98	2.5	98	2.5	0.037	0.004
Hatchery Water w/ 0.05% Methanol Control	ND	100	0.0	100	0.0	0.045	0.003
Hatchery Water w/ 0.5 ppb Diazinon	0.664	100	0.0	100	0.0	0.049	0.003
Hatchery Water w/ 1.00 ppb Diazinon	1.14	98	2.5	98	2.5	0.039	0.002
Hatchery Water w/ 2.00 ppb Diazinon	2.80	100	0.0	95	2.8	0.033	0.002
Hatchery Water w/ 4.00 ppb Diazinon[2]	5.44	68	13.1	23	2.5	0.013	0.004
Hatchery Water w/ 8.00 ppb Diazinon	11.4	5	2.9	0	0.0	-	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
2. These treatments were excluded from analysis of weight effects because of the difficulty of weighing a small number of surviving animals.

Table H-2-2. Nominal 96-h and 10-day effect concentrations of diazinon in a *H. azteca* test initiated on 12/30/08.

Endpoint	Matrix	NOEC	LOEC	LC10	95% C.I.	LC50	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	2	4	2.21	1.41 - 2.69	4.44	3.30 - 5.47
	DIEPAMHR @ 900 + 25 ppb PBO	8	> 8	> 8	-	> 8	-
	Hatchery Water	2	4	2.41	2.00 - 3.48	4.90	2.79 - 5.81
10-day Survival	DIEPAMHR @ 900 uS/cm	2	4	1.34	1.15 - 2.35	2.67	2.19 - 3.08
	DIEPAMHR @ 900 + 25 ppb PBO	8	> 8	> 8	-	> 8	-
	Hatchery Water	2	4	2.11	1.95 - 2.24	3.12	3.00 - 3.27
Weight	DIEPAMHR @ 900 uS/cm	1	2	0.93	< 0.50 - 1.39	1.27	0.00 - 1.78
	DIEPAMHR @ 900 + 25 ppb PBO	8	> 8	1.91	0.17 - 6.39	4.7	< 0.40 - 6.80
	Hatchery Water	1	2	1.05	0.55 - 2.02	> 2	-

Table H-2-3. Measured 96-h and 10-day effect concentrations of diazinon in a *H. azteca* test initiated on 12/30/08.

Endpoint	Matrix	Diazinon (ppb)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	2.1	5.44	2.68	2.46 - 3.26	5.90	4.50 - 6.95
	Hatchery Water	2.8	5.44	3.41	2.98 - 5.00	6.74	4.18 - 8.21
10-day Survival	DIEPAMHR @ 900 uS/cm	1.14	2.1	1.45	1.30 - 1.86	3.08	2.42 - 3.67
	Hatchery Water	2.8	5.44	3.00	2.79 - 3.12	4.31	4.15 - 4.46
Weight	DIEPAMHR @ 900 uS/cm	1.14	2.1	1.03	< 0.41 - 1.52	1.41	< 0.41 - 1.99
	Hatchery Water	1.14	2.8	0.93	0.59 - 1.57	> 2.8	-

Table H-2-4. Summary of water chemistry during a *H. azteca* toxicity test initiated on 12/30/08 examining the toxicity of diazinon.

Treatment	Laboratory Chemistry						
	EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMHR (Method Control)	314	20.4	24.1	7.3	8.8	7.83	8.24
DIEPAMHR @ 900 uS/cm (D900)	854	20.3	24.0	7.2	8.9	7.71	8.22
D900 w/ 0.05% Methanol Control	852	20.6	24.2	4.1	8.6	7.47	8.13
D900 w/ 0.50 ppb Diazinon	853	20.5	24.1	6.9	8.8	7.68	8.22
D900 w/ 1.00 ppb Diazinon	856	20.5	23.9	7.1	8.8	7.70	8.11
D900 w/ 2.00 ppb Diazinon	855	20.6	24.1	7.0	8.7	7.67	8.17
D900 w/ 4.00 ppb Diazinon	866	20.6	25.1	4.6	8.6	7.51	8.13
D900 w/ 8.00 ppb Diazinon	810	20.5	24.4	5.1	8.6	7.61	8.16
DIEPAMHR @ 900 uS/cm + 25 ppb PBO	869	20.5	23.9	7.6	8.7	7.73	8.15
D900 w/ 0.05% Methanol Control + 25 ppb PBO	867	21.0	24.0	3.2	8.7	7.49	8.17
D900 w/ 0.40 ppb Diazinon + 25 ppb PBO	864	20.7	23.7	7.0	8.6	7.67	8.15
D900 w/ 4.00 ppb Diazinon + 25 ppb PBO	865	20.5	23.5	4.6	8.5	7.56	8.12
D900 w/ 8.00 ppb Diazinon + 25 ppb PBO	867	20.8	23.9	3.4	8.7	7.45	8.19
Hatchery Water	866	19.3	23.5	7.5	8.7	7.97	8.16
Hatchery Water w/ 0.05% Methanol Control	864	20.2	24.0	3.4	8.7	7.53	8.14
Hatchery Water w/ 0.05 ppb Diazinon	872	20.5	23.7	7.5	8.8	7.89	8.16
Hatchery Water w/ 1.00 ppb Diazinon	863	20.7	23.6	7.1	8.7	7.87	8.13
Hatchery Water w/ 2.00 ppb Diazinon	879	20.7	23.4	4.0	8.8	7.57	8.11
Hatchery Water w/ 4.00 ppb Diazinon	867	20.6	23.5	4.0	8.7	7.56	8.16
Hatchery Water w/ 8.00 ppb Diazinon	822	20.4	23.9	3.9	8.6	7.55	8.13

Table H-3-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/14/09 examining the toxicity of bifenthrin.

Treatment	Measured Bifenthrin (pptr)	96-hr Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
		mean	se	mean	se	mean	se
DIEPAMHR (Method Control)		100	0.0	100	0.0	0.062	0.006
DIEPAMHR @ 900 uS/cm (D900)		100	0.0	100	0.0	0.078	0.008
D900 w/ 0.05% Methanol Control	ND	98	2.5	98	2.5	0.069	0.004
D900 w/ 1.0 pptr Bifenthrin	0.6	100	0.0	100	0.0	0.062	0.010
D900 w/ 2.0 pptr Bifenthrin		98	2.5	98	2.5	0.053	0.004
D900 w/ 4 pptr Bifenthrin	2.0	100	0.0	100	0.0	0.045	0.003
D900 w/ 8 pptr Bifenthrin[2]		75	5.0	35	6.5	0.028	0.007
D900 w/ 16 pptr Bifenthrin	8.0	8	4.8	0	0.0	-	-
D900 + 25 ppb PBO		100	0.0	100	0.0	0.068	0.006
D900 w/ 0.05% Methanol Control + 25 ppb PBO		100	0.0	100	0.0	0.071	0.008
D900 w/ 0.1 pptr Bifenthrin + 25 ppb PBO		100	0.0	100	0.0	0.085	0.010
D900 w/ 1.0 pptr Bifenthrin + 25 ppb PBO[3]		100	0.0	97	3.3	0.054	0.011
D900 w/ 4 pptr Bifenthrin + 25 ppb PBO[2]		78	4.8	26	10.8	0.083	0.019
Hatchery Water	ND	100	0.0	100	0.0	0.101	0.004
Hatchery Water w/ 0.05% Methanol Control	ND	100	0.0	100	0.0	0.088	0.005
Hatchery Water w/ 1 pptr Bifenthrin	ND	100	0.0	100	0.0	0.089	0.010
Hatchery Water w/ 2 pptr Bifenthrin	ND	100	0.0	100	0.0	0.055	0.010
Hatchery Water w/ 4 pptr Bifenthrin	1.0	100	0.0	98	2.5	0.050	0.002
Hatchery Water w/ 8 pptr Bifenthrin[2]	3.0	90	4.1	33	19.2	0.055	0.016
Hatchery Water w/ 16 pptr Bifenthrin[4]	6.0	13	6.3	3	2.5	0.090	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

2. These treatments were excluded from analysis of weight effects because of the difficulty of weighing a small number of surviving animals.

3. This treatment was excluded from analysis of significant differences in survival between treatments because one replicate was missing, and the remaining three replicates did not give sufficient statistical power to detect differences by USEPA methods.

4. This treatment was excluded from analysis of weight because surviving animals were found in only one replicate.

Table H-3-2. Nominal 96-h and 10-day effect concentrations of bifenthrin in a *H. azteca* test initiated on 1/14/09.

Endpoint	Matrix	Bifenthrin (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	4	8	5.38	4.56 - 6.27	9.01	9.01 - 11.35
	DIEPAMHR @ 900 + 25 ppb PBO	0.1	4	2.13	1.47 - 4.94	> 4.0	-
	Hatchery Water	8	16	7.87	5.29 - 8.69	11.48	10.57 - 13.28
10-day Survival	DIEPAMHR @ 900 uS/cm	4	8	4.48	4.28 - 4.59	6.88	6.09 - 8.00
	DIEPAMHR @ 900 + 25 ppb PBO	0.1	4	1.18	0.89 - 1.39	2.65	2.03 - 4.61
	Hatchery Water	4	8	4.36	3.98 - 4.99	6.73	5.31 - 11.75
Weight	DIEPAMHR @ 900 uS/cm	2	4	0.86	< 1.0 - 2.25	2.18	< 1.0 - 4.25
	DIEPAMHR @ 900 + 25 ppb PBO	1	> 1	0.33	-	0.77	0.27 - > 4.0
	Hatchery Water	1	2	0.78	< 1.0 - 1.47	1.33	0.50 - 2.05

Table H-3-3. Measured 96-h and 10-day effect concentrations of bifenthrin in a *H. azteca* test initiated on 1/14/09.

Endpoint	Matrix	Bifenthrin (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	2	3	2.4	2.2 - 2.6	3.9	3.4 - 4.3
	Hatchery Water	3	6	2.9	1.4 - 3.4	4.3	4.0 - 4.9
10-day Survival	DIEPAMHR @ 900 uS/cm	2	3	2.1	2.1 - 2.2	2.7	2.5 - 3.0
	Hatchery Water	1	3	1.2	1.0 - 1.6	2.3	1.6 - 4.5
Weight	DIEPAMHR @ 900 uS/cm	0.6	2	0.5	< 0.6 - 1.2	1.3	< 0.6 - 2.3
	Hatchery Water	< 1	1	0.2	0.1 - 0.2	0.5	0.4 - 0.7

Table H-3-4. Summary of water chemistry during a *H. azteca* test initiated on 1/14/09 examining the toxicity of bifenthrin.

Treatment	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMHR (Method Control)	321	21.8	24.4	7.5	8.6	7.82	8.28
DIEPAMHR @ 900 uS/cm (D900)	846	22.0	24.1	7.6	8.4	7.84	8.16
D900 w/ 0.05% Methanol Control	840	22.0	24.4	4.1	8.6	7.49	8.13
D900 w/ 1 pptr Bifenthrin	856	22.3	24.2	7.6	8.5	7.88	8.11
D900 w/ 2 pptr Bifenthrin	839	22.1	24.5	7.4	8.6	7.81	8.14
D900 w/ 4 pptr Bifenthrin	854	22.2	24.4	7.4	8.6	7.87	8.18
D900 w/ 8 pptr Bifenthrin	841	22.2	24.6	7.7	8.6	7.85	8.18
D900 w/ 16 pptr Bifenthrin	829	22.4	24.4	7.2	8.5	7.82	8.09
Hatchery Water	841	22.3	23.8	7.5	8.7	7.93	8.19
Hatchery Water w/ 0.05% Methanol Control	840	22.3	23.9	3.6	8.7	7.45	8.18
Hatchery Water w/ 1 pptr Bifenthrin	855	22.2	25.5	7.6	8.8	7.92	8.14
Hatchery Water w/ 2 pptr Bifenthrin	853	22.1	24.0	7.6	8.9	5.08	8.20
Hatchery Water w/ 4 pptr Bifenthrin	850	21.9	24.1	7.6	8.7	7.98	8.29
Hatchery Water w/ 8 pptr Bifenthrin	842	22.1	24.0	7.7	8.8	7.92	8.13
Hatchery Water w/ 16 pptr Bifenthrin	839	22.2	24.0	7.5	8.6	7.91	8.15

Table H-4-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/15/08 examining the toxicity of chlorpyrifos.

Treatment	Measured Chlorpyrifos (pptr)	96-hr Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
		mean	se	mean	se	mean	se
DIEPAMHR (Method Control)		100	0.0	100	0.0	0.073	0.005
DIEPAMHR @ 900 uS/cm (D900)		100	0.0	100	0.0	0.089	0.005
D900 w/ 0.05% Methanol Control	ND	100	0.0	100	0.0	0.071	0.004
D900 w/ 31.25 pptr Chlorpyrifos	14	100	0.0	98	2.5	0.080	0.005
D900 w/ 62.5 pptr Chlorpyrifos		98	2.5	98	2.5	0.092	0.006
D900 w/ 125 pptr Chlorpyrifos[2]	128	68	13.1	31	13.1	0.096	0.002
D900 w/ 250 pptr Chlorpyrifos		3	2.5	0	0.0	-	-
D900 w/ 500 pptr Chlorpyrifos	540	0	0.0	0	0.0	-	-
DIEPAMHR @ 900 uS/cm + 25 ppb PBO		98	2.3	98	2.3	0.081	0.005
D900 w/ 0.05% Methanol Control + 25 ppb PBO		100	0.0	100	0.0	0.074	0.010
D900 12.5 pptr Chlorpyrifos + 25 ppb PBO		100	0.0	100	0.0	0.088	0.004
D900 w/ 125 pptr Chlorpyrifos + 25 ppb PBO		75	5.0	75	5.0	0.078	0.004
D900 w/ 500 pptr Chlorpyrifos + 25 ppb PBO		0	0.0	0	0.0	-	-
Hatchery Water	ND	100	0.0	100	0.0	0.102	0.006
Hatchery Water w/ 0.05% Methanol Control	ND	100	0.0	100	0.0	0.097	0.007
Hatchery Water w/ 31.25 pptr Chlorpyrifos	17	100	0.0	100	0.0	0.101	0.007
Hatchery Water w/ 62.5 pptr Chlorpyrifos	66	100	0.0	100	0.0	0.089	0.008
Hatchery Water w/ 125 pptr Chlorpyrifos[2]	133	59	4.2	21	8.2	0.123	0.011
Hatchery Water w/ 250 pptr Chlorpyrifos	252	0	0.0	0	0.0	-	-
Hatchery Water w/ 500 pptr Chlorpyrifos	420	0	0.0	0	0.0	-	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.
2. These treatments were excluded from analysis of weight effects because of the difficulty of weighing a small number of surviving animals.

Table H-4-2. Nominal 96-h and 10-day effect concentrations of chlorpyrifos in a *H. azteca* test initiated on 1/15/09.

Endpoint	Matrix	Chlorpyrifos (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	125	250	75.2	61.4 - 158	152.7	91.2 - 185.8
	DIEPAMHR @ 900 + 25 ppb PBO	12.5	125	32.0	24.7 - 75.0	198.6	178.3 - 235.1
	Hatchery Water	62.5	125	138.8	124.2 - 154.1	138.8	124.2 - 154.1
10-day Survival	DIEPAMHR @ 900 uS/cm	62.5	125	67.6	62.1 - 72.6	102.4	84.3 - 145.6
	DIEPAMHR @ 900 + 25 ppb PBO	12.5	125	32.0	24.7 - 75.0	198.6	178.3 - 235.1
	Hatchery Water	62.5	125	96.7	86.1 - 108.0	101.9	93.2 - 111.4
Weight	DIEPAMHR @ 900 uS/cm	62.5	> 62.5	-	-	-	-
	DIEPAMHR @ 900 + 25 ppb PBO	125	> 125	-	-	-	-
	Hatchery Water	62.5	> 62.5	-	-	-	-

Table H-4-3. Measured 96-h and 10-day effect concentrations of chlorpyrifos in a *H. azteca* test initiated on 1/15/09.

