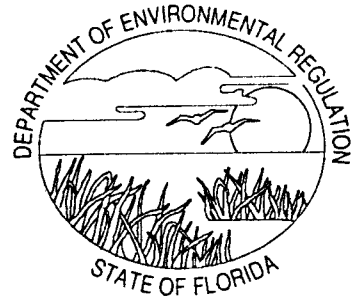


Bioassays of

Ewell Industries, Inc.

Largo, Pinellas County, Florida

NPDES #FL0038873

Sampled 12/7/92

February 1993

Biology Section
Division of Technical Services

Bioassays of

Ewell Industries, Inc.

Largo, Pinellas County, Florida

NPDES #FL0038873

Biology Section
Bureau of Laboratories
February 1993

Introduction

Ewell Industries, Inc., Largo, Pinellas County, Florida, NPDES #FL0038873, tests performed on 8 to 10 December, 1992.

This facility is located at 2195 Lake Avenue SE in Largo. The concrete batch plant manufactures ready-mix cement, cement blocks, and reinforced concrete pipe. The plant treats and discharges a maximum of 23,000 gpd of wastewater generated from this process. Water flows to primary and secondary settling tanks and through a series of sedimentation ditches connected to the county drainage system. This system empties into Long Bayou and Lake Seminole, then to Boca Ciega Bay. The plant is required to monitor the effluent for pH and neutralize prior to discharge (NPDES files). Neutralization of the effluent is undertaken by the addition of sulfuric acid. The sample was collected just prior to discharge into the receiving water (county drainage ditch).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1991, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027.

Results and Discussion

The FDER Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of pH-adjusted effluent from this facility. The pH of the sample was 2.5 when received in the laboratory (1.5, as measured in the field). Since the pH of the sample is less than the pH tolerance level of the test organisms, the sample pH was adjusted prior to test initiation with sodium hydroxide. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Notropis leedsi*. The test results indicated that the pH-adjusted sample caused 30% mortality in the *C. dubia* test, however, the pH-adjusted sample was not toxic to *N. leedsi*.

Total residual chlorine of the sample was 0.01 mg/L in the laboratory. Total residual chlorine was not measured in the field. Total ammonia was unable to be measured in the sample due to interference from the initial low pH.

Further chemical analyses were performed on the sample and indicated the presence of the metals as shown in Table 2. The concentrations of the various ions present in the sample, evident from the metals analyses results, may have contributed to the mortality observed in the *C. dubia* test. Iron was detected in both the sample and trip blank. Organics and pesticides were not detected.

Conclusion

The sample of effluent collected from this facility on 7 December, 1992, was pH-adjusted in the laboratory prior to test initiation. The original pH of the test sample was below that at which any of the standard test species can survive. The pH-adjusted sample caused 30% mortality to *C. dubia*. The concentrations of the various metals ions present may have contributed to the toxicity of the sample.

Table 1. Concentration series and volumes used for the 48-hour static acute screening bioassays of the Ewell Industries, Inc., effluent performed on 8 to 10 December, 1992.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	20 mL	0 mL	20 mL
100 %	0 mL	20 mL	20 mL

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 mL	0 mL	500 mL
100 %	0 mL	500 mL	500 mL

Table 2. Results of chemical analyses on the effluent from Ewell Industries, Inc., sampled on 7 December, 1992.

Pesticides & Herbicides

none detected

Base-Neutral & Acid Extractables

none detected

Metals

Aluminum	597	µg/L
Calcium	592	mg/L
Chromium	141	µg/L
Iron	990	µg/L
Magnesium	0.4	mg/L
Mercury	0.16	µg/L T
Zinc	17	µg/L

T Value reported is less than the practical quantitation limit.

