Table 4.5-16
Pit Water and Stormwater Runoff Quality

		Pit Water (a)			Storm Water Runoff (b)				
Constituent	**Units**	**SPM-2A-1**	**SPM-2B-1**	**SPM-4-1 & 4-2**	**Montgomery Outlet**	**South Bank Inlet**	**Lambert Inlet**	**Giacopuzzi Outlet**	**Carnegie Place**
Total Hardness (CaCO3)	mg/L	464 - 540	482 - 610	470 - 590	19 - 106	5 - 117	10 - 116	165 - 428	7
Calcium	mg/L	97 - 120	99 - 150	106 - 150	6 - 31	2 - 37	4 - 35	53 -104	3
Magnesium	mg/L	52 - 62	55 - 64	45 - 57	1 - 7	<1 - 6	<1 - 7	8 - 41	<1
Potassium	mg/L	5 - 7	5 - 6	5 - 7	1 - 9	<1 - 7	<1 - 16	11 - 23	1
Sodium	mg/L	100 - 124	108 - 123	100 - 130	1 - 28	<1 - 21	<1 - 50	11 - 80	<1
Total Cations	meq/L	14.2 - 16.3	14.9 - 17.3	14.2 - 17.2	0.5 - 3.6	0.1 - 3.4	0.2 - 4.9	4.1 - 12.6	0.2
Total Alkalinity	mg/L	79 - 170	110 - 210	130 - 220	10 - 50	10 - 50	10 -100	20 - 100	10
Hydoxide	mg/L	<10	<10	<10	<10	<10	<10	<10	<10
Carbonate	mg/L	20 - 30	<1 - 20	20	<10	<10	<10	<10	<10
Bicarbonate	mg/L	52 - 190	94 - 260	120 - 260	20 - 60	20 - 60	10 - 120	30 - 120	20
Sulfate	mg/L	483 - 631	500 - 625	477 - 601	4 - 58	5 - 46	1 - 87	127 - 378	15
Chloride	mg/L	56 - 79	59 - 84	49 - 61	<1 - 23	<1 -30	<1 - 24	5 - 39	<1
Nitrate	mg/L	2.4 - 21	3.6 - 42.1	3.9 - 21	0.8 - 9.8	0.6 - 20.1	0.4 - 5.5	15.5 - 85.8	0.9
Nitrite	mg/L	<0.3	<0.3	0.3	<0.3 - 0.7	<0.3 - 1	<0.3 - 0.7	<0.3 - 0.3	<0.3
Nitrate as N	mg/L	2 - 4.7	5.3 - 9.5	1.8 - 4.7	0.2 - 2.2	0.1 - 4.5	0.1 - 1.2	3.5 - 19.4	0.2
Nitrite as N	mg/L	<0.1	<0.1	0.1	<0.1 - 0.2	<0.1 - 0.3	<0.1 - 0.2	<0.1 - 0.1	<0.1
Ammonia as N	mg/L	<1	<1	<1	0.3 - 1.6	<0.2 - 1.6	<0.2 - 2.6	<0.2 - 0.7	<0.2
Phosphate	mg/L	<0.3	<0.3	<0.3	NS	NS	NS	NS	NS
Fluoride	mg/L	0.5 - 1.2	0.5 - 1.9	0.4 - 1.1	<0.1 - 0.5	<0.1 - 0.2	<0.1 - 0.5	<0.1 - 1.1	<0.1
Total Anions	meq/L	15 - 17.2	15.5 - 18.2	14.9 - 17.3	0.4 - 3.0	0.4 - 3.1	0.2 - 4.6	3.5 - 12.4	0.7
Aggressiveness Index		12.3 - 13.2	12.5 - 13.1	12.8 - 13.4	10.6 - 11.2	9.2 - 11.4	9.9 - 11.5	11.4 - 12.2	10.9
Langlier Index (Corrosivity)		0.3 - 1.3	0.6 - 1.2	0.9 - 1.5	-0.7 - -1.2	-0.5 - -2.5	-0.3 - -1.8	-0.4 - 0.3	-0.9
pH		7.7 - 8.8	7.8 - 8.5	8.0 - 8.6	7.6 - 8.4	7.5 - 7.7	7.6 - 7.9	7.8 - 8.0	9
E.C.	umhos/cm	1,340 - 1,520	1,400 - 1,600	1,320 -1,530	48 - 357	34 - 361	24 - 492	366 -1,190	29
TDS (residue @ 180 C)	mg/L	990 - 1,150	1,030 - 1,300	956 - 1,300	60 - 370	<40 - 360	<40 - 380	280 - 890	70
TDS by summation	mg/L	1,020 - 1,120	1,110 - 1,230	1,010 - 1,160	34 - 227	28 - 228	15 - 346	260 - 872	40
MBAS	mg/L	<0.1	<0.1	<0.1	<0.1 - 1	<0.1 - <1	<0.1 - 1	<0.1 - <0.2	0.2
Antimony	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	mg/L	NS	NS	NS	0.043 - 0.088	0.017 - 0.080	0.035 - 0.193	0.037 - 0.224	0.016
Beryllium	mg/L	NS	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	0.5 - 0.8	0.5 - 0.8	0.5 - 0.7	<0.1 - 0.5	<0.1 - 0.2	<0.1 - 0.4	0.1 - 0.4	<0.1
Cadmium	mg/L	NS	NS	NS	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	mg/L	NS	NS	NS	<0.01	<0.01	<0.01 - 0.01	<0.01 - 0.03	<0.01
Cobalt	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01 - 0.01	<0.01
Copper	µg/L	<50	<50	<10	<10 - 40	<10 - 30	<10 - 90	30 - 40	<10
Iron	µg/L	70 - 1,300	90 - 390	50 - 150	1,470 - 3,220	350 - 2,880	810 - 3,270	930 - 3,890	340
Lead	mg/L	NS	NS	NS	<0.01 - 0.02	<0.01 - 0.01	<0.01 - 0.03	<0.01 - 0.03	<0.01
Manganese	µg/L	<30	10 - 60	<10	60 - 140	20 - 170	40 - 140	120 -330	20
Mercury	mg/L	NS	NS	NS	<0.00001 - 0.00002	<0.00001 - 0.00002	<0.00001 - 0.00004	<0.00001 - 0.00004	<0.00001
Molybdenum	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01

