Attachment 3

- Print versions of previously submitted materials supporting RAI 02.04.02-11

Trawl Analysis by Segment

		Segment 1					Segment 2					Segment 3				
Common	**Scientific**	**Total**	***Pi***	***Pi^2***	***ln(Pi)***	***Pi*ln (Pi)***	**Total**	***Pi***	***Pi^2***	***ln(Pi)***	***Pi*ln (Pi)***	**Total**	***Pi***	***Pi^2***	***ln(Pi)***	***Pi*ln (Pi)***
Atlantic Croaker	*Micropogonias undulatus*	322	0.06	0.00	-2.76	-0.17	104	0.05	0.00	-2.94	-0.16	56	0.03	0.00	-3.42	-0.11
Southern flounder	*Paralichthys lethostigma*	10	0.00	0.00	-6.23	-0.01	2	0.00	0.00	-6.89	-0.01	0	0.00	0.00	0.00	0.00
Hardhead Catfish	*Ariopis felis*	181	0.04	0.00	-3.34	-0.12	60	0.03	0.00	-3.49	-0.11	11	0.01	0.00	-5.04	-0.03
Menhaden	*Brevoortia patronus*	132	0.03	0.00	-3.65	-0.09	295	0.15	0.02	-1.90	-0.28	649	0.38	0.15	-0.97	-0.37
Star Drum	*Stellifer lanceolatus*	86	0.02	0.00	-4.08	-0.07	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Sand Trout	*Cynoscion arenarius*	238	0.05	0.00	-3.06	-0.14	38	0.02	0.00	-3.95	-0.08	18	0.01	0.00	-4.55	-0.05
Silver perch	*Bairdiella chrysoura*	330	0.06	0.00	-2.73	-0.18	8	0.00	0.00	-5.51	-0.02	12	0.01	0.00	-4.96	-0.03
Blue Crab	*Callinectus sapidus*	22	0.00	0.00	-5.44	-0.02	7	0.00	0.00	-5.64	-0.02	48	0.03	0.00	-3.57	-0.10
Brown Shrimp	*Penaeus aztecus*	187	0.04	0.00	-3.30	-0.12	5	0.00	0.00	-5.98	-0.02	0	0.00	0.00	0.00	0.00
Crawfish	*Procambarus spp.*	1	0.00	0.00	-8.53	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
River Shrimp	*Macrobrachium ohione*	0	0.00	0.00	0.00	0.00	3	0.00	0.00	-6.49	-0.01	2	0.00	0.00	-6.75	-0.01
Blue Catfish	*Ictalurus furcatus*	26	0.01	0.00	-5.28	-0.03	166	0.08	0.01	-2.47	-0.21	485	0.28	0.08	-1.26	-0.36
Speckled Trout	*Cynoscion nebulosus*	45	0.01	0.00	-4.73	-0.04	8	0.00	0.00	-5.51	-0.02	0	0.00	0.00	0.00	0.00
Gafftop Catfish	*Bagre marinus*	143	0.03	0.00	-3.57	-0.10	20	0.01	0.00	-4.59	-0.05	20	0.01	0.00	-4.45	-0.05
Red Drum	*Sciaenops ocellatus*	5	0.00	0.00	-6.92	-0.01	15	0.01	0.00	-4.88	-0.04	5	0.00	0.00	-5.83	-0.02
Black Drum	*Pogonias cromis*	660	0.13	0.02	-2.04	-0.27	631	0.32	0.10	-1.14	-0.36	69	0.04	0.00	-3.21	-0.13
White Shrimp	*Penaeus setiferus*	2375	0.47	0.22	-0.76	-0.36	375	0.19	0.04	-1.66	-0.32	120	0.07	0.00	-2.65	-0.19
Lined Sole	*Achirus lineatus*	1	0.00	0.00	-8.53	0.00	2	0.00	0.00	-6.89	-0.01	0	0.00	0.00	0.00	0.00
Channel Catfish	*Ictalurus punctatus*	0	0.00	0.00	0.00	0.00	3	0.00	0.00	-6.49	-0.01	3	0.00	0.00	-6.34	-0.01
Seabob	*Xiphopenaeus kroyeri*	24	0.00	0.00	-5.36	-0.03	5	0.00	0.00	-5.98	-0.02	98	0.06	0.00	-2.86	-0.16
Striped Mullet	*Mugil cephalus*	1	0.00	0.00	-8.53	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Atlantic Threadfin	*Polydactylus octonemus*	6	0.00	0.00	-6.74	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Bay Anchovy	*Anchoa mitchilli*	120	0.02	0.00	-3.75	-0.09	110	0.06	0.00	-2.89	-0.16	34	0.02	0.00	-3.91	-0.08
Spot Croaker	*Leiostomus xanthurus*	69	0.01	0.00	-4.30	-0.06	60	0.03	0.00	-3.49	-0.11	27	0.02	0.00	-4.14	-0.07
Ladyfish	*Elops saurus*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.59	0.00	0	0.00	0.00	0.00	0.00
Silver Jenny	*Eucinostomus gula*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.59	0.00	1	0.00	0.00	-7.44	0.00
Spotted Gar	*Lepisosteus oculatus*	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.44	0.00
Sheepshead Minnow	*Cyprinodon variegatus*	7	0.00	0.00	-6.59	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Gizzard Shad	*Dorosoma cepedianum*	16	0.00	0.00	-5.76	-0.02	10	0.01	0.00	-5.28	-0.03	26	0.02	0.00	-4.18	-0.06
Spotfin Mojarra	*Eucinostomus argenteus*	4	0.00	0.00	-7.15	-0.01	1	0.00	0.00	-7.59	0.00	0	0.00	0.00	0.00	0.00
Pinfish	*Lagodon rhomboides*	11	0.00	0.00	-6.14	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Bay Whiff	*Citharichthys spilopterus*	2	0.00	0.00	-7.84	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00

Trawl Analysis by Segment (cont.)

Common	Scientific	Segment 1 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 2 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 3 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)
Cichlid	*Lethrinops brevis*	16	0.00	0.00	-5.76	-0.02	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Lesser Blue Crab	*Callinectes similis*	5	0.00	0.00	-6.92	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Pigfish	*Orthopristis chrysoptera*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.59	0.00	0	0.00	0.00	0.00	0.00
Threadfin Shad	*Dorosoma petenense*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.59	0.00	6	0.00	0.00	-5.65	-0.02
White Mullet	*Mugil curema*	1	0.00	0.00	-8.53	0.00	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.44	0.00
Southern Stingray	*Dasyatis americana*	1	0.00	0.00	-8.53	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Atlantic Cutlassfish	*Trichiurus lepturus*	2	0.00	0.00	-7.84	0.00	3	0.00	0.00	-6.49	-0.01	1	0.00	0.00	-7.44	0.00
Mangrove Snapper	*Lutjanus griseus*	1	0.00	0.00	-8.53	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Mud Crab	*Rhithropanopeus harrisii*	1	0.00	0.00	-8.53	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Sheepshead	*Archosargus probatocephalus*	9	0.00	0.00	-6.34	-0.01	29	0.01	0.00	-4.22	-0.06	10	0.01	0.00	-5.14	-0.03
Atlantic Brief Squid	*Lolliguncula brevis*	21	0.00	0.00	-5.49	-0.02	8	0.00	0.00	-5.51	-0.02	1	0.00	0.00	-7.44	0.00
Tonguefish	*Symphurus plagiusa*	3	0.00	0.00	-7.44	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
		5084					1972					1704				
		Species Richness =	37				Species Richness =	29				Species Richness =	24			
		Simpson Index (D) =	0.25				Simpson Index (D) =	0.18				Simpson Index (D) =	0.24			
		Simpson's Index of Diversity (1-D) =	0.75				Simpson's Index of Diversity (1-D) =	0.82				Simpson's Index of Diversity (1-D) =	0.76			
		Simpson's Reciprocal Index (1/D) =	3.99				Simpson's Reciprocal Index (1/D) =	5.66				Simpson's Reciprocal Index (1/D) =	4.18			
		Shannon Index (H) =	2.04				Shannon Index (H) =	2.13				Shannon Index (H) =	1.9			
		Evenness (E) =	0.56				Evenness (E) =	0.63				Evenness (E) =	0.6			
		Catch per Unit of Effort (CPUE) =	242				Catch per Unit of Effort (CPUE) =	89.6				Catch per Unit of Effort (CPUE) =	77.5			

Bag Seine Analysis by Segment

		Segment 1					Segment 2					Segment 3				
Common	**Scientific**	**Total**	***Pi***	***Pi^2***	***ln(Pi)***	***Pi*ln (Pi)***	**Total**	***Pi***	***Pi^2***	***ln(Pi)***	***Pi*ln (Pi)***	**Total**	***Pi***	***Pi^2***	***ln(Pi)***	***Pi*ln (Pi)***
Cyprinid Spp.	*Cyprinid spp.*	1	0.00	0.00	-7.89	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Striped Mullet	*Mugil cephalus*	794	0.30	0.09	-1.22	-0.36	342	0.07	0.01	-2.62	-0.19	535	0.38	0.14	-0.98	-0.37
White Mullet	*Mugil curema*	137	0.05	0.00	-2.97	-0.15	32	0.01	0.00	-4.99	-0.03	11	0.01	0.00	-4.86	-0.04
Bay Anchovy	*Anchoa mitchilli*	15	0.01	0.00	-5.19	-0.03	9	0.00	0.00	-6.26	-0.01	0	0.00	0.00	0.00	0.00
Grass Shrimp	*Palaemonetes pugio*	385	0.14	0.02	-1.94	-0.28	1211	0.26	0.07	-1.35	-0.35	166	0.12	0.01	-2.15	-0.25
Blue Crab	*Callinectes sapidus*	113	0.04	0.00	-3.17	-0.13	40	0.01	0.00	-4.76	-0.04	36	0.03	0.00	-3.68	-0.09
Rough Silverside	*Membras martinica*	17	0.01	0.00	-5.06	-0.03	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Bay Whiff	*Citharichthys spilopterus*	9	0.00	0.00	-5.70	-0.02	6	0.00	0.00	-6.66	-0.01	0	0.00	0.00	0.00	0.00
Gulf Menhaden	*Brevoortia patronus*	316	0.12	0.01	-2.14	-0.25	2369	0.51	0.26	-0.68	-0.35	275	0.19	0.04	-1.65	-0.32
Blue Catfish	*Ictalurus furcatus*	4	0.00	0.00	-6.51	-0.01	6	0.00	0.00	-6.66	-0.01	41	0.03	0.00	-3.55	-0.10
Atlantic Croaker	*Micropogonias undulatus*	237	0.09	0.01	-2.43	-0.21	183	0.04	0.00	-3.24	-0.13	142	0.10	0.01	-2.31	-0.23
Gizzard Shad	*Dorosoma cepedianum*	4	0.00	0.00	-6.51	-0.01	4	0.00	0.00	-7.07	-0.01	0	0.00	0.00	0.00	0.00
Sharptail Goby	*Oligolepis acutipennis*	19	0.01	0.00	-4.95	-0.04	15	0.00	0.00	-5.75	-0.02	5	0.00	0.00	-5.65	-0.02
Threadfin Shad	*Dorosoma petenense*	2	0.00	0.00	-7.20	-0.01	1	0.00	0.00	-8.45	0.00	0	0.00	0.00	0.00	0.00
Sand Trout	*Cynoscion arenarius*	5	0.00	0.00	-6.28	-0.01	7	0.00	0.00	-6.51	-0.01	10	0.01	0.00	-4.96	-0.03
White Shrimp	*Penaeus setiferus*	393	0.15	0.02	-1.92	-0.28	138	0.03	0.00	-3.53	-0.10	53	0.04	0.00	-3.29	-0.12
Spotted Gar	*Lepisosteus oculatus*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-8.45	0.00	0	0.00	0.00	0.00	0.00
Channel Catfish	*Ictalurus punctatus*	2	0.00	0.00	-7.20	-0.01	8	0.00	0.00	-6.37	-0.01	12	0.01	0.00	-4.78	-0.04
Violet Goby	*Gobioides broussonnetii*	1	0.00	0.00	-7.89	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Spotfin Mojarra	*Eucinostomus argenteus*	3	0.00	0.00	-6.79	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Sheepshead Minnow	*Cyprinodon variegatus*	29	0.01	0.00	-4.53	-0.05	37	0.01	0.00	-4.84	-0.04	13	0.01	0.00	-4.70	-0.04
Diamond Killifish	*Adinia xenica*	5	0.00	0.00	-6.28	-0.01	3	0.00	0.00	-7.35	0.00	3	0.00	0.00	-6.16	-0.01
Naked Goby	*Gobiosoma bosci*	3	0.00	0.00	-6.79	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Bayou Killifish	*Fundulus pulvereus*	1	0.00	0.00	-7.89	0.00	1	0.00	0.00	-8.45	0.00	1	0.00	0.00	-7.26	-0.01
Brown Shrimp	*Penaeus aztecus*	49	0.02	0.00	-4.00	-0.07	114	0.02	0.00	-3.72	-0.09	101	0.07	0.01	-2.65	-0.19
Black Drum	*Pogonias cromis*	1	0.00	0.00	-7.89	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Sailfin Molly	*Poecilia latipinna*	32	0.01	0.00	-4.43	-0.05	110	0.02	0.00	-3.75	-0.09	8	0.01	0.00	-5.18	-0.03
Freshwater Goby	*Ctenogobius shufeldti*	7	0.00	0.00	-5.95	-0.02	2	0.00	0.00	-7.76	0.00	0	0.00	0.00	0.00	0.00
Rainwater Killifish	*Lucania parva*	1	0.00	0.00	-7.89	0.00	1	0.00	0.00	-8.45	0.00	0	0.00	0.00	0.00	0.00
Gulf Killifish	*Fundulus grandis*	0	0.00	0.00	0.00	0.00	12	0.00	0.00	-5.97	-0.02	3	0.00	0.00	-6.16	-0.01
Shiner spp.	*Notropis spp.*	0	0.00	0.00	0.00	0.00	2	0.00	0.00	-7.76	0.00	0	0.00	0.00	0.00	0.00
Alligator Gar	*Atractosteus spatula*	1	0.00	0.00	-7.89	0.00	1	0.00	0.00	-8.45	0.00	0	0.00	0.00	0.00	0.00

Bag Seine Analysis by Segment (cont.)

Common	Scientific	Segment 1 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 2 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 3 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)
Central Mudminnow	*Umbra limi*	1	0.00	0.00	-7.89	0.00	4	0.00	0.00	-7.07	-0.01	0	0.00	0.00	0.00	0.00
Bluegill	*Lepomis macrochirus*	1	0.00	0.00	-7.89	0.00	2	0.00	0.00	-7.76	0.00	0	0.00	0.00	0.00	0.00
River Shrimp	*Macrobrachium ohione*	1	0.00	0.00	-7.89	0.00	8	0.00	0.00	-6.37	-0.01	1	0.00	0.00	-7.26	-0.01
Inland Silverside	*Menidia beryllina*	3	0.00	0.00	-6.79	-0.01	1	0.00	0.00	-8.45	0.00	2	0.00	0.00	-6.57	-0.01
Sheepshead	*Archosargus probatocephalus*	0	0.00	0.00	0.00	0.00	14	0.00	0.00	-5.81	-0.02	0	0.00	0.00	0.00	0.00
Mosquitofish	*Gambusia affinis*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-8.45	0.00	0	0.00	0.00	0.00	0.00
Spot Croaker	*Leiostomus xanthurus*	80	0.03	0.00	-3.51	-0.10	4	0.00	0.00	-7.07	-0.01	4	0.00	0.00	-5.88	-0.02
Red Drum	*Sciaenops ocellatus*	4	0.00	0.00	-6.51	-0.01	1	0.00	0.00	-8.45	0.00	3	0.00	0.00	-6.16	-0.01
Southern Flounder	*Paralichthys lethostigma*	2	0.00	0.00	-7.20	-0.01	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Atlantic Brief Squid	*Lolliguncula brevis*	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-8.45	0.00	0	0.00	0.00	0.00	0.00
Lesser Blue Crab	*Callinectes similis*	1	0.00	0.00	-7.89	0.00	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Crevalle Jack	*Caranx hippos*	1	0.00	0.00	-7.89	0.00	0	0.00	0.00	0.00	0.00	1	0.00	0.00	-7.26	-0.01
		2680					**4691**					**1426**				
		Species Richness =				**38**	**Species Richness =**				**35**	**Species Richness =**				**22**
		Simpson Index (D) =				**0.16**	**Simpson Index (D) =**				**0.33**	**Simpson Index (D) =**				**0.21**
		Simpson's Index of Diversity (1-D) =				**0.84**	**Simpson's Index of Diversity (1-D) =**				**0.67**	**Simpson's Index of Diversity (1-D) =**				**0.79**
		Simpson's Reciprocal Index (1/D) =				**6.34**	**Simpson's Reciprocal Index (1/D) =**				**3.02**	**Simpson's Reciprocal Index (1/D) =**				**4.77**
		Shannon Index (H) =				**2.21**	**Shannon Index (H) =**				**1.57**	**Shannon Index (H) =**				**1.95**
		Evenness (E) =				**0.61**	**Evenness (E) =**				**0.44**	**Evenness (E) =**				**0.63**
		Catch per Unit of Effort (CPUE) =				**244**	**Catch per Unit of Effort (CPUE)* =**				**521**	**Catch per Unit of Effort (CPUE) =**				**143**

*skewed by large menhaden catch in April

Hoop Net Analysis by Segment

Common	Scientific	Segment 1 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 2 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 3 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)
Hardhead Catfish	*Ariopis felis*	1	0.03	0.00	-3.37	-0.12	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Sheepshead	*Archosargus probatocephalus*	3	0.10	0.01	-2.27	-0.23	2	0.07	0.00	-2.71	-0.18	1	0.03	0.00	-3.69	-0.09
Smallmouth Buffalo	*Ictiobus bubalus*	0	0.00	0.00	0.00	0.00	3	0.10	0.01	-2.30	-0.23	2	0.05	0.00	-3.00	-0.15
Alligator Gar	*Lepisosteus spatula*	3	0.10	0.01	-2.27	-0.23	5	0.17	0.03	-1.79	-0.30	5	0.13	0.02	-2.08	-0.26
Spotted Gar	*Lepisosteus oculatus*	1	0.03	0.00	-3.37	-0.12	5	0.17	0.03	-1.79	-0.30	4	0.10	0.01	-2.30	-0.23
Southern Flounder	*Paralichthys lethostigma*	1	0.03	0.00	-3.37	-0.12	0	0.00	0.00	0.00	0.00	2	0.05	0.00	-3.00	-0.15
Red Drum	*Sciaenops ocellatus*	13	0.45	0.20	-0.80	-0.36	8	0.27	0.07	-1.32	-0.35	17	0.43	0.18	-0.86	-0.36
Longnose Gar	*Lepisosteus osseus*	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.69	-0.09
Gulf Menhaden	*Brevoortia patronus*	2	0.07	0.00	-2.67	-0.18	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Gizzard Shad	*Dorosoma petenense*	1	0.03	0.00	-3.37	-0.12	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.69	-0.09
Blue Crab	*Callinectes sapidus*	1	0.03	0.00	-3.37	-0.12	1	0.03	0.00	-3.40	-0.11	1	0.03	0.00	-3.69	-0.09
Channel Catfish	*Ictalurus punctatus*	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	2	0.05	0.00	-3.00	-0.15
Blue Catfish	*Ictalurus furcatus*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11	2	0.05	0.00	-3.00	-0.15
Striped Mullet	*Mugil cephalus*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11	0	0.00	0.00	0.00	0.00
Red Eared Slider	*Trachemys scripta elegans*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11	0	0.00	0.00	0.00	0.00
Flathead Catfish	*Polydictis olivaris*	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	2	0.05	0.00	-3.00	-0.15
Spot Croaker	*Leiostomus xanthurus*	1	0.03	0.00	-3.37	-0.12	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Grass Carp	*Ctenopharyngodon idella*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11	0	0.00	0.00	0.00	0.00
Spadefish	*Chaetodipterus faber*	2	0.07	0.00	-2.67	-0.18	1	0.03	0.00	-3.40	-0.11	0	0.00	0.00	0.00	0.00
Black Drum	*Pogonias cromis*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11	0	0.00	0.00	0.00	0.00
		29					30					40				
		Species Richness =				11	Species Richness =				12	Species Richness =				12
		Simpson Index (D) =				0.24	Simpson Index (D) =				0.15	Simpson Index (D) =				0.22
		Simpson's Index of Diversity (1-D) =				0.76	Simpson's Index of Diversity (1-D) =				0.85	Simpson's Index of Diversity (1-D) =				0.78
		Simpson's Reciprocal Index (1/D) =				4.18	Simpson's Reciprocal Index (1/D) =				13.4	Simpson's Reciprocal Index (1/D) =				4.52
		Shannon Index (H) =				1.89	Shannon Index (H) =				2.15	Shannon Index (H) =				1.97
		Evenness (E) =				0.79	Evenness (E) =				0.87	Evenness (E) =				0.79
		Catch per Unit of Effort (CPUE) =				2.64	Catch per Unit of Effort (CPUE) =				2.73	Catch per Unit of Effort (CPUE) =				3.64

Gill Net Analysis by Segment

Common	Scientific	Segment 1 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 2 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)	Segment 3 Total	Pi	Pi^2	ln(Pi)	Pi*ln (Pi)
Sheepshead	*Archosargus probatocephalus*	1	0.02	0.00	-3.71	-0.09	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Blue Crab	*Callinectes sapidus*	0	0.00	0.00	0.00	0.00	2	0.06	0.00	-2.86	-0.16	0	0.00	0.00	0.00	0.00
Grass Carp	*Ctenopharyngodon idella*	1	0.02	0.00	-3.71	-0.09	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11
Spotted Gar	*Lepisosteus oculatus*	1	0.02	0.00	-3.71	-0.09	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Red Drum	*Sciaenops ocellatus*	4	0.10	0.01	-2.33	-0.23	1	0.03	0.00	-3.56	-0.10	3	0.10	0.01	-2.30	-0.23
Gafftopsail Catfish	*Bagre marinus*	5	0.12	0.01	-2.10	-0.26	4	0.11	0.01	-2.17	-0.25	0	0.00	0.00	0.00	0.00
Ladyfish	*Elops saurus*	1	0.02	0.00	-3.71	-0.09	1	0.03	0.00	-3.56	-0.10	0	0.00	0.00	0.00	0.00
Bull Shark	*Carcharhinus leucas*	5	0.12	0.01	-2.10	-0.26	1	0.03	0.00	-3.56	-0.10	0	0.00	0.00	0.00	0.00
Blue Catfish	*Ictalurus furcatus*	9	0.22	0.05	-1.52	-0.33	7	0.20	0.04	-1.61	-0.32	6	0.20	0.04	-1.61	-0.32
Smallmouth Buffalo	*Ictiobus bubalus*	5	0.12	0.01	-2.10	-0.26	14	0.40	0.16	-0.92	-0.37	13	0.43	0.19	-0.84	-0.36
Sand Trout	*Cynoscion arenarius*	2	0.05	0.00	-3.02	-0.15	1	0.03	0.00	-3.56	-0.10	2	0.07	0.00	-2.71	-0.18
Southern Flounder	*Paralichthys lethostigma*	1	0.02	0.00	-3.71	-0.09	1	0.03	0.00	-3.56	-0.10	0	0.00	0.00	0.00	0.00
Gulf Menhaden	*Brevoortia patronus*	2	0.05	0.00	-3.02	-0.15	1	0.03	0.00	-3.56	-0.10	2	0.07	0.00	-2.71	-0.18
Hardhead Catfish	*Ariopsis felis*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.56	-0.10	0	0.00	0.00	0.00	0.00
Speckled Trout	*Cynoscion nebulosus*	3	0.07	0.01	-2.61	-0.19	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11
Black Drum	*Pogonias cromis*	1	0.02	0.00	-3.71	-0.09	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00
Alligator Gar	*Atractosteus spatula*	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.56	-0.10	1	0.03	0.00	-3.40	-0.11
Atlantic Croaker	*Micropogonias undulatus*	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	1	0.03	0.00	-3.40	-0.11
		41					35					30				
		Species Richness =				14	Species Richness =				12	Species Richness =				9
		Simpson Index (D) =				0.12	Simpson Index (D) =				0.22	Simpson Index (D) =				0.25
		Simpson's Index of Diversity (1-D) =				0.88	Simpson's Index of Diversity (1-D) =				0.78	Simpson's Index of Diversity (1-D) =				0.75
		Simpson's Reciprocal Index (1/D) =				8.62	Simpson's Reciprocal Index (1/D) =				4.49	Simpson's Reciprocal Index (1/D) =				3.98
		Shannon Index (H) =				2.36	Shannon Index (H) =				1.91	Shannon Index (H) =				1.73
		Evenness (E) =				0.89	Evenness (E) =				0.77	Evenness (E) =				0.79
		Catch per Unit of Effort (CPUE) =				3.73	Catch per Unit of Effort (CPUE) =				3.18	Catch per Unit of Effort (CPUE) =				2.73

Jaccard Coefficients of Similarity between Segments for Trawl Samples

		Segment 1 vs Segment 2				Segment 1 vs Segment 3				Segment 2 vs 3			
Common	**Scientific**	Segment 1	Segment 2	Both	Either	Segment 1	Segment 3	Both	Either	Segment 2	Segment 3	Both	Either
Atlantic Croaker	*Micropogonias undulatus*	322	104	1	1	322	56	1	1	104	56	1	1
Southern Flounder	*Paralichthys lethostigma*	10	2	1	1	10	0		1	2	0		1
Hardhead Catfish	*Ariopis felis*	181	60	1	1	181	11	1	1	60	11	1	1
Gulf Menhaden	*Brevoortia patronus*	132	295	1	1	132	649	1	1	295	649	1	1
Star Drum	*Stellifer lanceolatus*	86	0		1	86	0		1	0	0		
Sand Trout	*Cynoscion arenarius*	238	38	1	1	238	18	1	1	38	18	1	1
Silver Perch	*Bairdiella chrysoura*	330	8	1	1	330	12	1	1	8	12	1	1
Blue Crab	*Callinectes sapidus*	22	7	1	1	22	48	1	1	7	48	1	1
Brown Shrimp	*Penaeus aztecus*	187	5	1	1	187	0		1	5	0		1
Crawfish	*Procamburus spp.*	1	0		1	1	0		1	0	0		
River Shrimp	*Macrobrachium ohione*	0	3		1	0	2		1	3	2	1	1
Blue Catfish	*Ictalurus furcatus*	26	166	1	1	26	485	1	1	166	485	1	1
Speckled Trout	*Cynoscion nebulosus*	45	8	1	1	45	0		1	8	0		1
Gafftop Catfish	*Bagre marinus*	143	20	1	1	143	20	1	1	20	20	1	1
Red Drum	*Sciaenops ocellatus*	5	15	1	1	5	5	1	1	15	5	1	1
Black Drum	*Pogonias cromis*	660	631	1	1	660	69	1	1	631	69	1	1
White Shrimp	*Penaeus setiferus*	2375	375	1	1	2375	120	1	1	375	120	1	1
Lined Sole	*Achirus lineatus*	1	2	1	1	1	0		1	2	0		1
Channel Catfish	*Ictalurus punctatus*	0	3		1	0	3		1	3	3	1	1
Seabob	*Xiphopenaeus kroyeri*	24	5	1	1	24	98	1	1	5	98	1	1
Striped Mullet	*Mugil cephalus*	1	0		1	1	0		1	0	0		
Atlantic Threadfin	*Polydactylus octonemus*	6	0		1	6	0		1	0	0		
Bay Anchovy	*Anchoa mitchilli*	120	110	1	1	120	34	1	1	110	34	1	1
Spot Croaker	*Leiostomus xanthurus*	69	60	1	1	69	27	1	1	60	27	1	1
Ladyfish	*Elops saurus*	0	1		1	0	0			1	0		1
Silver Jenny	*Eucinostomus gula*	0	1		1	0	1		1	1	1	1	1
Spotted Gar	*Lepisosteus oculatus*	0	0		0	0	1		1	0	1		1
Sheepshead Minnov	*Cyprinodon variegatus*	7	0		1	7	0		1	0	0		
Gizzard Shad	*Dorosoma cepedianum*	16	10	1	1	16	26	1	1	10	26	1	1
Spotfin Mojarra	*Eucinostomus argenteus*	4	1	1	1	4	0		1	1	0		1
Pinfish	*Lagodon rhomboides*	11	0		1	11	0		1	0	0		
Bay Whiff	*Citharichthys spilopterus*	2	0		1	2	0		1	0	0		

Jaccard Coefficients of Similarity between Segments for Trawl Samples (cont.)