Endpoint	Matrix	Chlorpyrifos (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	66	128	77.9	65.4 - 117.6	153.6	95.7 - 183.3
	Hatchery Water	66	133	78.3	75.4 - 83.4	146.6	131.4 - 161.8
10-day Survival	DIEPAMHR @ 900 uS/cm	66	128	71.1	65.6 - 75.9	105.2	88.2 - 141.7
	Hatchery Water	66	133	72.1	70.5 - 73.8	102.6	91.2 - 114.7
Weight	DIEPAMHR @ 900 uS/cm	14	> 14	-	-	-	-
	Hatchery Water	66	> 66	-	-	-	-

Table H-4-4. Summary of water chemistry during a *H. azteca* 10-day test initiated on 1/15/09 examining the toxicity of chlorpyrifos.

Treatment	EC (uS/cm)	Min Temp (^oC)	Max Temp (^oC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMHR (Method Control)	323	19.9	23.4	7.9	8.7	7.94	8.28
DIEPAMHR @ 900 uS/cm (D900)	845	20.0	23.5	7.9	8.6	7.86	8.19
D900 w/ 0.05% Methanol Control	848	20.4	23.6	4.2	8.5	7.65	8.17
D900 w/ 31.25 pptr Chlorpyrifos	843	20.4	23.8	7.6	8.7	7.78	8.22
D900 w/ 62.5 pptr Chlorpyrifos	853	22.1	23.8	7.2	8.6	7.82	8.17
D900 w/ 125 pptr Chlorpyrifos	863	20.7	23.8	6.8	8.5	7.74	8.22
D900 w/ 250 pptr Chlorpyrifos	818	22.2	23.7	4.9	8.4	7.63	8.10
D900 w/ 500 pptr Chlorpyrifos	882	22.9	23.5	6.8	8.4	7.72	8.06
Hatchery Water	859	21.9	23.5	7.4	8.8	8.02	8.15
Hatchery Water w/ 0.05% Methanol Control	855	22.4	23.3	3.8	8.8	7.58	8.16
Hatchery Water w/ 31.25 pptr Chlorpyrifos	865	21.7	23.6	7.7	8.7	8.02	8.18
Hatchery Water w/ 62.5 pptr Chlorpyrifos	879	22.1	23.6	7.7	8.9	8.02	8.15
Hatchery Water w/ 125 pptr Chlorpyrifos	863.5	21.9	23.7	7.6	8.9	7.93	8.17
Hatchery Water w/ 250 pptr Chlorpyrifos	822	20.8	23.8	6.9	8.8	7.71	8.10
Hatchery Water w/ 500 pptr Chlorpyrifos	877.5	23.1	23.5	4.5	8.5	7.59	8.15

Table H-5-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 1/21/09 examining the toxicity of permethrin in a variety of matrices.

Treatment	Measured Permethrin (pptr)	96-hr Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
		mean	se	mean	se	mean	se
DIEPAMHR (Method Control)		100	0.0	100	0.0	0.054	0.004
DIEPAMHR @ 900 uS/cm (D900)		100	0.0	100	0.0	0.062	0.004
D900 w/ 0.05% Methanol Control	16	100	0.0	100	0.0	0.060	0.005
D900 w/ 6.25 pptr Permethrin	6	100	0.0	98	2.5	0.045	0.003
D900 w/ 12.5 pptr Permethrin		100	0.0	100	0.0	0.041	0.007
D900 w/ 25 pptr Permethrin	19	100	0.0	100	0.0	0.044	0.011
D900 w/ 50 pptr Permethrin		100	0.0	98	2.5	0.051	0.005
D900 w/ 100 pptr Permethrin[2]	90	45	17.1	15	5.0	0.090	0.037
DIEPAMHR @ 900 uS/cm + 25 ppb PBO		98	2.5	98	2.5	0.052	0.012
D900 w/ 0.05% Methanol Control + 25 ppb PBO		100	0.0	100	0.0	0.042	0.005
D900 w/ 0.625 pptr Permethrin + 25 ppb PBO		100	0.0	100	0.0	0.047	0.010
D900 w/ 6.25 pptr Permethrin + 25 ppb PBO		100	0.0	100	0.0	0.035	0.006
D900 w/ 25 pptr Permethrin + 25 ppb PBO[2]		71	5.5	13	4.7	0.125	0.008
Hatchery Water	ND	100	0.0	100	0.0	0.061	0.007
Hatchery Water w/ 0.05% Methanol Control	ND	100	0.0	100	0.0	0.038	0.004
Hatchery Water w/ 6.25 pptr Permethrin	15	100	0.0	100	0.0	0.072	0.007
Hatchery Water w/ 12.5 pptr Permethrin	14	100	0.0	100	0.0	0.062	0.004
Hatchery Water w/ 25 pptr Permethrin	19	100	0.0	94	5.6	0.041	0.008
Hatchery Water w/ 50 pptr Permethrin	40	95	2.9	93	2.5	0.033	0.010
Hatchery Water w/ 100 pptr Permethrin	69	98	2.5	72	6.0	0.038	0.004

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control.

2. These treatments were excluded from analysis of weight effects because of the difficulty of weighing a small number of surviving animals.

Table H-5-2. Nominal 96-h and 10-day effect concentrations of permethrin in a *H. azteca* test initiated on 1/21/09.

Endpoint	Matrix	Permethrin (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	50	100	56.8	53.2 - 66.8	93.9	67.12 - > 100
	DIEPAMHR @ 900 + 25 ppb PBO	6.25	25	10.34	8.31 - 14.01	> 25	-
	Hatchery Water	100	-	> 100	-	>100	-
10-day Survival	DIEPAMHR @ 900 uS/cm	50	100	53.24	50.0 - 55.3	74.6	70.3 - 78.7
	DIEPAMHR @ 900 + 25 ppb PBO	6.25	25	7.4	7.24 - 7.57	14.12	12.71 - 15.69
	Hatchery Water	50	100	54.39	3.31 - 66.72	> 100	-
Weight	DIEPAMHR @ 900 uS/cm	50	> 50	1.30	0.50 - > 100	> 50	-
	DIEPAMHR @ 900 + 25 ppb PBO	6.25	> 6.25	2.35	-	> 6.25	-
	Hatchery Water	100	> 100	16.11	13.63 - 37.16	23.42*	15.38 - 79.28

*: Low weight of solvent control indicates that EC25 estimate may be an artifact of high weights in low concentration treatments.

Table H-5-3. Measured 96-h and 10-day effect concentrations of permethrin in a *H. azteca* test initiated on 1/21/09.

Endpoint	Matrix	Permethrin (pptr)					
		NOEC	LOEC	LC10 / EC10		LC50 / EC25	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	40	90	46.4	43.0 - 56.1	83.6	56.1 - > 90
	Hatchery Water	90	> 90	> 90	-	> 90	-
10-day Survival	DIEPAMHR @ 900 uS/cm	40	90	43.1	40.0 - 45.0	63.9	59.6 - 68.1
	Hatchery Water	40	90	44.1	1.6 - 56.0	> 90	-
Weight	DIEPAMHR @ 900 uS/cm	-	-	-	-	-	-
	Hatchery Water	-	-	-	-	-	-

Note: In this test, weights did not decrease compared to the solvent controls, so any weight decreases relative to the low concentration treatments are probably artifacts and cannot produce reliable estimates of chronic toxicity.

Table H-5-4. Summary of water chemistry during a *H. azteca* 10-day test initiated on 1/21/09 examining the toxicity of permethrin.

Treatment	Laboratory Chemistry						
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH
DIEPAMHR (Method Control)	325	20.2	23.6	8.0	8.6	7.76	8.24
DIEPAMHR @ 900 uS/cm (D900)	821	20.2	23.4	8.2	8.7	7.56	8.40
D900 w/ 0.05% Methanol Control	843	21.0	23.7	4.0	8.8	7.56	8.10
D900 w/ 6.25 pptr Permethrin	831	20.9	23.8	8.0	8.7	7.75	8.13
D900 w/ 12.5 pptr Permethrin	870	21.2	23.7	8.1	8.9	7.78	8.16
D900 w/ 25 pptr Permethrin	836	21.1	23.9	8.0	8.7	7.69	8.20
D900 w/ 50 pptr Permethrin	859	21.2	23.6	7.9	8.8	7.80	8.16
D900 w/ 100 pptr Permethrin	856	21.3	23.8	7.6	8.8	7.71	8.19
Hatchery Water	871	21.8	23.9	7.9	8.9	7.98	8.19
Hatchery Water w/ 0.05% Methanol Control	867	21.3	23.7	3.5	8.7	7.56	8.19
Hatchery Water w/ 6.25 pptr Permethrin	771	21.8	23.9	8.0	8.8	7.98	8.18
Hatchery Water w/ 12.5 pptr Permethrin	881	21.3	23.9	8.0	8.9	7.99	8.15
Hatchery Water w/ 25 pptr Permethrin	857	21.6	23.9	7.7	8.8	7.99	8.18
Hatchery Water w/ 50 pptr Permethrin	864	21.7	23.9	8.0	8.8	7.99	8.14
Hatchery Water w/ 100 pptr Permethrin	861	21.8	24.0	7.9	8.8	7.98	8.18

Table H-6-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/10/09 examining the toxicity of ammonia.

Treatment	Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)	96-hour Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
			Mean	SE	Mean	SE	Mean	SE
DIEPAMHR (Method Control)	0.02	0.001	98	2.5	95	2.9	0.057	0.006
DIEPAMHR @ 900 µS/cm (D900)	0.03	0.002	100	0.0	98	2.5	0.083	0.003
D900 w/ 6.25 mg/L NH_4Cl	4.70	0.236	100	0.0	100	0.0	0.084	0.004
D900 w/ 12.5 mg/L NH_4Cl	9.05	0.368	100	0.0	100	0.0	0.063	0.012
D900 w/ 25 mg/L NH_4Cl	19.0	0.658	97	2.8	92	8.3	0.066	0.004
D900 w/ 50 mg/L NH_4Cl	37.0	1.010	92	5.3	89	4.6	0.046	0.010
D900 w/ 100 mg/L NH_4Cl	78.0	1.512	69	3.6	49	4.3	0.033	0.005
D900 w/ 200 mg/L NH_4Cl	158.4	2.107	23	9.9	0	0.0	-	-
Hatchery Water	0.1	0.007	100	0.0	100	0.0	0.056	0.005
Hatchery Water w/ 6.25 mg/L NH_4Cl	4.85	0.279	100	0.0	100	0.0	0.072	0.010
Hatchery Water w/ 12.5 mg/L NH_4Cl	10.15	0.554	100	0.0	100	0.0	0.055	0.006
Hatchery Water w/ 25 mg/L NH_4Cl	19.4	0.793	100	0.0	98	2.5	0.071	0.004
Hatchery Water w/ 50 mg/L NH_4Cl	39.2	1.378	92	5.3	84	3.1	0.059	0.009
Hatchery Water w/ 100 mg/L NH_4Cl	76.0	1.702	86	5.5	50	9.6	0.034	0.005
Hatchery Water w/ 200 mg/L NH_4Cl[2]	156.8	2.500	44	5.2	11	7.9	0.125	0.045

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.
2. This treatment was excluded from weight dose-response calculations because of a lack of precision in weighing the few surviving test animals.

Table H-6-2. 96-h and 10-day effect concentrations of ammonia in a *H. azteca* test initiated on 4/10/09.

Analyte	Endpoint	Matrix	NOEC	LOEC	LC10 / EC10		LC50 / EC25	
					Estimate	95% C.I.	Estimate	95% C.I.
Nominal NH_4Cl (mg/L)	96-hour Survival	DIEPAMHR @ 900 uS/cm	50	100	52.3	36.6 - 65.5	130.9	108 - 169
		Hatchery Water	100	200	69.5	46.1 - 88.9	192.9	149 - 304
	10-day Survival	DIEPAMHR @ 900 uS/cm	50	100	57.3	40.5 - 69.1	94.3	81 - 108
		Hatchery Water	25	50	41.6	30.3 - 51.4	94.3	80 - 114
	Weight	DIEPAMHR @ 900 uS/cm	25	50	8.5	3.7 - 21.3	26.7	0.2 - 38.4
		Hatchery Water	200	> 200	51.7	< 6.25 - 65.3	67.9	22.9 - 87.5
Measured Ammonia Nitrogen (mg/L)	96-hour Survival	DIEPAMHR @ 900 uS/cm	37.0	78.0	39.4	27.3 - 49.8	102.2	84 - 133
		Hatchery Water	76.0	156.8	53.9	40.0 - 68.9	149.3	115 - 234
	10-day Survival	DIEPAMHR @ 900 uS/cm	37.0	78.0	42.8	29.5 - 52.3	72.9	62 - 84
		Hatchery Water	19.4	39.2	32.3	23.6 - 39.8	72.9	62 - 88
	Weight	DIEPAMHR @ 900 uS/cm	19.0	37.0	6.3	2.9 - 15.7	20.2	< 4.85 - 28.8
		Hatchery Water	156.8	> 156.8	40.5	< 4.85 - 50.6	52.5	18 - 67
Measured Unionized Ammonia (mg/L)	96-hour Survival	DIEPAMHR @ 900 uS/cm	1.010	1.512	1.025	0.823 - 1.168	1.714	1.542 - 1.976
		Hatchery Water	1.702	2.500	1.513	1.231 - 1.697	2.406	2.138 - 2.99
	10-day Survival	DIEPAMHR @ 900 uS/cm	1.010	1.512	1.113	0.904 - 1.238	1.454	1.331 - 1.564
		Hatchery Water	0.793	1.378	1.151	0.947 - 1.291	1.731	1.591 - 1.904
	Weight	DIEPAMHR @ 900 uS/cm	0.658	1.01	0.292	0.180 - 0.587	0.688	0.107 - 0.876
		Hatchery Water	2.500	> 2.500	1.392	< 0.279 - 1.501	1.516	0.954 - 1.64

Table H-6-3. Water chemistry during a 10-day *H. azteca* water column toxicity test initiated on 4/10/09 examining the toxicity of ammonia.

