

CARLSBAD SEAWATER DESALINATION PROJECT

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

REGION 9, SAN DIEGO REGION

ORDER NO. R-9-2006-0065

NPDES NO. CA0109223

FLOW, ENTRAINMENT AND IMPINGEMENT MINIMIZATION PLAN

**ATTACHMENT 8 - NUMBERS AND BIOMASS OF SPECIES COLLECTED
DURING 2004/2005 SAMPLING PERIOD**

March 27, 2009

EPS Impingement Summary:

Numbers and Biomass of Species Collected During 2004/2005 Sampling Period

Table A.

Numbers and weights of fishes, sharks and rays impinged during 52 normal operations surveys at EPS from June 2004 to June 2005, sorted by taxa abundance. Traveling screen data and bar rack data presented separately. Some sample weights were extrapolated based on a subset of collected fishes.

Taxon	Common Name	Sample Count	Sample Weight (g)	Bar Rack Count	Bar Rack Weight (g)
<i>Atherinops affinis</i>	topsmelt	5,242	42,298.7	10	261.5
<i>Cymatogaster aggregata</i>	shiner surfperch	2,827	28,374.4	–	–
<i>Anchoa compressa</i>	deepbody anchovy	2,079	11,605.9	2	21.0
<i>Seriphus politus</i>	queenfish	1,304	7,498.8	2	16.5
<i>Xenistius californiensis</i>	salema	1,061	2,389.8	–	–
<i>Anchoa delicatissima</i>	slough anchovy	1,056	3,143.5	–	–
Atherinopsidae	silverside	999	4,453.9	–	–
<i>Hyperprosopon argenteum</i>	walleye surfperch	605	23,961.8	1	21.0
<i>Engraulis mordax</i>	northern anchovy	537	786.3	–	–
<i>Leuresthes tenuis</i>	California grunion	489	2,280.3	–	–
<i>Heterostichus rostratus</i>	giant kelpfish	344	2,612.3	–	–
<i>Paralabrax maculatofasciatus</i>	spotted sand bass	303	4,603.6	–	–
<i>Sardinops sagax</i>	Pacific sardine	268	1,479.7	–	–
<i>Roncador stearnsi</i>	spotfin croaker	182	8,353.6	2	3,000.0
<i>Paralabrax nebulifer</i>	barred sand bass	151	1,540.8	–	–
<i>Gymnura marmorata</i>	California butterfly ray	146	60,628.5	1	390.0
<i>Phanerodon furcatus</i>	white surfperch	144	4,685.6	–	–
<i>Strongylura exilis</i>	California needlefish	135	6,025.0	–	–
<i>Paralabrax clathratus</i>	kelp bass	111	679.8	–	–
<i>Porichthys myriaster</i>	specklefin midshipman	103	28,189.3	–	–
unidentified chub	unidentified chub	96	877.3	–	–
<i>Paralichthys californicus</i>	California halibut	95	1,728.9	–	–
<i>Anisotremus davidsoni</i>	sargo	94	1,662.3	–	–
<i>Urolophus halleri</i>	round stingray	79	20,588.6	–	–
<i>Atractoscion nobilis</i> (Sciaenidae)	white seabass	70	11,294.8	6	872.1
<i>Hypsopsetta guttulata</i>	diamond turbot	66	10,679.2	1	85.0
<i>Micrometrus minimus</i>	dwarf surfperch	57	562.2	–	–
<i>Syngnathus</i> spp.	pipefishes	55	160.7	–	–
<i>Atherinopsis californiensis</i>	jacksmelt	54	1,152.0	–	–
<i>Myliobatis californica</i>	bat ray	50	19,899.1	4	5,965.0
<i>Menticirrhus undulatus</i>	California corbina	43	1,906.1	–	–
<i>Amphistichus argenteus</i>	barred surfperch	43	1,306.4	–	–
<i>Fundulus parvipinnis</i>	California killifish	43	299.0	–	–
unidentified fish, damaged	unidentified damaged fish	36	1,060.2	1	70.0
Ictaluridae	catfish unid.	35	4,278.5	–	–
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	32	280.2	–	–
<i>Lepomis cyanellus</i>	green sunfish	29	1,169.6	–	–