Common	Scientific	Segment 1 vs Segment 2				Segment 1 vs Segment 3				Segment 2 vs 3			
		Segment 1	Segment 2	Both	Either	Segment 1	Segment 3	Both	Either	Segment 2	Segment 3	Both	Either
Cichlid	*Lethrinops brevis*	16	0		1	16	0		1	0	0		
Lesser Blue Crab	*Callinectes similis*	5	0		1	5	0		1	0	0		
Pigfish	*Orthopristis chrysoptera*	0	1		1	0	0			1	0		1
Threadfin Shad	*Dorosoma petenense*	0	1		1	0	6		1	1	6	1	1
White Mullet	*Mugil curema*	1	0		1	1	1	1	1	0	1		1
Southern Stingray	*Dasyatis americana*	1	0		1	1	0		1	0	0		
Atlantic Cutlassfish	*Trichiurus lepturus*	2	3	1	1	2	1	1	1	3	1	1	1
Mangrove Snapper	*Lutjanus griseus*	1	0		1	1	0		1	0	0		
Mud Crab	*Rhithropanopeus harrisii*	1	0		1	1	0		1	0	0		
Sheepshead	*Archosargus probatocephalus*	9	29	1	1	9	10	1	1	29	10	1	1
Atlantic Brief Squid	*Lolliguncula brevis*	21	8	1	1	21	1	1	1	8	1.	1	1
Tonguefish	*Symphurus plagiusa*	3	0		1	3	0		1	0	0		
				23	43			19	42			22	31
		Jaccard Coeff=		**0.53**		**Jaccard Coeff=**		**0.45**		**Jaccard Coeff=**		**0.71**	
			%CCJ=	**53.5**			**%CCJ=**	**45.2**			**%CCJ=**	**71**	

Jaccard Coefficients of Similarity between Segments for Bag Seine Samples

		Segment 1 vs Segment 2				Segment 1 vs Segment 3				Segment 2 vs Segment 3			
Common	**Scientific**	Segment 1	Segment 2	Both	Either	Segment 1	Segment 3	Both	Either	Segment 2	Segment 3	Both	Either
Cyprinid Spp.	*Cyprinid spp.*	1	0		1	1	0		1	0	0		
Striped Mullet	*Mugil cephalus*	794	342	1	1	794	535	1	1	342	535	1	1
White Mullet	*Mugil curema*	137	32	1	1	137	11	1	1	32	11	1	1
Bay Anchovy	*Anchoa mitchilli*	15	9	1	1	15	0		1	9	0		1
Grass Shrimp	*Palaemonetes pugio*	385	1211	1	1	385	166	1	1	1211	166	1	1
Blue Crab	*Callinectes sapidus*	113	40	1	1	113	36	1	1	40	36	1	1
Rough Silverside	*Membras martinica*	17	0		1	17	0		1	0	0		
Bay Whiff	*Citharichthys spilopterus*	9	6	1	1	9	0		1	6	0		1
Gulf Menhaden	*Brevoortia patronus*	316	2369	1	1	316	275	1	1	2369	275	1	1
Blue Catfish	*Ictalurus furcatus*	4	6	1	1	4	41	1	1	6	41	1	1
Atlantic Croaker	*Micropogonias undulatus*	237	183	1	1	237	142	1	1	183	142	1	1
Gizzard Shad	*Dorosoma cepedianum*	4	4	1	1	4	0		1	4	0		1
Sharptail Goby	*Oligolepis acutipennis*	19	15	1	1	19	5	1	1	15	5	1	1
Threadfin Shad	*Dorosoma petenense*	2	1	1	1	2	0		1	1	0		1
Sand Trout	*Cynoscion arenarius*	5	7	1	1	5	10	1	1	7	10	1	1
White Shrimp	*Penaeus setiferus*	393	138	1	1	393	53	1	1	138	53	1	1
Spotted Gar	*Lepisosteus oculatus*	0	1		1	0	0			1	0		1
Channel Catfish	*Ictalurus punctatus*	2	8	1	1	2	12	1	1	8	12	1	1
Violet Goby	*Gobioides broussonnetii*	1	0		1	1	0		1	0	0		
Spotfin Mojarra	*Eucinostomus argenteus*	3	0		1	3	0		1	0	0		
Sheepshead Minnow	*Cyprinodon variegatus*	29	37	1	1	29	13	1	1	37	13	1	1
Diamond Killifish	*Adinia xenica*	5	3	1	1	5	3	1	1	3	3	1	1
Naked Goby	*Gobiosoma bosci*	3	0		1	3	0		1	0	0		
Bayou Killifish	*Fundulus pulvereus*	1	1	1	1	1	1	1	1	1	1	1	1
Brown Shrimp	*Penaeus aztecus*	49	114	1	1	49	101	1	1	114	101	1	1
Black Drum	*Pogonias cromis*	1	0		1	1	0		1	0	0		
Sailfin Molly	*Poecilia latipinna*	32	110	1	1	32	8	1	1	110	8	1	1
Freshwater Goby	*Ctenogobius shufeldti*	7	2	1	1	7	0		1	2	0		1
Rainwater Killifish	*Lucania parva*	1	1	1	1	1	0		1	1	0		1
Gulf Killifish	*Fundulus grandis*	0	12		1	0	3		1	12	3	1	1
Shiner spp.	*Notropis spp.*	0	2		1	0	0			2	0		1
Alligator Gar	*Atractosteus spatula*	1	1	1	1	1	0		1	1	0		1

Jaccard Coefficients of Similarity between Segments for Bag Seine Samples (cont.)

Common	Scientific	Segment 1 vs Segment 2				Segment 1 vs Segment 3				Segment 2 vs Segment 3			
		Segment 1	Segment 2	Both	Either	Segment 1	Segment 3	Both	Either	Segment 2	Segment 3	Both	Either
Central Mudminnow	*Umbra limi*	1	4	1	1	1	0		1	4	0		1
Bluegill	*Lepomis macrochirus*	1	2	1	1	1	0		1	2	0		1
River Shrimp	*Macrobrachium ohione*	1	8	1	1	1	1	1	1	8	1	1	1
Inland Silverside	*Menidia beryllina*	3	1	1	1	3	2	1	1	1	2	1	1
Sheepshead	*Archosargus probatocephalus*	0	14		1	0	0			14	0		1
Mosquitofish	*Gambusia affinis*	0	1		1	0	0			1	0		1
Spot Croaker	*Leiostomus xanthurus*	80	4	1	1	80	4	1	1	4	4	1	1
Red Drum	*Sciaenops ocellatus*	4	1	1	1	4	3	1	1	1	3	1	1
Southern Flounder	*Paralichthys lethostigma*	2	0		1	2	0			0	0		
Atlantic Brief Squid	*Lolliguncula brevis*	0	1		1	0	0			1	0		1
Lesser Blue Crab	*Callinectes similis*	1	0		1	1	0		1	0	0		
Crevalle Jack	*Caranx hippos*	1	0		1	1	1	1	1	0	1		1
				29	44			21	38			21	36
		Jaccard Coeff =		**0.66**		**Jaccard Coeff =**		**0.55**		**Jaccard Coeff =**		**0.58**	
		%CCJ =		**65.9**		**%CCJ =**		**55.3**		**%CCJ =**		**58.3**	

Jaccard Coefficients of Similarity between Segments for Hoop Net Samples

Common	Scientific	Segment 1 vs Segment 2				Segment 1 vs Segment 3				Segment 2 vs 3			
		Segment 1	Segment 2	Both	Either	Segment 1	Segment 3	Both	Either	Segment 2	Segment 3	Both	Either
Hardhead Catfish	*Ariopis felis*	1	0		1	1	0		1	0	0		
Sheepshead	*Archosargus probatocephalus*	3	2	1	1	3	1	1	1	2	1	1	1
Smallmouth Buffalo	*Ictiobus bubalus*	0	3		1	0	2		1	3	2	1	1
Alligator Gar	*Lepisosteus spatula*	3	5	1	1	3	5	1	1	5	5	1	1
Spotted Gar	*Lepisosteus oculatus*	1	5	1	1	1	4	1	1	5	4	1	1
Southern Flounder	*Paralichthys lethostigma*	1	0		1	1	2	1	1	0	2		1
Red Drum	*Sciaenops ocellatus*	13	8	1	1	13	17	1	1	8	17	1	1
Longnose Gar	*Lepisosteus osseus*	0	0			0	1		1	0	1		1
Gulf Menhaden	*Brevoortia patronus*	2	0		1	2	0		1	0	0		
Gizzard Shad	*Dorosoma petenense*	1	0		1	1	1	1	1	0	1		1
Blue Crab	*Callinectes sapidus*	1	1	1	1	1	1	1	1	1	1	1	1
Channel Catfish	*Ictalurus punctatus*	0	0			0	2		1	0	2		1
Blue Catfish	*Ictalurus furcatus*	0	1		1	0	2		1	1	2	1	1
Striped Mullet	*Mugil cephalus*	0	1		1	0	0			1	0		1
Red Eared Slider	*Trachemys scripta elegans*	0	1		1	0	0			1	0		1
Flathead Catfish	*Polydictis olivaris*	0	0			0	2		1	0	2		1
Spot Croaker	*Leiostomus xanthurus*	1	0		1	1	0		1	0	0		
Grass Carp	*Ctenopharyngodon idella*	0	1		1	0	0			1	0		1
Spadefish	*Chaetodipterus faber*	2	1	1	1	2	0		1	1	0		1
Black Drum	*Pogonias cromis*	0	1		1	0	0			1	0		1
				6	17			7	16			7	17
		Jaccard Coeff=		**0.35**		**Jaccard Coeff=**		**0.44**		**Jaccard Coeff=**		**0.412**	
		%CCJ=		**35.3**		**%CCJ=**		**43.8**		**%CCJ=**		**41.18**	

Jaccard Coefficients of Similarity between Segments for Gill Net Samples

Common	Scientific	Segment 1 vs Segment 2				Segment 1 vs Segment 3				Segment 2 vs 3			
		Segment 1	Segment 2	Both	Either	Segment 1	Segment 3	Both	Either	Segment 2	Segment 3	Both	Either
Sheepshead	*Archosargus probatocephalus*	1	0		1	1	0		1	0	0		
Blue Crab	*Callinectes sapidus*	0	2		1	0	0			2	0		1
Grass Carp	*Ctenopharyngodon idella*	1	0		1	1	1	1	1	0	1		1
Spotted Gar	*Lepisosteus oculatus*	1	0		1	1	0		1	0	0		
Red Drum	*Sciaenops ocellatus*	4	1	1	1	4	3	1	1	1	3	1	1
Gafftopsail Catfish	*Bagre marinus*	5	4	1	1	5	0		1	4	0		1
Ladyfish	*Elops saurus*	1	1	1	1	1	0		1	1	0		1
Bull Shark	*Carcharhinus leucas*	5	1	1	1	5	0		1	1	0		1
Blue Catfish	*Ictalurus furcatus*	9	7	1	1	9	6	1	1	7	6	1	1
Smallmouth Buffalo	*Ictiobus bubalus*	5	14	1	1	5	13	1	1	14	13	1	1
Sand Trout	*Cynoscion arenarius*	2	1	1	1	2	2	1	1	1	2	1	1
Southern flounder	*Paralichthys lethostigma*	1	1	1	1	1	0		1	1	0		1
Gulf Menhaden	*Brevoortia patronus*	2	1	1	1	2	2	1	1	1	2	1	1
Hardhead Catfish	*Ariopsis felis*	0	1		1	0	0			1	0		1
Speckled Trout	*Cynoscion nebulosus*	3	0		1	3	1	1	1	0	1		1
Black Drum	*Pogonias cromis*	1	0		1	1	0		1	0	0		
Alligator Gar	*Atractosteus spatula*	0	1		1	0	1		1	1	1	1	1
Atlantic Croaker	*Micropogonias undulatus*	0	0			0	1		1	0	1		1
				9	17			7	16			6	15
		Jaccard Coeff=		**0.53**		**Jaccard Coeff=**		**0.44**		**Jaccard Coeff=**		**0.4**	
		%CCJ=		**52.9**		**%CCJ=**		**43.8**		**%CCJ=**		**40**	

ENCL 3

Lengths of Species Collected in Trawls near the STP RMPF		CoRF-03T5 6/11/2007		CoRF-04-T5 8/28/2007		CoRF-06-T5 10/31/2007		CoRF-07-T5 11/14/2007		CoRf-13-T6 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Atlantic Croaker	*Micropogonias undulatus*									205	1				
Atlantic Croaker	*Micropogonias undulatus*									202	1				
Atlantic Croaker	*Micropogonias undulatus*									178	1				
Atlantic Croaker	*Micropogonias undulatus*									101	1				
Atlantic Croaker	*Micropogonias undulatus*									75	1				
Atlantic Croaker	*Micropogonias undulatus*									68	1				
	Average	**0**		**0**			**0**		**0**	**138.17**					
	Total	**0**		**0**			**0**		**0**		**6**	**6**	**205**	**68**	**138.17**
Hardhead Catfish	*Ariopis felis*					280	1			310	1				
Hardhead Catfish	*Ariopis felis*					230	1								
Hardhead Catfish	*Ariopis felis*					235	1								
	Average					**248**				**310**					
	Total	**0**		**0**		—	**3**		**0**		**1**	**4**	**310**	**230**	**263.75**
Gulf Menhaden	*Brevoortia patronus*					235	1	110	1	176	1				
Gulf Menhaden	*Brevoortia patronus*					140	1	108	1	138	1				
Gulf Menhaden	*Brevoortia patronus*					130	1			184	1				
Gulf Menhaden	*Brevoortia patronus*					165	1								
Gulf Menhaden	*Brevoortia patronus*					125	1								
Gulf Menhaden	*Brevoortia patronus*					170	1								
Gulf Menhaden	*Brevoortia patronus*					165	1								
Gulf Menhaden	*Brevoortia patronus*					130	1								
Gulf Menhaden	*Brevoortia patronus*					162	1								
Gulf Menhaden	*Brevoortia patronus*					150	1								
Gulf Menhaden	*Brevoortia patronus*					132	1								
Gulf Menhaden	*Brevoortia patronus*					125	1								
Gulf Menhaden	*Brevoortia patronus*					165	1								
Gulf Menhaden	*Brevoortia patronus*					168	1								
Gulf Menhaden	*Brevoortia patronus*					180	1								
Gulf Menhaden	*Brevoortia patronus*					172	1								
Gulf Menhaden	*Brevoortia patronus*					140	1								
Gulf Menhaden	*Brevoortia patronus*					170	1								

Lengths of Species Collected in Trawls near the STP RMPF		CoRF-03T5 6/11/2007		CoRF-04-T5 8/28/2007		CoRF-06-T5 10/31/2007		CoRF-07-T5 11/14/2007		CoRf-13-T6 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Gulf Menhaden	*Brevoortia patronus*					165	1								
Gulf Menhaden	*Brevoortia patronus*					160	1								
	Average					**157**		**109**		**166**					
	Total		**0**		**0**		**20**		**2**		**3**	**25**	**235**	**108**	**148.65**
Sand Trout	*Cynoscion arenarius*					300	1			158	1				
Sand Trout	*Cynoscion arenarius*					160	1								
Sand Trout	*Cynoscion arenarius*					230	1								
Sand Trout	*Cynoscion arenarius*					125	1								
Sand Trout	*Cynoscion arenarius*					160	1								
Sand Trout	*Cynoscion arenarius*					150	1								
Sand Trout	*Cynoscion arenarius*					58	1								
	Average									**158**					
	Total		**0**		**0**		**7**		**0**		**1**	**8**	**300**	**58**	**167.63**
Silver Perch	*Bairdiella chrysoura*					140	1								
Silver Perch	*Bairdiella chrysoura*					190	1								
Silver Perch	*Bairdiella chrysoura*					190	1								
Silver Perch	*Bairdiella chrysoura*					120	1								
Silver Perch	*Bairdiella chrysoura*					115	1								
Silver Perch	*Bairdiella chrysoura*					122	1								
Silver Perch	*Bairdiella chrysoura*					112	1								
Silver Perch	*Bairdiella chrysoura*					170	1								
	Average					**145**									
	Total		**0**		**0**		**8**		**0**		**0**	**8**	**190**	**112**	**144.88**
Blue Crab	*Callinectes sapidus*									44	1				
	Average									**44**					
	Total		**0**		**0**		**0**		**0**		**1**	**1**	**44**	**44**	**44**
Blue Catfish	*Ictalurus furcatus*	192	1	138	1	170	1	180	1						
Blue Catfish	*Ictalurus furcatus*	175	1	112	1			135	1						
Blue Catfish	*Ictalurus furcatus*	185	1	115	1										
Blue Catfish	*Ictalurus furcatus*			118	1										
Blue Catfish	*Ictalurus furcatus*			150	1										

Lengths of Species Collected in Trawls near the STP RMPF		CoRF-03T5 6/11/2007		CoRF-04-T5 8/28/2007		CoRF-06-T5 10/31/2007		CoRF-07-T5 11/14/2007		CoRf-13-T6 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Blue Catfish	*Ictalurus furcatus*			142	1										
Blue Catfish	*Ictalurus furcatus*			128	1										
Blue Catfish	*Ictalurus furcatus*			142	1										
Blue Catfish	*Ictalurus furcatus*			95	1										
	Average	**184**		**127**		**170**		**158**							
	Total		**3**		**9**		**1**		**2**		**0**	**15**	**192**	**95**	**145.13**
Gafftop Catfish	*Bagre marinus*					162	1			174	1				
Gafftop Catfish	*Bagre marinus*					158	1			178	1				
Gafftop Catfish	*Bagre marinus*					155	1			195	1				
Gafftop Catfish	*Bagre marinus*					155	1			165	1				
Gafftop Catfish	*Bagre marinus*									193	1				
	Average					**158**				**181**					
	Total		**0**		**0**		**4**		**0**		**5**	**9**	**195**	**155**	**170.56**
White Shrimp	*Penaeus setiferus*					90	1			105	1				
White Shrimp	*Penaeus setiferus*					80	1			115	1				
White Shrimp	*Penaeus setiferus*					95	1			107	1				
White Shrimp	*Penaeus setiferus*					110	1			118	1				
White Shrimp	*Penaeus setiferus*					95	1			112	1				
White Shrimp	*Penaeus setiferus*					65	1			124	1				
White Shrimp	*Penaeus setiferus*					100	1			88	1				
White Shrimp	*Penaeus setiferus*					90	1			125	1				
White Shrimp	*Penaeus setiferus*					108	1			110	1				
White Shrimp	*Penaeus setiferus*					85	1			108	1				
White Shrimp	*Penaeus setiferus*					75	1			115	1				
White Shrimp	*Penaeus setiferus*					95	1			100	1				
White Shrimp	*Penaeus setiferus*					95	1			114	1				
White Shrimp	*Penaeus setiferus*					82	1								
White Shrimp	*Penaeus setiferus*					55	1								
White Shrimp	*Penaeus setiferus*					100	1								
White Shrimp	*Penaeus setiferus*					78	1								
White Shrimp	*Penaeus setiferus*					65	1								

Lengths of Species Collected in Trawls near the STP RMPF		CoRF-03T5 6/11/2007		CoRF-04-T5 8/28/2007		CoRF-06-T5 10/31/2007		CoRF-07-T5 11/14/2007		CoRf-13-T6 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
White Shrimp	*Penaeus setiferus*					88	1								
White Shrimp	*Penaeus setiferus*					82	1								
White Shrimp	*Penaeus setiferus*					78	1								
White Shrimp	*Penaeus setiferus*					96	1								
White Shrimp	*Penaeus setiferus*					78	1								
White Shrimp	*Penaeus setiferus*					86	1								
	Average					**86**				**110.85**					
	Total		**0**		**0**		**24**		**0**		**13**	**37**	**125**	**55**	**94.919**
Channel Catfish	*Ictalurus punctatus*			70	1										
	Average			**70**											
	Total		**0**		**1**		**0**		**0**		**0**	**1**	**70**	**70**	**70**
Striped Mullet	*Mugil cephalus*							360	1						
	Average							**360**							
	Total		**0**		**0**		**0**		**1**		**0**	**1**	**360**	**360**	**360**
Gizzard Shad	*Dorosoma cepedianum*									174	1				
	Average									**174**					
	Total		**0**		**0**		**0**		**0**		**1**	**1**	**174**	**174**	**174**

Lengths of Species Collected In Hoop Nets near the STP RMPF	CoRF-07-HN3 11/15/2007		CoRF-08-HN3 12/12/2007		CoRf-09-HN3 1/24/2008		CoRF-10-HN3 2/21/2008		CoRF-11-HN3 3/20/2008		CoRF-13-HN3 5/12/2008					
Common Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Sheepshead					240	1										
Average					240											
Total		0		0		1		0		0		0	1	240	240	240
Smallmouth Buffalo					450											
Average					450											
Total		0		0		1		0		0		0	1	450	450	450
Alligator Gar	580	1														
Alligator Gar	590	1														
Alligator Gar	585	1														
Alligator Gar	560	1														
Average	579															
Total		4		0		0		0		0		0	4	590	560	578.75
Spotted Gar									635	1	605	1				
Average									635		605					
Total		0		0		0		0		1		1	2	635	605	620
Red Drum	380	1	415	1	570	1	570	1	660	1						
Red Drum	410	1	430	1	560	1										
Red Drum					495	1										
Red Drum					485	1										
Red Drum					540	1										
Average	395		423		530		570		660							
Total		2		2		5		1		1		0	11	660	380	501.36
Gizzard Shad	330	1														
Average	330															
Total		1		0		0		0		0		0	1	330	330	330
Blue Crab											165	1				
Average											165					
Total		0		0		0		0		0		1	1	165	165	165
Channel Catfish	550	1														
Average	550															
Total		1		0		0		0		0		0	1	550	550	550

Lengths of Species Collected in Hoop Nets near the STP RMPF	CoRF-07-HN3 11/15/2007		CoRF-08-HN3 12/12/2007		CoRf-09-HN3 1/24/2008		CoRF-10-HN3 2/21/2008		CoRF-11-HN3 3/20/2008		CoRF-13-HN3 5/12/2008					
Common Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Blue Catfish			465	1												
Blue Catfish			445	1												
Average			**455**													
Total		**0**		**2**		**0**		**0**		**0**		**0**	**2**	**465**	**445**	**455**
Flathead Catfish							425	1								
Flathead Catfish							410	1								
Average							**418**									
Total		**0**		**0**		**0**		**2**		**0**		**0**	**2**	**425**	**410**	**417.5**

