Bioassays of

Golden Gem Growers, Inc.

Umatilla, Lake County, Florida

NPDES #FL0001066

Sampled 10/9/95

December 1995

Biology Section

Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan #870346G

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Introduction

Golden Gem Growers, Inc., Umatilla, Lake County, Florida, NPDES #FL0001066, tests performed on 10 to 12 October, 1995.

This citrus and juice concentrate processing facility is located on State Road 19, Umatilla. The facility has a design flow of 2.0 MGD. The wastewater discharge consists of barometric condensate, contact cooling water, refrigerant cooling water, and storm water. The wastewater receives no treatment prior to discharge to a ditch, then a marsh, and ultimately to Lake Yale (facility summary provided by Peter Dentice, FDEP, Orlando).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1993, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027F.

Results and Discussion

The FDEP Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of effluent from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The tests results did not indicate toxicity (Table 1).

Total residual chlorine and total ammonia were not detected in the sample. Further chemical analyses were performed on the sample and several metals and the herbicide, Norflurazon, were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on October 9, 1995, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Golden Gem Growers, Inc., Umatilla, Lake County, Florida, NPDES# FL0001066, performed on 10 to 12 October,1995.

Facility:	**Golden Gem Growers, Inc.**			**NPDES #**	**FL0001066**	Facility Type:	**Food Processing**
Location:	SR 19, Umatilla			Contact/District:	Phil Kane/Central		
County:	Lake			Test type:	static acute screen		
Sample Collection Date:	**10/9/95**	Time:	1453	# tests:	2	Receiving Water:	Ditch to marsh to Lake Yale
Test Beginning Date:	10/10/95	Time:	1350	Chlorination Type:	Non-chlorinated		
Test Ending Date:	10/12/95	Time:	1400				**Page 1 of 1**

Total Residual CL2	mg/L	Method
Field:	not measured	
Lab:	<0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	< 0.017	0.00
20% Dilute Mineral Water (cladocerans):	< 0.017	0.00
100% Sample:	<0.017	0.00

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	120
20% Dilute Mineral Water (cladocerans):	80	85
100% Sample:	165	170

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

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

	Sample/Diluent	**SURVIVAL # Alive**			pH			Temperature[A]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	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 A	0/20	5	5	5	8.0	-	8.1	24.2	-	24.4	8.0	-	7.8	180	200
Control B	0/20	5	5	5	-	-	8.2	-	-	24.2	-	-	7.7	-	200
Control C	0/20	5	5	5	-	-	8.2	-	-	24.1	-	-	7.8	-	200
Control D	0/20	5	5	5	-	-	8.2	-	-	24.0	-	-	7.8	-	200
100% A	20/0	5	5	5	7.5	-	8.5	24.0	-	24.4	7.4	-	7.7	350	355
100% B	20/0	5	5	5	-	-	8.5	-	-	24.3	-	-	7.7	-	360
100% C	20/0	5	5	5	-	-	8.5	-	-	24.2	-	-	7.8	-	360
100% D	20/0	5	5	5	-	-	8.5	-	-	24.1	-	-	7.8	-	355

[A] Temperature of test incubator was continously recorded on a strip chart recorde
Incubator temperature range for the test period was 23.9-24.4°C.

Organism: ***Cyprinella leedsi*** Age: 12 days

	Sample/Diluent	**SURVIVAL # Alive**			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	Volume(mL)	0 hr	24 hr	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 A	0/500	5	5	5	7.8	8.2	8.3	26.1	23.8	24.0	8.1	7.6	7.9	260	250
Control B	0/500	5	5	5	7.8	8.2	8.3	26.1	23.8	23.8	8.0	7.7	7.9	260	245
Control C	0/500	5	5	5	7.8	8.2	8.3	26.1	23.7	23.7	8.0	7.8	7.8	260	250
Control D	0/500	5	5	5	7.8	8.2	8.3	26.1	23.8	23.8	8.0	7.8	7.8	260	250
100% A	500/0	5	5	5	7.5	8.1	8.3	24.4	23.8	23.8	7.2	7.7	7.8	365	360
100% B	500/0	5	5	5	7.5	8.1	8.3	24.3	23.6	23.7	7.2	7.6	7.7	365	360
100% C	500/0	5	5	5	7.5	8.1	8.3	24.1	23.6	23.7	7.0	7.6	7.7	365	360
100% D	500/0	5	5	5	7.5	8.1	8.3	24.1	23.6	23.7	6.9	7.5	7.7	365	360

[B] Temperature of test room was continously recorded on a strip chart recorder.
Room temperature range for the test period was 23.5-24.3°C.