Constituent	Units	Pit Water (a)			Storm Water Runoff (b)				
		SPM-2A-1	SPM-2B-1	SPM-4-1 & 4-2	Montgomery Outlet	South Bank Inlet	Lambert Inlet	Giacopuzzi Outlet	Carnegie Place
Nickel	mg/L	NS	NS	NS	<0.01	<0.01	<0.01 - 0.02	<0.01	<0.01
Selenium	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	NS	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	mg/L	NS	NS	NS	0.01 - 0.03	<0.01 - 0.03	<0.01 - 0.03	<0.01 - 0.06	<0.01
Zinc	µg/L	<50	<50	<50	50 - 420	70 - 360	80 - 980	150 - 620	40
Total Organic Carbon	mg/L	NS	NS	NS	5.2	3.6	2.8 - 70	9.6 - 24	2.9
TPH - Gas	mg/L	NS	NS	NS	<0.5	<0.5	<0.5	<0.5	<0.5
TPH - Diesel	mg/L	NS	NS	NS	<0.5	<0.5	<0.5	<0.5	<0.5
DBCP	µg/L	NS	NS	NS	<0.2	<0.2	<0.2	<0.2	<0.2
EDB	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Lindane	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor Epoxide	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan I	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan II	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin Aldehyde	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
p,p-DDT	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	µg/L	NS	NS	NS	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Beta BHC	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Delta BHC	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
p,p-DDE	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
p,p-DDD	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan Sulfate	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Toxaphene	µg/L	NS	NS	NS	<2	<2	<2	<2	<2
PCB 1016	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
PCB 1221	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
PCB 1232	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
PCB 1242	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
PCB 1248	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
PCB 1254	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
PCB 1260	µg/L	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
NS - not sampled
(a) Range reported for samples collected from 6/12/97 - 1/18/00
(b) Range reported for samples collected on 1/17/00 and 4/17/00, with the exception of the Carnegie Place sampling site, which was only sampled on 4/17/00.

