Publication No. 77-e20
WA-22-0010

M E M O R A N D U M

April 11, 1977

State of Washington
Department of Ecology

To: Rhonda Pritchard

From: Mike Morhous

Subject: Ocean Spray Cranberries, Inc.
Class II Inspection

On February 2, 1977, Rhonda Pritchard, Eric Egbers and I arrived at Markham, Washington to conduct the above referenced inspection. We met with Mr. Lockhart, West Coast Area Engineer.

Automatic composite samplers were installed at the influent, unchlorinated effluent and chlorinated effluent. The influent sampler was located at the plant's influent composite sampling station in the first cell of the lagoon. The unchlorinated effluent sampler was located at the plant's effluent composite sampling station in the second cell of the lagoon.

From the second cell, the effluent is divided and pumped into two separate chlorine contact chambers, with each contact chamber having a final discharge line. For simplification, these two contact chambers and respective outfalls will be subsequently referred to as "A" and "B". The "A" chamber series is situated to the west and the "B" chamber series is situated to the east. The chlorinated effluent sampler was located at the outfall end of contact chamber "B".

All composite samplers were adjusted to take a 250 ml aliquot every thirty minutes.

The plant's flow measuring device is a venturi meter and therefore was not checked for accuracy.

It was observed during the inspection that the chlorine tank gage was inoperative. It was explained that the only way to determine when the tank is empty is when there is no chlorine residual in the final effluents.

The plant is using the orthotolidine colorimetric method to determine chlorine residuals. It should be noted that EPA and Standard Methods no longer recognize the orthotolidine colorimetric procedure as an approved method for determining total residual chlorine.

Fecal coliform grab samples were collected from effluents "A" and "B" together with simultaneous chlorine residuals using the DPD chlorine test kit. Also a two liter grab sample was collected from effluent "A" for BOD_5 and TSS analyses, and to provide a comparison with effluent "B".

On February 3, Eric and I returned to pick up the composite samplers and split the unchlorinated effluent composite with Ocean Spray. Ocean Spray ices all of their wastewater samples and sends them by commercial bus to Laucks Laboratories, Inc. in Seattle. It should be noted this procedure may result in an excessive holding time for both BOD and coliform samples prior to initiation of the analyses.

The DOE laboratory stored BOD samples at 4°C and set up the five day BOD's on February 10 to correspond with Laucks laboratory schedule.

The following table lists DOE and Laucks results together with the NPDES permit limitations.

	DOE				Laucks	NPDES
	Inf.	Unchl. Eff.	Chl. Eff. "A"	Chl. Eff. "B"	Unchl. Eff.	
BOD_5 (mg/l) set on 2/10	286	126		156	230	
% Removal				45%		85%
BOD_5 (mg/l) set on 2/7		160				
TSS (mg/l)	650	200		186	260	
% Removal				71%		90%
Fecal Coliforms (Colonies/100 mls)						Daily Max. 200
at 1130			<20	<50		
at 1245				<50		
* Chlorine Residual						Daily Max. 1.0
at 1130			>6.0	> 6.0		
pH	7.2	6.5		6.0		6.5 to 8.5
Sp. Conductivity (umhos/cm)	390	440		450		
Total Plant Flow (mgd)		.149				Daily Max. .20
Grab Sample 2/3 at 1155						
BOD_5 (mg/l) set on 2/10			155			
TSS (mg/l)			145			

* DPD field analysis
"<" is "less than" and ">" is "greater than"

The above list shows a significant difference in the BOD_5 and TSS results obtained by the two laboratories from the common composite sample. In

view of the excessive holding time involved with these analyses, the accuracy of the results is questionable.

However, it would appear that Ocean Spray was not meeting their BOD_5 and TSS percent removal requirements at the time of this inspection. The inspection did point out an excessive quantity of chlorine being applied to the effluent.

In summary, the following are recommended:

The collection of grab samples to be split with Laucks Laboratories, Inc. for an additional comparison of laboratory results. If necessary additional 24 hour composites may be collected at a future date.

The amount of chlorine being applied to the effluent should be reduced to obtain a 1.0 ppm residual and may be reduced further provided fecal coliform counts remain within the daily maximum limitation.

Replacement of the existing inoperable chlorine tank gage with a calibrated pressure gage or similar mechanism which will indicate the volume of chlorine remaining in the tank. Ocean Spray may want to consider a combination gage and alarm system which will activate when the tank nears empty.

Replacement of the orthololidine chlorine residual test kit with an acceptable method for determining total residual chlorine.

Ocean Spray should consider options which would reduce any excessive holding time of BOD and bacteriology samples. The acceptable holding time for these samples is 6 to 12 hours.

Ocean Spray should consider relocating their final effluent composite sampling station to the chlorinated effluent outfalls, compositing grabs from both "A" and "B". As shown in the previous table this relocation would provide more accurate final effluent data.

MM:ee

cc: Doug Houck
Dick Cunningham
Central Files

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

ORIGINAL TO: E. Eggers
COPIES TO: R. Pritchard
LAB. FILES

OLYMPIA LABORATORY

DATA SUMMARY

Source Ocean Spray Cranberry @ Markham Collected By Eggers & Morgan

Date Collected 2/3-4/77

Log Number:	77-635	36	37	38	39	40	41	42
Station:	Chlor. Eff A Inf Set	B 2nd Set	B 2nd Set	Grab Inf Lagoon Inf. Dig. Pit	Grab Inf Tanks A Chlor. Eff	Comp. Inf	Comp. Unchlor. Eff	Comp. Chlor. Eff. B
pH				7.0	6.5	7.2	6.5	6.0
Turbidity (NTU)								
Sp. Conductivity (umhos/cm)				370	440	390	440	450
COD				870 (4th)	423 (4th)	947 (7th)	415 (320 7th)	419 (7th)
BOD (5 day) (Set on 2/10)				244	155	286	126 (230)	156
Total Coliform (Col./100ml)								
Fecal Coliform (Col./100ml)	<20	<50	<50					
NO3-N (Filtered)							<.02	<.02
NO2-N (Filtered)							0.02	0.02
NH3-N (Unfiltered)							.92	.64
T. Kjeldahl-N (Unfiltered)								
O-PO4-P (Filtered)							1.4	1.3
Total Phos.-P (Unfiltered)							3.1 (3.6)	3.0
Total Solids				971	506	983	533	547
Total Non. Vol. Solids				358	241	364	241	244
Total Suspended Solids				620	145	650	200 (260)	186
Total Sus. Non Vol. Solids				220	75	310	110	89
BOD_5 (Set on 2/7)							160	
Time Collected:	1130	1130	1245					

Note: All results are in PPM (mg/L) unless otherwise specified. ND is "None Detected" "<" is "Less Than" and ">" is "Greater Than"

ECY 040-2-32

Summary By S. Rell Date 2-24-77