Treatment	Initial EC (uS/cm)	Temp (°C)		DO (mg/L)		pH	
		Min	Max	Min	Max	Min	Max
DIEPAMHR (Method Control)	338	23.1	23.7	5.8	8.7	7.43	8.18
DIEPAMHR @ 900 µS/cm (D900)	881	23.2	23.8	5.6	8.6	7.40	8.17
D900 w/ 6.25 mg/L NH_4Cl	917	23.2	23.8	5.8	8.7	7.41	8.06
D900 w/ 12.5 mg/L NH_4Cl	956	23.2	23.7	6.2	8.8	7.35	7.97
D900 w/ 25 mg/L NH_4Cl	1039	23.2	24.0	6.4	8.7	7.39	7.89
D900 w/ 50 mg/L NH_4Cl	1214	23.2	23.6	6.5	8.7	7.36	7.80
D900 w/ 100 mg/L NH_4Cl	1567	23.1	24.1	6.6	8.9	7.29	7.64
D900 w/ 200 mg/L NH_4Cl	2157	23.9	23.9	6.7	8.6	7.10	7.49
Hatchery Water	883	23.1	23.5	5.5	8.9	7.57	8.19
Hatchery Water w/ 6.25 mg/L NH_4Cl	910	23.3	23.9	6.6	8.4	7.54	8.12
Hatchery Water w/ 12.5 mg/L NH_4Cl	958	23.2	23.8	6.5	8.5	7.55	8.10
Hatchery Water w/ 25 mg/L NH_4Cl	1046	23.4	23.5	6.3	8.7	7.52	7.98
Hatchery Water w/ 50 mg/L NH_4Cl	1213	23.4	23.7	6.6	8.3	7.50	7.91
Hatchery Water w/ 100 mg/L NH_4Cl	1567	23.7	23.9	6.6	8.4	7.39	7.71
Hatchery Water w/ 200 mg/L NH_4Cl	2204	23.5	23.9	6.5	8.6	7.22	7.57

Treatment	Ammonia Nitrogen (mg/L)		Unionized Ammonia (mg/L)		Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Initial	Final	Initial	Final		
DIEPAMHR (Method Control)	0.02	0.71	0.001	0.019	100	56
DIEPAMHR @ 900 µS/cm (D900)	0.03	0.65	0.002	0.010	168	60
D900 w/ 6.25 mg/L NH_4Cl	4.70	1.78	0.236	0.043	-	-
D900 w/ 12.5 mg/L NH_4Cl	9.05	1.79	0.368	0.035	-	-
D900 w/ 25 mg/L NH_4Cl	19.0	1.69	0.658	0.037	-	-
D900 w/ 50 mg/L NH_4Cl	37.0	1.69	1.010	0.030	-	-
D900 w/ 100 mg/L NH_4Cl	78.0	1.67	1.512	0.022	-	-
D900 w/ 200 mg/L NH_4Cl	158.4	-	2.107	-	-	-
Hatchery Water	0.10	0.63	0.007	0.024	148	82
Hatchery Water w/ 6.25 mg/L NH_4Cl	4.85	1.69	0.279	0.063	-	-
Hatchery Water w/ 12.5 mg/L NH_4Cl	10.15	1.66	0.554	0.051	-	-
Hatchery Water w/ 25 mg/L NH_4Cl	19.4	1.55	0.793	0.042	-	-
Hatchery Water w/ 50 mg/L NH_4Cl	39.2	1.67	1.378	0.035	-	-
Hatchery Water w/ 100 mg/L NH_4Cl	76.0	1.74	1.702	0.027	-	-
Hatchery Water w/ 200 mg/L NH_4Cl	156.8	1.60	2.500	0.018	-	-

Table H-7-1. Summary of 10-day *H. azteca* water column toxicity test initiated on 4/10/09 examining the toxicity of copper.

Treatment	Measured Dissolved Copper (ppb)	96-hour Survival (%)[1]		10-day Survival (%)[1]		Weight (mg/surviving individual)[1]	
		Mean	SE	Mean	SE	Mean	SE
DIEPAMHR (Method Control)	-	100	0.0	92	2.6	0.068	0.004
DIEPAMHR @ 900 µS/cm (D900)	ND	100	0.0	100	0.0	0.080	0.003
D900 w/ 125 ppb Copper	122	100	0.0	90	4.1	0.027	0.004
D900 w/ 250 ppb Copper	242	98	2.5	7	7.1	-	-
D900 w/ 500 ppb Copper	491	42	7.8	4	3.6	-	-
D900 w/ 1000 ppb Copper	923	5	3.1	0	0.0	-	-
D900 w/ 2000 ppb Copper	1820	0	0.0	0	0.0	-	-
Hatchery Water	2.80	100	0.0	100	0.0	0.095	0.012
Hatchery Water w/ 125 ppb Copper	124	100	0.0	100	0.0	0.047	0.009
Hatchery Water w/ 250 ppb Copper	-	98	2.5	85	6.5	0.016	0.003
Hatchery Water w/ 500 ppb Copper	504	69	11.2	0	0.0	-	-
Hatchery Water w/ 1000 ppb Copper	-	6	3.6	0	0.0	-	-
Hatchery Water w/ 2000 ppb Copper	1990	0	0.0	0	0.0	-	-

1. Highlighted areas indicate a significant reduction in survival or weight compared to the appropriate control. Data were analyzed using USEPA standard statistical protocols.

Table H-7-2. Nominal 96-h and 10-day effect concentrations of copper in a *H. azteca* test initiated on 4/10/09.

Endpoint	Matrix	Dissolved Copper (ppb)					
		NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	250	500	291	224 - 343	484	422 - 553
	Hatchery Water	500	1000	352	274 - 412	570	500 - 650
10-day Survival	DIEPAMHR @ 900 uS/cm	125	250	125	36 - 140	174	165 - 183
	Hatchery Water	250	500	207	153 - 295	318	293 - 344
Weight	DIEPAMHR @ 900 uS/cm	< 125	125	18	15 - 24	45	38 - 62
	Hatchery Water	< 125	125	24	13 - 57	60	32 - 147

Table H-7-3. Measured 96-h and 10-day effect concentrations of copper in a *H. azteca* test initiated on 4/10/09.

Endpoint	Matrix	Dissolved Copper (ppb)					
		NOEC	LOEC	LC10 / EC10		LC50 (survival) / EC25 (weight)	
				Estimate	95% C.I.	Estimate	95% C.I.
96-hour Survival	DIEPAMHR @ 900 uS/cm	242	491	271	244 - 303	449	377 - 554
	Hatchery Water	504	923	303	230 - 627	613	474 - 737
10-day Survival	DIEPAMHR @ 900 uS/cm	122	242	122	36 - 133	178	165 - 197
	Hatchery Water	242	504	199	152 - 287	343	312 - 369
Weight	DIEPAMHR @ 900 uS/cm	< 122	122	17	15 - 22	44	37 - 57
	Hatchery Water	< 124	124	26	16 - 55	61	36 - 138

Table H-7-4. Water chemistry during a 10-day *H. azteca* water column toxicity test initiated on 4/10/09 examining the toxicity of copper.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)	Total Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)
	EC (uS/cm)	Min Temp (ºC)	Max Temp (ºC)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH				
DIEPAMHR (Method Control)	333	22.7	24.0	7.0	8.8	7.73	8.22	100	56	0.02	0.001
DIEPAMHR @ 900 µS/cm (D900)	873	23.1	23.7	7.8	8.6	7.73	8.21	168	60	0.03	0.002
D900 w/ 125 ppb Copper	873	22.8	24.0	7.6	8.7	7.72	8.12	-	-	-	-
D900 w/ 250 ppb Copper	877	22.6	24.0	7.4	8.9	7.88	8.15	-	-	-	-
D900 w/ 500 ppb Copper	872	22.7	24.3	7.7	9.1	7.84	8.12	-	-	-	-
D900 w/ 1000 ppb Copper	854	23.9	23.9	7.7	8.5	7.80	7.94	-	-	-	-
D900 w/ 2000 ppb Copper	861	23.9	23.9	7.9	8.5	7.76	7.91	-	-	-	-
Hatchery Water	870	22.7	24.0	7.9	9.0	7.61	8.16	148	82	0.10	0.006
Hatchery Water w/ 125 ppb Copper	866	22.8	23.8	7.7	8.9	7.82	8.16	-	-	-	-
Hatchery Water w/ 250 ppb Copper	875	22.9	24.1	7.6	8.8	7.89	8.14	-	-	-	-
Hatchery Water w/ 500 ppb Copper	859	22.7	24.2	7.6	8.9	7.94	8.17	-	-	-	-
Hatchery Water w/ 1000 ppb Copper	868	22.6	24.2	7.9	9.0	7.94	8.08	-	-	-	-
Hatchery Water w/ 2000 ppb Copper	855	24.1	24.1	7.9	8.1	7.96	7.96	-	-	-	-

Appendix I

E. affinis:

Tests to Determine Effect Concentrations for Select Contaminants

Table I 1.1. Results of a *E. affinis* 96-hour toxicity test initiated on 3/03/10 examining the toxicity of copper.

Treatment	Measured Dissolved Copper (µg/L)	24-hour Survival (%)[1]	48-hour Survival (%)[1]	72-hour Survival (%)[1]	96-hour Survival (%)[1]
SSEPAMH @ 500	-	100	100	90	90
SSEPAMH @ 900	ND	100	90	70	70
SS900 + 9.375 µg/L Copper	-	100	100	80	80
SS900 + 18.75 µg/L Copper	15.3	100	90	90	90
SS900 + 37.5 µg/L Copper	34.9	100	100	100	30
SS900 + 75 µg/L Copper	72.6	100	100	80	50
SS900 + 150 µg/L Copper	151	100	90	50	30
SS900 + 300 µg/L Copper	305	80	30	10	0

1. Highlighted cells indicate significantly reduced survival relative to appropriate controls. Data were analyzed using USEPA standard statistical protocols.

Table I 1.2. Nominal and measured effect concentrations of copper (µg/L) in a 96-hour *E. affinis* test initiated on 3/03/10.

Analyte	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Copper (µg/L)	96 hours	150	300	21.6	5.5 - 32.7	75.0	30.2 - 172.3	NA
Measured Copper (µg/L)	96 hours	151	305	18.1	11.3 - 28.5	72.6	27.1 - 174.9	NA

Table I 1.3. Water chemistry during a *E. affinis* 96-hour toxicity test initiated on 3/03/10 examining the toxicity of copper.

Treatment	Temp (°C)		EC (uS/cm)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max		
SS900 + 9.375 µg/L Copper	18.7	21	434	473	8.1	9.5	7.9	8.2	120	72
SS900 + 18.75 µg/L Copper	19	20.9	775	851	8.3	9.3	7.8	8.0	156	60
SS900 + 37.5 µg/L Copper	19.2	20.9	780	847	8.1	9.3	7.9	8.1	-	-
SS900 + 75 µg/L Copper	18.8	21.1	783	856	8.3	9.4	7.8	8.1	-	-
SS900 + 150 µg/L Copper	18.8	21.3	779	857	8.2	9.4	7.8	8.1	-	-
SS900 + 300 µg/L Copper	19.1	21.2	780	852	8.1	9.4	7.8	8.1	-	-
SS900 + 9.375 µg/L Copper	19.2	21.3	786	853	8.3	9.4	7.8	8.1	-	-

Table I 2.1. Results of a *E. affinis* 96-hour toxicity test initiated on 3/09/10 examining the toxicity of ammonia.

Treatment	Measured Ammonia Nitrogen (mg/L)	Measured Unionized Ammonia (mg/L)	24-hour Survival (%)[1]	48-hour Survival (%)[1]	72-hour Survival (%)[1]	96-hour Survival (%)[1]
SSEPAMH @ 500 uS/cm	0.0	0.001	100	100	90	70
SSEPAMH @ 900 uS/cm (SS900)	0.0	0.001	100	100	90	70
SS900 + 3.13 mg/L Ammonia	4.0	0.135	100	100	90	30
SS900 + 6.25 mg/L Ammonia	7.0	0.222	100	100	70	20
SS900 + 12.5 mg/L Ammonia	14.7	0.434	80	20	0	0
SS900 + 25 mg/L Ammonia	28	0.767	20	0	0	0
SS900 + 50 mg/L Ammonia	58	1.312	0	0	0	0
SS900 + 100 mg/L Ammonia	114	1.573	0	0	0	0
SS900 + 200 mg/L Ammonia	232	2.681	0	0	0	0

1. Highlighted cells indicate significantly reduced survival relative to appropriate controls. Data were analyzed using USEPA standard statistical protocols.

Table I 2.2. Effect concentrations of ammonia in a 96-hour *E. affinis* test initiated on 3/09/10.

Ammonia Measurement	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Ammonia Nitrogen (mg/L)	96-hour Survival	6.3	12.5	0.3	0.2 - 3.5	2.5	1.3 - 6.9	NA
Measured Ammonia Nitrogen (mg/L)	96-hour Survival	7.0	14.7	0.3	0.2 - 4.4	3.1	1.5 - 7.8	NA
Measured Unionized Ammonia (mg/L)	96-hour Survival	0.222	0.434	0.023	0.015 - 0.148	0.117	0.076 - 0.250	NA

Table I 2.3. Water chemistry during a *E. affinis* 96-hour toxicity test initiated on 3/09/10 examining the toxicity of copper.

Treatment	Temp (°C)		EC (uS/cm)		DO (mg/L)		pH		Ammonia Nitrogen (mg/L)	Unionized Ammonia (mg/L)	Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max				
SSEPAMH @ 500 uS/cm	19.2	20.7	438	466	7.6	9.2	7.95	8.13	0.0	0.001	120	72
SSEPAMH @ 900 uS/cm (SS900)	19.2	20.5	784	819	7.9	9.5	7.88	8.10	0.0	0.001	156	60
SS900 + 3.13 mg/L Ammonia	19.3	20.9	815	869	8.0	9.5	7.83	8.07	4.0	0.135	-	-
SS900 + 6.25 mg/L Ammonia	19.2	21.0	820	887	7.8	9.5	7.82	8.05	7.0	0.222	-	-
SS900 + 12.5 mg/L Ammonia	19.3	20.8	884	898	8.3	9.5	7.80	8.00	14.7	0.434	-	-
SS900 + 25 mg/L Ammonia	19.4	20.5	980	986	8.4	9.5	7.70	7.93	28.0	0.767	-	-
SS900 + 50 mg/L Ammonia	19.3	20.5	1161	1210	8.6	9.5	7.56	7.85	58.0	1.312	-	-
SS900 + 100 mg/L Ammonia	19.3	20.3	1563	1609	8.5	9.5	7.40	7.71	114.0	1.573	-	-
SS900 + 200 mg/L Ammonia	19.3	20.4	2232	2354	8.6	9.5	7.26	7.58	232.0	2.681	-	-

Table I 3.1. Results of a *E. affinis* 96-hour rangefinding sensitivity test initiated on 3/10/10 examining the toxicity of bifenthrin and cyfluthrin.

Treatment	24-hour Survival (%)[1]	48-hour Survival (%)[1]	72-hour Survival (%)[1]	96-hour Survival (%)[1]
SSEPAMH @ 900 uS/cm, pH 7.9 (SS900)	100	100	75	75
SS900 + 2 pptr Cyfluthrin	100	100	75	50
SS900 + 6 pptr Cyfluthrin	100	100	100	50
SS900 + 18 pptr Cyfluthrin	100	100	50	50
SS900 + 54 pptr Cyfluthrin	50	25	25	25
SS900 + 162 pptr Cyfluthrin	25	25	0	0
SS900 + 486 pptr Cyfluthrin	75	75	0	0
SS900 + 1458 pptr Cyfluthrin	25	0	0	0
SS900 + 4374 pptr Cyfluthrin	0	0	0	0
SS900 + 2 pptr Bifenthrin	100	100	75	50
SS900 + 6 pptr Bifenthrin	100	100	75	75
SS900 + 18 pptr Bifenthrin	100	100	50	50
SS900 + 54 pptr Bifenthrin	100	50	0	0
SS900 + 162 pptr Bifenthrin	100	100	25	25
SS900 + 486 pptr Bifenthrin	25	0	0	0
SS900 + 1458 pptr Bifenthrin	25	0	0	0
SS900 + 4374 pptr Bifenthrin	0	0	0	0

1. Highlighted cells indicate significantly reduced survival relative to the control. Data were analyzed using USEPA standard statistical protocols.

Table I 3.2. Nominal 96-h effect concentrations of cyfluthrin and bifenthrin in a *E. affinis* test initiated on 3/10/10.

Analyte	Endpoint	LC10		LC50	
		Estimate	95% C.I.	Estimate	95% C.I.
Nominal Cyfluthrin (pptr)	96-hr Survival	0.39	0.04 - 37.1	31.30	< 2 - 115.5
Nominal Bifenthrin (pptr)	96-hr Survival	0.93	< 2 - 33.49	26.08	< 2 - 243.6

Table I 3.3. Summary of water chemistry during a *E. affinis* 96-hour rangefinding sensitivity test initiated on 3/10/10 examining the toxicity of bifenthrin and cyfluthrin.