Lengths of Species Collected in Gill Nets near the STP RMPF		CoRF-04-G3 8/28/2007		CoRF-05-G3 9/27/2007		CoRF-07-G3 11/15/2007		CoRF-09-G3 1/24/2008		CoRF-10-G3 2/21/2008		CoRf-11-G3 3/22/2008	
Common Name	**Scientific Name**	**Length (mm)**	**#**	**Length (mm)**	**#**	**Length (mm)**	**#**	**Length (mm)**	**#**	**Length (mm)**	**#**	**Length (mm)**	**#**
Red Drum	*Sciaenops ocellatus*	N/A	1					748	1				
	Average							**748**					
	Total		**1**		**0**		**0**		**1**		**0**		**0**
Blue Catfish	*Ictalurus furcatus*			810	1	660	1			865	1	570	1
	Average			**810**		**660**				**865**		**570**	
	Total		**0**		**1**		**1**		**0**		**1**		**1**
Smallmouth Buffalo	*Ictiobus bubalus*			550	1	555	1					560	1
Smallmouth Buffalo	*Ictiobus bubalus*											580	1
Smallmouth Buffalo	*Ictiobus bubalus*											610	1
Smallmouth Buffalo	*Ictiobus bubalus*											543	1
	Average			**550**		**555**						**573**	
	Total		**0**		**1**		**1**		**0**		**0**		**4**
Gulf Menhaden	*Brevoortia patronus*												
	Average												
	Total		**0**		**0**		**0**		**0**		**0**		**0**
Alligator Gar	*Atractosteus spatula*							1790	1				
	Average							**1790**					
	Total		**0**		**0**		**0**		**1**		**0**		**0**
Atlantic Croaker	*Micropogonias undulatus*											255	1
	Average											**255**	
	Total		**0**		**0**		**0**		**0**		**0**		**1**

Lengths of Species Collected in Gill Nets near the STP RMPF (continued)		CoRf-12-G3 4/9/2008		CoRF-13-G3 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Red Drum	*Sciaenops ocellatus*	395	1						
	Average	**395**							
	Total		**1**		**0**	**3**	**748**	**748**	**748**
Blue Catfish	*Ictalurus furcatus*	830	1						
	Average	**830**							
	Total		**1**		**0**	**5**	**865**	**570**	**747**
Smallmouth Buffalo	*Ictiobus bubalus*	655	1						
Smallmouth Buffalo	*Ictiobus bubalus*	590	1						
Smallmouth Buffalo	*Ictiobus bubalus*								
Smallmouth Buffalo	*Ictiobus bubalus*								
	Average	**623**							
	Total		**2**		**0**	**8**	**655**	**543**	**580.375**
Gulf Menhaden	*Brevoortia patronus*	330	1						
	Average	**330**							
	Total		**1**		**0**	**1**	**330**	**330**	**330**
Alligator Gar	*Atractosteus spatula*								
	Average								
	Total		**0**		**0**	**1**	**1790**	**1790**	**1790**
Atlantic Croaker	*Micropogonias undulatus*								
	Average								
	Total		**0**		**0**	**1**	**255**	**255**	**255**

Lengths of Species Collected in Trawls near the STP Blowdown		CoRF-09-T4 1/24/2008		CoRF-12-T4 4/8/2008		CoRF-12-T5 4/8/2008		CoRf-13-T4 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Atlantic Croaker	*Micropogonias undulatus*			565	1	210	1	233	1				
Atlantic Croaker	*Micropogonias undulatus*			50	1	31	1	185	1				
Atlantic Croaker	*Micropogonias undulatus*					33	1						
	Average			**308**		**91**		**209**					
	Total		**0**		**2**		**3**		**2**	**7**	**565**	**31**	**186.71**
Hardhead Catfish	*Ariopis felis*					330	1						
Hardhead Catfish	*Ariopis felis*					235	1						
	Average					**283**							
	Total		**0**		**0**		**2**		**0**	**2**	**330**	**235**	**282.50**
Gulf Menhaden	*Brevoortia patronus*			175	1			320	1				
	Average			**175**				**320**					
	Total		**0**		**1**		**0**		**1**	**2**	**320**	**175**	**247.50**
Sand Trout	*Cynoscion arenarius*			45	1	50	1	80	1				
Sand Trout	*Cynoscion arenarius*					45	1	119	1				
Sand Trout	*Cynoscion arenarius*							95	1				
Sand Trout	*Cynoscion arenarius*							96	1				
Sand Trout	*Cynoscion arenarius*							81	1				
	Average			**45**		**48**		**94.2**					
	Total		**0**		**1**		**2**		**5**	**8**	**119**	**45**	**76.38**
Blue Catfish	*Ictalurus furcatus*	150	1			220	1						
	Average	**150**				**220**							
	Total		**1**		**0**		**1**		**0**	**2**	**220**	**150**	**185.00**
Speckled Trout	*Cynoscion nebulosus*	445	1										
Speckled Trout	*Cynoscion nebulosus*	375	1										
Speckled Trout	*Cynoscion nebulosus*	240	1										
Speckled Trout	*Cynoscion nebulosus*	315	1										
	Average	**344**											
	Total		**4**		**0**		**0**		**0**	**4**	**445**	**240**	**343.75**
Gafftop Catfish	*Bagre marinus*							171	1				
	Average							**171**					
	Total		**0**		**0**		**0**		**1**	**1**	**171**	**171**	**171.00**
Red Drum	*Sciaenops ocellatus*	350	1										
Red Drum	*Sciaenops ocellatus*	310	1										

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Lengths of Species Collected in Trawls near the STP Blowdown		CoRF-09-T4 1/24/2008		CoRF-12-T4 4/8/2008		CoRF-12-T5 4/8/2008		CoRf-13-T4 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Red Drum	*Sciaenops ocellatus*	365	1										
Red Drum	*Sciaenops ocellatus*	355	1										
	Average	**345**											
	Total		**4**		**0**		**0**		**0**	**4**	**365**	**310**	**345.00**
Black Drum	*Pogonias cromis*	220	1										
Black Drum	*Pogonias cromis*	215	1										
Black Drum	*Pogonias cromis*	255	1										
Black Drum	*Pogonias cromis*	181	1										
Black Drum	*Pogonias cromis*	167	1										
Black Drum	*Pogonias cromis*	185	1										
Black Drum	*Pogonias cromis*	154	1										
Black Drum	*Pogonias cromis*	151	1										
Black Drum	*Pogonias cromis*	197	1										
Black Drum	*Pogonias cromis*	173	1										
Black Drum	*Pogonias cromis*	241	1										
Black Drum	*Pogonias cromis*	162	1										
Black Drum	*Pogonias cromis*	168	1										
Black Drum	*Pogonias cromis*	158	1										
Black Drum	*Pogonias cromis*	190	1										
Black Drum	*Pogonias cromis*	167	1										
Black Drum	*Pogonias cromis*	175	1										
Black Drum	*Pogonias cromis*	140	1										
Black Drum	*Pogonias cromis*	165	1										
Black Drum	*Pogonias cromis*	185	1										
Black Drum	*Pogonias cromis*	168	1										
Black Drum	*Pogonias cromis*	174	1										
Black Drum	*Pogonias cromis*	166	1										
Black Drum	*Pogonias cromis*	180	1										
	Average	**181**											
	Total		**24**		**0**		**0**		**0**	**24**	**255**	**140**	**180.71**
White Shrimp	*Penaeus setiferus*			91	1	43	1	100	1				
White Shrimp	*Penaeus setiferus*					74	1	120	1				
White Shrimp	*Penaeus setiferus*							115	1				

Lengths of Species Collected in Trawls near the STP Blowdown		CoRF-09-T4 1/24/2008		CoRF-12-T4 4/8/2008		CoRF-12-T5 4/8/2008		CoRf-13-T4 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
White Shrimp	*Penaeus setiferus*							125	1				
White Shrimp	*Penaeus setiferus*							105	1				
White Shrimp	*Penaeus setiferus*							104	1				
White Shrimp	*Penaeus setiferus*							115	1				
White Shrimp	*Penaeus setiferus*							116	1				
White Shrimp	*Penaeus setiferus*							110	1				
White Shrimp	*Penaeus setiferus*							92	1				
White Shrimp	*Penaeus setiferus*							110	1				
White Shrimp	*Penaeus setiferus*							105	1				
White Shrimp	*Penaeus setiferus*							100	1				
White Shrimp	*Penaeus setiferus*							116	1				
White Shrimp	*Penaeus setiferus*							104	1				
White Shrimp	*Penaeus setiferus*							130	1				
	Average			**91**		**59**		**110.4375**					
	Total		**0**		**1**		**2**		**16**	**19**	**130**	**43**	**103.95**
Bay Anchovy	*Anchoa mitchilli*			34	1	45	1	35	1				
Bay Anchovy	*Anchoa mitchilli*			35	1	42	1						
Bay Anchovy	*Anchoa mitchilli*			38	1	38	1						
Bay Anchovy	*Anchoa mitchilli*			33	1	38	1						
Bay Anchovy	*Anchoa mitchilli*			42	1	41	1						
Bay Anchovy	*Anchoa mitchilli*			41	1	37	1						
Bay Anchovy	*Anchoa mitchilli*			48	1	40	1						
Bay Anchovy	*Anchoa mitchilli*			39	1	45	1						
Bay Anchovy	*Anchoa mitchilli*			37	1	45	1						
Bay Anchovy	*Anchoa mitchilli*			39	1	38	1						
Bay Anchovy	*Anchoa mitchilli*			36	1	48	1						
Bay Anchovy	*Anchoa mitchilli*			35	1	41	1						
Bay Anchovy	*Anchoa mitchilli*			40	1	33	1						
Bay Anchovy	*Anchoa mitchilli*			45	1	38	1						
Bay Anchovy	*Anchoa mitchilli*			38	1	40	1						
Bay Anchovy	*Anchoa mitchilli*			42	1								
Bay Anchovy	*Anchoa mitchilli*			47	1								
Bay Anchovy	*Anchoa mitchilli*			37	1								

Lengths of Species Collected in Trawls near the STP Blowdown		CoRF-09-T4 1/24/2008		CoRF-12-T4 4/8/2008		CoRF-12-T5 4/8/2008		CoRf-13-T4 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Bay Anchovy	*Anchoa mitchilli*			48	1								
Bay Anchovy	*Anchoa mitchilli*			44	1								
Bay Anchovy	*Anchoa mitchilli*			38	1								
Bay Anchovy	*Anchoa mitchilli*			41	1								
Bay Anchovy	*Anchoa mitchilli*			40	1								
Bay Anchovy	*Anchoa mitchilli*			42	1								
Bay Anchovy	*Anchoa mitchilli*			42	1								
Bay Anchovy	*Anchoa mitchilli*			38	1								
Bay Anchovy	*Anchoa mitchilli*			37	1								
Bay Anchovy	*Anchoa mitchilli*			41	1								
Bay Anchovy	*Anchoa mitchilli*			35	1								
Bay Anchovy	*Anchoa mitchilli*			35	1								
Bay Anchovy	*Anchoa mitchilli*				37								
	Average			**40**		**41**		**35**					
	Total		**0**		**67**		**15**		**1**	**83**	**48**	**33**	**39.80**
Spot Croaker	*Leiostomus xanthurus*	130	1	150	1	160	1						
Spot Croaker	*Leiostomus xanthurus*			55	1	158	1						
	Average	**130**		**103**		**159**							
	Total		**1**		**2**		**2**		**0**	**5**	**160**	**55**	**130.60**
Gizzard Shad	*Dorosoma cepedianum*	295	1	210	1			162	1				
Gizzard Shad	*Dorosoma cepedianum*	250	1	108	1			125	1				
	Average	**273**		**159**				**143.5**					
	Total		**2**		**2**		**0**		**2**	**6**	**295**	**108**	**191.67**
Pinfish	*Lagodon rhomboides*							155	1				
	Average							**155**					
	Total		**0**		**0**		**0**		**1**	**1**	**155**	**155**	**155.00**
Atlantic Cutlassfish	*Trichiurus lepturus*							440	1				
Atlantic Cutlassfish	*Trichiurus lepturus*							455	1				
Atlantic Cutlassfish	*Trichiurus lepturus*							370	1				
	Average							**421.7**					
	Total		**0**		**0**		**0**		**3**	**3**	**455**	**370**	**421.67**
Sheepshead	*Archosargus probatocephalus*	251	1										
Sheepshead	*Archosargus probatocephalus*	198	1										

Lengths of Species Collected in Trawls near the STP Blowdown		CoRF-09-T4 1/24/2008		CoRF-12-T4 4/8/2008		CoRF-12-T5 4/8/2008		CoRf-13-T4 5/12/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Sheepshead	*Archosargus probatocephalus*	235	1										
Sheepshead	*Archosargus probatocephalus*	150	1										
Sheepshead	*Archosargus probatocephalus*	205	1										
Sheepshead	*Archosargus probatocephalus*	230	1										
Sheepshead	*Archosargus probatocephalus*	208	1										
Sheepshead	*Archosargus probatocephalus*	155	1										
Sheepshead	*Archosargus probatocephalus*	171	1										
Sheepshead	*Archosargus probatocephalus*	260	1										
Sheepshead	*Archosargus probatocephalus*	261	1										
	Average	**211**	**—**										
	Total	**—**	**11**		**0**		**0**		**0**	**11**	**261**	**150**	**211.27**

Lengths of Species Collected in Hoop Nets near the STP Blowdown			CoRf-09-HN2 1/24/2008		CoRF-12-HN2 4/9/2008					
Common Name	Scientific Name		Length (mm)	#	Length (mm)	#	Total sample	Max	Min	AVG
Spotted Gar	*Lepisosteus oculatus*				695	1				
		Average			695					
		Total	0			1	1	695	695	695
Blue Catfish	*Ictalurus furcatus*				189	1				
		Average			189					
		Total	0			1	1	189	189	189
Striped Mullet	*Mugil cephalus*									
		Average								
		Total	1			0	1	NA	NA	NA

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Lengths of Species Collected in Bag Seines near the STP Blowdown		CoRF-03-BS2 6/11/07		CoRF-08-BS2B 12/12/2007		CoRF-09-BS3A 12/23/2008		CoRF-09-BS2B 12/23/2008		CoRF-12-BS2B 4/8/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Striped Mullet	*Mugil cephalus*					28	1	37	1	58	1				
Striped Mullet	*Mugil cephalus*					33	1	34	1	48	1				
Striped Mullet	*Mugil cephalus*							32	1	42	1				
Striped Mullet	*Mugil cephalus*							35	1	42	1				
Striped Mullet	*Mugil cephalus*									48	1				
Striped Mullet	*Mugil cephalus*									42	1				
Striped Mullet	*Mugil cephalus*									43	1				
Striped Mullet	*Mugil cephalus*									55	1				
Striped Mullet	*Mugil cephalus*									40	1				
Striped Mullet	*Mugil cephalus*									40	1				
Striped Mullet	*Mugil cephalus*									46	1				
Striped Mullet	*Mugil cephalus*									44	1				
Striped Mullet	*Mugil cephalus*									40	1				
Striped Mullet	*Mugil cephalus*									43	1				
Striped Mullet	*Mugil cephalus*									44	1				
Striped Mullet	*Mugil cephalus*									45	1				
Striped Mullet	*Mugil cephalus*									40	1				
Striped Mullet	*Mugil cephalus*									42	1				
Striped Mullet	*Mugil cephalus*									38	1				
Striped Mullet	*Mugil cephalus*									46	1				
Striped Mullet	*Mugil cephalus*									31	1				
Striped Mullet	*Mugil cephalus*									40	1				
Striped Mullet	*Mugil cephalus*									45	1				
Striped Mullet	*Mugil cephalus*									35	1				
Striped Mullet	*Mugil cephalus*									38	1				
Striped Mullet	*Mugil cephalus*									50	1				
Striped Mullet	*Mugil cephalus*									41	1				
Striped Mullet	*Mugil cephalus*									47	1				
Striped Mullet	*Mugil cephalus*									37	1				
Striped Mullet	*Mugil cephalus*									40	1				
Striped Mullet	*Mugil cephalus*										10				
	Average						31		35		43				
	Total		0		0		2		4		40	46	58	28	41.36
Grass Shrimp	*Palaemonetes pugio*			24	1	25	1	25	1	28	1				
Grass Shrimp	*Palaemonetes pugio*					24	1	30	1	31	1				
Grass Shrimp	*Palaemonetes pugio*					25	1	31	1	33	1				
Grass Shrimp	*Palaemonetes pugio*					28	1	38	1	30	1				
Grass Shrimp	*Palaemonetes pugio*					25	1	32	1	31	1				
Grass Shrimp	*Palaemonetes pugio*					31	1	24	1	33	1				
Grass Shrimp	*Palaemonetes pugio*					24	1	28	1	30	1				
Grass Shrimp	*Palaemonetes pugio*					23	1	29	1	30	1				
Grass Shrimp	*Palaemonetes pugio*					24	1	37	1						
Grass Shrimp	*Palaemonetes pugio*					31	1	24	1						
Grass Shrimp	*Palaemonetes pugio*					31	1	23	1						
Grass Shrimp	*Palaemonetes pugio*					30	1	28	1						

Lengths of Species Collected in Bag Seines near the STP Blowdown		CoRF-03-BS2 6/11/07		CoRF-08-BS2B 12/12/2007		CoRf-09-BS3A 12/23/2008		CoRf-09-BS2B 12/23/2008		CoRF-12-BS2B 4/8/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Grass Shrimp	*Palaemonetes pugio*					30	1	28	1						
Grass Shrimp	*Palaemonetes pugio*					30	1	30	1						
Grass Shrimp	*Palaemonetes pugio*					32	1	23	1						
Grass Shrimp	*Palaemonetes pugio*					25	1	20	1						
Grass Shrimp	*Palaemonetes pugio*					24	1	24	1						
Grass Shrimp	*Palaemonetes pugio*					24	1	22	1						
Grass Shrimp	*Palaemonetes pugio*					24	1	31	1						
Grass Shrimp	*Palaemonetes pugio*					28	1	30	1						
Grass Shrimp	*Palaemonetes pugio*					28	1	35	1						
Grass Shrimp	*Palaemonetes pugio*					26	1	33	1						
Grass Shrimp	*Palaemonetes pugio*					25	1	28	1						
Grass Shrimp	*Palaemonetes pugio*					23	1	31	1						
Grass Shrimp	*Palaemonetes pugio*					23	1	30	1						
Grass Shrimp	*Palaemonetes pugio*					21	1	29	1						
Grass Shrimp	*Palaemonetes pugio*					24	1	30	1						
Grass Shrimp	*Palaemonetes pugio*					23	1	22	1						
Grass Shrimp	*Palaemonetes pugio*					23	1	26	1						
Grass Shrimp	*Palaemonetes pugio*					32	1	25	1						
Grass Shrimp	*Palaemonetes pugio*						13		71						
	Average				24		26		28		31				
	Total		0		1		43		101		8	153	38	20	27.57
Blue Crab	*Callinectes sapidus*	75	1	18	1	20	1	33	1						
Blue Crab	*Callinectes sapidus*	35	1	14	1			38	1						
Blue Crab	*Callinectes sapidus*	15	1	12	1			21	1						
Blue Crab	*Callinectes sapidus*	12	1	15	1										
Blue Crab	*Callinectes sapidus*	10	1	18	1										
Blue Crab	*Callinectes sapidus*	18	1												
	Average		28		15		20		31						
	Total		6		5		1		3		0	15	75	10	23.60
Bay Whiff	*Citharichthys spilopterus*	50	1					48	1						
Bay Whiff	*Citharichthys spilopterus*	45	1					28	1						
Bay Whiff	*Citharichthys spilopterus*	42	1					31	1						
Bay Whiff	*Citharichthys spilopterus*	40	1					28	1						
Bay Whiff	*Citharichthys spilopterus*							33	1						
	Average		44						34						
	Total		4		0		0		5		0	9	50	28	38.33
Gulf Menhaden	*Brevoortia patronus*	65	1			50	1			31	1				
Gulf Menhaden	*Brevoortia patronus*	42	1			40	1			34	1				
Gulf Menhaden	*Brevoortia patronus*	52	1			38	1			30	1				
Gulf Menhaden	*Brevoortia patronus*	48	1			41	1			35	1				
Gulf Menhaden	*Brevoortia patronus*	52	1			35	1			32	1				
Gulf Menhaden	*Brevoortia patronus*	55	1			42	1			36	1				
Gulf Menhaden	*Brevoortia patronus*	55	1			40	1			35	1				
Gulf Menhaden	*Brevoortia patronus*	52	1							30	1				
Gulf Menhaden	*Brevoortia patronus*	50	1							38	1				

Lengths of Species Collected in Bag Seines near the STP Blowdown		CoRF-03-BS2 6/11/07		CoRF-08-BS2B 12/12/2007		CoRF-09-BS3A 12/23/2008		CoRF-09-BS2B 12/23/2008		CoRF-12-BS2B 4/8/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Gulf Menhaden	*Brevoortia patronus*	45	1							35	1				
Gulf Menhaden	*Brevoortia patronus*	65	1							35	1				
Gulf Menhaden	*Brevoortia patronus*	48	1							30	1				
Gulf Menhaden	*Brevoortia patronus*	52	1							33	1				
Gulf Menhaden	*Brevoortia patronus*	62	1							31	1				
Gulf Menhaden	*Brevoortia patronus*	45	1							32	1				
Gulf Menhaden	*Brevoortia patronus*	48	1							32	1				
Gulf Menhaden	*Brevoortia patronus*	35	1							31	1				
Gulf Menhaden	*Brevoortia patronus*	45	1							31	1				
Gulf Menhaden	*Brevoortia patronus*	40	1							31	1				
Gulf Menhaden	*Brevoortia patronus*	55	1							32	1				
Gulf Menhaden	*Brevoortia patronus*	55	1							31	1				
Gulf Menhaden	*Brevoortia patronus*	42	1							33	1				
Gulf Menhaden	*Brevoortia patronus*	52	1							32	1				
Gulf Menhaden	*Brevoortia patronus*	50	1							31	1				
Gulf Menhaden	*Brevoortia patronus*	52	1							35	1				
Gulf Menhaden	*Brevoortia patronus*		58							36	1				
Gulf Menhaden	*Brevoortia patronus*									35	1				
Gulf Menhaden	*Brevoortia patronus*									31	1				
Gulf Menhaden	*Brevoortia patronus*									32	1				
Gulf Menhaden	*Brevoortia patronus*									31	1				
Gulf Menhaden	*Brevoortia patronus*										39				
	Average		50				41				33				
	Total		83		0		7		0		69	159	65	30	40.79
Atlantic Croaker	*Micropogonias udulatus*	70	1			41	1	55	1	51	1				
Atlantic Croaker	*Micropogonias udulatus*	70	1			43	1	44	1	55	1				
Atlantic Croaker	*Micropogonias udulatus*					38	1	63	1	67	1				
Atlantic Croaker	*Micropogonias udulatus*					61	1	41	1	55	1				
Atlantic Croaker	*Micropogonias udulatus*					39	1	50	1	50	1				
Atlantic Croaker	*Micropogonias udulatus*					28	1	32	1	50	1				
Atlantic Croaker	*Micropogonias udulatus*					35	1	48	1	55	1				
Atlantic Croaker	*Micropogonias udulatus*					32	1	38	1	40	1				
Atlantic Croaker	*Micropogonias udulatus*					39	1	31	1	41	1				
Atlantic Croaker	*Micropogonias udulatus*					28	1	33	1	58	1				
Atlantic Croaker	*Micropogonias udulatus*					31	1	32	1	52	1				
Atlantic Croaker	*Micropogonias udulatus*					30	1	28	1	58	1				
Atlantic Croaker	*Micropogonias udulatus*					28	1	31	1	45	1				
Atlantic Croaker	*Micropogonias udulatus*					28	1	35	1	51	1				
Atlantic Croaker	*Micropogonias udulatus*					30	1	31	1	54	1				
Atlantic Croaker	*Micropogonias udulatus*					23	1	32	1	52	1				
Atlantic Croaker	*Micropogonias udulatus*					28	1	28	1	51	1				
Atlantic Croaker	*Micropogonias udulatus*							31	1	48	1				
Atlantic Croaker	*Micropogonias udulatus*							20	1	50	1				
Atlantic Croaker	*Micropogonias udulatus*							27	1						
Atlantic Croaker	*Micropogonias udulatus*							31	1						

