



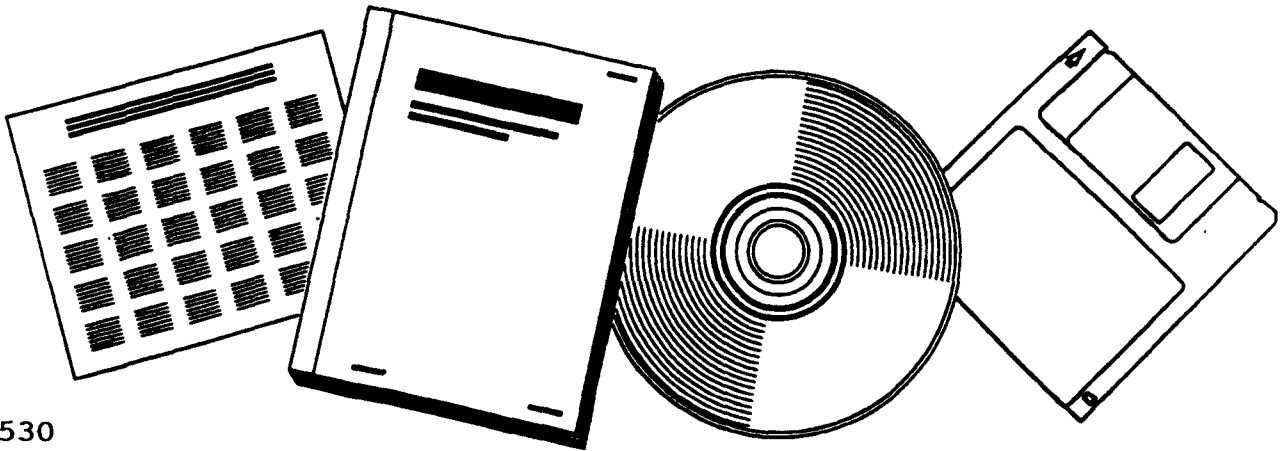
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COMPOSITION AND MANAGEMENT OF USED OIL GENERATED IN THE UNITED STATES

FRANKLIN ASSOCIATES, LTD.
PRAIRIE VILLAGE, KS

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ENVIRONMENTAL PROTECTION AGENCY
OCT 16 1984

APPENDIX

COMPOSITION AND MANAGEMENT OF USED OIL
GENERATED IN THE UNITED STATES

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY

By

FRANKLIN ASSOCIATES, LTD.
8340 Mission Road
Suite 101
Prairie Village, Kansas 66206

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APPENDIX A
ANALYTICAL DATA FOR WASTE OIL SAMPLES

Appendix A presents a comprehensive analytical data base for more than 1,000 waste oil samples. Table A-1 provides the raw data for all samples numbered consecutively from 1 to 1,071. Over 200 of these sample results were developed as part of EPA's 1983 used oil sampling program. For these samples, EPA sample numbers are shown in parentheses beside the consecutive numbering selected for this study. Table A-2 provides the sources from which oil analytical data were received, and Table A-3 provides letter codes for each sample number which describe the specific used oil generating source and end-use for the oil, if known.

TABLE A-1
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	1	2	3	4	5	6	7	8	9
Flash Point (*F)	174	160	168	200	-	200	192	-	-
Metals									
Arsenic	13	3.7	14	11	17	<0.4	17	-	-
Aluminum	16	15	13	17	8.3	8.4	11	22	10
Barium	22	49	160	62	150	9.2	95	480	36
Beryllium	0.06	<0.04	0.04	0.04	0.04	<0.01	0.03	-	-
Cadmium	1.9	<0.8	2.3	1.0	0.8	0.6	1.6	-	-
Chromium	6.3	3.3	5.2	3.8	3.4	0.3	4.1	21	3
Cobalt	<0.04	0.2	<0.1	<0.06	0.2	<0.04	<0.1	-	-
Copper	36	27	39	73	13	91	23	17	18
Iron	290	100	180	140	110	58	170	260	180
Lead	1,590	510	1,630	1,280	2,060	23	1,890	7,000	75
Magnesium	380	260	380	310	280	590	320	1,000	1,100
Manganese	19	3.1	11	12	13	1.4	14	3	0
Molybdenum	6.8	1.4	8.7	2.9	1.4	3.5	4.5	10	4
Nickel	1.3	0.7	1.1	1.4	0.6	0.3	1.2	0	0
Selenium	<0.3	<1.0	<0.8	<0.5	<0.4	<0.3	<0.7	-	-
Silicon	19	34	21	20	22	8.2	14	18	-
Silver	<0.01	<0.04	0.2	0.3	<0.4	<0.01	0.03	0	0
Sodium	140	150	93	110	60	24	100	51	39
Tin	11	1.1	8.4	21	2.2	16	8.6	5	3
Titanium	0.3	1.1	0.3	0.4	2.2	<0.01	0.2	-	-
Vanadium	<0.1	<0.2	<0.2	<0.1	<0.2	<0.1	0.2	0	0
Zinc	1,150	660	1,020	920	630	1,550	1,000	1,000	1,300
Volatile Organics									
Dichlorodifluoromethane	<20	<20	<20	<20	<20	<20	<20	-	-
Trichlorofluoromethane	<20	<20	<20	<20	<20	<20	<20	-	-
Trichlorotrifluoroethane	<20	530	<20	<20	<20	<20	<20	-	-
1,1,1-Trichloroethane	100	210	950	120	<20	<20	150	-	-
Trichloroethylene	<20	220	<20	<20	<20	<20	130	-	-
Tetrachloroethylene	700	<20	900	<20	<20	<20	<20	-	-
Phenol	<20	<10	<10	<10	<40	<10	<10	-	-
Benzene	100	80	<20	180	90	100	70	-	-
Toluene	1,650	2,800	1,400	1,200	670	1,700	2,300	-	-
Ethyl Benzene	800	730	580	320	160	260	840	-	-
Xylenes	2,300	2,400	220	-	710	880	-	-	-
Methylene Chloride	<20	<20	<20	<20	<20	<20	<20	-	-
PNAs									
Naphthalene	560	170	260	240	280	490	580	-	-
Phenanthrene/Anthracene	150	130	40	80	130	140	210	-	-
Pyrene	110	10	10	20	20	40	40	-	-
Benzo(a)anthracene	<10	<10	<10	20	10	40	20	-	-
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	-	-
Alkylbenzene (C9H12)	2,700	<20	33,000	-	<20	6,600	-	-	-
Alkylbenzene (C12H12)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	1,400	1,400
Chlorine, wt. %	0.16	0.10	0.19	0.10	0.12	0.05	0.12	-	-
Sulfur, wt. %	1.02	0.72	1.29	0.75	0.87	0.94	0.78	-	-
PCBs	<0.1	<0.1	<0.1	13	<0.1	<0.1	<0.1	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	10	11	12	13	14	15	16	17
Flash Point (°F)	-	360	370	380	380	380	255	350
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	13	14	13	10	12	7	21
Barium	398	430	485	428	260	203	144	278
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	24	7	8	5	7	8	6	24
Cobalt	-	-	-	-	-	-	-	-
Copper	16	22	43	41	41	38	37	37
Iron	292	119	203	150	129	212	116	655
Lead	7,039	6,495	7,595	6,560	4,890	10,410	4,165	8,005
Magnesium	-	225	165	259	227	458	261	297
Manganese	-	3	4	2	8	3	2	8
Molybdenum	-	-	-	-	-	-	-	-
Nickel	7	0	0	0	0	0	0	0
Selenium	-	-	-	-	-	-	-	-
Silicon	-	43	25	39	38	36	27	87
Silver	-	-	-	-	-	-	-	-
Sodium	-	115	72	95	660	102	89	357
Tin	9	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	0	0	0	0	0	0	0
Zinc	451	990	668	780	860	1,233	910	1,040
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₇ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	871	672	815	764	1,015	708	778
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	0.50	0.40	0.46	0.46	0.53	0.45	0.33
PCBs	<0.1	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

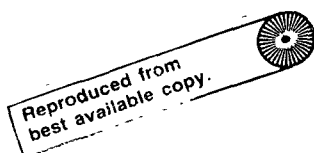


TABLE A-1 (continued)

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	18	19	20	21	22	23	24	25	26
Flash Point (°F)	375	250	355	215	204	427	360	403	144
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	11	13	20	-	12	27	15	12	-
Barium	520	333	319	568	180	693	286	175	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	8	8	11	-	9	22	12	14	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	18	41	31	-	33	33	27	27	-
Iron	179	173	216	356	137	306	200	162	-
Lead	4,560	7,680	7,570	11,100	4,720	13,885	7,070	5,225	90
Magnesium	182	209	375	-	311	325	236	323	-
Manganese	4	3	4	-	3	4	3	8	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	2	2	2	-	1	1	1	1	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	37	32	51	-	<15	<15	<15	<15	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	100	81	125	-	64	42	142	41	-
Tin	-	-	-	-	6	7	2	2	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	0	0	0	<5	0	0	0	0	-
Zinc	660	1,140	980	800	1,201	1,267	1,000	952	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₇ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	674	996	961	900	1,080	1,118	889	1,060	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	0.41	0.44	0.41	0.34	0.39	0.38	0.36	0.45	0.
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	27	28	29	30	31	32	33	34	35
Flash Point (°F)	367	398	222	365	406	335	440	315	-
Metal									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	41	13	10	15	15	12	17	11	-
Barium	131	148	229	176	204	124	185	494	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	<10
Chromium	7	10	10	12	12	21	8	12	<10
Cobalt	-	-	-	-	-	-	-	-	-
Copper	17	26	39	20	31	6	7	37	23
Iron	164	222	151	249	212	170	153	181	-
Lead	3,730	8,460	5,860	10,560	8,450	11,575	7,730	7,825	440
Magnesium	138	384	236	425	312	599	999	286	-
Manganese	8	6	3	3	3	2	2	3	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	1	1	2	1	1	1	4	5	<10
Selenium	-	-	-	-	-	-	-	-	-
Silicon	<15	<15	<15	19	<15	<15	25	40	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	55	132	207	54	79	8	45	127	-
Tin	5	6	3	4	3	3	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	0	0	0	0	0	0	0	0	-
Zinc	629	1,239	1,023	1,316	1,151	1,169	2,500	933	760
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	740	1,012	782	1,138	1,074	895	1,393	747	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	0.44	0.38	0.42	0.45	0.34	0.54	0.44	0.40	-
PCBs	-	-	-	-	-	-	-	-	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *								
	36	37	38	39	40	41	42	43	44
Flash Point (°F)	405	380	310	405	355	305	370	365	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	14	19	4	13	6	18	18	25	-
Barium	200	494	10	297	377	547	213	59	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	11	6	8	10	5	12	10	14	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	13	56	13	28	12	27	37	16	-
Iron	178	171	88	192	102	216	272	342	-
Lead	6,885	6,980	19	4,855	1,362	8,655	9,420	11,165	-
Magnesium	171	220	8	520	147	233	310	338	-
Manganese	2	3	1	3	2	4	4	4	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	4	<1	<1	<1	<1	1	2	1	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	8	16	14	26	15	25	17	14	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	150	23	67	59	34	64	169	69	-
Tin	-	6	0	4	3	1	8	14	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	0	0	0	0	0	0	0	0	-
Zinc	705	1,409	80	1,029	1,527	725	1,150	1,574	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Tetrachlorofluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	3.2-16
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	675	982	81	880	1,197	857	881	1,341	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	0.22	0.40	0.37	0.35	0.46	0.38	0.38	0.47	-
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *					
	45	46	47	48	49	50
Flash Point (*F)	295	-	-	-	-	-
Metals						
Arsenic	-	-	-	-	-	-
Aluminum	-	-	14	10-800	33	-
Barium	-	2-1,631	150	10-2,000	200	-
Beryllium	-	-	-	6	-	-
Cadmium	-	-	-	4	2	-
Chromium	-	-	10	8-50	27	-
Cobalt	-	-	-	-	-	-
Copper	-	1-120	4	5-348	50	-
Iron	1,025	10-330	149	50-2,000	750	-
Lead	6,000	1-11,000	10,420	800-21,700	7,800	6,000
Magnesium	559	3-500	47	10-1,108	430	-
Manganese	-	1-200	2	5-10	42	-
Molybdenum	-	-	-	2-3	7	-
Nickel	-	-	2	3-30	3	-
Selenium	-	-	-	-	-	-
Silicon	-	-	12	10-875	47	-
Silver	-	-	-	1	0	-
Sodium	158	-	18	16-300	160	-
Tin	-	-	10	5-112	20	-
Titanium	-	-	-	5-30	5	-
Vanadium	21	-	0	3-39	5	-
Zinc	-	560-1,550	461	300-3,000	1,100	1,000
Volatile Organics						
Dichlorodifluoromethane	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-
Phenol	-	-	-	-	-	-
Benzene	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-
PNAs						
Naphthalene	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-
Phosphorus	-	600-1,410	600	500-2,000	900	1,000
Chlorine, wt %	-	0.03-0.49	-	-	-	-
Sulfur, wt %	0.43	0.13-0.47	-	0.21-0.65	-	-
PCBs	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *							
	51	52	53	54	55	56	57	58
Flash Point (°F)	175-427	-	350	205	-	-	365	-
Metals	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Aluminum	<1-758	-	-	-	-	-	-	-
Barium	9-3,906	<100	240	180	230	460	<100	180
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	30	40	20	45	30	<30	35
Iron	97-2,401	135	190	575	210	190	290	190
Lead	85-21,676	2,050	1,850	1,790	3,300	1,470	2,150	2,200
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	260-1,787	500	750	260	550	590	350	620
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	319-1,550	830	1,300	880	1,200	1,080	1,160	3,500
Chlorine, wt %	0.17-0.47	0.14	0.07	0.39	0.20	0.07	0.18	0.08
Sulfur, wt %	0.17-1.09	0.36	0.54	0.38	0.51	0.42	0.49	0.44
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *								
	59	60	61	62	63	64	65	66	67
Flash Point (°F)	-	300	-	-	-	105	221	220	215
Metals									
Arsenic	-	-	-	13.95	-	-	-	-	-
Aluminum	-	-	-	-	-	10.2	13	16	-
Barium	200	<100	310	<100	<100	59.5	-	-	600
Beryllium	-	-	-	-	-	0.05	-	-	-
Cadmium	-	-	-	-	-	2.1	-	-	-
Chromium	-	-	-	-	-	7.1	3	4	-
Cobalt	-	-	-	-	-	0.16	-	-	-
Copper	20	45	45	65	25	45.7	3	3	-
Iron	180	105	300	515	210	163	34	36	360
Lead	3,300	1,100	2,450	2,210	3,300	1,417	159	177	11,100
Magnesium	-	-	-	-	-	200	-	-	-
Manganese	-	-	-	-	-	7.5	-	-	-
Molybdenum	-	-	-	-	-	3.8	-	-	-
Nickel	-	-	-	-	-	2.0	-	-	-
Selenium	-	-	-	-	-	0	-	-	-
Silicon	-	-	-	-	-	0	10	12	-
Silver	-	-	-	-	-	0	-	-	-
Sodium	-	-	-	-	-	132	-	-	-
Tin	-	-	-	-	-	9.1	<5	<5	-
Titanium	-	-	-	-	-	1.3	-	-	-
Vanadium	-	-	-	-	-	2.1	-	-	-
Zinc	460	680	680	480	680	743	-	-	800
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	50	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	1,600	-	-	-
Trichloroethylene	-	-	-	-	-	38	-	-	-
Tetrachloroethylene	-	-	-	-	-	185	-	-	-
Phenol	-	-	-	-	-	<1	-	-	-
Benzene	-	-	-	-	-	160	-	-	-
Toluene	-	-	-	-	-	>5,100	-	-	-
Ethyl Benzene	-	-	-	-	-	1,150	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	440	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	90	-	-	-
Pyrene	-	-	-	-	-	38	-	-	-
Benzo(a)anthracene	-	-	-	-	-	16	-	-	-
Benzo(a)pyrene	-	-	-	-	-	<1	-	-	-
Alkylbenzene (C ₇ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	1,230	980	1,380	1,500	1,330	-	-	-	900
Chlorine, wt %	0.34	0.05	0.06	0.44	0.14	0.20	-	-	-
Sulfur, wt %	0.52	0.43	0.60	0.49	0.59	0.48	-	-	0.34
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*	
	68	69
Flash Point (°F)	375	175
Metals		
Arsenic	<5	<5
Aluminum	-	-
Barium	1,000	100
Beryllium	-	-
Cadmium	-	-
Chromium	-	-
Cobalt	-	-
Copper	-	-
Iron	200	90
Lead	9,000	7,200
Magnesium	-	-
Manganese	-	-
Molybdenum	-	-
Nickel	-	-
Selenium	-	-
Silicon	-	-
Silver	-	-
Sodium	-	-
Tin	-	-
Titanium	-	-
Vanadium	-	-
Zinc	700	350
Volatile Organics		
Dichlorodifluoromethane	-	-
Trichlorofluoromethane	-	-
Trichlorotrifluoroethane	-	-
1,1,1-Trichloroethane	-	-
Trichloroethylene	-	-
Tetrachloroethylene	-	-
Phenol	-	-
Benzene	-	-
Toluene	-	-
Ethyl Benzene	-	-
Xylenes	-	-
Methylene Chloride	-	-
PNAs		
Naphthalene	-	-
Phenanthrene/Anthracene	-	-
Pyrene	-	-
Benzo(a)anthracene	-	-
Benzo(a)pyrene	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-
Phosphorus	1,000	550
Chlorine, wt %	-	-
Sulfur, wt %	-	0.29
PCBs	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**†							
	<u>70</u> (262)	<u>71</u> (263)	<u>72</u> (264)	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>
Flash Point (°F)	158	164	164					
Metals								
Aluminum	16	15	15	-	-	-	-	-
Arsenic	<5	<5	<5	-	-	-	-	-
Barium	29	14	11	-	-	-	-	-
Beryllium	<0.2	<0.2	<0.2	-	-	-	-	-
Cadmium	1.6	1.5	2.1	-	-	-	-	-
Chromium	5.8	6.2	6.0	-	-	-	-	-
Cobalt	<0.5	<0.5	<0.5	-	-	-	-	-
Copper	33	29	34	-	-	-	-	-
Iron	200	220	230	-	-	-	-	-
Lead	1,300	1,300	1,400	-	-	-	-	-
Magnesium	420	400	470	-	-	-	-	-
Manganese	11	13	13	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.6	1.4	1.7	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	110	160	160	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	<0.2	<0.2	-	-	-	-	-
Zinc	1,100	1,100	1,100	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	860	-	3,000	-	-	-	-	-
Trichloroethylene	<15	-	<39	-	-	-	-	-
Tetrachloroethylene	<15	-	<39	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	220	-	140	-	-	-	-	-
Toluene	2,000	-	760	-	-	-	-	-
Ethyl Benzene	500	-	360	-	-	-	-	-
Xylenes	1,700	-	1,400	-	-	-	-	-
Methylene Chloride	<15	-	<39	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	10	8	11	10	11
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	1,000	-	1,000	-	-	-	-	-
Chlorine, wt. %	0.07	0.05	0.85	-	-	-	-	-
Sulfur, wt. %	0.59	0.61	0.54	-	-	-	-	-
PCBs	<5	<5	<5	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	78	79	80	81	82	83	84	85
Flash Point (°F)								
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	14	14	16	12	14	17	1.5	1.3
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt. %	-	-	-	-	-	-	-	1
Sulfur, wt. %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*						
	86	87	88	89	90	91	92
Flash Point (°F)							
Metals							
Aluminum	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-
Volatile Organics							
Dichlorodifluoromethane	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-
PNAs							
Naphthalene	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-
Benzo(a)pyrene	1.7	1.3	12	3.2	16	14	5.2
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-
Chlorine, wt. %	-	-	-	-	-	-	-
Sulfur, wt. %	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	93	94	95	96	97	98	99	100	101
SIC	345	356	28	28	33	33	33	33	3
Flash Point (°F)	-	155	-	-	-	-	290	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	55	23	25	10	75	0	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	14	0.1	3	3	0	0	3	5	-
Chromium	-	0.01	1	21	4	5	25	18	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	6.7	0.6	1	460	11	32	20	1	-
Iron	-	-	12	1,750	5	950	1,000	5,100	-
Lead	3.6	0.6	7	300	37	25	22	28	-
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	0	25	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	2	70	2	250	100	6	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	123	0.7	25	5,000	5	500	8	92	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	0	2,500	10	425	800	600	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	0.90	0.79	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *								
	102	103	104	105	106	107	108	109	110
SIC	33	33	34	34	34	35	37	37	37
Flash Point (°F)	200	-	-	300	350	210	-	480	440
Metals									
Arsenic	-	-	-	-	-	-	2,000	- 7	- 7
Aluminum	-	-	-	-	-	-	190	10	0
Barium	70	15	70	0	10	0	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	0	5	3	0	1	0	-	0	0
Chromium	3	3	18	3	5	1	9	4	7
Cobalt	-	-	-	-	-	-	-	-	-
Copper	1	60	380	10	20	0	-	-	-
Iron	13	120	700	18	60	12	375	33	55
Lead	2	55	2,000	5	8	1	78	17	10
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	4	3	0	-	1	0
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	5	16	110	7	10	1	2,500	8	10
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	2	20	450	4	8	1	250	1	500
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Fenzone	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(e)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	0	40	400	0	10	0	700	10	450
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	111	112	113	114	115	116	117	118
SIC	37	37	356	34	356	352	34	345
Flash Point (°F)	445	410	150	225	-	150	150	150
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	36	4	-	-	-	-	-	-
Barium	10	550	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	0	0	0	0.6	0.2	0.1	0.3	0.4
Chromium	3	5	0	0.3	10	3	7	0.5
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	1	0.3	5	12	11	4
Iron	20	13	-	-	-	-	-	-
Lead	780	30	4	2.3	84	17	126	8
Magnesium	-	-	-	-	-	-	-	-
Manganese	0	0	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	4	12	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	420	270	28	23	90	38	50	51
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	300	100	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	0.0	0.4	-	0.1	0.02	0.02
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	119	120	121	122	123	124	125	126	127
SIC	3312	3519	3312	3312	3451	3714	3452	3522	3462
Flash Point (°F)	475	525	315	470	-	280	330	235	195
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	12	1	1	3	1	6	3	9	65
Barium	23	5	45	13	11	76	330	55	40
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	2	0	0	0	0	1	19	0	1
Chromium	45	4	2	8	4	5	4	15	18
Cobalt	-	-	-	-	-	-	-	-	-
Copper	140	4	3	3	0	16	11	27	25
Iron	1,500	35	18	120	68	240	36	24	1,000
Lead	19	90	7	150	4	230	100	31	170
Magnesium	6	1	0	4	11	74	3	13	20
Manganese	21	1	0	12	3	95	1	11	250
Molybdenum	2	1	0	1	2	1	1	1	2
Nickel	44	4	3	5	4	5	4	10	29
Selenium	-	-	-	-	-	-	-	-	-
Silicon	9	1	11	5	4	29	6	680	650
Silver	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.6
Sodium	9	0	0	0	0	97	0	25	40
Tin	5	45	0	5	0	5	5	2	7
Titanium	4	0	0	0	1	2	22	2	110
Vanadium	1	2	1	2	1	2	4	11	5
Zinc	4	1	39	10	14	39	530	30	23
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	340	10	90	50	19	2,000	360	50	960
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	0.4	0.2	0.6	-	0.2	0.8	0.2	0.3
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*						
	128	129	130	131	132	133	134
SIC	3452	3741	3452	3522	35	34	34
Flash Point (°F)	280	355	325	220	80	150	150
Metals							
Arsenic	-	-	-	-	-	-	-
Aluminum	30	4	3	22	-	-	-
Barium	10	15	10	100	-	-	-
Beryllium	-	-	-	-	-	-	-
Cadmium	1	1	0	1	7	0.6	0.4
Chromium	1	5	9	14	0.2	2	3
Cobalt	-	-	-	-	-	-	-
Copper	3	120	6	34	4	39	91
Iron	110	900	27	170	-	-	-
Lead	17	24	27	700	49	23	13
Magnesium	11	19	6	55	-	-	-
Manganese	17	9	64	17	-	-	-
Molybdenum	0	0	0	1	-	-	-
Nickel	10	7	4	12	-	-	-
Selenium	-	-	-	-	-	-	-
Silicon	20	19	4	37	-	-	-
Silver	0.1	0.5	0.1	0.3	-	-	-
Sodium	10	7	0	33	-	-	-
Tin	0	5	0	5	-	-	-
Titanium	1	1	0	5	-	-	-
Vanadium	0	1	1	15	-	-	-
Zinc	7	200	3	100	174	187	216
Volatile Organics							
Dichlorodifluoromethane	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-
PNAs							
Naphthalene	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-
Alkylphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-
Phosphorus	70	300	57	350	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-
Sulfur, wt %	0.4	0.3	0.4	0.6	0.90	0.21	0.30
PCBs	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	135	136	137	138	139	140	141	142
Flash Point (°F)	-	-	370	-	270	200	385	170
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	17	12	8	3	3	5	3	3
Barium	36	36	34	220	7	13	7	45
Beryllium	-	-	4	4	-	-	-	-
Cadmium	3	4	-	-	5	3	4	1
Chromium	14	31	10	5	1	7	5	16
Cobalt	-	-	-	-	-	-	-	-
Copper	24	6	12	3	12	10	3	9
Iron	170	190	100	6	18	21	2	31
Lead	260	7	15	4	8	3	4	11
Magnesium	0	90	26	1	1	2	3	3
Manganese	1	124	6	3	6	4	3	7
Molybdenum	10	1	1	1	1	9	1	2
Nickel	0	21	0	0	0	0	0	0
Selenium	-	-	-	-	-	-	-	-
Silicon	16	44	32	2	2	33	2	63
Silver	0	0	0	0	0	0	0	0
Sodium	20	370	25	12	1	1	1	19
Tin	8	10	6	7	8	3	3	6
Titanium	7	1	0	0	0	1	0	1
Vanadium	25	5	8	6	0	9	6	19
Zinc	330	6	12	200	190	47	580	36
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	390	13	58	58	15	13	210	70
Chlorine, wt %								
Sulfur, wt %	0.50	0.10	0.20	0.50	0.30	0.40	0.40	0.50
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Numbers*								
	143	144	145	146	147	148	149	150	1
Flash Point (°F)	440	-	410	415	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	3	36	24	2	-	-	-	-	-
Barium	10	35	120	5	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	<0.1
Cadmium	8	7	8	4	0.7	-	2.5	-	0.
Chromium	3	8	16	3	1.2	-	0.1	-	0.
Cobalt	-	-	-	-	-	-	-	-	-
Copper	16	1,160	140	7	5.9	-	9.3	8	0.
Iron	1	200	85	2	-	10,000	-	-	-
Lead	0	23	1,400	4	-	51	0.6	-	0.
Magnesium	4	45	1,000	0	-	-	-	-	-
Manganese	3	16	9	3	-	-	-	-	-
Molybderum	0	19	2	1	-	-	-	-	-
Nickel	0	27	0	0	1.2	-	0.4	-	2.
Selenium	-	-	-	-	-	-	-	-	-
Silicon	2	62	22	2	-	-	-	-	-
Silver	0	0.1	0	0	-	-	-	-	-
Sodium	4	1	85	1	-	-	-	-	-
Tin	3	40	25	1	-	-	-	-	-
Titanium	0	1	0	0	-	-	-	-	-
Vanadium	3	4	8	3	-	-	-	-	-
Zinc	56	1,100	760	600	150	-	0.8	-	8
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trictlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	52	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	13	} 21
Ethyl Benzene	-	-	-	-	-	-	-	-	
Xylenes	-	-	-	-	-	-	-	28	
Methylene Chloride	-	-	-	-	-	-	-	-	
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alklynaphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	62	1,080	400	200	-	-	-	-	50
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	0.40	0.10	0.40	0.40	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	<50	2.

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	152	153	154	155	156	157	158	159	160
Flash Point (°F)	380	-	-	270	102	-	-	-	-
Metals									
Arsenic	-	-	-	-	<0.01	<0.01	-	-	-
Aluminum	33	-	-	3	-	-	39	-	3
Barium	120	-	-	7	-	-	-	-	220
Beryllium	-	-	-	-	-	7	-	<0.01	-
Cadmium	3	<0.01	-	5	4	0.2	21	0.22	4
Chromium	28	<0.01	-	1	520	2.5	7	0.24	5
Cobalt	-	-	-	-	-	-	-	-	-
Copper	150	13	-	12	96	42	15	0.08	3
Iron	520	-	-	18	-	-	18	-	6
Lead	15	21	-	8	3,500	114	50	0.01	4
Magnesium	42	-	-	1	-	-	11	-	1
Manganese	17	-	-	6	-	-	20	-	3
Molybdenum	-	-	-	1	-	-	16	-	1
Nickel	5	<0.01	-	0	300	4	4	0.12	0
Selenium	-	-	-	-	-	-	-	-	-
Silicon	90	-	-	2	-	-	22	-	2
Silver	0	-	-	0	30	-	0	-	0
Sodium	180	-	-	1	-	-	400	-	12
Tin	21	-	-	8	-	-	140	-	7
Titanium	0	-	-	0	-	-	21	-	0
Vanadium	-	-	-	0	-	-	7	-	6
Zinc	12	14	-	190	43	324	160	1.2	200
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	300,000	-	100,000	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	15	-	190	270	42	58
Chlorine, wt %	-	-	-	-	-	0.09	-	0.01	-
Sulfur, wt %	0.3	-	-	0.3	-	-	0.1	0.4	0.5
PCBs	-	-	-	-	-	<0.5	-	7	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	161	162	163	164	165	166	167	168
Flash Point (°F)	340	405	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	<100	>100	<5	<5	<5	<5	<5	<5
Arsenic	-	-	-	-	-	-	-	-
Barium	-	-	160	150	150	240	240	140
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	<10	<10	<10	<10	10	10
Chromium	5.0	2.0	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	10.0	5.0	218	96	149	192	187	104
Iron	>200.0	34.0	3,860	1,500	2,650	3,590	2,680	1,650
Lead	38.0	>100.0	284	189	264	275	311	217
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	24	<5	11	12	10	7
Nickel	-	-	37	11	18	20	16	8
Selenium	-	-	<5	<5	<5	<5	<5	<5
Silicon	24.0	7.0	-	-	-	-	-	-
Silver	<1.0	<1.0	<5	<5	<5	<5	<5	<5
Sodium	10.0	7.0	-	-	-	-	-	-
Tin	9.0	<1.0	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	56	33	45	52	35	29
Zinc	-	-	598	381	646	1,080	831	706
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	2,600	380	880	250	410	<200
Trichloroethylene	-	-	240	<200	<200	<200	320	<200
Tetrachloroethylene	-	-	2,200	560	780	1,100	1,200	740
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt. %	0.83	<0.1	0.32	0.12	0.14	0.22	0.21	0.13
Sulfur, wt. %	0.71	0.54	0.28	0.34	0.29	0.34	0.33	0.38
PCBs	-	-	<10	<10	<10	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	169	170	171	172	173	174	175	176
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	150	320	440	430	-	90	190	240
Beryllium	-	-	-	-	-	-	-	-
Cadmium	20	30	<10	20	-	<10	40	<10
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	1,040	317	147	339	-	98	168	145
Iron	1,470	4,900	1,770	4,840	-	2,470	2,280	1,490
Lead	268	603	237	591	-	156	419	269
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	6	16	7	19	-	<5	8	7
Nickel	8	30	15	33	-	19	13	11
Selenium	<5	<5	<5	<5	-	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<5	<8	<8	<8	-	<8	<8	<8
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	21	79	32	92	-	47	36	26
Zinc	469	2,380	895	1,310	-	277	831	722
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,900	<200	260	-	1,200	3,500	3,100	310
Trichloroethylene	460	<200	220	-	430	15,000	1,600	240
Tetrachloroethylene	870	<200	3,800	-	1,600	710	370	990
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt. %	0.32	0.18	0.62	0.30	-	1.21	0.21	0.2
Sulfur, wt. %	0.37	0.55	0.38	0.35	-	0.30	0.24	0.39
PCBs	<10	<10	<10	-	<10	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number and Description*		
	Railroad Drainings 177	Recipro. Engine Oil 178	Jet Engine Oil 179
Flash Point (°F)	-	-	-
Metals			
Arsenic	-	-	-
Aluminum	1.83	-	-
Barium	1.46	-	-
Beryllium	-	-	-
Cadmium	-	-	-
Chromium	1.92	7	3
Cobalt	-	-	-
Copper	1.6	14	9
Iron	11.9	33	28
Lead	0.8	3,187	19
Magnesium	4.8	-	-
Manganese	-	-	-
Molybdenum	-	-	-
Nickel	-	1	1
Selenium	-	-	-
Silicon	27.9	-	-
Silver	-	2	1
Sodium	12.5	-	-
Tin	-	2	2
Titanium	-	-	-
Vanadium	-	-	-
Zinc	5.70	-	-
Volatile Organics			
Dichlorodifluoromethane	-	-	-
Trichlorofluoromethane	-	-	-
Trichlorotrifluoroethane	-	-	-
1,1,1-Trichloroethane	-	-	-
Trichloroethylene	-	-	-
Tetrachloroethylene	-	-	-
Phenol	-	-	-
Benzene	-	-	-
Toluene	-	-	-
Ethyl Benzene	-	-	-
Xylenes	-	-	-
Methylene Chloride	-	-	-
PNAs			
Naphthalene	-	-	-
Phenanthrene/Anthracene	-	-	-
Pyrene	-	-	-
Benzo(a)anthracene	-	-	-
Benzo(a)pyrene	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-
Phosphorus	22.5	-	-
Chlorine, wt %	-	-	-
Sulfur, wt %	-	-	-
PCBs	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

Sample Number	PCB's Concentration (ppm)	Sample Number	PCB's Concentration (ppm)	Sample Number	PCB's Concentration (ppm)
180	0.4	199	1.1	218	0.7
181	5.5	200	1.7	219	0.4
182	3.2	201	7.2	220	9.8
183	5.3	202	0.9	221	1.0
184	0.8	203	1.3	222	18.0
185	2.8	204	1.6	223	7.1
186	9.4	205	<0.6	224	4.1
187	1.2	206	5.1	225	37.0
188	1.6	207	0.4	226	0.9
189	0.8	208	3.4	227	11.0
190	4.8	209	<0.6	228	0.9
191	2.8	210	<0.6	229	0.8
192	1.1	211	3.1	230	1.4
193	7.8	212	1.1	231	2.1
194	41.0	213	7.2	232	8.6
195	6.9	214	2.5	233	0.9
196	7.9	215	<0.6	234	4.7
197	180.0	216	92.0	235	130.0
198	150.0	217	130.0	236	85.0

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.
† Only PCBs concentration was measured for these samples, therefore, they are not present in the format used in the preceding tables of this appendix.