<i>Sphyræna argentea</i>	California barracuda	29	397.2	–	–
<i>Umbrina roncadore</i>	yellowfin croaker	28	572.5	–	–
<i>Lepomis macrochirus</i>	bluegill	20	670.0	–	–
<i>Ophichthus zophochir</i>	yellow snake eel	18	5,348.6	–	–
<i>Citharichthys stigmaeus</i>	speckled sanddab	17	61.6	–	–
<i>Brachyistius frenatus</i>	kelp surfperch	16	181.5	–	–
<i>Cheilotrema saturnum</i>	black croaker	15	103.4	–	–
<i>Embiotoca jacksoni</i>	black surfperch	14	1,240.3	–	–
<i>Genyonemus lineatus</i>	white croaker	12	170.7	–	–
<i>Platyrrhinoidis triseriata</i>	thornback	11	4,730.9	1	1,500.0
unidentified fish	unidentified fish	10	811.0	–	–
<i>Chromis punctipinnis</i>	blacksmith	10	395.9	–	–
<i>Porichthys notatus</i>	plainfin midshipman	9	1,791.8	–	–
<i>Hermosilla azurea</i>	zebra perch	9	1,097.2	–	–
<i>Micropterus salmoides</i>	large mouth bass	9	27.0	–	–
<i>Heterostichus</i> spp.	kelpfish	7	47.8	–	–
<i>Hypsoblennius gentilis</i>	bay blenny	7	36.5	–	–
<i>Trachurus symmetricus</i>	jack mackerel	7	7.2	–	–
<i>Anchoa</i> spp.	anchovy	6	27.0	–	–
Engraulidae	anchovies	6	2.8	–	–
<i>Peprilus simillimus</i>	Pacific butterflyfish	5	91.3	–	–
<i>Rhacochilus vacca</i>	pile surfperch	4	915.1	–	–
<i>Pylodictis olivaris</i>	flathead catfish	4	480.0	–	–
<i>Pleuronichthys verticalis</i>	hornyhead turbot	4	189.6	–	–
<i>Pleuronectiformes</i> unid.	flatfishes	4	62.1	–	–
<i>Sebastes atrovirens</i>	kelp rockfish	4	39.8	–	–
<i>Mustelus californicus</i>	gray smoothhound	3	1,850.0	–	–
<i>Cheilopogon pinnatibarbus</i>	spotted flyingfish	3	604.0	–	–
<i>Ameiurus natalis</i>	yellow bullhead	3	220.0	–	–
<i>Lepomis</i> spp.	sunfishes	3	195.5	–	–
<i>Hypsoblennius gilberti</i>	rockpool blenny	3	15.6	–	–
<i>Syngnathus leptorhynchus</i>	bay pipefish	3	8.8	–	–
<i>Albula vulpes</i>	bonefish	2	1,192.0	–	–
<i>Sarda chiliensis</i>	Pacific bonito	2	1,010.0	–	–
<i>Rhinobatos productus</i>	shovelnose guitarfish	2	460.8	2	6,200.0
<i>Girella nigricans</i>	opaleye	2	346.1	–	–
<i>Scorpaena guttata</i>	California scorpionfish	2	76.0	–	–
<i>Acanthogobius flavimanus</i>	yellowfin goby	2	55.2	–	–
<i>Hyporhamphus rosae</i>	California halfbeak	2	22.6	–	–
<i>Hypsoblennius jenkinsi</i>	mussel blenny	2	17.3	–	–
<i>Symphurus atricauda</i>	California tonguefish	2	15.4	–	–
<i>Hypsoblennius</i> spp.	blennies	2	10.5	–	–
<i>Scomber japonicus</i>	Pacific mackerel	2	10.0	–	–
<i>Tilapia</i> spp.	African mouth brooders	2	6.6	–	–
Sciaenidae unid.	croaker	2	2.8	–	–
<i>Paralabrax</i> spp.	sand bass	2	2.0	–	–
<i>Cynoscion parvipinnis</i>	shortfin corvina	1	900.0	–	–
<i>Porichthys</i> spp.	midshipman	1	200.0	–	–
<i>Micropterus dolomieu</i>	smallmouth bass	1	150.0	–	–
<i>Hyperprosopon</i> spp.	surfperch	1	115.0	–	–

