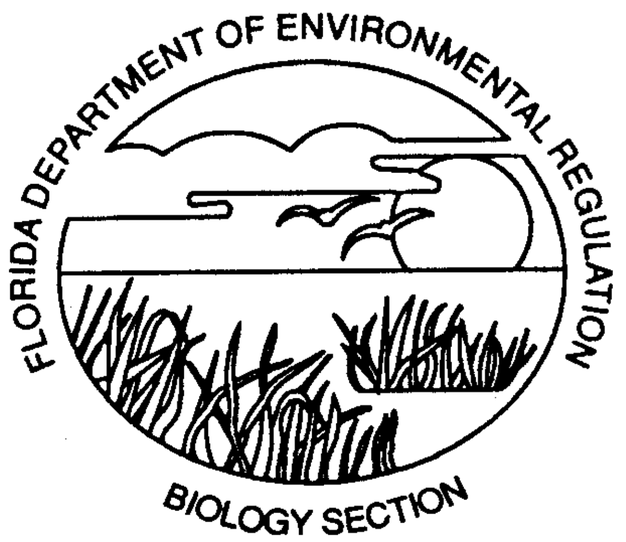


Bioassays of

Gulf Coast Lead Company, Inc.

Tampa, Hillsborough County, Florida

Florida Temporary Operating Permit #DER IT 29-110367

Sampled 9/25/89

November 13, 1989

Biology Section
Division of Administrative and Technical Services

Bioassays of

Gulf Coast Lead Company, Inc.

Tampa, Hillsborough County, Florida

Florida Temporary Operating Permit #DER IT 29-110367

Biology Section
Bureau of Laboratories
November 13, 1989

Introduction

Gulf Coast Lead Company, Inc., Tampa, Hillsborough County, Florida, NPDES #DER IT 29-110367, on 26 to 28 September, 1989.

This facility is located at 1901 N. 66th Street, Tampa. A battery-recycling plant, Gulf Coast Lead Company, Inc. operates a treatment facility for the treatment of low pH (1.0-4.0 pH units) lead-bearing process water and recovered groundwater. The treatment-facility design capacity is 28,000 gallons of wastewater per day. After treatment, the recovered water is discharged to Palm River, which then flows to Hillsborough Bay.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

The sample of discharge from this facility was not toxic to the bioassay test organisms, the water fleas, *Ceriodaphnia dubia* and *Daphnia pulex*, and the fish, *Notropis leedsi*. The sample was stimulatory to the Microtox® assay organism, *Photobacterium phosphoreum*. There were several random deaths in the *C. dubia* tests. The cause of these deaths was not determined. The sample was unchlorinated and contained 0.067mg/l total ammonia. The calculated unionized ammonia was 0.002 mg/l. No further chemical analyses were performed on the sample.

Conclusion

The sample of discharge from this facility was not toxic on 25 September, 1989.

Table 1. Concentration Series and Volumes Used for These Static Bioassays.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0 ml	15 ml
10.0%	13.5 ml	1.5 ml	15 ml
30.0%	10.5 ml	4.5 ml	15 ml
50.0%	7.5 ml	7.5 ml	15 ml
70.0%	4.5 ml	10.5 ml	15 ml
85.0%	2.25 ml	12.75 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Daphnia pulex (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 ml	0 ml	500 ml
10.0%	450 ml	50 ml	500 ml
30.0%	350 ml	150 ml	500 ml
50.0%	250 ml	250 ml	500 ml
70.0%	150 ml	350 ml	500 ml
85.0%	75 ml	425 ml	500 ml
100.0%	0 ml	500 ml	500 ml

Table 2. Data recorded during the 48 hour static definitive bioassay of a sample of discharge from the Gulf Coast Lead Company, Inc., Tampa, Hillsborough County, Florida, Florida Temporary Permit #DER IT 29-110367, on 26 to 28 September, 1989.