Lengths of Species Collected in Bag Seines near the STP Blowdown		CoRF-03-BS2 6/11/07		CoRF-08-BS2B 12/12/2007		CoRf-09-BS3A 12/23/2008		CoRf-09-BS2B 12/23/2008		CoRF-12-BS2B 4/8/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Atlantic Croaker	*Micropogonias udulatus*							33	1						
	Average	70				34		36		52					
	Total		2		0		17		22		19	60	70	20	41.65
Blue Catfish	*Ictalurus furcatus*	52	1	18	1										
Blue Catfish	*Ictalurus furcatus*			14	1										
Blue Catfish	*Ictalurus furcatus*			12	1										
Blue Catfish	*Ictalurus furcatus*			15	1										
Blue Catfish	*Ictalurus furcatus*			18	1										
	Average	52		15											
	Total		1		5		0		0		0	6	52	12	21.50
Sharptail Goby	*Oligolepis acutipennis*									71	1				
	Average									71					
	Total		0		0		0		0		1	1	71	71	71.00
Bay Anchovy	*Anchoa mitchilli*			71	1										
Bay Anchovy	*Anchoa mitchilli*			60	1										
Bay Anchovy	*Anchoa mitchilli*			51	1										
Bay Anchovy	*Anchoa mitchilli*			55	1										
Bay Anchovy	*Anchoa mitchilli*			62	1										
	Average			60											
	Total		0		5		0		0		0	5	71	51	59.80
Sand Trout	*Cynoscion arenarius*									44	1				
Sand Trout	*Cynoscion arenarius*									46	1				
Sand Trout	*Cynoscion arenarius*									41	1				
Sand Trout	*Cynoscion arenarius*									47	1				
	Average										45				
	Total		0		0		0		0		4	4	47	41	44.50
White Shrimp	*Penaeus setiferus*			48	1										
White Shrimp	*Penaeus setiferus*			48	1										
White Shrimp	*Penaeus setiferus*			50	1										
White Shrimp	*Penaeus setiferus*			49	1										
White Shrimp	*Penaeus setiferus*			45	1										
White Shrimp	*Penaeus setiferus*			40	1										
White Shrimp	*Penaeus setiferus*			46	1										
White Shrimp	*Penaeus setiferus*			38	1										
White Shrimp	*Penaeus setiferus*			60	1										
White Shrimp	*Penaeus setiferus*			50	1										
White Shrimp	*Penaeus setiferus*			51	1										
White Shrimp	*Penaeus setiferus*			53	1										
White Shrimp	*Penaeus setiferus*			45	1										
White Shrimp	*Penaeus setiferus*			44	1										
White Shrimp	*Penaeus setiferus*			48	1										
White Shrimp	*Penaeus setiferus*			43	1										
White Shrimp	*Penaeus setiferus*			38	1										
White Shrimp	*Penaeus setiferus*			40	1										
White Shrimp	*Penaeus setiferus*			37	1										

Lengths of Species Collected in Bag Seines near the STP Blowdown			CoRF-03-BS2 6/11/07		CoRF-08-BS2B 12/12/2007		CoRf-09-BS3A 12/23/2008		CoRf-09-BS2B 12/23/2008		CoRF-12-BS2B 4/8/2008					
Common Name	Scientific Name		Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
White Shrimp	*Penaeus setiferus*				56	1										
White Shrimp	*Penaeus setiferus*				50	1										
White Shrimp	*Penaeus setiferus*				59	1										
White Shrimp	*Penaeus setiferus*				45	1										
White Shrimp	*Penaeus setiferus*				46	1										
White Shrimp	*Penaeus setiferus*				38	1										
White Shrimp	*Penaeus setiferus*				47	1										
White Shrimp	*Penaeus setiferus*				48	1										
White Shrimp	*Penaeus setiferus*				40	1										
White Shrimp	*Penaeus setiferus*				45	1										
White Shrimp	*Penaeus setiferus*				55	1										
White Shrimp	*Penaeus setiferus*					26										
		Average			47											
		Total		0		56		0		0		0	56	60	37	46.73
Channel Catfish	*Ictalurus punctatus*				54	1										
Channel Catfish	*Ictalurus punctatus*				55	1										
Channel Catfish	*Ictalurus punctatus*				48	1										
Channel Catfish	*Ictalurus punctatus*				54	1										
		Average			53											
		Total		0		4		0		0		0	4	55	48	52.75
Sheepshead minnow	*Cyprinodon variegatus*				33	1	38	1								
Sheepshead minnow	*Cyprinodon variegatus*						40	1								
Sheepshead minnow	*Cyprinodon variegatus*						40	1								
Sheepshead minnow	*Cyprinodon variegatus*						41	1								
Sheepshead minnow	*Cyprinodon variegatus*						38	1								
Sheepshead minnow	*Cyprinodon variegatus*						40	1								
Sheepshead minnow	*Cyprinodon variegatus*						39	1								
Sheepshead minnow	*Cyprinodon variegatus*						33	1								
Sheepshead minnow	*Cyprinodon variegatus*						30	1								
		Average			33			38								
		Total		0		1		9		0		0	10	41	30	37.20
Bayou killifish	*Fundulus pulvereus*				48	1										
		Average			48											
		Total		0		1		0		0		0	1	48	48	48.00
Sailfin Molly	*Poecilia latipinna*				40	1										
Sailfin Molly	*Poecilia latipinna*				38	1										
Sailfin Molly	*Poecilia latipinna*				45	1										
Sailfin Molly	*Poecilia latipinna*				44	1										
Sailfin Molly	*Poecilia latipinna*				45	1										
		Average			42											
		Total		0		5		0		0		0	5	45	38	42.40
Gulf killifish	*Fundulus grandis*				94	1	85	1								
Gulf killifish	*Fundulus grandis*						77	1								
		Average			94			81								
		Total		0		1		2		0		0	3	94	77	85.33

Lengths of Species Collected in Bag Seines near the STP Blowdown		CoRF-03-BS2 6/11/07		CoRF-08-BS2B 12/12/2007		CoRf-09-BS3A 12/23/2008		CoRf-09-BS2B 12/23/2008		CoRF-12-BS2B 4/8/2008					
Common Name	Scientific Name	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Length (mm)	#	Total Sample	MAX	MIN	AVG
Shiner	*Notropis spp.*							38	1						
	Average								38						
	Total		0		0		0		1		0	1	38	38	38.00
Alligator Gar	*Atractosteus spatula*			451	1										
	Average				451										
	Total		0		1		0		0		0	1	451	451	451.00
								51	1						
Central Mudminnow	*Umbra limi*							38	1						
Central Mudminnow	*Umbra limi*							41	1						
Central Mudminnow	*Umbra limi*							37	1						
	Average								42						
	Total		0		0		0		4		0	4	51	37	41.75
Bluegill	*Lepomis machrochirus*							31	1						
	Average								31						
	Total		0		0		0		1		0	1	31	31	31.00
Inland Silverside	*Menidia beryllina*					75	1								
	Average						75								
	Total		0		0		1		0		0	1	75	75	75.00
Sheepshead	*Archosargus probatocephalus*							35	1						
Sheepshead	*Archosargus probatocephalus*							34	1						
Sheepshead	*Archosargus probatocephalus*							30	1						
Sheepshead	*Archosargus probatocephalus*							38	1						
Sheepshead	*Archosargus probatocephalus*							33	1						
Sheepshead	*Archosargus probatocephalus*							32	1						
Sheepshead	*Archosargus probatocephalus*							41	1						
Sheepshead	*Archosargus probatocephalus*							40	1						
Sheepshead	*Archosargus probatocephalus*							40	1						
Sheepshead	*Archosargus probatocephalus*							39	1						
Sheepshead	*Archosargus probatocephalus*							34	1						
Sheepshead	*Archosargus probatocephalus*							32	1						
	Average								36						
	Total		0		0		0		12		0	12	41	30	35.67
Mosquitofish	*Gambusia affinis*							34	1						
	Average								34						
	Total		0		0		0		1		0	1	34	34	34.00

Attachment 4

- Print versions of previously submitted materials supporting RAI 02.05-06

SOF 2.5-6-1

Summary of Phone Conversations

City and # called:	Contact:	Title:	Phone # I was directed to:	Conversation:
Bay City, TX (979)245-0997	Sandra Douglas	Assistant Office Manager	Same	"No zoning in at all in Bay City."
Palacios, TX (361)972-3605	Don Duynes	Assistant City Manager	Same	Yes, land use. No wells other than for irrigation. Restrictions on building new businesses and where they are able to tap into water line. Zoning map available at http://www.cityofpalacios.org:705/cities/PalaciosTX/docs/uploadedpages/34%20x%2044%20color.pdf
Angleton, TX (979)849-4364	Lori Rodrigues	City Planning	Same	Left a message to ask for Amanda or Kristin. Called later and got a hold of Lori. Water supply zoning restrictions, but does not know what kind. Gave me the number to contact Robert Heinemier at Public Works.
	Robert Heinemier	Public Works Director	(979)849-0742	Zoning enforced on a case by case basis dependant on how much water is available at the time not zoning restrictions are currently being enforced because they have "plenty of water". A new building being built would have to "check with them (Public Works) first". Gave me the website for their master plan http://www.municode.com/resources/gateway.asp?pid=10361&sid=43 scroll to Ch. 28.
Alvin, TX (281)388-4271	General Office Voicemail		Same	Left a message to ask for Amanda or Kristin. Their message said they are only open on Fridays from 7:30 – 11:30 am.

Summary of Telephone call (City of Palacios)
STP RAI 2.5-6

Date Place; August 6, 2008
Call Placed by P Baxter, TtNUS
To: City of Palacios
361 972 3729
Spoke to Patsy Gibbons (Admin Assist)

My concern, and reason for the telephone call, was that the City's web site (http://www.palacios.org/zoning_codes.htm) stated that the City has "a zero zoning policy." However, a phone log from a TtNUS intern, working with Kristin S and B Twigg, notes that a Palacios Code Enforcement/Building Inspector named Don Duyne said there was "land use planning" and that a "zoning map" was available.

To clarify the disconnect between the posted information and the telephone log, I called the City on Wednesday (08/06/08) afternoon at 3:30 pm (eastern). According to Ms Gibbons, the web site is outdated (not updated) and is erroneous. She confirmed that the City has an adopted part of a zoning ordinance (Fall 2007) that deals with permanent housing and that the city was currently working on a section to add to the zoning ordinance to deal with mobile homes. I read the draft response to RAI 2.5-6 to Ms Gibbons. She confirmed that the wording accurately reflects the status in Palacios.

Telephone Summary (TX DOT)
STP RAI 2.5-6

Call Placed (return call) August 6, 2008
To Texas Department of Transportation
Design Division
512 416 2678
Ms Rory Meza
Placed by P Baxter 9:15am (eastern)

Ms Meza explained the process, at all three levels (city, county, state), for roads to be accepted into the system:

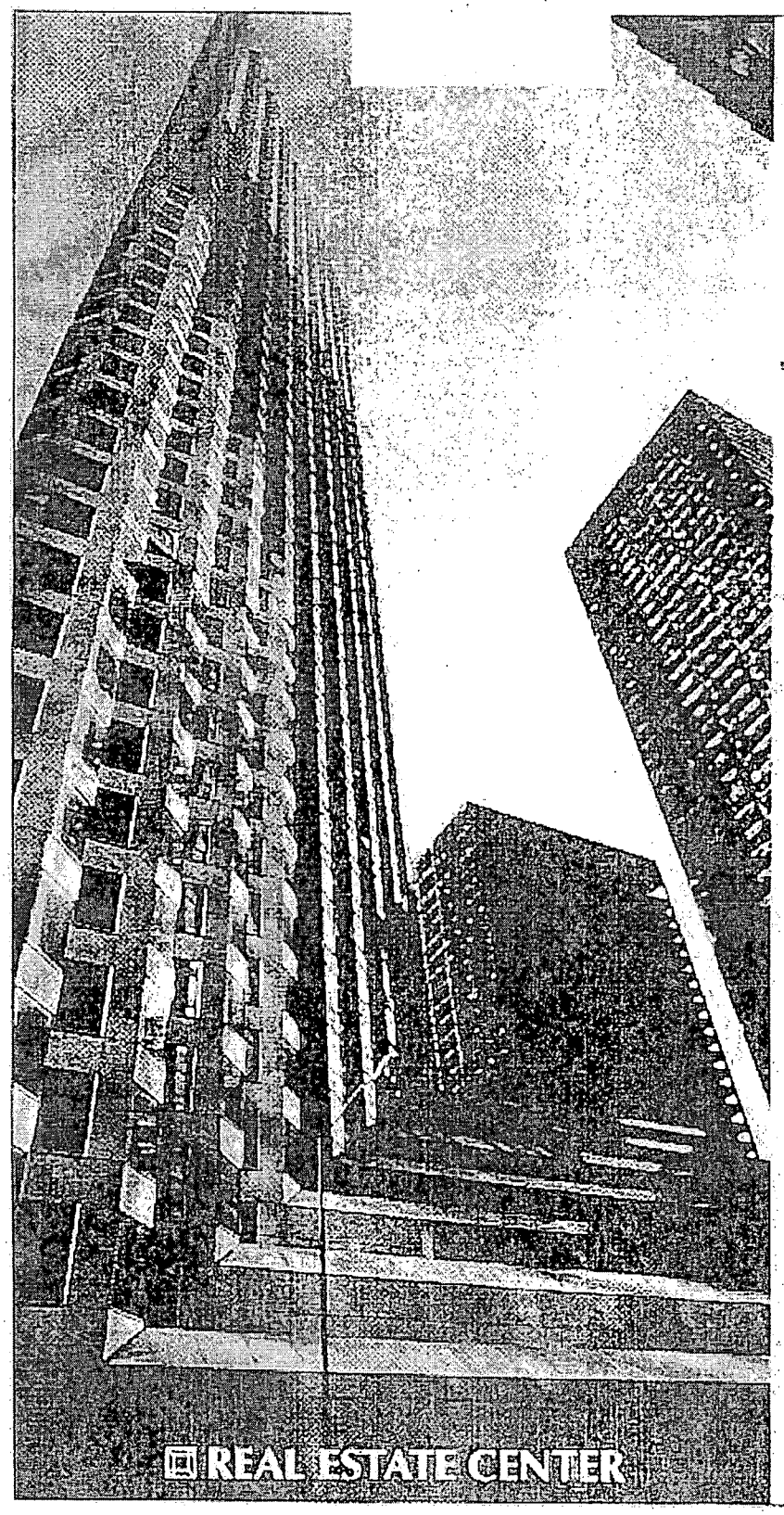
Present design specifications to the local/state authority (the applicable authority is the government level where the to-be-built road will intersect the current road, for example, if new road will intersect a city road, then the approving/accepting entity is the city)

Secure permitting
Build road to specs
Road accepted by permitting entity

When asked if there were any plans, codes, laws, regulations or any other regulatory obstacles that impede land development, land conversion, or housing development, Ms Meza said she knew on none, but suggested I call the Transportation Planning Division of Texas DOT to confirm. She provided the telephone number of Jack Frost.

Called Jack Frost, Transportation Planning Division of the Texas DOT (512 486 5024). I asked if he knew of any non-zoning regulatory impediments to road planning, construction, or use that would control or deter land development, housing development, or land conversions. He didn't. I then asked if there were any unique or noteworthy transportation issues (limited highway access policies or moratoriums on new construction for example) in either Matagorda or Brazoria County. He knew of none.

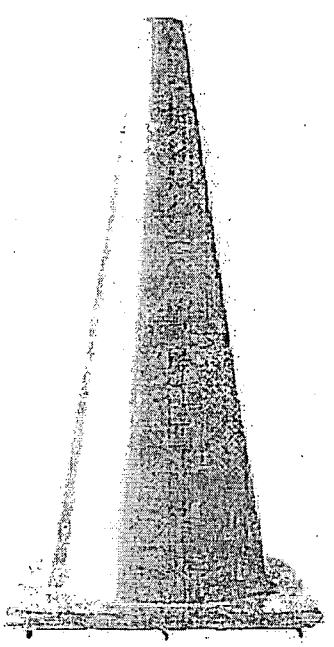
V2.5-64



A CITIZEN'S GUIDE TO TEXAS ZONING

JENNIFER EVANS
Research Associate

report
1294
APRIL 1999



REAL ESTATE CENTER

V25-6-4

community. Where specific answers are needed, however, the local planning department should be contacted.

Zoning Basics

Zoning can be difficult to understand. Here are answers to frequently asked questions.

What is zoning?

Zoning is the division of land into districts or zones for the regulation of land uses and development standards.

Why is there zoning?

Zoning was created to ensure the compatibility of land uses by minimizing conflicts between uses and, therefore, protecting the health, safety and welfare of the community while enhancing the urban environment.

For example, assume a beautiful home on a half-acre lot has just been built. Six months after construction and move-in, the property owner next door decides to put in a restaurant. This means parking problems and late-night noise.

Without a zoning ordinance, there may be nothing to prohibit the adjacent landowner from building the restaurant or a manufacturing facility, for that matter. Zoning works to protect a home or business from incompatible land uses. There are additional controls, including deed restrictions and nuisance ordinances, that can restrict land uses.

Where is Zoning?

In cities, the zoning ordinance applies to all areas within the city limits. As a city annexes land, that property then becomes zoned as well. The extra-territorial jurisdiction (added land) of the municipality is not subject to zoning regulations. There are no zoning restrictions outside the city limits. Texas counties cannot pass zoning ordinances.

What is a zoning district?

Zoning districts are established to promote compatible patterns of land use within the city limits. Zoning districts establish site development regulations appropriate to the purposes and the uses allowed in each district. Distinct zoning districts exist for residential, office, retail and industrial uses. Also see the glossary, Appendix C.

Who can help with zoning problems?

The first question most people ask when confronted with a city's zoning ordinance is "whom do I contact at the city about this matter?" The planning department is the best place to start because it normally has someone in charge of city zoning. In large cities, there is an entire department devoted to zoning. In smaller cities, an individual who handles zoning matters may be part of the building or community development department.

The planning department in most cities is responsible for handling zoning questions, such as those related to development services, community development or building permits. In addition, the department that handles the planning functions will have copies of the zoning ordinance and the zoning map. The department has the responsibility for implementing city zoning, even though final decisions on zoning changes are made by the city council or planning and zoning commission.

What is the staff looking for in a request for a zoning change?

The staff and members of the planning and zoning commission consider zoning change requests. A number of areas are considered in a proposed change. General questions that the Amarillo planning staff answers on a request for a zoning change follow. Most cities use similar questions.

Comprehensiveness

- Is the change requested contrary to the established land-use pattern?
- Will the change constitute the only example of this zoning category in the vicinity?
- Will a zoning change alter the population density and increase the demand placed on public facilities (sewers, streets, and so forth)?
- Will the proposed change be contrary to the land-use relationship requirement of the city's comprehensive plan?

Changed Conditions

- Have the land-use conditions in the immediate vicinity been subject to change?
- Has development of the area been contrary to existing regulations?

Public Welfare

- Will the change have a negative influence on living conditions in the neighborhood?
- Will the change create or increase traffic congestion?
- Will the change reduce the light and air to adjacent areas?

V 2.5-6-5

Twigg, Bridget

To: Owen William Bludau
Subject: RE: Zoning question

From: Owen William Bludau [mailto:obludau@co.matagorda.tx.us]
Sent: Tuesday, July 15, 2008 10:48 AM
To: Twigg, Bridget
Subject: RE: Zoning question

Without zoning, just about everything is OK "by right". Matagorda County does have a subdivision ordinance. Plans have to meet the ordinance requirements. However, if the subdivision is within a utility district, getting the utilities depends on availability of lines and capacity from the local district. So, you can have an approved site plan, but no utilities available to serve it, even in a utility district. So, yes, I guess decisions on constructing housing is on a case-by-case basis, depending on what utilities are needed to serve the unit(s).
Owen

From: Owen William Bludau [mailto:obludau@co.matagorda.tx.us]
Sent: Tuesday, July 15, 2008 10:27 AM
To: Twigg, Bridget
Subject: RE: Zoning question

Bridget,
Bay City is probably OK for expansion of housing and retail stock. It has available land, can annex more, and has utility plant capacity for more hook-ups. The rural water and sewer systems and the Palacios utility systems have capacity and funding limitations that make expansion of their systems much more problematic until these can be resolved. That means that housing stock expansion on public utilities in the rural utility districts and even on the undeveloped sites in Palacios may not be so readily possible, until utility system improvements can be made. The biggest problem, as always, is finding the funds to make needed system improvements. The districts have kept fees as low as possible, so they have no reserves to make necessary improvements. They rely upon grants and loans from USDA primarily. Those are competitive funds. Development on well and septic systems in the rural areas can occur without problems. We have several rural subdivisions underway now on community water and individual septic systems--River Oaks and Vaquero Estates are examples.

The highway system is not much of a problem for residential type traffic. It is the heavy traffic from construction and the added volume of construction worker traffic getting to and from STP that will cause temporary problems during the construction period. With the limitation in TXDOT's construction funding, I see little likelihood of getting Hwy 512 widened to accommodate the construction traffic around STP. Maybe you have some more hopeful ideas.

Owen

----- Original Message -----
From: Twigg, Bridget <Bridget.Twigg@tetratech.com>
To: Owen William Bludau <obludau@co.matagorda.tx.us>
Cc:
Date: Tuesday, July 15 2008 10:09 AM
Subject: RE: Zoning question
I am trying to decifer how local infrastructure and transportation plans could control the location of housing and businesses, and effect constraints on water hookups.

Bridget Twigg | Staff Geologist
Direct: 832.251.5195 | Main: 832.251.5160 | Personal Fax: 832.251.5190
bridget.twigg@ttnus.com
Tetra Tech NUS
2901 Wilcrest Drive, Suite 405 | Houston, TX 77042 | www.ttnus.com

From: Owen William Bludau [mailto:obludau@co.matagorda.tx.us]
Sent: Monday, July 14, 2008 4:24 PM
To: Twigg, Bridget
Subject: RE: Zoning question

This question is very general. What specific questions are you trying to address?

Bay City has water and sewer system capacity available. Palacios has limitations on new water and sewer connections, depending on location or whether line extensions are required. The Palacios infrastructure is old and needs replacement. There is much I&I in its sewage system. Its water system has a lot of water leakage.

The county requires a large-load permit for large loads using highways in the county. County roads have load limits and are not built to TXDOT strength standards. Heavy loads must be bonded for road damages.

Is that what you were asking?

Owen Bludau

----- Original Message -----
From: Twigg, Bridget <Bridget.Twigg@tetratech.com>
To: Owen William Bludau <obludau@co.matagorda.tx.us>
Cc:
Date: Monday, July 14 2008 03:43 PM
Subject: RE: Zoning question
Mr. Bladau,
Are there any restrictions on water hook-ups or transportation in Matagorda county, Bay City or Palacios?

Bridget Twigg | Staff Geologist
Direct: 832.251.5195 | Main: 832.251.5160 | Personal Fax: 832.251.5190
bridget.twigg@ttnus.com
Tetra Tech NUS
2901 Wilcrest Drive, Suite 405 | Houston, TX 77042 | www.ttnus.com

From: Owen William Bludau [mailto:obludau@co.matagorda.tx.us]
Sent: Monday, July 14, 2008 2:07 PM
To: Twigg, Bridget
Subject: Re: Zoning question

Ms. Twigg,
The Texas Legislature has not given Texas counties the authority to zone. Texas cities have been given the authority to establish zoning. Only the City of Palacios in Matagorda County has adopted a zoning ordinance for the area within its city limits. Neither Matagorda County nor Bay City have zoning at this time.

Owen Bludau

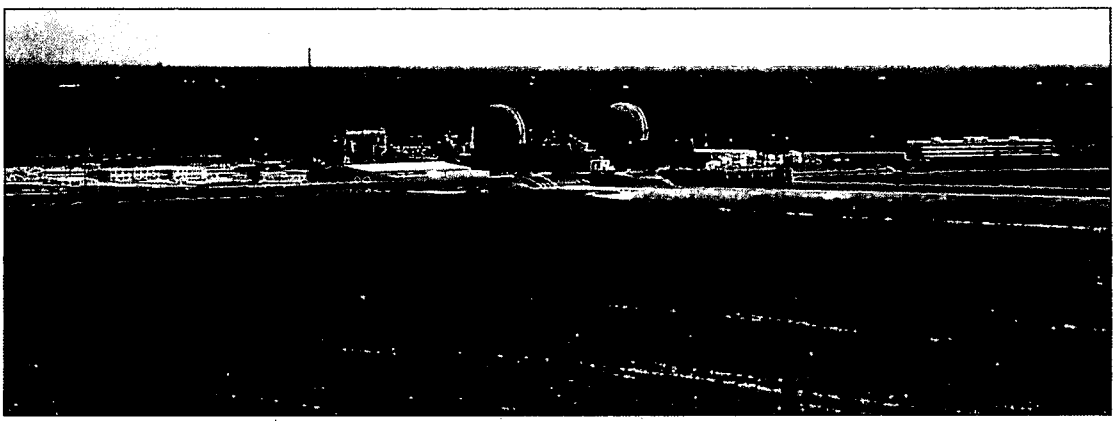
----- Original Message -----
From: Twigg, Bridget <Bridget.Twigg@tetratech.com>
To: <obludau@co.matagorda.tx.us>
Cc:
Date: Monday, July 14 2008 01:44 PM
Subject: Zoning question
What is the rule on zoning in Matagorda County?

