Bioassays of

Goldkist Poultry Processing Facility

Live Oak, Suwannee County, Florida

NPDES #FL0001465

Sampled 11/17/97

March 1998

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

Introduction

Goldkist Poultry Processing Facility, U.S. Highway 90 West, Live Oak, Suwannee County, Florida, NPDES #FL0001465, tests performed on 18 to 20 November, 1997.

This food processing facility's wastewater treatment system has a design flow of 1.04 MGD. Treatment of wastewater includes primary and secondary screening, chemical coagulation/flocculation, dissolved air flotation, trickling filtration, activated sludge, secondary clarification, a stabililization pond, pH adjustment, and sand filtration. The wastewater is then chlorinated for disinfection, and dechlorinated with sulfur dioxide prior to being discharged into the Suwannee River. Sludge is aerobically digested and applied to land by spray irrigation (facility summary prepared by Khalid Al-Nahby, FDEP, Jacksonville).

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*. Test results did not show toxicity (Table 1).

Total residual chlorine was 0.05 mg/L in the field and < 0.03 mg/L in the laboratory. Total ammonia was not detected in the sample. Further chemical analyses were performed on the sample and several metals were identified (Table 2).

Conclusion

The sample of effluent collected from this facility on November 17, 1997, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Goldkist Poultry Processing Facility, Live Oak, Suwannee County, Florida, NPDES# FL0001465, performed on 18 to 20 November,1997.

Facility: **Goldkist Poultry Processing Facility** | **NPDES #** **FL0001465** | Facility Type: Food Processing
Location: U.S. Highway 90 West, Live Oak | Contact/District: Tim McKelvey/Northeast
County: Suwannee | Test type: static acute screen
Sample Collection Date: 11/17/97 Time: 1400 | # tests: 2 | Receiving Water: Suwannee River
Test Beginning Date: 11/18/97 Time: 1410 | Chlorination Type: Chlorinated
Test Ending Date: 11/20/97 Time: 1410

Total Residual CL2	mg/L	Method
Field:	0.05	-
Lab:	<0.03	DR-100

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

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	130
Control Water (20% DMW) (cladocerans):	70	80
100% Sample:	210	525

Salinity	(ppt)
Control Water (fish):	0
Control Water (20% DMW) (cladocerans):	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	8.1	-	8.3	24.2	-	24.5	7.3	-	7.0	170	190
Control B	0/20	5	5	5	-	-	8.3	-	-	24.4	-	-	7.0	-	185
Control C	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.1	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.1	-	185
100% A	20/0	5	5	5	7.2	-	8.7	24.5	-	24.4	7.6	-	7.1	1410	1410
100% B	20/0	5	5	5	-	-	8.7	-	-	24.4	-	-	7.1	-	1445
100% C	20/0	5	5	5	-	-	8.7	-	-	24.4	-	-	7.2	-,	1435
100% D	20/0	5	5	5	-	-	8.7	-	-	24.3	-	-	7.1	-	1460

[A] Temperature of test incubator and test room were continously recorded on strip chart recorders.
Incubator temperature range for the test period was 24.4-25.4°C.
Test room temperature range for the test period was 24.0-25.0°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	7.9	8.4	8.4	25.1	24.6	25.2	6.9	7.1	6.7	255	275
Control B	0/500	5	5	5	7.9	8.4	8.4	25.1	24.8	25.1	6.9	7.1	6.7	255	270
Control C	0/500	5	5	5	7.9	8.4	8.4	25.1	24.9	24.7	6.9	7.1	6.8	255	275
Control D	0/500	5	5	5	7.9	8.4	8.4	25.1	24.7	24.8	6.9	7.0	6.8	255	265
100% A	500/0	5	5	5	7.2	8.1	8.4	25.0	24.7	25.0	7.2	7.0	6.7	1475	1490
100% B	500/0	5	5	5	7.2	8.1	8.4	25.0	24.6	24.8	7.2	6.9	6.7	1475	1480
100% C	500/0	5	5	5	7.2	8.1	8.4	24.9	24.6	24.8	7.3	7.0	6.8	1475	1485
100% D	500/0	5	5	5	7.2	8.2	8.4	25.0	24.8	24.8	7.4	7.0	6.7	1475	1510

[B] Temperature of test incubator and test room were continously recorded on strip chart recorders.
Incubator temperature range for the test period was 24.5-26.0°C.
Test room temperature range for the test period was 24.0-25.0°C.

