APPENDIX A

ACCUTEST®
Laboratory Data

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E39858-1	Nitrogen, Total Kjeldahl	75.6	mg/l	CENTRATE WET WELL (GRAB)	24-Sep-98	14:45
E39858-1	Nitrogen, Ammonia	93.9	mg/l	CENTRATE WET WELL (GRAB)	24-Sep-98	14:45
E39858-1	Solids, Total Suspended	78	mg/l	CENTRATE WET WELL (GRAB)	24-Sep-98	14:45
E39858-1	Iron	3740	ug/l	CENTRATE WET WELL (GRAB)	24-Sep-98	14:45
E39858-1	Zinc	116	ug/l	CENTRATE WET WELL (GRAB)	24-Sep-98	14:45
E39858-2	Nitrogen, Total Kjeldahl	235	mg/l	CENTRATE HEAD TANK (COMPOSITE)	24-Sep-98	15:05
E39858-2	Nitrogen, Ammonia	185	mg/l	CENTRATE HEAD TANK (COMPOSITE)	24-Sep-98	15:05
E39858-2	Solids, Total Suspended	13	mg/l	CENTRATE HEAD TANK (COMPOSITE)	24-Sep-98	15:05
E39858-2	Iron	2760	ug/l	CENTRATE HEAD TANK (COMPOSITE)	24-Sep-98	15:05
E39858-2	Zinc	928	ug/l	CENTRATE HEAD TANK (COMPOSITE)	24-Sep-98	15:05
E39858-3	Nitrogen, Total Kjeldahl	8.5	mg/l	ARP EFFLUENT (COMPOSITE)	24-Sep-98	15:00
E39858-3	Nitrogen, Ammonia	7.7	mg/l	ARP EFFLUENT (COMPOSITE)	24-Sep-98	15:00
E39858-3	Solids, Total Suspended	7	mg/l	ARP EFFLUENT (COMPOSITE)	24-Sep-98	15:00
E39858-3	Iron	4900	ug/l	ARP EFFLUENT (COMPOSITE)	24-Sep-98	15:00
E39858-3	Zinc	2540	ug/l	ARP EFFLUENT (COMPOSITE)	24-Sep-98	15:00
E39858-4	Nitrogen, Ammonia	650	mg/l	REGENERATION SOLUTION (GRAB)	24-Sep-98	14:55
E39858-4	Iron	30200	ug/l	REGENERATION SOLUTION (GRAB)	24-Sep-98	14:55
E39858-4	Zinc	3380000	ug/l	REGENERATION SOLUTION (GRAB)	24-Sep-98	14:55
E40042-1	Nitrogen, Total Kjeldahl	327	mg/l	CENTRATE WET WELL (GRAB)	29-Sep-98	15:38
E40042-1	Nitrogen, Ammonia	236	mg/l	CENTRATE WET WELL (GRAB)	29-Sep-98	15:38
E40042-1	Solids, Total Suspended	1060	mg/l	CENTRATE WET WELL (GRAB)	29-Sep-98	15:38
E40042-1	Iron	241000	ug/l	CENTRATE WET WELL (GRAB)	29-Sep-98	15:38
E40042-1	Zinc	614	ug/l	CENTRATE WET WELL (GRAB)	29-Sep-98	15:38
E40042-2	Nitrogen, Total Kjeldahl	330	mg/l	CENTRATE HEAD TANK (COMPOSITE)	29-Sep-98	15:20
E40042-2	Nitrogen, Ammonia	243	mg/l	CENTRATE HEAD TANK (COMPOSITE)	29-Sep-98	15:20
E40042-2	Solids, Total Suspended	28	mg/l	CENTRATE HEAD TANK (COMPOSITE)	29-Sep-98	15:20
E40042-2	Iron	5270	ug/l	CENTRATE HEAD TANK (COMPOSITE)	29-Sep-98	15:20
E40042-2	Zinc	86.3	ug/l	CENTRATE HEAD TANK (COMPOSITE)	29-Sep-98	15:20
E40042-3	Nitrogen, Total Kjeldahl	69	mg/l	ARP EFFLUENT (COMPOSITE)	29-Sep-98	15:20
E40042-3	Solids, Total Suspended	<4.0	mg/l	ARP EFFLUENT (COMPOSITE)	29-Sep-98	15:20
E40042-3	Nitrogen, Ammonia	50.8	mg/l	ARP EFFLUENT (COMPOSITE)	29-Sep-98	15:20
E40042-3	Iron	216	ug/l	ARP EFFLUENT (COMPOSITE)	29-Sep-98	15:20