Facility: **Gulf Coast Lead Co. Inc.**
Location: 1901 N. 66th St., Tampa.
County: Hillsborough
Sample Collection Date: **9/25/89** Time: 1032
Test Beginning Date: 9/26/89 Time: 1400
Test Ending Date: 9/28/89 Time: 1400

Fl. temp. permit # **DER IT 29-110367**
Contact/District: D. Demmi / SW
Test type: static definitive
tests: 3
Chlorination Type: **unchlorinated**

Facility Type: **Chemical Processing**
Receiving Water: Palm River

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

SURVIVAL				Dissolved Oxygen			pH			Temperature			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	4	8.0	-	8.5	8.5	-	8.4	22.9	-	22.0	-	-
Control	5	5	5	8.0	-	8.5	8.5	-	8.4	-	-	-	-	-
Control	5	5	5	8.0	-	8.5	8.5	-	8.4	-	-	-	-	-
Control	5	5	5	8.1	-	8.5	8.5	-	8.4	-	-	-	235	260
10%	5	5	5	8.0	-	8.4	8.5	-	8.2	22.7	-	21.6	-	-
10%	5	5	5	8.0	-	8.4	8.5	-	8.2	-	-	-	-	-
10%	5	5	5	8.0	-	8.5	8.5	-	8.2	-	-	-	-	-
10%	5	5	5	8.1	-	8.5	8.5	-	8.3	-	-	-	380	380
30%	5	5	5	8.0	-	8.5	8.4	-	8.2	22.9	-	21.5	-	-
30%	5	5	5	8.0	-	8.5	8.4	-	8.2	-	-	-	-	-
30%	5	5	5	8.1	-	8.5	8.4	-	8.2	-	-	-	-	-
30%	5	5	5	8.1	-	8.5	8.4	-	8.2	-	-	-	650	660
50%	5	5	5	8.0	-	8.5	8.2	-	8.1	22.8	-	21.5	-	-
50%	5	5	5	8.1	-	8.5	8.2	-	8.1	-	-	-	-	-
50%	5	5	3	8.1	-	8.5	8.2	-	8.1	-	-	-	-	-
50%	5	5	4	8.1	-	8.5	8.2	-	8.1	-	-	-	925	910
70%	5	5	5	8.1	-	8.5	8.0	-	7.8	22.6	-	21.5	-	-
70%	5	5	5	8.1	-	8.5	8.0	-	7.8	-	-	-	-	-
70%	5	5	5	8.1	-	8.5	8.0	-	7.8	-	-	-	-	-
70%	5	5	4	8.1	-	8.5	8.0	-	7.8	-	-	-	1175	1205
85%	5	5	5	8.1	-	8.5	7.8	-	7.8	22.5	-	21.5	-	-
85%	5	5	5	8.1	-	8.5	7.8	-	7.8	-	-	-	-	-
85%	5	5	5	8.1	-	8.5	7.8	-	7.8	-	-	-	-	-
85%	5	5	4	8.1	-	8.5	7.8	-	7.8	-	-	-	1375	1400
100%	5	4	4	8.0	-	8.5	7.6	-	7.7	22.9	-	21.5	-	-
100%	5	5	5	8.0	-	8.5	7.6	-	7.7	-	-	-	-	-
100%	5	5	5	8.1	-	8.5	7.6	-	7.7	-	-	-	-	-
100%	5	5	5	8.1	-	8.5	7.6	-	7.7	-	-	-	1555	1575

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	0.0	Hach
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	0.067	0.002

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	123	112
Cond. Control Water (daphnids):	126	113
100% Sample:	10	390

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

Table 2. Continued.

Facility: **Gulf Coast Lead Co. Inc.**
Location: 1901 N. 66th St., Tampa.
County: Hillsborough
Sample Collection Date: **9/25/89** Time: 1032
Test Beginning Date: 9/26/89 Time: 1400
Test Ending Date: 9/28/89 Time: 1400

Fl. temp. permit # **DER IT 29-110367**
Contact/District: D. Demmi / SW
Test type: static definitive
tests: 3
Chlorination Type: **unchlorinated**