Treatment	Initial EC (uS/cm)	Initial SC (uS/cm)	Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
			Min	Max	Min	Max	Min	Max		
SSEPAMH @ 900 uS/cm, pH 7.9 (SS900)	809	901	19.6	20.8	8.5	8.7	8.0	8.0	126	60
SS900 + 2 pptr Cyfluthrin	815	908	19.6	20.8	8.6	8.6	8.0	8.1	-	-
SS900 + 4374 pptr Cyfluthrin	815	910	19.6	20.7	8.5	8.6	8.0	8.1	-	-
SS900 + 2 pptr Bifenthrin	806	899	19.6	20.9	8.5	8.7	7.9	8.1	-	-
SS900 + 4374 pptr Bifenthrin	811	905	19.6	21.0	8.4	8.6	8.0	8.1	-	-

Table I 4.1. Results of a *E. affinis* 96-hour rangefinding sensitivity test initiated on 3/12/10 examining the toxicity of chlorpyrifos, diazinon and permethrin.

Treatment	24-hour Survival (%)[1]	48-hour Survival (%)[1]	72-hour Survival (%)[1]	96-hour Survival (%)[1]
SSEPAMH @ 900 uS/cm, pH 7.9 (SS900)	100	100	75	75
SS900 + 25 pptr Chlorpyrifos	100	100	75	75
SS900 + 75 pptr Chlorpyrifos	100	100	100	50
SS900 + 225 pptr Chlorpyrifos	100	100	100	75
SS900 + 675 pptr Chlorpyrifos	100	100	75	75
SS900 + 2025 pptr Chlorpyrifos	100	75	25	0
SS900 + 6075 pptr Chlorpyrifos	25	0	0	0
SS900 + 50 pptr Diazinon	75	75	75	75
SS900 + 150 pptr Diazinon	100	100	25	25
SS900 + 450 pptr Diazinon	100	100	100	100
SS900 + 1350 pptr Diazinon	100	75	50	50
SS900 + 4050 pptr Diazinon	100	100	100	75
SS900 + 12150 pptr Diazinon	100	100	50	50
SS900 + 30 pptr Permethrin	100	100	100	75
SS900 + 90 pptr Permethrin	100	100	75	75
SS900 + 270 pptr Permethrin	100	100	100	50
SS900 + 810 pptr Permethrin	100	100	100	25
SS900 + 2430 pptr Permethrin	75	25	0	0
SS900 + 7290 pptr Permethrin	0	0	0	0

1. Highlighted cells indicate significantly reduced survival relative to the control. Data were analyzed using USEPA standard statistical protocols.

Table I 4.2. Nominal 96-h effect concentrations of chlorpyrifos, diazinon and permethrin in a *E. affinis* test initiated on 3/12/10.

Analyte	Endpoint	LC10		LC50	
		Estimate	95% C.I.	Estimate	95% C.I.
Nominal Chlorpyrifos (pptr)	96-hr Survival	67.3	< 25 - 1165	1092	< 25 - 1216
Nominal Diazinon (pptr)	96-hr Survival	No Dose - Response			
Nominal Permethrin (pptr)	96-hr Survival	125.2	< 30 - 673.3	467.8	< 30 - 1731

Table I 4.3. Water chemistry during a *E. affinis* 96-hour rangefinding sensitivity test initiated on 3/12/10 examining the toxicity of chlorpyrifos, diazinon and permethrin.

Treatment	Initial EC (uS/cm)	Initial SC (uS/cm)	Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
			Min	Max	Min	Max	Min	Max		
SSEPAMH @ 900 uS/cm, pH 7.9 (SS900)	796	882	19.2	20.3	8.7	8.7	7.9	8.1	126	60
SS900 + 6075 pptr Chlorpyrifos	788	872	19.0	19.3	8.5	9.0	8.0	8.1	-	-
SS900 + 12150 pptr Diazinon	783	874	19.1	19.6	8.6	8.9	8.0	8.1	-	-
SS900 + 7290 pptr Permethrin	771	852	19.3	19.8	8.7	9.1	8.0	8.1	-	-

Appendix J

C. dubia:

Tests to Determine Effect Concentrations for Select Contaminants

J.1. 96-hour Acute *C. dubia* Toxicity Tests

Table J 1.1. Results of a 96-hour acute *C. dubia* test initiated on 3/02/10 examining the toxicity of cyfluthrin and bifenthrin.

Treatment	24-hour Survival (%)		48-hour Survival (%)[1]		72-hour Survival (%)		96-hour Survival (%)[1]	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
SDEPAMH	100	0	100	0	100	0	100	0
SDEPAMH @ 900	100	0	100	0	100	0	100	0
SD900 Solvent Control	100	0	100	0	100	0	100	0
SD900 + 16.625 pptr Cyfluthrin	100	0	100	0	95	5	70	6
SD900 + 31.25 pptr Cyfluthrin	100	0	100	0	70	13	15	10
SD900 + 62.5 pptr Cyfluthrin	100	0	100	0	11	7	0	0
SD900 + 125 pptr Cyfluthrin	100	0	75	5	0	0	0	0
SD900 + 250 pptr Cyfluthrin	100	0	65	10	0	0	0	0
SD900 + 500 pptr Cyfluthrin	100	0	20	14	0	0	0	0
SD900 + 16.625 pptr Bifenthrin	100	0	100	0	95	5	80	8
SD900 + 31.25 pptr Bifenthrin	100	0	90	6	10	10	0	0
SD900 + 62.5 pptr Bifenthrin	100	0	45	13	0	0	0	0
SD900 + 125 pptr Bifenthrin	100	0	45	5	0	0	0	0
SD900 + 250 pptr Bifenthrin	100	0	0	0	0	0	0	0
SD900 + 500 pptr Bifenthrin	100	0	0	0	0	0	0	0

1. Data were analyzed using USEPA standard multiple concentration statistical protocols.

Table J 1.2. Nominal effect concentrations of cyfluthrin and bifenthrin in a *C. dubia* test initiated on 3/02/10.

Pesticide	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Cyfluthrin (pptr)	48 hours	62.5	125	82.5	74.3 - 92.0	315	211 - 508	21.9%
	96 hours	< 16.625	16.625	1.6	0.7 - 4.2	21.0	17.7 - 25.3	19.7%
Bifenthrin (pptr)	48 hours	31.25	62.5	31.3	17.8 - 38.7	57.9	48.1 - 172	20.5%
	96 hours	< 16.625	16.625	3.2	0.1 - 25.6	21.1	18.2 - 23.3	16.3%

Table J 1.3. Water chemistry during a 96-hour acute *C. dubia* toxicity test initiated on 3/02/10 examining the toxicity of cyfluthrin and bifenthrin.

Treatment	EC (uS/cm)		Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max		
SDEPAMH	289	307	23.5	26.3	7.3	8.3	7.8	8.2	92	56
SDEPAMH @ 900	851	872	23.9	25.8	7.5	8.5	7.8	8.1	156	60
SD900 Solvent Control	853	861	23.6	25.7	7.5	8.6	7.8	8.1	-	-
SD900 + 16.625 pptr Cyfluthrin	847	861	23.5	25.7	7.4	8.6	7.7	8.1	-	-
SD900 + 31.25 pptr Cyfluthrin	847	868	23.6	25.8	7.3	8.5	7.7	8.1	-	-
SD900 + 62.5 pptr Cyfluthrin	848	862	23.5	25.9	7.4	8.5	7.7	8.1	-	-
SD900 + 125 pptr Cyfluthrin	856	860	23.6	25.9	7.3	8.6	7.8	8.1	-	-
SD900 + 250 pptr Cyfluthrin	856	863	23.6	26.0	7.3	8.4	7.7	8.1	-	-
SD900 + 500 pptr Cyfluthrin	853	861	23.7	25.8	7.2	8.5	7.7	8.1	-	-
SD900 + 16.625 pptr Bifenthrin	860	868	23.6	26.1	7.4	8.3	7.8	8.1	-	-
SD900 + 31.25 pptr Bifenthrin	846	873	23.7	26.6	7.1	8.3	7.7	8.2	-	-
SD900 + 62.5 pptr Bifenthrin	851	869	23.5	26.5	7.3	8.5	7.7	8.1	-	-
SD900 + 125 pptr Bifenthrin	855	870	23.6	26.2	7.4	8.5	7.7	8.1	-	-
SD900 + 250 pptr Bifenthrin	850	857	23.7	25.9	7.5	8.5	7.8	8.1	-	-
SD900 + 500 pptr Bifenthrin	851	858	23.8	26.1	7.5	8.4	7.8	8.1	-	-

Table J 2.1. Results of a 96-hour acute *C. dubia* test initiated on 3/11/10 examining the toxicity of diazinon and chlorpyrifos.

Treatment	24-hour Survival (%)		48-hour Survival (%)[1]		72-hour Survival (%)		96-hour Survival (%)[1]	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
SDEPAMH	100	0	100	0	100	0	100	0
SDEPAMH @ 900	100	0	100	0	100	0	100	0
SD900 Solvent Control	100	0	100	0	100	0	100	0
SD900 + 50 pptr Diazinon	100	0	100	0	100	0	100	0
SD900 + 100 pptr Diazinon	100	0	100	0	100	0	100	0
SD900 + 200 pptr Diazinon	100	0	95	5	95	5	95	5
SD900 + 400 pptr Diazinon	100	0	65	13	5	5	0	0
SD900 + 800 pptr Diazinon	0	0	0	0	0	0	0	0
SD900 + 1600 pptr Diazinon	0	0	0	0	0	0	0	0
SD900 + 12.5 pptr Chlorpyrifos	100	0	100	0	100	0	100	0
SD900 + 25 pptr Chlorpyrifos	100	0	100	0	100	0	100	0
SD900 + 50 pptr Chlorpyrifos	100	0	100	0	100	0	100	0
SD900 + 100 pptr Chlorpyrifos	80	12	50	24	0	0	0	0
SD900 + 200 pptr Chlorpyrifos	0	0	0	0	0	0	0	0
SD900 + 400 pptr Chlorpyrifos	0	0	0	0	0	0	0	0

1. Data were analyzed using USEPA standard single concentration statistical protocols.

Table J 2.2. Nominal 96-hour effect concentrations of diazinon and chlorpyrifos in a *C. dubia* test initiated on 3/11/10.

Pesticide	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Diazinon (pptr)	48-hr Survival	400	800	224.5	185.3 - 505.3	469.4	319.3 - 589.3	19.10%
	96-hr Survival	200	400	207.4	195.5 - 218.5	277.8	268.9 - 286	10.00%
Chlorpyrifos (pptr)	48-hr Survival	100	200	57.5	52.4 - 125.5	100	60.4 - 157.8	33.60%
	96-hr Survival	50	100	53.6	-	70.8	-	5.50%

Table J 2.3. Water chemistry during a 96-hour acute *C. dubia* toxicity test initiated on 3/11/10 examining the toxicity of diazinon and chlorpyrifos.

Treatment	EC (uS/cm)		Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max		
SDEPAMH	289	302	24.0	26.5	6.1	8.4	7.6	8.2	84	60
SDEPAMH @ 900	860	897	23.7	26.2	6.4	8.1	7.5	8.0	126	57
SD900 Solvent Control	869	907	23.8	26.1	6.2	7.9	7.5	8.1	-	-
SD900 + 50 pptr Diazinon	860	895	23.6	26.1	6.5	8.0	7.5	8.1	-	-
SD900 + 100 pptr Diazinon	866	887	23.6	26.2	6.3	8.0	7.6	8.3	-	-
SD900 + 200 pptr Diazinon	859	896	23.7	26.3	6.4	7.9	7.5	8.1	-	-
SD900 + 400 pptr Diazinon	848	888	23.5	27.1	6.3	7.9	7.5	8.1	-	-
SD900 + 800 pptr Diazinon	800	886	24.7	25.4	6.8	7.9	7.7	8.0	-	-
SD900 + 1600 pptr Diazinon	875	887	24.5	25.6	6.8	7.9	7.7	8.0	-	-
SD900 + 12.5 pptr Chlorpyrifos	862	894	23.5	26.1	6.4	8.0	7.6	8.0	-	-
SD900 + 25 pptr Chlorpyrifos	866	891	23.7	26.0	6.3	8.1	7.5	8.0	-	-
SD900 + 50 pptr Chlorpyrifos	865	881	23.9	26.0	6.4	7.8	7.5	8.2	-	-
SD900 + 100 pptr Chlorpyrifos	876	886	23.8	25.8	6.4	7.9	7.5	8.1	-	-
SD900 + 200 pptr Chlorpyrifos	881	883	24.4	25.3	6.8	7.9	7.7	8.0	-	-
SD900 + 400 pptr Chlorpyrifos	878	884	24.4	25.5	6.8	7.9	7.7	8.0	-	-

Table J 3.1. Results of a 96-hour acute *C. dubia* test initiated on 3/16/10 examining the toxicity of permethrin and copper.

Treatment	24-hour Survival (%)		48-hour Survival (%)[1]		72-hour Survival (%)		96-hour Survival (%)[1]	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
SDEPAMH 030810	100	0	100	0	95	5	95	5
SDEPAMH @ 900	100	0	100	0	100	0	100	0
SD900 Solvent Control	100	0	100	0	100	0	100	0
SD900 + 31.3 pptr Permethrin	100	0	100	0	100	0	100	0
SD900 + 62.5 pptr Permethrin	100	0	100	0	95	5	95	5
SD900 + 125 pptr Permethrin	100	0	100	0	100	0	100	0
SD900 + 250 pptr Permethrin	100	0	100	0	100	0	100	0
SD900 + 500 pptr Permethrin	100	0	95	5	40	14	35	15
SD900 + 1000 pptr Permethrin	55	13	0	0	0	0	0	0
SD900 + 2000 pptr Permethrin	30	10	0	0	0	0	0	0
SD900 + 4000 pptr Permethrin	0	0	0	0	0	0	0	0
SD900 + 18.75 ppb Copper	80	8	70	13	70	13	70	13
SD900 + 37.5 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 75 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 150 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 300 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 600 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 1200 ppb Copper	0	0	0	0	0	0	0	0

1. Data were analyzed using USEPA standard single concentration statistical protocols.

Table J 3.2. Nominal 96-hour effect concentrations of permethrin and copper in a *C. dubia* test initiated on 3/16/10.

Pesticide	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Permethrin (pptr)	48-hr Survival	500	1000	518.6	323.9 - 546.3	694.4	647.7 - 714.8	9.2%
	96-hr Survival	250	500	278.5	256.2 - 311.3	428.7	331.3 - 651.3	22.7%
Copper (ppb)	48-hr Survival	<18.75	18.75	1.6	0.4 - 20.9	22.6	16.4 - 27.1	22.3%
	96-hr Survival	18.75	37.5	1.9	0.3 - 30.6	23.2	17.1 - 28.3	25.9%

Table J 3.3. Water chemistry during a 96-hour acute *C. dubia* toxicity test initiated on 3/16/10 examining the toxicity of permethrin and copper.