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TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	237	238	239	240	241	242	243	244
Flash Point (°F)	186	200	194	130	200	188	188	-
Metals								
Aluminum	8.4	8.0	15	21	18	77	12	14
Arsenic	9	100	11	4.6	5.5	16	6.5	-
Barium	68	44	44	100	23	82	43	150
Beryllium	0.04	0.02	0.03	0.03	<0.04	0.22	0.03	-
Cadmium	1.5	1.4	1.3	1.2	0.7	2.8	1.1	-
Chromium	3.4	2.9	5.7	4.7	3.0	37	3.3	10
Cobalt	0.2	<0.06	<0.07	0.6	0.9	2.6	0.2	-
Copper	31	32	30	18	21	110	26	4
Iron	130	120	180	150	110	980	160	149
Lead	1,300	1,250	1,420	580	690	2,000	880	10,420
Magnesium	93	190	350	87	170	530	280	47
Manganese	6.2	5.2	11	10	14	31	6.6	2
Molybdenum	2.4	1.6	4.4	1.1	2.2	12	7.2	-
Nickel	2.1	1.1	1.7	6.3	0.5	16	1.3	2
Selenium	<0.5	<0.5	<0.5	<0.3	<1.0	<1.0	<0.4	-
Silicon	11	20	22	15	36	210	15	12
Silver	<0.02	<0.02	<0.02	<0.01	<0.04	<0.04	<0.02	-
Sodium	55	85	140	68	170	570	140	-
Tin	110	5.5	8.5	8.9	3.0	10	18	10
Titanium	0.1	0.1	0.5	0.1	2.1	33	0.6	-
Vanadium	1.0	<0.1	<0.1	13	<0.2	3.4	1.4	0
Zinc	830	1,100	940	390	470	1,530	1,000	461
Volatile Organics								
Dichlorodifluoromethane	<20	<20	<20	<20	<20	<20	<20	-
Trichlorofluoromethane	<20	<20	360	110	<20	<20	<20	-
Trichlorotrifluoroethane	160	<20	1,350	80	<20	160	<20	-
1,1,1-Trichloroethane	1,700	910	210	1,250	1,560	1,500	150	-
Trichloroethylene	570	<20	<20	740	4,900	800	<20	-
Tetrachloroethylene	530	650	270	1,250	1,100	80	230	-
Phenol	<10	<10	<10	<10	<10	<10	<10	-
Benzene	110	90	120	110	50	80	100	-
Toluene	5,000	2,400	970	5,300	1,200	1,000	4,400	-
Ethyl Benzene	1,200	540	300	120	20	200	500	-
Xylenes	-	1,300	1,070	-	-	-	1,900	-
Methylene Chloride	<20	<20	<20	90	50	<20	<20	-
PNAs								
Naphthalene	780	330	110	800	260	290	260	-
Phenanthrene/Anthracene	350	150	40	780	120	180	230	-
Pyrene	50	30	10	30	20	40	20	-
Benzo(a)anthracene	30	20	<10	<10	<10	30	10	-
Benzo(a)pyrene	20	<10	<10	<10	<10	30	<10	-
Alkylbenzene (C ₉ H ₁₂)	-	23,000	20	-	-	-	48,000	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	600
Chlorine, wt. %	0.26	0.18	0.16	0.34	0.62	0.24	0.1	-
Sulfur, wt. %	0.72	1.2	0.92	2.05	1.25	0.85	0.92	0.32
PCBs	<0.1	<0.5	<0.5	<0.1	7	<0.1	<0.1	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	246	247	248	249	250	251	252	253
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	<10	370	40	40	80	120	30	50
Barium	60	120	50	50	40	50	70	80
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	<10	60	10	10	10	10	<10	10
Cobalt	-	-	-	-	-	-	-	-
Copper	10	100	10	10	10	20	20	40
Iron	40	1,360	150	150	670	980	180	200
Lead	680	800	300	290	160	310	1,780	1,380
Magnesium	90	200	160	160	250	350	340	190
Manganese	10	20	10	10	40	60	10	10
Molybdenum	10	50	<10	<10	<10	10	10	<10
Nickel	<10	50	10	10	20	30	<10	<10
Selenium	-	-	-	-	-	-	-	-
Silicon	10	530	80	80	250	370	110	140
Silver	<10	<10	<10	<10	<10	<10	<10	<10
Sodium	80	460	360	400	190	600	160	140
Tin	<10	100	<10	<10	<10	10	10	<10
Titanium	-	-	-	-	-	-	-	-
Vanadium	20	40	60	60	110	140	<10	<10
Zinc	580	550	390	400	170	210	1,080	990
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	2,260	-	-	-	-	-	-	-
Trichloroethylene	150	-	-	-	-	-	-	-
Tetrachloroethylene	190	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	1,750	1,740	510	500	280	250	1,110	1,130
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	<50	<50	<50	<50	<50	<50	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	254	255	256	257	258	259	260	261
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	2-1,630
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<5	<10	<10	<5	<10	-	-	-
Chromium	<10	<10	<10	<10	<10	25	20	-
Cobalt	-	-	-	-	-	-	-	-
Copper	20	22	20	8	20	12.5	-	1-120
Iron	-	-	-	-	-	-	-	10-600
Lead	330	430	420	230	430	618	835	1-11,000
Magnesium	-	-	-	-	-	-	-	3-500
Manganese	-	-	-	-	-	<5	4	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<10	<10	<10	<10	<10	40	30	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	40	30	-
Zinc	370	710	550	<10	220	250	385	560-1,500
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	595	225	-
Pyrene	-	-	-	-	-	1,240	450	-
Benzo(a)anthracene	-	-	-	-	-	660	360	-
Benzo(a)pyrene	-	-	-	-	-	405 2/	130 2/	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	600-1,410
Chlorine, wt %	-	-	-	-	-	-	-	0.03-0.25
Sulfur, wt %	-	-	-	-	-	-	-	0.13-0.60
PCBs	46	<5	<5	<2	<5	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	262	263	264	265	266	267	268	269	270
Flash Point (°F)	-	-	385	199	450	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	<25	<25	-	-
Aluminum	-	-	5.8	-	6.8	-	-	-	-
Barium	-	-	<1	-	<1	<25	<25	-	-
Beryllium	-	-	-	-	-	<2.5	<2.5	-	-
Cadmium	-	-	-	-	-	<5	<5	-	-
Chromium	-	-	0.7	-	18.2	170	86	-	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	2.5	-	34.0	340	92	-	-
Iron	-	-	6	-	14.0	1,040	390	-	-
Lead	-	-	20	-	2,140	53	39	80	100
Magnesium	-	-	0.4	-	160	-	-	-	-
Manganese	-	-	-	-	-	13	4	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	89	19	-	-
Selenium	-	-	-	-	-	<25	<25	-	-
Silicon	-	-	305	-	309.0	-	-	-	-
Silver	-	-	-	-	-	6.4	<5	-	-
Sodium	-	-	106	-	12.0	1,300	140	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	<20	<20	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	12.0	-	874	72	64	-	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	20	350
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	550,000	110,000	-	-	-	-	-	-	-
1,1,1-Trichloroethane	80,000	110,000	-	-	-	7,100	1,400	360	1,800
Trichloroethylene	-	-	-	-	-	200	1,700	680	130
Tetrachloroethylene	-	-	-	-	-	280	1,200	300	310
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	920	1,600	-	-
Ethyl Benzene	-	-	-	-	-	220	270	-	-
Xylenes	70,000	139,000	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	75	-	22.0	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	0.43	0.20	-	-	-	-	-
PCBs	-	-	-	-	-	860	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *								
	271	272	273	274	275	276	277	278	
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	50	40	730	410	1,100	<10	30	370	1
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	8	<5	210	360	26	<5	<5	2,000	
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	640	59	540	1,300	480	80	<5	2,500	
Trichloroethylene	25	13	160	370	830	<5	5	410	
Tetrachloroethylene	54	22	260	1,200	280	64	5	1,500	
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	<5	<5	30	100	50	<5	<5	1,000	
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	280	281	282	283	284	285	286	287	288
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	990	920	900	670	<10	190	1,200	980	<10
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	220	1,500	<5	5	9	<5	54	1,300	<5
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,300	1,100	10	26	76	<5	120	3,300	380
Trichloroethylene	660	400	<5	<5	<5	<5	57	2,900	110
Tetrachloroethylene	710	650	10	14	29	<5	150	1,500	92
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	200	100	<5	<5	<5	<5	<5	5,000	1,000
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *							
	289	290	291	292	293	294	295	296
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	600	480	420	520	380	360	680	10
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	<5	19	130	180	1,700	74	<5	<5
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<5	310	1,200	1,300	1,700	360	130	<5
Trichloroethylene	<5	550	500	760	1,400	200	<5	<5
Tetrachloroethylene	<5	1,000	900	618	1,300	200	110	<5
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	<5	<5	300	500	4,000	5,000	100	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *								
	298	299	300	301	302	303	304	305	306
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	100	1,400	700	320	390	<10	<10	830	10
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	380	120	2,200	8	860	<5	<5	100	20
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,700	920	440	570	1,400	<5	<5	480	150
Trichloroethylene	130	1,100	840	90	1,600	<5	<5	180	24
Tetrachloroethylene	310	1,200	200	250	1,300	<5	<5	330	22
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	300	600	30	600	<5	<5	-	<5
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	307	308	309	310	311	312	313	314
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	10	60	230	<10	220	70	<10	220
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	58	20	160	20	980	2,000	<5	300
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	370	320	640	150	1,200	1,800	<5	1,100
Trichloroethylene	75	46	1,100	96	7,000	1,400	<5	880
Tetrachloroethylene	230	190	1,700	99	370	3,900	<5	850
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	10	10	100	100	50	2,000	<5	500
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	316	317	318	319	320	321	322	323	324
Flash Point (°F)	-	-	125	77	72	85	135	155	145
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	20	10	10	10	10	<10	10
Barium	-	-	30	30	20	30	10	10	160
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	1.3	0.3	-	-	-	-	-	-	-
Chromium	94	1.0	10	10	10	10	40	10	10
Cobalt	-	-	-	-	-	-	-	-	-
Copper	267	2.8	30	30	30	30	10	20	30
Iron	2,300	358	90	90	60	90	40	70	40
Lead	19	16	1,090	1,170	920	1,170	110	140	190
Magnesium	-	-	180	190	110	190	280	<10	10
Manganese	-	-	10	10	10	10	<10	<10	<10
Molybdenum	-	-	10	<10	<10	<10	<10	<10	<10
Nickel	31	2.4	10	<10	10	<10	10	10	10
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	30	40	920	40	10	10	10
Silver	-	-	<10	<10	<10	<10	<10	<10	<10
Sodium	-	-	130	120	110	120	50	10	30
Tin	1.6	<0.3	10	10	10	10	10	10	10
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	10	10	10	10	40	30	10
Zinc	543	33	690	720	750	720	130	10	550
Volatile Organics									
Dichlorodifluoromethane	-	-	2	500	150	1	10	80	150
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	800	400	60	100	200	600	4,100
Trichloroethylene	-	-	4	650	2	1	5	30	50
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkylindanththalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	880	880	1,040	880	320	180	580
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	0.4	0.4	-	-	-	-	-	-	-
PCBs	-	-	<50	<50	<50	<50	<50	<50	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	325	326	327	328	329	330	331	332
Flash Point (°F)	165	138	118	103	118	147	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	<10	3	2	2	30	1	640	170
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	180	130	90	4	260	40	2,200	3,100
Trichloroethylene	330	40	280	2	370	50	730	490
Tetrachloroethylene	60	80	110	1	130	20	830	1,400
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	<50	<50	<50	<50	<50	<50	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**								
	334	335	336	337	338	339	340	341	342
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	-	8	10	10	14	12	9	10	10
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	34	13	25	60	22	16	25	25
Iron	-	-	-	-	-	-	-	-	-
Lead	-	104	257	250	262	208	233	320	430
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	<5	<5	<5	<5	<5	11	<5	<5
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	380	140	1,040	750	-	-	950	950
Volatile Organics									
Dichlorodifluoromethane	210	-	-	-	-	-	-	-	-
Trichlorofluoromethane	55	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	600	†	†	†	†	†	†	†	†
Trichloroethylene	370	-	-	-	-	-	-	-	-
Tetrachloroethylene	500	-	-	-	-	-	-	-	-
Phenol	-	21	12	39	23	85	19	-	-
Benzene	-	†	†	†	†	†	†	†	-
Toluene	-	†	†	†	†	†	†	†	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	†	†	†	†	†	†	†	-
Methylene Chloride	25	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	<50	<15	<15	<15	<15	88	<6	<15	<15

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.
† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Numbers*†							
	343	344	345	346	347	348	349	350
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	4	5	1	10	4	5	12	25
Cobalt	-	-	-	-	-	-	-	-
Copper	49	72	8	22	6	12	17	3
Iron	-	-	-	-	77	104	410	186
Lead	60	260	75	297	52	59	315	35
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<5	<5	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	18	350	170	1,170	110	6	200	6
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	†	†	†	†
Trichloroethylene	-	-	-	-	†	†	†	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	28	75	18	17	15	18	66	33
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	†	†	†	†
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	†	†	†	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<15	<15	<15	<15	<12	<12	<12	<12

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.
† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†								
	352	353	354	355	356	357	358	359	360
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	<1	<1	1	2	1	2	<1	<1	<1
Chromium	4	1	30	66	72	62	10	10	8
Cobalt	-	-	-	-	-	-	-	-	-
Copper	86	1	200	540	48	52	23	42	40
Iron	275	30	3,100	1,600	250	440	220	1,160	220
Lead	230	5	62	230	300	260	350	40	430
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	<5	<5	38	8	<5	<5	<5	10	<5
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Carbon	600	1	200	1,100	460	620	870	190	1,000
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	†	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	†	-	-
Toluene	-	-	-	-	-	-	†	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	†	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	<6	<6	86	<15	<15	<15	<15	<15	<15

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describe the specific generating source of used oil and the end-use.
† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number* ‡								
	361	362	363	364	365	366	367	368	369
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<5	<2	<10	<10	<10	<10	-
Chromium	<10	<10	35	6	<10	<10	<10	<10	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	23	32	6	9	90	60	<10	<10	-
Iron	-	-	-	5,500	20	-	-	-	-
Lead	440	<10	65	260	<10	310	30	10	-
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	<10	<10	-	<5	<10	<10	<10	10	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	760	18	35	95	380	1,100	<10	<10	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	‡	-	-	-	-	-	-
Trichloroethylene	-	-	‡	‡	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	6.2	-	-	8.7	4.8	9
Benzene	-	-	-	-	-	‡	‡	-	-
Toluene	-	-	‡	‡	-	‡	‡	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	<17	<17	37	<0.9	<6	<21	<6	<6	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
‡ Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number* ‡								
	370	371	372	373	374	375	376	377	378
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	2	<1	<1	<1	1	<5	<10	<10	<10
Chromium	14	13	8	4	22	<10	<10	<10	<10
Cobalt	-	-	-	-	-	-	-	-	-
Copper	30	26	22	8	200	20	20	22	20
Iron	-	-	-	-	34,000	-	-	-	-
Lead	320	300	300	190	58	330	430	430	420
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	<5	<5	<5	<5	12	<10	<10	<10	<10
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	890	660	760	77	180	870	220	710	550
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	‡	‡	‡	‡	-	‡	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	‡	‡	‡	‡	-	-	-	-	-
Toluene	‡	‡	‡	‡	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	‡	‡	‡	‡	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	<15	<15	<15	<15	<15	46	<17	<17	<17

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
‡ Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	379	380	381	382	383	384	385	386
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<1	<1	<1	<1	1	<1	<1	<1
Chromium	10	3	35	10	26	60	63	14
Cobalt	-	-	-	-	-	-	-	-
Copper	22	13	230	45	2	3	40	26
Iron	-	26	6,000	240	60	110	650	-
Lead	450	106	25	280	20	<5	16	340
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	5	<5	44	<5	<5	<5	16	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	750	62	560	610	3	6	13	790
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	†	-	-	†	-	-	†
Trichloroethylene	-	-	-	-	†	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	†	†	-	-	-	†
Toluene	-	†	†	†	†	-	-	†
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	†	†	†	-	-	†
Methylene Chloride	-	†	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<15	<6	46	<15	<15	<15	<15	<15

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†								
	387	388	389	390	391	392	383	394	395
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10	-
Chromium	<10	<10	<10	<10	<10	<10	<10	<10	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	20	20	20	20	20	20	<10	27	-
Iron	-	-	-	-	-	-	-	-	-
Lead	400	350	350	350	350	380	40	320	-
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	<10	<10	<10	<10	<10	<10	<10	<10	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	1,000	1,900	980	1,700	920	950	280	670	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	†	†	†	†	†	†	†	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	110	110	110	48	50	50	15	210	230
Benzene	†	†	†	†	†	†	†	†	†
Toluene	†	†	†	†	†	†	†	†	†
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	†	†	†	†	†	-	-	†	†
Methylene Chloride	-	-	-	-	-	-	-	†	†
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	<6	<9	<6	<20	<6	<25	89	<6	<18

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number* ‡							
	396	397	398	399	400	401	402	403
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	<10	<10	<10	<10	<10	<10	<10	<10
Cobalt	-	-	-	-	-	-	-	-
Copper	<10	<10	<10	16	13	30	30	30
Iron	-	-	-	-	-	-	-	-
Lead	70	20	50	140	260	420	100	90
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	50	<10	30	240	20	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	‡	-	‡	-	-	-	-
Trichloroethylene	-	-	-	-	-	‡	‡	‡
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	11	39	48	21	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	‡	‡	‡	‡	‡
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	‡	-	‡	‡	‡
Methylene Chloride	-	-	‡	‡	-	‡	‡	‡
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<225	<15	<14	<11	<6	81	15	<30

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides code for each sample number which describes the specific generating source of used oil and the end-use.
‡ Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	405	406	407	408	409	410	411	412	413
Flash Point (°F)	156	174	212	212	97	212	212	284	250
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	0	0	0	0	0	0
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	T †	15	40	30	20	T	0	T	T
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	10	100	50	100	100	50	0	30	20
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	}	0	1,500	600	0	7,200	0	0	0
Trichlorofluoromethane									
Trichlorotrifluoroethane									
1,1,1-Trichloroethane									
Trichloroethylene									
Tetrachloroethylene	}	0	0	600	0	5,000	0	0	0
Phenol									
Benzene									
Toluene									
Ethyl Benzene									
Xylenes	}	-	-	-	-	-	-	-	-
Methylene Chloride									
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	0	0	0	0	74	0	0	0	0

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
† "T" indicates a trace amount of the given constituent was measured.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	414	415	416	417	418	419	420	421
Flash Point (°F)	212	212	110	170	200	130	212	118
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	T †	-	300	-	-	0	0	0
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	5	0	0	150	150	20	40	20
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	100	300	0	300	300	25	20	15
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	210	300	-	8,300	6,900	1,300	5,400	6,000
Trichlorofluoromethane								
Trichlorotrifluoroethane								
1,1,1-Trichloroethane								
Trichloroethylene								
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	T	1,200	-	0	0	0	0	0
Toluene								
Ethyl Benzene								
Xylenes								
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	0	0	0	0	0	0	0	0

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	423	424	425	426	427	428	429	430	431
Flash Point (°F)	-	-	-	-	169	174	122	133	100
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	0	0	0	0	T†	T	T	T	T
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	0	5	10	10	5	5	5	5	0
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	25	25	25	25	100	100	100	100	75
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	T	400	3,000	0	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	100	10,000	9,000	0	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	0.43	1.25	0.46	0.38	0.46
PCBs	0	0	0	0	0	0	0	0	0

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	432	433	434	435	436	437	438	439
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	680	7,500	460	1,003	5,200	55	-	238
Trichlorotrifluoroethane	‡	‡	‡	‡	‡	‡	-	‡
1,1,1-Trichloroethane	3,100	1,334	6,300	491	4,631	1,500	1,100	1,300
Trichloroethylene	410	240	2,900	230	1,049	900	5,000	751
Tetrachloroethylene	700	100	106	65	302	540	14	163
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	265	<40	<40	<40	<40	110	110	63

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides code for each sample number which describes the specific generating source of used oil and the end-use.
I Indicates that the given contaminant was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*								
	441	442	443	444	445	446	447	448	449
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	280	-	-	-	3	24	-	-	-
Trichlorotrifluoroethane	‡	‡	‡	‡	‡	‡	‡	-	-
1,1,1-Trichloroethane	340	83	2,500	760	980	810	31	240	240
Trichloroethylene	1,000	36	670	520	410	360	36	15	-
Tetrachloroethylene	140	11	480	200	120	96	320	7	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-	-
PCBs	<40	<40	<40	<40	66	<40	240	<40	<40

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
‡ Indicates that the given contaminant was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	450	451	452	453	454	455	456	457
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	‡	‡	-	-	-	-	-
1,1,1-Trichloroethane	-	1,100	83	270	2	18	3	1,200
Trichloroethylene	-	19	60	128	-	-	-	11
Tetrachloroethylene	77	2,000	22	110	-	7	-	430
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<40	<40	<40	170	<40	38	<40	<40

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
‡ Indicates that the given contaminant was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	<u>Sample Number*</u>
	459
Flash Point (°F)	-
Metals	
Arsenic	-
Aluminum	-
Barium	-
Beryllium	-
Cadmium	-
Chromium	-
Cobalt	-
Copper	-
Iron	-
Lead	-
Magnesium	-
Manganese	-
Molybdenum	-
Nickel	-
Selenium	-
Silicon	-
Silver	-
Sodium	-
Tin	-
Titanium	-
Vanadium	-
Zinc	-
Volatile Organics	
Dichlorodifluoromethane	-
Trichlorofluoromethane	690
Trichlorotrifluoroethane	‡
1,1,1-Trichloroethane	730
Trichloroethylene	18
Tetrachloroethylene	100
Phenol	-
Benzene	-
Toluene	-
Ethyl Benzene	-
Xylenes	-
Methylene Chloride	-
PNAs	
Naphthalene	-
Phenanthrene/Anthracene	-
Pyrene	-
Benzo(a)anthracene	-
Benzo(a)pyrene	-
Alkylbenzene (C ₉ H ₁₂)	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-
Phosphorus	-
Chlorine, wt %	-
Sulfur, wt %	-
PCBs	44

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
‡ Indicates that the given constituent was detected but not quantified.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *							
	460	461	462	463	464	465	466	467
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Arsenic	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-
Barium	<32	37	48	101	<39	25	<35	<36
Beryllium	<0.32	<0.29	<0.36	<0.34	<0.39	<0.25	<0.35	<0.36
Cadmium	1.6	1.1	<0.36	1.3	0.55	1.4	<0.35	<0.36
Chromium	2.9	3.0	3.4	3.8	<0.8	364	<0.7	<0.7
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	380	670	390	790	<1.94	1,900	<1.9	4.7
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	2.0	<1.4	3.3	5.0	6.6	<1.3	2.1	<1.8
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine	260	370	1,330	1,380	459,000	6,150	40	55
Sulfur, wt %	0.32	0.39	0.35	0.38	0.10	0.46	0.33	0.34
PCBs	<3	<3	<3	135	<3	<3	<3	<3

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides cod for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *								
	469	470	471	472	473	474	475	476	477
Flash Point (°F)	-	-	-	-	-	-	-	-	-
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-
Barium	<38	96	<49	<43	147	<29	<34	<32	<29
Beryllium	<0.38	<0.31	<0.049	<0.43	<0.26	<0.29	<0.35	<0.32	<0.30
Cadmium	1.0	0.92	<0.49	1.8	1.1	6.3	1.0	<0.32	9.6
Chromium	4.7	4.4	<1	6.2	29	16	5.4	1.2	16
Cobalt	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-
Lead	1,700	370	120	590	810	16	18	4.8	31
Magnesium	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-
Nickel	1.9	2.4	22	2.3	3.9	52	7.9	<1.6	90
Selenium	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-
Volatile Organics									
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
PNAs									
Naphthalene	-	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-	-
Chlorine	640	1,410	660	1,390	2,370	3,000	14,000	640	19,800
Sulfur, wt %	0.83	0.26	1.35	0.49	1.30	0.50	<0.10	0.02	<0.6
PCBs	<3	81	<3	<3	<3	<3	529	<3	<3

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TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *							
	478	479	480	481	482	483	484	485
Flash Point (°F)	-	-	-	-	154	165	168	134
Metals								
Arsenic	-	-	-	-	<2	10.6	-	2.9
Aluminum	-	-	-	-	-	-	-	-
Barium	<35	<23	<45	<38	-	-	-	-
Beryllium	<0.35	<0.23	<0.45	<0.38	-	-	-	-
Cadmium	0.78	3.8	<0.45	<0.38	1.2	<1	-	<1
Chromium	0.84	7.0	1.1	7.7	4.2	8.4	-	9.6
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	6.3	25	4.9	380	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	5.6	<1.1	<2.2	9.5	2.4	4.5	-	2.0
Selenium	-	-	-	-	<2.0	2.7	-	2.2
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine	302	72,500	1,360	610	2,170	747	-	1,300
Sulfur, wt %	0.78	<0.10	0.57	0.31	0.55	0.45	0.55	0.42
PCBs	<3	<3	<3	24.1	<3	<3	<3	<3

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number *			
	487	488	489	490
Flash Point (°F)	126	120	130	128
Metals				
Arsenic	-	-	-	-
Aluminum	-	-	-	-
Barium	-	-	-	-
Beryllium	-	-	-	-
Cadmium	-	-	-	<1
Chromium	-	-	-	11.0
Cobalt	-	-	-	-
Copper	-	-	-	-
Iron	-	-	-	-
Lead	-	-	-	-
Magnesium	-	-	-	-
Manganese	-	-	-	-
Molybdenum	-	-	-	-
Nickel	-	-	-	8.8
Selenium	-	-	-	2.6
Silicon	-	-	-	-
Silver	-	-	-	-
Sodium	-	-	-	-
Tin	-	-	-	-
Titanium	-	-	-	-
Vanadium	-	-	-	-
Zinc	-	-	-	-
Volatile Organics				
Dichlorodifluoromethane	-	-	-	-
Trichlorofluoromethane	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-
Trichloroethylene	-	-	-	-
Tetrachloroethylene	-	-	-	-
Pneno.	-	-	-	-
Benzene	-	-	-	-
Toluene	-	-	-	-
Ethyl Benzene	-	-	-	-
Xylenes	-	-	-	-
Methylene Chloride	-	-	-	-
PNAs				
Naphthalene	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-
Pyrene	-	-	-	-
Benzo(a)anthracene	-	-	-	-
Benzo(a)pyrene	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-
Phosphorus	-	-	-	-
Chlorine	-	-	-	1,240
Sulfur, wt %	0.59	0.63	0.60	0.56
PCBs	<3	4.62	44.8	<3

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	491	492	493	494	495	496	497	498
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	490	320	1,160	730	550	630	110	1,710
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	51	59	17	103	85	96	9	89
Iron	758	654	11	1,030	826	731	114	978
Lead	477	592	<5	538	484	631	<5	<5
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	7	<5	<5	<5	5	<5	<5
Nickel	8	<5	<5	12	9	8	<5	15
Selenium	<5	<5	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<8	<8	<8	<8	<8	<8	<8	<8
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	15	6	<5	10	8	8	<5	10
Zinc	933	1,060	1,090	1,760	1,590	1,860	1,300	2,050
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,400	<200	<200	<200	<200	<200	<200	-
Trichloroethylene	<200	<200	<200	<200	<200	<200	<200	-
Tetrachloroethylene	610	<200	<200	<200	700	<200	<200	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.40	0.19	0.03	0.33	0.47	0.42	0.42	0.43
Sulfur, wt %	0.60	0.49	0.83	0.63	0.68	0.64	1.01	0.62
PCBs	<30	<30	<10	<30	<30	<30	<30	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*					
	499	500	501	502	503	504
Flash Point (°F)	-	-	-	>147	>147	>147
Metals						
Aluminum	-	-	-	-	-	-
Arsenic	<5	36	<5	<5	<5	<5
Barium	310	70	1,170	750	460	160
Beryllium	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10
Chromium	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-
Copper	245	30	898	59	61	101
Iron	6,360	245	34,100	950	402	1,590
Lead	1,320	<5	4,730	201	958	1,180
Magnesium	-	-	-	-	-	-
Manganese	-	-	-	-	-	-
Molybdenum	14	<5	84	<5	6	<5
Nickel	133	11	793	6	<5	<5
Selenium	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-
Silver	<8	12	15	<5	<5	<5
Sodium	-	-	-	-	-	-
Tin	-	-	-	-	-	-
Titanium	-	-	-	-	-	-
Vanadium	90	7	245	22	11	8
Zinc	1,860	192	3,800	495	1,190	1,130
Volatile Organics						
Dichlorodifluoromethane	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	<200	210	720
Trichloroethylene	-	-	-	<200	<200	<200
Tetrachloroethylene	-	-	-	<200	360	<200
Phenol	-	-	-	-	-	-
Benzene	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-
PNAs						
Naphthalene	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-
Chlorine, wt %	0.25	0.18	0.20	0.24	0.16	0.22
Sulfur, wt %	0.26	0.16	0.25	0.44	0.51	0.30
PCBs	-	-	-	<50	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*					
	505	506	507	508	509	510
Flash Point (°F)	>147	>147	>147	>147	>147	>147
Metals						
Aluminum	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5
Barium	60	140	130	100	<50	70
Beryllium	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10
Chromium	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-
Copper	49	263	137	46	<5	57
Iron	173	5,350	4,220	1,690	15	551
Lead	926	484	932	786	55	918
Magnesium	-	-	-	-	-	-
Manganese	-	-	-	-	-	-
Molybdenum	<5	<5	7	<5	<5	<5
Nickel	<5	37	26	10	<5	<5
Selenium	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-
Silver	<8	<8	<8	<8	<8	<8
Sodium	-	-	-	-	-	-
Tin	-	-	-	-	-	-
Titanium	-	-	-	-	-	-
Vanadium	12	26	26	26	<5	9
Zinc	669	688	1,520	807	49	941
Volatile Organics						
Dichlorodifluoromethane	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,1,1-Trichloroethane	1,800	-	<200	<200	610	<200
Trichloroethylene	540	-	<200	1,200	<200	<200
Tetrachloroethylene	<200	-	<200	<200	<200	<200
Phenol	-	-	-	-	-	-
Benzene	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-
PNAs						
Naphthalene	-	-	-	-	-	-
Peranthrene/Anthracene	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-
Chlorine, wt %	0.32	0.19	0.17	0.64	0.11	0.11
Sulfur, wt %	0.40	0.22	0.25	0.52	0.09	0.36
PCBs	<20	-	<50	<100	<20	<20