Ameiurus nebulosus	brown bullhead	1	100.0	-	-
Gillichthys mirabilis	longjaw mudsucker	1	34.4	-	-
Lyopsetta exilis	slender sole	1	25.9	-	-
Gibbonsia montereyensis	crevice kelpfish	1	8.3	-	-
Pleuronichthys ritteri	spotted turbot	1	6.5	-	-
Oxylebius pictus	painted greenling	1	4.8	-	-
Paraclinus integripinnis	reef finspot	1	3.7	-	-
Dorosoma petenense	threadfin shad	1	3.4	-	-
Mugil cephalus	striped mullet	1	3.4	-	-
Citharichthys sordidus	Pacific sanddab	1	0.5	-	-
Torpedo californica	Pacific electric ray	-	-	1	3,750.0
		19,408	351,672.4	34	22,152.1

Table B.

Numbers and weights of shellfish invertebrates impinged during 52 normal operations surveys at EPS from June 2004 to June 2005, sorted by taxa abundance. Traveling screen data and bar rack data presented separately.

Taxon	Common Name	Sample Count	Sample Weight (g)	Bar Rack Count	Bar Rack Weight (g)
<i>Portunus xantusii</i>	Xantus' swimming crab	699	4,423.4	–	–
<i>Pachygrapsus crassipes</i>	striped shore crab	655	2,786.3	–	–
<i>Pachygrapsus</i> spp.	shore crab	418	821.9	–	–
<i>Octopus</i> spp.	octopus	36	6,909.4	–	–
<i>Cancer productus</i>	red rock crab	26	222.0	–	–
<i>Loligo opalescens</i>	market squid	24	263.7	–	–
<i>Pugettia</i> spp.	kelp crabs	24	53.3	–	–
<i>Cancer</i> spp.	cancer crabs	23	57.3	–	–
<i>Pugettia producta</i>	northern kelp crab	11	20.4	–	–
<i>Pyromaia tuberculata</i>	tuberculate pea crab	11	17.7	–	–
<i>Octopus bimaculatus</i>	California two-spot octopus	8	1,108.1	–	–
<i>Taliepus nuttallii</i>	globose kelp crab	6	2.9	–	–
Brachyuran unid.	unidentified crab	4	270.9	–	–
<i>Cancer antennarius</i>	brown rock crab	4	11.4	–	–
<i>Loxorhynchus crispatus</i>	moss crab	4	2.4	–	–
<i>Cancer jordani</i>	hairy rock crab	3	15.6	–	–
<i>Hemigrapsus oregonensis</i>	yellow shore crab	3	6.2	–	–
<i>Panulirus interruptus</i>	California spiny lobster	2	96.0	–	–
Caridean unid.	unidentified shrimp	2	35.0	–	–
<i>Pugettia richii</i>	cryptic kelp crab	2	12.3	–	–
<i>Blepharipoda occidentalis</i>	spiny mole crab	2	12.0	–	–
<i>Lophopanopeus</i> spp.	black-clawed crabs	2	9.3	–	–
<i>Callinassa californiensis</i>	ghost shrimp	2	2.9	–	–
<i>Lophopanopeus frontalis</i>	molarless crestleg crab	2	0.8	–	–
<i>Crangon</i> spp.	bay shrimp	1	20.9	–	–
<i>Rhithropanopeus harrisi</i>	Harris mud crab	1	18.0	–	–
<i>Sicyonia ingentis</i>	Ridgeback rock shrimp	1	16.0	–	–
<i>Callinectes</i> spp.	crab	1	13.8	–	–
<i>Podochela hemphilli</i>	Hemphill's kelp crab	1	3.0	–	–
<i>Cycloxanthops novemdentatus</i>	ninetooth pebble crab	1	2.6	–	–
<i>Pelia tumida</i>	dwarf teardrop crab	1	1.9	–	–
<i>Pandalus platyceros</i>	spot shrimp	1	1.8	–	–
Majidae	spider crabs	1	1.8	–	–
<i>Loxorhynchus</i> spp.	spider crabs	1	0.1	1	0.5
Hippolytidae unid.	hippolytid shrimps	1	0.0	–	–
<i>Cancer magister</i>	dungeness crab	1	0.0	–	–
<i>Dosidicus gigas</i>	jumbo squid	–	–	1	500.0
		1,985	17,241.2	2	500.5