Table 2. Results of chemical analyses on the effluent from the Goldkist Poultry Processing Wastewater Treatment Facility sampled on November 17, 1997.

Metals

Calcium	66.4	mg/L [A]
Copper	2.8	µg/L [A]
Iron	76	µg/L [A]
Nickel	8	µg/L [I]
Magnesium	90.4	mg/L [A]
Potassium	39.8	µg/L [A]
Zinc	14	µg/L [I]

Pesticides and Herbicides

none detected

Base, Neutral, & Acid Extractable Organics

none detected

Oil and Grease	5.0	mg/L [K]

[A] Value reported is the mean of two or more determinations.

[I] Value reported is less than the minimum quantitation limit and greater than or equal to the minimum detection limit.

[K] Actual value is known to be less than value given.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Gold Kist
County: Suwannee
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0001465
LIMS Sample #: 200759 LIMS Job #: 97-NOV-18-20
sample log: 12-5-97 DV
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Temperature range: room 24.0-25.0 °C
incubator 24.4-25.4 °C
Test Number: 1 of 2
Remarks: D = dead, M = missing

Sample Collection: Date 11-17-97 Time 1400
Test Beginning: Date 11-18-97 Time 1410
Test Ending: Date 11-20-97 Time 1410
Organism Batch #: 46 Diluent Batch #: 51
Organism Age: <24 hours
Test Organism: Ceriodaphnia dubia

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	23.5 @ 23.6	8.4 @ 24.0 °C	105.1 @ 1036 994 @ 1005 @ 24.6 °C 9930 @ 10076
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.0	8.3 @ 24.9 °C	105.7 @ 103.6 968 @ 1005 @ 24.6 °C 9822 @ 10058
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.1 @ 22.2	8.2 @ 25.1 °C	104.3 @ 103.2 987 @ 1005 @ 25.0 °C

Conc.	Chamber #	Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (mmhos/cm) / Cond. (µmhos/cm)		
		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
Control A	A	5	5	5	8.1		8.3	24.2		24.5	7.3		7.0	170		190
Control B	B	5	5	5			8.3			24.4			7.0			185
Control C	C	5	5	5			8.3			24.3			7.1			185
Control D	D	5	5	5			8.3			24.3			7.1			185
100% A	A	5	5	5	7.2		8.7	24.5		24.4	7.6		7.1	1410		1410
100% B	B	5	5	5			8.7			24.4			7.1	MF pen		1445
100% C	C	5	5	5			8.7			24.4			7.2	slip 12-8-97		1435
100% D	D	5	5	5			8.7			24.3			7.1			1460
Measured/Loaded by:		MF	KS	MF	MC		MF	MF		MF	MF		MF	MF		MF
Recorded by:		MF	KS	MF	MF		ND	MF		ND	MF		ND	MF		ND

Investigators' Signatures
Marshall Faircloth
Keri Johnson

Water Quality Parameters verified by MF

	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.05	—	KHALID AL-MAHDY
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR-100	MF/ND
Alkalinity (mg/L as $CaCO_3$):		70	210	Hach	ND
Hardness (mg/L as $CaCO_3$):		80	525	Hach	ND
Total ammonia (mg/L as N):		<0.017	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -60.0 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

reviewer

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Gold Kist
County: Suwannee
Contact / District: Tim Ackelvey / Northeast
NPDES Permit #: FL0001465
LIMS Sample #: 200759 **LIMS Job #:** 97-NOV-18-20
sample log: 12-5-97 aw

Sample Collection: Date 11-17-97 Time 1400
Test Beginning: Date 11-18-97 Time 1430
Test Ending: Date 11-20-97 Time 1410
Organism Batch #: 88 **Diluent Batch #:** well
Organism Age: 12 days
Test Organism: Cyprinella leedsi

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24.0-25.0°C
incubator 24.5-26.0°C
Test Number: 2 of 2
Remarks: D = dead, M = missing