Bridget Twigg | Staff Geologist
Direct: 832.251.5185 | Main: 832.251.5160 | Personal Fax: 832.251.5190
bridget.twigg@ttnus.com
Tetra Tech NUS
[illegible] Wilcrest Drive, Suite 405 | Houston, TX 77042 | www.ttnus.com

Attachment 5

- Print versions of previously submitted materials supporting RAI 05.03.01.02-03

Prepared for:
STP Nuclear Operating Company
Wadsworth, Texas



Aquatic Ecology-Main Cooling Reservoir and Circulating Water Intake Structure Study
Unit 3 and 4 Licensing Project

ENSR Corporation
August 2008

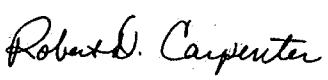
ENSR | AECOM

ENSR | AECOM

Prepared for:
STP Nuclear Operating Company
Wadsworth, Texas

Aquatic Ecology-Main Cooling Reservoir and Circulating Water Intake Structure Study
Unit 3 and 4 Licensing Project

Prepared By
Kurtis K. Schlicht



Reviewed By
Robert D. Carpenter

ENSR Corporation
August 2008

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Executive Summary

This report summarizes the results of ENSR's aquatic assessment of the Main Cooling Reservoir (MCR) and the Circulating Water Intake Structure (CWIS) for the circulating water system for Units 1 and 2. The study was conducted in conjunction with the STP Nuclear Operating Company's (STPNOC) Unit 3 and Unit 4 Combined Operating License (COL) application development for the proposed expansion project located proximal to Units 1 and 2 at the South Texas Project Electric Generating Station (STPEGS) in Matagorda County, Texas (Figure 1). From May 2007 to April 2008, biological samples were collected from the MCR and the CWIS at the STPEGS facility. The objective of the aquatic assessment was to collect current data over a one year period to characterize the aquatic species within the MCR, and to evaluate impingement and entrainment impacts to establish, to the extent possible, relationships between the presence of aquatic organisms and the current STPEGS intake design and operating parameters.

The circulating water system for Units 1 and 2 includes the CWIS and all of its components and the MCR. There are a total of 8 circulating pumps and 16 screens that make up the CWIS. The MCR is an approximately 7,000 acre reservoir designed to provide closed-cycle cooling water for four generating units at the STPEGS facility. Currently there are only two units operating at the facility.

The MCR study was completed over four quarterly sampling periods using four sampling gears including; gill nets, trawls, beach seines, and plankton nets. Utilization of multiple sampling gears was necessary for the MCR to sample in the different aquatic zones within the MCR, as well as to document and establish a baseline characterization of the life stages of fauna in the reservoir. Samples were collected at fixed stations located in stratified regions within the MCR. These regions include: Region 1-the cooling water discharge area; Region 2–southwest region of MCR; Region 3-central levee (y-dike); Region 4-spillway area; and, Region 5-make-up water area and CWIS. Regions 1, 3, and 5 were sampled using all four gears while Regions 2 and 4 were sampled only with trawls and beach seines.

The CWIS study was completed by sampling twice per month from May through September during the peak hot months of the summer, and once per month from October through April. All samples were collected over a 24 hr period using small mesh nets for impingement and plankton nets for entrainment. The CWIS study was designed to document diel and seasonal patterns associated with the operation of the circulating water pumps and the intake screens for Units 1 and 2.

Hydrological data collected during this study indicates that water temperatures in the MCR undergo both a seasonal and temporal change. Temperatures increased in the spring and summer and then decreased in the fall and winter.

A total of 11,605 finfish and invertebrates representing 25 species were collected over the duration of the sampling program for the MCR. Seines had the highest number of organisms (10,091) collected, the largest proportion of organisms (87%), and demonstrated the highest species diversity (17 species) of the three gears sampled. Trawl samples resulted in 999 organisms collected comprising 9% of the total, and representing 12 species, while gill net samples resulted in 515 organisms collected comprising 4% of the total and representing 13 species.

A total of 5,362 macroinvertebrate organisms were collected in the plankton samples in the MCR. Species were comprised almost entirely (84%) of mud crab larvae, specifically the species *Rhithropanopeus harrissi*. Finfish were represented by two species of fish including shad and gobies.

Impingement sampling of the CWIS resulted in a total of 3,982 organisms representing 25 finfish, 7 invertebrate species and 1 other (snake). Impingement rates during the study were highly variable with no

seasonal trend being identified. Dominant species during the study included threadfin shad (42%), blue crab (24%), mud crab (24%), and Atlantic croaker (5%).

Entrainment sampling of the CWIS resulted in a total 207,696 organisms representing 9 different fish families and 12 different Classes of invertebrates. Ichthyoplankton species comprised less than 1% of the total composition of entrained organisms. Rates of entrainment were highly variable during the study with the highest rate being recorded during the month of April and the lowest rate recorded during the month of August.

Data specific to the MCR indicate healthy populations of threadfin shad, silversides, blue catfish, common carp, ladyfish, and Atlantic croaker are present while data from the CWIS indicate that mud crab, threadfin shad, and blue crab are prevalent. Based on data collected from this combined study it is evident that the MCR supports a diverse aquatic system both for both fisheries and macroinvertebrates. Although the MCR functions as a cooling water system, the day to day withdraw of water through the CWIS and resultant influx of heated discharge water does not appear to have a negative impact on the fish and macroinvertebrate communities living in the MCR.

1.0 Introduction

This report summarizes the results of ENSR's aquatic assessment of the Main Cooling Reservoir (MCR) and the Circulating Water Intake Structure (CWIS) for the circulating water system for Units 1 and 2. The study was conducted in conjunction with the STP Nuclear Operating Company's (STPNOC) Unit 3 and Unit 4 Combined Operating License (COL) application development for the proposed expansion project located proximal to Units 1 and 2 at the South Texas Project Electric Generating Station (STPEGS) in Matagorda County, Texas, Figure 1. Biological samples were collected from May 2007 to April 2008 from the MCR and the CWIS at the STPEGS facility. The objective of the aquatic assessment was to collect current data over a one year period to characterize the aquatic species within the MCR and to evaluate impingement and entrainment impacts to establish, to the extent possible, casual relationships between aquatic organisms and intake design and operating parameters.

1.1 Study system and historical information

The MCR is an approximately 7,000 acre reservoir designed to provide closed cycle cooling water for up to four generating units and currently services the two units at the STPEGS facility. Make-up water for the reservoir is pumped from the Reservoir Make-up Pumping Facility (RMPF) that is located approximately 1 mile from the Colorado River to the MCR. The MCR is a perched system constructed of earthen levees covered by grasses on the exterior slopes and sandcrete on the inside slopes. There are a series of levees inside the MCR which lengthen the flow path, providing extended circulation and cooling of the water. The MCR is designed to handle a capacity of 49 ft MSL; however, the MCR is currently maintained at a water level of 47 ft MSL. There is little to no natural habitat within the MCR and any areas considered habitat are confined to the steep levee shorelines and the areas associated with the circulating water intake structure. The cooling water system for Units 1 and 2 includes the Circulating Water Intake Structure (CWIS) and the MCR. The CWIS is located on the northern shore of the MCR near the central y-levee and is configured with a total of 8 circulating pumps and 16 screens.

To date, no formal biological surveys have been completed on the MCR or the CWIS. Limited data has been collected associated with the radioactive tissue assessment conducted quarterly as part of the radiological environmental monitoring program and through anecdotal information from on-site biologists.

2.0 Materials and Methods

2.1 Extent of study area and field sampling design

Main Cooling Reservoir

The assessment of fish and macroinvertebrate populations was conducted following techniques described in Murphy and Willis (1996) that are widely applied in fisheries sampling programs. This study was completed using different sampling approaches for the MCR and the CWIS. The MCR study was completed by sampling four quarterly sampling periods distributed quarterly throughout one year using four sampling gears including; gill nets, trawls, beach seines, and plankton nets. Multiple sampling gears were necessary on the MCR to sample in different aquatic zones of the reservoir and to obtain information on the life stages of fauna. Samples were collected at fixed stations located in stratified regions within the MCR, Figure 2. These regions include: Region 1 the cooling water discharge area; Region 2–southwest region of MCR; Region 3-central levee (y-dike); Region 4-spillway area; and, Region 5-make-up water area and CWIS. Regions 1, 3, and 5 were sampled using all four gears while Regions 2 and 4 were sampled only by trawls and beach seines. The increased sampling in Regions 1, 3, and 5 was designed to document species associated with temperature changes as the water circulates around the reservoir. These three regions were selected based on proximity to the start point, mid point, and final point for cooling water discharge and water circulation in the MCR.

All finfish and invertebrate species collected during MCR and impingement component of the CWIS study were sorted by species and identified to the lowest taxonomic level by field biologists and then were measured to the nearest millimeter (mm) total length (TL). Plankton samples for entrainment and plankton tows in the MCR were collected and sent to an independent laboratory (Ecological Associates) for identification and quantification. Organisms were keyed to the lowest taxonomic level using current larval and egg identification manuals. No length measures were taken for plankton samples.

Trawls

Trawl sampling was designed to sample fishes and macroinvertebrates occupying benthic or demersal habitats in the reservoir. During each quarterly sampling period five trawl samples were collected, one from each region of the reservoir, using a 6.1 m otter trawl constructed entirely of 3.5 cm stretched mesh. The trawl was fitted with doors (i.e., otter boards) measuring 46 cm × 91 cm attached to each wing of the net. The doors and net were fastened to a 30.5 m long bridle attached to the stern of the towing vessel, which was a 7.3 m center console boat equipped with a 250 hp outboard engine. Each trawl sample consisted of a ten minute tow pulled in a zig-zag direction at a speed of approximately 3 knots.

Gill nets

Gill net sampling was designed to characterize the utilization of shoreline and open water surface habitats by adult fishes. Gill nets measured 91.4 m long, 3.0 m deep and consisted of four separate panels measuring approximately 22.9 m in length that were and being comprised of 2.5, 5.1, 7.6, and 10.2 cm stretched mesh connected in ascending order. During each quarterly sampling event, three gill nets were set at fixed stations within three regions (Region 1, 3, and 5) of the reservoir. Gill nets along the shore were set perpendicular to the shoreline and those set in open water were set downwind. Gill nets were set within one hour of sunset and were retrieved at sunrise the following morning.

Beach seines

Beach seine sampling was designed to characterize small aquatic fauna utilizing the shoreline areas of the reservoir. The beach seine measured 30.5 m long and 3.0 m deep and was constructed of 6.4 mm mesh.

Five seine samples, one from each of the reservoir regions, were collected during each quarterly sampling event by using the boat to pull the net out 100 ft perpendicular to shore then pulling the net approximately 100 ft down the shore.

Plankton tows

Plankton sampling was designed to characterize ichthyoplankton and macroinvertebrates within the pelagic regions of the reservoir. A low speed Henson plankton net with a with a dimension of 30 cm (mouth width) X 120 cm length and covered with mesh size of 0.363-mm was towed obliquely through all depths of the water column along side a 7.3 m center console boat equipped with a 250 hp outboard engine at a rate no greater than 2 knots for approximately three to five minutes to equate to a volume of 25 m^3. Three plankton samples were collected during each quarterly sample event at fixed stations located within Regions 1, 3, and 5.

Circulating Water Intake Structure

The CWIS study was completed by sampling twice per month from May through September during the peak hot months of the summer and then once per month from October through April. All samples were collected over a 24 hr period using small mesh nets for impingement and plankton nets for entrainment. The CWIS study was designed to document diel and seasonal patterns associated with the operation of the circulating water pumps and the intake screens for Units 1 and 2. Due to the volume of spray wash water associated with each of operating pumps (8 circulating pumps) and intake screens (16 screens) for Units 1 and 2, samples were collected only for Unit 2 circulating pumps which included pumps 21, 22, and 23 and intake screens numbers 1, 2, 3, 4, and 6. Data collected from these selected screens are believed to be representative of all the intake screens due to the similar operating design for each of the intakes screens and more importantly, the assumption that the fish population in the area associated with the CWIS is homogenous across all intake bays and screens.

Impingement

Impingement sampling was conducted within the sluiceway for the CWIS screen wash system at a point just before the sluiceway discharges into the trash/debris basket. Samples were collected by placing a metal-framed net fitted with ¼" nylon mesh into the sluiceway and the screen wash system was activated for a 35 minute sample collection. Prior to each initial sample collection, the screens were rotated for approximately 30 minutes to clean fish and debris from the screens and then the screens were kept idle over the next 12 hrs. At the end of the 12 hr interval the net was placed into the sluiceway and the screens were activated for 35 minutes to complete the 12 hr sample. Organisms captured on the screens are representative of the 12 hr impingement sample. This step was be repeated for two 12 hr intervals to collect one 24 hr sample. Impingement samples were at 0500 and 1700 in conjunction with entrainment samples that were collected at 0430 and 1630. The impinged organisms from the screens were rinsed into collection baskets and sorted by species, then measured to the nearest millimeter and weighed to the nearest kilogram.

Entrainment

Entrainment samples were collected from behind the trash bars by pumping and filtering water through plankton nets into a buffering chamber. Samples were collected using a 5.5 horsepower, 2" trash pump rated at flows of up to 10,800 gallons per hour (gph) or 180 gpm. The pump was fitted with a 2 inch diameter hose and foot valve that was lowered into the water behind the trash bars to a depth of approximately 12 ft (middle of water column). Water was pumped up from the reservoir up to two 300 gallon tanks (buffering chambers) fitted with 0.363 mm mesh plankton nets to filter the water. Pumps were run for approximately 2 hours per sample for a volume of 25m^3 of water per event. Four sample events were completed over a 24 hr period totaling 100m^3 of water. Sample collection times were 0430, 1030, 1630, and 2230. The two daytime samples and two night samples were composited to generate one daytime sample and one nighttime sample to determine species richness and species characterization.

2.2 Hydrological data collection

Hydrological data was recorded for each sample event for the MCR study and the CWIS study using a YSI™ Model 80 water quality meter. Parameters included water temperature (°C), dissolved oxygen (DO in mg/l), and salinity (parts per thousand - ppt). Hydrological data for gill net, trawl, and plankton samples were collected at 0.1 m below the surface and 0.3 m above the bottom while hydrological data for seines were collected at 0.1 m below the surface. Meteorological data was recorded based on observations made in the field at the time of each sample collection.

2.3 Data analysis

Data collected from the field were entered into an Excel spreadsheet to summarize all sample collections. Data were analyzed to determine catch per unit of effort (CPUE) and abundance percentages for species comprising greater than 1 percent of the total number captured. Additional analyses included calculation of monthly impingement rates and seasonal trends for all gears sampled.

3.0 Results

3.1 Hydrological data

Hydrological data (water temperature, salinity, and dissolved oxygen) are presented in Table 1 for the impingement and entrainment samples and Table 2 for the MCR samples.

3.1.1 MCR

Water temperatures documented in the MCR study ranged from 18.5°C to 35.6°C on the surface and from 18.4°C to 35.0°C on the bottom. A seasonal trend in water temperatures was documented as temperature data from trawl samples increased from an average 30.2°C in May to 34.1°C in August and then decreased in October to 24.9°C and then to 21.4°C in February. Water temperatures demonstrated a temporal change averaging 1.1°C decrease in temperatures from station to station moving away from the cooling water discharge (Station 1) around to the CWIS (Station 5).

Salinity readings were constant throughout the study with readings ranging from 1.6 ppt to 1.7 ppt at all sample stations and for both surface and bottom readings. No significant trends were documented.

Dissolved oxygen (DO) concentrations ranged from 4.6 mg/l to 13.9 mg/l and averaged 8.3 mg/l over the study period. The highest DO concentrations were recorded during the month of May and the lowest were recorded during the month of August. Seasonal trends for DO concentrations were demonstrated; however, they were not as pronounced due to the limited number of samples collected, Figure 3.

3.1.2 CWIS

Water temperatures associated with the CWIS study ranged from 14.4°C to 33.0°C, with highest temperatures occurring during the month of August and the coolest temperatures occurring during the month of January. Average temperature for the study was 27°C. Seasonal trends were documented as water temperatures increased during the summer months and then decreased during the fall and winter months. Temperatures remained fairly constant during daily sample collections with temperature changes averaging a 0.7°C between samples.

Salinity readings during the study were constant throughout the study with readings ranging from 1.5 ppt to 1.7 ppt. No significant trends were documented.

Dissolved oxygen (DO) concentrations ranged from 5.3 mg/l to 12.0 mg/l and averaged 7.6 mg/l over the study period. The highest DO concentrations were recorded during the month of May and the lowest were recorded during the month of September. Seasonal trends were documented as average DO concentrations decreased during the summer months as water temperatures increased and then increased when water temperatures decreased, Figure 4. DO concentrations remained fairly constant during daily sample collections with readings averaging a 0.5 mg/l between samples.

3.2 Aquatic Data

3.2.1 MCR

Table 3 provides a summary of the total number of organisms collected by gear for the MCR. A total of 11,605 organisms representing 25 species were collected. Seines had the highest number of organisms (10,091) collected, the largest proportion of organisms (87%), and demonstrated the highest species diversity (17 species) of the three gears sampled. Total number of organisms by quarter for seine samples resulted in May samples yielding having the lowest number (962) and October exhibiting the highest number of organisms

(5,477) collected, Table 4. Species richness for each sample ranged from 7 in February to 12 in May and total species richness was 17 species. Dominant species collected in the seine samples included threadfin shad (64%), inland silverside (20%), rough silverside (13%), and other species (3%). Figure 5 demonstrates the seasonal composition for seines samples. May samples were dominated by inland silversides, August and October samples were dominated by threadfin shad, and February samples were dominated by rough silverside.

Trawl samples resulted in 999 organisms collected comprising 9% of the total and representing 12 species. Total number of organisms by quarter for trawl samples resulted in October samples yielding the lowest number of organisms (56) and February exhibiting the highest number of organisms (432) collected, Table 5. Species richness was the highest in August with 10 species and lowest in February with 3 species. Dominant species collected in the trawl samples included threadfin shad (77%), followed by Atlantic croaker (9%), blue catfish (5%), freshwater drum (4%), gizzard shad (3%), and other species (2%). May samples were dominated by Atlantic croaker, and August, October and February samples were dominated by threadfin shad, Figure 6. May and October had more species comprising a larger proportion of the total catch suggesting greater diversity and evenness during these periods.

Gill net samples resulted in 515 organisms collected comprising 4% of the total and representing 13 species. Total number of organisms by quarter for gill net samples resulted in May samples yielding the lowest number of organisms (105) and February exhibiting the highest number of organisms (164) collected, Table 6. Species richness was the highest in August and October with 10 species and lowest in May with 6 species. Dominant species collected in gill net samples included blue catfish (60%), common carp (19%), lady fish (7%), black drum (5%), Atlantic croaker (3%), blue crab (2%), and other species (4%). May samples were dominated by common carp and blue catfish, August samples by blue catfish, October samples by blue catfish and lady fish, and February samples by blue catfish, Figure 7.

Invertebrate species were almost nonexistent in all three sampling gears with blue crab representing the only species that was captured. A total of 11 were collected in the gill nets, 6 in the trawls, and 2 in the seines representing 0.2% of the total catch.

CPUE for all three gears sampled demonstrated wide variability, Figures 8-10. Trawl samples resulted in an overall CPUE of 49.9 organisms/trawl and demonstrated the greatest variability as CPUE increased from 18.6 to 83.6, decreased to 11.2, and then rebounded to 86.4 organisms/trawl. February had the highest value of CPUE. Seine CPUE's had the highest number of organisms per effort with values ranging from 320.7 to 1,095.4 organisms/seine and an overall CPUE of 560.6 organisms/seine. October had the highest CPUE for seine samples. Gill net CPUE's had the most consistent range of values ranging from 35.0 organisms/gill net to 54.6 organisms/gill net and an overall CPUE of 42.9 organisms/gill net. February had the highest value of CPUE for gill net samples.

Table 7 provides a summary of plankton species collected in plankton tows from the MCR. A total of 5,362 organisms were collected with macroinvertebrates comprising 99% of the organisms captured. Finfish were represented by two species of fish including shad and gobies while the invertebrates were represented by five different Classes including the Branchiopoda, Malacostraca, Maxillopoda, Bivalvia, and Ostracoda. Species in the Order Decapoda were the most abundant comprising 98% of the total catch, Figure 11. The estuarine mud crab, *Rhithropanopeus harrissi* comprised 84% of the decapod species. Seasonal trends suggest that mud crab larvae occur predominately during the early summer months from May through July with few small influxes occurring in the late summer.

3.2.2 CWIS Data

Table 8 provides a list of species collected during the impingement portion of the MCR CWIS study. A total of 3,982 organisms representing 25 finfish and 7 invertebrate species were collected. Table 9 provides a summary of species collected by weight and length for each sample period. Impingement rates during the study were highly variable with no seasonal trend being identified, Figure 12. Dominant species during the

study included threadfin shad (42%), blue crab (25%), mud crab (25%), Atlantic croaker (5%), and white shrimp (3%), Figure 13. Species specific trends were documented for the blue crab during the months of May, June, and July, while threadfin shad numbers were steady throughout the year and increased during the months of January and March. No other species specific trends were documented.

Table 10 provides a list of species collected during the entrainment portion of the MCR CWIS study. A total of 207,696 organisms representing 9 different fish families and 12 different Classes of invertebrates were documented during this study. The estuarine mud crab comprised 67% of the invertebrate species collected while ichthyoplankton species comprised less than 1% of the total composition of entrained organisms. Rates of entrainment indicated a seasonal trend in abundance with the highest numbers being recorded during the months of April, May and June and the low abundances recorded during the months of December, January, February, and March, Figure 14. Species specific trends were documented for threadfin shad and mud crab which demonstrated increases in number during the late spring and summer months as well as for silversides which demonstrated increases during the summer months. No other species-specific trends were documented.

4.0 Conclusions

Data collected during this study suggests that overall abundances for select aquatic organisms are very high while species richness is considered low to marginal. Data specific to the MCR indicate healthy populations of threadfin shad, silversides, blue catfish, common carp, ladyfish, and Atlantic croaker. Threadfin shad was the dominant species for both the trawl and seine samples while blue catfish was the dominant species for gill net samples. Numerous large schools of both jack crevalle and red drum were observed in the reservoir during the study and several fish have been collected as part of the radioactive tissue assessment; however, neither species were collected in any of the sample gears during this study.

Seasonal trends in the MCR were observed for a few select species such as the threadfin shad and silversides. Other species such as blue catfish, Atlantic croaker, and blue crab did demonstrate a shift in abundance between samples; however, this shift appears to be associated more with a large increase in threadfin shad collected rather than a true seasonal shift. The lack of seasonal trends by other species is believed to be attributed to several factors including: 1) to the limited number of samples collected throughout the entire year not representing possible month to month trends; 2) most of the fish species documented are estuarine-based species living in a mostly freshwater environment which may restrict their spawning capabilities resulting in a population of mostly adult fish; and 3) threadfin shad numbers are far greater in proportion of the total catch which will hinder discerning a seasonal shift in abundance for other species . Although healthy populations of threadfin shad are present in the MCR they appear to be kept in balance by the large forage species that live in the reservoir.

Plankton samples in the MCR were comprised almost entirely of mud crab larvae, specifically the species *Rhithropanopeus harrissi.* This species is common on the Texas coast and is known to occur in estuarine and freshwater rivers and reservoir systems. Current data from the US Geological Survey indicates that the species is found in several watersheds in central Texas and is considered a non-indigenous aquatic species in these systems as well as in others across the country. Presence of this species in the MCR appears to be supported by favorable habitat conditions within the reservoir.

Hydrological data collected during this study indicates that water temperatures in the MCR undergo both a seasonal and temporal change. Temperatures increased in the spring and summer and then decreased in the fall winter. Temporal changes were documented as water cycles around the internal levee system. Temperatures were greatest at the cooling water discharge and then gradually decreased by approximately 1°C from station to station with the lowest readings occurring at the CWIS. The overall temperature change observed averaged 5.8°C between the discharge and intake. Salinity in the MCR remains constant at an average of 1.6 ppt. Dissolved oxygen (DO) concentrations ranged between 5.4mgl to 12.0 mg/l and did not appear to have a significant role in fish assemblages in the MCR. Hydrological data at the CWIS was similar to the data recorded for the MCR portion of the study.

Data specific to the CWIS study indicate that very few fish species are impinged (<50%) or entrained (<1%) at circulating water intake structure. A total of 3,982 organisms were impinged and a total of 207,696 organisms were entrained. The mud crab comprised 67% of the organisms entrained while the threadfin shad comprised 42% of all organisms impinged and 86% of the fish impinged. Entrainment rates were highest during the spring months while impingement rates were highest during the winter and early spring months.

Based on data collected from this combined study it is evident that the MCR supports a very diverse aquatic system both for both fishes and macroinvertebrates. Although the reservoir functions as a cooling water system, the day to day withdrawal of water through the CWIS and resultant influx of heated discharge water does not appear to have a negative impact on the fish and macroinvertebrate communities living in the MCR.

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Tables

Table 1. Hydrological data collected during impingement and entrainment sampling in the MCR Circulating Water Intake Structure, 2007-2008.