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E40042-3	Zinc	5280	ug/l	ARP EFFLUENT (COMPOSITE)	29-Sep-98	15:20
E40419-1	Nitrogen, Total Kjeldahl	429	mg/l	CENTRATE WET WELL, GRAB	7-Oct-98	15:15
E40419-1	Nitrogen, Ammonia	357	mg/l	CENTRATE WET WELL, GRAB	7-Oct-98	15:15
E40419-1	Solids, Total Suspended	453	mg/l	CENTRATE WET WELL, GRAB	7-Oct-98	15:15
E40419-1	Iron	55700	ug/l	CENTRATE WET WELL, GRAB	7-Oct-98	15:15
E40419-1	Zinc	306	ug/l	CENTRATE WET WELL, GRAB	7-Oct-98	15:15
E40419-2	Nitrogen, Total Kjeldahl	361	mg/l	CENTRATE HEAD TANK, COMPOSITE	7-Oct-98	15:00
E40419-2	Solids, Total Suspended	57	mg/l	CENTRATE HEAD TANK, COMPOSITE	7-Oct-98	15:00
E40419-2	Nitrogen, Ammonia	346	mg/l	CENTRATE HEAD TANK, COMPOSITE	7-Oct-98	15:00
E40419-2	Iron	4610	ug/l	CENTRATE HEAD TANK, COMPOSITE	7-Oct-98	15:00
E40419-2	Iron	4440	ug/l	CENTRATE HEAD TANK, COMPOSITE	7-Oct-98	15:00
E40419-2	Zinc	74.9	ug/l	CENTRATE HEAD TANK, COMPOSITE	7-Oct-98	15:00
E40419-3	Nitrogen, Total Kjeldahl	134	mg/l	ARP EFFLUENT, COMPOSITE	7-Oct-98	15:05
E40419-3	Nitrogen, Ammonia	122	mg/l	ARP EFFLUENT, COMPOSITE	7-Oct-98	15:05
E40419-3	Solids, Total Suspended	4	mg/l	ARP EFFLUENT, COMPOSITE	7-Oct-98	15:05
E40419-3	Iron	<500	ug/l	ARP EFFLUENT, COMPOSITE	7-Oct-98	15:05
E40419-3	Iron	362	ug/l	ARP EFFLUENT, COMPOSITE	7-Oct-98	15:05
E40419-3	Zinc	58800	ug/l	ARP EFFLUENT, COMPOSITE	7-Oct-98	15:05
E40419-4	Nitrogen, Total Kjeldahl	1920	mg/l	REGENERATION SOLUTION, GRAB	7-Oct-98	15:07
E40419-4	Nitrogen, Ammonia	1340	mg/l	REGENERATION SOLUTION, GRAB	7-Oct-98	15:07
E40419-4	Solids, Total Suspended	313	mg/l	REGENERATION SOLUTION, GRAB	7-Oct-98	15:07
E40419-4	Iron	109000	ug/l	REGENERATION SOLUTION, GRAB	7-Oct-98	15:07
E40419-4	Zinc	13900000	ug/l	REGENERATION SOLUTION, GRAB	7-Oct-98	15:07
E40701-1	Nitrogen, Ammonia	376	mg/l	CENTRATE WET WELL (GRAB)	14-Oct-98	15:52
E40701-1	Nitrogen, Total Kjeldahl	361	mg/l	CENTRATE WET WELL (GRAB)	14-Oct-98	15:52
E40701-1	Solids, Total Suspended	1110	mg/l	CENTRATE WET WELL (GRAB)	14-Oct-98	15:52
E40701-1	Iron	106000	ug/l	CENTRATE WET WELL (GRAB)	14-Oct-98	15:52
E40701-1	Zinc	681	ug/l	CENTRATE WET WELL (GRAB)	14-Oct-98	15:52
E40701-2	Nitrogen, Ammonia	454	mg/l	CENTRATE HEAD TANK (COMPOSITE)	14-Oct-98	16:00
E40701-2	Solids, Total Suspended	46	mg/l	CENTRATE HEAD TANK (COMPOSITE)	14-Oct-98	16:00
E40701-2	Nitrogen, Total Kjeldahl	333	mg/l	CENTRATE HEAD TANK (COMPOSITE)	14-Oct-98	16:00
E40701-2	Iron	5590	ug/l	CENTRATE HEAD TANK (COMPOSITE)	14-Oct-98	16:00
E40701-2	Zinc	448	ug/l	CENTRATE HEAD TANK (COMPOSITE)	14-Oct-98	16:00
E40701-3	Nitrogen, Total Kjeldahl	5.2	mg/l	ARP EFFLUENT (COMPOSITE)	14-Oct-98	16:05