Facility Type: **Chemical Processing**
Receiving Water: Palm River

Organism: ***Daphnia pulex*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

Concentrations	SURVIVAL # at 0 hr	Live at 24 hr	Live at 48 hr	Dissolved Oxygen 0 hour	24 hour	48 hour	pH 0 hour	24 hour	48 hour	Temperature 0 hour	24 hour	48 hour	Conductivity 0 hour	48 hour
Control	5	5	5	8.0	-	8.5	8.4	-	8.2	23.0	-	21.7	-	-
Control	5	5	5	8.0	-	8.5	8.4	-	8.2	-	-	-	-	-
Control	5	5	5	8.0	-	8.5	8.4	-	8.2	-	-	-	-	-
Control	5	5	5	8.0	-	8.5	8.4	-	8.2	-	-	-	235	250
100.0%	5	5	5	8.0	-	8.4	7.6	-	7.7	23.0	-	21.8	-	-
100.0%	5	5	5	8.0	-	8.4	7.6	-	7.7	-	-	-	-	-
100.0%	5	5	5	8.1	-	8.5	7.6	-	7.7	-	-	-	-	-
100.0%	5	5	5	8.1	-	8.5	7.6	-	7.7	-	-	-	1535	1585

Organism: ***Notropis leedsi*** Age: 11 days
LC50: - Binomial: - Moving Average: - Probit: -

Concentrations	SURVIVAL # at 0 hr	Live at 24 hr	Live at 48 hr	Dissolved Oxygen 0 hour	24 hour	48 hour	pH 0 hour	24 hour	48 hour	Temperature 0 hour	24 hour	48 hour	Conductivity 0 hour	48 hour
Control	5	5	4	8.0	8.7	8.3	7.9	8.1	8.1	23.0	19.9	20.0	-	-
Control	5	5	5	7.9	8.7	8.3	7.9	8.1	8.1	-	-	-	235	280
10%	5	5	5	7.9	8.6	8.4	7.9	8.0	8.1	22.9	19.8	19.9	-	-
10%	5	5	5	8.0	8.7	8.4	7.9	8.0	8.1	-	-	-	400	380
30%	5	5	5	8.0	8.6	8.4	7.8	7.9	8.0	22.7	19.9	20.0	-	-
30%	5	5	5	8.1	8.6	8.3	7.8	7.9	8.0	-	-	-	670	640
50%	5	5	5	8.1	8.5	8.3	7.7	7.8	7.9	22.3	19.9	20.0	-	-
50%	5	5	5	8.1	8.5	8.3	7.7	7.8	7.9	-	-	-	940	905
70%	5	5	5	8.1	8.5	8.3	7.6	7.7	7.8	22.3	19.9	20.0	-	-
70%	5	5	5	8.1	8.5	8.3	7.6	7.7	7.8	-	-	-	1205	1155
85%	5	5	5	8.1	8.5	8.4	7.5	7.5	7.7	22.1	20.0	20.1	-	-
85%	5	5	5	8.1	8.5	8.4	7.5	7.5	7.7	-	-	-	1405	1355
100%	5	5	5	8.1	8.5	8.4	7.4	7.5	7.7	22.2	20.2	20.3	-	-
100%	5	4	4	8.1	8.6	8.4	7.4	7.4	7.7	-	-	-	1585	1535

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	0.0	Hach
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	0.067	0.002

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	123	112
Cond. Control Water (daphnids):	126	113
100% Sample:	10	390

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

Table 3. Microtox test results, Gulf Coasty Lead Co. Inc., Hillsborough County, Florida Temporary Permit # DER IT 29-110367, on 6 September, 1989.

% Sample	Final Reclaimed Water nonchlorinated	
	5-min	15-min
0	70	52
0	67	51
0	77	61
12.38	74	55
12.38	75	57
12.38	68	54
24.75	77	60
24.75	73	57
24.75	72	56
49.5	83	62
49.5	78	59
49.5	75	57
99	78	59
99	78	60
99	78	59

EC_{50} unchlorinated (15 minute, 15 °C) = stimulatory

EC_{50} (15 minute, 15 °C) is calculated using the Data Reduction Computer Program developed by Microbics Corporation for the Sharp Model EL-5100 calculator. (*Microbics Systems Operating Manual*, 1982, Microbics Corporation, Carlsbad, California.)