Treatment	EC (uS/cm)		Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max		
SDEPAMH 030810	294	879	23.5	27.2	6.5	7.9	7.9	8.3	84	60
SDEPAMH @ 900	862	903	23.5	27.1	6.7	8.1	7.8	8.3	126	57
SD900 Solvent Control	853	936	23.5	27.1	6.0	8.1	7.7	8.3	-	-
SD900 + 31.3 pptr Permethrin	847	897	23.3	27.1	6.1	8.0	7.6	8.2	-	-
SD900 + 62.5 pptr Permethrin	850	900	23.4	27.1	6.0	8.0	7.6	8.3	-	-
SD900 + 125 pptr Permethrin	859	901	23.6	27.1	6.1	8.0	7.6	8.2	-	-
SD900 + 250 pptr Permethrin	864	898	23.5	27.1	5.8	8.2	7.7	8.3	-	-
SD900 + 500 pptr Permethrin	858	903	23.6	27.1	6.0	8.1	7.6	8.2	-	-
SD900 + 1000 pptr Permethrin	867	901	23.4	26.1	6.5	7.9	7.9	8.2	-	-
SD900 + 2000 pptr Permethrin	871	899	23.8	27.5	6.2	8.0	7.9	8.2	-	-
SD900 + 4000 pptr Permethrin	847	847	23.5	27.2	6.1	7.9	7.9	8.1	-	-
SD900 + 18.75 ppb Copper	834	888	23.5	27.2	6.7	8.1	7.8	8.2	-	-
SD900 + 37.5 ppb Copper	890	890	23.4	27.0	6.7	7.9	8.0	8.1	-	-
SD900 + 75 ppb Copper	885	885	23.5	26.9	7.0	7.8	8.0	8.1	-	-
SD900 + 150 ppb Copper	894	894	23.5	26.9	7.0	8.0	8.0	8.0	-	-
SD900 + 300 ppb Copper	870	870	23.4	26.9	7.3	7.7	8.0	8.3	-	-
SD900 + 600 ppb Copper	892	892	23.5	26.9	7.3	7.9	8.0	8.0	-	-
SD900 + 1200 ppb Copper	888	888	23.4	27.2	7.3	7.7	7.9	8.1	-	-

Table J 4.1. Results of a 96-hour acute *C. dubia* test initiated on 3/17/10 examining the toxicity of copper.

Treatment	24-hour Survival (%)		48-hour Survival (%)[1]		72-hour Survival (%)		96-hour Survival (%)[1]	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
SDEPAMH	100	0	100	0	95	5	95	5
SDEPAMH @ 900 µS/cm	100	0	100	0	100	0	100	0
SD900 + 4.69 ppb Copper	100	0	100	0	100	0	100	0
SD900 + 9.38 ppb Copper	100	0	100	0	100	0	100	0
SD900 + 18.75 ppb Copper	100	0	100	0	95	5	95	5
SD900 + 37.5 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 75 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 150 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 300 ppb Copper	0	0	0	0	0	0	0	0
SD900 + 600 ppb Copper	0	0	0	0	0	0	0	0

1. Data were analyzed using USEPA standard single concentration statistical protocols.

Table J 4.2. Nominal 96-hour effect concentrations of copper in a *C. dubia* test initiated on 3/17/10.

Endpoint	NOEC (ppb)	LOEC (ppb)	LC10 (ppb)		LC50 (ppb)		PMSD
			Estimate	95% C.I.	Estimate	95% C.I.	
48-hr Survival	18.75	37.5	20.1	NA	26.6	NA	6.0%
96-hr Survival	18.75	37.5	19.7	13.4 - 20.4	26.3	24.5 - 26.8	12.7%

Table J 4.3. Water chemistry during a 96-hour acute *C. dubia* toxicity test initiated on 3/17/10 examining the toxicity of copper.

Treatment	EC (uS/cm)		Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max		
SDEPAMH	834	886	23.7	26.6	7.1	8.2	8.0	8.2	84	60
SDEPAMH @ 900 µS/cm	853	883	24.1	26.2	7.4	8.3	8.0	8.2	126	57
SD900 + 4.69 ppb Copper	868	886	24.2	26.1	7.4	8.0	8.0	8.1	-	-
SD900 + 9.38 ppb Copper	854	893	24.1	26.2	7.4	8.0	8.0	8.1	-	-
SD900 + 18.75 ppb Copper	868	893	24.1	26.2	7.4	8.0	8.0	8.1	-	-
SD900 + 37.5 ppb Copper	864	891	24.0	26.3	7.6	8.1	7.9	8.1	-	-
SD900 + 75 ppb Copper	301	317	24.6	26.8	7.2	8.1	8.0	8.3	-	-
SD900 + 150 ppb Copper	851	874	23.0	26.6	7.0	8.2	7.8	8.1	-	-
SD900 + 300 ppb Copper	856	885	22.5	27.0	7.0	8.2	7.9	8.2	-	-
SD900 + 600 ppb Copper	837	897	22.9	27.1	7.1	8.3	7.9	8.2	-	-

Table J 5.1. Results of a 96-hour acute *C. dubia* test initiated on 4/13/10 examining the toxicity of ammonia.

Treatment	Measured Ammonia Nitrogen (mg/L)	Measured Unionized Ammonia (mg/L)	24-hour Survival (%)		48-hour Survival (%)[1]		72-hour Survival (%)		96-hour Survival (%)[1]	
			Mean	SE	Mean	SE	Mean	SE	Mean	SE
SDEPAMH	0.04	0.003	90	10	90	10	90	10	90	10
SDEPAMH @ 900 µS/cm	0.04	0.003	90	6	90	6	75	13	75	13
SD900 + 3.13 ppm NH3	2.74	0.147	95	5	95	5	75	5	75	5
SD900 + 6.25 ppm NH3	5.18	0.202	100	0	100	0	90	6	90	6
SD900 + 12.5 ppm NH3	9.45	0.236	100	0	100	0	85	5	75	5
SD900 + 25 ppm NH3	19	0.388	95	5	45	13	15	10	0	0
SD900 + 50 ppm NH3	42.4	0.652	0	0	0	0	0	0	0	0
SD900 + 100 ppm NH3	90.4	0.991	0	0	0	0	0	0	0	0
SD900 + 200 ppm NH3	181.6	1.308	0	0	0	0	0	0	0	0
SDEPAMH @ 2675 (High EC)	0.05	0.004	95	5	85	10	85	10	85	10

1. Data were analyzed using USEPA standard single concentration statistical protocols.

Table J 5.2. Nominal and measured 96-hour effect concentrations of ammonia in a *C. dubia* test initiated on 4/13/10.

Analyte	Endpoint	NOEC	LOEC	LC10		LC50		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
Nominal Ammonia (mg/L)	48-hr Survival	12.5	25.0	14.3	13.1 - 17.1	24.0	17.8 - 35.1	23.0%
	96-hr Survival	12.5	25.0	12.9	< 3.13 - 13.7	17.4	15.1 - 18.0	31.2%
Measured Ammonia Nitrogen (mg/L)	48-hr Survival	9.45	19.0	10.8	9.8 - 13.0	18.2	13.4 - 28.0	26.3%
	96-hr Survival	9.45	19.0	5.8	< 2.74 - 12.79	12.6	11 - 14	23.1%
Measured Un-ionized Ammonia (mg/L)	48-hr Survival	0.236	0.388	0.263	0.243 - 0.303	0.378	0.312 - 0.514	26.3%
	96-hr Survival	0.236	0.388	0.208	< 0.147 - 0.276	0.295	0.267 - 0.319	23.1%

Table J 5.3. Water chemistry during a 96-hour acute *C. dubia* toxicity test initiated on 4/13/10 examining the toxicity of ammonia.

Treatment	EC (uS/cm)		Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
	Min	Max	Min	Max	Min	Max	Min	Max		
SDEPAMH	285.1	3148	24.3	26.2	7.2	8.2	8.1	8.3	92	56
SDEPAMH @ 900 µS/cm	818	928	24.5	26.6	7.4	8.3	7.9	8.2	140	56
SD900 + 3.13 ppm NH3	877	930	24.5	26.4	7.3	8.2	7.9	8.1	-	-
SD900 + 6.25 ppm NH3	935	976	24.1	26.4	7.3	8.5	7.9	8.1	-	-
SD900 + 12.5 ppm NH3	991	1016	23.8	26.6	7.2	8.4	7.7	8.0	-	-
SD900 + 25 ppm NH3	1089	1136	24.0	26.5	7.3	8.3	7.6	7.9	-	-
SD900 + 50 ppm NH3	1317	1320	24.5	25.3	7.4	8.3	7.5	7.8	-	-
SD900 + 100 ppm NH3	1767	1772	24.5	25.4	7.3	8.2	7.4	7.7	-	-
SD900 + 200 ppm NH3	2625	2675	24.5	25.4	7.2	8.2	7.2	7.5	-	-
SDEPAMH @ 2675 (High EC)	2670	2816	24.0	26.8	7.2	8.3	7.7	8.3	-	-

J.2. 7-day Chronic *C. dubia* Toxicity Tests

Table J 6.1. Results of a *C. dubia* 7-day test initiated 10/08/09 evaluating the toxicity of chlorpyrifos in conductivity-adjusted synthetic water and in water collected from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Measured Chlorpyrifos (pptr)	96-hr Survival (%)[1]		7-day Survival (%)[1]		Reproduction (offspring)[1]	
		Mean	SE	Mean	SE	Mean	SE
SSEPAMH (TAC Control)	-	100	0.0	100	0.0	21.4	0.5
SSEPAMH @ 900 uS/cm (SS900)	-	90	10.0	90	10.0	20.9	2.1
SS900 Solvent Control	-	100	0.0	100	0.0	21.2	0.4
SS900 + 12.5 pptr Chlorpyrifos	-	100	0.0	100	0.0	22.1	0.7
SS900 + 25 pptr Chlorpyrifos	-	100	0.0	100	0.0	21.3	0.4
SS900 + 50 pptr Chlorpyrifos	-	100	0.0	100	0.0	20.8	1.0
SS900 + 100 pptr Chlorpyrifos	-	20	13.3	0	0.0	2.4	0.7
SS900 + 200 pptr Chlorpyrifos	-	0	0.0	0	0.0	0.0	0.0
Hatchery Water @ 900 uS/cm (HW900)	-	100	0.0	100	0.0	22.9	0.4
HW900 Solvent Control	ND	100	0.0	100	0.0	21.3	0.9
HW900 + 12.5 pptr Chlorpyrifos	ND	100	0.0	100	0.0	22.3	0.9
HW900 + 25 pptr Chlorpyrifos	11	80	13.3	80	13.3	17.4	2.9
HW900 + 50 pptr Chlorpyrifos	20	100	0.0	100	0.0	20.3	1.1
HW900 + 100 pptr Chlorpyrifos	28	10	10.0	0	0.0	2.8	0.6
HW900 + 200 pptr Chlorpyrifos	56	0	0.0	0	0.0	0.0	0.0

1. Highlighted cells indicate statistically significant reductions in survival or reproduction compared to the laboratory control. Data were analyzed using USEPA standard statistical protocols.

Table J 6.2. Nominal 7-day effect concentrations of chlorpyrifos in a *C. dubia* test initiated on 10/08/09.

Endpoint	Matrix	Chlorpyrifos (pptr)						
		NOEC	LOEC	LC10/EC10		LC50/EC25		
				Estimate	95% C.I.	Estimate	95% C.I.	PMSD
96-hr Survival	SSEPAMH @ 900 uS/cm	50	100	54.6	53.6 - 56.2	77.2	70.8 - 89.1	-
	Hatchery Water @ 900 uS/cm	50	100	50.0	17.7 - 54.0	70.8	64.9 - 79.4	-
7-day Survival	SSEPAMH @ 900 uS/cm	50	100	53.6	-	70.8	-	-
	Hatchery Water @ 900 uS/cm	50	100	50.0	17.7 - 53.6	68.1	64.9 - 70.8	-
7-day Reproduction	SSEPAMH @ 900 uS/cm	50	100	52.4	35.1 - 54.2	59.3	54.5 - 61.3	9.5%
	Hatchery Water @ 900 uS/cm	50	100	17.6	9.0 - 51.4	53.8	21.5 - 58.5	20.5%

Table J 6.3. Measured 7-day effect concentrations of chlorpyrifos in a *C. dubia* test initiated on 10/08/09.

Endpoint	Matrix	Chlorpyrifos (pptr)						
		NOEC	LOEC	LC10/EC10		LC50/EC25		
				Estimate	95% C.I.	Estimate	95% C.I.	PMSD
96-hour Survival	SSEPAMH @ 900 uS/cm	20	28	20.9	20.7 - 21.2	24.7	23.7 - 26.5	-
	Hatchery Water @ 900 uS/cm	20	28	20.0	1.7 - 20.8	23.7	22.7 - 25.0	-
7-day Survival	SSEPAMH @ 900 uS/cm	20	28	20.7	-	23.7	-	-
	Hatchery Water @ 900 uS/cm	20	28	20.0	1.70 - 20.7	23.2	22.4 - 23.7	-
7-day Reproduction	SSEPAMH @ 900 uS/cm	20	28	20.6	18.4 - 20.8	21.9	21.2 - 22.1	9.5%
	Hatchery Water @ 900 uS/cm	20	28	7.7	1.52 - 20.8	21.3	9.13 - 22.1	23.5%

Table J 6.4. Water chemistry data taken during a *C. dubia* 7-day test initiated 10/08/09 evaluating the toxicity of chlorpyrifos in conductivity-adjusted synthetic water and in water collected from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Laboratory Chemistry							Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
	Initial EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH		
SSEPAMH (TAC Control)	184	23.9	27.4	7.4	8.4	7.89	8.16	68	56
SSEPAMH @ 900 uS/cm (SS900)	883	23.8	25.5	7.3	9.1	7.82	8.04	128	56
SS900 Solvent Control	884	23.9	25.5	6.8	8.6	7.78	8.05	-	-
SS900 + 12.5 pptr Chlorpyrifos	881	23.8	25.6	6.8	8.6	7.72	8.04	-	-
SS900 + 25 pptr Chlorpyrifos	881	23.8	25.7	6.9	8.6	7.76	8.03	-	-
SS900 + 50 pptr Chlorpyrifos	877	23.7	26.0	6.8	8.6	7.80	8.01	-	-
SS900 + 100 pptr Chlorpyrifos	882	23.8	25.1	6.9	8.6	7.78	8.02	-	-
SS900 + 200 pptr Chlorpyrifos	876	23.7	24.9	7.5	8.5	7.82	7.99	-	-
Hatchery Water @ 900 uS/cm (HW900)	877	23.7	26.0	7.0	8.6	7.84	8.25	128	78
HW900 Solvent Control	884	23.3	26.0	5.5	8.6	7.69	8.25	-	-
HW900 + 12.5 pptr Chlorpyrifos	879	23.3	25.9	5.6	8.6	7.69	8.25	-	-
HW900 + 25 pptr Chlorpyrifos	864	23.4	25.8	5.7	8.6	7.69	8.24	-	-
HW900 + 50 pptr Chlorpyrifos	882	23.3	26.0	5.8	8.6	7.68	8.23	-	-
HW900 + 100 pptr Chlorpyrifos	882	23.6	25.2	6.8	8.6	7.71	8.24	-	-
HW900 + 200 pptr Chlorpyrifos	879	23.6	24.9	7.4	8.4	7.87	8.15	-	-

Table J 7.1. Results of a *C. dubia* 7-day test initiated 10/22/09 evaluating the toxicity of diazinon in conductivity-adjusted synthetic water and in water collected from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Measured Diazinon (pptr)	96-hour Survival (%)[1]		7-Day Survival (%)[1]		Reproduction (offspring)[1]	
		Mean	SE	Mean	SE	Mean	SE
SSEPAMH (TAC Control)	-	100	0.00	100	0.00	26.3	0.58
SSEPAMH @ 900 uS/cm (SS900)	-	100	0.00	100	0.00	27.1	0.82
SS900 Solvent Control	-	100	0.00	100	0.00	26.5	0.65
SS900 + 62.5 pptr Diazinon	-	100	0.00	100	0.00	25.8	0.83
SS900 + 125 pptr Diazinon	-	100	0.00	100	0.00	26.0	0.87
SS900 + 250 pptr Diazinon	-	100	0.00	0	0.00	15.6	1.47
SS900 + 500 pptr Diazinon	-	0	0.00	0	0.00	0.0	0.00
SS900 + 1000 pptr Diazinon	-	0	0.00	0	0.00	0.0	0.00
Hatchery Water @ 900 uS/cm (HW900)	-	100	0.00	100	0.00	16.4	1.70
HW900 Solvent Control	ND	100	0.00	100	0.00	13.6	1.96
HW900 + 62.5 pptr Diazinon	57	80	13.33	80	0.13	11.5	2.00
HW900 + 125 pptr Diazinon	123	100	0.00	90	0.10	12.8	1.92
HW900 + 250 pptr Diazinon	228	100	0.00	10	0.10	8.8	1.61
HW900 + 500 pptr Diazinon	560	0	0.00	0	0.00	0.0	0.00
HW900 + 1000 pptr Diazinon	1100	0	0.00	0	0.00	0.0	0.00

1. Highlighted cells indicate statistically significant reductions in survival or reproduction compared to the laboratory control. Data were analyzed using USEPA standard statistical protocols.