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*	
	511	512
Flash Point (°F)	>147	>147
Metals		
Aluminum	-	-
Arsenic	<5	<5
Barium	400	70
Beryllium	-	-
Cadmium	<10	<10
Chromium	-	-
Cobalt	-	-
Copper	199	14
Iron	823	28
Lead	389	165
Magnesium	-	-
Manganese	-	-
Molybdenum	11	<5
Nickel	6	<5
Selenium	<5	<5
Silicon	-	-
Silver	<5	<8
Sodium	-	-
Tin	-	-
Titanium	-	-
Vanadium	9	<5
Zinc	741	51
Volatile Organics		
Dichlorodifluoromethane	-	-
Trichlorofluoromethane	-	-
Trichlorotrifluoroethane	-	-
1,1,1-Trichloroethane	530	280
Trichloroethylene	<200	<200
Tetrachloroethylene	250	<200
Phenol	-	-
Benzene	-	-
Toluene	-	-
Ethyl Benzene	-	-
Xylenes	-	-
Methylene Chloride	-	-
PNAs		
Naphthalene	-	-
Benanthrene/Anthracene	-	-
Pyrene	-	-
Benzo(a)anthracene	-	-
Benzo(a)pyrene	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-
Phosphorus	-	-
Chlorine, wt %	0.22	0.08
Sulfur, wt %	0.29	0.39
PCBs	<20	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	513	514	515	516	517	518	519	520
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	200	90	120	160	210	<50	100	140
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	9
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	102	44	109	61	59	22	40	71
Iron	460	155	6,110	412	404	90	224	441
Lead	1,630	635	443	1,110	1,790	107	1,740	774
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	7	5	10	<5	6	<5	7	15
Nickel	<5	<5	11	<5	<5	<5	<5	6
Selenium	<5	<5	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<9	<9	<9	<9	<9	<9	<9	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	34	<5	<5	<5	<5	13
Zinc	2,060	449	422	1,080	1,250	727	1,470	699
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	220	460	540	2,200	<200	<200	<200	620
Trichloroethylene	<200	<200	<200	340	<200	<200	<200	110
Tetrachloroethylene	<200	300	340	<200	<200	<200	<200	1,800
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.06	0.08	0.23	0.24	0.15	0.04	0.13	0.21
Sulfur, wt %	0.33	0.25	0.25	0.34	0.33	0.52	0.29	0.28
PCBs	<10	<10	<10	<10	<10	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	521	522	523	524	525	526	527	528
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	160	160	90	140	60	<50	<60	<90
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	56	93	73	42	37	84	46	56
Iron	433	1,020	467	301	792	616	470	265
Lead	942	543	917	602	68	48	361	935
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	6	9	<5	<5	<5	5	9	5
Nickel	12	12	7	8	11	10	11	<5
Selenium	<5	<5	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<5	<5	<5	<5	<5	<5	<5	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	20	23	7	12	36	11	7	<5
Zinc	678	628	872	562	156	97	451	857
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,700	<100	2,000	1,200	220	1,400	400	1,400
Trichloroethylene	230	<100	180	770	<100	490	180	120
Tetrachloroethylene	1,000	460	300	2,500	<100	<100	200	170
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PXAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.42	0.13	0.22	0.92	0.32	0.28	0.19	0.24
Sulfur, wt %	0.49	0.24	0.31	0.64	0.80	0.41	0.47	0.47
PCBs	<5	<5	<5	<5	<10	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	529	530	531	532	533	534	535	536
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	100	180	210	220	240	220	170	190
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	80	56	184	167	147	96	95	180
Iron	986	932	1,720	1,090	1,100	1,410	6,650	2,110
Lead	551	239	728	757	717	343	386	1,570
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	7	13	23	30	11	18	17	61
Nickel	13	9	18	14	17	11	16	13
Selenium	<5	<5	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	7	<5	<5	8	<5	<5	<5	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	16	19	27	20	65	39	56	36
Zinc	655	206	862	720	825	310	906	662
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,300	1,100	740	970	2,000	2,500	<100	3,100
Trichloroethylene	<100	160	<100	<100	120	320	<100	<100
Tetrachloroethylene	560	880	840	4,200	140	700	<100	8,800
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.17	0.25	0.17	0.32	0.26	0.20	0.04	0.95
Sulfur, wt %	0.28	0.51	0.36	0.36	0.66	0.46	0.40	0.36
PCBs	<2	<10	<5	<5	56	24	<1	<2

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	537	538	539	540	541	542	543	544
Flash Point (°F)	>147	140	>147	90	>147	>147	>147	126
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	160	110	160	160	270	130	190	140
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	74	63	83	89	217	91	169	89
Iron	739	803	870	1,160	815	915	2,320	314
Lead	753	821	558	564	1,080	693	957	640
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	8	6	<5	6	49	8	36	12
Nickel	8	14	14	10	17	11	15	7
Selenium	<5	<5	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<5	<5	<5	<5	<5	<5	<5	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	41	64	28	24	36	46	29	45
Zinc	966	677	640	789	664	830	905	604
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	15,000	470	3,400	3,200	1,200	1,400	4,500	420
Trichloroethylene	<100	<100	190	330	110	<100	280	120
Tetrachloroethylene	1,300	<100	2,400	3,100	6,400	610	8,800	3,800
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.77	0.13	0.28	0.26	0.42	0.21	0.58	0.29
Sulfur, wt %	0.43	0.37	0.35	0.33	0.37	0.40	0.36	0.39
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	545	546	547	548	549	550	551	552
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	140	160	150	200	170	150	100	140
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	112	48	55	88	57	37	44	59
Iron	1,170	450	458	672	553	283	316	890
Lead	1,170	927	867	1,080	962	386	481	630
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	7	<5	7	9	8	10
Nickel	14	8	8	12	9	<5	<5	7
Selenium	<5	<5	<5	<5	<5	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<5	<5	<5	<5	<5	<5	<5	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	10	10	9	13	10	5	8	18
Zinc	1,090	622	608	906	698	187	206	525
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	3,300	3,000	2,700	3,400	3,000	420	1,700	6,600
Trichloroethylene	620	540	500	390	490	<100	340	300
Tetrachloroethylene	830	760	750	570	700	110	540	400
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.47	0.46	0.40	0.39	0.46	0.14	0.26	0.49
Sulfur, wt %	0.48	0.47	0.42	0.37	0.46	0.22	0.26	0.29
PCBs	12	10	11	6	10	<5	5	

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	553	554	555	556	557	558	559	560
Flash Point (°F)	>147	>147	>147	>147	>147	-	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	16	<5	<5	<5	<5	-	<5
Barium	150	<50	160	150	180	210	-	140
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	-	<7
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	105	57	82	103	61	99	-	115
Iron	3,530	2,840	695	3,270	2,000	3,060	-	1,510
Lead	745	301	673	834	471	643	-	872
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	7	<5	5	11	9	7	-	<5
Nickel	13	8	9	30	14	23	-	14
Selenium	<5	<5	<5	<5	<5	<5	-	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<5	<5	<5	<5	<5	9	-	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	44	<5	8	11	31	32	-	13
Zinc	629	405	627	762	383	712	-	981
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,400	450	1,900	1,700	11,000	9,600	-	1,400
Trichloroethylene	<100	<100	310	120	320	270	-	110
Tetrachloroethylene	370	120	500	270	260	220	-	170
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.26	0.09	0.27	0.27	0.43	0.37	-	0.19
Sulfur, wt %	0.29	0.12	0.29	0.28	0.22	0.28	-	0.33
PCBs	<2	2	6	<5	<2	-	6	5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	561	562	563	564	565	566	567	568
Flash Point (°F)	142	>147	>147	-	-	>147	141	>141
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	-	-	<5	<5	<5
Barium	150	200	210	-	-	140	150	200
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	-	-	<7	<7	<7
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	49	54	99	-	-	115	49	54
Iron	596	495	3,060	-	-	1,570	596	495
Lead	512	931	643	-	-	872	512	931
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	13	12	7	-	-	<5	13	12
Nickel	6	7	23	-	-	14	6	7
Selenium	<5	<5	<5	-	-	<5	<5	<5
Silicon	-	-	-	-	-	-	-	-
Silver	<5	<5	9	-	-	<5	<5	<5
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	9	15	32	-	-	13	9	15
Zinc	388	650	712	-	-	981	388	650
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,600	4,200	9,600	-	-	1,400	1,600	4,200
Trichloroethylene	<100	720	270	-	-	110	<100	720
Tetrachloroethylene	990	900	220	-	-	170	990	900
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.18	0.42	0.38	-	-	0.19	0.18	0.42
Sulfur, wt %	0.25	0.37	0.28	-	-	0.33	0.25	0.37
PCBs	<2	12	-	6	<5	5	<2	12

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

	Sample Number*							
	569	570	571	572	573	574	575	576
Flash Point (°F)								
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	16	10	14	13	10	14	12	11
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	577	578	579	580	581	582	583	584
Flash Point (°F)	-	-	126	263	-	145	92	-
Metals								
Aluminum	-	-	20	10	10	<10	20	<10
Arsenic	-	-	-	-	-	<1	-	-
Barium	-	-	80	290	40	60	40	50
Beryllium	-	-	-	-	-	<1	-	-
Cadmium	-	-	-	-	-	-	-	-
Chromium	-	-	10	<10	10	<10	10	<10
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	30	30	<10	10	60	20
Iron	-	-	170	150	470	40	60	50
Lead	-	-	950	1,370	100	680	650	650
Magnesium	-	-	180	350	10	90	230	40
Manganese	-	-	10	10	<10	10	10	10
Molybdenum	-	-	10	10	<10	10	<10	<10
Nickel	-	-	<10	<10	10	<10	<10	<10
Selenium	-	-	-	-	-	5	-	-
Silicon	-	-	120	40	10	10	40	10
Silver	-	-	<10	<10	<10	<10	<10	<10
Sodium	-	-	790	110	30	80	130	30
Tin	-	-	<10	<10	<10	<10	<10	<10
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	<10	<10	<10	20	<10	<10
Zinc	-	-	600	1,130	30	580	770	470
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	310	130	7.5	2,260	360	380
Trichloroethylene	-	-	160	-	-	150	19	<100
Tetrachloroethylene	-	-	-	-	6.9	194	93	-
Phenol	-	-	16	8.8	-	16	18	47
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	12	8.8	<1	<1	-	-	-	<1
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	0.42	0.27	-	1.6	1.55	-
PCBs	-	-	15	<10	8	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	585	586	587	588	589	590	591	592 (110)
Flash Point (°F)	105	145	-	210	68	-	138	> 200
Metals								
Aluminum	20	30	160	<10	10	-	15	22
Arsenic	-	-	<1	-	-	-	-	<5.0
Barium	40	20	50	90	60	-	177	110
Beryllium	-	-	<1	-	-	-	-	<0.2
Cadmium	-	-	-	-	-	-	-	1.4
Chromium	<10	<10	10	50	<10	-	-	4.2
Cobalt	-	-	-	-	-	-	-	<0.5
Copper	<10	<10	30	10	10	-	18	180
Iron	120	50	1,600	30	160	-	220	270
Lead	750	140	250	<10	3,250	-	18,500	240
Magnesium	120	510	380	30	320	-	410	34
Manganese	<10	<10	160	<10	10	-	-	3.4
Molybdenum	10	<10	<10	40	10	-	-	-
Nickel	<10	<10	20	<10	<10	-	-	<1
Selenium	-	-	4	-	-	-	-	-
Silicon	150	30	1,000	<10	10	-	17	-
Silver	<10	<10	<10	<10	<10	-	-	-
Sodium	830	380	380	30	20	-	59	51
Tin	<10	<10	10	120	10	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	10	<10	100	<10	<10	-	-	<0.2
Zinc	330	670	190	190	1,190	-	1,350	240
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	580	17,400	160	840	-	-	-	<3
Trichloroethylene	350	234	190	<100	-	10,000	-	<3
Tetrachloroethylene	-	950	300	-	590	-	-	<3
Phenol	32	43	19	<2	16	-	-	-
Benzene	-	-	-	-	-	-	-	<3
Toluene	-	-	-	-	-	-	-	51
Ethyl Benzene	-	-	-	-	-	-	-	24
Xylenes	-	-	-	-	-	-	-	400
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	6.4	<1	<1	-	11	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	240
Chlorine, wt %	-	-	-	-	-	-	-	0.06
Sulfur, wt %	0.16	0.43	-	0.50	0.86	-	0.54	0.29
PCBs	580	<10	-	<10	<10	-	-	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number†							
	593(111)	594(112)	595(118)	596(119)	597(120)	598(121)	599(122)	600(123)
Flash Point (°F)	>200	<70	182	>200	<75	184	166	166
Metals								
Aluminum	11	11	19	<1.0	13	11	10	12
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	2.2	38	77	0.67	100	93	38	81
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.88	4.1	1.7	<0.5	1.1	1.9	1.1	1.1
Chromium	1.1	4.4	6.5	2.1	5.2	4.2	6.0	3.3
Cobalt	<0.5	<0.5	0.52	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	150	49	29	5.2	39	51	32	32
Iron	110	140	280	1.6	150	160	150	130
Lead	6.4	330	1,800	<5.0	920	1,200	3,000	1,100
Magnesium	170	250	290	0.79	380	500	450	280
Manganese	1.5	5.4	11	<0.2	6.6	5.5	9.1	5.1
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<1.0	1.3	1.3	<1.0	1.8	1.2	1.2	2.9
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	66	110	180	7.1	240	73	120	290
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	0.73	0.23	<0.2	<0.2	<0.2	<0.2	<0.2	4.3
Zinc	280	1,100	1,100	68	1,100	1,100	1,000	780
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<5	<4	<16	<4	<5	<8	<3	82
Trichloroethylene	<5	<4	<16	<4	<5	<8	<3	<5
Tetrachloroethylene	<5	<4	<16	<4	8.6	<8	<3	<5
Phenol	-	-	-	-	-	-	-	-
Benzene	59	3,600	73	<4	<5	<8	<3	<5
Toluene	290	6,500	290	<4	97	150	60	72
Ethyl Benzene	<5	510	440	<4	69	<8	110	86
Xylenes	190	14,000	1,100	17	600	280	220	500
Methylene Chloride	<5	<4	<16	<4	<5	<8	<3	<5
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C₉H₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C₁₂H₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.01	0.04	0.08	0.01	0.10	0.07	0.15	0.13
Sulfur, wt %	0.37	0.39	0.40	0.30	0.41	0.37	0.68	0.48
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	601(125)	602(126)	603(127)	604(128)	605(129)	606(130)	607(131)	608(132)
Flash Point (°F)	>200	-	188	>200	186	84	186	>200
Metals								
Aluminum	4.9	12	8.6	33	14	13	17	5.6
Arsenic	<5.0	5.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	8.1	19	48	95	640	160	99	27
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	1.0	1.4	0.52	0.63	1.4	0.54	1.6	<0.5
Chromium	1.5	2.8	9.3	<0.5	5.9	4.1	6.2	1.7
Cobalt	<0.5	<0.5	0.98	<0.5	0.58	<0.5	<0.5	<0.5
Copper	48	100	35	200	37	30	42	20
Iron	100	360	100	200	170	84	200	37
Lead	78	20	83	140	1,900	2,300	2,000	200
Magnesium	330	84	170	51	450	230	420	250
Manganese	3.0	3.1	2.0	3.0	9.9	8.3	9.9	1.8
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<1.0	1.8	<1.0	<1.0	1.2	1.1	1.3	1.9
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	94	200	160	56	170	160	160	89
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	0.22	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	820	550	1,000	230	1,200	1,100	1,100	1,000
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<3	<1	<6	<1	<6	520	<10	<8
Trichloroethylene	<3	<1	<6	2	<6	<5	<10	<8
Tetrachloroethylene	55	12	420	2	<6	280	<10	<8
Phenol	-	-	-	-	-	-	-	-
Benzene	<3	<1	<6	<1	15	1,600	<10	110
Toluene	39	<1	190	14	1,500	3,500	1,300	410
Ethyl Benzene	16	12	200	19	590	1,000	2,200	150
Xylenes	110	120	660	43	1,900	3,700	11,000	490
Methylene Chloride	<3	4	<6	<1	190	<5	<10	<8
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C₉H₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C₁₂H₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.04	0.04	0.10	0.02	0.08	0.11	0.08	0.02
Sulfur, wt %	0.86	0.52	0.54	0.32	0.53	0.51	0.47	0.56
PCBs	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	609(133)	610(135)	611(137)	612(138)	613(140)	614(142)	615(146)	616(147)
Flash Point (°F)	138	>200	85	>200	<80	124	>200	>200
Metals								
Aluminum	16	<1.0	6.7	1.6	<1.0	3.4	<1.0	2.8
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	71	0.61	37	20	8.1	5.3	38	140
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	6.6	<0.5	0.52	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	56	0.64	9.8	1.0	7.7	11	<0.5	1.4
Iron	170	<1.0	32	5.9	28	63	4.4	5.2
Lead	1,600	<5.0	280	190	180	42	38	14
Magnesium	550	<0.5	13	7.7	1.8	<0.5	36	28
Manganese	8.0	<0.2	1.3	<0.2	0.36	0.28	<0.2	0.21
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	130	<1.0	1.9	1.5	<1.0	<1.0	14	5.0
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	<0.2	0.27	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	850	8.7	380	300	190	34	540	530
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,000	<10	<25	150	5,000	<16	<7	<17
Trichloroethylene	<4	<10	<25	46	2,100	<16	<7	<17
Tetrachloroethylene	660	490	<25	<8	4,400	<16	<7	<17
Phenol	-	-	-	-	-	-	-	-
Benzene	240	<10	820	16	610	<16	<7	<17
Toluene	2,900	<10	4,000	160	12,000	260	15	330
Ethyl Benzene	300	<10	1,000	90	5,700	<16	<7	<17
Xylenes	1,600	150	7,900	250	28,000	1,400	<7	<17
Methylene Chloride	<4	<10	<25	64	1,400	<16	<7	<17
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.14	0.22	0.10	0.10	0.29	0.15	0.02	0.05
Sulfur, wt %	0.44	0.25	0.47	0.56	0.44	0.42	0.68	0.54
PCBs	<5.0	13	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	617(148)	618(151)	619(152)	620(161)	621(164)	622(165)	623(165)	624(166)
Flash Point (°F)	90	106	<70	>200	96	196	124	>200
Metals								
Aluminum	7.7	11	9.8	19	3.9	160	3.3	410
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	5.3	16	18	0.9	66	21	4.3	14
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.78	0.9	0.84	<0.5	<0.5	<0.5	0.59	<0.5
Chromium	1.0	3.2	3.7	<0.5	7.4	5.1	1.1	10
Cobalt	<0.5	<0.5	<0.5	<0.5	0.94	1.8	<0.5	6.2
Copper	43	39	44	<0.5	9.8	16	15	16
Iron	80	71	68	26	130	640	88	630
Lead	130	390	340	<5.0	130	17	200	59
Magnesium	7.6	370	60	17	4.7	76	10	6.3
Manganese	2.3	3.8	7.8	0.23	1.1	4.3	1.3	5.6
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<1.0	<1.0	1.5	19	1.6	26	<1.0	17
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	5.6	69	12	110	45	68	14	10
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	<0.2	<0.2	80	3.2	92	0.28	0.32
Zinc	380	790	670	8.8	170	190	260	63
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	29	1,300	16	<12	210	<12	<9	1,900
Trichloroethylene	<20	<12	<10	<12	<9	<12	<9	1,400
Tetrachloroethylene	<20	260	<10	<12	35	<12	<9	1,100
Phenol	-	-	-	-	-	-	-	-
Benzene	260	210	950	890	300	220	650	210
Toluene	580	770	1,000	500	15,000	780	1,100	850
Ethyl Benzene	1,600	1,200	710	320	300	140	680	210
Xylenes	1,700	3,500	1,300	620	3,000	580	1,100	1,400
Methylene Chloride	<20	<12	810	<12	140	<12	<9	27
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C₉H₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C₁₂H₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.09	0.12	0.06	0.04	0.25	0.06	0.05	0.61
Sulfur, wt %	0.38	0.46	0.18	1.33	0.86	1.55	0.41	0.45
PCBs	<5	<5	<5	<5	-	<5	<5	30

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	625(167)	626(168)	627(169)	628(170)	629(174)	630(177)	631(181)	632(182)
Flash Point (°F)	>200	>200	>200	>200	>200	140	>200	-
Metals								
Aluminum	180	440	76	65	43	1.2	120	86
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	2.6	38	19	17	2.5	50	16	12
Beryllium	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	5.2	1.2	7.4	5.9	4.9	<0.5	2.6	2.2
Cobalt	1.4	0.56	3.3	3.4	<0.69	<0.5	0.8	0.59
Copper	1.9	12	1.6	0.7	7.4	4.9	8.3	6.2
Iron	240	210	190	140	180	52	380	330
Lead	6.9	48	31	22	6.9	57	11	10
Magnesium	2.5	26	3.1	2.1	<0.5	11	41	29
Manganese	2.3	3.5	4.6	3.8	0.73	0.88	3.2	2.6
Molybdenum	-	-	-	-	-	-	-	-
Nickel	12	1.2	24	24	8.3	<1.0	18	18
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	5.0	340	6.1	1.1	<1.0	<1.0	46	35
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	0.21	0.28	0.46	0.49	<0.2	0.95	110	110
Zinc	40	170	88	78	20	210	78	66
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	38	<18	44	<10	<12	<12	<13	<8
Trichloroethylene	<8	<18	32	<10	<12	<12	<13	<8
Tetrachloroethylene	49	<18	<11	240	<12	<12	<13	<8
Phenol	-	-	-	-	-	-	-	-
Benzene	17	<18	<11	<10	15	48	280	12
Toluene	190	580	83	140	17	400	930	47
Ethyl Benzene	85	<18	21	98	<12	<12	320	<8
Xylenes	76	160	260	160	75	290	1,200	74
Methylene Chloride	<8	<18	<11	<10	<12	<12	<13	<8
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.37	0.47	0.15	-	0.61	0.03	0.15	0.09
Sulfur, wt %	0.26	0.09	0.20	-	0.86	0.43	0.94	-
PCBs	<5	<5	<5	23	12	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number†							
	633(187)	634(188)	635(190)	636(191)	637(193)	638(202)	639(204)	640(205)
Flash Point (°F)	>200	116	138	184	178	>200	>200	>200
Metals								
Aluminum	100	16	31	3.1	23	13	1.3	4.9
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	33	38	32	120	46	33	<0.5	3.5
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	64	13	16	<0.5	4.3	1.0	<0.5	<0.5
Cobalt	1.5	1.4	1.6	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	120	1.1	6.1	21	70	0.52	110	300
Iron	500	300	620	15	410	110	18	53
Lead	76	37	55	5.1	190	<5.0	6.8	46
Magnesium	230	84	36	1.5	<0.5	1.6	0.82	47
Manganese	23	25	16	0.34	0.34	0.32	0.30	2.0
Molybdenum	-	-	-	-	-	-	-	-
Nickel	8.5	4.9	5.8	<1.0	<1.0	6.0	4.1	2.1
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	52	31	21	5.5	<1.0	28	<1.0	42
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	0.23	<0.2	0.25	<0.2	<0.2	2.7	<0.2	<0.2
Zinc	400	86	95	160	17	3.3	40	330
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	35,000	4,200	8,100	<3	<2	<24	<24	<15
Trichloroethylene	11,000	1,800	5,100	<3	<2	<24	<24	<15
Tetrachloroethylene	14,000	1,800	2,600	<3	<2	<24	<24	<15
Phenol	-	-	-	-	-	-	-	-
Benzene	<17	<38	<11	<3	<2	72	130	<15
Toluene	580	560	2,700	<3	65	560	630	65
Ethyl Benzene	<17	<38	200	<3	<2	<24	500	<15
Xylenes	860	470	1,100	11	32	460	1,200	<15
Methylene Chloride	5,000	<38	<11	56	<2	<24	<24	<15
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.44	0.10	0.55	0.40	0.15	0.03	0.04	0.01
Sulfur, wt %	0.23	<0.06	-	0.65	0.49	0.53	0.47	0.31
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	641(207)	642(208)	643(209)	644(233)	645(242)	646(243)	647(245)	648(250)
Flash Point (°F)	>200	136	164	138	>200	>200	112	>200
Metals								
Aluminum	72	2.9	4.1	57	<1.0	20	14	1.7
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	21	4.3	1.9	130	3.1	3.1	8.7	17
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	<0.5	<0.5	<0.5	0.5	1.2	3.5	1.1
Chromium	1.8	3.8	1.6	1.2	<0.5	5.1	4.2	0.57
Cobalt	<0.5	<0.5	<0.5	<0.5	<0.5	0.72	<0.5	<0.5
Copper	42	4.3	1.7	1.1	5.2	47	9.1	24
Iron	76	120	62	200	1.5	280	170	82
Lead	180	80	48	10	<5.0	2,000	2,700	150
Magnesium	68	8.2	16	5.8	<0.5	460	410	16
Manganese	3.4	1.9	1.1	1.6	<0.2	19	27	4.7
Molybdenum	-	-	-	-	-	-	-	-
Nickel	11	<1.0	25	4.2	<1.0	1.8	1.2	<1.0
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	100	12	53	68	<1.0	200	120	9.9
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	38	0.44	68	2.1	<0.2	<0.2	<0.2	<0.2
Zinc	180	80	58	8.3	210	1,200	1,100	390
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	180	<13	<7	<6	<4	<15	<15	160
Trichloroethylene	140	38	<7	<6	<4	<15	<15	<14
Tetrachloroethylene	120	27	<7	<6	<4	<15	<15	980
Phenol	-	-	-	-	-	-	-	-
Benzene	110	30	<7	<6	<4	<15	<15	<14
Toluene	420	600	150	60	6,300	46	630	42
Ethyl Benzene	660	180	89	<6	<4	82	560	19
Xylenes	1,200	810	410	300	<4	350	1,600	140
Methylene Chloride	45	<13	<7	<6	<4	<15	<15	<14
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.06	0.08	0.04	0.02	0.02	0.09	0.07	0.80
Sulfur, wt %	1.97	0.31	2.03	0.66	0.33	0.62	0.43	0.34
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**							
	649(255)	650(256)	651(257)	652(258)	653(259)	654(261)	655(265)	656(267)
Flash Point (°F)	172	>200	>200	>200	>200	>200	>200	>200
Metals								
Aluminum	19	50	13	20	19	23	220	<1.0
Arsenic	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	14	16	110	4.2	4.3	2.8	4.1	<0.5
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	0.58	1.3	1.6	1.8	2.1	<0.5	<0.5
Chromium	2.1	2.9	5.9	8.2	8.1	8.4	3.0	<0.5
Cobalt	1.2	0.55	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	4.0	2.1	29	17	17	17	3.3	21
Iron	68	270	170	310	320	320	99	3.1
Lead	140	370	1,500	1,200	1,200	1,400	24	<5.0
Magnesium	14	30	360	550	560	470	3.8	<0.5
Manganese	2.5	6.5	12	9.9	9.8	12	3.2	<0.2
Molybdenum	-	-	-	-	-	-	-	-
Nickel	16	2.0	1.7	1.9	2.1	2.1	5.2	<1.0
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	19	27	73	320	270	84	<1.0	<1.0
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	19	0.35	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	80	300	1,200	1,100	1,100	1,200	26	400
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<16	440	<4	<16	<16	<15	470	<8
Trichloroethylene	<16	37	<4	<16	<16	<15	<14	<8
Tetrachloroethylene	<16	40	<4	<16	<16	<15	<14	<8
Phenol	-	-	-	-	-	-	-	-
Benzene	<16	11	<4	46	60	130	<14	<8
Toluene	<16	230	57	460	710	670	<14	<8
Ethyl Benzene	<16	190	130	230	180	460	<14	<8
Xylenes	170	970	550	990	1,200	1,500	<14	<8
Methylene Chloride	<16	<4	<4	<16	<16	<15	<14	<8
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	1,200	1,000	1,000	-	-	-
Chlorine, wt %	0.09	0.91	0.06	0.02	0.03	0.05	0.20	<0.01
Sulfur, wt %	0.80	0.43	0.56	0.53	0.53	0.60	0.35	0.30
PCBs	<5	<5	<6	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number††							
	657(268)	658(271)	659(272)	660	661	662	663	664
Flash Point (°F)	>200	168	>200	128	104	116	-	-
Metals								
Aluminum	<1.0	12	4.8	52	15	1.5	17	47
Arsenic	<5.0	<5.0	<5.0	<1.0	10	0.9	6.2	6.2
Barium	18	20	13	51	70	84	32	54
Beryllium	<0.2	<0.2	<0.2	0.2	0.1	<0.1	<0.1	0.9
Cadmium	<0.5	1.2	0.73	0.8	1.6	0.2	1.5	0.8
Chromium	<0.5	4.5	3.5	17	3.8	1.2	4.8	5.4
Cobalt	<0.5	<0.5	<0.5	1.0	1.0	0.3	0.2	0.4
Copper	<0.5	38	20	19	34	12	36	40
Iron	120	170	85	490	150	84	170	200
Lead	<5.0	1,200	500	1,070	1,170	170	810	810
Magnesium	2.5	420	700	43	190	4.6	300	210
Manganese	10	11	4.9	10	6.4	1.2	11	7.6
Molybdenum	-	-	-	2.5	3.6	0.4	7.6	3.4
Nickel	1.0	1.3	<1.0	12	2.3	0.6	15	7.6
Selenium	-	-	-	<0.4	<0.4	<0.4	<0.4	<0.4
Silicon	-	-	-	26	20	<0.1	41	35
Silver	-	-	-	<0.3	<0.1	<0.1	<0.1	<0.1
Sodium	4.3	130	59	24	130	14	160	510
Tin	-	-	-	2.6	7.9	<0.7	11	3.8
Titanium	-	-	-	1.3	0.8	<0.1	7.0	4.2
Vanadium	<0.2	<0.2	<0.2	11	0.6	0.9	0.3	13
Zinc	19	1,000	1,100	170	690	91	890	620
Volatile Organics								
Dichlorodifluoromethane	-	-	-	<20	<30	<30	<20	<20
Trichlorofluoromethane	-	-	-	<100	<30	<30	<20	<20
Trichlorotrifluoroethane	-	-	-	230	<30	860	1,900	1,300
1,1,1-Trichloroethane	<15	<15	110	14,000	2,000	500	880	670
Trichloroethylene	<15	<15	<4	1,600	370	730	3,700	170
Tetrachloroethylene	<15	<15	180	13,000	640	<90	620	200
Phenol	-	-	-	70	40	<5	35	25
Benzene	<15	<15	<4	<100	<100	<30	100	90
Toluene	<15	120	53	9,700	3,100	380	4,400	1,000
Ethyl Benzene	<15	110	43	330	3,700	560	570	390
Xylenes	<15	510	170	1,300	2,600	3,300	1,800	1,100
Methylene Chloride	<15	<15	<4	<20	<30	<30	<20	<20
PNAs								
Naphthalene	-	-	-	990	430	1,400	230	750
Benanthrene/Anthracene	-	-	-	260	100	330	80	390
Pyrene	-	-	-	30	30	20	15	70
Benzo(a)anthracene	-	-	-	35	12	10	30	60
Benzo(a)pyrene	-	-	-	<5	<5	<5	<5	<5
Alkylbenzene (C ₉ H ₁₂)	-	-	-	42,000	<30	<30	<20	4,100
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.12	0.07	0.06	2.7	0.36	0.17	0.51	0.23
Sulfur, wt %	0.45	0.33	0.63	0.59	0.61	0.27	0.69	0.75
PCBs	<5	<5	<5	<15	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**							
	665	666	667	668	669	670 (13)	671 (14)	672 (15)
Flash Point (°F)	104	200	108	172	-	94	<75	92
Metals								
Aluminum	11	13	15	20	640	9.4	13	9.9
Arsenic	7.1	5.0	8.8	7.4	4.5	<5	<5	<5
Barium	30	71	64	100	84	4.4	3	4.8
Beryllium	<0.1	<0.1	<0.1	<0.1	0.4	<0.2	<0.2	<0.2
Cadmium	1.0	1.3	1.4	1.2	1.0	<0.5	<0.5	<0.5
Chromium	3.3	4.0	4.9	4.4	18	2.4	2.0	2.5
Cobalt	0.2	<0.1	<0.1	0.1	0.2	5	<0.5	5
Copper	19	45	37	32	130	0.52	1.9	0.54
Iron	100	120	150	160	1,300	46	180	49
Lead	950	660	1,800	1,500	350	13	<5	13
Magnesium	78	430	280	280	240	13	6.3	13
Manganese	5.6	7.3	8.4	7.5	28	1.0	1.3	1.1
Molybdenum	2.3	2.9	3.9	3.7	13	-	-	-
Nickel	3.0	1.8	1.7	1.5	86	3.9	6.4	3.7
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	-	-	-
Silicon	19	20	12	20	200	-	-	-
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
Sodium	250	85	100	170	450	<1	6.2	<1
Tin	4.3	3.9	8.5	7.8	17	-	-	-
Titanium	1.5	1.1	1.0	1.3	21	-	-	-
Vanadium	3.1	<0.1	0.1	0.1	7.5	12	24	12
Zinc	430	850	1,050	900	340	6.6	5.8	6.9
Volatile Organics								
Dichlorodifluoromethane	<30	<20	<20	<30	<30	-	-	-
Trichlorofluoromethane	<30	<20	<20	<20	<30	-	-	-
Trichlorotrifluoroethane	940	<20	620	380	1,400	-	-	-
1,1,1-Trichloroethane	840	110	390	310	1,700	<11	<70	<33
Trichloroethylene	<100	<20	<90	<90	790	<11	<70	<33
Tetrachloroethylene	190	210	610	490	690	230	<70	<33
Phenol	<5	<5	18	14	45	-	-	-
Benzene	190	<90	190	170	<100	6,900	2,700	8,200
Toluene	12,000	510	3,500	2,500	1,400	4,800	1,800	6,000
Ethyl Benzene	1,500	180	840	670	440	2,000	1,100	1,000
Xylenes	6,400	650	3,400	2,500	1,400	4,000	3,100	5,100
Methylene Chloride	<30	<20	<20	<20	<30	<11	<70	<33
PNAs								
Naphthalene	990	210	420	340	270	-	-	-
Penanthrene/Anthracene	380	80	100	100	150	-	-	-
Pyrene	40	<5	45	35	20	-	-	-
Benzo(a)anthracene	<5	<5	25	8	20	-	-	-
Benzo(a)pyrene	<5	<5	7	<5	<5	-	-	-
Alkylbenzene (C ₉ H ₁₂)	<30	36,000	<20	-	<30	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	52	12	48
Chlorine, wt %	0.18	0.25	0.12	0.11	0.34	0.03	0.06	0.03
Sulfur, wt %	0.36	0.66	0.62	0.65	0.67	1.00	0.55	1.24
PCBs	-	-	-	-	-	<5	<5	<5