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: GULF COAST LEAD
Address/City: 1901 N. 66TH ST., TAMPA
County: HILLSBOROUGH
Contact/District: DAVE DEMMI
NPDES Permit #: DER IT 29-110367 Outfall #: 001

Sample Collection: Date 9/25/89 Time 10:32
Test Beginning: Date 9/26 Time 1400
Test Ending: Date 9/28 Time
Test Organism: Ceriodaphnia dubia
Life Stage/Age: neonate

Test Number: 1 of 3 Test Type: Screening (Definitive)
(Static) | Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.7, 9.9	8.5 @ 24°C	1375 @ 23.8°C	23.4 @ 23.3°C
24 hr	7.7, 9.9	8.7 @ 23°C		22.8 @ 22.8
48 hr	7.7, 9.9	8.5 @ 24°C	1368 @ 23.3°C	23.1 @ 23.0

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Cont		5	5	4	8.0		8.5	8.5		8.4	22.9		22.0			
"		5	5	5	8.0		8.5	8.5		8.4						
"		5	5	5	8.0		8.5	8.5		8.4						
"		5	5	5	8.1		8.5	8.5		8.4				235		260
10%		5	5	5	8.0		8.4	8.5		8.2	22.7		21.6			
"		5	5	5	8.0		8.4	8.5		8.2						
"		5	5	5	8.0		8.5	8.5		8.4						
"		5	5	5	8.1		8.5	8.5		8.3				380		380
30%		5	5	5	8.0		8.5	8.4		8.2	22.9		21.5			
"		5	5	5	8.0		8.5	8.4		8.2						
"		5	5	5	8.1		8.5	8.4		8.2						
"		5	5	5	8.1		8.5	8.4		8.2				650		666
50%		5	5	5	8.0		8.5	8.2		8.1	22.8		21.5			
"		5	5	5	8.1		8.5	8.2		8.1						
"		5	5	3	8.1		8.5	8.2		8.1						
		5	5	4	8.1		8.5	8.2		8.1				925		910
70%		5	5	5	8.1		8.5	8.0		7.8	22.6		21.5			
"		5	5	5	8.1		8.5	8.0		7.8						
"		5	5	5	8.1		8.5	8.0		7.8						
		5	5	4	8.1		8.5	8.0		7.8				1175		1205
95%		5	5	5	8.1		8.5	7.8		7.8	22.5		21.5			
"		5	5	5	8.1		8.5	7.8		7.8						
"		5	5	5	8.1		8.5	7.8		7.8						
		5	5	4	8.1		8.5	7.8		7.8			21.5	1375		1400
100%		5	4	4	8.0		8.5	7.6		7.9	22.9		21.5			
"		5	5	5	8.0		8.5	7.6		7.7						
"		5	5	5	8.1		8.5	7.6		7.9						
"		5	5	5	8.1		8.5	7.6		7.7				1555		1575
Measured by:		MF	MF	MF	SHW		MF	SHW			SHW	MF	MF	SHW		MF
Recorded by:		MF	MF	MF	MF		MGC	MF			MF	MGC	MC	MF		MGC

Investigators' Signatures

Steven H Wolf
Rob Conyers
Marshall Faircloth
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:			Mod.	Hach	MF
Alkalinity:	12	126	10	Hach	SHW
Hardness:	112	113	390	Hach	SHW
Total Ammonia:	0.000	0.000	0.067	Orion/Hach	SHW

slope -57.2

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Gulf Coast Lead
Address/City:
County:
Contact/District:
NPDES Permit #: _____ **Outfall #:** _____

Test Number: 2 of 3 **Test Type:** (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks:

Sample Collection: Date 9/25/99 Time 10:32
Test Beginning: Date 9/26 Time 1320
Test Ending: Date _____ Time _____
Test Organism: Daphnia pulex
Life Stage/Age: neonate

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

		Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (µmhos/cm)		
Conc.	Chamber #	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control		5	5	5	8.0		8.5	8.4		8.2	23.0		21.7	225		
"		5	5	5	8.0		8.5	8.4		8.2						
"		5	5	5	8.0		8.5	8.4		8.2						
"		5	5	5	8.0		8.5	8.4		8.2				230		250
100%		5	5	5	8.0		8.4	7.6		7.7	23.0		21.8	1525		
"		5	5	5	8.0		8.4	7.6		7.7						
"		5	5	5	8.1		8.5	7.6		7.7						
"		5	5	5	8.1		8.5	7.6		7.7				1530		1585
Measured by:		SHW	MF	MF	SHW		MF	SHW		MF	SHW		MF	SHW		MF
Recorded by:		MF	MF	MF	MF		MC	MF		MC	MF		MC	MF		MC