Table J 7.2. Nominal effect concentrations of diazinon in a 7-day chronic *C. dubia* test initiated on 10/22/09.

Endpoint	Matrix	Diazinon (pptr)						
		NOEC	LOEC	LC10/EC10		LC50/EC25		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SSEPAMH @ 900 uS/cm	250	500	268	-	353.6	-	NA
	Hatchery Water @ 900 uS/cm	250	500	256.3	11.1 - 268	345	329.9 - 353.6	NA
7-day Survival	SSEPAMH @ 900 uS/cm	125	250	134.0	-	176.8	142 - 220.1	NA
	Hatchery Water @ 900 uS/cm	125	250	14.9	2.99-134	172.7	150.4 - 198.3	N/A
7-day Reproduction	SSEPAMH @ 900 uS/cm	125	250	145.3	126.5-155.1	189.5	170.9-222.1	10.01%
	Hatchery Water @ 900 uS/cm	250	500	4.0	1.61-142.9	53.85	9.98-237.9	33.35%

Table J 7.3. Measured effect concentrations of diazinon in a 7-day chronic C. dubia test initiated on 10/22/09.

Endpoint	Matrix	Diazinon (pptr)						
		NOEC	LOEC	LC10/EC10		LC50/EC25		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SSEPAMH @ 900 uS/cm	228	560	249.5	-	357.4	-	NA
	Hatchery Water @ 900 uS/cm	228	560	235.4	10.4 - 249.5	346.1	326.7 - 357.4	NA
7-day Survival	SSEPAMH @ 900 uS/cm	123	228	130.8	-	167.5	-	NA
	Hatchery Water @ 900 uS/cm	123	228	14.0	2.87 - 130.8	164.1	146.8 - 185.7	NA
7-day Reproduction	SSEPAMH @ 900 uS/cm	123	228	139.1	123.1 - 148.1	176.5	160.3 - 208	11.42%
	Hatchery Water @ 900 uS/cm	228	560	44.1	2.41 - 228	176.2	20.5 - 264.9	41.62%

Table J 7.4. Water chemistry data taken during a *C. dubia* 7-day test initiated 10/22/09 evaluating the toxicity of diazinon in conductivity-adjusted synthetic water and in water collected from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Initial EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
SSEPAMH (TAC Control)	228	22.9	24.4	7.3	8.4	7.76	8.18	80	58
SSEPAMH @ 900 uS/cm (SS900)	865	22.9	24.3	7.5	8.6	7.80	8.09	-	-
SS900 Solvent Control	871	22.7	24.4	6.9	8.6	7.72	8.10	-	-
SS900 + 62.5 pptr Diazinon	880	22.8	24.5	7.0	8.5	7.70	8.09	-	-
SS900 + 125 pptr Diazinon	878	22.7	24.5	7.1	8.6	7.72	8.08	-	-
SS900 + 250 pptr Diazinon	901	22.6	25.7	7.0	8.6	7.78	8.12	-	-
SS900 + 500 pptr Diazinon	876	23.2	24.6	7.6	8.4	7.80	8.08	-	-
SS900 + 1000 pptr Diazinon	886	23.8	24.9	7.6	8.6	7.84	8.09	-	-
Hatchery Water @ 900 uS/cm (HW900)	863	23.1	24.7	7.3	8.6	7.84	8.23	144	79
HW900 Solvent Control	889	23.0	24.9	4.1	8.6	7.50	8.22	-	-
HW900 + 62.5 pptr Diazinon	865	22.9	24.6	4.1	8.6	7.50	8.24	-	-
HW900 + 125 pptr Diazinon	863	22.9	24.6	4.3	8.6	7.52	8.21	-	-
HW900 + 250 pptr Diazinon	876	22.8	24.6	4.7	8.6	7.52	8.19	-	-
HW900 + 500 pptr Diazinon	866	23.6	24.6	7.3	8.5	7.85	8.17	-	-
HW900 + 1000 pptr Diazinon	879	23.8	24.6	7.3	8.3	7.85	8.18	-	-

Table J 8.1. Results of a *C. dubia* 7-day test initiated 12/02/09 evaluating the toxicity of permethrin in both conductivity-adjusted synthetic water and water from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	96-hr Survival (%)[1]		7-day Survival (%)[1]		Reproduction (offspring)[1]	
	Mean	SE	Mean	SE	Mean	SE
SSEPAMH	100	0.0	100	0.0	10.1	2.26
SSEPAMH @ 900 uS/cm (SS900)	100	0.0	100	0.0	20.8	1.70
SS900 Solvent Control	100	0.0	100	0.0	24.2	1.38
SS900 + 312.5 pptr Permethrin	100	0.0	100	0.0	21.6	1.28
SS900 + 625 pptr Permethrin	100	0.0	100	0.0	20.2	1.26
SS900 + 1250 pptr Permethrin	100	0.0	90	10.0	16.3	1.89
SS900 + 2500 pptr Permethrin	60	16.3	60	16.3	2.5	0.95
SS900 + 5000 pptr Permethrin	0	0.0	0	0.0	0.0	0.00
Hatchery Water @ 900 uS/cm (HW900)	100	0.0	100	0.0	26.4	1.53
HW900 Solvent Control	100	0.0	100	0.0	27.9	2.00
HW900 + 312.5 pptr Permethrin	100	0.0	100	0.0	25.0	2.10
HW900 + 625 pptr Permethrin	100	0.0	100	0.0	23.8	1.91
HW900 + 1250 pptr Permethrin	100	0.0	90	10.0	16.3	2.22
HW900 + 2500 pptr Permethrin	60	16.3	60	16.3	2.1	1.05
HW900 + 5000 pptr Permethrin	0	0.0	0	0.0	0.0	0.00

1. Highlighted cells indicate statistically significant reductions in survival or reproduction compared to the solvent control. Data were analyzed using USEPA standard statistical protocols.

Table J 8.2. Nominal 7-day effect concentrations of permethrin in a *C. dubia* test initiated on 12/02/09.

Endpoint	Matrix	Permethrin (pptr)						
		NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SSEPAMH @ 900 uS/cm	2500	5000	1487	1380 - 2500	2806	2051 - 3402	NA
	Hatchery Water @ 900 uS/cm	2500	5000	1487	1380 - 2500	2806	2051 - 3402	NA
7-day Survival	SSEPAMH @ 900 uS/cm	2500	5000	1250	787.5 - 2500	2806	1895 - 3402	NA
	Hatchery Water @ 900 uS/cm	2500	5000	1250	787.5 - 2500	2806	1895 - 3402	NA
7-day Reproduction	SSEPAMH @ 900 uS/cm	625	1250	209.6	12.25 - 725.7	899.8	498 - 1354	18.02%
	Hatchery Water @ 900 uS/cm	625	1250	251.1	9.7 - 771	815.3	357 - 1268	21.44%

Table J 8.3. Water chemistry during a *C. dubia* 7-day test initiated 12/02/09 evaluating the toxicity of permethrin in both conductivity-adjusted synthetic water and water from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Initial EC (uS/cm)	Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
		Min	Max	Min	Max	Min	Max		
SSEPAMH	224	21.0	25.7	7.2	8.8	7.8	8.37	88	62
SSEPAMH @ 900 uS/cm (SS900)	848	21.7	25.7	7.4	8.7	7.71	8.27	180	58
SS900 Solvent Control	859	21.8	25.8	6.8	8.8	7.76	8.27	-	-
SS900 + 312.5 pptr Permethrin	890	21.5	25.7	6.8	8.7	7.77	8.25	-	-
SS900 + 625 pptr Permethrin	871	21.3	25.6	7.2	8.9	7.81	8.3	-	-
SS900 + 1250 pptr Permethrin	897	21.7	25.6	7.1	8.9	7.79	8.33	-	-
SS900 + 2500 pptr Permethrin	838	21.7	25.5	7.2	8.8	7.78	8.33	-	-
SS900 + 5000 pptr Permethrin	895	24.0	24.8	7.4	8.6	7.79	7.95	-	-
Hatchery Water @ 900 uS/cm (HW900)	840	21.8	25.5	7.2	9.7	7.83	8.57	148	72
HW900 Solvent Control	868	22.0	25.5	6.7	9.4	7.82	8.51	-	-
HW900 + 312.5 pptr Permethrin	834	21.7	25.4	6.8	9.3	7.85	8.51	-	-
HW900 + 625 pptr Permethrin	835	21.7	25.3	6.9	9.3	7.83	8.52	-	-
HW900 + 1250 pptr Permethrin	870	21.2	25.3	7.0	9.3	7.86	8.54	-	-
HW900 + 2500 pptr Permethrin	840	21.0	25.3	7.2	9.4	7.89	8.51	-	-
HW900 + 5000 pptr Permethrin	870	23.9	24.9	7.6	8.6	7.92	7.97	-	-

Table J 9.1. Results of a *C. dubia* 7-day test initiated 3/03/10 evaluating the toxicity of copper in conductivity-adjusted synthetic water and in water collected from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California..

Treatment	Dissolved Copper (mg/L)	96-hour Survival (%)[1]		7-day Survival (%)[1]		Reproduction (offspring)[1]	
		Mean	SE	Mean	SE	Mean	SE
SDEPAMH	-	100	0	100	0	26	0.71
SDEPAMH @ 900 µS/cm (SD900)	ND	100	0	100	0	25.1	1.32
SD900 + 37.5 ppb Copper	34.9	90	10	90	10	17.8	2.45
SD900 + 75 ppb Copper	72.6	30	15	10	10	1.4	0.91
SD900 + 150 ppb Copper	151	0	0	0	0	0	0.00
SD900 + 300 ppb Copper	305	0	0	0	0	0	0.00
SD900 + 600 ppb Copper	-	0	0	0	0	0	0.00
SD900 + 1200 ppb Copper	-	0	0	0	0	0	0.00
Hatchery Water @ 900 µS/cm (HW900)	-	100	0	100	0	23	1.20
HW900 + 37.5 ppb Copper	-	100	0	100	0	24.7	0.62
HW900 + 75 ppb Copper	-	100	0	100	0	19.7	2.54
HW900 + 150 ppb Copper	-	70	15	70	15	7.5	1.93
HW900 + 300 ppb Copper	-	0	0	0	0	0.0	0.00
HW900 + 600 ppb Copper	-	0	0	0	0	0.0	0.00
HW900 + 1200 ppb Copper	-	0	0	0	0	0.0	0.00

1. Highlighted cells indicate statistically significant reductions in survival or reproduction compared to the laboratory control. Data were analyzed using USEPA standard statistical protocols.

Table J 9.2. Nominal 7-day effect concentrations of copper in a *C. dubia* test initiated on 3/03/10.

Endpoint	Matrix	NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SDEPAMH @ 900 uS/cm	37.5	75	37.5	2.4 - 43.1	59.6	49.5 - 84.2	NA
	Hatchery Water @ 900 uS/cm	150	300	94.5	84.2 - 150	182.9	133.7 - 204.2	NA
7-day Survival	SDEPAMH @ 900 uS/cm	37.5	75	37.5	2.4 - 40.9	53.1	47.3 – 59.5	NA
	Hatchery Water @ 900 uS/cm	150	300	106.1	86.2 – 160.8	194.6	150 – 212.2	NA
Reproduction	SDEPAMH @ 900 uS/cm	< 37.5	37.5	2.20	1.1 - 11.8	17.1	5.3 - 40.9	19.0%
	Hatchery Water @ 900 uS/cm	75	150	55.90	44.0 - 83.2	83.2	58.5 - 98.2	22.7%

Table J 9.3. Measured 7-day effect concentrations of copper in a *C. dubia* test initiated on 3/03/10.

Endpoint	Matrix	NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SDEPAMH @ 900 uS/cm	34.9	72.6	34.9	2.3 - 40.4	56.9	44.6 - 82.1	NA
	Hatchery Water @ 900 uS/cm	151	305	92.7	82.1 - 162	184.6	133.7 - 214.7	NA
7-day Survival	SDEPAMH @ 900 uS/cm	34.9	72.6	34.9	2.3 - 38.8	50.4	43.1 - 59.0	NA
	Hatchery Water @ 900 uS/cm	151	305	92.7	82.1 - 162	184.6	133.7 - 214.7	NA
Reproduction	SDEPAMH @ 900 uS/cm	< 34.9	34.9	2.4	1.1 - 21.2	20.7	5.1 - 39.4	19.0%
	Hatchery Water @ 900 uS/cm	72.6	151	53.20	41.5 - 80.2	81.0	54.2 - 95.6	22.7%

Table J 9.4. Summary of water chemistry during a *C. dubia* toxicity test initiated on 3/03/10 evaluating the toxicity of copper in conductivity-adjusted synthetic water and in water collected from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Initial EC (uS/cm)	Temp (°C)		DO (mg/L)		pH		Hardness (mg/L as CaCO3)	Alkalinity (mg/L as CaCO3)
		Min	Max	Min	Max	Min	Max		
SDEPAMH	292	24.1	26.2	6.7	8.3	7.77	8.27	92	56
SDEPAMH @ 900 µS/cm (SD900)	892	23.7	26.2	7.2	8.6	7.74	8.11	156	60
SD900 + 37.5 ppb Copper	880	23.8	26.1	7.2	8.5	7.75	8.16	-	-
SD900 + 75 ppb Copper	885	23.9	26.4	7.3	8.5	7.69	8.13	-	-
SD900 + 150 ppb Copper	853	24.0	25.8	7.3	8.4	7.72	8.02	-	-
SD900 + 300 ppb Copper	883	23.7	25.2	7.7	8.4	7.74	7.97	-	-
SD900 + 600 ppb Copper	874	23.8	25.2	7.8	8.4	7.64	8.02	-	-
SD900 + 1200 ppb Copper	891	23.8	25.3	7.8	8.2	7.57	8.01	-	-
Hatchery Water @ 900 µS/cm (HW900)	868	24.0	26.0	7.2	8.5	7.59	8.28	128	88
HW900 + 37.5 ppb Copper	870	23.8	26.1	7.3	8.6	7.66	8.24	-	-
HW900 + 75 ppb Copper	879	23.7	26.3	7.1	8.5	7.66	8.25	-	-
HW900 + 150 ppb Copper	872	23.8	26.1	7.2	8.5	7.65	8.23	-	-
HW900 + 300 ppb Copper	872	23.7	25.6	7.3	8.3	7.62	8.23	-	-
HW900 + 600 ppb Copper	863	24.4	25.2	8.0	8.4	7.59	8.11	-	-
HW900 + 1200 ppb Copper	870	23.8	25.2	8.1	8.2	7.57	8.17	-	-

Table J 10.1. Results of a *C. dubia* 7-day test initiated 3/18/10 evaluating the toxicity of bifenthrin in both conductivity-adjusted synthetic water and water from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Measured Bifenthrin (pptr in Milli-Q)	96-hour Survival (%)[1]		7-day Survival (%)[1]		Reproduction (offspring)[1]	
		Mean	SE	Mean	SE	Mean	SE
SDEPAMH	-	100	0	100	0.0	6.8	1.60
SDEPAMH @ 900 uS/cm (SD900)	-	100	0	100	0.0	15.8	1.96
SD900 Solvent Control	ND	100	0	100	0.0	17.7	2.15
SD900 + 125 pptr Bifenthrin	68	100	0	100	0.0	17.8	2.89
SD900 + 250 pptr Bifenthrin	179	100	0	100	0.0	20.3	1.67
SD900 + 500 pptr Bifenthrin	288	100	0	90	10.0	11.3	1.93
SD900 + 1000 pptr Bifenthrin	432	70	15	0	0.0	0.0	0.00
SD900 + 2000 pptr Bifenthrin	752	0	0	0	0.0	0.0	0.00
SD900 + 4000 pptr Bifenthrin	-	0	0	0	0.0	0.0	0.00
SD900 + 8000 pptr Bifenthrin	-	0	0	0	0.0	0.0	0.00
Hatchery Water @ 900 (HW900)	-	100	0	100	0.0	24.7	1.21
HW900 Solvent Control	ND	100	0	100	0.0	16.1	1.25
HW900 + 250 pptr Bifenthrin	179	100	0	90	10.0	17.2	1.16
HW900 + 500 pptr Bifenthrin	288	100	0	40	16.3	9.0	1.15
HW900 + 1000 pptr Bifenthrin	432	40	16	0	0.0	0.0	0.00
HW900 + 2000 pptr Bifenthrin	752	0	0	0	0.0	0.0	0.00
HW900 + 4000 pptr Bifenthrin	-	0	0	0	0.0	0.0	0.00
HW900 + 8000 pptr Bifenthrin	-	0	0	0	0.0	0.0	0.00

Table J 10.2. Nominal 7-day effect concentrations of bifenthrin in a *C. dubia* test initiated on 3/18/10.