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† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	673 (16)	674 (60)	675 (104)	676 (105)	677 (106)	678 (107)	679 (108)	680 (109)
Flash Point (°F)	<75	>200	188	>200	>200	>200	>200	188
Metals								
Aluminum	2.0	20	19	14	12	11	13	9.5
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	2.5	38	50	49	11	34	23	15
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	1.6	1.5	1.4	1.2	1.3	1.3	1.1
Chromium	<0.5	6.1	7.0	4.7	4.4	4.1	4.4	3.1
Cobalt	<0.5	<0.5	<0.5	<0.5	1.1	0.87	<0.5	<0.5
Copper	<0.5	55	22	44	32	25	29	37
Iron	35	220	260	160	180	140	170	120
Lead	<5	2,300	1,400	1,000	1,300	1,000	1,000	720
Magnesium	2	370	68	230	280	130	410	97
Manganese	0.51	17	14	13	16	14	12	6.2
Molybdenum	-	-	-	-	-	-	-	-
Nickel	5.5	1.3	1.5	1.1	1.3	1.4	1.3	1.2
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	1.2	63	26	100	180	70	91	36
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	17	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	8.2	1,100	880	910	960	710	1,000	830
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<60	<9	2,100	23	<17	<17	<21	2,000
Trichloroethylene	<60	<9	<15	<16	<17	<17	<21	<17
Tetrachloroethylene	<60	<9	240	<16	<17	<17	<21	320
Phenol	-	-	-	-	-	-	-	-
Benzene	<60	<9	73	96	170	150	79	120
Toluene	18,000	460	340	260	530	250	160	480
Ethyl Benzene	<60	170	400	36	440	330	<21	280
Xylenes	1,300	490	900	790	640	650	800	2,300
Methylene Chloride	<60	<9	37	16	<17	<17	<21	23
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	11	1,100	870	870	950	670	900	2,400
Chlorine, wt %	0.02	0.08	0.19	0.05	0.02	0.04	0.06	0.10
Sulfur, wt %	0.50	0.44	0.46	0.46	0.63	0.41	0.74	0.45
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number†							
	681(211)	682(212)	683(213)	684(218)	685(220)	686(227)	687(228)	688(230)
Flash Point (°F)	146	92	>200	132	102	>200	168	144
Metals								
Aluminum	3.8	1.8	3.3	<1.0	<1.0	<1.0	<1.0	25.0
Arsenic	<5.0	<5.0	5.1	<5.0	<5.0	<5.0	<5.0	<5.0
Barium	0.5	1.2	9.2	<0.5	4.0	2.6	<0.5	32.0
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	1.1
Chromium	0.54	0.97	1.8	<0.5	0.59	<0.5	<0.5	4.9
Cobalt	<0.5	<0.5	0.62	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	1.9	6.3	320.0	<0.5	19.0	0.55	<0.5	52.0
Iron	80.0	46.0	110.0	<1.0	1.3	150.0	4.6	210.0
Lead	<5.0	11.0	<5.0	<5.0	<5.0	<5.0	<5.0	910.0
Magnesium	2.5	0.68	13.0	<0.5	1.4	<0.5	<0.5	95.0
Manganese	0.53	0.72	5.0	<0.2	<0.2	4.6	<0.2	10.0
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<1.0	11.0	7.5	<1.0	<1.0	<1.0	<1.0	1.6
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	<1.0	<1.0	2.5	<1.0	3.3	5.0	2.0	80.0
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	0.2	18.0	1.1	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	1.8	36.0	460.0	<0.5	17.0	2.5	0.53	700.0
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<7	<13	<22	<7	62,000	<16	<15	3,400
Trichloroethylene	<7	93	<22	<7	<11	<16	<15	860
Tetrachloroethylene	<7	<13	<22	<7	<11	<16	<15	81
Phenol	-	-	-	-	-	-	-	-
Benzene	<7	540	<22	<7	<11	<16	<15	340
Toluene	200	12,000	120	<7	170	<16	<15	2,000
Ethyl Benzene	350	8,400	32	<7	<11	<16	<15	1,200
Xylenes	830	20,000	350	<7	26	230	<15	1,700
Methylene Chloride	<7	570	<22	<7	5,100	<16	<15	<16
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C₉H₁₂)								
Alkylbenzene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	<5.0	15.0	180.0	<5.0	130.0	8.3	6.0	720.0
Chlorine, wt %	0.02	0.06	0.27	0.02	2.46	0.96	5.45	0.21
Sulfur, wt %	0.41	0.35	0.19	0.15	0.02	0.06	5.62	0.51
PCBs	<5	<5	<5	<5	<5	-	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	689(280)	690(281)	691(282)	692(284)	693(285)	694(288)	695(292)	696(294)
Flash Point (°F)	170	154	178	196	>200	98	>200	>200
Metals								
Aluminum	16	15	12	3.3	2.1	14	88	74
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	64	38	1.9	9.9	3.8	52	260	170
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	1.5	1.6	<0.5	<0.5	0.63	1.1	2.8	0.57
Chromium	3.6	3.2	0.97	0.86	1.1	2.9	50	5.6
Cobalt	0.82	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5
Copper	51	60	33	49	8.5	44	110	110
Iron	160	130	7.8	140	58	130	980	510
Lead	960	730	34	96	110	830	2,000	740
Magnesium	300	220	9.3	4.4	36	150	370	300
Manganese	7.3	5.6	0.24	2.1	0.97	5.5	29	20
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.2	1.2	<1	6.5	5.1	1.3	15	2.6
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	120	110	2.7	4.1	37	120	380	640
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.3	1.8	<0.2	<0.2	16	2.1	5.3	4.3
Zinc	820	600	26	380	180	610	1,600	630
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	8	160	<7	<8	<8.3	<18	66	6.8
Trichloroethylene	<17	<17	<7	1,400	<8.3	150	<25	71
Tetrachloroethylene	37	28	53	190	<8.3	2,300	<25	62
Phenol	-	-	-	-	-	-	-	-
Benzene	170	110	<7	<8	<8.3	690	<25	12
Toluene	2,900	1,400	76	84	<8.3	3,300	300	180
Ethyl Benzene	380	260	110	<8	<8.3	1,200	92	120
Xylenes	1,400	1,100	630	420	310	3,600	530	470
Methylene Chloride	<17	<17	<7	<8	<8.3	<18	<25	<4.1
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	740	730	30	440	220	640	1,100	740
Chlorine, wt %	0.08	0.06	0.02	0.48	0.09	0.13	0.21	0.51
Sulfur, wt %	0.50	0.36	0.20	0.59	0.55	0.38	0.61	0.45
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	697(295)	698(296)	699(298)	700(299)	701(300)	702(301)	703(302)	704(303)
Flash Point (*F)	180	166	<75	114	<75	132	96	-
Metals								
Aluminum	39	88	<1	14	15	14	25	<1
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	130	320	0.53	16	46	38	27	0.63
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	8.2	3.0	<0.5	0.62	0.94	1.2	0.96	<0.5
Chromium	10	34	<0.5	3.9	3.6	6.4	5.3	<0.5
Cobalt	0.63	1.6	<0.5	0.5	<0.5	1.4	1.2	<0.5
Copper	410	150	1.5	22	40	40	9.6	2.0
Iron	810	1,100	3.8	97	140	260	330	3.9
Lead	1,500	3,700	17	140	810	750	710	38
Magnesium	210	260	41	17	76	110	11	22
Manganese	22	56	<0.2	1.3	5.4	4.1	2.6	0.24
Molybdenum	-	-	-	-	-	-	-	-
Nickel	6.3	13	<1	2.6	8.1	1.9	4.7	<1
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	100	260	<1	2,100	39	160	8.2	8.0
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	23	2.6	0.71	6.8	34	5.4	11	<0.2
Zinc	1,800	1,300	15	49	480	410	240	46
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	30	<39	<42	610	<16	63	<13	<8
Trichloroethylene	<8	<39	<42	410	<16	<16	260	<8
Tetrachloroethylene	25	65	<42	200	<16	130	400	<8
Phenol	-	-	-	-	-	-	-	-
Benzene	33	110	<42	<15	110	250	<13	<8
Toluene	730	780	1,600	450	940	4,100	6,400	15
Ethyl Benzene	130	280	24,000	50	620	540	600	<8
Xylenes	1,700	1,400	33,000	300	1,300	1,800	2,100	<8
Methylene Chloride	<8	<39	<42	<15	<16	<16	<13	<8
PAHs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	1,000	1,100	20	240	550	640	470	45
Chlorine, wt %	0.13	0.24	<0.01	0.14	0.04	0.07	0.20	0.07
Sulfur, wt %	0.80	0.70	0.15	0.23	0.99	0.53	0.71	0.07
PCBs	<5	22	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**							
	705(316)	706(319)	707(145)	708(171)	709(172)	710(173)	711(175)	712(176)
Flash Point (°F)	148	164	-	-	-	-	-	-
Metals								
Aluminum	14	16	150	-	-	-	-	-
Arsenic	<5	<5	<5	-	-	-	-	-
Barium	38	53	280	-	-	-	-	-
Beryllium	<0.2	<0.2	<0.2	-	-	-	-	-
Cadmium	1.3	8.8	<0.5	-	-	-	-	-
Chromium	3.3	36	5.2	-	-	-	-	-
Cobalt	<0.5	<0.5	1.1	-	-	-	-	-
Copper	64	50	38	-	-	-	-	-
Iron	150	140	1,600	-	-	-	-	-
Lead	1,100	920	330	-	-	-	-	-
Magnesium	310	220	120	-	-	-	-	-
Manganese	7.2	6.6	12	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<1	1.1	2.4	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	120	180	340	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	0.22	0.39	-	-	-	-	-
Zinc	730	670	270	-	-	-	-	-
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<16	<8	<16	-	-	-	-	-
Trichloroethylene	<16	<8	<16	-	-	-	-	-
Tetrachloroethylene	110	<8	<16	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	230	<8	<16	-	-	-	-	-
Toluene	3,500	36	<16	-	-	-	-	-
Ethyl Benzene	270	89	<16	-	-	-	-	-
Xylenes	1,200	450	<16	-	-	-	-	-
Methylene Chloride	<16	83	<16	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	720	590	530	-	-	-	-	-
Chlorine, wt %	0.12	0.04	0.74	0.17	0.07	0.05	0.16	0.14
Sulfur, wt %	0.43	0.30	0.59	-	0.58	-	<0.06	-
PCBs	<5	<5	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†						
	713(178)	714(179)	715(183)	716(184)	717(185)	718(186)	719(192) 720(194)
Flash Point (°F)	-	>200	-	-	-	134	132
Metals							
Aluminum	26	340	-	-	-	33	12
Arsenic	<5	<5	-	-	-	<5	<5
Barium	6.5	13	-	-	-	30	25
Beryllium	<0.2	<0.2	-	-	-	<0.2	<0.2
Cadmium	<0.5	<0.5	-	-	-	1.5	0.94
Chromium	15	10	-	-	-	21	2.5
Cobalt	3.5	7.0	-	-	-	1.1	0.84
Copper	40	29	-	-	-	120	52
Iron	200	750	-	-	-	1,400	110
Lead	31	49	-	-	-	600	340
Magnesium	45	4.9	-	-	-	180	75
Manganese	2.3	4.4	-	-	-	27	3.8
Molybdenum	-	-	-	-	-	-	-
Nickel	4.5	15	-	-	-	15	1.0
Selenium	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-
Sodium	61	7.0	-	-	-	390	42
Tin	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-
Vanadium	0.46	0.25	-	-	-	1.2	<0.2
Zinc	110	64	-	-	-	1,300	320
Volatile Organics							
Dichlorodifluoromethane	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<12	2,300	-	-	-	210	<10
Trichloroethylene	<12	1,400	-	-	-	<26	<10
Tetrachloroethylene	<12	1,300	-	-	-	<26	<10
Phenol	-	-	-	-	-	-	-
Benzene	<12	89	-	-	-	<26	<10
Toluene	38	940	-	-	-	580	190
Ethyl Benzene	<12	340	-	-	-	590	630
Xylenes	<12	1,100	-	-	-	840	790
Methylene Chloride	<12	<12	-	-	-	<26	<10
PNAs							
Naphthalene	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₀)	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-
Phosphorus	310	290	-	-	-	720	440
Chlorine, wt %	0.16	0.57	0.07	0.19	0.12	0.12	0.09
Sulfur, wt %	0.40	<0.06	-	<0.06	0.15	0.22	0.26
PCBs	<5	24	-	-	-	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	721(195)	722(197)	723(198)	724(200)	725(201)	726(203)	727(206)	728(223)
Flash Point (°F)	>200	>200	140	130	>200	>200	180	>200
Metals								
Aluminum	140	16	65	7.2	58	11	12	20
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	31	33	29	12	23	20	35	27
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	0.66	0.55	1.2	0.72	1.4	1.6	1.2
Chromium	6.5	4.7	5.7	3.3	3.3	5.2	4.1	5
Cobalt	1.2	0.5	1.8	<0.5	0.54	<0.5	<0.5	<0.5
Copper	29	22	42	31	28	30	28	33
Iron	390	170	330	150	130	180	160	170
Lead	210	530	380	710	380	1,500	1,300	930
Magnesium	42	42	62	170	100	320	390	130
Manganese	4.9	6.5	5.3	9.8	6.6	12	11	5.6
Molybdenum	-	-	-	-	-	-	-	-
Nickel	2.1	0.88	2.9	<1	<1	<1	1.3	1.3
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	190	76	240	120	110	140	110	110
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	1.2	<0.2	0.64	<0.2	<0.2	<0.2	1.3	0.2
Zinc	110	310	200	660	330	960	960	660
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	60	7,200	2,000	1,600	140	<13	<13	<10
Trichloroethylene	180	22	2,800	1,100	35	<13	<13	<10
Tetrachloroethylene	52	68	1,900	340	22	<13	190	900
Phenol	-	-	-	-	-	-	-	-
Benzene	<14	63	340	360	<4	<13	170	<10
Toluene	410	450	3,100	2,800	90	<13	800	380
Ethyl Benzene	98	170	1,800	590	12	<13	370	830
Xylenes	640	1,700	2,900	1,600	85	<13	1,200	1,400
Methylene Chloride	<14	<12	<16	1,000	<4	<13	<13	<10
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	340	390	440	640	380	2,100	890	680
Chlorine, wt %	0.37	0.20	0.30	0.15	0.06	0.06	0.07	0.23
Sulfur, wt %	0.30	0.19	0.44	0.48	0.36	0.47	0.58	0.49
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**†						
	729(224)	730(225)	731(232)	732(244)	733(251)	734(252)	735(253) 736(254)
Flash Point (°F)	> 200	> 200	126	> 200	128	-	- > 200
Metals							
Aluminum	2.5	13	12	8.7	15	-	- 480
Arsenic	<5	<5	<5	<5	<5	-	- 6.0
Barium	6.3	28	110	10	27	-	- 42
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	-	- <0.2
Cadmium	<0.5	0.95	0.98	0.6	1.6	-	- <0.5
Chromium	0.64	2.3	4.2	1.7	5.4	-	- 1.3
Cobalt	<0.5	<0.5	0.61	<0.5	1.1	-	- 0.54
Copper	7.4	55	31	22	63	-	- 12
Iron	32	130	190	150	200	-	- 240
Lead	170	700	1,900	440	840	-	- 52
Magnesium	21	36	260	76	220	-	- 29
Manganese	1.3	3.7	11	4.2	12	-	- 3.9
Molybdenum	-	-	-	-	-	-	-
Nickel	<1	1.1	<1	<1	1.6	-	- 1.2
Selenium	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-
Sodium	32	26	100	49	100	-	- 360
Tin	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-
Vanadium	<0.2	0.57	<0.2	<0.2	<0.2	-	- 0.3
Zinc	280	440	820	340	760	-	- 190
Volatile Organics							
Dichlorodifluoromethane	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<12	<13	<17	<8	<8	-	<7 <16
Trichloroethylene	<12	200	<17	<8	<8	-	<7 <16
Tetrachloroethylene	<12	240	<17	<8	<8	-	<7 <16
Phenol	-	-	-	-	-	-	-
Benzene	<12	76	1,100	<8	<8	-	<7 <16
Toluene	<12	4,500	1,600	120	<8	-	<7 <16
Ethyl Benzene	<12	340	260	86	<8	-	<7 <16
Xylenes	<12	850	2,200	440	120	-	<7 <16
Methylene Chloride	<12	9,500	<17	<8	<8	-	<7 <16
PNAs							
Naphthalene	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-
Phosphorus	320	1,500	790	330	690	-	- 730
Chlorine, wt %	0.02	0.14	0.08	0.07	0.10	<0.01	<0.01 2.34
Sulfur, wt %	0.54	0.59	0.45	0.37	0.51	-	- 0.75
PCBs	<5	<5	<5	<5	<5	-	- <5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	737(270)	738	739	740	741	742	743	744
Flash Point (°F)	> 147	> 147	> 147	-	> 147	> 147	> 147	> 147
Metals								
Aluminum	2.8	-	-	-	-	-	-	-
Arsenic	<5	28	19	10	28	28	18	<5
Barium	26	72	92	23	55	58	44	7
Beryllium	<0.2	-	-	-	-	-	-	-
Cadmium	0.56	<8	<8	<8	<8	8	<8	<8
Chromium	0.67	<5	<5	<5	<5	<5	<5	<5
Cobalt	<0.5	-	-	-	-	-	-	-
Copper	24	77	65	30	68	75	82	17
Iron	57	145	106	49	138	138	115	90
Lead	130	935	665	<6	1,050	1,061	559	17
Magnesium	12	-	-	-	-	-	-	-
Manganese	1.7	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<1	<5	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	5.8	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	<5	<5	<5	<5	<5	<5	15
Zinc	400	918	920	287	867	877	694	51
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	8,400	<100	<100	-	<100	<100	100	<100
Trichloroethylene	18	<100	<100	-	<100	<100	<100	<100
Tetrachloroethylene	110	<100	<100	-	<100	<100	<100	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	100	-	-	-	-	-	-	-
Toluene	310	-	-	-	-	-	-	-
Ethyl Benzene	100	-	-	-	-	-	-	-
Xylenes	700	-	-	-	-	-	-	-
Methylene Chloride	570	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	500	-	-	-	-	-	-	-
Chlorine, wt %	0.75	0.07	0.05	0.11	0.09	0.10	0.06	0.05
Sulfur, wt %	0.73	-	-	-	-	-	-	-
PCBs	<5	<10	<10	-	<10	<10	<10	<1

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	745	746	747	748	749	750	751	752
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	7	<5	23	38	6	11	18
Barium	<5	162	39	76	67	10	228	52
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<8	<8	<8	<8	<8	<8	<8	<8
Chromium	<5	7	<5	<5	<5	<5	324	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	29	85	6,230	48	96	15	73	41
Iron	153	1,340	470	106	202	69	1,130	129
Lead	<6	563	<6	1,010	1,460	209	2,210	761
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<5	<5	<5	<5	<5	<5	12	6
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	<5	34	14
Zinc	15	989	1,850	716	788	95	385	477
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	<100	-	500	<100	600	200	300
Trichloroethylene	-	<100	-	<100	<100	<100	<100	<100
Tetrachloroethylene	-	<100	-	<100	<100	<100	<100	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	<0.01	0.09	0.12	0.14	0.05	0.17	0.14	0.13
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	<10	-	<10	<20	<2	<10	<2