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Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E40701-3	Nitrogen, Ammonia	3.9	mg/l	ARP EFFLUENT (COMPOSITE)	14-Oct-98	16:05
E40701-3	Solids, Total Suspended	<4.0	mg/l	ARP EFFLUENT (COMPOSITE)	14-Oct-98	16:05
E40701-3	Iron	592	ug/l	ARP EFFLUENT (COMPOSITE)	14-Oct-98	16:05
E40701-3	Zinc	468000	ug/l	ARP EFFLUENT (COMPOSITE)	14-Oct-98	16:05
E40701-4	Nitrogen, Ammonia	1210	mg/l	REGENERATION SOLUTION (GRAB)	14-Oct-98	16:10
E40701-4	Iron	56600	ug/l	REGENERATION SOLUTION (GRAB)	14-Oct-98	16:10
E40701-4	Zinc	26100000	ug/l	REGENERATION SOLUTION (GRAB)	14-Oct-98	16:10
E41046-1	Nitrogen, Ammonia	1370	mg/l	REGENERATION SOLUTION BEFORE PUMPED TO EVAPORATOR (A1)	19-Oct-98	10:00
E41046-2	Nitrogen, Ammonia	1280	mg/l	REGEN SOLUTION TRNSFR TO CRYST. AFTER VAPOR. <210 DEG 5HR A2	21-Oct-98	15:00
E41046-1A	pH	1	su	REGENERATION SOLUTION BEFORE PUMPED TO EVAPORATOR (A1)	19-Oct-98	10:00
E41046-1A	Iron	67900	ug/l	REGENERATION SOLUTION BEFORE PUMPED TO EVAPORATOR (A1)	19-Oct-98	10:00
E41046-1A	Zinc	18400000	ug/l	REGENERATION SOLUTION BEFORE PUMPED TO EVAPORATOR (A1)	19-Oct-98	10:00
E41046-2A	pH	0.96	su	REGEN SOLUTION TRNSFR TO CRYST. AFTER VAPOR. <210 DEG 5HR A2	21-Oct-98	15:00
E41046-2A	Iron	244000	ug/l	REGEN SOLUTION TRNSFR TO CRYST. AFTER VAPOR. <210 DEG 5HR A2	21-Oct-98	15:00
E41046-2A	Zinc	48900000	ug/l	REGEN SOLUTION TRNSFR TO CRYST. AFTER VAPOR. <210 DEG 5HR A2	21-Oct-98	15:00
E41050-1	Nitrogen, Total Kjeldahl	143	mg/l	CENTRATE WET WELL (GRAB)	22-Oct-98	14:21
E41050-1	Nitrogen, Ammonia	116	mg/l	CENTRATE WET WELL (GRAB)	22-Oct-98	14:21
E41050-1	Solids, Total Suspended	300	mg/l	CENTRATE WET WELL (GRAB)	22-Oct-98	14:21
E41050-1	Iron	115000	ug/l	CENTRATE WET WELL (GRAB)	22-Oct-98	14:21
E41050-1	Zinc	864	ug/l	CENTRATE WET WELL (GRAB)	22-Oct-98	14:21
E41050-2	Nitrogen, Total Kjeldahl	280	mg/l	CENTRATE HEAD TANK (COMPOSITE)	22-Oct-98	14:25
E41050-2	Nitrogen, Ammonia	353	mg/l	CENTRATE HEAD TANK (COMPOSITE)	22-Oct-98	14:25
E41050-2	Solids, Total Suspended	56	mg/l	CENTRATE HEAD TANK (COMPOSITE)	22-Oct-98	14:25
E41050-2	Iron	8560	ug/l	CENTRATE HEAD TANK (COMPOSITE)	22-Oct-98	14:25
E41050-2	Zinc	79.6	ug/l	CENTRATE HEAD TANK (COMPOSITE)	22-Oct-98	14:25
E41050-3	Nitrogen, Total Kjeldahl	44.6	mg/l	ARP EFFLUENT (COMPOSITE)	22-Oct-98	14:30

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E41050-3	Solids, Total Suspended	<4.0	mg/l	ARP EFFLUENT (COMPOSITE)	22-Oct-98	14:30
E41050-3	Nitrogen, Ammonia	44.1	mg/l	ARP EFFLUENT (COMPOSITE)	22-Oct-98	14:30
E41050-3	Iron	265	ug/l	ARP EFFLUENT (COMPOSITE)	22-Oct-98	14:30
E41050-3	Zinc	11800	ug/l	ARP EFFLUENT (COMPOSITE)	22-Oct-98	14:30
E41050-4	Nitrogen, Ammonia	1390	mg/l	INTERMEDIATE CRYSTALS (GRAB)	22-Oct-98	14:52
E41050-5	Nitrogen, Ammonia	1110	mg/l	REGENERATION SOLUTION (GRAB)	22-Oct-98	14:32
E41050-5	Iron	40600	ug/l	REGENERATION SOLUTION (GRAB)	22-Oct-98	14:32
E41050-5	Zinc	17800000	ug/l	REGENERATION SOLUTION (GRAB)	22-Oct-98	14:32
E41129-1	Nitrogen, Total Kjeldahl	318	mg/l	CENTRATE WET WELL (GRAB)	23-Oct-98	12:30
E41129-1	Solids, Total Suspended	590	mg/l	CENTRATE WET WELL (GRAB)	23-Oct-98	12:30
E41129-1	Nitrogen, Ammonia	358	mg/l	CENTRATE WET WELL (GRAB)	23-Oct-98	12:30
E41129-1	Iron	118000	ug/l	CENTRATE WET WELL (GRAB)	23-Oct-98	12:30
E41129-1	Zinc	408	ug/l	CENTRATE WET WELL (GRAB)	23-Oct-98	12:30
E41129-2	Nitrogen, Total Kjeldahl	336	mg/l	CENTRATE HEAD TANK (COMPOSITE)	23-Oct-98	12:43
E41129-2	Nitrogen, Ammonia	349	mg/l	CENTRATE HEAD TANK (COMPOSITE)	23-Oct-98	12:43
E41129-2	Solids, Total Suspended	50	mg/l	CENTRATE HEAD TANK (COMPOSITE)	23-Oct-98	12:43
E41129-2	Iron	5890	ug/l	CENTRATE HEAD TANK (COMPOSITE)	23-Oct-98	12:43
E41129-2	Zinc	125	ug/l	CENTRATE HEAD TANK (COMPOSITE)	23-Oct-98	12:43
E41129-3	Nitrogen, Total Kjeldahl	96.7	mg/l	ARP EFFLUENT (COMPOSITE)	23-Oct-98	12:45
E41129-3	Nitrogen, Ammonia	86.6	mg/l	ARP EFFLUENT (COMPOSITE)	23-Oct-98	12:45
E41129-3	Solids, Total Suspended	<4.0	mg/l	ARP EFFLUENT (COMPOSITE)	23-Oct-98	12:45
E41129-3	Iron	394	ug/l	ARP EFFLUENT (COMPOSITE)	23-Oct-98	12:45
E41129-3	Zinc	102000	ug/l	ARP EFFLUENT (COMPOSITE)	23-Oct-98	12:45
E41292-1	Nitrogen, Total Kjeldahl	121	mg/l	CENTRATE WET WELL (GRAB)	28-Oct-98	14:25
E41292-1	Solids, Total Suspended	32	mg/l	CENTRATE WET WELL (GRAB)	28-Oct-98	14:25
E41292-1	Nitrogen, Ammonia	99.7	mg/l	CENTRATE WET WELL (GRAB)	28-Oct-98	14:25
E41292-1	Iron	4230	ug/l	CENTRATE WET WELL (GRAB)	28-Oct-98	14:25
E41292-1	Zinc	56	ug/l	CENTRATE WET WELL (GRAB)	28-Oct-98	14:25
E41292-2	Nitrogen, Total Kjeldahl	330	mg/l	CENTRATE HEAD TANK (COMPOSITE)	28-Oct-98	14:45
E41292-2	Nitrogen, Ammonia	294	mg/l	CENTRATE HEAD TANK (COMPOSITE)	28-Oct-98	14:45
E41292-2	Solids, Total Suspended	65	mg/l	CENTRATE HEAD TANK (COMPOSITE)	28-Oct-98	14:45
E41292-2	Iron	17400	ug/l	CENTRATE HEAD TANK (COMPOSITE)	28-Oct-98	14:45
E41292-2	Zinc	274	ug/l	CENTRATE HEAD TANK (COMPOSITE)	28-Oct-98	14:45
E41292-3	Nitrogen, Total Kjeldahl	46.4	mg/l	ARP EFFLUENT (COMPOSITE)	28-Oct-98	14:40