Endpoint	Matrix	Bifenthrin (pptr)						
		NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-h Survival	SDEPAMH @ 900 uS/cm	1000	2000	630	561.3 - 1072	1219	890.9 - 1414	NA
	Hatchery Water @ 900 uS/cm	500	1000	561.3	540 - 630	890.9	734.9 - 1219	NA
7-day Survival	SDEPAMH @ 900 uS/cm	500	1000	500.0	315 - 535.9	680.5	609.6-707.2	NA
	Hatchery Water @ 900 uS/cm	250	500	280.6	270-315	445.5	367.5-609.6	NA
7-day Reproduction	SDEPAMH @ 900 uS/cm	500	1000	298.4	15.2 - 344.4	388.9	298.2 - 520.4	37.9%
	Hatchery Water @ 900 uS/cm	250	500	290.7	78.1 - 315.3	364.6	310.7 - 446.6	20.9%

Table J 10.3. Measured 7-day effect concentrations of bifenthrin in a *C. dubia* test initiated on 3/18/10.

Endpoint	Matrix	Bifenthrin (pptr)						
		NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-h Survival	SDEPAMH @ 900 uS/cm	432	752	329.7	308.1 - 432	506.2	403.8 - 552.7	NA
	Hatchery Water @ 900 uS/cm	288	432	308.1	301.3 - 329.7	403.8	360.8 - 506.2	NA
7-day Survival	SDEPAMH @ 900 uS/cm	288	432	288.0	209.8 - 299.9	344.9	323.4 - 352.7	NA
	Hatchery Water @ 900 uS/cm	179	288	193.8	188.7 - 209.8	266.1	233.2 - 323.4	NA
7-day Reproduction	SDEPAMH @ 900 uS/cm	288	432	203.1	8.0 – 240.0	245.4	203 – 302	37.9%
	Hatchery Water @ 900 uS/cm	179	288	198.5	86.9 - 208.7	231.9	211.6 - 262.9	20.9%

Table J 10.4. Water chemistry during a *C. dubia* 7-day test initiated 3/18/10 evaluating the toxicity of bifenthrin in both conductivity-adjusted synthetic water and water from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Initial EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
SDEPAMH	284	23.7	26.7	6.6	7.9	7.77	8.34	84	60
SDEPAMH @ 900 uS/cm (SD900)	843	15.1	26.3	6.8	8.1	7.79	8.14	126	57
SD900 Solvent Control	850	23.2	26.3	5.7	8.2	7.58	8.14	-	-
SD900 + 125 pptr Bifenthrin	828	23.2	26.4	5.7	8.2	7.62	8.20	-	-
SD900 + 250 pptr Bifenthrin	832	23.3	26.5	5.9	8.3	7.59	8.18	-	-
SD900 + 500 pptr Bifenthrin	837	23.0	29.3	5.2	8.3	7.63	8.15	-	-
SD900 + 1000 pptr Bifenthrin	827	23.2	27.1	5.3	8.2	7.61	8.19	-	-
SD900 + 2000 pptr Bifenthrin	840	23.1	26.4	6.3	8.2	7.61	8.20	-	-
SD900 + 4000 pptr Bifenthrin	831	23.2	26.5	6.7	8.2	7.82	8.08	-	-
SD900 + 8000 pptr Bifenthrin	838	23.9	26.4	6.9	7.8	7.81	8.05	-	-
Hatchery Water @ 900 (HW900)	831	23.3	27.0	6.7	8.4	7.89	8.26	-	-
HW900 Solvent Control	893	23.3	26.9	3.2	8.4	7.54	8.26	-	-
HW900 + 250 pptr Bifenthrin	841	23.3	26.9	3.1	8.5	7.52	8.26	-	-
HW900 + 500 pptr Bifenthrin	852	23.2	27.0	3.3	9.6	7.55	8.26	-	-
HW900 + 1000 pptr Bifenthrin	836	23.2	26.9	3.1	8.5	7.59	8.26	-	-
HW900 + 2000 pptr Bifenthrin	862	23.3	26.5	4.4	8.5	7.65	8.22	-	-
HW900 + 4000 pptr Bifenthrin	842	23.2	26.2	4.2	8.5	7.66	8.23	-	-
HW900 + 8000 pptr Bifenthrin	852	24.1	25.9	5.4	8.0	7.73	8.19	-	-

Table J 11.1. Results of a *C. dubia* 7-day test initiated 4/07/10 evaluating the toxicity of cyfluthrin in both conductivity-adjusted synthetic water and water from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Measured Cyfluthrin (pptr in Milli-Q)	96-hour Survival (%)[1]		7-day Survival (%)[1]		Reproduction (offspring)[1]	
		Mean	SE	Mean	SE	Mean	SE
SDEPAMH	-	100	0	100	0	18.9	1.5
SDEPAMH @ 900 uS/cm (SD900)	-	80	13	80	13	11.4	3.1
SDEPAMH Solvent Control	ND	90	10	90	10	14.3	2.7
SD900 + 62.5 pptr Cyfluthrin	35	100	0	100	0	14.6	2.5
SD900 + 125 pptr Cyfluthrin	108	100	0	100	0	11.8	1.9
SD900 + 250 pptr Cyfluthrin	268	90	10	90	10	9.7	1.6
SD900 + 500 pptr Cyfluthrin	515	100	0	90	10	2.0	0.9
SD900 + 1000 pptr Cyfluthrin	985	0	0	0	0	0.0	0.0
SD900 + 2000 pptr Cyfluthrin	-	0	0	0	0	0.0	0.0
SD900 + 4000 pptr Cyfluthrin	-	0	0	0	0	0.0	0.0
Hatchery Water @ 900 uS/cm (HW900)	-	100	0	100	0	27.5	1.3
HW900 Solvent Control	-	100	0	100	0	27.3	1.4
HW900 + 125 pptr Cyfluthrin	108	100	0	100	0	21.9	1.3
HW900 + 250 pptr Cyfluthrin	268	100	0	100	0	14.1	1.6
HW900 + 500 pptr Cyfluthrin	515	100	0	100	0	3.2	0.8
HW900 + 1000 pptr Cyfluthrin	985	0	0	0	0	0.0	0.0
HW900 + 2000 pptr Cyfluthrin	-	0	0	0	0	0.0	0.0
HW900 + 4000 pptr Cyfluthrin	-	0	0	0	0	0.0	0.0

Table J 11.2. Nominal 7-day effect concentrations of cyfluthrin in a *C. dubia* test initiated on 4/07/10.

Endpoint	Matrix	Cyfluthrin (pptr)						
		NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SDEPAMH @ 900 uS/cm	500	1000	530.1	222 - 535.9	702.9	674.3 - 707.2	NA
	Hatchery Water @ 900 uS/cm	500	1000	535.9	-	707.2	-	NA
7-day Survival	SDEPAMH @ 900 uS/cm	500	1000	511.7	177 - 536	689.2	610 - 707	NA
	Hatchery Water @ 900 uS/cm	500	1000	535.9	-	707.2	-	NA
7-day Reproduction	SDEPAMH @ 900 uS/cm	250	500	91.3	3 - 203	171.8	25 - 282	45.0%
	Hatchery Water @ 900 uS/cm	< 125	125	9.8	4 - 96	140.0	49 - 177	14.5%

Table J 11.3. Measured 7-day effect concentrations of cyfluthrin in a *C. dubia* test initiated on 4/07/10.

Endpoint	Matrix	Cyfluthrin (pptr)						
		NOEC	LOEC	LC10/EC10		LC50 (survival) / EC25 (reproduction)		PMSD
				Estimate	95% C.I.	Estimate	95% C.I.	
96-hour Survival	SDEPAMH @ 900 uS/cm	515	985	543.9	229.4 - 549.5	708.2	681.3 - 712.3	NA
	Hatchery Water @ 900 uS/cm	515	985	549.5	-	712.3	-	NA
7-day Survival	SDEPAMH @ 900 uS/cm	515	985	537.8	183 - 550	703.8	620 -712	NA
	Hatchery Water @ 900 uS/cm	515	985	549.5	-	712.3	-	NA
7-day Reproduction	SDEPAMH @ 900 uS/cm	268	515	64.9	1.8 - 270.9	163.9	12.0 - 307.7	45.0%
	Hatchery Water @ 900 uS/cm	<108	108	9.7	3.6 - 112.5	127.6	43.3 - 183.3	14.5%

Table J 11.4. Water chemistry during a *C. dubia* 7-day test initiated 4/07/10 evaluating the toxicity of cyfluthrin in both conductivity-adjusted synthetic water and water from the UC Davis Fish Conservation and Culture Laboratory, Skinner Fish Protection Facility, Byron, California.

Treatment	Initial EC (uS/cm)	Min Temp (°C)	Max Temp (°C)	Min DO (mg/L)	Max DO (mg/L)	Min pH	Max pH	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
SDEPAMH	292	24.0	26.4	6.8	8.1	7.85	8.51	92	56
SDEPAMH @ 900 uS/cm (SD900)	871	23.5	26.4	6.6	8.3	7.80	8.47	88	56
SDEPAMH Solvent Control	871	23.7	26.5	6.2	8.3	7.78	8.43	-	-
SD900 + 62.5 pptr Cyfluthrin	870	23.5	26.6	6.1	8.3	7.78	8.45	-	-
SD900 + 125 pptr Cyfluthrin	872	23.6	26.6	5.9	8.3	7.74	8.43	-	-
SD900 + 250 pptr Cyfluthrin	868	23.7	26.6	6.1	8.2	7.74	8.48	-	-
SD900 + 500 pptr Cyfluthrin	874	23.6	26.6	6.2	8.3	7.74	8.51	-	-
SD900 + 1000 pptr Cyfluthrin	873	23.7	26.7	7.0	8.3	7.81	8.52	-	-
SD900 + 2000 pptr Cyfluthrin	874	23.7	27.0	6.9	8.4	7.83	8.50	-	-
SD900 + 4000 pptr Cyfluthrin	874	23.7	27.2	6.5	8.2	7.84	8.44	-	-
Hatchery Water @ 900 uS/cm (HW900)	878	23.9	26.7	6.4	8.6	7.80	8.37	132	92
HW900 Solvent Control	878	23.9	26.6	4.0	8.2	7.58	8.39	-	-
HW900 + 125 pptr Cyfluthrin	881	23.8	26.7	3.8	8.0	7.57	8.39	-	-
HW900 + 250 pptr Cyfluthrin	877	23.8	26.6	4.0	8.1	7.62	8.37	-	-
HW900 + 500 pptr Cyfluthrin	883	23.8	26.8	4.1	8.6	7.64	8.39	-	-
HW900 + 1000 pptr Cyfluthrin	879	23.8	26.9	5.7	8.1	7.82	8.41	-	-
HW900 + 2000 pptr Cyfluthrin	884	24.3	26.8	6.4	8.2	7.82	8.30	-	-
HW900 + 4000 pptr Cyfluthrin	891	23.9	26.9	6.3	8.2	7.81	8.40	-	-

Appendix K

Quality Assurance/Quality Control: Relative Percent Differences

Table K1. Individual Relative Percent Differences of water chemistry measurements between Site 609 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
May 7, 2008	2.43	1.24 2.74	2.12	8.45	1.83	11.76
	2.25	2.38 1.38	0.00			
		2.63 0.00	0.63			
		2.38 0.00	0.00			
		1.29 1.16	1.78			
			0.38			
June 3, 2008	0.53	0.00 0.00	0.88	4.65	3.64	15.38
	0.88	3.77 0.00	0.38			
		2.56 7.14	0.13			
		7.50 5.19	0.12			
		5.33 2.41	0.38			
			0.12			
August 27, 2008	3.70	3.73 4.38	1.77	9.76	0.00	66.67
	2.14	0.00 1.29	0.13			
		2.78 3.68	0.51			
		3.55 2.67	1.16			
		0.00 0.00	0.25			
			0.65			
September 10, 2008	0.42	0.00 1.40	0.00	2.35	1.80	0.00
	0.71	2.47 2.78	0.00			
		2.70 1.26	0.26			
		0.00 2.53	0.25			
		4.14 0.00	0.90			
			0.64			
December 17, 2008	7.53	1.29 0.00	1.51	5.13	1.07	0.00
	1.08	5.00 0.00	0.51			
		1.29 10.13	0.25			
		3.82 3.87	0.51			
		3.87 3.73	0.63			
			0.50			
May 27, 2009	0.81	1.24 1.31	0.50	0.00	9.09	6.45
	1.60	2.41 2.67	0.38			
		1.29 5.78	0.38			
		0.00 2.60	0.25			
		1.32 3.55	0.64			
			0.38			
October 28, 2009	1.98	2.50 0.00	0.51	2.47	4.55	8.33
	1.99	1.31 9.76	0.00			
		6.37 2.30	0.25			
		0.00 1.34	0.77			
		0.00 10.00	0.13			
			0.64			

Table K2. Average Relative Percent Differences of water chemistry measurements between Site 609 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
May 7, 2008	2	2.34	0.12	10	1.52	1.01	6	0.82	0.92
June 3, 2008	2	0.70	0.25	10	3.39	2.87	6	0.34	0.30
August 27, 2008	2	2.92	1.10	10	2.21	1.73	6	0.74	0.62
September 10, 2008	2	0.56	0.20	10	1.73	1.43	6	0.34	0.36
December 17, 2008	2	4.30	4.56	10	3.30	2.99	6	0.65	0.44
May 27, 2009	2	1.20	0.56	10	2.22	1.61	6	0.42	0.13
October 28, 2009	2	1.99	0.01	10	3.36	3.92	6	0.38	0.30

Table K3. Individual Relative Percent Differences of water chemistry measurements between Site Hood and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
March 12, 2008	0.38	6.06	3.92	4.88	2.41	190.00
	1.16	2.44	0.00			
		0.00	1.13			
		2.44	0.50			
		0.00	2.53			
		2.35	0.90			
		2.63				
		0.00				
		1.23				
		1.29				
September 23, 2008	3.13	0.00	0.64	0.00	0.00	7.14
	2.93	3.55	2.55			
		4.03	2.72			
		1.20	0.26			
		5.48	1.06			
		0.00	0.91			
		2.82				
		2.41				
		2.82				
		2.67				
September 3, 2009	0.18	1.23	1.38	0.00	2.82	200.00
	7.84	1.24	1.17			
		1.31	0.49			
		1.17	0.38			
		4.08	2.94			
		2.35	0.13			
		2.70				
		3.51				
		0.00				
		8.00				
September 15, 2009	0.47	0.00	0.25	3.77	0.00	200.00
	0.94	2.41	1.06			
		6.71	0.76			
		2.44	1.79			
		5.41	2.99			
		1.29	0.39			
		2.56				
		3.51				
		2.63				
		0.00				