Table 4.5-17
Anticipated Stormwater Constituent Concentrations vs. Land-Use For Storms Smaller Than 10-Year Event

		Stormwater Quality by Land-Use							
		Industrial		Agricultural		Residential		Commercial	
Pollutant	Units	Stormwater Concentration	Data Source	Stormwater Concentration	Data Source	Stormwater Concentration	Data Source	Stormwater Concentration	Data Source
TSS	mg/l	436	Ventura	1,144	Ventura	156	Ventura	403	Ventura
MINERALS									
Sulfate	mg/l	31	Hanson	402	United	6	LA	34	LA
Chloride	mg/l	24	Ventura	36	United	20	Ventura	48	LA
TDS	mg/l	148	Ventura	930	United	122	Ventura	75	Ventura
Boron	mg/l	0.21	Hanson	0.53	United	0.19	LA	0.18	LA
NUTRIENTS									
Nitrate	mg/l as NO3	5	Hanson	60.3	Ventura	8.1	Ventura	1.9	Ventura
Ammonia	mg/l as NH3	1.16	Hanson	2.79	Ventura	0.83	Ventura	0.57	Ventura
METALS									
Arsenic	mg/l	0.01	Hanson	0.016	Ventura	0.003	Ventura	0.004	Ventura
Beryllium	mg/l	0.001	Hanson	0.001	Hanson	0.002	Santa Mon	0.002	Santa Mon
Cadmium	mg/l	0.005	Hanson	0.005	Ventura	0.001	Ventura	0.002	Ventura
Chromium, total	mg/l	0.016	Ventura	0.131	Ventura	0.01	Ventura	0.016	Ventura
Chromium VI (1)	mg/l	0.008	See Note 1	0.066	See Note 1	0.005	See Note 1	0.008	See Note 1
Copper	mg/l	0.037	Ventura	0.093	Ventura	0.029	Ventura	0.06	Ventura
Iron	mg/l	1.763	Hanson	3.58	Hanson	2.051	LA	5.319	LA
Lead	mg/l	0.017	Ventura	0.032	Ventura	0.026	Ventura	0.029	Ventura
Manganese	mg/l	0.084	Hanson	0.225	Hanson	0.065	LA	0.115	Santa Monica
Mercury	mg/l	0.00024	Ventura	0.00011	Ventura	0.00014	Ventura	0.0002	Fresno
Nickel	mg/l	0.032	Ventura	0.095	Ventura	0.02	Ventura	0.026	Ventura
Selenium	mg/l	0.01	Hanson	0.01	Hanson	0.001	Ventura	0.001	Ventura
Silver	mg/l	0.01	Hanson	0.01	Hanson	0.002	Ventura	0.001	Ventura
Zinc	mg/l	0.275	Hanson	0.385	Hanson	0.168	Ventura	0.332	Ventura
PESTICIDES									
ChemA	mg/l	ND	Hanson	ND	Hanson	NA	NA	NA	NA
Lannate	mg/l	ND	Kennedy/ Jenks	NA	Kennedy/ Jenks	ND	Kennedy/ Jenks	ND	Kennedy/ Jenks
HYDROCARBONS									
Oil/Grease	mg/l	35	Hanson	3	Hanson	3	Ventura	6	Ventura
MTBE	mg/l	0.002	USGS	ND	Kennedy/ Jenks	ND	Kennedy/ Jenks	ND	Kennedy/ Jenks
MICROORGANISMS									
Total Coliform	MPN/100ml	39,300	Ventura	261,800	Ventura	65,800	Ventura	107,000	Ventura
Fecal Coliform	MPN/100ml	13,500	Ventura	32,700	Ventura	17,200	Ventura	4,530	Ventura
Fecal Streptococci	MPN/100ml	20,200	Ventura	82,800	Ventura	48,300	Ventura	32,530	Ventura
Giardia	cysts/100L	NA	--	NA	--	NA	--	NA	--
Cryptosporidium	oocysts/100L	NA	--	NA	--	NA	--	NA	--

NA: Data not available.
ND: Levels not detectable.
(1) Chromium VI concentration is based on 50 percent of the total chromium concentration.
(2) MTBE concentrations are based on USGS data (http://ca.water.usgs.gov/mtbe) indicating that California urban storm runoff samples have generally been less than 2 µg/L. MTBE is only expected to be found in the industrial drainage area.