Date	Central Standard Time	Sample Type*	Air Temp. (°C)	Water Temp. (°C)	Salinity (ppt)	Dissolved Oxygen (mg/l)
5/1/2007	1000	E	28.5	24.4	1.6	8.2
5/1/2007	1615	E	26.5	24.8	1.6	8.8
5/1/2007	2200	E/IM	22.7	24.4	1.6	7.7
5/2/2007	0400	E	22.5	24.1	1.6	7.9
5/2/2007	1000	IM	23.5	24.2	1.6	7.4
5/15/2007	1030	E	39.5	29.9	1.6	8.9
5/15/2007	1623	E	32.5	30.5	1.6	11.7
5/15/2007	2235	E/IM	36.5	30.5	1.6	12.0
5/16/2007	0420	E	24.7	29.8	1.6	10.7
5/16/2007	1015	IM	31.9	29.8	1.6	9.1
6/5/2007	0946	E	27.6	29.9	1.6	10.4
6/5/2007	1555	E	25.0	29.6	1.6	9.6
6/5/2007	2155	E/IM	24.2	29.6	1.6	9.3
6/6/2007	0407	E	22.7	29.4	1.6	7.9
6/6/2007	0950	IM	26.2	29.4	1.6	7.8
6/19/2007	1006	E	27.5	30.2	1.6	5.9
6/19/2007	1550	E	35.0	31.1	1.6	6.8
6/19/2007	2140	E/IM	28.2	30.5	1.6	6.8
6/20/2007	0345	E	27.3	30.2	1.6	6.0
6/20/2007	0940	IM	30.9	30.3	1.6	5.8
7/10/2007	0950	E	30.2	30.1	1.6	7.0
7/10/2007	1550	E	35.0	31.0	1.6	7.8
7/10/2007	2141	E/IM	23.4	30.6	1.6	7.7
7/11/2007	0344	E	26.8	30.4	1.6	7.3
7/11/2007	0948	IM	31.2	31.3	1.6	6.9

Table 1. Continued

Date	Central Standard Time	Sample Type*	Air Temp. (°C)	Water Temp. (°C)	Salinity (ppt)	Dissolved Oxygen (mg/l)
7/24/2007	0955	E	29.4	31.6	1.6	7.6
7/24/2007	1545	E	30.6	32.4	1.6	8.0
7/24/2007	2135	E/IM	26.3	31.6	1.6	8.0
7/25/2007	0350	E	25.9	31.5	1.6	6.9
7/25/2007	0950	IM	30.4	31.5	1.6	6.5
8/7/2007	0940	E	31.3	31.9	1.6	5.6
8/7/2007	1553	E	43.8	33.0	1.6	6.1
8/7/2007	2145	E/IM	29.4	32.3	1.6	6.2
8/8/2007	0400	E	27.2	31.9	1.6	5.6
8/8/2007	1048	IM	31.9	32.0	1.6	5.8
8/21/2007	1003	E	32.6	31.5	1.6	5.9
8/21/2007	1550	E	31.4	32.3	1.6	7.6
8/21/2000	2150	E/IM	29.6	31.9	1.6	6.9
8/22/2007	0340	E	27.8	31.5	1.6	6.2
8/22/2007	0955	IM	31.8	31.5	1.6	6.4
9/4/2007	1018	E	35.3	30.9	1.6	5.3
9/4/2007	1602	E	28.2	30.9	1.6	6.4
9/4/2007	2155	E/IM	27.7	30.8	1.6	6.0
9/5/2007	0400	E	27.2	30.4	1.6	5.4
9/5/2007	1000	IM	28.7	30.3	1.6	5.9
9/25/2007	0945	E	36.1	31.2	1.6	5.9
9/25/2007	1550	E	34.6	31.7	1.6	6.9
9/25/2007	2145	E/IM	27.6	31.1	1.6	6.8
9/26/2007	0345	E	25.0	30.7	1.6	6.2
9/26/2007	1000	IM	28.8	30.7	1.6	5.9

Table 1. Continued

Date	Central Standard Time	Sample Type*	Air Temp. (°C)	Water Temp. (°C)	Salinity (ppt)	Dissolved Oxygen (mg/l)
10/23/2007	0945	E	20.1	25.0	1.6	6.8
10/23/2007	1600	E	18.0	24.8	1.6	7.4
10/23/2007	2200	E/IM	13.4	24.4	1.6	7.0
10/24/2007	0400	E	9.6	24.1	1.6	7.2
10/24/2007	1000	IM	18.0	24.4	1.6	6.2
11/13/2007	0935	E	23.7	24.0	1.6	6.7
11/13/2007	1550	E	28.6	24.6	1.6	7.7
11/13/2007	2154	E/IM	23.3	24.1	1.6	7.4
11/14/2007	0351	E	22.5	27.6	1.6	7.6
11/14/2007	0950	IM	24.5	24.6	1.6	7.4
12/11/2007	1000	E	21.3	21.3	1.6	9.6
12/11/2007	1607	E	21.8	21.8	1.6	9.0
12/11/2007	2200	E/IM	22.1	21.6	1.6	8.2
12/12/2007	0400	E	21.7	21.4	1.6	8.1
12/12/2007	1040	IM	21.0	21.8	1.6	8.2
1/22/2008	1000	E	**	**	**	**
1/22/2008	1600	E	25.5	17.1	1.6	10.1
1/22/2008	2311	E/IM	10.4	15.1	1.6	10.1
1/23/2008	0400	E	7.4	14.5	1.6	10.2
1/23/2008	1000	IM	9.1	14.4	1.6	9.4
2/12/2008	1000	E	**	**	**	**
2/12/2008	1600	E	16.9	19.1	1.5	8.7
2/12/2008	2200	E/IM	10.3	18.7	1.7	8.3
2/13/2008	0400	E	5.0	18.1	1.7	8.1
2/13/2008	1000	IM	19.7	18.0	1.7	8.2

Table 1. Continued

Date	Central Standard Time	Sample Type*	Air Temp. (°C)	Water Temp. (°C)	Salinity (ppt)	Dissolved Oxygen (mg/l)
3/18/2008	1100	E	24.4	22.2	1.6	9.3
3/18/2008	1600	E	24.1	22.2	1.6	10.1
3/18/2008	2200	E/IM	18.5	21.8	1.6	8.9
3/19/2008	0400	E	17.2	21.8	1.6	8.8
3/19/2008	1000	IM	14.8	21.3	1.6	8.4
4/7/2008	1000	E	26.0	23.9	1.5	6.8
4/7/2008	1545	E	29.7	26.7	1.6	7.3
4/7/2008	2200	E/IM	26.1	25.1	1.6	7.1
4/8/2008	0344	E	22.2	24.2	1.6	6.9
4/8/2008	0950	IM	27.2	25.4	1.6	6.4

*E = Entrainment Sample; I = Impingement Sample
** - Data not recorded

Table 2-1. Hydrological data collected during gill net sampling in the Main Cooling Reservoir, 2007-2008.

Date	Central Standard Time	Station	Air Temp. (°C)	Surface Water Temp. (°C)	Bottom Water Temp. (°C)	Surface Salinity (ppt)	Bottom Salinity (ppt)	Surface Oxygen (mg/l)	Bottom Oxygen (mg/l)
5/29/2007	1925	1	28.8	30.8	33.2	1.6	1.6	11.1	11.0
5/30/2007	0730								
5/29/2007	1942	2	26.7	31.3	28.7	1.6	1.6	11.6	7.4
5/30/2007	0910								
5/29/2007	1954	3	26.4	27.5	26.6	1.6	1.6	10.2	8.5
5/30/2007	1023								
8/27/2007	1920	1	28.5	32.2	31.1	1.6	1.6	7.6	4.4
8/28/2007	0701								
8/27/2007	1937	2	28.4	34.0	33.2	1.6	1.6	7.2	6.1
8/28/2007	0730								
8/27/2007	1952	3	28.7	35.3	35.9	1.6	1.6	6.6	4.1
8/28/2007	0822								
10/29/2007	1740	1	22.5	29.8	27.9	1.6	1.6	7.2	6.0
10/30/2007	0730								
10/29/2007	1755	2	23.9	23.4	23.0	1.6	1.6	7.7	23.0
10/30/2007	0811								
10/29/2007	1805	3	20.9	23.0	22.3	1.6	1.6	7.5	7.0
10/30/2007	0905								
2/19/2007	1813	1	14.7	18.7	18.7	1.7	1.7	8.1	6.9
2/20/2007	1053								
2/19/2007	1849	2	16.0	24.2	24.0	1.7	1.7	7.2	7.5
2/20/2007	0905								
2/19/2007	1904	3	16.2	21.0	19.5	1.7	1.7	7.3	6.0
2/20/2007	0704								

Table 2-2. Hydrological data collected during trawl sampling in the Main Cooling Reservoir, 2007-2008.

Date	Central Standard Time	Station	Air Temp. (°C)	Surface Water Temp. (°C)	Bottom Water Temp. (°C)	Surface Salinity (ppt)	Bottom Salinity (ppt)	Surface Oxygen (mg/l)	Bottom Oxygen (mg/l)
5/29/2007	1015	1	29.9	32.8	31.4	1.6	1.6	9.2	6.5
5/29/2007	1108	2	30.4	31.7	28.9	1.6	1.6	8.9	8.6
5/29/2007	1137	3	29.2	30.6	28.6	1.6	1.6	10.8	10.1
5/29/2007	1220	4	29.0	28.7	26.7	1.6	1.6	11.0	8.2
5/29/2007	1252	5	27.5	27.4	26.6	1.6	1.6	11.1	8.4
8/27/2007	1303	1	33.1	35.6	35.0	1.6	1.6	5.4	4.6
8/27/2007	1358	2	33.3	35.3	32.4	1.6	1.6	7.4	1.6
8/27/2007	1434	3	31.5	34.4	31.6	1.6	1.6	8.0	2.4
8/27/2007	1514	4	32.4	33.1	32.0	1.6	1.6	7.6	6.0
8/27/2007	1602	5	32.3	32.1	31.2	1.6	1.6	7.7	7.7
10/29/2007	1024	1	16.5	28.9	27.2	1.6	1.6	6.9	6.5
10/29/2007	1053	2	21.8	26.5	24.7	1.6	1.6	7.5	7.1
10/29/2007	1124	3	16.8	23.8	29.2	1.6	1.6	7.9	6.3
10/29/2007	1207	4	19.0	23.0	22.6	1.6	1.6	8.0	8.1
10/29/2007	1245	5	19.9	22.3	22.2	1.6	1.6	8.4	6.9
2/19/2007	1339	1	20.8	26.0	23.9	1.6	1.6	7.6	7.3
2/19/2007	1410	2	16.8	21.7	21.2	1.7	1.7	8.2	6.8
2/19/2007	1434	3	17.1	21.5	19.5	1.7	1.7	7.9	5.2
2/19/2007	1502	4	16.4	19.5	19.6	1.7	1.7	8.0	8.3
2/19/2007	1530	5	16.0	18.5	18.4	1.7	1.7	8.5	7.8

Table 2-3. Hydrological data collected during seine sampling in the Main Cooling Reservoir, 2007-2008.

Date	Central Standard Time	Station	Air Temp. (°C)	Surface Water Temp. (°C)	Bottom Water Temp. (°C)*	Surface Salinity (ppt)	Bottom Salinity (ppt)	Surface Oxygen (mg/l)	Bottom Oxygen (mg/l)*
5/29/2007	1848	1	29.7	33.3	NA	1.6	1.6	9.5	NA
5/29/2007	1620	3	30.4	29.6	NA	1.6	1.6	13.9	NA
5/29/2007	1653	5	29.0	27.3	NA	1.6	1.6	9.8	NA
8/27/2007	1710	1	29.9	35.8	NA	1.6	1.6	4.6	NA
8/27/2007	1736	2	29.4	34.8	NA	1.6	1.6	6.2	NA
8/27/2007	1800	3	30.0	34.5	NA	1.6	1.6	6.8	NA
8/27/2007	1824	4	29.0	33.0	NA	1.6	1.6	7.3	NA
8/27/2007	1840	5	29.2	31.7	NA	1.6	1.6	7.1	NA
10/29/2007	NA	1	23.5	31.2	NA	1.6	1.6	6.9	NA
10/29/2007	1503	2	20.7	28.0	NA	1.6	1.6	8.5	NA
10/29/2007	1526	3	22.7	23.5	NA	1.6	1.6	6.9	NA
10/29/2007	1643	4	21.7	23.1	NA	1.6	1.6	8.4	NA
10/29/2007	1601	5	20.1	22.2	NA	1.6	1.6	8.0	NA
2/19/2007	1707	1	16.0	24.9	NA	1.7	1.7	7.7	NA
2/19/2007	1730	2	16.6	22.1	NA	1.7	1.7	8.2	NA
2/19/2007	1152	3	**	**	NA	1.7	1.7	**	NA
2/19/2007	1640	4	16.6	19.1	NA	1.7	1.7	8.7	NA
2/19/2007	1614	5	17.7	18.7	NA	1.7	1.7	8.5	NA

NA - Not applicable for this gear.

Table 2-4. Hydrological data collected during plankton sampling in the Main Cooling Reservoir, 2007-2008.

Date	Central Standard Time	Station	Air Temp. (°C)	Surface Water Temp. (°C)	Bottom Water Temp. (°C)	Surface Salinity (ppt)	Bottom Salinity (ppt)	Surface Oxygen (mg/l)	Bottom Oxygen (mg/l)
5/29/2007	1015	1	29.9	32.8	31.4	1.6	1.6	9.2	6.5
5/29/2007	1137	3	29.2	30.6	28.6	1.6	1.6	10.8	10.1
5/29/2007	1252	5	27.5	27.4	26.6	1.6	1.6	11.1	8.4
8/27/2007	1303	1	33.1	35.6	35.0	1.6	1.6	5.4	4.6
8/27/2007	1434	3	31.5	34.4	31.6	1.6	1.6	8.0	2.4
8/27/2007	1602	5	32.3	32.1	31.2	1.6	1.6	7.7	7.7
10/29/2007	1024	1	16.5	28.9	27.2	1.6	1.6	6.9	6.5
10/29/2007	1124	3	16.8	23.8	29.2	1.6	1.6	7.9	6.3
10/29/2007	1255	5	19.9	22.3	22.2	1.6	1.6	8.4	6.9
2/19/2007	1339	1	20.8	26.0	23.9	1.6	1.6	7.6	7.3
2/19/2007	1434	3	17.1	21.5	19.5	1.7	1.7	7.9	5.2
2/19/2007	1530	5	16.0	18.5	18.4	1.7	1.7	8.5	7.8

* - Bottom samples not collected for this gear.
** - No data collected.

Table 3. Total number of organisms collected by gear in the Main Cooling Reservoir, 2007-2008.

Common Name	Scientific Name	Gill Net	Bag Seine	Trawl	Total
Atlantic croaker	*Micropogonias undulatus*	17		86	103
Black drum	*Pogonias cromis*	26			26
Blue catfish	*Ictalurus furcatus*	308	35	50	393
Blue Crab	*Callinectes sapidus*	11	2	6	19
Bluegill	*Lepomis macrochirus*		31		31
Brown clam	*Rangia cuniata*			3	3
Channel Catfish	*Icatlurus punctatus*	3	21	6	30
Common carp	*Cyprinus carpio*	97		9	106
Freshwater Drum	*Aplodinotus grunniens*	7	3	39	49
Gizzard shad	*Dorosoma cepedianum*		45	28	73
Gulf menhaden	*Brevoorita patronus*	4		1	5
Inland silverside	*Menidia beryllina*		2068		2068
Ladyfish	*Elops saurus*	36	1		37
Mangrove Snapper	*Lutjanus griseus*	2			2
Naked goby	*Gobiosoma bosc*		3		3
Needlefish	*Strongylura marina*		1		1
Pinfish	*Lagodon rhomboides*		3	1	4
Red Drum	*Sciaenops ocellatus*	1			1
Rough Silverside	*Membras martinica*		1362		1362
Sheepshead minnow	*Cyprinodon variegatus*		4		4
Smallmouth Buffalo	*Ictiobus bubalus*	2			2
Spotted gar	*Lepisosteus oculatus*		1	2	3
Striped Mullet	*Mugil cephalus*	1	41		42
Threadfin shad	*Dorosoma petenense*		6463	768	7231
White mullet	*Mugil curema*		7		7
	Total	515	10091	999	11605

Table 4. Total number of organisms collected in seine samples in the Main Cooling Reservoir, 2007-2008.

Common Name	Scientific Name	Sample Dates 5/29/2007	8/27/2007	10/29/2007	2/19/2008	Total
Finfish						
Blue catfish	*Ictalurus furcatus*	33	0	1	1	35
Bluegill	*Lepomis macrochirus*	4	5	21	1	31
Channel catfish	*Ictalurus punctatus*	0	10	4	7	21
Freshwater drum	*Aplodinotus grunniens*	0	3	0	0	3
Gizzard shad	*Dorosoma cepedianum*	9	0	33	3	45
Inland silverside	*Menidia beryllina*	790	53	763	462	2068
Ladyfish	*Elops saurus*	1	0	0	0	1
Naked goby	*Gobiosoma bosc*	2	1	0	0	3
Needlefish	*Strongylura marina*	0	0	1	0	1
Pinfish	*Lagodon rhomboides*	3	0	0	0	3
Rough silverside	*Membras martinica*	0	0	431	931	1362
Sheepshead minnow	*Cyprinodon variegatus*	1	1	2	0	4
Spotted gar	*Lepisosteus oculatus*	1	0	0	0	1
Striped mullet	*Mugil cephalus*	0	37	4	0	41
Threadfin shad	*Dorosoma petenense*	109	1718	4217	419	6463
White mullet	*Mugil curema*	7	0	0	0	7
Invertebrates						
Blue crab	*Callinectes sapidus*	2	0	0	0	2
	Total	962	1828	5477	1824	10091

Table 5. Total number of organisms collected in trawl samples in the Main Cooling Reservoir, 2007-2008.

		Sample Dates				
Common Name	Scientific Name	5/29/2007	8/27/2007	10/28/2007	2/19/2008	Total
Finfish						
Atlantic croaker	*Micropogonias undulatus*	68	17	1	0	86
Blue catfish	*Ictalurus furcatus*	8	30	7	5	50
Brown clam	*Rangia cuniata*	1	0	2	0	3
Channel catfish	*Ictalurus punctatus*	1	5	0	0	6
Common carp	*Cyprinus carpio*	6	1	2	0	9
Freshwater drum	*Aplodinotus grunniens*	0	39	0	0	39
Gizzard shad	*Dorosoma cepedianum*	0	2	11	15	28
Gulf menhaden	*Brevoortia patronus*	0	1	0	0	1
Pinfish	*Lagodon rhomboides*	0	1	0	0	1
Spotted gar	*Lepisosteus oculatus*	0	2	0	0	2
Threadfin shad	*Dorosoma pentenense*	4	320	32	412	768
Invertebrates						
Blue crab	*Callinectes sapidus*	5	0	1	0	6
	Total	93	418	56	432	999

Table 6. Total number of organisms collected in gill net samples in the Main Cooling Reservoir, 2007-2008.

Common Name	Scientific Name	Sample Dates 5/29/2007	8/27/2007	10/29/2007	2/19/2008	Total
Finfish						
Atlantic croaker	*Micropogonias undulatus*	3	7	7	0	17
Black drum	*Pogonias cromis*	4	14	4	4	26
Blue catfish	*Ictalurus furcatus*	29	90	50	139	308
Channel catfish	*Icatlurus punctatus*	0	1	1	1	3
Common carp	*Cyprinus carpio*	54	10	19	14	97
Freshwater drum	*Aplodinotus grunniens*	0	1	6	0	7
Gulf menhaden	*Brevoorita patronus*	2	1	1	0	4
Ladyfish	*Elops saurus*	13	5	16	2	36
Mangrove snapper	*Lutjanus griseus*	0	0	2	0	2
Red drum	*Sciaenops ocellatus*	0	0	0	1	1
Smallmouth buffalo	*Ictiobus bubalus*	0	2	0	0	2
Striped mullet	*Mugil cephalus*	0	1	0	0	1
Invertebrates						
Blue crab	*Callinectes sapidus*	0	0	8	3	11
	Total	105	132	114	164	515

Table 7. Macroinvertebrate organisms collected in plankton tow samples from the Main Cooling Reservoir, 2007-2008.

Category	Classes	Order	Name/Identification	Scientific Name	Total Number
Finfish					
	Actinopterygii				
		Clupeiformes			
			Clupeid shad	*Clupeidae sp.*	15
			Gobi	*Gobiidae sp.*	2
			Naked Gobi	*Gobiosoma bosc*	
Invertebrates					
Crustacea					
	Branchiopoda				
		Cladocera	Water Flea	*Cladocera sp.*	8
	Malacastroca				
		Amphipoda			
			Amphipods	*Amphipoda sp.*	1
	Maxillopoda				
		Cyclopoida	Copepods	*Copepoda sp.*	22
		Arguloida	Fish lice	*Branchiura sp.*	1
		Decapoda			
			Decapod	*Panopeidae sp.*	539
			Harris Mud Crab	*Rhithropanopeus harrissi*	4,582
			Decapod zoea	*Decapoda sp.*	153
			Brachyuran decapod	*Brachyura sp.*	29
		Mysida			
			Mysid shrimp	*Mysida sp.*	2
	Bivalvia				
			Mollusk	*Bivalvia sp.*	3
	Ostracoda				
			Ostracod	*Ostracoda sp.*	
Unidentified					5
				Total	5,362

Table 8. Fish and invertebrate species collected during impingement samples in the MCR Circulating Water Intake Structure, 2007-2008.

Common Name	Scientific Name	Total Number
Finfish		
American Eel	*Anguilla rostrata*	1
Atlantic croaker	*Micropogonius undulatus*	182
Bay anchovy	*Anchoa mitchilli*	3
Bay Whiff	*Citharichthys spilopterus*	2
Black Drum	*Pogonias cromis*	2
Blue catfish	*Ictalurus furcatus*	6
Bluegill	*Lepomis macrochirus*	9
Carp	*Cyprinus carpio*	2
Channel catfish	*Ictalurus punctatus*	4
Freshwater drum	*Aplodinotus grunniens*	5
Freshwater Goby	*Ctenogobius shufeldti*	2
Gizzard shad	*Dorosoma cepedianum*	2
Goby	*Gobiidae: spp*	8
Gulf Menhaden	*Brevoortia patronus*	2
Inland Silverside	*Menidia beryllina*	5
Ladyfish	*Elops saurus*	1
Naked Goby	*Gobiosoma bosc*	13
Needlefish	*Xenentodon cancila*	2
Rough Silverside	*Membras martinica*	2
Sand Trout	*Cynoscion arenarius*	3
Sharptail goby	*Oligolepis acutipennis*	2
Sheepshead	*Archosargus probatocephalus*	1
Spot	*Leiostomus xanthurus*	1
Threadfin shad	*Dorosoma petenense*	1668
Worm Eel	*Myrophis punctatus*	1
	Subtotal	1,929
Invertebrates		
Blue crab	*Callinectes sapidus*	944
Brown shrimp	*Farfantepenaeus aztecus*	10
Grass shrimp	*Paleomonetes pugio*	33
Lesser Blue Crab	*Callinectes similis*	3
Mud crab	*Rithropanopeus harissii*	953
River shrimp	*Macrobrachium ohione*	3
White shrimp	*Litopenaeus setiferus*	106
Other		
Flat head snake	*Tantilla gracilis*	1
	Subtotal	2,053
	Total	3,982

Table 9. Species captured, by sample date, during impingement samples in the MCR Circulating Water Intake Structure, 2007-2008.