Table K4. Average Relative Percent Differences of water chemistry measurements between Site Hood and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
March 12, 2008	2	0.69	0.45	10	1.84	1.83	6	1.50	1.46
September 23, 2008	2	3.03	0.15	10	2.50	1.72	6	1.36	1.03
September 3, 2009	2	4.01	5.42	10	2.56	2.27	6	1.08	1.03
September 15, 2009	2	0.71	0.34	10	2.70	2.13	6	1.21	1.03

Table K5. Individual Relative Percent Differences of water chemistry measurements between Site 711 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
February 29, 2008	11.53	7.32	1.80	6.90	3.51	2.67
	4.15	5.78	1.16			
		3.92	0.26			
		4.76	0.63			
		2.56	0.77			
		2.44	0.39			
		0.00				
		2.30				
		1.31				
		1.34				
October 23, 2008	0.05	1.21	1.13	0.00	2.99	2.99
	1.36	0.00	0.26			
		0.00	0.13			
		2.30	0.63			
		2.53	0.40			
		3.51	0.00			
		0.00				
		1.20				
		2.78				
		0.00				
January 22, 2009	1.80	5.85	2.64	0.00	8.28	14.29
	13.26	3.64	0.25			
		0.00	0.49			
		2.41	1.01			
		2.60	0.63			
		3.43	0.62			
		5.06				
		2.67				
		1.48				
		1.32				

Table K6. Average Relative Percent Differences of water chemistry measurements between Site 711 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
February 29, 2008	2	7.84	5.22	10	3.17	2.25	6	0.83	0.57
October 23, 2008	2	0.71	0.93	10	1.35	1.35	6	0.42	0.41
January 22, 2009	2	7.53	8.11	10	2.85	1.75	6	0.94	0.87

Table K7. Individual Relative Percent Differences of water chemistry measurements between Site 508 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
February 12, 2008	8.84	1.16	1.00	4.08	2.53	0.00
	9.02	2.35	1.01			
		2.56	1.36			
		1.26	1.16			
		1.36	5.26			
		1.16	7.23			
		5.26				
		7.23				
August 13, 2008	2.59	1.26	0.51	0.00	2.90	66.67
	4.30	1.24	0.26			
		1.36	0.00			
		0.00	1.03			
		1.32	0.51			
		2.47	1.31			
		2.82				
		3.73				
		6.90				
		4.20				
June 24, 2009	6.23	1.26	1.53	0.00	0.00	22.22
	5.46	3.59	1.39			
		2.82	0.41			
		2.41	2.51			
		0.00	2.80			
		5.26	1.60			
		2.44				
		3.51				
		22.56				
		2.70				

Table K8. Average Relative Percent Differences of water chemistry measurements between Site 508 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
February 12, 2008	2	8.93	0.12	8	2.48	2.18	6	0.56	0.39
August 13, 2008	2	3.45	1.21	10	2.53	2.00	6	0.60	0.49
June 24, 2009	2	5.85	0.54	10	4.65	6.44	6	1.71	0.86

Table K9. Individual Relative Percent Differences of water chemistry measurements between Site 340 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
January 30, 2008	2.21	0.00	0.13	12.12	2.47	3.92
	0.94	3.72	0.00			
		5.00	0.25			
		3.55	0.13			
		1.21	0.13			
		2.47	0.13			
		1.24				
		1.27				
		1.32				
		1.29				
March 4, 2009	1.47	4.82	0.38	10.91	2.15	0.00
	4.27	1.26	0.13			
		5.41	0.13			
		1.26	0.00			
		1.26	0.00			
		7.06	0.00			
		1.27				
		3.43				
		6.54				
		2.53				

Table K10. Average Relative Percent Differences of water chemistry measurements between Site 340 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
January 30, 2008	2	1.58	0.90	10	2.11	1.53	6	0.13	0.08
March 4, 2009	2	2.87	1.98	10	3.48	2.31	6	0.11	0.15

Table K11. Individual Relative Percent Differences of water chemistry measurements between Site Rough & Ready and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
June 17, 2008	3.98	1.29	1.74	5.88	2.35	9.52
	2.27	2.41	0.89			
		5.33	1.52			
		2.38	0.38			
		2.78	0.38			
		0.61	0.75			
		2.56				
		2.41				
		1.36				
		2.27				
September 9, 2008	2.03	3.77	0.51	2.60	0.00	66.67
	2.18	1.21	0.00			
		2.63	1.25			
		2.44	1.24			
		0.00	0.63			
		0.00	0.49			
		1.29				
		2.47				
		1.36				
		1.34				
December 2, 2008	5.56	1.27	3.22	6.74	1.77	0.00
	5.68	1.20	0.12			
		2.50	0.61			
		3.68	0.12			
		3.77	0.12			
		5.99	1.10			
		17.14				
		3.68				
		0.00				
		0.00				
February 17, 2009	0.00	3.77	1.33	3.70	66.67	151.02
	1.95	0.00	0.86			
		5.33	0.12			
		0.00	0.37			
		3.92	0.50			
		7.69	0.00			
		1.26				
		0.00				
		5.13				
		2.70				

Table K12. Average Relative Percent Differences of water chemistry measurements of Site Rough & Ready and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
June 17, 2008	2	3.13	1.21	10	2.11	1.46	6	0.95	0.56
September 9, 2008	2	5.62	0.06	10	3.92	5.02	6	0.88	1.21
December 2, 2008	2	2.11	0.10	10	1.65	1.19	6	0.50	0.44
February 17, 2009	2	0.97	1.38	10	2.98	2.66	6	0.53	0.50

Table K13. Individual Relative Percent Differences of water chemistry measurements between Site 602 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
July 30, 2008	2.42	1.31	0.38	0.00	2.20	13.33
	0.81	1.27	0.00			
		2.78	0.00			
		2.50	0.00			
		5.41	0.00			
		2.47	0.00			
		2.78				
		0.00				
		4.14				
		0.00				
January 7, 2009	3.94	2.41	0.26	4.48	0.00	4.08
	2.96	0.00	0.13			
		1.31	0.51			
		1.21	0.00			
		6.71	0.13			
		6.45	0.13			
		4.37				
		4.94				
		0.00				
		1.24				

Table K14. Average Relative Percent Differences of water chemistry measurements between Site 602 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
July 30, 2008	2	1.62	1.14	10	2.26	1.70	6	0.06	0.15
January 7, 2009	2	3.45	0.70	10	2.87	2.55	6	0.19	0.17

Table K15. Individual Relative Percent Differences of water chemistry measurements between Site 815 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
July 17, 2008	1.58	2.35	1.02	6.45	6.25	18.18
	1.01	2.33	0.00			
		3.73	0.63			
		0.00	0.51			
		6.06	2.02			
		1.29	0.00			
		2.78				
		4.71				
		5.41				
		2.74				
June 11, 2009	0.62	2.44	2.25	6.45	3.51	0.00
	4.02	1.24	1.01			
		2.63	0.26			
		1.21	0.00			
		1.29	0.91			
		3.51	0.78			
		0.00				
		1.20				
		2.74				
		0.00				

Table K16. Average Relative Percent Differences of water chemistry measurements between Site 815 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
July 17, 2008	2	1.29	0.40	10	3.14	1.87	6	0.70	0.76
June 11, 2009	2	2.32	2.40	10	1.63	1.17	6	0.87	0.78

Table K17. Individual Relative Percent Differences of water chemistry measurements between Site 902 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
July 3, 2008	0.14	4.82	1.51	5.41	5.88	22.22
	9.02	1.18	0.89			
		2.94	0.63			
		0.00	0.90			
		0.00	1.05			
		1.18	0.00			
		8.11				
		1.21				
		0.00				
		1.34				
April 23, 2009	1.19	0.00	0.00	4.88	0.00	100.00
	0.29	1.21	0.38			
		0.00	0.12			
		1.20	0.12			
		1.24	0.64			
		4.65	0.63			
		1.26				
		3.73				
		2.56				
		2.70				

Table K18. Average Relative Percent Differences of water chemistry measurements between Site 902 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
July 3, 2008	2	4.58	6.28	10	2.08	2.59	6	0.83	0.50
April 23, 2009	2	0.74	0.63	10	1.86	1.53	6	0.32	0.28

Table K19. Individual Relative Percent Differences of water chemistry measurements between Site 915 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
September 25, 2008	0.44	0.00	0.62	0.00	2.47	100.00
	1.46	1.16	0.00			
		0.00	0.50			
		1.26	0.13			
		1.14	0.26			
		4.03	0.38			
		0.87				
		1.32				
		2.56				
August 6, 2009	12.80	2.44	0.62	8.70	3.77	0.00
	32.30	1.21	0.66			
		2.74	0.52			
		3.73	0.27			
		1.32	0.39			
		0.00	0.39			
		2.74				
		2.38				
		1.27				
		2.78				

Table K20. Average Relative Percent Differences of water chemistry measurements between Site 915 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
September 25, 2008	2	0.95	0.72	9	1.37	1.26	6	0.31	0.23
August 6, 2009	2	22.55	13.79	10	2.06	1.08	6	0.47	0.15

Table K21. Individual Relative Percent Differences of water chemistry measurements between Site Cache-Ulatis and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
November 6, 2008	0.86	2.47	1.51	8.45	0.00	33.33
	1.37	0.00	0.22			
		0.00	0.61			
		1.23	0.12			
		0.00	0.00			
		1.20	1.00			
		2.63				
		1.21				
		4.20				
		0.00				
October 15, 2009	6.90	0.00	1.18	0.00	0.00	14.63
	1.12	1.26	0.26			
		0.00	0.50			
		3.87	0.25			
		0.00	1.02			
		3.82	1.14			
		0.00				
		0.00				
		1.34				
		1.34				

Table K22. Average Relative Percent Differences of water chemistry measurements between Site Cache-Ulatis and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
November 6, 2008	2	1.11	0.36	10	1.29	1.43	6	0.58	0.58
October 15, 2009	2	4.01	4.09	10	1.16	1.54	6	0.72	0.44

Table K23. Individual Relative Percent Differences of water chemistry measurements between Site Napa and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
November 4, 2008	1.73	1.29	0.00	3.17	2.20	5.41
	0.41	2.47	0.13			
		3.97	0.64			
		0.00	9.73			
		1.44	0.26			
		2.53	0.13			
		4.32				
		0.00				
		1.44				
		5.63				
July 7, 2009	1.43	4.65	0.79	3.63	0.00	120.00
	0.00	5.26	0.26			
		1.36	0.13			
		8.48	1.02			
		1.40	0.90			
		2.63	0.13			
		6.25				
		5.06				
		5.80				
		4.65				
October 29, 2009	0.41	2.30	1.30	1.55	3.77	4.65
	2.97	1.24	0.51			
		6.54	0.39			
		3.82	0.13			
		2.78	0.00			
		2.56	0.13			
		1.40				
		0.00				
		1.40				
		1.40				

Table K24. Average Relative Percent Differences of water chemistry measurements between Site Napa and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
November 4, 2008	2	1.07	0.94	10	2.31	1.86	6	1.81	3.88
July 7, 2009	2	0.72	1.01	10	4.56	2.22	6	0.54	0.41
October 29, 2009	2	1.69	1.82	10	2.34	1.81	6	0.41	0.47

Table K25. Individual Relative Percent Differences of water chemistry measurements between Site Light 55 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
October 9, 2008	3.79	0.00	0.25	4.88	2.35	28.57
	4.63	9.52	0.51			
		0.00	0.49			
		0.00	0.26			
		0.00	0.51			
		1.17	0.51			
		0.00				
		1.17				
		2.63				
		4.14				
February 4, 2009	0.30	2.53	1.61	8.00	7.41	14.08
	4.60	4.82	0.74			
		4.08	0.24			
		4.76	0.62			
		3.77	0.12			
		2.44	0.00			
		2.63				
		2.44				
		0.00				
		1.29				
August 6, 2009	0.04	3.64	0.12	19.05	2.90	185.20
	0.19	2.47	0.13			
		2.74	0.38			
		2.50	0.26			
		2.67	0.39			
		0.00	0.38			
		5.71				
		3.64				
		3.97				
		1.42				

Table K26. Average Relative Percent Differences of water chemistry measurements between Site Light 55 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
October 9, 2008	2	4.21	0.59	10	1.86	3.03	6	0.42	0.13
February 4, 2009	2	2.45	3.04	10	2.88	1.53	6	0.55	0.59
August 6, 2009	2	0.11	0.10	10	2.78	1.53	6	0.28	0.13

Table K27. Individual Relative Percent Differences of water chemistry measurements between Site Cache-Lindsey and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
October 9, 2008	0.27	1.24	0.13	6.06	0.00	0.00
	2.26	7.41	0.00			
		3.82	0.49			
		3.68	0.52			
		1.23	0.65			
		4.65	0.26			
		2.63				
		1.18				
		1.32				
		0.00				
July 9, 2009	0.13	1.18	0.00	19.35	0.00	5.13
	1.88	3.47	1.31			
		2.63	0.13			
		2.47	0.39			
		1.31	0.26			
		2.53	0.13			
		1.34				
		1.24				
		1.38				
		0.00				

Table K28. Average Relative Percent Differences of water chemistry measurements between Site Cache-Lindsey and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
October 9, 2008	2	1.26	1.41	10	2.72	2.21	6	0.34	0.25
July 9, 2009	2	1.00	1.23	10	1.76	1.00	6	0.37	0.48

Table K29. Individual Relative Percent Differences of water chemistry measurements between Site Suisun and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
October 21, 2008	0.07	0.00	0.00	4.87	1.24	44.44
	0.43	0.00	0.63			
		0.00	0.63			
		3.55	0.75			
		3.97	0.00			
		0.00	0.62			
		0.00				
		0.00				
		1.34				
		1.34				
May 26, 2009	0.72	1.26	1.15	7.41	8.11	52.63
	0.94	1.24	0.12			
		0.00	0.50			
		1.21	0.62			
		2.33	0.37			
		2.60	0.12			
		2.38				
		1.32				
		2.63				

Table K30. Average Relative Percent Differences of water chemistry measurements between Site Suisun and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
October 21, 2008	2	0.25	0.25	10	1.02	1.55	6	0.44	0.34
May 26, 2009	2	0.83	0.55	10	1.89	1.09	6	0.48	0.38

Table K31. Individual Relative Percent Differences of water chemistry measurements between Site 405 and its duplicate

Collection Date	Analyte					
	EC	DO	pH	Hardness	Alkalinity	Ammonia
June 24, 2009	1.78	5.13	0.39	0.00	2.35	29.79
	2.84	4.88	2.94			
		5.88	0.82			
		3.77	1.72			
		6.71	0.66			
		10.13	1.21			
		9.66				
		7.59				
		2.86				
		1.40				
November 10, 2009	0.68	4.71	0.26	18.46	4.26	22.22
	2.83	5.26	0.38			
		0.00	0.38			
		1.31	0.51			
		1.32	1.03			
		0.00	0.39			
		1.40				
		5.06				
		2.67				
		5.33				

Table K32. Average Relative Percent Differences of water chemistry measurements between Site 405 and its duplicate

Collection Date	EC			DO			pH		
	Sample Size	Average	SD	Sample Size	Average	SD	Sample Size	Average	SD
June 24, 2009	2	2.31	0.75	10	8.50	2.81	6	1.29	0.93
November 10, 2009	2	1.75	1.53	10	2.71	2.19	6	0.49	0.28