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	753	754	755	756	757	758	759	760
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	20	<5	<5	<5	8	15	19	12
Barium	52	<5	14	37	755	126	95	35
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<8	<8	<8	<8	57	<8	<8	<8
Chromium	<5	<5	<5	<5	459	108	<5	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	55	<5	18	50	630	54	48	27
Iron	151	<5	124	929	9,580	888	161	25
Lead	939	<5	<6	466	273	1,110	1,460	<6
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	<5	<5	<5	<5	111	10	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	10	<5	<5	<5	69	35	<5	<5
Zinc	648	<5	<5	652	383	387	876	198
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	300	<100	-	100	<100	100	<100	-
Trichloroethylene	<100	<100	-	<100	<100	<100	<100	-
Tetrachloroethylene	<100	<100	-	<100	<100	<100	<100	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.17	<0.01	0.20	0.23	0.13	0.15	0.08	0.04
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<2	<1	-	<2	<2	<10	<10	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	761	762	763	764	765	766	767	768
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	8	19	12	40	37	<5	<5	<5
Barium	51	49	94	108	56	129	92	<5
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<8	<8	<8	<8	<8	<8	<8	<8
Chromium	<5	<5	10	<5	<5	12	5	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	41	31	45	53	45	35	25	<5
Iron	186	97	415	179	176	1,010	1,840	<5
Lead	792	588	714	1,510	1,530	8	<6	<6
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	6	<5	11	<5	<5	17	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	18	8	46	<5	<5	136	56	<5
Zinc	531	414	555	1,020	901	16	21	<5
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	<100	<100	<100	300	<100	-	<100
Trichloroethylene	<100	<100	<100	<100	<100	<100	-	<100
Tetrachloroethylene	300	<100	<100	100	100	<100	-	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.16	0.06	0.10	0.11	0.10	0.72	0.28	<0.01
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<10	<10	<10	<10	<10	-	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**†							
	769	770	771	772(333)	773(348)	774(354)	775(356)	776(1)
Flash Point (°F)	>147	>147	>147	-	>200	-	-	>200
Metals								
Aluminum	-	-	-	<1	3.0	6.6	2.3	16
Arsenic	65	65	5	<5	<5	<5	<5	<5
Barium	91	38	207	5.2	4.1	1.9	0.78	4.3
Beryllium	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<8	<8	<8	0.92	<0.5	<0.5	<0.5	<0.5
Chromium	19	<5	30	<0.5	0.86	16	3.8	1.2
Cobalt	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	52	31	57	39	14	1.7	29	3.3
Iron	7,890	233	2,940	19	24	120	23	89
Lead	185	498	440	10	<5	<5	13	<5
Magnesium	-	-	-	<0.5	7.4	4.0	4.0	9.2
Manganese	-	-	-	<0.2	0.52	1.2	0.85	3.7
Molybdenum	-	-	-	-	-	-	-	-
Nickel	18	9	21	<1	<1	<1	<1	2.1
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	6.8	72	3.6	130	16
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	78	20	97	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	161	368	278	400	4.9	6.2	4.4	69
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	200	200	530	<11	<16	<2	310
Trichloroethylene	<100	<100	<100	<15	<11	<16	<2	<4
Tetrachloroethylene	<100	<100	<100	<15	<11	<16	<2	2.5
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	<15	<11	38	<2	<4
Toluene	-	-	-	160	<11	230	<2	12
Ethyl Benzene	-	-	-	61	<11	150	<2	<4
Xylenes	-	-	-	190	<11	1,100	<2	<4
Methylene Chloride	-	-	-	<15	<11	<16	<2	<4
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	500	24	21	4.9	69
Chlorine, wt %	0.51	0.09	0.14	0.11	0.13	<0.01	0.03	0.13
Sulfur, wt %	-	-	-	-	0.33	0.29	0.44	0.27
PCBs	<10	2	<10	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number* †							
	777 (2)	778 (3)	779 (4)	780 (5)	781 (6)	782 (10)	783 (51)	784 (52)
Flash Point (°F)	>200	>200	>200	>200	>200	>75	>200	>200
Metals								
Aluminum	68	260	340	19	3.6	100	4.9	1.0
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	2.4	3.2	1.9	4.6	76	51	240	56
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.6	<0.5
Chromium	3.4	690	560	5.2	0.8	18	1.5	<0.5
Cobalt	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	6.9
Copper	2.5	55	52	2.2	21	5.6	0.96	4.0
Iron	560	820	470	310	89	490	38	13
Lead	6.0	9.8	6.0	12	110	56	<5	<5
Magnesium	4.2	18	20	48	1.9	96	9.1	0.72
Manganese	2.2	4.7	3.4	8.6	1.2	4.4	0.49	0.21
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.1	5.8	1.8	23	<1	7.3	3.6	<1
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	2.8	11	6.6	13	1.2	15	270	280
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	<0.2	0.26	<0.2	<0.2	18	<0.2	<0.2
Zinc	24	62	55	130	31	68	17	16
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<4	250	17	39	<2	<7	<6	<3
Trichloroethylene	<4	59	<4	<4	<2	8.2	<6	<3
Tetrachloroethylene	<4	1,100	5.7	<4	<2	<7	<6	<3
Phenol	-	-	-	-	-	-	-	-
Benzene	<4	<4	94	<4	<2	<7	<6	<3
Toluene	<4	19	<4	19	7.3	<7	16	9
Ethyl Benzene	<4	<4	<4	<4	19	250	<6	<3
Xylenes	<4	39	<4	59	<2	1,200	<6	<3
Methylene Chloride	<4	<4	<4	<4	<2	<7	<6	<3
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	120	290	300	270	140	130	6,700	2,700
Chlorine, wt %	0.10	0.10	0.21	0.35	0.22	0.05	0.04	0.44
Sulfur, wt %	0.41	0.84	0.81	0.51	0.44	1.30	0.20	1.02
PCBs	<5	<5	<5	<5	<5	<11	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number* †							
	785 (62)	786 (63)	787 (64)	788 (65)	789 (66)	790 (67)	791 (92)	792 (93)
Flash Point (°F)	>200	84	164	140	>200	158	>200	>200
Metals								
Aluminum	36	9.5	14	5.1	14	15	<1	13
Arsenic	<5	7.6	<5	<5	<5	<5	<5	<5
Barium	29	26	20	6.6	32	58	<0.5	4.2
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	1.1	1.1	1.3	0.93	1.4	1.6	<0.5	<0.5
Chromium	9.1	2.7	4.3	<0.5	5.2	4.6	<0.5	<0.5
Cobalt	<0.5	1.1	<0.5	34	<0.5	<0.5	<0.5	<0.5
Copper	33	30	36	2.9	35	72	5.0	<0.5
Iron	280	120	180	87	240	240	3.2	41
Lead	1,200	490	980	110	770	1,100	<5	<5
Magnesium	180	94	330	180	390	300	<0.5	1.0
Manganese	11	6.2	7.4	1.3	10	9.0	<0.2	1.1
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.0	1.1	<1	<1	1.8	1.5	<1.0	<1
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	81	110	100	210	150	110	<1.0	1.2
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	0.21	<0.2	<0.2	0.35	<0.2	<0.2	0.51
Zinc	930	410	910	640	1,000	910	6.7	22
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<4	290	190	37	160	360	<2	<5
Trichloroethylene	7	46	80	20	95	110	<2	<5
Tetrachloroethylene	<4	320	67	13	20	46	<2	<5
Phenol	-	-	-	-	-	-	-	-
Benzene	<4	<5	230	-	24	360	<2	<5
Toluene	270	1,900	1,300	1,700	1,000	1,400	<2	<5
Ethyl Benzene	<4	300	580	260	110	450	<2	<5
Xylenes	150	430	530	410	270	550	<2	<5
Methylene Chloride	<4	1,200	11	18	<5	67	<2	<5
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	920	540	820	620	920	800	180	31
Chlorine, wt %	0.07	0.11	0.09	0.05	0.21	0.09	0.02	0.01
Sulfur, wt %	0.54	0.80	0.56	0.49	0.62	0.51	0.25	0.81
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number††							
	793 (94)	794(122)	795(297)	796(320)	797(326)	798(327)	799(328)	800(329)
Flash Point (°F)	<80	>200	112	>200	>200	>200	>200	>200
Metals								
Aluminum	25	14	14	1.3	5.2	2.3	4.4	13
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	18	770	130	<0.5	13	2.4	14	45
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.52	1.9	1.0	<0.5	0.88	<0.5	1.7	1.6
Chromium	2.8	6.4	7.4	<0.5	1.7	<0.5	4.6	3.1
Cobalt	2.4	1.7	0.59	<0.5	<0.5	<0.5	<0.5	1.4
Copper	38	25	153	5.4	28	1.2	16	89
Iron	96	250	680	21	130	72	85	150
Lead	180	1,900	810	5.6	390	8.5	460	790
Magnesium	9.9	380	100	4.8	110	6.4	110	160
Manganese	2.0	10	16	0.22	5.2	0.65	3.1	5.2
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.0	1.5	2.7	1.1	1.8	10	2.9	1.2
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	5.2	42	91	12	150	19	120	400
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<0.2	<0.2	0.36	0.53	3.7	46	8.7	0.45
Zinc	130	1,000	500	18	790	6.0	390	380
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	12,000	<7	<6	<15	<16	<15	93	60
Trichloroethylene	6,100	<7	<6	<15	<16	<15	<10	<8
Tetrachloroethylene	21,000	<7	72	<15	<16	<15	83	35
Phenol	-	-	-	-	-	-	-	-
Benzene	<330	190	80	38	<16	60	100	100
Toluene	12,000	940	370	290	140	100	1,200	890
Ethyl Benzene	1,600	440	130	<15	<16	73	160	150
Xylenes	3,200	960	600	1,100	320	520	340	950
Methylene Chloride	5,100	<7	<6	<15	<16	<15	140	890
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C₉H₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C₁₂H₁₂)	-	-	-	-	-	-	-	-
Phosphorus	510	1,100	660	100	850	26	420	510
Chlorine, wt %	0.14	0.08	0.37	<0.01	0.06	0.27	0.20	0.07
Sulfur, wt %	0.19	0.48	0.44	0.18	0.54	0.72	0.49	0.38
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**							
	801(335)	802(337)	803(338)	804(339)	805(340)	806(341)	807(342)	808(343)
Flash Point (°F)	190	194	140	>200	170	86	164	<75
Metals								
Aluminum	5.7	2.2	10	5.5	9.5	7.3	11	7.4
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	48	<0.5	35	11	25	17	25	62
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.95	<0.5	1.2	0.74	0.95	<0.5	0.89	0.84
Chromium	1.6	<0.5	5.1	2.0	2.7	1.2	2.7	2.1
Cobalt	<0.5	0.53	1.6	0.51	<0.5	<0.5	<0.5	<0.5
Copper	59	<0.5	40	32	46	21	46	39
Iron	160	7.9	220	81	120	170	120	120
Lead	1,100	<5	660	840	870	360	850	940
Magnesium	77	23	89	460	170	24	170	140
Manganese	5	<0.2	3.5	5.2	5.5	1.9	5.2	5.4
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.3	46	1.8	1.1	1.9	2.6	1.1	1.5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	55	10	92	110	130	230	99	88
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	2.7	190	4.6	0.67	0.44	8.8	0.29	3.8
Zinc	860	30	400	1,000	720	310	680	660
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<8	<4	43	<4	740	240	<16	1,900
Trichloroethylene	<8	<4	46	<4	<14	190	<16	140
Tetrachloroethylene	<8	<4	140	<4	60	<14	<16	1,000
Phenol	-	-	-	-	-	-	-	-
Benzene	<8	63	200	<4	290	1,900	<16	2,500
Toluene	120	190	5,800	63	1,900	7,400	<16	9,900
Ethyl Benzene	88	<4	520	45	330	1,500	<16	760
Xylenes	590	390	2,100	200	1,600	6,700	160	3,200
Methylene Chloride	<8	<4	<16	<4	<14	100	<16	100
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	780	29	590	930	720	370	640	610
Chlorine, wt %	0.08	0.10	0.08	0.04	0.09	1.23	0.13	0.12
Sulfur, wt %	0.46	2.44	0.71	0.47	0.46	0.51	0.83	0.26
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	809 (344)	810(345)	811(359)	812(360)	813(89)	814(90)	815(91)	816(95)
Flash Point (°F)	94	<80	>200	>200	>200	>200	>200	136
Metals								
Aluminum	7.9	7.4	17	2.3	17	22	6.4	11
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	48	52	8.4	380	22	33	280	32
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.87	0.79	<0.5	1.5	1.0	1.4	<0.5	0.64
Chromium	2.2	2.0	3.7	0.94	5.2	5.3	<0.5	3.7
Cobalt	<0.5	<0.5	<0.5	0.68	<0.5	<0.5	<0.5	<0.5
Copper	36	35	6.1	5.3	75	28	100	26
Iron	110	100	100	18	210	250	9.0	120
Lead	950	850	9.4	<5	1,200	470	<5	490
Magnesium	130	150	9.8	10	220	390	510	86
Manganese	5.6	5.3	0.52	0.4	6.7	9.6	0.38	3.5
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.4	1.2	1.5	<1	<1	1.3	<1	1.7
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	130	140	3,800	300	98	170	24	460
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	2.8	2.9	<0.2	<0.2	<0.2	0.6	<0.2	2.4
Zinc	630	590	17	13	750	890	910	280
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1,600	870	<4	1,200	300	140	<4	310
Trichloroethylene	240	480	<4	<1	<4	54	<4	110
Tetrachloroethylene	530	870	<4	1,600	20	7.8	<4	430
Phenol	-	-	-	-	-	-	-	-
Benzene	640	320	<4	1	180	30	<4	150
Toluene	9,200	11,000	<4	2	770	200	<4	1,100
Ethyl Benzene	440	1,100	<4	3	260	120	<4	520
Xylenes	1,900	2,200	<4	<1	350	157	<4	540
Methylene Chloride	390	<15	<4	<1	<4	<4	<4	<10
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	570	540	310	6,700	1,100	880	600	490
Chlorine, wt %	0.13	0.16	0.09	0.03	0.52	0.40	<0.01	0.18
Sulfur, wt %	0.27	0.39	0.45	0.59	0.09	0.53	0.41	0.53
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†							
	817(96)	818(98)	819(99)	820(101)	821(102)	822(103)	823(214)	824(216)
Flash Point (°F)	200	134	>200	>200	96	>200	146	116
Metals								
Aluminum	14	4.2	16	5.0	44	16	7.0	3.4
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	32	51	33	120	19	35	21	3.0
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.79	<0.5	1.0	5.8	<0.5	1.2	0.68	<0.5
Chromium	7.2	2.6	5.6	1.9	3.6	3.8	9.6	1.9
Cobalt	0.58	<0.5	<0.5	<0.5	<0.5	<0.5	10	1.2
Copper	24	10	28	33	21	47	35	6.8
Iron	180	36	140	52	190	160	140	52
Lead	610	230	740	83	190	920	99	9.8
Magnesium	200	20	140	66	7.8	260	12	5.9
Manganese	7.9	1.1	6.8	1.5	1.3	11	5.3	1.3
Molybdenum	-	-	-	-	-	-	-	-
Nickel	1.6	1.8	1.3	<1.0	1.1	<1	2.0	15
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	130	170	26	16	3.5	110	5.5	23
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	2.0	0.23	0.88	<0.2	<0.2	<0.2	0.35	23
Zinc	660	59	720	670	120	930	160	80
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	18	5,600	630	3,500	12,000	<17	9,100	13,000
Trichloroethylene	29	200	150	30	40	<17	11,000	37,000
Tetrachloroethylene	100	3,500	330	380	270	27	5,100	9,300
Phenol	-	-	-	-	-	-	-	-
Benzene	-	230	-	19	59	62	<14	<17
Toluene	200	3,000	36	230	860	270	780	9,100
Ethyl Benzene	170	720	300	270	290	96	270	10,000
Xylenes	320	1,200	460	520	630	730	1,100	12,000
Methylene Chloride	<8	120	<17	<15	170	<19	2,800	1,200
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	800	300	1,000	470	300	830	410	62
Chlorine, wt %	0.05	0.35	0.18	0.17	0.21	<0.01	1.89	2.58
Sulfur, wt %	0.66	0.36	0.66	0.40	0.44	0.47	0.50	0.72
PCBs	<5	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.
† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number††							
	825(217)	826(226)	827(227)	828(234)	829(235)	830(236)	831(237)	832(238)
Flash Point (°F)	116	>200	-	<85	>200	>200	-	154
Metals								
Aluminum	2.7	2.2	1.9	31	5.5	19	31	1
Arsenic	<5	<5	<5	6.6	<5	<5	<5	<5
Barium	19	95	93	0.86	0.76	35	<0.5	94
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	<0.5	<0.5	2.8	0.51	<0.5	5.9	<0.5
Chromium	7.7	<0.5	<0.5	52	<0.5	<0.5	23	<0.5
Cobalt	5.7	<0.5	<0.5	9.3	<0.5	<0.5	16	<0.5
Copper	9.6	<0.5	<0.5	69	610	8.5	68	9.8
Iron	120	45	42	72	33	4.5	100	5.8
Lead	46	6.1	11	51	2,000	87	55	19
Magnesium	16	4.4	4.0	1.2	<0.5	9.2	1.3	30
Manganese	4.8	1.5	1.5	4.0	<0.2	1.5	3.5	2.5
Molybdenum	-	-	-	-	-	-	-	-
Nickel	4.0	<1	<1	3.3	<1	<1	2.1	<1
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	53	11	8.8	5.0	<1	2.6	7.2	3.0
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	0.45	0.56	0.61	0.26	<0.2	<0.2	<0.2	<0.2
Zinc	120	6.6	7.9	520	88	39	580	220
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	3,100	<16	<14	12,000	<10	<2	4,700	<15
Trichloroethylene	24,000	<16	<14	3,100	<10	4.1	<200	<15
Tetrachloroethylene	20,000	2,400	1,300	1,200	<10	2.2	2,900	<15
Phenol	-	-	-	-	-	-	-	-
Benzene	<15	<16	<14	<11	<10	<2	<200	<15
Toluene	5,900	5,700	1,800	55,000	<10	8.1	55,000	<15
Ethyl Benzene	7,000	1,400	<14	31,000	<10	3.6	29,000	300
Xylenes	8,000	590	660	57,000	70	8.6	74,000	1,100
Methylene Chloride	1,700	51	<14	9,300	<10	<2	41,000	<15
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	390	88	78	46	61	68	72	400
Chlorine, wt %	1.81	0.40	-	1.10	0.40	0.32	0.61	7.17
Sulfur, wt %	0.46	0.06	-	0.08	0.70	0.49	0.06	0.56
PCBs	<5	3,800	1,900	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (CONTINUED)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**						
	833(240)	834(275)	835(276)	836(278)	837(279)	838(331)	839(332)
Flash Point (*F)	150	-	>200	>200	-	-	-
Metals							
Aluminum	<1	590	770	760	910	16	410
Arsenic	<5	<5	<5	<5	<5	<5	<5
Barium	90	7.8	14	14	24	120	5.0
Beryllium	<0.2	<0.21	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	0.56	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Chromium	<0.5	2.2	1.5	1.5	2.1	10	2.0
Cobalt	<0.5	0.68	<0.5	<0.5	<0.5	0.8	<0.5
Copper	9.8	1.4	4.0	3.6	6.0	20	2.0
Iron	6.7	130	270	220	170	110	240
Lead	16	44	330	290	220	59	7.3
Magnesium	25	1.6	2.3	1.3	3.6	16	6.2
Manganese	2.5	0.42	0.4	<0.2	0.53	2.0	3.0
Molybdenum	-	-	-	-	-	-	-
Nickel	<1	<1	<1	<1	<1	40	1.1
Selenium	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-
Sodium	2.3	5.7	2.4	1.7	3.3	5.9	3.2
Tin	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-
Vanadium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	200	3.7	2.3	1.9	6.0	120	30
Volatile Organics							
Dichlorodifluoromethane	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<14	<16	<15	<16	<4	<16	<16
Trichloroethylene	<14	<16	<15	<16	<4	<16	<16
Tetrachloroethylene	<14	<16	<15	<16	<4	<16	<16
Phenol	-	-	-	-	-	-	-
Benzene	<14	<16	<15	<16	<4	<16	<16
Toluene	<14	<16	<15	<16	<4	<16	<16
Ethyl Benzene	<14	<16	<15	<16	<4	<16	<16
Xylenes	540	<16	<15	<16	37	<16	<16
Methylene Chloride	<14	<16	<15	<16	<4	<16	<16
PNAs							
Naphthalene	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-
Phosphorus	350	280	220	110	91	280	240
Chlorine, wt %	8.67	0.07	<0.01	<0.01	<0.01	0.06	0.15
Sulfur, wt %	0.60	0.49	0.39	0.45	0.06	-	-
PCBs	<5	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	840	841	842	843	844	845	846	847
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	82	96.2	88	81.3	88.3	89.5	79.4	85
Beryllium	-	-	-	-	-	-	-	-
Cadmium	2.7	3	5	4.7	4.8	2	4.2	2.7
Chromium	9.8	12	16.3	8	14.5	16.8	12.8	6.3
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	93.8	257.3	118.3	86	129.7	21.8	183.6	87.5
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	1,125	965	900	1,100	1,133	1,020	1,166	923
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	848	849	850	851	852	853	854	855
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	86.3	87	77.5	91.5	75.0	103.1	102.3	76.5
Beryllium	-	-	-	-	-	-	-	-
Cadmium	6.5	4.0	0.3	0.9	2.0	0.7	1.3	0.5
Chromium	12.8	11.0	5.8	9.5	11.5	8.1	7.7	5.0
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	161.3	77.8	120	85.1	115	95.8	53	69.0
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	950	1,160	1,758	906.3	1,050	951.4	936.7	1,125
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	856	857	858	859	860	861	862	863
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	94.8	82.8	83.5	80.6	95.6	90.0	65.0	74.8
Beryllium	-	-	-	-	-	-	-	-
Cadmium	1.1	0.2	1.3	0.2	0.7	1.7	3.0	2.4
Chromium	7.7	5.8	10.0	5.8	6.0	7.7	10.0	7.9
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	91.3	51.0	82.0	87.3	103.3	84.3	90.0	309.3
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	1,251	1,522	917.5	1,541	1,157	842	1,050	1,177
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	864	865	866	867	868	869	870	871
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	82.5	68.4	84.3	76.1	94.3	85.1	69.8	76.0
Beryllium	-	-	-	-	-	-	-	-
Cadmium	1.1	0.6	0.5	2.0	1.4	1.4	1.3	-
Chromium	8.7	12.0	5.0	8.0	6.0	10.4	15.3	5.8
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	102.5	1,323.3	70.2	56.3	77.4	78.9	133.4	97.6
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	915	1,291	872	1,082.8	901	1,600	1,644	916
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	872	873	874	875	876	877	878	879
Flash Point (°F)	-	-	-	-	-	-	-	-
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	79.0	77.9	70.0	87.3	70.0	67.7	68.0	30.7
Beryllium	-	-	-	-	-	-	-	-
Cadmium	0.3	1.0	0.6	0.3	0.7	0.3	0.9	1.0
Chromium	25.3	18.6	32.6	31.0	25.0	26.7	21.3	19.3
Cobalt	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-
Lead	12,242	18,063	18,500	12,400	20,333	17.8	16,637	17,037
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-
Zinc	915	980	1,214	1,077	1,050	1,067	1,169	1,112.5
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-	-	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	-	-	-	-	-	-	-	-
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	880	881	882	883	884	885	886	887
Flash Point (°F)	>147	142	>147	>147	>147	133	142	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	9	<5	<5	18	13	<5	22
Barium	<7	<7	10	18	31	19	90	10
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	9	<5	<5
Chromium	<5	6	14	<5	9	9	52	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	<5	18	43	28	38	38	69	30
Iron	11	113	48	60	184	148	783	107
Lead	6	202	16	89	1,000	507	725	1,240
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<5	<5	<6	<6	19	<6
Nickel	<5	<5	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	<5	19	<5
Zinc	254	197	168	331	952	380	597	300
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	2,300	9,200	600	36,000	4,700	10,000	2,700	6,000
Trichloroethylene	<100	<100	<100	<100	<100	4,200	1,900	1,400
Tetrachloroethylene	<100	<100	<100	<100	300	3,000	1,900	11,000
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.19	0.99	0.08	3.23	0.36	1.95	0.32	3.26
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	10	<10	<1	<10	<10	<50	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	888	889	890	891	892	893	894	895
Flash Point (°F)	108	147	-	147	147	147	147	147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	18	<5	<5	<5	<5	<5	<5	26
Barium	17	99	39	<9	284	42	91	40
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<5	9	<5	<5	<5	<5	<5	<10
Chromium	<5	126	31	<5	37	<5	7	8
Cobalt	-	-	-	-	-	-	-	-
Copper	60	89	16	<5	103	6	6	53
Iron	102	671	337	5	613	87	2,570	173
Lead	1,200	915	28	<5	141	5	57	815
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<6	8	<6	<6	<6	<6	<6	5
Nickel	<5	<5	<5	<5	<5	<5	15	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	7	<5	<5	6	<5	22	<5
Zinc	366	214	50	<5	148	8	224	962
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5,200	30,000	-	<100	900	-	200	<100
Trichloroethylene	5,700	800	-	<100	<100	-	-	<100
Tetrachloroethylene	24,000	4,500	-	<100	<100	-	-	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	4.72	1.22	0.35	<0.01	0.34	0.26	0.29	0.04
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<50	-	<1	<50	-	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*	
	896	897
Flash Point (°F)	>147	>147
Metals		
Aluminum	-	-
Arsenic	19	9
Barium	30	40
Beryllium	-	-
Cadmium	<10	<10
Chromium	25	118
Cobalt	-	-
Copper	34	63
Iron	166	282
Lead	636	725
Magnesium	-	-
Manganese	-	-
Molybdenum	<5	6
Nickel	<5	<5
Selenium	-	-
Silicon	-	-
Silver	-	-
Sodium	-	-
Tin	-	-
Titanium	-	-
Vanadium	<5	<5
Zinc	923	569
Volatile Organics		
Dichlorodifluoromethane	-	-
Trichlorofluoromethane	-	-
Trichlorotrifluoroethane	-	-
1,1,1-Trichloroethane	200	<100
Trichloroethylene	<100	<100
Tetrachloroethylene	600	20,000
Phenol	-	-
Benzene	-	-
Toluene	-	-
Ethyl Benzene	-	-
Xylenes	-	-
Methylene Chloride	-	-
PNAs		
Naphthalene	-	-
Benanthrene/Anthracene	-	-
Pyrene	-	-
Benzo(a)anthracene	-	-
Benzo(a)pyrene	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-
Phosphorus	-	-
Chlorine, wt %	0.11	3.69
Sulfur, wt %	-	-
PCBs	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	898	899	900	901	902	903	904	905
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	<7	31	82	11	<7	10	29	<7
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	9	<5	13	<5	<5	11	10	7
Cobalt	-	-	-	-	-	-	-	-
Copper	44	<5	37	21	6	30	34	46
Iron	270	156	221	232	33	316	306	73
Lead	39	11	72	20	11	41	30	<5
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	15	<5	<5	<5	6	7	<5
Nickel	27	16	11	7	<5	33	26	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	86	36	566	54	<5	76	183	<5
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	<100	1,600	<100	200	2,400	1,600	900
Trichloroethylene	<100	<100	200	600	<100	200	200	<100
Tetrachloroethylene	<100	<100	3,800	600	<100	1,300	7,700	200
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Peranthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	1.34	0.05	1.38	0.72	1.20	1.14	1.40	0.61
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	<10	<50	<50	<50	<50	<50	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
Flash Point (°F)	906 ≥147	907 ≥147	908 ≥147	909 ≥147	910 ≥147	911 ≥147	912 ≥147	913 ≥147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	18	55	10	38	41	33	1,100	116
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	27	<7
Chromium	16	91	12	8	62	181	440	209
Cobalt	-	-	-	-	-	-	-	-
Copper	6	71	25	16	55	201	1,140	76
Iron	482	1,100	392	212	321	28	12,300	3,250
Lead	13	18	40	39	<5	<5	893	57
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	12	315	7	<5	58	31	987	45
Nickel	21	47	23	8	15	13	1,840	100
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	<5	450	19
Zinc	47	106	116	249	34	86	8,610	1,600
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	200	-	5,100	1,500	<100	<100	-	500
Trichloroethylene	400	-	100	400	<100	<100	-	200
Tetrachloroethylene	1,000	-	400	6,900	<100	<100	-	2,100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.64	0.29	1.07	1.53	0.09	0.10	0.20	0.65
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	-	<50	<50	<10	<10	-	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	914	915	916	917	918	919	920	921
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	9	<5	<5	<5	<5	5
Barium	547	205	552	70	458	61	12	22
Beryllium	-	-	-	-	-	-	-	-
Cadmium	18	<7	8	<7	<7	<7	<7	<5
Chromium	363	253	571	31	125	24	42	10
Cobalt	-	-	-	-	-	-	-	-
Copper	237	149	1,160	11	66	<5	8	22
Iron	15,000	1,020	4,930	152	3,150	307	26	549
Lead	1,180	33	317	30	64	19	<5	118
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	1,490	96	387	<5	30	<5	18	<6
Nickel	721	96	528	7	322	7	<5	6
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	117	36	113	<5	384	<5	<5	<5
Zinc	8,120	588	3,550	152	650	122	13	392
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	300	-	1,000	<100	<100	-	1,000
Trichloroethylene	-	200	-	800	<100	1,000	-	200
Tetrachloroethylene	-	1,000	-	300	<100	1,000	-	3,000
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Napthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.46	0.15	0.20	0.43	0.15	1.01	0.13	0.45
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	-	<10	-	<10	<10	<50	-	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	922	923	924	925	926	927	928	929
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	21	<5	<5	<5	<5	<5	<2	4
Barium	29	13	28	292	76	79	32	26
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<5	<5	<5	33	7	<5	<5	<5
Chromium	8	7	11	511	84	107	28	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	20	42	26	100	34	363	29	<5
Iron	170	110	597	3,260	1,080	1,150	502	690
Lead	502	11	104	114	10	163	<5	86
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<6	<6	<6	12	<6	7	<6	<6
Nickel	<5	<5	9	48	17	10	<5	47
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	164	41	28	10	<5
Zinc	593	50	333	188	51	203	34	368
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	200	<100	800	<100	-	<100	<100	<100
Trichloroethylene	800	<100	400	<100	-	200	<100	<100
Tetrachloroethylene	200	<100	300	<100	-	<100	300	200
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.26	0.54	0.32	0.08	0.03	0.15	0.08	0.19
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<5	<10	<1	-	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	930	931	932	933	934	935	936	937
Flash Point (°F)	97	>147	61	>147	97	>147	68	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	6	<2	4	<2	6	<5	<5	<5
Barium	30	75	9	26	31	91	379	251
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<5	7	<5	<5	<5	<5	9	<5
Chromium	124	<5	<5	<5	50	25	106	6
Cobalt	-	-	-	-	-	-	-	-
Copper	264	9	16	8	86	57	105	58
Iron	1,100	425	572	176	1,030	416	8,330	728
Lead	240	10	115	<5	350	21	404	35
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<6	<6	<6	<6	<6	<6	19	<6
Nickel	19	<5	10	<5	5	<5	51	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	27	<5	6	7	74	373	7
Zinc	233	39	136	47	172	60	518	220
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	-	300	<100	4,400	600	<100	4,400
Trichloroethylene	<100	-	<100	<100	2,200	500	<100	<100
Tetrachloroethylene	200	-	1,500	<100	4,800	800	900	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.22	0.05	0.35	0.02	1.32	0.21	-	0.65
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	-	<10	<1	<50	<10	<10	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	938	939	940	941	942	943	944	945
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	<5	<5	<5
Barium	622	718	66	200	168	74	159	212
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<5	<5	<5	<5	<5	<5	<5	<5
Chromium	42	12	<5	8	10	<5	12	15
Cobalt	-	-	-	-	-	-	-	-
Copper	167	52	17	75	6	17	159	124
Iron	1,220	1,030	96	252	201	114	374	434
Lead	52	26	<5	24	10	<5	32	25
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<6	<6	<6	<6	<6	<6	<6	<6
Nickel	<5	<5	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	27	14	<5	<5	<5	<5	11	<5
Zinc	252	235	17	99	52	9	187	170
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5,400	300	-	1,400	5,500	-	<100	3,800
Trichloroethylene	<100	<100	-	<100	200	-	<100	<100
Tetrachloroethylene	<100	<100	-	<100	<100	-	<100	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.50	0.10	0.17	0.50	1.05	0.19	0.04	0.81
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	<20	-	<50	<50	-	<5	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	<u>Sample Number*</u>	
	<u>946</u>	<u>947</u>
Flash Point (°F)	-	>147
Metals		
Aluminum	-	-
Arsenic	<5	<5
Barium	524	171
Beryllium	-	-
Cadmium	<5	<5
Chromium	36	11
Cobalt	-	-
Copper	210	84
Iron	2,990	338
Lead	44	26
Magnesium	-	-
Manganese	-	-
Molybdenum	<6	<6
Nickel	<5	<5
Selenium	-	-
Silicon	-	-
Silver	-	-
Sodium	-	-
Tin	-	-
Titanium	-	-
Vanadium	19	<5
Zinc	484	147
Volatile Organics		
Dichlorodifluoromethane	-	-
Trichlorofluoromethane	-	-
Trichlorotrifluoroethane	-	-
1,1,1-Trichloroethane	-	1,200
Trichloroethylene	-	<100
Tetrachloroethylene	-	<100
Phenol	-	-
Benzene	-	-
Toluene	-	-
Ethyl Benzene	-	-
Xylenes	-	-
Methylene Chloride	-	-
PNAs		
Naphthalene	-	-
Peranthrene/Anthracene	-	-
Pyrene	-	-
Benzo(a)anthracene	-	-
Benzo(a)pyrene	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-
Phosphorus	-	-
Chlorine, wt %	0.27	0.34
Sulfur, wt %	-	-
PCBs	-	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	948	949	950	951	952	953	954	955
Flash Point (°F)	129	117	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	12	<5	<5	<5	8	6	16
Barium	122	16	217	249	11	9	<7	48
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	42	72	32	45	153	332	47	241
Cobalt	-	-	-	-	-	-	-	-
Copper	82	181	21	172	296	612	448	550
Iron	2,560	1,260	1,580	2,630	433	2,040	1,490	4,690
Lead	1,160	321	1,760	191	27	106	102	595
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	12	<5	<5	7	<5	9
Nickel	20	<5	14	13	<5	17	10	32
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	26	6	37	29	<5	<5	<5	9
Zinc	1,160	83	1,680	255	34	122	56	512
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5,000	200	400	<100	300	<100	<100	<100
Trichloroethylene	200	<100	<100	<100	<100	<100	<100	<100
Tetrachloroethylene	600	1,100	200	<100	<100	<100	<100	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.56	0.40	0.39	0.10	0.07	<0.01	<0.01	0.04
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<10	<5	<5	32	11	7	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	956	957	958	959	960	961	962	963
Flash Point (°F)	> 147	> 147	> 147	> 147	> 147	> 147	> 147	> 147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	10	7	20	9	15	11	6	7
Barium	1,070	1,000	708	22	27	36	26	48
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<7	<7	<7	<7	<7	<7	<7	<7
Chromium	87	65	18	9	119	35	11	153
Cobalt	-	-	-	-	-	-	-	-
Copper	600	369	129	275	300	359	267	442
Iron	8,570	971	2,410	6,780	1,550	18,600	5,450	2,660
Lead	388	209	785	267	537	129	227	122
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	12	<5	<5	8	<5	13	8	<5
Nickel	40	11	18	35	10	48	28	21
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	11	7	<5	18	<5	<5
Zinc	440	249	678	233	446	162	227	102
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	<100	200	<100	<100	<100	<100	<100
Trichloroethylene	<100	<100	<100	<100	<100	<100	<100	<100
Tetrachloroethylene	<100	<100	<100	<100	<100	<100	<100	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphtnalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.04	0.04	0.16	0.02	0.03	<0.01	0.03	0.01
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	5	6	<5	6	2	2	3	4

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	964	965	966	967	968	969	970	971
Flash Point (°F)	84	115	>147	>147	93	>147	111	97
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	14	<5	8	<5
Barium	23	178	105	32	107	285	520	8
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	94	9	<5	8	16	25	27	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	125	39	<5	26	51	32	37	<5
Iron	276	2,730	1,050	189	796	2,800	21,100	38
Lead	69	720	322	273	476	607	563	43
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	15	18	<5	8	8	25	<5
Nickel	<5	7	5	<5	<5	12	72	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	161	20	7	21	224	238	<5
Zinc	117	1,070	421	495	991	797	659	21
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	4,400	<100	<100	2,500	6,100	300	30,000	<100
Trichloroethylene	<100	<100	<100	<100	<100	26,000	<100	<100
Tetrachloroethylene	300	<100	<100	700	<100	200	200	1,600
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.15	0.22	0.19	0.29	1.31	2.69	2.94	0.09
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	<10	<10	<10	<50	<20	<100	<1

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	972	973	974	975	976	977	978	979
Flash Point (°F)	>147	>147	>147	>126	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	12	<5	23	<5	<5	<5	<5	<5
Barium	235	106	70	10	30	20	10	10
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	18	8	11	<5	<5	22	8	<5
Cobalt	-	-	-	-	-	-	-	-
Copper	<5	9	37	44	7	199	7	9
Iron	5,330	2,860	283	25	1,100	717	1,060	550
Lead	342	286	<5	<5	8	9	17	<5
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	5	29	<5	<5	8	9	17	<5
Nickel	12	<5	<5	<5	9	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	287	78	<5	<5	<5	<5	<5	<5
Zinc	431	795	773	33	14	165	36	<5
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	500	400	500	200	1,600	700	<100	-
Trichloroethylene	<100	<100	<100	<100	<100	<100	<100	-
Tetrachloroethylene	200	1,000	300	<100	300	900	1,400	-
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	1.58	0.42	0.14	0.73	0.96	1.10	1.01	0.18
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<50	<20	6	<1	<20	<20	<20	-

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	980	981	982	983	984	985	986	987
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	8	9	<5	<5	21
Barium	<10	20	<10	30	20	30	<10	<10
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	<5	<5	<5	18	<5	<5	<5	8
Cobalt	-	-	-	-	-	-	-	-
Copper	<5	<5	<5	28	41	6	<5	12
Iron	8	<5	<5	834	202	29	12	222
Lead	5	<5	6	327	518	<5	12	747
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<5	13	<5	<5	<5	<5
Nickel	<5	<5	<5	8	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	394	33	9	267	709	17	330	166
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	600	-	200	800	3,500	-	1,200	<100
Trichloroethylene	<100	-	<100	<100	<100	-	<100	<100
Tetrachloroethylene	<100	-	<100	800	800	-	<100	<100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)								
Alkyl-naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.04	<0.01	0.07	0.73	0.66	0.09	0.16	0.05
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<1	-	44	<20	<10	-	<1	39

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	988	989	990	991	992	993	994	995
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	13	<5	<5	<5	<5	<5	<5
Barium	<10	80	30	10	10	50	360	30
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	<5	431	168	26	10	13	104	42
Cobalt	-	-	-	-	-	-	-	-
Copper	<5	54	34	71	229	19	218	220
Iron	326	3,430	557	467	415	958	6,020	1,900
Lead	6	827	9	59	58	136	259	86
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<5	<5	<5	<5	12	<5
Nickel	<5	8	6	<5	<5	<5	24	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	6	<5	8	<5	<5	<5	36	<5
Zinc	15	263	273	23	186	211	650	126
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	1,000	-	400	300	1,100	300	300
Trichloroethylene	<100	5,400	-	<100	<100	<100	<100	<100
Tetrachloroethylene	<100	6,100	-	200	400	300	500	400
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.03	0.62	0.14	0.39	0.78	1.48	1.66	4.94
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<5	53	-	<50	<50	<50	<50	<50