Table 4.5-18
Anticipated Stormwater Constituent Concentrations vs. Land-Use For Storms Greater Than 10-Year Event

		Stormwater Quality by Land-Use							
		Industrial		Agricultural		Residential		Commercial	
Pollutant	Units	Stormwater Concentration	Data Source	Stormwater Concentration	Data Source	Stormwater Concentration	Data Source	Stormwater Concentration	Data Source
TSS	mg/l	67	Hanson	50	United	38	Santa Mon	52	Santa Mon
MINERALS									
Sulfate	mg/l	31	Hanson	253	Hanson	6	LA	34	LA
Chloride	mg/l	12	Hanson	17	Ventura	3	LA	48	LA
TDS	mg/l	131	Hanson	530	Ventura	50	LA	75	Ventura
Boron	mg/l	0.21	Hanson	0.25	Hanson	0.19	LA	0.18	LA
NUTRIENTS									
Nitrate	mg/l as NO3	5	Ventura	8.5	United	2.2	LA	1.9	Ventura
Ammonia	mg/l as NH3	0.64	Ventura	0.45	Hanson	0.6	LA	0.57	Ventura
METALS									
Arsenic	mg/l	0.006	Ventura	0.004	United	0.003	Ventura	0.004	Ventura
Beryllium	mg/l	0.001	Hanson	0.0002	United	0.002	Santa Mon	0.002	Santa Mon
Cadmium	mg/l	0.002	Ventura	0.001	United	0.001	Ventura	0.002	Ventura
Chromium, total	mg/l	0.01	Hanson	0.003	United	0.007	Santa Mon	0.007	Santa Mon
Chromium VI	mg/l	0.005	See Note 1	0.002	See Note 1	0.004	See Note 1	0.004	See Note 1
Copper	mg/l	0.029	Hanson	0.04	United	0.02	LA	0.027	LA
Iron	mg/l	1.763	Hanson	1.407	United	0.224	Santa Mon	0.357	Santa Mon
Lead	mg/l	0.014	Hanson	0.008	United	0.009	Santa Mon	0.015	LA
Manganese	mg/l	0.084	Hanson	0.205	United	0.065	LA	0.115	Santa Mon
Mercury	mg/l	0.000017	Hanson	0.00002	United	0.00014	Ventura	0.0002	Fresno
Nickel	mg/l	0.011	Hanson	0.009	United	0.02	Ventura	0.011	LA
Selenium	mg/l	0.001	Ventura	0.001	Ventura	0.001	Ventura	0.001	Ventura
Silver	mg/l	0.001	Ventura	0.001	United	0.002	Ventura	0.001	Ventura
Zinc	mg/l	0.205	Ventura	0.083	United	0.168	Ventura	0.241	LA
PESTICIDES									
ChemA	mg/l	ND	Hanson	ND	United	NA	NA	NA	NA
Lannate	mg/l	ND	Kennedy/ Jenks	NA	Kennedy/ Jenks	ND	Kennedy/ Jenks	ND	Kennedy/Jen ks
HYDROCARBONS									
Oil/Grease	mg/l	3	Ventura	1	Ventura	3	Ventura	3	LA
MTBE (2)	mg/L	0.002	USGS	ND	Kennedy/ Jenks	ND	Kennedy/ Jenks	ND	Kennedy/Jen ks
MICROORGANISMS									
Total Coliform	MPN/100ml	39,300	Ventura	261,800	Ventura	65,800	Ventura	107,000	Ventura
Fecal Coliform	MPN/100ml	13,500	Ventura	32,700	Ventura	17,200	Ventura	4,530	Ventura
Fecal Streptococci	MPN/100ml	20,200	Ventura	82,800	Ventura	48,300	Ventura	32,530	Ventura
Giardia	cysts/100L	NA	--	NA	--	NA	--	NA	--
Cryptosporidium	oocysts/100L	NA	--	NA	--	NA	--	NA	--

NA: Data not available.
ND: Levels not detectable.
(1) Chromium VI concentrations are based on 50 percent of the total chromium concentration. This ratio is based on data from California DHS.
(2) MTBE concentrations are based on USGS data (http://ca.water.usgs.gov/mtbe) indicating that California urban storm runoff samples have generally been less than 2 µg/L. MTBE is only expected to be found in the industrial drainage area.