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E41292-3	Nitrogen, Ammonia	38.7	mg/l	ARP EFFLUENT (COMPOSITE)	28-Oct-98	14:40
E41292-3	Solids, Total Suspended	<4.0	mg/l	ARP EFFLUENT (COMPOSITE)	28-Oct-98	14:40
E41292-3	Iron	567	ug/l	ARP EFFLUENT (COMPOSITE)	28-Oct-98	14:40
E41292-3	Zinc	13700	ug/l	ARP EFFLUENT (COMPOSITE)	28-Oct-98	14:40
E41293-1	Nitrogen, Ammonia	45400	mg/kg	INTERMEDIATE CRYSTALS (GRAB)	26-Oct-98	15:15
E41293-1	Solids, Percent	63.8	%	INTERMEDIATE CRYSTALS (GRAB)	26-Oct-98	15:15
E41293-1	Iron	234	mg/kg	INTERMEDIATE CRYSTALS (GRAB)	26-Oct-98	15:15
E41293-1	Zinc	177000	mg/kg	INTERMEDIATE CRYSTALS (GRAB)	26-Oct-98	15:15
E41293-2	Nitrogen, Ammonia	6120	mg/kg	INTERMEDIATE CRYSTALS (GRAB) "DRIED"	23-Oct-98	11:00
E41293-2	Solids, Percent	99.4	%	INTERMEDIATE CRYSTALS (GRAB) "DRIED"	23-Oct-98	11:00
E41293-2	Iron	6470	mg/kg	INTERMEDIATE CRYSTALS (GRAB) "DRIED"	23-Oct-98	11:00
E41293-2	Zinc	195000	mg/kg	INTERMEDIATE CRYSTALS (GRAB) "DRIED"	23-Oct-98	11:00
E41370-1	Nitrogen, Total Kjeldahl	199	mg/l	CENTRATE HEAD TANK (COMPOSITE)	29-Oct-98	15:30
E41370-1	Nitrogen, Ammonia	109	mg/l	CENTRATE HEAD TANK (COMPOSITE)	29-Oct-98	15:30
E41370-1	Solids, Total Suspended	153	mg/l	CENTRATE HEAD TANK (COMPOSITE)	29-Oct-98	15:30
E41370-1	Iron	7940	ug/l	CENTRATE HEAD TANK (COMPOSITE)	29-Oct-98	15:30
E41370-1	Zinc	161	ug/l	CENTRATE HEAD TANK (COMPOSITE)	29-Oct-98	15:30
E41370-2	Nitrogen, Total Kjeldahl	33.2	mg/l	ARP EFFLUENT (COMPOSITE)	29-Oct-98	15:35
E41370-2	Solids, Total Suspended	34	mg/l	ARP EFFLUENT (COMPOSITE)	29-Oct-98	15:35
E41370-2	Nitrogen, Ammonia	24.1	mg/l	ARP EFFLUENT (COMPOSITE)	29-Oct-98	15:35
E41370-2	Iron	1280	ug/l	ARP EFFLUENT (COMPOSITE)	29-Oct-98	15:35
E41370-2	Zinc	3700	ug/l	ARP EFFLUENT (COMPOSITE)	29-Oct-98	15:35
E41370-3	Nitrogen, Ammonia	2090	mg/l	REGENERATION SOLUTION (GRAB)	29-Oct-98	15:00
E41370-3	Iron	238000	ug/l	REGENERATION SOLUTION (GRAB)	29-Oct-98	15:00
E41370-3	Zinc	39500000	ug/l	REGENERATION SOLUTION (GRAB)	29-Oct-98	15:00
E41439-1	Nitrogen, Total Kjeldahl	348	mg/l	CENTRATE WET WELL (GRAB)	31-Oct-98	11:15
E41439-1	Nitrogen, Ammonia	285	mg/l	CENTRATE WET WELL (GRAB)	31-Oct-98	11:15
E41439-1	Solids, Total Suspended	412	mg/l	CENTRATE WET WELL (GRAB)	31-Oct-98	11:15
E41439-1	Iron	76600	ug/l	CENTRATE WET WELL (GRAB)	31-Oct-98	11:15
E41439-1	Zinc	312	ug/l	CENTRATE WET WELL (GRAB)	31-Oct-98	11:15
E41439-2	Nitrogen, Total Kjeldahl	294	mg/l	CENTRATE HEAD TANK (COMPOSITE)	31-Oct-98	11:38
E41439-2	Nitrogen, Ammonia	243	mg/l	CENTRATE HEAD TANK (COMPOSITE)	31-Oct-98	11:38

