Addendum Report to "Investigation of an *Escherichia coli* O157:H7 Outbreak Associated with Dole Pre-Packaged Spinach"

Date: May 7, 2007

Subsequent to the publication date, the following corrections were identified in the report detailing the investigation of the September 2006 *E. coli* O157:H7 outbreak associated with consumption of Dole pre-packaged spinach. The information provided in this document addresses those corrections.

Cover Page and Footers

- The publication date of the report was reported as March 21, 2007. The actual publication date was March 23, 2007.

CalFERT Environmental Sampling

- Additional isolates were submitted for PFGE analysis subsequent to the release of this report. On page 31 of the original report, under CalFERT Environmental Sampling for Paicines Ranch, we reported 45 of 351 samples (13 percent) were found positive for *E. coli* O157:H7 and 26 of these 45 (58 percent) matched the outbreak strain as determined by PFGE analysis. Following issuance of the report, two additional samples were reported as a match to the outbreak strain by PFGE analysis. A total of 28 of the 45 (62 percent) *E. coli* O157:H7 positive samples collected at the Paicines Ranch were found to match the outbreak strain by PFGE analysis.

- On page 42 of the original report, under CalFERT Environmental Sampling for Eade, the report stated that of 102 samples collected at the Eade Ranch, nine were positive for *E. coli* O157:H7. After final analysis, ten of the 102 samples (10 percent) were positive for *E. coli* O157:H7, none of which matched the outbreak strain by PFGE analysis.

- The updated lab results for Paicines Ranch and Eade have been revised in Attachment 10, and have been included in this addendum.

Executive Summary

- Early notification provided to CDHS by the Oregon Department of Human Services facilitated the rapid CalFERT response. Specifically, on September 13, 2006, Oregon officials notified CDHS about a cluster of E. coli O157:H7 illnesses that Oregon was investigating. Later that same day, CDHS was also notified by FDA of additional clusters in other states.

- On page 3, in paragraph 3 of the original report, the third line did not include **soil** as an environmental sample in which *E. coli* O157:H7 with a PFGE pattern matching the outbreak strain was identified on Paicines Ranch.

- The final sentence on page 3 refers to the presence of wild pigs "**in and around spinach fields**". This sentence was not intended to indicate that wild pig tracks were observed in the implicated 50.9 acre lot (lot 1) on Paicines Ranch. Investigators observed wild pig tracks in fields and on dirt roads approximately 1 mile south of lot 1. Additionally, as described in the report, numerous wild pigs were observed on the Paicines Ranch.

Paicines Ranch: Lot 1

- In the first paragraph on page 30 of the original report, the report incorrectly stated that wild pig tracks were observed "**through prepared beds in lot 1"** and suggested that the pigs were crossing from the riparian areas through the fields "**to the vineyards on the far side of lot 1**". No pig tracks were observed by investigators in lot 1 although they were observed in fields south of lot 1. There was evidence that pigs traveled to the vineyard on the east side of Airline Highway but it would not have been necessary for the pigs to traverse lot 1 to reach these vineyards.

Wickstrom Ranch: Lot 817

- In the second paragraph on page 36 of the original report, the report incorrectly stated, "Several cattle were seen grazing on a hill in a fenced pasture about **50 feet** from the field on the opposite side of Quarry Road". The distance from the Wickstrom 817 to the nearest fence line on that hill was approximately **750 feet**.

Eade Ranch: Lot 6

- In the second paragraph on page 42 of the original report, the report refers to a pile of **compost** approximately two and one-half miles north of the subject field. This statement was included only as a factual representation of nearby environmental factors that may have been of note for the investigation. The compost pile investigators observed was not on the Eade Ranch nor was it on a ranch farmed by Braga Ranch.