Table 3. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from Ewell Industries, Inc., Largo, Pinellas County, Florida, NPDES# FL0038873, performed on 8 to 10 December, 1992

Facility:	**Ewell Industries, Inc.**			NPDES #	FL0038873	Facility Type:	**Concrete Batch Plant**
Location:	Largo			Contact/District:	Kathy Hicks / SW		
County:	Pinellas			Test type:	static acute screen		
Sample Collection Date:	**12/7/92**	Time:	1000	# tests:	2	Receiving Water:	Long Bayou
Test Beginning Date:	12/8/92	Time:	1500	Chlorination Type:	**unchlorinated**		
Test Ending Date:	12/10/92	Time:	1500			**Page 1 of 1**	

Total Residual Cl2	mg/L	Method
Field:	not measured	
Lab:	0.01	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	0.00	0.00
20% Dilute Mineral Water (cladocerans):	0.00	0.00
100% Sample:	0.00	~~<0.01~~ 0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	122
20% Dilute Mineral Water (cladocerans):	72	84
100% Sample:	-	1400

Salinity (ppt)	
Control Water:	0
100% Sample:	2

Organism: ***Ceriodaphnia dubia*** Life stage: < 24 hours old

	SURVIVAL			pH			Temperature			Dissolved Oxygen			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	8.3	-	8.3	22.2	-	24.3	8.7	-	7.7	149	170
Control	5	5	5	-	-	8.3	-	-	-	-	-	7.6	-	165
Control	5	5	5	-	-	8.3	-	-	-	-	-	7.7	-	165
Control	5	5	5	-	-	8.3	-	-	-	-	-	7.6	-	170
100%	5	5	2 ~~5~~ 4	7.4	-	7.7	21.9	-	24.0	8.4	-	7.6	2980	2780
100%	5	5	~~5~~	-	-	7.7	-	-	-	-	-	7.6	-	2890
100%	5	5	~~5~~ 4	-	-	7.7	-	-	-	-	-	7.7	-	2900
100%	5	5	~~5~~ 4	-	-	7.7	-	-	-	-	-	7.7	-	2900

Salinity (ppt)	
Control Water:	2
100% Sample:	2

Organism: ***Notropis leedsi*** Age: 11 days

	SURVIVAL			pH			Temperature			Dissolved Oxygen			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	7.7	8.2	8.2	21.9	22.0	22.5	8.7	8.6	7.9	3220	3280
Control	5	5	5	7.7	8.2	8.2	-	-	-	8.7	8.6	7.9	3220	3280
100%	5	5	5	7.7	7.6	7.5	23.4	22.0	22.4	8.6	8.6	7.6	2860	2820
100%	5	5	5	7.7	7.6	7.4	-	-	-	8.6	8.6	7.6	2860	2830

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: EWELL INDUSTRIES
Address/City: _____
County: PINELLAS
Contact/District: KATHY HICKS SW
NPDES Permit #: FL0038873 Outfall #: _____
Test Number: 1 of ~~2~~ 3 KP Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Sample Collection: Date 12-7-92 Time 1000 KP
Test Beginning: Date 12-8-92 Time ~~1400~~ 1500
Test Ending: Date 12-10-92 Time 1500
Test Organism: N. LEEDSI
Life Stage/Age: 11 DAYS

92-DEC-08-26- 46047
verified 12/11/92 KP

Remarks:
- ORIGINAL SAMPLE SALINITY ~ 2 PPT
- ADJUSTED SALINITY OF WELL WATER TO ~ 2PPT W/ FORTY FATHOMS WATER FOR SALT CONTROL
adjusted pH w/ NaOH

Instrument Calibrations:

	pH	DO	Temp	Cond
0 hr	7@, 10@10 MF	~~8.6@22.4°C~~ 21.4@21.5	21.4@21.5	950 9550 @ 22.5°C
24 hr	7@ 7, 10@10	8.5@ 23.2°C	22.3°@ 22.2	570 9630 @ 23.7
48 hr	_____	_____	_____	_____

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	DO (mg/L) 0	24	48	Cond. (µmhos/cm) 0	24	48
control	68	5	5	5	~~6.9~~	8.2	8.2	21.9	22.0	22.5	8.7	8.6	7.9	3230	3230	3280
control	414	5	5	5	~~6.9~~	8.2	8.2				8.7	8.6	7.9	3220	3230	3280
100%	1	5	5	5	7.7	7.6	7.5	23.4	22.0	22.4	8.6	8.6	7.6	2860	2760	2820
100%	190	5	5	5	7.7	7.6	7.4				8.6	8.6	7.6	2860	2780	2830
				#68	7.7	in rate aerating										
				#414	7.7	meter KP	12/8/92									
Measured/Loaded by:		MF	TR	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM	MF	MF	TM
Recorded by:		KP	TR	TR	KP	TR	TR	KP	TR	TR	KP	TR	TR	KP	TR	TR