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E41439-2	Solids, Total Suspended	38	mg/l	CENTRATE HEAD TANK (COMPOSITE)	31-Oct-98	11:38
E41439-2	Iron	5830	ug/l	CENTRATE HEAD TANK (COMPOSITE)	31-Oct-98	11:38
E41439-2	Zinc	61.1	ug/l	CENTRATE HEAD TANK (COMPOSITE)	31-Oct-98	11:38
E41439-3	Nitrogen, Total Kjeldahl	43.9	mg/l	ARP EFFLUENT (COMPOSITE)	31-Oct-98	11:42
E41439-3	Solids, Total Suspended	18	mg/l	ARP EFFLUENT (COMPOSITE)	31-Oct-98	11:42
E41439-3	Nitrogen, Ammonia	27.8	mg/l	ARP EFFLUENT (COMPOSITE)	31-Oct-98	11:42
E41439-3	Iron	801	ug/l	ARP EFFLUENT (COMPOSITE)	31-Oct-98	11:42
E41439-3	Zinc	4860	ug/l	ARP EFFLUENT (COMPOSITE)	31-Oct-98	11:42
E41518-1	Nitrogen, Ammonia	607	mg/l	EVAPORATED REGENERATION SOLUTION (GRAB)	3-Nov-98	12:30
E41518-2	Nitrogen, Ammonia	209	mg/l	INFLUENT COMP COL #2	1-Nov-98	17:30
E41518-3	Nitrogen, Ammonia	7.4	mg/l	EFFLUENT COMP COL #2	1-Nov-98	17:30
E41597-1	Nitrogen, Total Kjeldahl	397	mg/l	CENTRATE HEAD TANK (COMPOSITE)	4-Nov-98	15:10
E41597-1	Nitrogen, Ammonia	239	mg/l	CENTRATE HEAD TANK (COMPOSITE)	4-Nov-98	15:10
E41597-1	Solids, Total Suspended	55	mg/l	CENTRATE HEAD TANK (COMPOSITE)	4-Nov-98	15:10
E41597-1	Iron	5930	ug/l	CENTRATE HEAD TANK (COMPOSITE)	4-Nov-98	15:10
E41597-1	Zinc	45.7	ug/l	CENTRATE HEAD TANK (COMPOSITE)	4-Nov-98	15:10
E41597-2	Nitrogen, Total Kjeldahl	18.8	mg/l	ARP EFFLUENT (COMPOSITE)	4-Nov-98	15:15
E41597-2	Nitrogen, Ammonia	11.2	mg/l	ARP EFFLUENT (COMPOSITE)	4-Nov-98	15:15
E41597-2	Solids, Total Suspended	14	mg/l	ARP EFFLUENT (COMPOSITE)	4-Nov-98	15:15
E41597-2	Iron	691	ug/l	ARP EFFLUENT (COMPOSITE)	4-Nov-98	15:15
E41597-2	Zinc	4100	ug/l	ARP EFFLUENT (COMPOSITE)	4-Nov-98	15:15
E41597-3	Nitrogen, Ammonia	418	mg/l	REGENERATION SOLUTION (GRAB)	4-Nov-98	15:25
E41597-3	Iron	75700	ug/l	REGENERATION SOLUTION (GRAB)	4-Nov-98	15:25
E41597-3	Zinc	28800000	ug/l	REGENERATION SOLUTION (GRAB)	4-Nov-98	15:25
E41768-1	Nitrogen, Total Kjeldahl	394	mg/l	CENTRATE WET WELL (GRAB)	7-Nov-98	14:48
E41768-1	Solids, Total Suspended	530	mg/l	CENTRATE WET WELL (GRAB)	7-Nov-98	14:48
E41768-1	Nitrogen, Ammonia	290	mg/l	CENTRATE WET WELL (GRAB)	7-Nov-98	14:48
E41768-1	Iron	48500	ug/l	CENTRATE WET WELL (GRAB)	7-Nov-98	14:48
E41768-1	Zinc	328	ug/l	CENTRATE WET WELL (GRAB)	7-Nov-98	14:48
E41768-2	Nitrogen, Total Kjeldahl	438	mg/l	CENTRATE HEAD TANK (COMPOSITE)	7-Nov-98	14:39
E41768-2	Nitrogen, Ammonia	330	mg/l	CENTRATE HEAD TANK (COMPOSITE)	7-Nov-98	14:39
E41768-2	Solids, Total Suspended	73.3	mg/l	CENTRATE HEAD TANK (COMPOSITE)	7-Nov-98	14:39
E41768-2	Iron	4200	ug/l	CENTRATE HEAD TANK (COMPOSITE)	7-Nov-98	14:39