ATTACHMENT 10

***E. coli* O157:H7 testing results for environmental samples, spinach outbreak investigation, 2006.**

PRE-HARVEST

EADE
(Monterey County)

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
ANIMAL			
Cattle feces (feedlot)	21	9 (43%)	0
Small waterfowl feces	1	0	
Wild pig feces (Salinas river)	1	0	
Subtotal (Animal)	**23**	**9**	**0**
PLANT			
Red leaf lettuce (spinach field)	5	0	
SOIL/SEDIMENT			
Cattle pen, soil	3	0	
Cattle pen, drag swab	7	0	
Field ditch, sediment	2	0	
Field pond, sediment	16	0	
Salinas river, sediment	2	0	
Spinach field, drag swab	4	0	
Standpipe, sediment	2	0	
Subtotal (Soil/sediment)	**36**	**0**	
WATER			
Cattle trough, swab	1	0	
Cattle trough, water	4	1 (25%)[b]	0
Field pond, water	19	0	
Field pond, Moore swab	6	0	
Irrigation sprinkler, water	4	0	
Salinas River, water	2	0	
Well, water	2	0	
Subtotal (Water)	**38**	**1 (3%)**	**0**
TOTAL (Eade)	**102**	**10 (10%)**	**0**

PAICINES
(San Benito County)

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
AEROSOL			
Mobile aerosol, pasture	5	0	
Pooled aerosol, field	3	0	
Subtotal (Aerosol)	**8**	**0**	
ANIMAL			
Cattle feces	77	26 (34%)	15
Coyote feces	1	0	
Deer feces	4	0	
Dog feces	1	0	
Horse feces	2	0	
Owl pellet	2	0	
Small ruminant (sheep/goat)			
Feces	3	0	
Small waterfowl feces	2	0	
Wild pig			
Feces from ground	47	11 (23%)	6
Feces/tissue, necropsy	40	2 (5%)	2
Subtotal (wild pig)	**87**	**13 (15%)**	**8**
Unknown feces, pastures	11	0	
Subtotal (Animal)	**190**	**39 (21%)**	**23**
PLANT			
Leafy greens (unspecified)	2	0	
Spinach seedlings	1	0	
Water plants (pond/reservoir)	2	0	
Subtotal (Plant)	**5**	**0**	
SOIL/SEDIMENT			
Implicated spinach field, soil	5	0	
Pasture pond, sediment	3	0	
Pasture soil/dust	6	1 (17%)	1
San Benito river, sediment	14	2 (14%)	2
Small reservoir/pond, sediment	3	0	
Wells/irrigation runoff, sediment	6	0	
Subtotal (Soil/sediment)	**37**	**3 (8%)**	**3**
OTHER			
Compost, chicken pellets	1	0	
Swamp cooler (mesh, water)	2	0	
Subtotal (Other)	**3**	**0**	**0**

PAICINES continued

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
WATER			
Cattle water trough			
Water	6	0	
Sponge swabs (biofilm)	4	0	
Irrigation runoff (slough)			
Grab, 1 liter	1	0	
Grab, 100mls	1	0	
Moore swab	1	0	
Paicines reservoir			
Grab, 1 liter	6	0	
Concentrate	1	0	
Pond #1, pasture			
Grab, 1 liter	1	0	
Grab, 100mls	6	0	
Turtle pool water (near worker housing)	1	0	
San Benito river/creeks	49	3 (6%)	2
San Benito river/creeks, Moore swabs	6	0	
Small reservoir/pond	3	0	
Small reservoir/pond, Moore swab	4	0	
Well/sprinklers			
Sprinkler head (100mls)	2	0	
Well #1			
Grab, 1 liter	3	0	
Grab, 100mls	1	0	
Concentrate	1	0	
Well #2			
Grab, 1 liter	3	0	
Grab, 100mls	3	0	
Concentrate	1	0	
Runoff water	2	0	
Well #3			
Grab, 1 liter	1	0	
Concentrate	1	0	
Subtotal (Water)	**108**	**3 (3%)**	**2**
TOTAL (Paicines)	**351**	**45 (13%)**	**28**