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
5/1/2007	Blue Catfish	2	1000.0	NA	470	470
	Threadfin shad	96	161.1	58	74	65
	Goby	2	0.9	36	36	36
	Brown shrimp	2	439.0	60	85	73
	Grass shrimp	2	1.1	34	35	34.5
	Mud Crab	2	0.9	15	16	15.5
	Blue Crab	0	547.0	151	185	165
5/2/2007	Threadfin shad	52	81.0	54	74	63.7
	Mud crab	3	1.1	10	12	11
	Gizzard shad	2	579.3	275	355	315
	Sharptail goby	2	NA	NA	NA	NA
	Blue crab	10	2247.3	170	195	177.4
5/15/2007	Threadfin shad	2	3.8	66	71	69
	Goby	1	0.5	0.5	0.5	0.5
	Brown shrimp	2	13.8	95	95	95
	Grass shrimp	1	0.8	45	45	45
	Mud crab	5	1.0	8	16	11
	Blue crab	7	1368.1	155	180	167
	Freshwater drum	1	650.0	325	325	325
	River shrimp	1	3.6	70	70	70
	White shrimp	1	32.3	148	148	148
5/16/2007	Blue catfish	1	700.0	420	420	420
	Threadfin shad	10	11.1	52	65	58
	Goby	3	1.2	30	37	34
	Brown shrimp	3	16.6	85	95	90
	Mud crab	13	4.4	8	21	10
	Needlefish	1	0.5	91	91	91
	Blue crab	11	222.6	150	177	170
	Freshwater drum	3	NA	215	215	215
	Channel catfish	1	800.0	440	440	440
	Spot	1	356.1	240	240	240

Table 9. Continued

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
6/5/2007	Blue catfish	2	1910.0	230	450	340
	Goby	1	0.5	36	36	36
	Mud crab	26	13.4	8	22	14
	Blue crab	7	1604.0	160	190	181
6/6/2007	Threadfin shad	2	2.5	62	64	63
	Mud crab	158	30.4	6	20	12
	Blue crab	16	3452.0	115	205	172
	Bay Anchovy	1	4.9	92	92	92
6/19/2007	Threadfin shad	7	11.8	44	72	61
	Mud crab	25	3.3	4	45	8
	Blue crab	177	5910.0	140	215	178
	Sand Trout	1	600.0	390	390	390
	Black Drum	2	600.0	280	310	295
	Bluegill	1	49.0	130	130	130
	Naked Goby	1	1.6	55	55	55
6/20/2007	Threadfin shad	2	2.9	55	56	55.5
	Brown shrimp	1	9.0	108	108	108
	Mud crab	70	3.6	6	20	10
	Blue crab	302	5224.0	61	225	169
	Channel catfish	1	800.0	470	470	470
	Sand Trout	1	600.0	380	380	380
	Bluegill	2	17.3	74	88	81
	Bay Whiff	1	29.0	131	131	131
	Inland Silverside	1	1.1	52	52	52
7/10/2007	Threadfin shad	1	0.4	41	41	41
	Mud crab	93	22.4	4	15	10
	Blue crab	24	5300.0	39	210	165
	Sand Trout	1	500.0	343	343	343
	Naked Goby	1	0.5	46	46	46

Table 9. Continued

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
7/11/2007	Threadfin shad	7	2.6	35	50	41
	Mud crab	30	10.1	4	15	9
	Blue crab	29	7000.0	35	215	161
	Channel catfish	1	1000.0	530	530	530
	Atlantic croaker	1	NA	245	245	245
	Gulf Menhaden	1	NA	NA	NA	NA
7/24/2007	Threadfin shad	48	32.2	30	42	36
	Mud crab	44	15.5	8	22	12
	Blue crab	40	8129.0	10	320	165
	Atlantic Croaker	1	NA	209	209	209
7/25/2007	Threadfin shad	41	20.6	30	45	37
	Mud crab	16	5.6	8	20	12
	Blue crab	50	5600.0	140	220	172
	Blue Gill	2	NA	NA	NA	NA
	Inland Silverside	1	2.0	65	65	65
	Atlantic croaker	2	NA	NA	182	NA
	Carp	1	5000.0	660	660	660
8/7/2007	Mud crab	39	10.2	7	15	10
	Blue crab	17	2700.0	52	190	156
	Atlantic croaker	2	330.0	218	265	242
8/8/2007	Mud crab	10	1.9	5	17	9
	Blue crab	19	4200.0	140	228	172
8/21/2007	Mud crab	41	9.5	6	16	10
	Blue crab	14	5800.0	146	195	165
	Naked Goby	2	3.1	51	52	51.5
	Gulf Menhaden	1	NA	NA	NA	NA
	Atlantic croaker	1	NA	NA	NA	NA
8/22/2007	Threadfin shad	3	1.9	38	45	41
	Mud crab	32	4.7	4	12	7
	Blue crab	14	5200.0	132	187	161

Table 9. Continued

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
9/4/2007	Threadfin shad	1	0.4	40	40	40
	Goby	1	0.4	36	36	36
	Mud crab	33	9.9	5	14	9
	Blue crab	24	4600.0	125	210	167
	American Eel	1	1400.0	800	800	800
9/5/2007	Mud crab	31	9.2	5	14	8
	Blue crab	9	2000.0	130	190	168
9/25/2007	Threadfin shad	2	0.9	42	48	45
	Mud crab	39	13.0	6	18	11
	Blue crab	11	2700.0	145	200	172
	Naked Goby	1	0.5	38	38	38
	Carp	1	4000.0	640	640	640
	Rough Silverside	1	0.3	45	45	45
9/26/2007	Threadfin shad	6	1.6	28	48	38
	Mud crab	14	12.6	5	22	11
	Blue crab	12	2700.0	15	190	152
	Naked Goby	2	NA	34	46	40
	Inland Silverside	1	0.3	44	44	44
	Atlantic croaker	3	NA	NA	392	NA
10/23/2007	Threadfin shad	2	1.1	38	40	39
	Grass shrimp	1	4.1	72	72	72
	Mud crab	30	17.8	6	22	12
	Blue crab	6	2100.0	158	205	179
	Bay Whiff	1	60.1	158	158	158
	Atlantic croaker	53	4300.0	180	270	228
10/24/2007	Threadfin shad	1	1.4	55	55	55
	Mud crab	26	11.1	5	18	10
	Blue crab	7	1800.0	142	192	172
	White shrimp	1	0.2	42	42	42
	Bluegill	1	1.1	40	40	40
	Atlantic croaker	57	5600.0	200	340	240
	Ladyfish	1	1500.0	625	625	625

Table 9. Continued

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
11/13/2007	Blue catfish	1	700.0	410	410	410
	Threadfin shad	91	25.0	28	54	47
	Mud crab	30	26.7	12	21	15
	Blue crab	6	1200.5	24	202	125
	White shrimp	1	9.7	119	119	119
	Naked Goby	1	0.2	42	42	42
	Atlantic croaker	5	484.0	165	305	231
11/14/2007	Threadfin shad	70	24.3	28	58	48
	Mud crab	30	22.8	8	18	13
	Blue crab	6	1800.0	152	200	179
	White shrimp	1	0.6	39	39	39
	Channel catfish	1	600.0	295	295	295
	Naked Goby	3	2.1	28	45	38
	Atlantic croaker	13	1600.0	175	255	223
	Rough Silverside	1	1.6	65	65	65
	Lesser Blue Crab	1	0.5	18	18	18
12/11/2007						
	Threadfin shad	38	30.2	36	56	50
	Mud crab	18	8.9	6	20	11
	Blue crab	11	2800.9	18	202	164
	Freshwater drum	1	366.0	358	358	358
	White shrimp	5	34.9	46	126	90
	Bay anchovy	1	4.4	82	82	82
	Naked Goby	1	1.4	46	46	46
	Atlantic croaker	2	381.0	250	252	251
	Sheepshead	1	400.0	310	310	310
12/12/2007	Threadfin shad	65	28.9	40	73	52
	Brown shrimp	2	18.2	95	125	110
	Mud crab	22	10.8	6	18	11
	Needlefish	1	0.3	77	77	77
	Blue crab	13	3600.0	30	198	154
	Bay anchovy	1	3.6	85	85	85
	Atlantic croaker	19	4200.0	206	360	245

Table 9. Continued

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
1/22/2008	Threadfin shad	179	29.5	38	60	51
	Blue crab	8	1600.0	12	196	131
	Atlantic croaker	2	290.1	220	240	230
	Lesser Blue Crab	1	0.7	20	20	20
1/23/2008	Threadfin shad	272	33.2	45	72	53
	Mud crab	6	5.4	11	16	14
	Blue crab	16	3800.0	30	215	140
	White shrimp	9	0.1	25	65	48
	Inland Silverside	1	0.1	30	30	30
	Atlantic croaker	1	91.4	210	210	210
	Worm Eel	1	NA	NA	NA	NA
2/12/2008	Threadfin shad	26	25.1	36	73	53
	Mud crab	17	14.1	5	18	10
	Blue crab	14	2000.0	52	182	127
	White shrimp	2	2.1	38	54	46
	Lesser Blue Crab	1	1.3	25	25	25
2/13/2008	Threadfin shad	41	26.8	41	59	51
	Mud crab	4	3.0	11	14	12
	Blue crab	12	2200.0	6	180	154
	White shrimp	1	19.1	148	148	148
	Bluegill	1	4.5	65	65	65
	Atlantic croaker	18	1800.0	180	275	217
3/18/2008	Threadfin shad	284	NA	38	62	52
	Grass shrimp	27	NA	27	27	27
	Blue crab	22	NA	34	190	135
	White shrimp	85	NA	85	85	85
3/19/2008	Threadfin shad	312	NA	48	71	55
	Grass shrimp	2	NA	45	52	49
	Blue crab	21	NA	48	190	126
	Bluegill	1	NA	88	88	88
	Inland Silverside	1	NA	64	64	64
	Atlantic croaker	2	NA	235	258	247
	Freshwater Goby	2	NA	20	23	21.5

Table 9. Continued

Sample Date	Species	No.	Batch Wt. (g)	Length Min (mm)	Length Max (mm)	Length Average (mm)
4/7/2008	Threadfin shad	4	3.1	46	58	53
	Mud crab	25	7.4	5	14	8
	Blue crab	2	677.6	155	210	183
	Naked Goby	1	NA	45	45	45
4/8/2008	Threadfin shad	3	2.4	52	55	54
	Mud crab	21	7.9	5	13	7
	Blue crab	7	1200.0	10	170	134
	River shrimp	2	2.9	43	60	52
	Bluegill	1	59.1	138	138	138
	Brown snake	1	2.4	171	171	171
Total		3982				

NA - no data collected.

Table 10. Species collected during entrainment sampling in the MCR Circulating Water Intake Structure, 2007-2008.

Common Name	Scientific Name	Total
Finfish		
Anchovy	*Engraulid* sp.	30
Clupeid	*Clupeid* sp	544
Gobies	*Gobi* spp.	61
Naked goby	*Gobiosoma bosc*	5
Silversides	*Atheriniformes spp.*	2
Silversides	*Atheriniformes spp.*	169
Silversides	*Atheriniformes spp.*	30
Fish egg	Fish egg	103
Needlefish	*Beloniformes spp.*	3
Flying fish (eggs)	*Exocoetidae* sp. (eggs)	307
Egg Complex	*Carangidae-Labridae-Sciaenidae*	8
Perch-like fish	*Perciformes*	6
Wrasse fishes	*Labridae* sp.	3
	Subtotal	1,271
Invertebrates		
Amphipod	Amphipod spp.	141
Amphipod	*Cerapus* sp.	4
Brachyuran decapod	*Brachyura sp. (zoea)*	353
Fish Lice	*Branchiura spp.*	399
Cladoceran	*Cladocera spp.*	800
Copepod	*Copepoda spp.*	6,588
Decapoda	*Rhithropanopeus harrissi*	140,192
Decapoda	*Panopeidae sp.*	10,798
Decapoda Zoea	Decapoda	31,919
Harpacticoid copepod	Copepoda	12,212
Insect sp.	Insecta	24
Tongue biters	Isopoda	16
Mollusk	*Bivalvia* sp.	1
Mysid shrimp	*Mysida sp.*	2,660
Midge (sp.1)	Diptera	32
Mites/Ticks	*Acari*	12
Midge	*Chironomidae* sp.	78
Polychaete	*Nereis* sp.	4
Seed Shrimp	Ostracoda	78
Shrimp	*Caridea*	1
Unidentified		113
	Subtotal	206,425
	Total	**207,696**

Figures

N

Project Location Map
South Texas Project Electric Generating Station
Unit 3 and 4 Licensing Project

Matagorda County, Texas

Scale:1:500,000 (1" =7.9 miles)

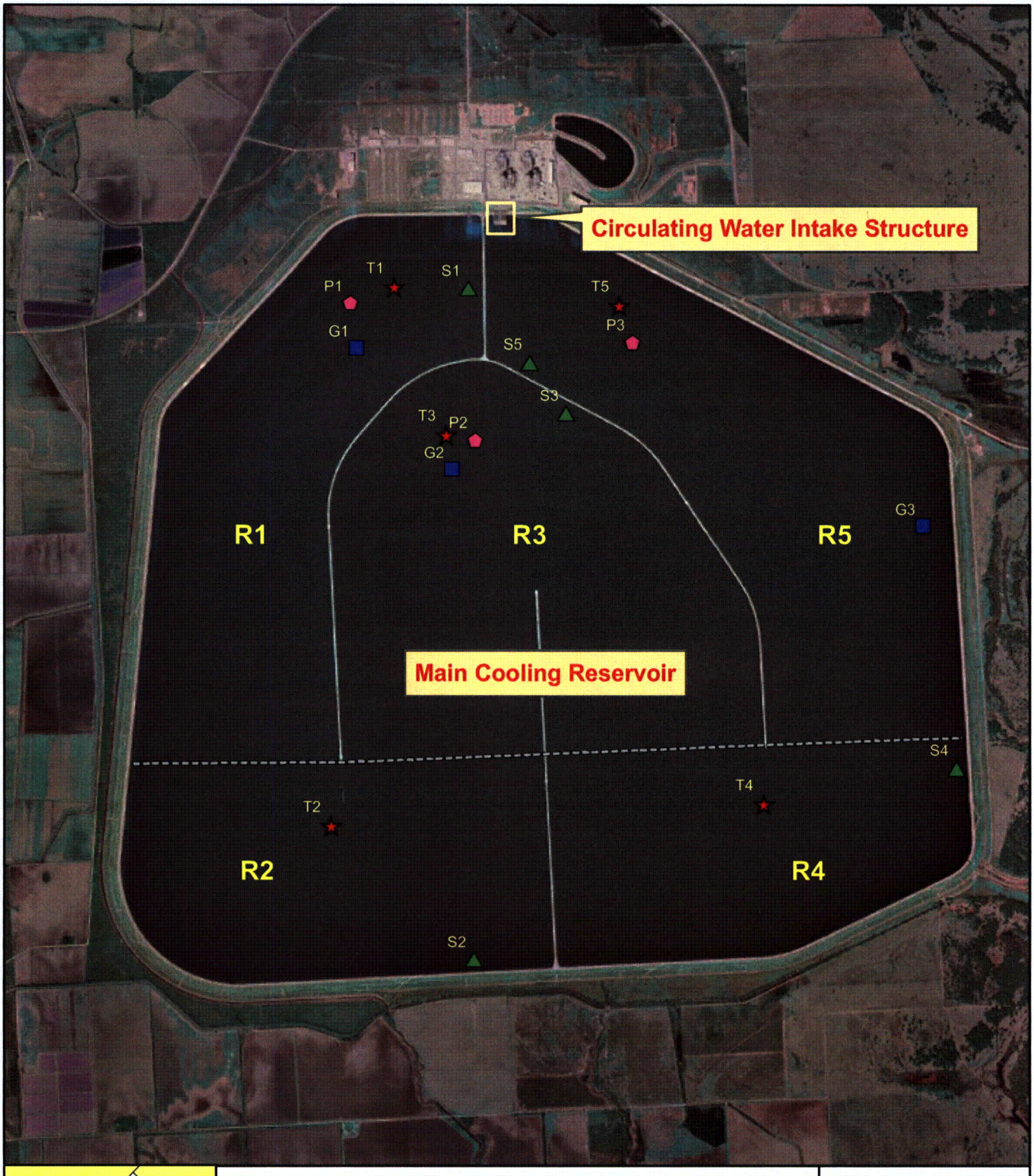
Image Source: Delorme

STPNOC

ENSR | AECOM

Figure 1

Project #: 10720-008



MCR and CWIS Aquatic Study Sample Locations
South Texas Project Electric Generating Station
Matagorda County, TX

- Gill Net
- Plankton
- Seine
- Trawl Station

0 0.1250.25 0.5 0.75 1 Miles

Coordinate System: Texas State Plane, South Central Zone, NAD 1983, US Feet
Image Source: I3_Imagery_Prime_World_2D
http://services.arcgisonline.com/v92

N W E S

STPNOC

ENSR | AECOM

Date: July 31, 2008
Project No.: 10720-008
Figure 2

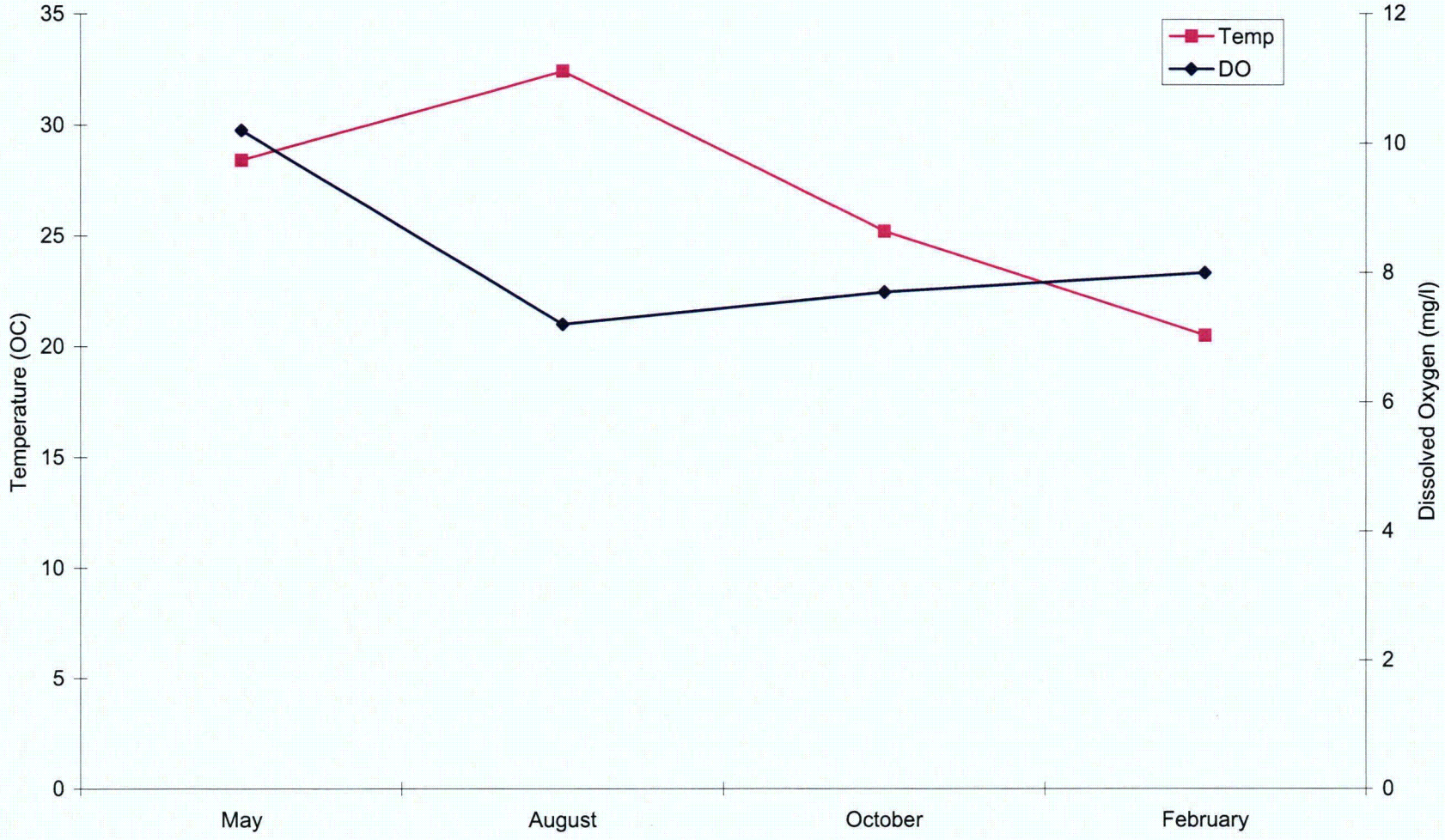


Figure 3. Temperature and dissolved oxygen readings collected from trawl samples in the Main Cooling Reservoir, 2007-2008.

Figure 4. Temperature and dissolved oxygen readings collected during the MCR Circulating Water Intake Structure study, 2007-2008.

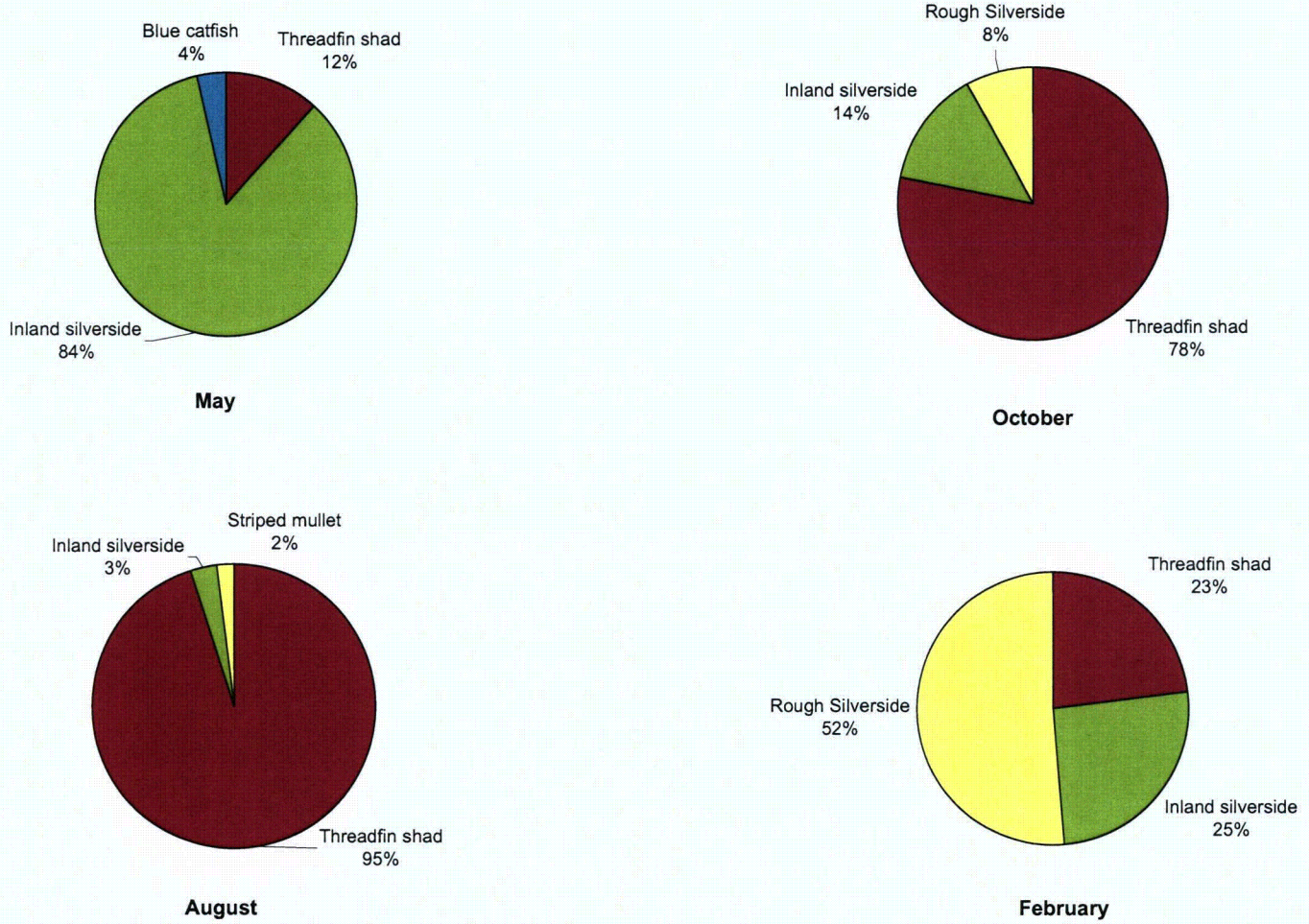
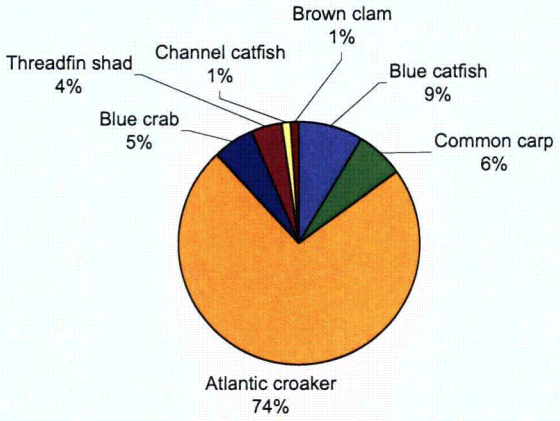


Figure 5. Seasonal composition of aquatic organisms comprising >1% in seine samples collected in the Main Cooling Reservoir, 2007-2008.



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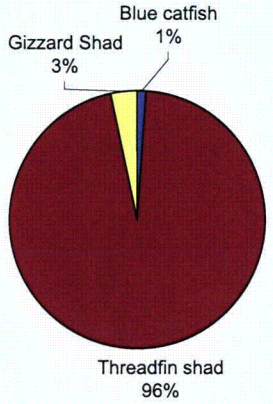
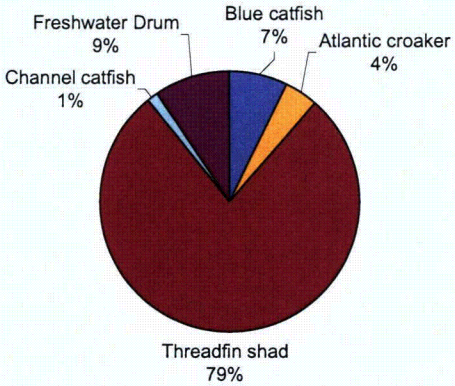


February



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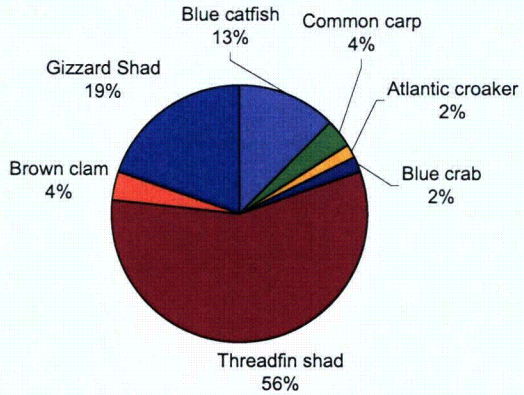
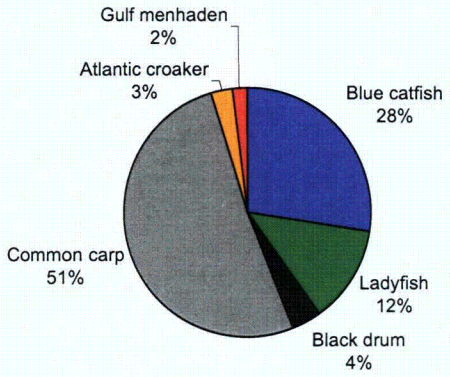


October

Figure 6. Seasonal composition of aquatic organisms comprising >1% in trawl samples collected in the Main Cooling Reservoir, 2007-2008.