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	23.5 @ 23.6	8.4 @ 24.0 °C	1051 @ 103.6 994 @ 1005 @ 24.6 °C 994 @ 1005 @ 100%
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.0 @ 24.0	8.3 @ 24.9 °C	1057 @ 103.6 968 @ 1005 @ 24.6 °C 982 @ 1005
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.1 @ 22.2	8.2 @ 25.1 °C	1043 @ 103.2 987 @ 1005 @ 25.0 °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
Control A	B13	5	5	5	7.9	8.4	8.4	25.1	24.6	25.2	6.9	7.1	6.7	255	255	275
Control B	B14	5	5	5	7.9	8.4	8.4	25.1	24.8	25.1	6.9	7.1	6.7	255	265	270
Control C	B15	5	5	5	7.9	8.4	8.4	25.1	24.9	24.7	6.9	7.1	6.8	255	275	275
Control D	B16	5	5	5	7.9	8.4	8.4	25.1	24.7	24.8	6.9	7.0	6.8	255	260	265
100% A	B17	5	5	5	7.2	8.1	8.4	25.0	24.7	25.0	7.2	7.0	6.7	1475	1445	1490
100% B	B18	5	5	5	7.2	8.1	8.4	25.0	24.6	24.8	7.2	6.9	6.7	1475	1460	1480
100% C	B19	5	5	5	7.2	8.1	8.4	24.9	24.6	24.8	7.3	7.0	6.8	1475	1470	1485
100% D	B20	5	5	5	7.2	8.2	8.4	25.0	24.8	24.8	7.4	7.0	6.7	1475	1490	1510
Measured/Loaded by:		MF	KS	ND	MF	KJ	MF	MF	KJ	MF	MF	KJ	MF	MF	KJ	MF
Recorded by:		KJ	KS	ND	MF	KJ	ND	MF	MF	ND	MF	MF	ND	MF	MF	ND

Investigators' Signatures
Marshall Faircloth
Kevin Johnson
Kristi Smith

reviewer

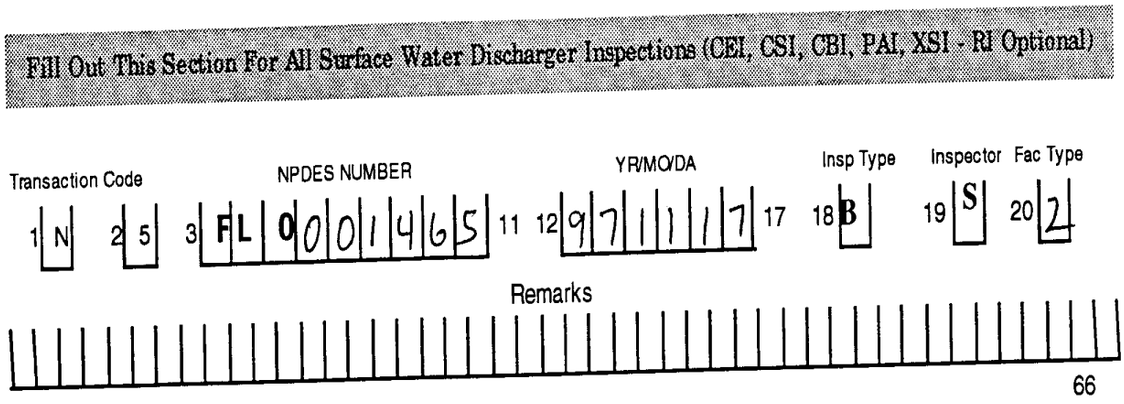
form updated 4/01/96

Water Quality Parameters verified by MF

	Salt Water / Well Water?	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			0.05	—	Khalid Al-Nahdi
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR 100	MF/ND
Alkalinity (mg/L as $CaCO_3$):	120		210	Hach	ND
Hardness (mg/L as $CaCO_3$):	130		525	Hach	ND
Total ammonia (mg/L as N):	<0.017		<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope: -60.0 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Goldkist Poultry Processing Facility effluent sampled on November 17, 1997, NPDES #FL0001465.



The Priority Pollutants Analysis for the Bioassay of the Goldkist Poultry Processing Facility effluent sampled on November 17, 1997, NPDES #FL0001465.