TAIX
(San Benito County)

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
ANIMAL			
Cattle feces, Nyland Ranch	25	0	
Bird feces, spinach field	1	0	
Subtotal (Animal)	**26**	**0**	
PLANT			
Baby spinach, implicated field	18	0	
SOIL/SEDIMENT			
Spinach field, soil	4	0	
Spinach field, drag swabs	1	0	
Field ditch, sediment	7	0	
Soil, cattle pasture, Nyland Ranch	25	4 (16%)	0
Soil, near well	21	0	
Subtotal (Soil/sediment)	**58**	**4 (7%)**	**0**
WATER			
Cattle water trough, Nyland Ranch	5	0	
Field ditch, water	14	0	
Moore swab, near well	2	0	
Moore swab, field ditch	3	0	
Well, water	2	0	
Subtotal (Water)	**26**	**0**	
OTHER			
Porta pottie, swabs	3	0	
Portal pottie, handwashing water	2	0	
Subtotal (Other)	**5**	**0**	
TOTAL (Taix)	**133**	**4 (3%)**	**0**

WICKSTROM
(San Benito County)

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
PLANT			
Romaine, composite (adjacent to spinach field)	20	0	
SOIL/SEDIMENT			
Field ditch/road (adjacent to spinach field)	3	0	
Field ditch	3	0	
Spinach field	1	0	
Standpipe (adjacent to spinach field)	2	0	
Subtotal (Soil/sediment)	**9**	**0**	
WATER			
Pajaro river, Moore swab	2	1 (50%)	0
Pajaro river, water	4	0	
Standpipe (adjacent to spinach field)	4	0	
Well (Brown's Ranch)	4	0	
Subtotal (Water)	**14**	**1 (%)**	**0**
OTHER			
Invertebrate (earthworm in spinach field)	1	0	
TOTAL (Wickstrom)	**44**	**1 (2%)**	**0**

SURROUNDING WATERSHEDS
(San Benito County)

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
Airline Hwy-San Benito Bridge #43-15			
Grab, 100mls	1	0	
Moore swab	1	0	
Hernandez Reservoir			
Grab, 1 liter	1	0	
Grab, 100mls	1	0	
Concentrate	1	0	
Moore Swab	1	0	
KT Road Bridge			
Grab, 100mls	2	0	
Moore swab	2	0	
Old Hernandez Road			
Grab 100mls	1	0	
Moore swab	1	0	
San Benito River (upstream of Paicines)			
Grab, 100mls	1	0	
Moore swab	2	2 (100%)	0
San Benito River at Hwy 25/Cienaga Road			
Grab, 100mls	2	0	
San Justo Reservoir			
Grab, 1 liter	1	0	
Concentrate	1	0	
San Luis Reservoir			
Grab, 1 liter	1	0	
Concentrate	1	0	
Subtotal (Surrounding watersheds)	**21**	**2 (10%)**	**0**
TOTAL, PRE-HARVEST	**651**	**62 (10%)**	**28**

POST-HARVEST

FACILITY

Sample	No. Tested	No. Positive *E. coli* O157 (%)	Match by PFGE[a]
Garin Ranch-Seco Harvesting			
Environmental swabs (harvester)	6	0	
Natural Selection Food			
Environmental swab	14	0	
Organic spinach, retain	2	0	
Spinach/radicchio, retain	4	0	
Spinach/red leaf, retain	2	0	
Spring mix	8	0	
Trench drain	13	0	
Water (processing plant)	2	0	
Water, well	2	0	
Subtotal (Natural Selection Food)	**47**	**0**	
Pride of San Juan Harvesting			
Environmental swab (harvester)	4	0	
TOTAL, POST HARVEST	**57**	**0**	
GRAND TOTAL	**708**	**62 (9%)**	**28**

Notes

[a]PFGE = pulsed-field gel electrophoresis.
[b]Negative for H7.