Investigators' Signatures
Kim Pearce
Robin Rader

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			not measured		
Lab Tot. Resid. Cl2:			0.01	DR100	KWP
Alkalinity:	125	72		KP R/R	MF
Hardness:	122	84	~~1400~~ >1000	Hach	MF
Total Ammonia:	0.10	0.10	NR		MF

Ammonia Meter Slope: ~55.6 Ammonia Blank: 0.10 Salinity Sample: 2 ppt

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: EWELL INDUSTRIES
Address/City:
County: PINELLAS
Contact/District: KATHY HICKS - SW
NPDES Permit #: FL0038873 Outfall #:
Test Number: 3 of 3 KP omitted mysids KP 12/11/92
2 2
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Sample Collection: Date 12-7-92 Time 1000
Test Beginning: Date 12-8-92 Time 1400 1500 KP
Test Ending: Date 12-10-92 Time 1500
Test Organism: C. DUBIA
Life Stage/Age: <24HRS

92-DEC-08-26 4.6047
verified 12/11/92 KP

Remarks:
CONDUCTIVITY TRANSLATES TO ~2PPT SALINITY
CONTROL WATER WAS 20% DMW W/ NO SALINITY ADJUSTMT
* pH adjusted w/NaOH prior to loading KP 12/8/92

Instrument Calibrations:

	pH	DO °C	Temp °C	Cond
0 hr	7@7, 10@10	8.6@22.4	21.4@21.5	950 @22.5°C 9550
24 hr	7@7, 10@10	8.5@23.2	22.3@22.2	9700 9630 @23.7°C
48 hr				

Conc.	Chamber #	Number Live 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	DO (mg/L) 0	24	48	Cond. (µmhos/cm) 0	24	48
control	A	5	5	5	8.3		8.3	22.2		24.3	8.7	*7.7	~~7.0~~	149		170
control	B	5	5	5			8.3						7.6			165
control	C	5	5	5			8.3						7.7			165
control	D	5	5	5			8.3						7.6			170
100%	A	5	5	2	~~2.5*~~ ORIGINAL pH		7.7	21.9		24.0	8.4		7.6	2980		2780
100%	B	5	5	4	7.4		7.7						7.6			2890
100%	C	5	5	4			7.7						7.7			2900
100%	D	5	5	4			7.7						7.7			2900
												* recorded wrong #				
Measured/Loaded by:		MF		TM	MF		TM	MF		TM	MF		TM	MF		TM
Recorded by:		KP		TR	KP		TR	KP		TR	KP		TR	KP		TR

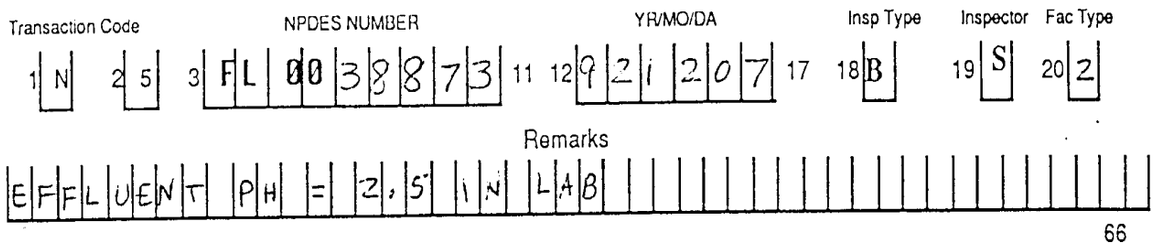
Investigators' Signatures
Kim Pearce
Robin Rader
Tina M. Kubski
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			not	measured	
Lab Tot. Resid. Cl2:			0.01	DR-100	KWP
Alkalinity:	125	72		Hach	MF
Hardness:	122	84	1400	Hach	MF
Total Ammonia:					

Ammonia Meter Slope: _____
Ammonia Blank: _____
Salinity Sample: 2 ppt

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)



Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