Table 2. Results of chemical analyses on the effluent from the Golden Gem Growers, Inc., sampled on October 9, 1995.

Metals

Calcium	45.7	mg/L[A]
Iron	1080	µg/L[A]
Magnesium	9.36	mg/L[A]

Pesticides and Herbicides

Norflurazon	0.30	µg/L[T]

Base, Neutral, & Acid Extractable Organics

none detected

[A] Value reported is the mean of two or more determinations.
[T] Value reported is less than the criterion of detection.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Golden Gem
County: Lake
Contact / District: C. Smith, P. Kahr / Central
NPDES Permit #: FL0001066
LIMS Sample #: 119301 LIMS Job #: 95-Oct-10-14-01
Sample log 10-18-95

Sample Collection: Date 10/09/95 Time 1453
Test Beginning: Date 10/10/95 Time 1350
Test Ending: Date 10-12-95 Time 1400
Organism Batch #: 48 Diluent Batch #: 41
Organism Age: < 24 hrs
Test Organism: Ceriodaphnia dubia

Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 1 of 2
Remarks:

Instrument Calibrations: pH | Temperature °C | D.O. mg/L | Conductivity µmhos/cm

meter # 7851 | 90H018262 | 90H018262 | G9005749

0 hr 2.0 @ 7.0, 9.0 @ 9.0 | 24.4 @ 24.4 | 8.3 @ 24.4 °C | 993 @ 1013, 10090 @ 10320 @ 23.6 °C
24 hr 7.0 @ 7.0, 9.0 @ 9.0 | 24.5 @ 24.5 | 8.3 @ 24.5 °C | 995 @ 1013, 10100 @ 10320 @ 24.6 °C
48 hr 7.0 @ 7.0, 9.0 @ 9.0 | 23.4 @ 23.4 | 8.3 @ 24.4 °C | 111 @ 102.3, 1002 @ 1013 @ 24.1 °C

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
CTL	A	5	5	5	8.0		8.1	24.2		24.4	8.0		7.8	180		200
CTL	B	5	5	5			8.2			24.2			7.7			200
CTL	C	5	5	5			8.2			24.1			7.8			200
CTL	D	5	5	5			8.2			24.0			7.8			200
100%	A	5	5	5	7.5		8.5	24.0		24.4	7.5		7.7	350		355
100%	B	5	5	5			8.5			24.3			7.7			360
100%	C	5	5	5			8.5			24.2			7.8			360
100%	D	5	5	5			8.5			24.1			7.8			355
Measured/Loaded by:		MF	TM	MF	TM		MF	TM		MF	TM		MF	TM		MF
Recorded by:		RBS	TM	TM	RBS		JN	RBS		JN	RBS		JN	RBS		JN

Investigators' Signatures
Tina Mitchell
R. Stanley
Judith Mott
Marbil Faircloth
Tonia C. Haden
David F. Karr
reviewer

form updated 5/05/95

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			Not measured		
Lab Total Residual Cl2 (mg/L):	—	<0.03	<0.03	DR 400	TM/RS
Alkalinity (mg/L as $CaCO_3$):	—	40	165	HACH	TM/RS
Hardness (mg/L as $CaCO_3$):	—	85	170	HACH	TM/RS
Total ammonia (mg/L as N):	—	<0.017	<0.017	Orion	JN/DR

Ammonia Meter #98136 Meter Slope: -59.0 Ammonia Blank: <0.017 Control Salinity: 5 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Golden Acres
County: Lake
Contact / District: C. Smith, P. Krane / Central
NPDES Permit #: FL0001066
LIMS Sample #: 119301 LIMS Job #: 95-OCT-10-14
Sample Collection: Date 10/9/95 Time 1453
Test Beginning: Date 10/10/95 Time 1400
Test Ending: Date 10-12-95 Time 1400
Organism Batch #: 50 Diluent Batch #: well
Organism Age: 12 days old
Test Organism: Cyprinella leedsi

Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 2 of 2
Remarks:

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	24.4 @ 24.4	8.3 @ 24.4 °C	993 @ 1013 10090 @ 10320 @ 23.6 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.5 @ 24.5	8.3 @ 24.5 °C	995 @ 1013 10100 @ 10320 @ 24.6 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.4 @ 23.4	8.3 @ 24.4 °C	111 @ 1023 1002 @ 1013 @ 24.1 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
CTL A	520	5	5	5	7.8	8.2	8.3	26.1	23.8	24.0	8.1	6.9	7.9	260	250	250
CTL B	883	5	5	5	7.8	8.2	8.3	26.1	23.8	23.8	8.0	6.9	7.9	260	245	245
CTL C	136	5	5	5	7.8	8.2	8.3	26.1	23.7	23.7	8.0	7.0	7.8	260	245	250
CTL D	307	5	5	5	7.8	8.2	8.3	26.1	23.8	23.8	8.0	7.1	7.8	260	250	250
100%A	476	5	5	5	7.5	8.1	8.3	24.4	23.5	23.8	7.2	6.9	7.8	365	360	360
100%B	618	5	5	5	7.5	8.1	8.3	24.3	23.6	23.7	7.2	6.9	7.7	365	360	360
100%C	3	5	5	5	7.5	8.1	8.3	24.1	23.6	23.7	7.0	7.6	7.7	365	360	360
100%D	504	5	5	5	7.5	8.1	8.3	24.1	23.6	23.7	6.9	7.5	7.7	365	360	360
											*	7.6				
											salinity	7.7				
											piston 20:12	7.8				
											Adj	7.8				
											10/11/95	7.7				
											TM	7.6				
Measured/Loaded by:		MF/TM	TM	MF	TM	TR	MF	TM	TR	MF	TM	TR	MF	TM	TR	MF
Recorded by:		MF	TM	TM	RBS	TM	JN	RBS	TM	JN	RBS	TM	JN	RBS	TM	JN

Investigators' Signatures

Salt Water: (Well Water) / 20% Min Water

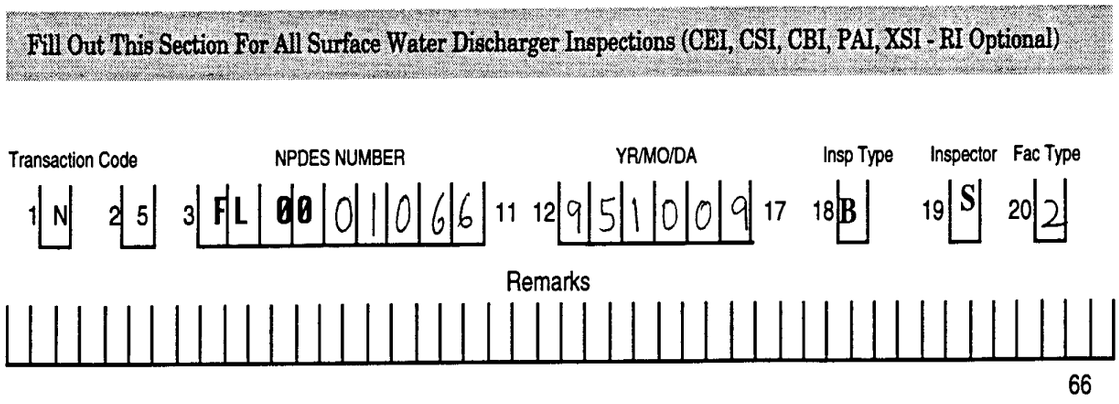
Water Quality Parameters	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):	not measured		
Lab Total Residual Cl2 (mg/L):	<0.03	DR-100	TM/RBS
Alkalinity (mg/L as $CaCO_3$):	120	HACH	TM/RBS
Hardness (mg/L as $CaCO_3$):	120	HACH	TM/RBS
Total ammonia (mg/L as N):	<0.017	Orion	JN/DR

Ammonia Meter #98136 Ammonia Meter Slope: -59.0 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

reviewer

form updated 5/05/95

The Bioassay of the Golden Gem Growers, Inc., effluent sampled on October 9, 1995, NPDES #FL0001066.



The Priority Pollutants Analysis for the Bioassay of the Golden Gem Growers, Inc., effluent sampled on October 9, 1995, NPDES #FL0001066.