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	996	997	998	999	1000	1001	1002	1003
Flash Point (°F)	>147	99	>147	>147	>147	>147	120	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	33	6	<5	<5	19	10	<5	25
Barium	30	<10	<9	81	38	42	17	1,150
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<5	<5	<5	<5	<5	6
Chromium	12	8	<5	<5	12	<5	<5	500
Cobalt	-	-	-	-	-	-	-	-
Copper	52	20	13	6	47	106	8	465
Iron	240	229	<5	23	137	139	19	404
Lead	1,010	148	23	81	625	273	14	2,960
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<6	<6	<6	<6	<6	86
Nickel	<5	15	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	82	<5	<5	<5	<5	<5	559
Zinc	1,030	37	391	511	762	264	30	268
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	100	<100	<100	<100	100	900	8,200	1,700
Trichloroethylene	<100	<100	<100	<100	<100	200	<100	<100
Tetrachloroethylene	<100	<100	<100	<100	<100	2,000	3,000	2,200
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₇)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.12	0.07	0.01	0.08	0.07	0.61	0.77	0.24
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<1	<1	<5	<5	<50	<5	6

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	1004	1005	1006	1007	1008	1009	1010	1011
Flash Point (°F)	72	131	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	<5	<5	<5	<5	<5	12	7	20
Barium	312	240	109	65	93	20	46	46
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	12	<5	19	65	55	11	6	8
Cobalt	-	-	-	-	-	-	-	-
Copper	23	7	39	198	219	23	21	39
Iron	92	104	161	302	1,250	83	95	139
Lead	44	56	94	78	423	456	238	836
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	11	18	<5	<5	6	<5	<5	8
Nickel	<5	<5	<5	<5	5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	8	<5	<5	<5
Zinc	693	1,150	189	78	221	490	206	667
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	3,800	500	<100	<100	<100	<100	400	200
Trichloroethylene	2,200	2,800	<100	<100	<100	<100	300	200
Tetrachloroethylene	500	1,400	<100	<100	<100	<100	3,200	100
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₀)	-	-	-	-	-	-	-	-
Alkylanthracene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.42	0.32	0.40	0.47	0.19	0.45	2.25	0.16
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<10	16	38	83	64	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	1012	1013	1014	1015	1016	1017	1018	1019
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	58	41	41	< 5	27	24	18	26
Barium	68	26	21	399	51	25	30	41
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	<5	<5	<5	50	7	<5	6	10
Cobalt	-	-	-	-	-	-	-	-
Copper	10	12	6	95	44	25	22	32
Iron	521	35	27	2,150	158	115	118	148
Lead	<5	<5	<5	3,250	856	671	592	942
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	14	8	8	14	<5	<5	<5	<5
Nickel	<5	<5	<5	23	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	23	<5	<5	<5	<5
Zinc	764	21	93	2,030	730	546	558	830
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	<100	<100	1,600	<100	<100	<100	<100
Trichloroethylene	1,500	12,000	<100	40,000	<100	<100	<100	<100
Tetrachloroethylene	<100	<100	<100	<100	<100	<100	<100	1,200
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.55	0.96	0.46	2.29	0.10	0.10	0.21	0.14
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<10	<10	<10	<10	<5	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	1020	1021	1022	1023	1024	1025	1026	1027
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>126	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	16	27	19	23	24	19	8	19
Barium	26	36	32	39	68	50	42	38
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	<5	<5	<5	5	8	8	8	13
Cobalt	-	-	-	-	-	-	-	-
Copper	10	30	10	31	61	32	32	21
Iron	77	155	150	156	160	159	148	270
Lead	443	803	572	725	1,050	647	693	750
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	<5	<5	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	428	804	500	622	788	694	628	683
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	<100	400	2,200	1,100	400	2,600	<100
Trichloroethylene	<100	<100	200	600	1,200	<100	1,800	<100
Tetrachloroethylene	1,700	<100	200	<100	4,600	200	19,000	5,800
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.13	0.10	0.27	0.36	-	0.12	2.96	0.79
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<10	<10	<5	<10	<5	<5	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	1028	1029	1030	1031	1032	1033	1034	1035
Flash Point (°F)	>147	>147	>147	>147	>147	>147	>147	>147
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	19	28	19	94	9	26	32	17
Barium	34	39	28	160	243	38	32	45
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	<5	6	<5	<5	66	<5	<5	10
Cobalt	-	-	-	-	-	-	-	-
Copper	49	35	11	11	40	37	36	50
Iron	202	175	194	1,410	992	160	151	180
Lead	785	1,040	555	2,480	786	1,010	932	826
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	6	<5	7	14	6	5	<5
Nickel	<5	<5	<5	11	17	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	12	7	<5	<5	<5
Zinc	864	1,020	321	2,670	1,480	848	625	716
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	8,400	500	3,400	1,100	800	700	2,600	2,400
Trichloroethylene	<100	<100	300	200	500	300	400	3,000
Tetrachloroethylene	1,200	200	5,800	1,500	1,100	300	2,200	8,200
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Peranthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.29	0.10	1.06	0.09	0.22	0.20	0.25	1.85
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	<10	<10	<1	<10	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

	Sample Table*							
	1036	1037	1038	1039	1040	1041	1042	1043
Flash Point (°F)	>147	>147	-	135	138	>147	>147	108
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	22	<5	<5	17	29	24	22	15
Barium	37	85	19	40	50	30	40	40
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	<10	<10	<10
Chromium	6	25	<5	27	18	16	12	16
Cobalt	-	-	-	-	-	-	-	-
Copper	57	27	7	24	39	41	41	44
Iron	167	615	48	146	297	146	143	155
Lead	864	177	5	558	885	771	901	603
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<5	<5	7	<5	<5	<5
Nickel	<5	8	<5	<5	<5	<5	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	10	<5	<5	10	<5	<5	<5
Zinc	709	273	15	527	728	575	631	525
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	4,200	1,300	-	4,200	5,200	6,000	14,000	14,000
Trichloroethylene	200	<100	-	1,900	1,600	900	600	3,000
Tetrachloroethylene	1,100	32,000	-	2,000	2,400	2,800	2,600	6,800
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C₉H₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C₁₂H₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.56	2.74	0.46	0.95	1.04	1.00	1.44	2.24
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<5	<10	<10	<10	<10	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

TABLE A-1 (continued)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*							
	1044	1045	1046	1047	1048	1049	1050	1051
Flash Point (°F)	135	66	64	115	120	>147	>147	113
Metals								
Aluminum	-	-	-	-	-	-	-	-
Arsenic	22	<5	<5	<5	21	<5	18	20
Barium	40	<5	20	<5	40	170	180	50
Beryllium	-	-	-	-	-	-	-	-
Cadmium	<10	<10	<10	<10	<10	10	<10	<10
Chromium	16	<5	<5	<5	28	35	56	18
Cobalt	-	-	-	-	-	-	-	-
Copper	44	<5	<5	<5	40	126	138	35
Iron	159	11	11	10	170	1,250	367	185
Lead	637	17	21	24	688	1,820	531	656
Magnesium	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-
Molybdenum	<5	<5	<5	<5	<5	10	<5	<5
Nickel	<5	<5	<5	<5	<5	7	<5	<5
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	<5	<5	<5	<5	29	34	15
Zinc	664	5	6	65	530	1,770	591	478
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	3,300	3,400	2,000	1,800	6,600	200	2,600	4,600
Trichloroethylene	900	<100	<100	700	700	<100	200	500
Tetrachloroethylene	1,500	600	400	1,200	1,300	200	700	700
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Penanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	-	-	-	-
Chlorine, wt %	0.77	0.16	0.10	0.17	0.87	0.15	-	0.91
Sulfur, wt %	-	-	-	-	-	-	-	-
PCBs	<10	4	2	<1	<10	<10	<10	<10

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number**†							
	1052	1053	1054	1055	1056(80)	1057(81)	1058(82)	1059(83)
Flash Point (°F)	>147	>147	>147	135	>200	<85	>200	>200
Metals								
Aluminum	-	-	-	-	45	7.6	16	23
Arsenic	12	13	16	22	<5	<5	<5	<5
Barium	20	190	90	40	67	25	35	47
Beryllium	-	-	-	-	<0.2	<0.2	<0.2	3.7
Cadmium	<10	10	<10	<10	1.1	0.66	2.9	2.8
Chromium	<5	35	84	29	6.1	1.9	2.2	<0.5
Cobalt	-	-	-	-	<0.5	<0.5	<0.5	27
Copper	<7	91	174	146	33	25	26	110
Iron	7	1,440	126	205	300	130	99	770
Lead	<5	2,180	636	768	890	440	560	110
Magnesium	-	-	-	-	150	23	74	5.7
Manganese	-	-	-	-	10	3	4.6	-
Molybdenum	10	7	<5	<5	-	-	-	-
Nickel	<5	7	<5	<5	3.3	1.4	1.1	1.2
Selenium	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	110	11	9.1	21
Tin	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-
Vanadium	<5	38	<5	5	5	3.7	1.5	0.79
Zinc	8	1,870	269	514	310	370	730	860
Volatile Organics								
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	<100	2,800	6,200	3,000	1,800	450	1,500	1,000
Trichloroethylene	<100	200	800	600	460	120	390	<4
Tetrachloroethylene	<100	800	1,400	600	400	800	380	15
Phenol	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	150	12,000	160	240
Toluene	-	-	-	-	2,000	8,000	670	810
Ethyl Benzene	-	-	-	-	430	4,000	200	270
Xylenes	-	-	-	-	820	25,000	500	500
Methylene Chloride	-	-	-	-	250	1,400	12	7
PNAs								
Naphthalene	-	-	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-	-	-
Phosphorus	-	-	-	-	640	440	660	710
Chlorine, wt %	0.12	0.29	0.68	0.51	0.07	0.21	0.33	0.15
Sulfur, wt %	-	-	-	-	0.63	0.37	0.64	0.55
PCBs	<1	<10	<10	<10	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-1 (CONTINUED)
ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†					
	1060 (84)	1061 (85)	1062 (86)	1063 (358)	1064 (361)	1065 (306)
Flash Point (°F)	>200	>200	>200	>200	104	-
Metals						
Aluminum	3.6	16	-	11	<1	-
Arsenic	<5	<5	-	<5	<5	-
Barium	13	52	-	<0.5	<0.5	-
Beryllium	<0.2	<0.2	-	<0.2	<0.2	-
Cadmium	0.93	4.1	-	1.7	0.83	-
Chromium	1.6	2.9	-	2.1	9.5	-
Cobalt	<0.5	<0.5	-	<0.5	0.73	-
Copper	16	27	-	7.6	<0.5	-
Iron	97	100	-	75	130	-
Lead	610	720	-	<5	<5	-
Magnesium	76	170	-	3.7	1.5	-
Manganese	2.6	5.9	-	0.59	<0.2	-
Molybdenum	-	-	-	-	-	-
Nickel	2.1	<1	-	<1	<1	-
Selenium	-	-	-	-	-	-
Silicon	-	-	-	-	-	-
Silver	-	-	-	-	-	-
Sodium	48	35	-	11	3.2	-
Tin	-	-	-	-	-	-
Titanium	-	-	-	-	-	-
Vanadium	4.2	0.36	-	<0.2	<0.2	-
Zinc	520	820	-	3.7	2.4	-
Volatile Organics						
Dichlorodifluoromethane	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,1,1-Trichloroethane	3,500	44	140	160	29	<4.3
Trichloroethylene	<4	<2	<1	70	1	<4.3
Tetrachloroethylene	4	3	<1	56	110	<4.3
Phenol	-	-	-	-	-	-
Benzene	97	3	4	11	9	<4.3
Toluene	640	86	7	1,000	130	<4.3
Styrene	200	88	<1	88	64	<4.3
Xylenes	7	111	3	4,445	43	<4.3
Methylene Chloride	<4	<2	63	<4	<4	<4.3
PNAs						
Naphthalene	-	-	-	-	-	-
Phenanthrene/Anthracene	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-
Phosphorus	480	740	-	270	500	-
Chlorine, wt. %	0.33	0.13	1.17	0.88	0.53	<0.01
Sulfur, wt. %	0.54	0.52	0.16	0.53	0.81	0.08
PCBs	<5	<5	<5	<5	<5	37

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

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ANALYTICAL DATA FOR USED OIL SAMPLES

	Sample Number*†					
	1066 (34)	1067 (36)	1068 (37)	1069 (50)	1070 (54)	1071 (59)
Flash Point (°F)	-	-	-	>200	-	>200
Metals						
Aluminum	980	<1	8.7	53	<1	16
Arsenic	<5	<5	<5	<5	<5	<5
Barium	3.2	3.2	120	8.5	1.1	8.5
Beryllium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	1.5	6.7	2.8	7	<0.5	0.82
Cobalt	<0.5	3.5	<0.5	<0.5	<0.5	0.93
Copper	<0.5	18	3.4	5.4	14	19
Iron	5.1	74	87	350	8.2	110
Lead	<5	100	<5	13	16	6.9
Magnesium	0.69	0.99	15	17	<0.5	0.56
Manganese	0.34	49	3.5	2	0.49	0.62
Molybdenum	-	-	-	-	-	-
Nickel	<1	8.1	<1	<1	1.5	1.1
Selenium	-	-	-	-	-	-
Silicon	-	-	-	-	-	-
Silver	-	-	-	-	-	-
Sodium	2.1	11	2.4	1,800	1.3	2.4
Tin	-	-	-	-	-	-
Titanium	-	-	-	-	-	-
Vanadium	0.2	<0.2	0.49	<0.2	<0.2	<0.2
Zinc	2.6	38	10	3.9	23	14
Volatile Organics						
Dichlorodifluoromethane	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,1,1-Trichloroethane	<20	<20	<8	<7.4	<16	<32
Trichloroethylene	<20	26,000	<8	<7.4	<16	<32
Tetrachloroethylene	<20	<20	<8	<7.4	<16	<32
Phenol	-	-	-	-	-	-
Benzene	<20	<20	<8	<7.4	<16	<32
Toluene	230	<20	<8	<7.4	<16	57
Ethyl Benzene	<20	670	<8	<7.4	<16	<32
Xylenes	<20	560	<8	<7.4	<16	<32
Methylene Chloride	<20	26,000	<8	<7.4	<16	<32
PNAs						
Naphthalene	-	-	-	-	-	-
Benanthrene/Anthracene	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-
Alkylbenzene (C ₉ H ₁₂)	-	-	-	-	-	-
Alkyl naphthalene (C ₁₂ H ₁₂)	-	-	-	-	-	-
Phosphorus	300	580	280	380	110	270
Chlorine, wt %	<0.01	0.93	2	0.02	0.01	-
Sulfur, wt %	-	-	-	0.51	-	0.65
PCBs	<5	<5	<5	<5	<5	<5

* Table A-2 identifies the source of analytical data for each used oil sample. Table A-3 provides codes for each sample number which describes the specific generating source of used oil and the end-use.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-2

SOURCE KEY FOR USED OIL SAMPLES IN TABLE A-1

Sample Number	Source	Date of Publication or Analysis
1-7	A-1	1982
8	A-12	1976
9	A-12	1981
10	A-10	Unknown
11-20	A-2	1977
21	A-13	1972
22-43 except 26	A-15	1977
26	A-21	1982
44	A-17	1979
45	A-26	1977
46	A-27	1977
47	A-28	1974
48	A-29	1974
49	A-30	1976
50	A-34	1981
51	A-32	1980
52-63	A-38	1978

TABLE A-2 (continued)

SOURCE KEY FOR USED OIL SAMPLES IN TABLE A-1

Sample Number	Source	Date of Publication or Analysis
64	A-39	1982
65-66	A-36	1982
67-69	A-37	1974
70-72	A-48	1983
73-92	A-32	1980
93-94	A-24	1978
95-112	A-24	1978
113-134	A-24	1978
135-137	A-19	Unknown
138	A-19	Unknown
139	A-19	1978
140	A-19	1978
141	A-19	1978
142	A-19	1978
143	A-19	1978
144	A-19	1978
145	A-19	1978
146	A-19	1978
147	A-40	1982

TABLE A-2 (continued)

SOURCE KEY FOR USED OIL SAMPLES IN TABLE A-1

Sample Number	Source	Date of Publication or Analysis
148	A-40	1982
149	A-40	1982
150	A-40	1982
151	A-40	1982
152	A-40	1982
153	A-40	1982
154	A-40	1982
155	A-40	1982
156	A-40	1982
157	A-40	1982
158	A-40	1982
159	A-40	1982
160	A-40	1982
161-162	A-25	1977
163-176	A-49	1983
177	A-5	1982
178	A-10	Unknown
179	A-10	Unknown
180-236	A-20	1979-1981

TABLE A-2 (continued)

SOURCE KEY FOR USED OIL SAMPLES IN TABLE A-1

Sample Number	Source	Date of Publication or Analysis
237-243	A-1	1982
244	A-3	1977
245	A-4	1979
246-253	A-9	1981
254-258	A-20	1981
259-260	A-7	1981
261	A-11	1979
262-263	A-9	1981
264-266	A-5	1982
267	A-22	1982
268	A-22	1982
269-315	A-23	1982
316-317	A-35	1982
318-334	A-8	1982
335-404	A-20	1979 to 1981
405-431	A-42	1982
432-459	A-43	1982
460-481	A-44	1982

TABLE A-2 (continued)

SOURCE KEY FOR USED OIL SAMPLES IN TABLE A-1

Sample Number	Source	Date of Publication or Analysis
482-490	A-45	1982
491-568	A-49	1983
569-578	A-32	1980
579-589	A-9	1981
590	A-47	1982
591	A-47	1974
592-659	A-48	1983
660-669	A-46	1983
670-737	A-48	1983
738-771	A-49	1983
772-839	A-48	1983
840-879	A-50	1978
880-1055	A-49	1983

TABLE A-3

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
1	C, J	41	B, J
2	C, J	42	B, J
3	C, J	43	B, J
4	C, J	44	B, J
5	C, J	45	B, J
6	C, J	46	C, H
7	C, J	47	B, J
8	B, J	48	B, J
9	B, J	49	B, J
10	B, J	50	C, G
11	B, H	51	B, J
12	B, H	52	B, H
13	B, H	53	B, H
14	B, H	54	B, H
15	B, H	55	B, H
16	B, H	56	B, H
17	B, H	57	B, H
18	B, H	58	B, H
19	B, H	59	B, H
20	C, J	60	B, H
21	C, J	61	B, H
22	B, J	62	B, H
23	B, J	63	B, H
24	B, J	64	C, G
25	B, J	65	C, J
26	C, G	66	C, J
27	B, J	67	C, J
28	B, J	68	C, J
29	B, J	69	C, J
30	B, J	70 (262) †	A, C, J, K
31	B, J	71 (263)	A, C, J, K
32	B, J	72 (264)	A, C, J, K
33	B, J	73	B, G
34	B, J	74	B, G
35	B, J	75	B, G
36	B, J	76	B, G
37	B, J	77	B, G
38	B, J	78	B, G
39	B, J	79	B, G
40	B, J	80	B, G

* Letter codes are defined at end of table.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

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TABLE A-3 (continued)
USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
81	B, G	121	D1, J
82	B, G	122	D1, J
83	B, G	123	D1, J
84	B, G	124	D1, J
85	B, G	125	D1, J
86	B, G	126	D1, J
87	B, G	127	D1, J
88	B, G	128	D1, J
89	B, G	129	D1, J
90	B, G	130	D1, J
91	B, G	131	D1, J
92	B, G	132	D4, J
93	D1, J	133	D4, J
94	D1, J	134	D4, J
95	E4, H	135	D4, J
96	E4, H	136	D4, J
97	E4, H	137	D4, J
98	E4, H	138	D1, J
99	E4, H	139	D1, J
100	E4, H	140	D4, J
101	E4, H	141	D4, J
102	E4, H	142	D4, J
103	E4, H	143	D4, J
104	E4, H	144	D4, J
105	E4, H	145	D4, J
106	E4, H	146	D3, J
107	E4, H	147	D1, J
108	E4, H	148	D1, J
109	E4, H	149	D3, J
110	E4, H	150	D1, J
111	E4, H	151	D1, J
112	E4, H	152	D1, J
113	D1, J	153	D2, J
114	D4, J	154	D1, J
115	D1, J	155	D1, J
116	D1, J	156	D1, J
117	D4, J	157	D4, J
118	D1, J	158	D1, J
119	D1, J	159	D1, J
120	D1, J	160	D1, J

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
161	D4, J	201	F, I
162	D4, J	202	F, I
163	E4, G	203	F, I
164	E4, G	204	F, I
165	E4, G	205	F, I
166	E4, G	206	F, I
167	E4, G	207	F, I
168	E4, G	208	F, I
169	E4, G	209	F, I
170	E4, G	210	F, I
171	E4, G	211	F, I
172	E4, G	212	F, I
173	E4, G	213	F, I
174	E4, G	214	F, I
175	E4, G	215	F, I
176	E4, G	216	F, I
177	D4, J	217	F, I
178	D4, J	218	F, I
179	D4, J	219	F, I
180	F, I	220	F, I
181	F, I	221	F, I
182	F, I	222	F, I
183	F, I	223	F, I
184	F, I	224	F, I
185	F, I	225	F, I
186	F, I	226	F, I
187	F, I	227	F, I
188	F, I	228	F, I
189	F, I	229	F, I
190	F, I	230	F, I
191	F, I	231	F, I
192	F, I	232	F, I
193	F, I	233	F, I
194	F, I	234	F, I
195	F, I	235	F, I
196	F, I	236	F, I
197	F, I	237	F, J
198	F, I	238	F, J
199	F, I	239	F, J
200	F, I	240	F, J

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
241	F, J	281	F, G
242	F, J	282	F, G
243	F, J	283	F, G
244	F, J	284	F, G
245	F, J	285	F, G
246	F, D	286	F, G
247	F, D	287	F, G
248	F, D	288	F, G
249	F, D	289	F, G
250	F, D	290	F, G
251	F, D	291	F, G
252	F, D	292	F, G
253	F, D	293	F, G
254	F, D	294	F, G
255	F, D	295	F, G
256	F, D	296	F, G
257	F, D	297	F, G
258	F, D	298	F, G
259	F, I	299	F, G
260	F, I	300	F, G
261	F, I	301	F, G
262	F, I	302	F, G
263	F, I	303	F, G
264	F, H	304	F, G
265	F, H	305	F, G
266	F, H	306	F, G
267	F, H	307	F, G
268	F, H	308	F, G
269	F, H	309	F, G
270	F, H	310	F, G
271	F, H	311	F, G
272	F, H	312	F, G
273	F, H	313	F, G
274	F, H	314	F, G
275	F, H	315	F, G
276	F, H	316	F, G
277	F, H	317	F, G
278	F, H	318	F, P
279	F, H	319	F, P
280	F, H	320	F, P

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
321	F, P	361	F, I
322	F, P	362	F, I
323	F, P	363	F, I
324	F, P	364	F, I
325	F, P	365	F, I
326	F, P	366	F, I
327	F, P	367	F, I
328	F, P	368	F, I
329	F, P	369	F, I
330	F, P	370	F, I
331	F, P	371	F, I
332	F, P	372	F, I
333	F, P	373	F, I
334	F, D	374	F, I
335	F, I	375	F, I
336	F, I	376	F, I
337	F, I	377	F, I
338	F, I	378	F, I
339	F, I	379	F, I
340	F, I	380	F, I
341	F, I	381	F, I
342	F, I	382	F, I
343	F, I	383	F, I
344	F, I	384	F, I
345	F, I	385	F, I
346	F, I	386	F, I
347	F, I	387	F, I
348	F, I	388	F, I
349	F, I	389	F, I
350	F, I	390	F, I
351	F, I	391	F, I
352	F, I	392	F, I
353	F, I	393	F, I
354	F, I	394	F, I
355	F, I	395	F, I
356	F, I	396	F, I
357	F, I	397	F, I
358	F, I	398	F, I
359	F, I	399	F, I
360	F, I	400	F, I

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
401	F, I	441	F, G
402	F, I	442	F, G
403	F, I	443	F, G
404	F, I	444	F, G
405	F, G	445	F, G
406	F, G	446	F, G
407	F, G	447	F, G
408	F, G	448	F, G
409	F, G	449	F, G
410	F, G	450	F, G
411	F, G	451	F, G
412	F, G	452	F, G
413	F, G	453	F, G
414	F, G	454	F, G
415	F, G	455	F, G
416	F, G	456	F, P
417	F, G	457	F, P
418	F, G	458	F, G
419	F, G	459	F, G
420	F, G	460	F, G
421	F, G	461	F, G
422	F, G	462	F, G
423	F, G	463	F, G
424	F, G	464	F, G
425	F, G	465	F, G
426	F, G	466	F, G
427	F, G	467	F, G
428	F, G	468	F, G
429	F, G	469	F, G
430	F, G	470	F, G
431	F, G	471	F, G
432	F, G	472	F, G
433	F, G	473	F, G
434	F, G	474	F, G
435	F, G	475	F, G
436	F, G	476	F, G
437	F, G	477	F, G
438	F, G	478	F, G
439	F, G	479	F, G
440	F, G	480	F, G

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
481	F, G	521	F, G, L
482	F, G	522	F, G, L
483	F, G	523	F, G, L
484	F, G	524	F, G, L
485	F, G	525	F, G, L
486	F, G	526	F, G, L
487	F, G	527	F, G, K
488	F, G	528	F, G, K
489	F, G	529	F, G, K
490	F, G	530	F, G, L
491	F, G, L	531	F, G, L
492	F, G, L	532	F, G, L
493	F, G, L	533	F, G, L
494	F, G, L	534	F, G, L
495	F, G, L	535	F, G, K
496	F, G, L	536	F, G, K
497	F, G, L	537	F, G, K
498	F, G, L	538	F, G, K
499	F, G, K	539	F, G, K
500	F, G, K	540	F, G, K
501	F, G, K	541	F, G, K
502	F, G, L	542	F, G, K
503	F, G, L	543	F, G, K
504	F, G, L	544	F, G, K
505	F, G, L	545	F, G, L
506	F, G, L	546	F, G, L
507	F, G, L	547	F, G, L
508	F, G, L	548	F, G, L
509	F, G, L	549	F, G, L
510	F, G, K	550	F, G, K
511	F, G, K	551	F, G, K
512	F, G, L	552	F, G, K
513	F, G	553	F, G, K
514	F, G	554	F, G, K
515	F, G, K	555	F, G, K
516	F, G	556	F, G, K
517	F, G	557	F, G, K
518	F, G	558	F, G, K
519	F, G	559	F, G, K
520	F, G, L	560	F, G, K

* Letter codes are defined at end of table.

TABLE A-3 (continued)
USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
561	F, G, K	601 (125)	A, B, J, K
562	F, G, K	602 (126)	A, B, J, K
563	F, G, K	603 (127)	A, B, J, K
564	F, G, K	604 (128)	A, B, J, K
565	F, G, K	605 (129)	A, B, J, K
566	F, G, K	606 (130)	A, B, J, K
567	F, G, K	607 (131)	A, B, J, K
568	F, G, K	608 (132)	A, B, J, K
569	F, H	609 (133)	A, B, J, K
570	F, H	610 (135)	A, F, H, K
571	F, H	611 (137)	A, F, H, K
572	F, H	612 (138)	A, F, H
573	F, H	613 (140)	A, F, H
574	F, H	614 (142)	A, F, H
575	F, H	615 (146)	A, F, H, L
576	F, H	616 (147)	A, F, H, K
577	F, H	617 (148)	A, C, G, K
578	F, H	618 (151)	A, C, G, K
579	F, J	619 (152)	A, C, G, K
580	F, J	620 (161)	A, F, J, K
581	F, J	621 (163)	A, F, J, K
582	F, J	622 (164)	A, F, J, K
583	F, J	623 (165)	A, F, J, K
584	F, J	624 (166)	A, F, J, K
585	F, J	625 (167)	A, F, I, K
586	F, J	626 (168)	A, F, I
587	F, J	627 (169)	A, F, I
588	F, J	628 (170)	A, F, I, K
589	F, J	629 (174)	A, F, I, K
590	F, I	630 (177)	A, F, J, K
591	F, J	631 (181)	A, F, J, K
592 (110)†	A, B, J, K	632 (182)	A, F, J, K
593 (111)	A, B, J, K	633 (187)	A, F, J, K
594 (112)	A, B, J, K	634 (188)	A, F, J, K
595 (118)	A, B, J, K	635 (190)	A, F, J, K
596 (119)	A, D3, K, J	636 (191)	A, F, G, K
597 (120)	A, B, J, K	637 (193)	A, F, J, K
598 (121)	A, B, J, K	638 (202)	A, F, J, K
599 (123)	A, B, J, K	639 (204)	A, D4, J, K
600 (124)	A, B, J, K	640 (205)	A, D4, J, K

* Letter codes are defined at end of table.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
641 (207)†	A, F, J, L	681 (211)	A, J, J
642 (208)	A, F, J, L	682 (212)	A, J, J
643 (209)	A, F, J, L	683 (213)	A, F, J
644 (233)	A, F, J, K	684 (218)	A, D3, J
645 (242)	A, D3, J, K	685 (220)	A, D3, J
646 (243)	A, D4, J, K	686 (227)	A, D1, J
647 (245)	A, D4, J, K	687 (228)	A, D1, J
648 (250)	A, E3, J, K	688 (230)	A, F, J, K
649 (255)	A, F, J, K	689 (280)	A, C, G
650 (256)	A, F, J, K	690 (281)	A, C, G
651 (257)	A, F, J, K	691 (282)	A, F, G
652 (258)	A, F, J, K	692 (284)	A, F, G
653 (259)	A, B, J, K	693 (285)	A, F, G
654 (261)	A, B, J, K	694 (288)	A, F, G
655 (265)	A, E4, J, K	695 (292)	A, J, J
656 (267)	A, E4, G, K	696 (294)	A, F, J
657 (268)	A, F, J	697 (295)	A, F, J
658 (271)	A, C, H, K	698 (296)	A, F, J
659 (272)	A, C, J, K	699 (298)	A, F, G
660	F, G	700 (299)	A, F, G
661	F, G	701 (300)	A, F, G
662	F, G	702 (301)	A, F, G
663	F, G	703 (302)	A, F, G
664	F, G	704 (303)	A, F, G
665	F, G	705 (316)	A, C, G
666	F, G	706 (319)	A, C, G
667	F, G	707 (145)	A, F, H, L
668	F, G	708 (171)	A, F, J, K
669	F, G	709 (172)	A, F, J
670 (13)	A, D4, J	710 (173)	A, F, J, K
671 (14)	A, D4, J	711 (175)	A, F, J
672 (15)	A, D4, J	712 (176)	A, F, J
673 (16)	A, D4, J	713 (178)	A, F, J, K
674 (60)	A, B, G	714 (179)	A, F, J, K
675 (104)	A, F, G	715 (183)	A, F, J, K
676 (105)	A, F, G	716 (184)	A, F, J
677 (106)	A, F, G	717 (185)	A, F, J
678 (107)	A, F, G	718 (186)	A, F, G, K
679 (108)	A, F, G	719 (192)	A, F, J, K
680 (109)	A, F, G	720 (194)	A, F, J, K

* Letter codes are defined at end of table.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