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E41768-2	Zinc	107	ug/l	CENTRATE HEAD TANK (COMPOSITE)	7-Nov-98	14:39
E41768-3	Nitrogen, Total Kjeldahl	27.8	mg/l	ARP EFFLUENT (COMPOSITE)	7-Nov-98	14:43
E41768-3	Solids, Total Suspended	18	mg/l	ARP EFFLUENT (COMPOSITE)	7-Nov-98	14:43
E41768-3	Nitrogen, Ammonia	20.7	mg/l	ARP EFFLUENT (COMPOSITE)	7-Nov-98	14:43
E41768-3	Iron	594	ug/l	ARP EFFLUENT (COMPOSITE)	7-Nov-98	14:43
E41768-3	Zinc	3860	ug/l	ARP EFFLUENT (COMPOSITE)	7-Nov-98	14:43
E41768-4	Nitrogen, Total Kjeldahl	3260	mg/l	REGENERATION SOLUTION	7-Nov-98	14:52
E41768-4	Iron	82200	ug/l	REGENERATION SOLUTION	7-Nov-98	14:52
E41768-4	Zinc	29800000	ug/l	REGENERATION SOLUTION	7-Nov-98	14:52
E41905-1	Nitrogen, Total Kjeldahl	452	mg/l	CENTRATE WET WELL (GRAB)	11-Nov-98	15:25
E41905-1	Nitrogen, Ammonia	330	mg/l	CENTRATE WET WELL (GRAB)	11-Nov-98	15:25
E41905-1	Solids, Total Suspended	1080	mg/l	CENTRATE WET WELL (GRAB)	11-Nov-98	15:25
E41905-1	Iron	92600	ug/l	CENTRATE WET WELL (GRAB)	11-Nov-98	15:25
E41905-1	Zinc	553	ug/l	CENTRATE WET WELL (GRAB)	11-Nov-98	15:25
E41905-2	Nitrogen, Total Kjeldahl	479	mg/l	CENTRATE HEAD TANK (COMPOSITE)	11-Nov-98	15:35
E41905-2	Nitrogen, Ammonia	411	mg/l	CENTRATE HEAD TANK (COMPOSITE)	11-Nov-98	15:35
E41905-2	Solids, Total Suspended	87	mg/l	CENTRATE HEAD TANK (COMPOSITE)	11-Nov-98	15:35
E41905-2	Iron	3620	ug/l	CENTRATE HEAD TANK (COMPOSITE)	11-Nov-98	15:35
E41905-2	Zinc	33.6	ug/l	CENTRATE HEAD TANK (COMPOSITE)	11-Nov-98	15:35
E41905-3	Nitrogen, Total Kjeldahl	37.9	mg/l	ARP EFFLUENT (COMPOSITE)	11-Nov-98	15:40
E41905-3	Solids, Total Suspended	12	mg/l	ARP EFFLUENT (COMPOSITE)	11-Nov-98	15:40
E41905-3	Nitrogen, Ammonia	25.7	mg/l	ARP EFFLUENT (COMPOSITE)	11-Nov-98	15:40
E41905-3	Iron	288	ug/l	ARP EFFLUENT (COMPOSITE)	11-Nov-98	15:40
E41905-3	Zinc	8380	ug/l	ARP EFFLUENT (COMPOSITE)	11-Nov-98	15:40
E41905-4	Nitrogen, Ammonia	675	mg/l	REGENERATION SOLUTION (GRAB)	11-Nov-98	15:45
E41905-4	Iron	36600	ug/l	REGENERATION SOLUTION (GRAB)	11-Nov-98	15:45
E41905-4	Zinc	26800000	ug/l	REGENERATION SOLUTION (GRAB)	11-Nov-98	15:45
E42059-1	Nitrogen, Ammonia	561	mg/l	CENTRATE WET WELL (GRAB)	14-Nov-98	14:39
E42059-1	Nitrogen, Total Kjeldahl	1150	mg/l	CENTRATE WET WELL (GRAB)	14-Nov-98	14:39
E42059-1	Solids, Total Suspended	1040	mg/l	CENTRATE WET WELL (GRAB)	14-Nov-98	14:39
E42059-1	Iron	101000	ug/l	CENTRATE WET WELL (GRAB)	14-Nov-98	14:39
E42059-1	Zinc	674	ug/l	CENTRATE WET WELL (GRAB)	14-Nov-98	14:39
E42059-2	Nitrogen, Total Kjeldahl	368	mg/l	CENTRATE HEAD TANK (COMPOSITE)	14-Nov-98	14:31
E42059-2	Solids, Total Suspended	54	mg/l	CENTRATE HEAD TANK (COMPOSITE)	14-Nov-98	14:31