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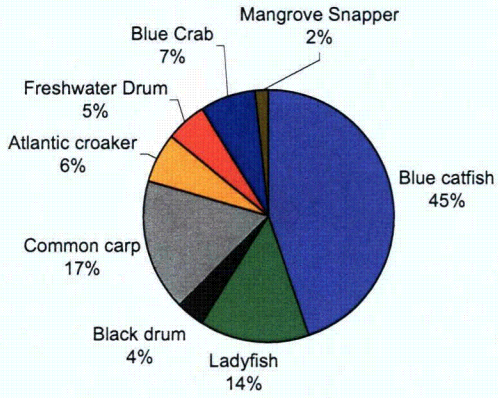
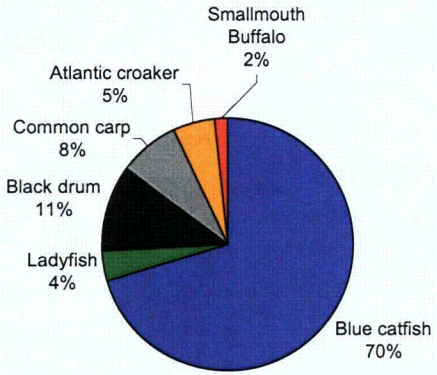
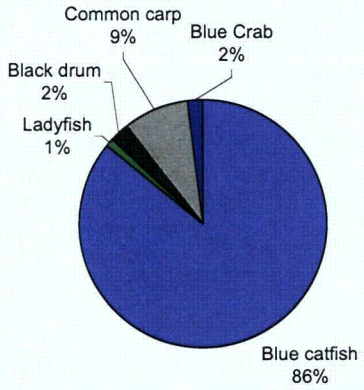


October



August



February

Figure 7. Seasonal composition of aquatic organisms comprising >1% in gill net samples collected in the Main Cooling Reservoir, 2007-2008.

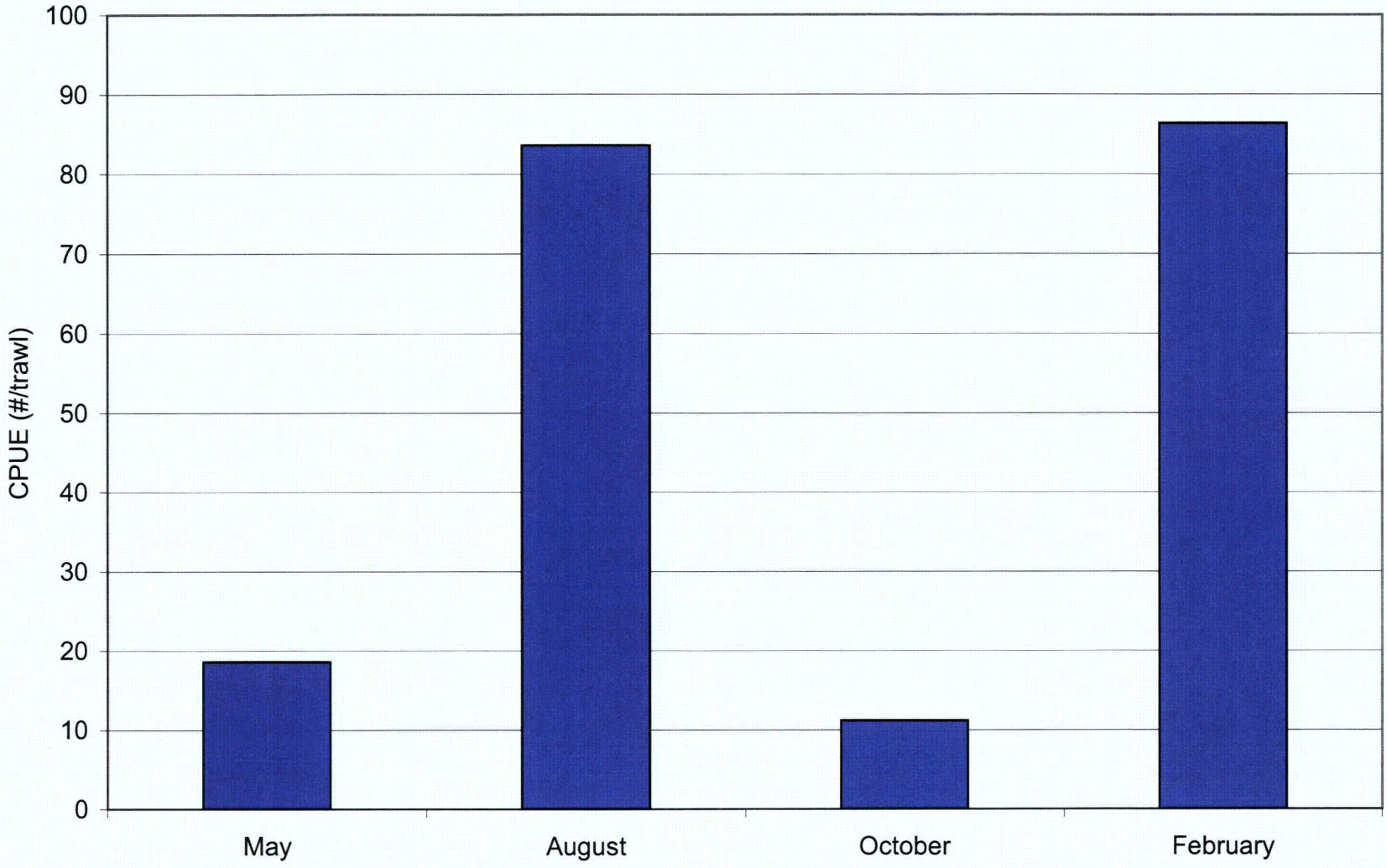


Figure 8. Catch per unit effort (CPUE) for organisms collected in trawl samples in the Main Cooling Reservoir, 2007-2008.

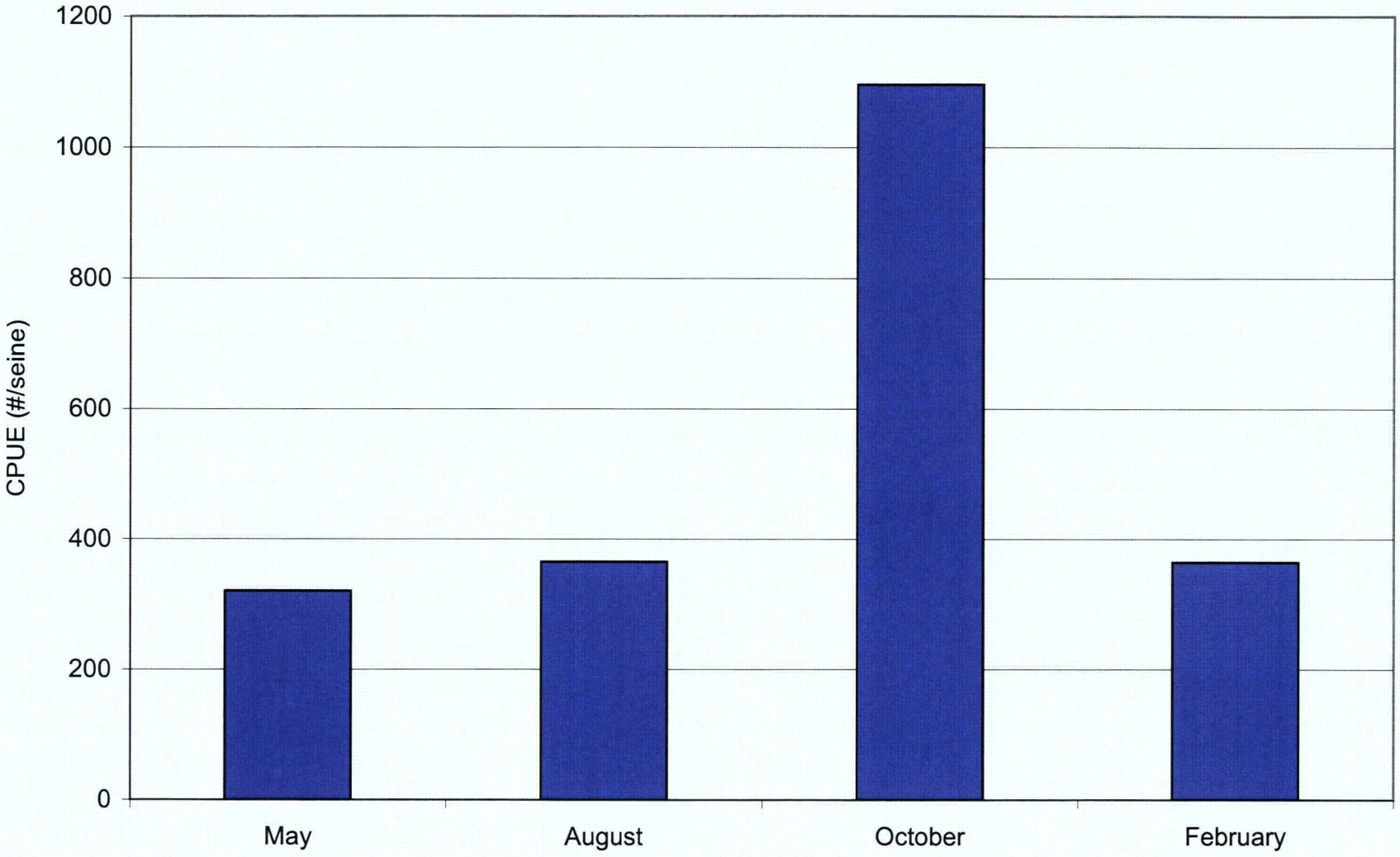


Figure 9. Catch per unit effort (CPUE) for organisms collected in seine samples in the Main Cooling Reservoir, 2007-2008.

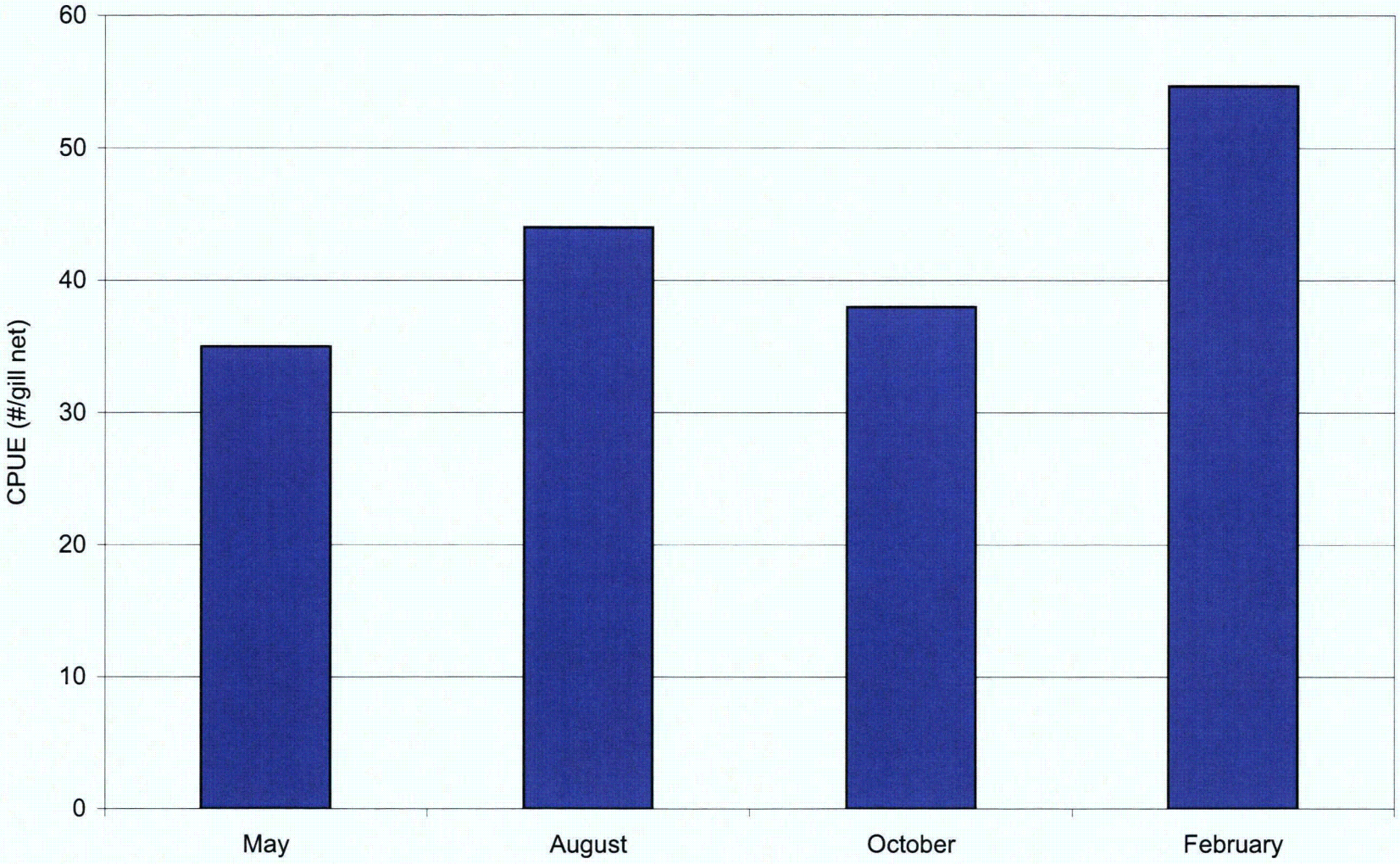


Figure 10. Catch per unit (CPUE) for organisms collected in gill net samples in the Main Cooling Reservoir, 2007-2008.

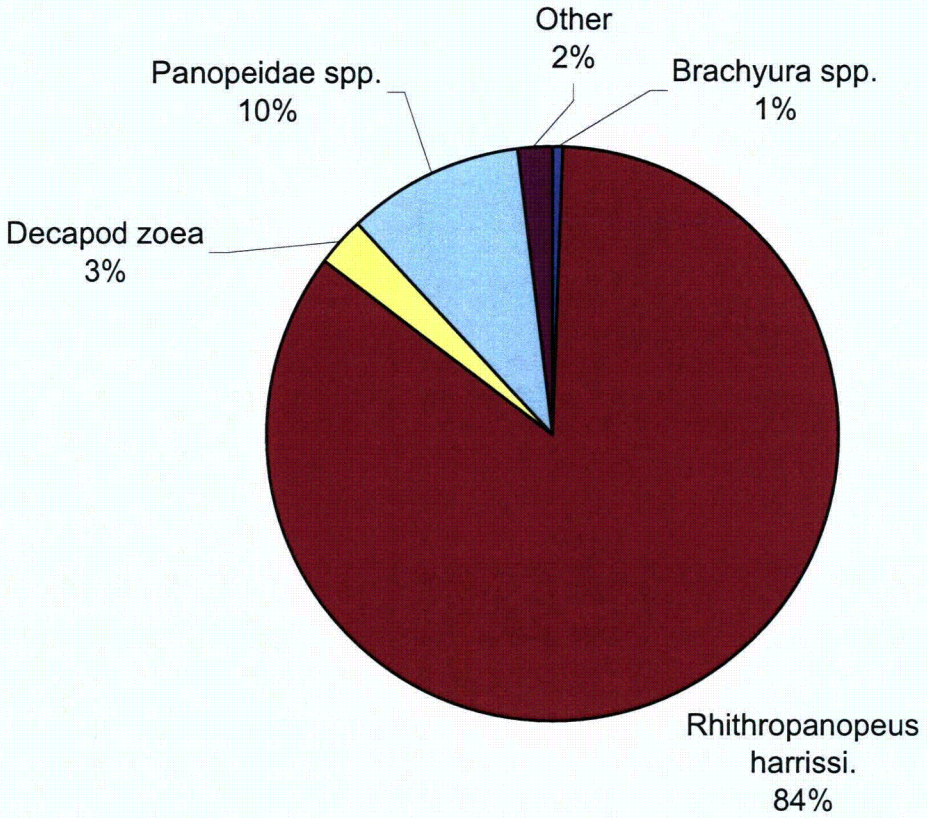


Figure 11. Composition of invertebrate species collected in plankton tows in the Main Cooling Reservoir, 2007-2008.

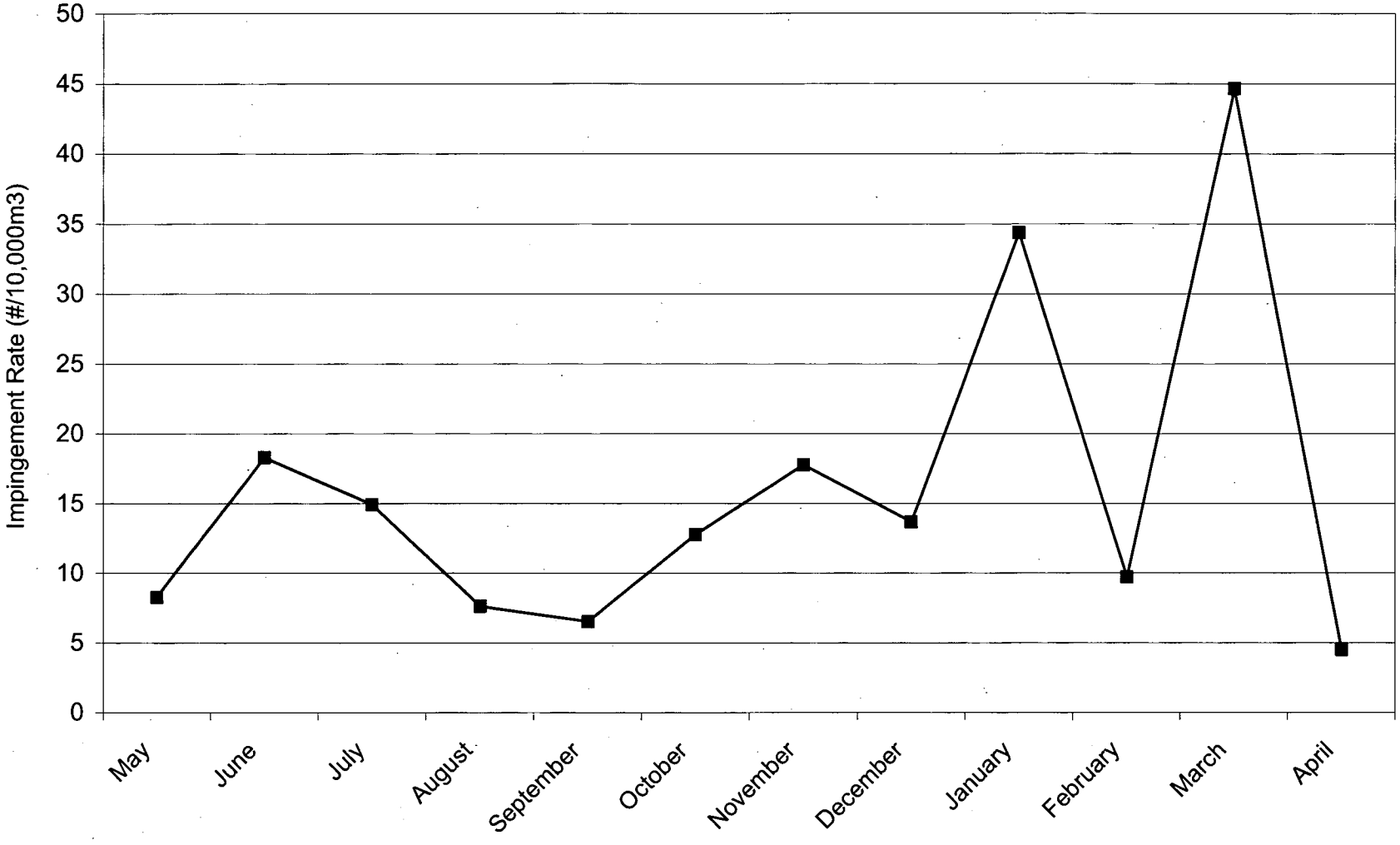


Figure 12. Impingement rates for organisms collected in the MCR Circulating Water Intake Structure, 2007-2008.

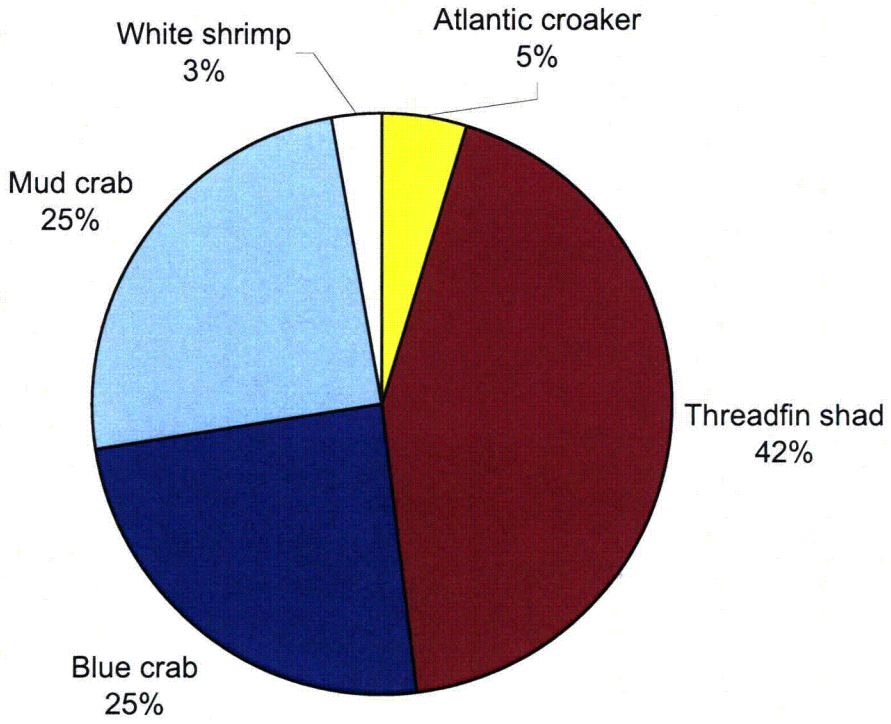


Figure 13. Composition of organisms impinged comprising >1% in the MCR Circulating Water Intake Structure, 2007-2008.

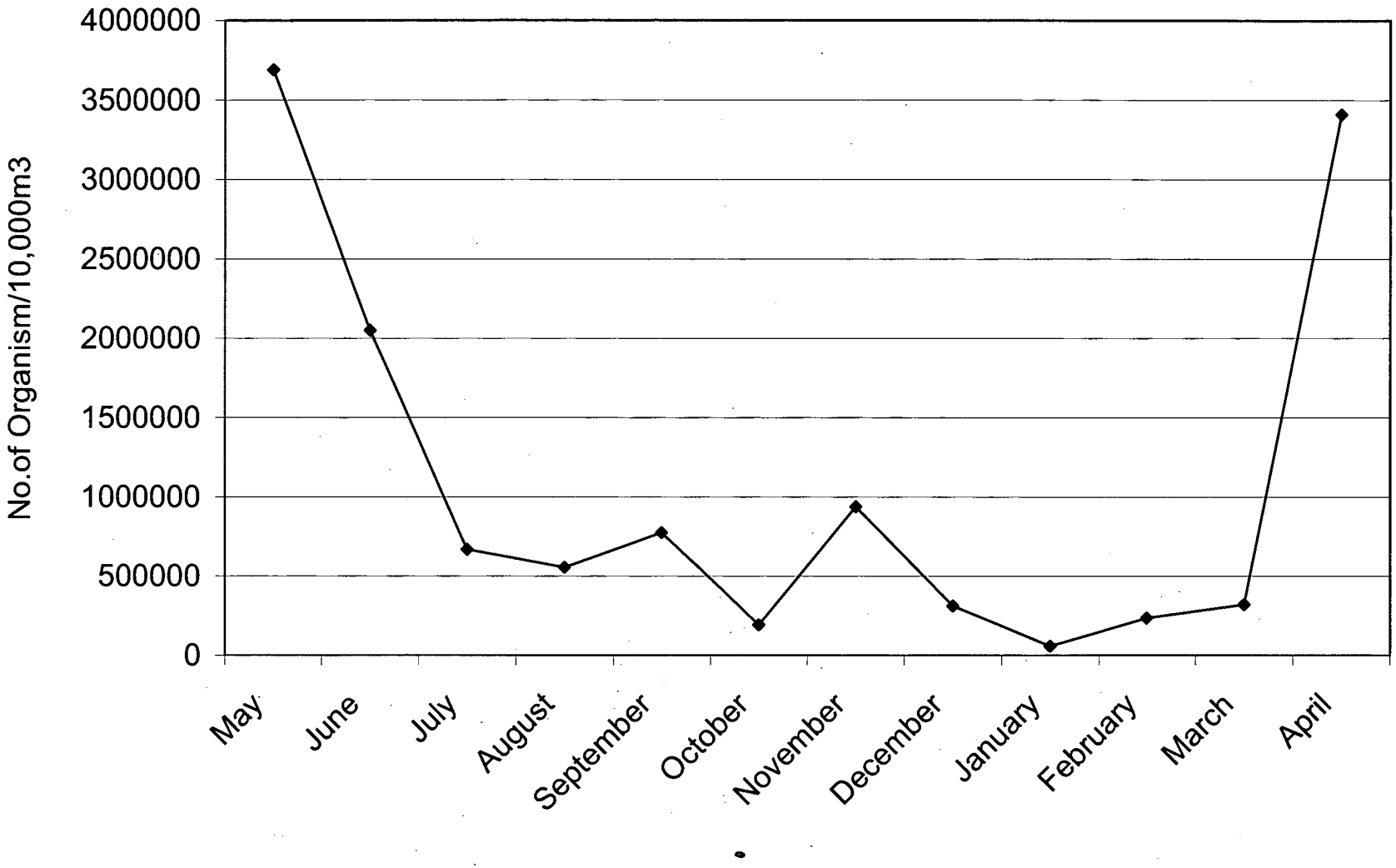


Figure 14. Rates of entrainment for organisms collected in the MCR Circulating Water Intake Structure, 2007-2008.