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TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
721 (195)†	A, F, J, K	761	F, J, L
722 (197)	A, F, J, K	762	F, J, L
723 (198)	A, F, I, K	763	F, J, K
724 (200)	A, F, J, K	764	F, J, K
725 (201)	A, F, J	765	F, J, K
726 (203)	A, F, J, K	766	F, J, K
727 (206)	A, F, J, K	767	F, J, K
728 (223)	A, F, H, K	768	F, J, K
729 (224)	A, C, H, K	769	F, J, K
730 (225)	A, F, H, K	770	F, J, K
731 (232)	A, F, G, L	771	F, J, K
732 (244)	A, E4, J, K	772 (333)	A, F, J
733 (251)	A, C, J, K	773 (348)	A, B, H, K
734 (252)	A, D1, J, K	774 (354)	A, F, J, K
735 (253)	A, D1, J, K	775 (356)	A, B, J, K
736 (254)	A, F, J, K	776 (1)	A, F, J
737 (270)	A, E3, J, K	777 (2)	A, F, J
738	F, J, K	778 (3)	A, F, J
739	F, J, K	779 (4)	A, F, J
740	F, J, K	780 (5)	A, F, J
741	F, J, K	781 (6)	A, F, J
742	F, J, K	782 (10)	A, D4, J
743	F, J, K	783 (51)	A, D4, J, K
744	F, J, L	784 (52)	A, D3, J, K
745	F, J, L	785 (62)	A, F, G
746	F, J, K	786 (63)	A, F, G
747	F, J, K	787 (64)	A, F, G
748	F, J, K	788 (65)	A, F, G
749	F, J, K	789 (66)	A, F, G
750	F, J, L	790 (67)	A, F, G
751	F, J, L	791 (92)	A, E3, J
752	F, J, L	792 (93)	A, F, G
753	F, J, L	793 (94)	A, C, J, K
754	F, J, K	794 (122)	A, C, J, K
755	F, J, K	795 (297)	A, F, J
756	F, J, K	796 (320)	A, F, G
757	F, J, K	797 (326)	A, C, G
758	F, J, K	798 (327)	A, C, G
759	F, J, L	799 (328)	A, F, G
760	F, J, L	800 (329)	A, C, G

* Letter codes are defined at end of table.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
801 (335)†	A, F, G	841	B, J
802 (337)	A, F, G	842	B, J
803 (338)	A, F, G	843	B, J
804 (339)	A, F, G	844	B, J
805 (340)	A, C, G	845	B, J
806 (341)	A, C, G	846	B, J
807 (342)	A, C, G	847	B, J
808 (343)	A, C, G	848	B, J
809 (344)	A, C, G	849	B, J
810 (345)	A, C, G	850	B, J
811 (359)	A, F, J	851	B, J
812 (360)	A, F, J	852	B, J
813 (89)	A, F, G	853	B, J
814 (90)	A, F, G	854	B, J
815 (91)	A, F, J	855	B, J
816 (95)	A, F, J, K	856	B, J
817 (96)	A, F, J, L	857	B, J
818 (98)	A, F, G, K	858	B, J
819 (99)	A, F, J, K	859	B, J
820 (101)	A, F, J, K	860	B, J
821 (102)	A, F, G, K	861	B, J
822 (103)	A, F, J, L	862	B, J
823 (214)	A, F, J, L	863	B, J
824 (216)	A, F, J, L	864	B, J
825 (217)	A, F, J, K	865	B, J
826 (226)	A, E1, J	866	B, J
827 (227)	A, D1, J, K	867	B, J
828 (234)	A, F, G, K	868	B, J
829 (235)	A, D1, J, K	869	B, J
830 (236)	A, D1, J, K	870	B, J
831 (237)	A, F, G, K	871	B, J
832 (238)	A, D1, J	872	B, J
833 (240)	A, D1, J, K	873	B, J
834 (275)	A, D2, J	874	B, J
835 (276)	A, D2, J, K	875	B, J
836 (278)	A, D2, J	876	B, J
837 (279)	A, F, J	877	B, J
838 (331)	A, F, J	878	B, J
839 (332)	A, F, J	879	B, J
840	B, J	880	C, J, K

* Letter codes are defined at end of table.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

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TABLE A-3 (continued)
USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
881	C, J, K	921	E4, G, L
882	C, J, K	922	E4, G, L
883	C, J, K	923	E4, G, L
884	C, J, K	924	E4, G, L
885	C, J, L	925	E4, G, K
886	C, J, L	926	E4, G, K
887	C, J, K	927	E4, G, K
888	C, J, K	928	E4, G, K
889	C, J, K	929	E4, G, K
890	C, J, K	930	E4, G, K
891	C, J, K	931	E4, G, K
892	C, J, K	932	E4, G, K
893	C, J, K	933	E4, G, K
894	C, J, K	934	E4, G, K
895	C, J, K	935	E4, G, K
896	C, H, K	936	E4, G, K
897	C, H, K	937	E4, H, L
898	E4, G, L	938	E4, H, L
899	E4, G, L	939	E4, H, K
900	E4, G, L	940	E4, H, K
901	E4, G, L	941	E4, H, K
902	E4, G, L	942	E4, H, K
903	E4, G, L	943	E4, H, K
904	E4, G, L	944	E4, H, K
905	E4, G, L	945	E4, H, K
906	E4, G, L	946	E4, H, K
907	E4, G, L	947	E4, H, K
908	E4, G, L	948	F, I, K
909	E4, G, L	949	F, I, K
910	E4, G, K	950	F, I, K
911	E4, G, K	951	F, I, K
912	E4, G, K	952	F, I, K
913	E4, G, K	953	F, I, K
914	E4, G, K	954	F, I, K
915	E4, G, K	955	F, I, K
916	E4, G, K	956	F, I, K
917	E4, G, K	957	F, I, K
918	E4, G, K	958	F, I, K
919	E4, G, K	959	F, I, K
920	E4, G, K	960	F, I, K

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
961	F, I, K	1001	F, J, K
962	F, I, K	1002	F, J, K
963	F, I, K	1003	F, J, K
964	F, H, K	1004	F, J, L
965	F, H, K	1005	F, J, L
966	F, H, K	1006	F, J, K
967	F, H, K	1007	F, J, K
968	F, H, K	1008	F, J, K
969	F, H, K	1009	F, J, K
970	F, H, K	1010	F, J, K
971	F, H, K	1011	F, P, L
972	F, H, K	1012	F, P, L
973	F, H, K	1013	F, P, L
974	F, Q, K	1014	F, P, L
975	F, Q, K	1015	F, P, L
976	F, Q, K	1016	F, P, L
977	F, Q, K	1017	F, P, L
978	F, Q, K	1018	F, P, L
979	F, Q, K	1019	F, P, L
980	F, Q, K	1020	F, P, L
981	F, Q, K	1021	F, P, L
982	F, Q, K	1022	F, P, L
983	F, Q, K	1023	F, P, L
984	F, Q, K	1024	F, P, L
985	F, Q, K	1025	F, P
986	F, Q, K	1026	F, P, K
987	F, Q, K	1027	F, P, K
988	F, Q, K	1028	F, P, K
989	F, Q, K	1029	F, P, K
990	F, Q, K	1030	F, P, K
991	F, Q, K	1031	F, P, K
992	F, Q, K	1032	F, P, K
993	F, Q, K	1033	F, P, K
994	F, Q, K	1034	F, P, K
995	F, Q, K	1035	F, P, K
996	F, Q, K	1036	F, P, K
997	F, Q, K	1037	F, P, K
998	F, J, L	1038	F, P, K
999	F, J, L	1039	F, J, L
1000	F, J, K	1040	F, J, L

* Letter codes are defined at end of table.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE NUMBER	CODE*	SAMPLE NUMBER	CODE
1041	F, J, L		
1042	F, J, L		
1043	F, J, L		
1044	F, J, L		
1045	F, J, L		
1046	F, J, L		
1047	F, J, L		
1048	F, J, L		
1049	F, J, L		
1050	F, J, L		
1051	F, J, L		
1052	F, J, L		
1053	F, J, K		
1054	F, J, K		
1055	F, J, K		
1056 (80) †	A, F, G		
1057 (81)	A, F, G		
1058 (82)	A, F, G		
1059 (83)	A, F, G		
1060 (84)	A, F, G		
1061 (85)	A, F, G		
1062 (86)	A, C, J		
1063 (358)	A, F, J		
1064 (361)	A, F, J		
1065 (306)	A, F, J		
1066 (34)	A, E1, J		
1067 (36)	A, E1, J		
1068 (37)	A, E1, J		
1069 (50)	A, E4, J		
1070 (54)	A, E4, J		
1071 (59)	A, E4, J		

* Letter codes are defined at end of table.

† Numbers in parentheses represent EPA sample numbers for used oil samples obtained as part of their 1983 sampling program.

TABLE A-3 (continued)

USED OIL SAMPLE IDENTIFICATION CODES

SAMPLE CODE KEY

- A - Sample analyzed as part of EPA's 1983 used oil sample program
 - B - Automotive oil; sample taken from generator
 - C - Automotive oil; sample taken from collector or processor
 - D - Industrial oil; sample taken from generator
 - D1 - Cutting or machine oils
 - D2 - Cooling oils
 - D3 - Hydraulic oils
 - D4 - Unknown oil types
 - E - Industrial oil; sample taken from collector or processor
 - E1 - Cutting or machine oils
 - E2 - Cooling oils
 - E3 - Hydraulic oils
 - E4 - Unknown oil types
 - F - Unknown oil source
 - G - Burned as fuel
 - H - Re-refined
 - I - Road oil
 - J - Unknown end-use
 - P - Road oil or burned as fuel
 - Q - Road oil or re-refined
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APPENDIX A

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Appendix B

DATA BASE FOR
CONTAMINATION OF RESIDUES FROM
WASTE OIL PROCESSING AND RE-REFINING

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TABLE B-1

METALS CONCENTRATIONS IN SETTLED SLUDGES
GENERATED DURING WASTE OIL STORAGE AND PROCESSING a/

Arsenic	Barium	Cadmium	Chromium	Lead	Zinc
<5	38	<0.5	1.2	48	170
<5	19	<0.5	7.4	31	88
<5	18	<0.5	<0.5	<5	19
<1	70	<7	<10	2,370	650
<5	70	<7	10	300	80
<5	90	<7	<10	1,540	510
<5	30	<7	20	660	500
<5	80	[<5 b/ 83 c/	20	700	540
[<5 b/ 5 c/	50	[38 b/ 216 c/	10	610	490
<5	<10	[<5 d/	30	540	680
<5	47	[<5 b/	20	15	106
<5	44	[<5 c/	40	300	46
<5	19	[<5 b/	23	50	48
[<5 b/ 17 c/ 24 b/	28	[<5 c/	22	28	165
	25 b/	[<5 b/	5	32	20 b/
	[1,950 c/	<7	20	<5	[2,100 c/
<5	[1,200 b/	<7	19 b/	21	415 b/
<5	21 d/	<7	[938 c/	<5 b/	5 d/
<5	[3,610 c/	<7	[50 b/	[1,038 c/	[1,550 c/
<5	102 b/	<10	[16 d/	[241 b/	29 b/
12	[385 c/	<10	[210 c/	[<5 d/	144 c/
<5	56 b/	6	[14 b/	[1,180 c/	620 b/
12	310	<5	[137 c/	[248 b/	175
14	420	<5	39 b/	[95 c/	751
<5	<50	47	<5	993 b/	19
<5	210	48	9	403	259
5	20	[50 b/	<5	1,160	<5
[<5 b/ c/	66	[47 c/	<5	<5	457
0.013	131	0.02	<5	689	469
	64	<8	572	<5	241
<5	33	148	254	363	10
<5	830	11	[271 b/	364	2,040
<5	1,300	<10	[735 c/	561	3,150
<5	[916 b/	<10	3.19	<5	[1,550 b/
<5	[1,140 c/	<10	139	777	[1,820 c/
<5	0.21	<10	714	1,040	0.09
<5	27	<10	2,130	[1,210 b/	237
<5	748	<10	-	[1,400 c/	1,480
<5	2,390	<8	-	0.02	109
21	280	<7	-	99	230
12	<50	-	-	2,280	201
-	<50	-	-	7,770	44
-	90	-	-	165	495
-	220	-	-	195	1,010
-	270	-	-	27	1,830
-	110	-	-	605	493
-	180	-	-	1,130	85
-	-	-	-	2,010	-
-	-	-	-	355	-
-	-	-	-	<5	-

a/ All data are presented in parts per million (ppm)

b/ A top layer phase of an oily sludge residue.

c/ A bottom layer phase of an oily sludge residue.

d/ A middle layer phase of an oily sludge residue.

Note: Data for samples from different layers of the same storage tank are grouped.

Source: References B-24 to B-31.

TABLE B-2

TOTAL CHLORINE AND CHLORINATED SOLVENTS CONCENTRATIONS
IN SETTLED SLUDGES GENERATED DURING WASTE OIL STORAGE AND PROCESSING a/

1,1,1-				
Dichlorodifluoromethane	Trichloroethylene	Trichloroethylene	Tetrachloroethylene	Total Chlorine
<1	19	2.2	70	4,700
<10	190	5.7	580	1,500
1.3	570	1,300	1,900	1,200
59	7,500	360	111	13,300
22	120	37	210	8,960
34	86	110	130	740
30	640	370	830	13,100
640	260	730	1,000	746 <u>b/</u>
	2,200	600	1,500	[2,940 <u>c/</u>
	300	100	<100	[2,530 <u>b/</u>
	300	<100	1,600	[933 <u>d/</u>
	<100	1,100	1,000	[1,880 <u>c/</u>
	1,200	<100	1,500	[181,000 <u>b/</u>
	<100 <u>b/</u>	900	<100	[75,400 <u>c/</u>
	110,000 <u>b/</u>	1,100	1,600	[7,790 <u>b/</u>
	5,100 <u>b/</u>	<100 <u>b/</u>	100 <u>b/</u>	2,910
	420	900 <u>b/</u>	1,400 <u>b/</u>	3,630
	9,900	1,100 <u>b/</u>	7,000 <u>b/</u>	88
	790	<100	740	2,390
	5,400	310	210	1,300
	<100	130	200	5,080
	1,300	190	210	2,540
	1,100	<100	<100	13,600
	300	<100	2,400	220
	<100	100	800	1,860
	500	<100	8,200	1,540
	400	<100	<100	1,470
	200	<100	<100	2,110
	<100	<100	300	593
	<100	200	<100	1,270
	<100	<100	<100	851
	<200	<100	<100	1,780
	2,300	<100	<100	1,300
	<200	<200	<200	<200
	240	<200	<200	1,370
	<200	<200	<200	610
	430	2,200	<200	718
	<100	<200	<200	3,950
	770	<200	<200	1,120
		<100	<100	
		<100	<100	

a/ All data are presented in ppm. No data were available on trichlorotrifluoroethane concentration.

b/ A top layer phase of an oily sludge residue.

c/ A bottom layer phase of an oily sludge residue.

d/ A middle layer phase of an oily sludge residue.

Note: Data for samples from different layers of the same storage tank are grouped.

Source: References B-24 to B-31.

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TABLE B-3

OTHER ORGANICS CONCENTRATIONS
IN SETTLED SLUDGES GENERATED DURING
WASTE OIL STORAGE AND PROCESSING a/

PCBs	Benzo(a)pyrene	Phenol
	1.4	
<50	2.0	<1
<50	<1	<1
<50	<1	<1
<50	3.6	5.5
<10	12	11
<50	1.4	2.4
<4		16
<10		
<10		
<10		
28		
<1		
17		
<1		
<5		
<10		
500		
<1		
<10		
<10		
<10		
<50		
<50		
<50		
<50		
<50		
<50		
<50		
<50		
<50		
<50		
<50		
<50		
<2		
<10		
<1		
<50		
<50		
<10		
<10		
<1		
<1		
<10		

a/ All data are presented in ppm. No data were available for the concentration of benzene, toluene, xylene, benzo(a)anthracene, or naphthale

Source: References B-24 to B-31.

TABLE B-4

METALS CONCENTRATIONS IN WASTEWATER
GENERATED DURING WASTE OIL STORAGE AND PROCESSING ^{a/}

Arsenic	Barium	Cadmium	Chromium	Lead	Zinc
<0.2*	0.24	0.045	0.3	1.9	15.0
0.03*	0	0	0	4	3
0.09	230*	37*	10*	550*	1,300*
0.09	<0.2*	<0.01*	<0.02*	<0.2*	<0.01*
0.68	0.2*	0.001*	0.004*	1.5*	4.4*
0.10	2.0	<0.05	0.77	49	13.5
0.05	<1	0.62	<0.04	1.4	0.72
0.35	<1	1.1	8.8	40	5.5
0.12	1.0	<0.05	<0.04	0.70	2.3
<0.05	<1	<0.05	<0.04	1.4	2.9
22*	<1	<0.05	<0.04	<0.1	<0.005
<5*	2	<0.05	1.04	0.1	0.72
<5*	<0.5	0.03	<0.1	<0.5	0.1
<5*	241*	<8*	68*	585*	756*
<5*	300*	<10*	<5*	2,300*	1,650*
10*	190*	<7*	5.7*	107*	217*
	19*	<5*	<5*	<5*	12*
	29*	0.55*		380*	200*
	29*	<5*		41*	70*

^{a/} All data were reported in mg/l unless coded by an (*) in which case the unit of measurement is ppm.

Source: References B-7, B-20, B-22, B-26, B-27, and B-31.

TABLE B-5

TOTAL CHLORINE AND CHLORINATED SOLVENTS CONCENTRATION
IN WASTEWATER GENERATED DURING WASTE OIL STORAGE AND PROCESSING a/

1,1,1-Trichloroethane	Trichloroethylene	Tetrachloroethylene	Total Chlorine
12*	20*	8*	1,140*
610*	230*	110*	526*
250	ND	18	1,920*
42	23	3.3	76*
990	ND	700	4,170*
1,800	100	580	
1,900	2,600	1,300	
35	44	14	
580	910	160	
<100*	ND	ND	
<200*	<100*	<100*	
440*	<200*	<200*	
ND b/	<100*	200*	
<100*	<100*	<100*	

a/ All data were reported in mg/l unless coded by an (*) in which case the unit of measurement is ppm. Only one sample was analyzed for dichlorodifluoromethane: <20 ppm. Two samples were analyzed for trichlorotrifluoroethane: <0.4 ppm and 370 ppm.

b/ Not detected, however, no detection limit was reported.

Source: References B-7, B-22, B-24, B-26, B-27, and B-31.

TABLE B-6

OTHER ORGANICS CONCENTRATIONS IN WASTEWATER
GENERATED DURING WASTE OIL STORAGE AND PROCESSING a/

Benzene	Toluene	Benzo(a)- anthracene	Benzo(a)- pyrene	Naphthalene	PCBs	Phenol
<0.4*	14*	<1*	<1*	<1*	<1*	65
<20*	1,300*	<0.02*	<0.02*	0.7*	<10*	<1*
550	840			ND <u>b/</u>	<0.04*	0.02*
38	120			120	14*	6,000
24	2,500			ND	<0.04*	4,600
150	530			700	0.1*	99,000
890	5,800			470	<0.04*	15,000
290	640			ND	<0.04*	48,000
300	630			180	<0.04*	19,000
669	693			229	<0.04*	5,100
					<0.04*	2,800
					0.2*	
					<0.04*	
					<0.04*	
					0.04*	
					0.19*	
					<0.04*	
					ND	
					ND	
					ND	
					ND	
					ND	
					ND	
					ND	
					ND	
					ND	
					<10*	
					<10*	
					<5*	
					<1*	

All data are reported in mg/l unless coded by an (*) in which case the unit of measurement is ppm. No samples were analyzed for xylene.

Not detected, however, no detection limit was reported.

Source: References B-20, B-22, B-24, B-26, B-27, and B-31.

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TABLE B-7

CONCENTRATION OF POTENTIALLY HAZARDOUS CONSTITUENTS IN SPENT CLAY USED IN WASTE OIL PROCESSING ^{a/}

	Contact Filtration (Processing)	Clay Use Re-Refining Technologies				
		Distillation/ Clay	Acid/Clay	Distillation/ Clay	Distillation/ Clay	Chemical Treatment/ Clay Beads
Metals						
Arsenic	4.0	0.4	24	3	3.7	<0.02
Barium	76	140	124	<1	<1	628
Cadmium	1.0	0.5	11	12	7	11
Chromium	8.9	18	10	18	5	169
Lead	1,200	0.4	<1	<1	<1	643
Zinc	800	140	76	66	52	418
Chlorinated Solvents						
Dichlorodifluoromethane	- b/	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-	-
Total Chlorine	-	-	-	-	-	-
Other Organics						
Benzene	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Xylene	-	4	-	-	-	-
Benzo(a)pyrene	-	2	-	-	-	-
Naphthalene	-	<1	-	-	-	-
PCBs	-	<8	-	-	-	-
Reference	B-22	B-22	B-26	B-26	B-26	B-26

^{a/} All data are reported in ppm.

b/ (-) indicates that the constituent was not measured. Spent clay is not believed to contain significant quantities of chlorinated solvents or other light organic solvents.

TABLE B-8

CONCENTRATION OF POTENTIALLY HAZARDOUS CONSTITUENTS
IN DISTILLATION BOTTOMS FROM RE-REFINING FACILITIES a/

	Sample Number				
	1	2	3	4	5
Metals					
Arsenic	-	8.3	<0.01	1.0	15
Barium	1,400	14	25	6	940
Cadmium	0	5.7	20	9	29
Chromium	100	35	7	11	63
Lead	15,000	2,090	1,090	4,235	10,300
Zinc	3,500	2,960	126	85	133
Chlorinated Solvents					
Dichlorodifluoromethane	- <u>b/</u>	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-
Trichloroethylene	-	-	-	-	-
Tetrachloroethylene	-	-	-	-	-
Total Chlorine	-	-	-	-	-
Other Organics					
Benzene	-	-	-	-	-
Toluene	-	-	-	-	-
Xylene	-	-	-	-	-
Benzo(a)anthracene	-	<4	-	-	-
Benzo(a)pyrene	-	<4	-	-	-
Naphthalene	-	<4	-	-	-
PCBs	-	<11	-	-	-
Reference	B-7	B-22	B-26	B-26	B-26

/ All values are reported in ppm.

/ (-) indicates constituent was not measured. Generally, distillation bottoms are believed to contain very low levels of chlorinated and organic solvents.

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TABLE B-9

CONCENTRATION OF POTENTIALLY HAZARDOUS CONSTITUENTS IN MISCELLANEOUS WASTE OIL PROCESSING RESIDUES ^{a/}

	Solvent Treatment Re-refining- Solvent Sludge	Acid Sludge, Acid/Clay Re-refining	Ultra- filtrate Processing ^{b/}	Centrifuge Sludge	Acid Sludge, Acid/Clay Re-refining	PROP Re- refining, Spent Activated Carbon	PROP Re- refining Bottoms, Filter Storage/ Cake Settling	Filter Sludge, Screen Filtration	Filter Sludge, Screen Filtration
Metals									
Arsenic	2.1	4.7	-	150	0.07	<0.02	<0.02	<5	13
Barium	243	467	95%	580	544	155	2,215	50	160
Cadmium	18	7	-	11	2	11	12	<7	<7
Chromium	62	<1	-	150	170	60	114	-	-
Lead	87,600	9,960	75%	11,000	2,265	643	71,536	57	98
Zinc	120	45	90%	4,330	8	418	6,448	16	232
Chlorinated Solvents	- c/	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	390	-
Trichloroethylene	-	-	-	-	-	-	-	590	-
Tetrachloroethylene	-	-	-	-	-	-	-	1,700	5,760
Total Chlorine	-	-	-	-	-	-	-	13,500	-
Other Organics									
Benzene	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-
Xylene	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	<1.0	<20	-
Reference	B-26	B-26	B-7	B-22	B-26	B-26	B-26	B-23	B-27

^{a/} All values are reported in ppm except where noted.^{b/} Values indicate percent of metals removal accomplished through ultrafiltration.^{c/} (-) indicates constituent was not measured.

Appendix B
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Appendix C

METHODOLOGY AND REFERENCES FOR USED OIL FLOW DESCRIPTION

The flow of used oil through the UOMS was developed for 1983 using information obtained from many sources and through making several assumptions based upon the best available information. This appendix provides the references and assumptions used to develop each number in the overall flow description.

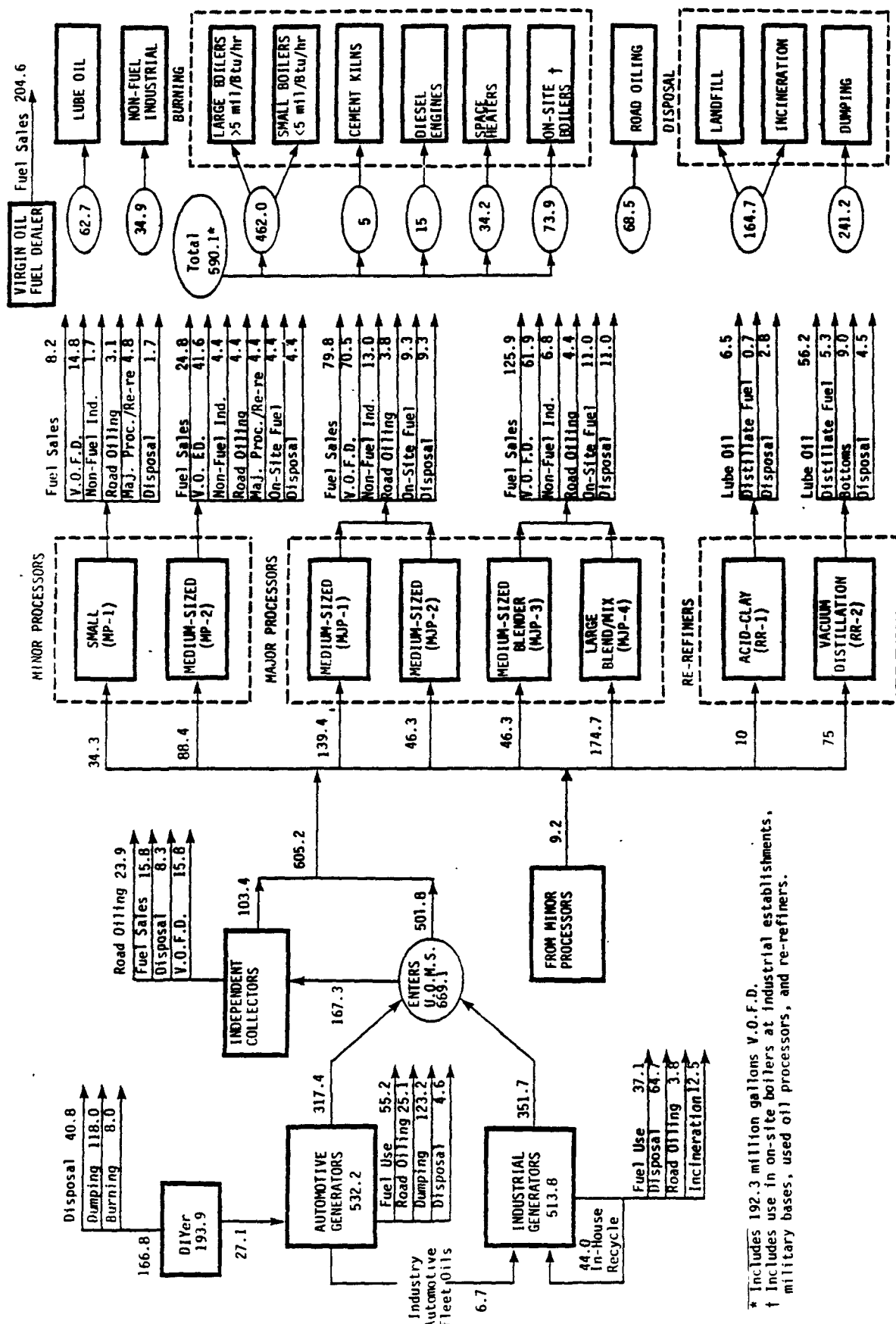
Figure C-1 shows the actual flow of oil through the UOMS in millions of gallons. The volumetric data has been removed in Figure C-2 and letter codes have been substituted. The references and assumptions used to develop each number in the flow are described below for each letter code.

It is important to note that the methodology which is used accounts for oil flow only. Contaminants which accumulate in oil such as water and solids are not included in the volumetric estimates. Therefore, the actual quantity of material which is handled is greater, perhaps by 10 percent, than the quantities shown.

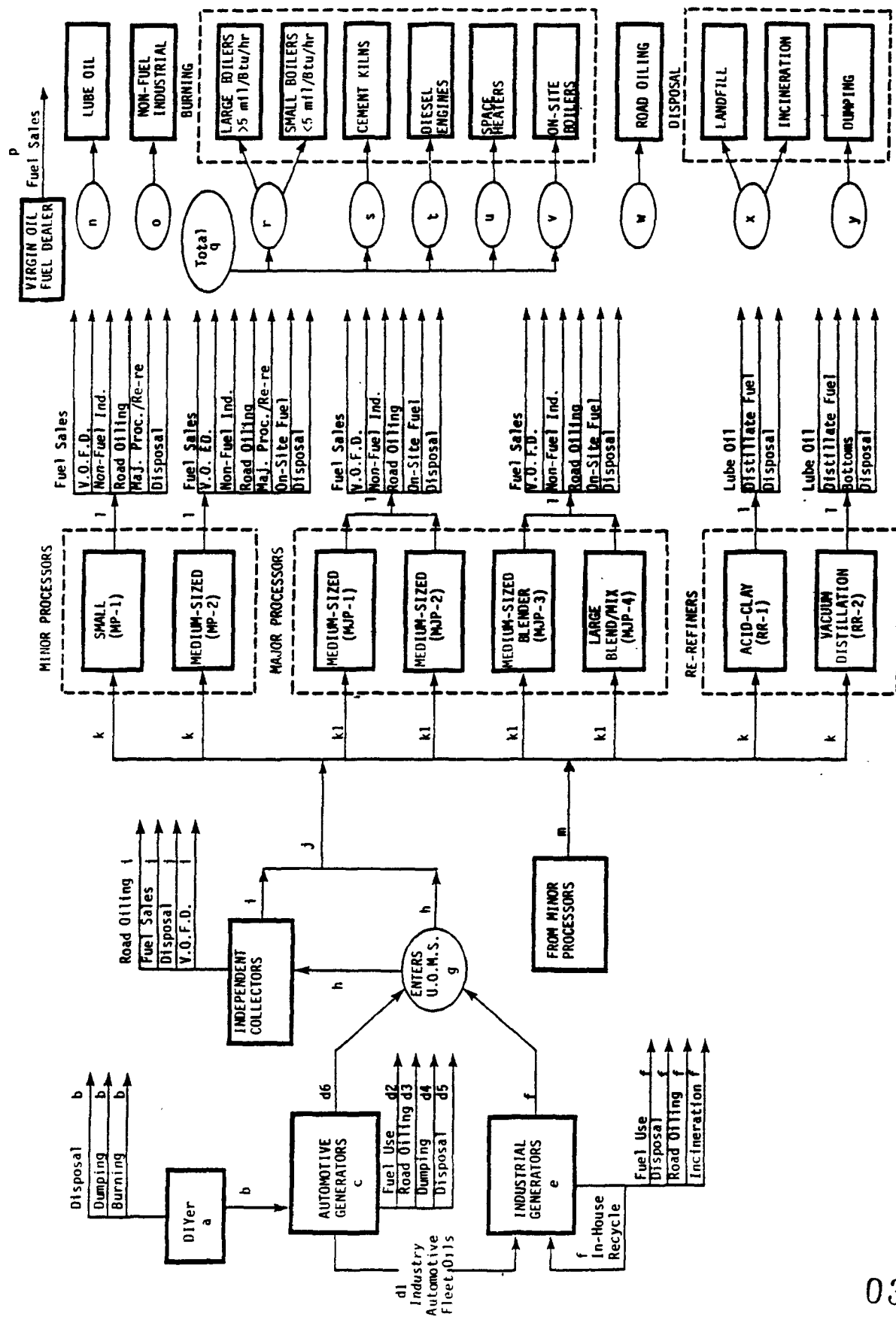
- (a) In 1983, a total of 1,251 million gallons of automotive lubricants were sold in the United States (C-12). About 94 percent of these oils were crankcase or hydraulic oils which comprise most of the oils generated following use. According to information obtained from (C-12), 42.1 percent of these oils were consumed in passenger cars and 15.5 percent in light trucks. Approximately 9.5 percent of these oils were hydraulic fluids. Triple A reports that 80 percent of passenger cars and 54 percent of light trucks are privately owned. For privately owned vehicles, a DOE study indicated that 64 percent of all oil changes are carried out by do-it-yourselfers (DIYers) (C-1). Finally, oil generation factors for passenger cars and light trucks are 0.68 and 0.63, respectively (only 0.10 for hydraulic fluids). Using this information, the total quantity of used oil generated by DIYers is calculated below:

Passenger cars

$$\begin{array}{rcl} \text{Crankcase} & = & [1,251 \times (.94) \times (.421) \times (.80) \\ & & \times (.64) \times (.68)] = & 155.2 \\ \text{Hydraulic oil} & = & [1,251 \times (.94) \times (.421) \times (.10) \\ & & \times (.80) \times (.64) \times (.10)] = & 2.5 \\ & & \text{Subtotal} & 157.7 \end{array}$$



* Includes 192.3 million gallons V.O.F.D.
 † Includes use in on-site boilers at industrial establishments, military bases, used oil processors, and re-refiners.