Investigators' Signatures

Steven H Wolfe
Neil Campbell
Marshall Faircloth
_____
_____
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: GULF COAST LEAD
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Test Number: 3 of 3 Test Type: Screening (Definitive) (Static) | Static Renewal | Flow-through

Remarks:

Sample Collection: Date 9/25/89 Time 10:32
Test Beginning: Date 9/26 Time
Test Ending: Date Time
Test Organism: Mysidopsis bahia
Life Stage/Age: 11 days

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	63	5	5	4	8.0	8.7	8.3	7.9	8.1	8.1	23.0	19.9	20.0	240		
"	58	5	5	5	7.9	8.7	8.3	7.9	8.1	8.1				235		230
10%	76	5	5	5	7.9	8.6	8.4	7.9	8.0	8.1	22.9	19.8	19.9			
"	87	5	5	5	8.0	8.7	8.4	7.9	8.0	8.1				405		380
30%	83	5	5	5	8.0	8.6	8.4	7.8	7.9	8.0	22.7	19.9	20.0			
"	14	5	5	5	8.1	8.6	8.3	7.8	7.9	8.0				670		640
50%	16	5	5	5	8.1	8.5	8.3	7.7	7.8	7.9	22.3	19.9	20.0			
"	186	5	5	5	8.1	8.5	8.3	7.7	7.8	7.9				940		905
70%	271	5	5	5	8.1	8.5	8.3	7.6	7.7	7.8	22.3	19.9	20.0			
"	19	5	5	5	8.1	8.5	8.3	7.6	7.7	7.8				1205		1155
85%	164	5	5	5	8.1	8.5	8.4	7.5	7.5	7.7	22.1	20.0	20.1			
"	62	5	5	5	8.1	8.5	8.4	7.5	7.5	7.7				1425		1355
100%	21	5	5	5	8.1	8.5	8.4	7.4	7.5	7.7	22.2	20.2	20.3			
"	12	5	4	4	8.1	8.6	8.4	7.4	7.4	7.7				1585		1535
Measured by:		MF	MF	MF	SHW	JMF	MF	SHW	JMF	MF	SHW	JMF	MF	SHW		MF
Recorded by:		SHW	ML	MF	MF	KML	MCC	MF	KML	MCC	MF	KML	MCC	MF		MCC

Investigators' Signatures

Steven H Wolfe
KM Lurding
Marshall Faircloth
Jeff Cooper
Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

MICROTOX™ Data Reduction Sheet

SOURCE: Gulf Coast Feed

GRAPH
CALC EC _____ (_____ MIN, _____ °C) = _____ %SAMPLE mg/L

Stimulatory

SAMPLE DATA:

SAMPLE TYPE (EFFLUENT, LEACHATE, ETC.):

DATE ASSAYED: 9/26/84 TIME: 1400

VISUAL COLOR: clear CORRECTION REQUIRED: YES (NO)

VISUAL TURBIDITY: none SEPARATION REQUIRED: YES (NO)

INITIAL pH: pH ADJUSTED TO: WITH:

OSMOTICALLY ADJUSTED WITH: MOAS (DRY NaCl) OTHER

PRIMARY DILUTION OF SAMPLE:

OPERATOR: MS Campos REAGENT VIAL LOT NO. M- NLN

REMARKS:

MICROTOX™ TEST

SAMPLE CUVETTE	% SAMPLE	READINGS 5 MIN	READINGS 15 MIN	Γ5	Γ15	NOTES
A1	0	70	52	X	X	
B1		67	51			
C1		77	61			
A2	12.36	74	55	-0.01	-0.01	
B2		75	57			
C2		63	54			
A3	24.75	77	60	-0.04	-0.05	
B3		73	57			
C3		72	56			
A4	49.5	83	62	-0.09	-0.08	
B4		78	59			
C4		75	57			
A5	99	75	59	-0.09	-0.08	
B5		75	60			
C5		78	59			
EC_{50} (MIN, °C)						Stimulatory

REVIEWED BY:
DATE: 11/5/84