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E42059-2	Nitrogen, Ammonia	218	mg/l	CENTRATE HEAD TANK (COMPOSITE)	14-Nov-98	14:31
E42059-2	Iron	4940	ug/l	CENTRATE HEAD TANK (COMPOSITE)	14-Nov-98	14:31
E42059-2	Zinc	159	ug/l	CENTRATE HEAD TANK (COMPOSITE)	14-Nov-98	14:31
E42059-3	Nitrogen, Total Kjeldahl	57.6	mg/l	ARP EFFLUENT (COMPOSITE)	14-Nov-98	14:35
E42059-3	Nitrogen, Ammonia	52.5	mg/l	ARP EFFLUENT (COMPOSITE)	14-Nov-98	14:35
E42059-3	Solids, Total Suspended	10	mg/l	ARP EFFLUENT (COMPOSITE)	14-Nov-98	14:35
E42059-3	Iron	270	ug/l	ARP EFFLUENT (COMPOSITE)	14-Nov-98	14:35
E42059-3	Zinc	7930	ug/l	ARP EFFLUENT (COMPOSITE)	14-Nov-98	14:35
E42990-2	Nitrogen, Ammonia	97.3	mg/l	REGENERATION SOLUTION (GRAB)	8-Dec-98	14:05
E42990-2	Iron	202000	ug/l	REGENERATION SOLUTION (GRAB)	8-Dec-98	14:05
E42990-2	Zinc	42700000	ug/l	REGENERATION SOLUTION (GRAB)	8-Dec-98	14:05
E42990-3	Nitrogen, Ammonia	781	mg/l	CENTRATE WET WELL (GRAB)	8-Dec-98	14:00
E42990-3	Nitrogen, Total Kjeldahl	980	mg/l	CENTRATE WET WELL (GRAB)	8-Dec-98	14:00
E42990-3	Solids, Total Suspended	2450	mg/l	CENTRATE WET WELL (GRAB)	8-Dec-98	14:00
E42990-3	Iron	132000	ug/l	CENTRATE WET WELL (GRAB)	8-Dec-98	14:00
E42990-3	Zinc	1700	ug/l	CENTRATE WET WELL (GRAB)	8-Dec-98	14:00
E42990-4	Nitrogen, Ammonia	445	mg/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Solids, Total Suspended	92	mg/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Nitrogen, Total Kjeldahl	501	mg/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Alkalinity, Total	1670	mg/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Phosphorus, Total	28.7	mg/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Calcium	29300	ug/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Iron	3550	ug/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Magnesium	28300	ug/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-4	Zinc	14800	ug/l	CENTRATE HEAD TANK (COMPOSITE)	8-Dec-98	14:10
E42990-5	Nitrogen, Ammonia	75.2	mg/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Alkalinity, Total	<5.0	mg/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Nitrogen, Total Kjeldahl	69.8	mg/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Phosphorus, Total	2.9	mg/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Solids, Total Suspended	5	mg/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Calcium	<5000	ug/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Iron	249	ug/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Magnesium	<5000	ug/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E42990-5	Zinc	22500	ug/l	ARP EFFLUENT (COMPOSITE)	8-Dec-98	14:15
E43037-1	Nitrogen, Ammonia	325	mg/l	CENTRATE WET WELL (GRAB)	9-Dec-98	14:05
E43037-1	Nitrogen, Total Kjeldahl	376	mg/l	CENTRATE WET WELL (GRAB)	9-Dec-98	14:05

Accutest LabLink Analytical Data Report (a)	ThermoEnergy Evaluation of Products, S.I., NY					
Sample	Parameter	Result	Units	Sample Location (Client ID)	Date Collected	Time
E43037-1	Solids, Total Suspended	736	mg/l	CENTRATE WET WELL (GRAB)	9-Dec-98	14:05
E43037-1	Iron	181000	ug/l	CENTRATE WET WELL (GRAB)	9-Dec-98	14:05
E43037-1	Zinc	433	ug/l	CENTRATE WET WELL (GRAB)	9-Dec-98	14:05
E43037-2	Nitrogen, Ammonia	500	mg/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Phosphorus, Total	32.2	mg/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Solids, Total Suspended	31	mg/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Alkalinity, Total	1690	mg/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Nitrogen, Total Kjeldahl	456	mg/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Calcium	28000	ug/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Iron	3360	ug/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Magnesium	31300	ug/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-2	Zinc	3160	ug/l	CENTRATE HEAD TANK (COMPOSITE)	9-Dec-98	14:15
E43037-3	Nitrogen, Ammonia	116	mg/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Solids, Total Suspended	<4.0	mg/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Nitrogen, Total Kjeldahl	114	mg/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Alkalinity, Total	<5.0	mg/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Phosphorus, Total	5.8	mg/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Calcium	<5000	ug/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Iron	997	ug/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Magnesium	<5000	ug/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20
E43037-3	Zinc	141000	ug/l	ARP EFFLUENT (COMPOSITE)	9-Dec-98	14:20