0321 Figure C-2. Source key for the description of used oil flow in the United States.

Light Trucks

$$\begin{aligned}
 \text{Crankcase} &= [1,251 \times (.94) \times (.155) \times (.90) \\
 &\quad \times (.54) \times (.64) \times (.63) = 35.6 \\
 \text{Hydraulic Oil} &= [1,251 \times (.94) \times (.155) \times (.10) \\
 &\quad \times (.54) \times (.64) \times (.10) = 0.6 \\
 &\quad \text{Subtotal } 36.2 \\
 \text{Total DIYer Oil} &= 193.9
 \end{aligned}$$

- (b) The management of used oil generated by DIYers was assumed to be equal to the average practices reported by DOE for conditions in 1981 (C-1). Volumes managed in each way were calculated from total generation using the following percentages:

$$\begin{aligned}
 \text{Take to recycle center} &- 14.0 \text{ (27.1 mil gal)} \\
 \text{Disposal} &- 21.0 \text{ (40.8 mil gal)} \\
 \text{Dumping} &- 60.9 \text{ (118.0 mil gal)} \\
 \text{Burning} &- 4.1 \text{ (8.0 mil gal)} \\
 &\quad \underline{100.0}
 \end{aligned}$$

- (c) The total quantity of used oil generated at "automotive generators" (see definition in Section 2.0) was calculated based upon sales to certain markets. These markets include personal and commercial vehicles with commercial being either fleet or non-fleet. The generation by non-DIYer personal vehicles can be calculated by using the same method and equations as presented above for DIYers. Oil generation by non-DIYer personal vehicles is about 55 percent of that generated by DIYers, or 106.8 million gallons. Oil generation by commercial vehicles is calculated below based upon sales (C-12) and generation factors (C-2) and (C-12) for three basic markets and two general oil types.

	(Sales - 10 ⁶ gal)	(Generation Factor)	(Used Oil Generation)
Passenger Cars			
Crankcase	(86.8)	x (0.68)	= 59.02
Hydraulic	(9.6)	x (0.10)	= 0.96
		Subtotal	60.0
Light Trucks			
Crankcase	(72.0)	x (0.63)	= 45.36
Hydraulic	(8.0)	x (0.10)	= 0.80
		Subtotal	46.2
Medium & Heavy Trucks & Buses			
Crankcase	(139.7)	x (0.59)	= 82.42
Hydraulic	(15.7)	x (0.10)	= 1.57
		Subtotal	84.0
Total - Commercial Vehicles			<u>190.2</u>

The remaining automotive used oil generation results from off-road engines including such uses as farming, construction, mining, military, and aviation. Both crankcase and hydraulic oil sales (C-12) and generation factors (C-2) and (C-12) were used to calculate used oil generation in these markets as shown below.

<u>Off-Road Market</u>	<u>(sales - 10⁶ gal)</u>	<u>x</u>	<u>(Generation Factor)</u>	<u>=</u>	<u>(Used Oil Generation)</u>
Farming					
Crankcase	(74.1)	x	(0.59)	=	43.7
Hydraulic	(39.7)	x	(0.75)	=	29.8
			Subtotal		73.5
Construction					
Crankcase	(68.8)	x	(0.59)	=	40.6
Hydraulic	(34.7)	x	(0.75)	=	26.0
			Subtotal		66.6
Mining					
Crankcase	(45.5)	x	(0.59)	=	26.9
Hydraulic	(23.1)	x	(0.75)	=	17.3
			Subtotal		44.2
Government					
Crankcase	(11.7)	x	(0.63)	=	7.4
Hydraulic	(6.3)	x	(0.75)	=	4.7
			Subtotal		12.1
Aviation					
Crankcase	(12.7)	x	(0.47)	=	6.0
Hydraulic	(7.6)	x	(0.75)	=	5.7
			Subtotal		11.7
Total - Off-Road Vehicles					<u>208.1</u>

The total volume of oil accumulated at automotive generators equals the sum of the following components:

Oil received from DIYers -	27.1 mil gal
Non-DIYer personal vehicles -	106.8 mil gal
Commercial on-road vehicles -	190.2 mil gal
Off-road vehicles -	<u>208.1 mil gal</u>
Total	<u>532.2 mil gal</u>

(d) The letter "d" codes represent outputs from automotive generators.

- (d1) - Some automotive oils are generated by industrial establishments due to the use of vehicle fleets. This quantity was estimated assuming that 8 percent of the oil generated by medium and heavy trucks and buses is in industry fleets. This percent is equal to the percent of total fleets comprised by the manufacturing process and petroleum industries (C-13).
- (d2) - Automotive generators use their oil as fuel in three major applications: (1) waste oil heaters; (2) diesel engines; and (3) on-site boilers. Some minor burning may take place in other fuel applications, but that activity is not included in this estimate.

Used oil heaters burn primarily automotive oils. They are usually located at automotive generator sites. It has been estimated that about 30,000 heaters are currently in use in the United States with a typical rating of about 250,000 Btu/hour (C-4). Based upon this rating and other information received from industrial contacts, it was assumed that a typical unit would burn 1,140 gallons per year. The total quantity of used oil burned in this way is estimated to be 34.2 million gallons in 1983.

Little documented information is available on used oil combustion in diesel engines. Some large diesel engine manufacturers, such as Cummins, have provided customers with instructions and apparatus for blending used diesel oil with diesel fuel for burning in diesel engines. The blending ratio is about 50 to 1 (fuel to oil). It is estimated that only 10 to 20 million gallons of the 200 plus million gallons of truck oil is burned in this way. The midpoint of 15 million gallons per year was assumed for this study.

Burning of automotive oils in on-site boilers is primarily limited to the U.S. Department of Defense. Approximately 50 percent of total generation by U.S. government installations (6.0 million gallons) is estimated to be burned on-site (C-14).

Overall, 55.2 million gallons ($34.2 + 15 + 6.0$) of generated used automotive oil is estimated to be burned directly by generators.

- (d3) - It was assumed that 20 percent of the used oil generated by the farming, construction, and mining industries which was not collected into the UOMS was used to oil roads or other unpaved areas to suppress dust or to provide an asphaltic effect to the surface. Total non-collected generation for these sectors was 125.3 million gallons in 1983. This volume equals 80 percent of farm generation and 60 percent of construction and mining generation. Twenty percent of this volume equals 25.1 million gallons.
- (d4) - Some generated used oil is dumped by non-fleet commercial vehicle operators and a substantial volume is dumped by operators of off-road vehicles. Most dumping is simply allowing oil to drain from a crankcase onto an unpaved lot or road; however, it is sometimes collected and used in a haphazard manner for other purposes such as weed or insect control. It was assumed that 12.5 percent of all oil generated by commercial vehicles is dumped. This practice is only common for small non-fleet situations where the volume of oil generated is too small to warrant storage with subsequent collection. The 12.5 percent estimate assumes 50 percent of the commercial vehicle oil generation is for non-fleet vehicles (91.8 million gallons); 50 percent of that oil is not collected into the UOMS (45.9 million gallons); and 50 percent of the non-collected generation is dumped (22.9 million gallons).

As stated in the preceding section, 125.3 million gallons of used oil generated by the farming, construction, and mining industries is not collected into the UOMS. Of this total, 80 percent (or 100.2 million gallons) is believed to be dumped.

Overall, 123.2 million gallons of used automotive oil is estimated to be dumped by generators, not including DIYers.

- (d5) - Only a small amount of generated used automotive oil is believed to be disposed of through conventional methods (e.g., sanitary landfill). It was estimated that 10 percent of the non-collected, non-fleet, commercial vehicle oil was managed in this way:

Disposed oil = (45.9 mil gal) x (.10) = 4.6 mil gal

- (e) Total used oil generation by industrial establishments was determined based upon sales reported in (C-12) and generation factors reported in (C-2) and (C-8) with some adjustments by FAL. Table C-1 summarizes this calculation procedure. Note that actual generation (shown in parenthesis for some oils) is lower than the theoretical volumes calculated from the factors. This is because some oils which are sold do not complete their life cycle in the year in which they are sold. In effect, there are more of these oils in use each year.
- (f) Used oil management practices by industrial facilities was estimated by determining generation by major industrial sectors and applying survey results on average management methods to the volume for each sector. Table C-2 shows industrial oil generation in 1983 by the major sectors. Table C-3 shows estimates of how the generated oils are managed in each major sector.
- (g) The total oil entering the UOMS is the sum of that supplied by automotive generators and industrial generators. Oil entering UOMS = $317.4 + 351.7 = \underline{669.1 \text{ mil gal.}}$
- (h) Although many independent collector companies exist, it was assumed that they only collect 25 percent of the oil accumulated by generators. The remaining 75 percent is collected by processors and re-refiners. This 25/75 percent breakdown was estimated based upon collection practices in many geographical regions as reported by collectors and processors. These percentages were applied to the total oil entering the UOMS to give the volume handled by independent collectors and the volume collected directly by processors and re-refiners.

$$\begin{aligned} \text{Ind. Collectors} &= (669.1) \times (.25) = \underline{167.3 \text{ mil gal}} \\ \text{Direct Collection} \\ \text{by Proc. and} \\ \text{Re-ref} &= (669.1) \times (.75) = \underline{501.8 \text{ mil gal}} \end{aligned}$$

- (i) The distribution of oil from independent collectors companies was estimated based upon telephone interviews and site visits with collectors and processors. Approximately 62 percent of the collected oil is delivered to processors or re-refiners. The remainder is sold directly to end-use applications including road oiling (14%), direct fuel sales (9.5%), and virgin fuel oil dealers (9.5%), or lost to disposal (5%).

Table C-1

1983 INDUSTRIAL OIL SALES/GENERATION(10⁶ gal)Sales x Generation Factor 1/ = Generation

I. General Industrial Oils			
A. Hydraulic	264	.80	211.2 (200) 2/
B. Gear	33	.60	20.0 (19.6)
C. Other Specified			
1. Turbine Circ.	78	.60	46.8 (45.9)
2. Refrigeration	6	.33	2.0 (1.9)
3. Way	5	.60	3.0
4. Compressor	4	.60	2.4
5. Rock Drill Air Tools	3	.60	1.8
D. Other	28	.73	20.5
Subtotal	421		307.7 (295.1)
II. Industrial Engine Oils			
A. Railroad Diesel	57	.20	11.4
B. Marine	49	.50	24.5
C. Natural Gas	38	.20	7.6
Subtotal	144		43.5
III. Metalworking Oils			
A. Metal Removing	85	1.00	85.0
B. Metal Forming	47	0.60	28.2
C. Metal Treating	19	0.60	11.4
D. Metal Protecting	12	0.10	1.2
Subtotal	163		125.8
IV. Process Oils			
A. Electrical	76	.90	68.4 (20.5) 3/
B. White	56	.10	5.6
C. Rubber	64	.10	6.4
D. Other	102	.10	10.2
Subtotal	298		90.6 (42.7)
TOTAL INDUSTRIAL OIL	1,026	55.3	567.6 (507.1)
INDUSTRIAL GREASE	35	0	0
TOTAL INDUSTRIAL LUBRICANTS	1,061	53.5	567.6 (507.1)
VI. Industry Fleet Oils			
A. Automotive Oil	11.2		6.7
TOTAL OIL GENERATION BY INDUSTRIAL GENERATORS			574.3 (513.8)

1/ Generator factor equals the fraction available for collection into the used oil management system; it does not include oil which ends up in wastewater treatment sludges generated on-site.

2/ Values in parentheses equal actual industrial oil generation assuming that all oil sold in any one year does not finish its life cycle in that same year. Thus, there is an accumulation of oil in use in our industrial/commercial system.

3/ The relatively low level of actual used electrical oil generation is due to the fact that much of electrical oil sales are to replace PCB oils in transformers. The generation of these PCB oils is not included in this value since these oils do not enter the UOMS.

Source: Sales data: (C-12).

Generation factors: (C-2) and (C-8) and Franklin Associates, Ltd.

Table C-2

INDUSTRIAL OIL GENERATION - 1983

SIC	Industry	Number of Establishments			Used Oil Generation (10 ³ gallons)		
		Less than 20 Employees	Greater than 20 Employees	Total	Small Facilities	Large Facilities	Total
Major Generators							
24	Wood Products	29,032	5,451	34,483	2,908.7	4,166.2	7,074.9
25	Furniture & Fixtures	6,128	3,450	9,608	135.0	506.8	641.8
26* <u>1/</u>	Pulp/Paper	72	548	620	30.1	7,996.8	8,026.9
27*	Newspapers	7,745	2,475	10,220	118.5	308.9	427.4
28	Chemicals	2,179	1,880	4,059	1,663.0	24,627.8	26,290.8
30*	Rubber/Plastic	6,673	5,127	11,800	1,315.1	6,113.5	7,428.6
31*	Leather	206	170	376	16.4	85.9	102.3
32*	Glass	237	228	465	42.0	1,206.7	1,248.7
33	Primary Metals	3,687	3,966	7,653	4,425.0	66,329.1	70,754.5
34	Fabricated Metals	20,985	12,791	33,776	3,725.0	16,886.4	20,611.4
35	Machinery	39,784	14,234	54,018	9,780.0	41,812.6	51,592.6
36	Electronics	9,785	7,329	17,114	1,314.5	20,775.6	22,090.1
37	Motor Vehicles	5,656	3,430	9,086	7,486.8	143,885.0	151,371.8
38	Instruments	5,145	1,988	7,133	86.6	1,124.9	1,211.4
39	Miscellaneous Manufacture	12,210	3,556	15,766	2,613.4	3,101.4	5,714.8
49*	Electric Utilities	-	1,068 <u>2/</u>	1,068	-	13,243.2	13,243.2
	Subtotal - Major Generators	149,524	67,721	217,245	35,660.1	352,170.8	387,830.9
	All Other Mfg. Industries	-	-	140,000	-	-	36,663.1
Marine Terminals							
	Military	-	153	153	-	306	306
	Commercial	-	-	NA <u>3/</u>	-	-	20,000 <u>4/</u>
Railroads							
		-	-	NA	-	-	11,400
Stationary Natural Gas Engines							
		-	-	NA	-	-	7,600
Other Miscellaneous Uses <u>5/</u>							
		-	-	-	-	-	50,000
Total Industrial Oil							
		-	-	-	-	-	513,800

1/*: The entire industry is not included in the major generator analysis because of a lack of data or because segments are insignificant generators.

2/ All power plants in SIC 49 are assumed to satisfy the large establishment definition of >20 employees.

3/ NA: Not Available.

4/ Estimated from the total generation believed to be 24 million gallons.

5/ Includes such things as the use of industrial oils in homes, commercial establishments, off-road vehicles, etc.

Source: Franklin Associates, Ltd., from data provided in (C-9) to (C-11) and (C-15).

Table C-3

MANAGEMENT OF USED INDUSTRIAL OILS

Generator Categories	Total Generation (10 ³ gal)	Management											
		Burned as Fuel		Incinerated		Treatment/Recycle		Land Disposal		Road Oiling		Sale to Coll/Proc	
		Percent	10 ³ gal	Percent	10 ³ gal	Percent	10 ³ gal	Percent	10 ³ gal	Percent	10 ³ gal	Percent	10 ³ gal
Major Generators	387,830.9	8	31,026	2	7,157	10	38,783	5	19,392	<1	-	75	290,873
Other Mfg. Establishments	36,663.1	5	1,833	5	1,833	5	1,833	10	3,667	<1	-	75	27,497
Marine Terminals													
Military	306	40	122	5	15	10	31	5	15	5	15	35	107
Commercial	20,000	5	1,000	2	400	3	600	5	1,000	<1	-	85	17,000
Railroads	11,400	5	570	<1	-	2	228	3	342	5	570	85	9,690
Natural Gas Engines	7,600	<1	-	<1	-	<1	-	70	5,320	10	760	20	1,520
Other Misc. Uses	50,000	5	2,500	5	2,500	5	2,500	70	35,000	5	2,500	10	5,000
Total	513,800	7.2	37,051	2.4	12,505	8.6	43,975	12.6	64,736	0.7	3,845	68.4	351,687

Source: Franklin Associates, Ltd., from Table C-2 and average management practices derived from (C-11) and (C-15).

- (j) The total volume of used oil handled by reproprocessors and re-refiners is equal to the sum of that delivered by independent collector companies (103.4 million gallons) and that which is directly collected by processor and re-refiner route trucks (501.8 million gallons). The total input to these companies equals the sum of these numbers or 605.2 million gallons.
- (k) The distribution of collected used oil to the eight selected model facilities is based upon several assumptions. First, it should be emphasized that there are actually many more types of facilities than the selected typical models, and therefore, the total volume of oil was "force fed" to a workable number of facilities.

Three basic data sources were used to estimate oil distribution to the typical models--(1) the volume handled per year by each model, (2) the total number of processing and re-refining companies, and (3) the total volume of oil delivered to these companies.

It has been reported that there are approximately 250 operating processors and re-refiners in the United States (C-5). Some information is available through limited surveys as to the number of specific company types. Good information is available characterizing the relatively small number of operating re-refiners. Using available information, a series of iterations was performed to determine a reasonable number of facility types while maintaining the desired volume of material throughput. Table C-4 shows the results of those iterations and the estimated flows. The data in Table C-4 are presented in two basic parts; one part consisting of the first four columns and the second part, the last column. The first part develops the total annual volume and percent of oil passing through each selected model type. The resultant estimates yield a total volume which is greater than the actual input to the model facilities (663 compared to 605.2 million gallons). This exercise was carried out to determine the percentages shown in column four which could be applied to the total input to processor companies to give material flows into each model which are consistent with the overall flow description. These percentages were multiplied times the remaining input material after the re-refiner volume of 85 million gallons had been subtracted. This independent estimate of re-refining was maintained because considerably more information was available about this entire industry.

Table C-4

DEVELOPMENT OF BEST ESTIMATES OF USED OIL DISTRIBUTION INTO PROCESSING AND RE-REFINING MODELS

<u>Model Facility</u>	<u>Number of Facilities</u>	<u>Model Facility Annual Volume (10³ gal)</u>	<u>Total Annual Volume (10⁶ gal)</u>	<u>Percent of Total Processed Oil</u>	<u>Estimated Oil Handled by Each Model†</u>
Minor Processors					
MP-1	50	750	37.5	6.6	34.3
MP-2	65	1,500	97.5	17.0	88.4
Major Processors					
MJP-1	60	2,500	150.0	26.2	136.3 (139.4)**
MJP-2	20	2,500	50.0	8.7	45.3 (46.3)**
MJP-3	20	2,500	50.0	8.7	45.3 (46.3)**
MJP-4	<u>25</u>	7,500	<u>187.5</u>	<u>32.8</u>	<u>170.6 (174.7)**</u>
Subtotal - Processing	240		572.5	100.0	520.2 (529.4)**
Re-Refiners					
RR-1†	3	3,500	10.5	-	10
RR-2†	<u>10</u>	8,000	<u>80.0</u>	-	<u>75</u>
Subtotal - Re-refining	13		90.5		85
Total	253		663.0*		605.2 (614.4)**

* This value is greater than the total estimated volume of material handled by processors and re-refiners (605.2 mil gal). Some disagreement is expected because the total annual volume was calculated based upon typical facility volumes rather than average volumes. Since the actual number of facilities was factored with typical volumes, agreement in total volume would be mere coincidence.

† The number of re-refining facilities and volumes of oil handled were independently estimated and held fairly constant in this analysis because a high level of confidence exists in those estimates.

‡ The estimated volumes passing through the processor models were calculated to fit the oil volume which remained following the subtraction of the re-refiner estimates. For example, the oil flow through MP-1 was calculated by:

$$(520.2) \times 0.066 = 34.3 \text{ million gallons.}$$

** The volumes shown in parentheses for major processors and re-refiners are adjustments associated with oil received from minor processors. In effect, this is double counting. Although only 605.2 million gallons enter the system, 614.4 million gallons are actually handled because of inter-facility transfers. See code (1) for a description of minor processor oil distribution practices.

Adjustments in the volume of oil handled by each major processor type (Kls) is shown in Table C-4 in parentheses. These adjustments represent oil which passes from minor processors to major processors as part of normal flows (see letter codes "l" and "m"). Therefore, the actual volume of oil handled is somewhat higher than the amount entering the UOMS.

- (1) The distribution of product oil from the selected processing and re-refining model facilities is based upon the results of a limited survey of companies. Table C-5 summarizes the percent distribution of product oil from processors, re-refiners, and independent collectors. These estimates were taken directly from the detailed market analyses developed for each model facility. Also, included in Table C-5 is the calculated distribution of all input oil including product oil and oil losses and disposal in processing residues. Since residue generation and disposal practices vary tremendously for different facility types, it was estimated that a 5 percent loss factor is common for processing facilities. The disposal estimates shown for re-refiners is greater and based upon reported practices as obtained in the company survey. The output gallonage for each model was calculated from the percentages shown in Table C-5 and the estimated input to the facilities (k).

- (m) The amount of used oil handled "twice" by the UOMS (once by minor processors and once by major processors or re-refiners) was calculated from the outputs from the two minor processors models classified as the "major processor/re-refiner" market.

(MP-1) = 4.8 mil gal
+(MP-2) = 4.4 mil gal
Total 9.2 mil gal

- (n) Total re-refined lube oil is equal to the sum of lube oil produced by the acid-clay and vacuum distillation re-refiner models.
- (o) Non-fuel industrial uses for product oil includes flotation oil for the phosphate industry, and material feedstock for asphalt manufacture, and form oil. The total oil consumed for this purpose is the non-fuel industrial output from the processor models and the bottoms material produced by vacuum distillation re-refiners.

Table C-5

SUMMARY OF USED OIL DISTRIBUTION FROM MODEL FACILITIES*
(percent)

<u>Model Facility</u>	<u>Direct Fuel Sales</u>	<u>Virgin Oil Fuel Dealer</u>	<u>Non-Fuel Industrial</u>	<u>Road Oiling</u>	<u>Other Processors or Re-refiners</u>	<u>On-Site Fuel</u>	<u>Lube Oil</u>	<u>Disposal</u>	<u>Total†</u>
Collector Only	9.5%	9.5%	-	14%	62%	-	-	5%	100
Minor Processors									
MP-1									
Product Oil	25	45	5	10	15	-	-	-	100
Total Oil Input	24	43	5	9	14			5	100
MP-2									
Product Oil	30	50	5	5	5	5	-	-	100
Total Oil Input	28	47	5	5	5	5	-	5	100
Major Processors									
MJP-1 and MJP-2									
Product Oil	45	40	8	2	-	5	-	-	100
Total Oil Input	43	38	7	2	-	5	-	5	100
MJP-3 and MJP-4									
Product Oil	60	30	3	2	-	5	-	-	100
Total Oil Input	57	28	3	2	-	5	-	5	100
Re-Refiners									
RR-1	-	-	-	-	-	7‡	65	28	100
RR-2	-	-	12	-	-	7‡	75	6	100

* Used oil distribution is described as the percent of total oil output. For the processor models, two sets of percentages are shown. The first shows product oil distribution only; the second is based upon total oil input and includes oil losses in disposal residues.

† Sum of calculated percents as related to total oil input may not equal 100 due to rounding.

‡ It was assumed that the recovered distillate fuels are burned in-house for process heating.

Source: Franklin Associates, Ltd., from a limited survey of facilities including site visits (C-15).

- (p) Total used oil sales through virgin oil fuel dealers was calculated as the sum of V.O.F.D. outputs from the processor and independent collector models.
- (q) Total burned used oil equals the sum of (1) burning by DIYers, (2) fuel use by generators, (3) fuel sales by all processors and collectors, (4) V.O.F.D. sales, (5) distillate fuel production by re-refiners, and (6) on-site burning by processors.
- (r) The estimate of the volume of used oil burned in large and small boilers was calculated as the difference in the total oil burned and the sum of oil burned in cement kilns, diesel engines, space heaters, and on-site boilers.
- (s) Cement companies routinely burn waste materials along with conventional fuels to provide the large amounts of heat required for cement kiln operation. The published fuel statistics for this industry do not distinguish between waste fuels consumed which include used oils, solvents, and contaminated fuel oils (C-6). The Portland Cement Association reports that used oil use is not significant, but some may be used with consumption ranging from 0 to 10 million gallons per year (C-7). For this study, the midpoint volume of 5 million gallons per year was assumed.
- (t) and (u) Used oil burned in diesel engines and space heaters was previously evaluated in the letter (d) discussion which examined generator used oil use as a fuel.
- (v) Processors and re-refiners burn used oil and light distillates recovered through processing to provide on-site process heat and sometimes space heat for buildings. From the processor survey, it was estimated that approximately 5 percent of product oil is burned on-site. Re-refiners often burn the recovered distillate fuels which comprise about 7 percent of input used oil (C-11). In total, on-site burning by processors and re-refiners was estimated to be 30.7 million gallons in 1983.

Also included in the on-site boiler use is burning by industrial facilities (see letter "f" - 37.1 million gallons) and the burning of primarily automotive oils by military bases (see letter "d2" - 6.1 million gallons). Overall, a total of 73.9 million gallons were believed to be burned in on-site boilers in 1983.

- (w) Total road oiling was estimated by summing the road oiling activity of each processor model, the independent collector model, and in-house generator usage.
- (x) and (y) Used oil disposal primarily includes the conventional techniques of landfilling and incineration and the undesirable method of dumping. Some oil may enter into disposal lagoons or the municipal sewer systems, but overall, these avenues of disposal are believed to be of minor significance. For this analysis, it is not possible to totally distinguish between landfilling and incineration methods; however, industrial oils are about 5 times more likely to be land disposed than incinerated (see Table C-3).

Some oil is disposed of at every stage in the UOMS. The DIYer may put the oil in the municipal solid waste stream; the industrial generator may have a private hauler dispose of a highly contaminated used oil; and processors and re-refiners produce sludges with variable oil contents for disposal. The (x) value is the sum of these disposal estimates for each selected UOMS model, as well as the generators.

Used oil which is dumped (letter "y") originates from two basic sources: (1) DIYers and (2) off-road vehicle operators. According to the DOE DIYer study (C-1), about 60 percent of the oil generated by DIYers is dumped. The dumping of oil generated by off-road vehicles has been previously discussed in the generator use disposal section (d4).

APPENDIX C REFERENCES

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- C-13 1981 Commercial Car Journal Fleet Census.

- C-14 Fu, T. T., and C. Semien, "Utilization of Navy-Generated Waste Oils as Boiler Fuel - Handbook of Guidelines and Field Survey Results," Naval Civil Engineering Lab, Port Hueneme, California, August 1983.
- C-15 Franklin Associates, Ltd., survey of selected industries and site visits to industrial establishments to assess used oil generation and management practices, information obtained May 1983 to August 1984.

Appendix D

ALTERNATIVE METHOD TO CALCULATE MEAN CONCENTRATION OF HAZARDOUS CONSTITUENTS IN USED OIL

There was some question among the research team and the U.S. EPA regarding the most appropriate method to calculate the mean concentration of hazardous constituents. Throughout this report mean concentrations are presented for detected concentrations only. Non-detected values were not included in those calculations because detection limits varied significantly. For example, many PCB tests had a detection limit of 50 ppm, but others could measure concentrations down to 1.0 ppm. It seemed inappropriate to consider samples with levels of <50 ppm and <1 ppm equal to zero, or even equal to their detection limits. There seemed to be no single method which would avoid distortion. That is why means were calculated for detected values only throughout this report.

Nevertheless, some individuals believed that the conservative approach of assuming the concentration to be equal to the detection limit to be the most appropriate for some risk assessment calculations. For this reason, an alternative mean was calculated for each contaminant for most used oil types. Table D-1 shows these values assuming that the concentration of the contaminant in a non-detected situation was equal to the detection limit (e.g., <50 = 50; <1 = 1).

Table D-1
MEAN CONCENTRATION OF USED OIL CONTAMINANTS IN VARIOUS OIL TYPES 1/
(ppm)

	All Used Oil Samples	All Automotive Samples	Automotive from Generator	Automotive from Coll./Proc	All Industrial Samples	Unknown Source	Unprocessed Oil	Product Oil	Used Oil Burned As Fuel	Burned and Blended Oil
Metals										
Arsenic	8.0	6.9	5.4	7.6	5.0	9.1	8.0	10.4	8.0	2.6
Barium	120.5	178.5	204.7	127.4	99.2	104.9	105.3	141.5	118.9	11.9
Cadmium	4.8	2.5	1.9	3.3	4.6	5.4	5.7	7.8	6.0	0.6
Chromium	23.0	11.8	10.7	11.8	30.8	24.3	34.7	16.3	30.4	3.9
Lead	604.7	1,569.8	2,509.5	898.5	189.0	567.6	531.2	496.1	527.8	54.6
Zinc	572.6	865.2	982.3	635.0	366.7	538.2	530.8	567.8	698.6	69.9
Chlorinated Solvents										
Dichlorodifluoromethane	225.5	20.0	ND 2/	20.0	ND	243.5	ND	ND	261.6	26.2
Trichlorotrifluoroethane	38,219.3	92.9	ND	92.9	200,000	35,236.3	ND	ND	768.0	76.8
1,1,1-Trichloroethane	1,778.0	1,894.8	78.8	2,693.8	1,439.0	1,814.1	1,766.6	1,764.8	1,223.5	122.4
Trichloroethylene	626.0	324.9	6.7	467.7	609.2	678.8	592.8	1,302.3	538.8	53.9
Tetrachloroethylene	857.2	1,321.6	70.8	1,883.1	652.6	820.4	1,192.7	1,020.0	928.9	92.9
Total Chlorine	21,700	3,600	1,200	5,200	5,700	30,100	38,500	4,800	5,500	550
Other Organics										
Benzene	485.2	277.8	270.6	282.4	462.4	573.3	663.3	151.4	1,129.0	112.9
Toluene	1,813.6	1,854.8	873.5	2,489.8	1,145.8	1,984.1	1,724.1	1,315.1	3,130.1	313.0
Xylenes	2,779.2	1,570.6	1,823.5	1,391.1	592.0	3,854.3	1,984.4	1,879.3	3,335.4	333.5
Benzo(a)anthracene	55.0	17.0	ND	17.0	ND	71.1	ND	ND	20.5	2.1
Benzo(a)pyrene	17.0	9.4	9.7	8.87	ND	23.1	ND	ND	7.9	0.8
Naphthalene	475.2	377.5	ND	377.5	ND	521.2	ND	ND	588.2	58.8
PCBs	30.6	7.6	4.8	8.9	76.5	26.3	20.6	16.8	32.8	3.1

1/ Assumes that nondetected concentrations are equal to detection levels (e.g., <5 = 5).

2/ ND indicates "no data."

3/ Blended at 9 parts virgin fuel to 1 part used oil.

Source: Franklin Associates, Ltd.