APPENDIX B

Flow and Laboratory Summary

					INFLUENT	units= mg/L			EFFLUENT	units= mg/L	
DATE	**FWENC Volume Treated**	**Accutest Visit Date**	**Accutest Sample ID**	**Flow Rate (gpm)**	**NH3-N**	**Zn**	**Fe**		**NH3-N**	**Zn**	**Fe**
9/24/98	Not Totaled	Yes	E39858	Not Given	185	0.928	2.76		7.7	2.54	4.9
9/28/98	560	No		Not Given							
9/29/98	798	Yes	E40042	Not Given	243	0.086	5.27		50.8	5.28	0.216
10/6/98	301	No		Not Given							
10/7/98	301 gallons* from 10/6/98 Date	Yes	E40419	Not Given	346	0.075	4.44		122	58.8	0.362
10/9/98	30	No		Not Given							
10/10/98	300	No		Not Given							
10/12/98	229	No		Not Given							
10/13/98	280	No		Not Given							
10/14/98	962	Yes	E40701	Not Given	454	0.448	5.59		3.9	468	0.592
10/17/98	576	No		Not Given							
10/17/98	334	No		1							
10/18/98	286	No		2							
10/22/98	408	Yes	E41050	2 gpm for 85 min; 1 gpm for 205 min	353	0.08	8.56		44.1	118	0.265
10/23/98	304	Yes	E41129	1.22	349	0.125	5.89		86.6	102	0.394
10/24/98	305	No		1.22							
10/25/98	422	No		1.22							
10/26/98	293	No		1.3							
10/28/98	325	Yes	E41292	3	294	0.274	174		38.7	137	0.567
10/29/98	779	No	E41370								
10/29/98	1123	Yes		3	109	0.161	7.94		24.1	3.7	1.28
10/30/98	763	No		5							
10/31/98	528	Yes	E41439	5	243	0.061	5.83		27.8	4.86	0.801
11/1/98	1232	Yes	E41518	6	209	-	-		7.4	-	-
11/4/98	1151	Yes	E41597	7	239	0.045	4.2		18.8	4.1	0.69
11/6/98	850	No		7							
11/7/98	866	Yes	E41768	8	330	0.1	4.2		20.7	3.8	0.59
11/8/98	595	No		8							
11/9/98	521	No		8.5							
11/9/98	547	No		8.5							
11/11/98	565	Yes	E41905	4	330	0.03	4.9		25.7	8.3	0.36
11/11/98	574	No		4							
11/12/98	686	No		6							
11/14/98	605	Yes	E42059	6	218	0.15	4.9		52.5	7.9	0.27
11/15/98	390	No		8							
11/15/98	285	No		8							
12/2/98	661	No		4							
12/3/98	567	No		4							
12/3/98	574	No		6							

					INFLUENT	units=: mg/L			EFFLUENT	units == mg/L	
DATE	FWENC Volume Treated	Accutest Visit Date	Accutest Sample ID	Flow Rate (gpm)	NH3-N	Zn	Fe		NH3-N	Zn	Fe
12/3/98	567	No		4							
12/3/98	574	No		6							
12/3/98	523	No		6							
12/4/98	534	No		8							
12/5/98	512	No		8							
12/5/98	405	No		8							
12/6/98	502	No		8							
12/7/98	456	No		8							
12/7/98	377	No		8							
12/8/98	366	No		6							
12/8/98	319	Yes	E42990	8	445	14.8	3.5		75.2	22.5	0.99
12/8/98	300	No		4							
12/9/98	299	Yes	E43037	4	500	3.2	3.4		116	141	0.99
	25168	Total gallons treated									

APPENDIX C

Staffing Requirements and Cost Information

C.1 Staffing Requirements

In developing the costs associated with the ARP process, FWENC assumed that two operators per shift are required. Typical operator responsibilities include:

- Monitoring process conditions and implementing appropriate measures to counteract potential process upsets;
- Backwashing/regenerating resins and filters;
- Handling and disposing of solids removed from the ARP influent;
- Changing-out resins following poisoning events;
- Changing-out bag-filters at the ARP influent;
- Filling chemical and fuel storage tanks; and,
- Mixing of regeneration solution and verifying the solution concentrations.

FWENC recommends that the functions listed above be accomplished to the maximum extent practical using remote/automatic operation from a central control room. Functions associated with maintaining the facility include: repairing and servicing electrical equipment and instrumentation; repairing and servicing mechanical equipment; and, contributing to actions necessary to correct upset conditions.

The individuals functioning in the operational/maintenance positions must have significant previous experience in water/chemical plant operations. The individuals should have a good working knowledge regarding the operation of chemical process and water treatment technologies, and on-the-job training must be limited to acquiring ARP-specific process knowledge. The staff should be capable of receiving and comprehending comprehensive in-depth training and technical instruction related to the design and operation of the ARP. This dictates that the individuals should be formally educated (post high-school) in both chemistry and mechanical/electrical/chemical treatment technology.

C.2 ARP Costs

Based on computer modeling of large scale commercial systems and on the data generated during the pilot study performed at the Oakwood Beach WPCP, FWENC estimates that the total cost to treat ammonia laden wastes at the concentrations found in centrate to be between 3 and 6 cents per gallon on a privatized basis. In determining the costs, no credit was taken for potential resale value of the fertilizer produced by the ARP. The cost will vary with, and be dependent upon throughput. The stated cost range includes all associated costs, including capital equipment recovery and operating overhead, and is based on the following assumptions:

- Building construction to be subcontracted;
- Engineering services provided;
- Process equipment costs are based on vendor quotes, with 90% of quotes being firm;
- Material and construction costs developed are based on:
  - General Facility Arrangement Plan developed
  - Process and Instrumentation Diagrams (P&IDs) developed
  - Local soil and foundation requirements
  - Electrical utility service is locally available.

Discipline specific material costs were based on the following:

- Civil/structural quantity take-offs were based on the Oakwood Beach site plan and anticipated equipment sizes and weights;
- Process piping based on take-off quantities;
- Plumbing requirements estimated based on building size;
- Fire protection piping based on typical square foot building size unit prices;
- New substation and transformer required;
- 2500 kVA incoming service required;
- Fire alarm, lightning protection, and plant communication systems provided.
- Instrumentation to include locally mounted devices and monitors tied to programmable logic controllers (PLCs) and distributed control systems (DCS).
- Redundant critical instrumentation and sensors are provided where deemed necessary.

Finally, the costs assume that a sales tax rate of 8.25% applies and that performance and payment bonds are required.