

APPENDIX A

Period 1 Field Monitoring Forms

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Period 1 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
11/29/2001	12:45	SAS	1	52.8	80.4	68.0	75	75	13	10	9	11	Cool, not raining, intermittent sun; leachate collection bucket full - emptied and unhooked *Temperatures measured using Fluke meter
11/30/2001	10:53	BF	2	49.0	98.0	71.8	82.2	76.4	2	3	2	3	D temp probe not inserted very deep into pile; no leachate bucket; steady trickle out of leachate pipe; not raining *Temperatures measured using Fluke meter
12/1/2001	8:41	RAR	3	48.9	119	82.4	92.8	82	1	1	0	0	Windy; Steady rain; no odor *Temperatures measured using Fluke meter
12/2/2001	8:40	RAR	4	41.2	128.6	104.6	92.6	102.4	0	0	-	-	Sprinkles; Oxygen reader plugged up & couldn't get cleared, hung it up to dry out *Temperatures measured using Fluke meter
12/3/2001	9:00	AD & RB	5	39.8	130.6	111	107.6	97.8	-	-	-	-	Sunny & cool; no steam; no odor unless downwind of leachate at drip; O2 monitor plugged, called Jack & Stacey; small animal tracks - no digging *Temperatures measured using Fluke meter
12/4/2001	10:04	RAR	6	41.4	133.2	113.8	111.8	99.6	0	0	0	0	Cold; no rain; leachate full - dumped half *Temperatures measured using Fluke meter
12/5/2001	10:04	BF	7	50.4	136.0	116.8	115.2	103.4	1	0	2	3	Not raining; Cover integrity good; Small animal tracks - no digging; no odor; leachate bucket full and stinky - emptied 1/4 now 3/4 full *Temperatures measured using Fluke meter

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoeck for assistance, if not available contact Stacey Servo

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Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
12/6/2001	14:14	TM	8	61.6	147*	124*	132*	124*	0	1	2	0	Intermittant rain 10:30 to 14:30; Leachate full so emptied to 1/2; noticed animal tracks *temperatures measured using Desmista oxygen meter at 3' up and 4' in
					145.6	135.8	127.4	115.0					
12/7/2001	14:39	BF	9	66.4	153.6	139.0	128.6	115.6	2	1	2	0	Sunny and warm *Temperatures measured using Fluke meter
12/8/2001	7:45	RAR	10	36	146	123	119	120	5	7	3	0	Fluke not working - will change battery; changed battery and still not working *Temps measured using Demista oxygen meter
12/9/2001	8:45	RON	11	34	152*	138*	134*	125*	5	1	5	2	Clear and cold; no rain; seems like a lot of difference between temperature readings from yesterday *Temperatures measured using Demista oxygen meter* and reotemp
					114	122	118	102					
12/10/2001	8:30	AD	12	43.4	161.4	149.8	136.6	128.4	1	1	1	0	Lightly raining; Some unpleasant odor when standing next to and downwind of pile (not noticeable 20-30 feet away); Leachate bucket full, drained half, slow trickle from the pipe; Fluke temperature monitor working fine; Bird (?) pulled paper out of the pile on the North side, otherwise no other apparent vectors.
12/11/2001	9:22	RAR	13	39	140*	151*	140*	121*	4	5	12	1	Cold and windy; cloudy with drizzle; Fluke meter left on all day - battery dead so replaced battery; make sure to turn off Fluke meter *Temperatures measured using Demista oxygen meter* and Fluke **Turned windrow
					165.6	164.8	147	140.6					
12/12/2001	13:49	BF	14	53.8	127.8	116.8	125.4	117.4	1	0	0	0	Overcast; not raining; breezy *Temperatures measured using Fluke meter

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					A	B	C	D	A	B	C	D	
12/13/2001	14:30	TM	15	56.6	126*	120*	127*	126*	11	14	7	9	Hard rain and wind; collected pathogen compost and leachate samples *Temperatures measured using oxygen meter* and Fluke meter
					150.2	135.4	147.4	132.4					
12/14/2001	16:30	AD	16	38.8	156	158.4	165	156	-	-	-	-	Rain with hail, no other vectors, not enough daylight to take O2 measures; TW has worse odor than the PAW *Temperatures measured using Fluke meter
12/15/2001		JG	17	47.1	153	163	167	164	13	13	13	12	Cloudy, little odor on TW *Temperatures measured using Demista oxygen meter
12/16/2001			18	50	143	129	131	133	-	-	-	-	Rain and windy; some odor; oxygen meter not working *Temperatures measured using Reo probe
12/17/2001	15:30	AD	19	44	153*	133*	113*	117*	9	1	1	1	Sunny & clear; no other vectors; no diggin, no birds; Fluke not working - took temps with O2 monitor* and Reo long probe; Ron cleared the O2 monitor that morning; O2 readings seem fine, but not sure I trust temperatures
					144	144	154	142					
12/18/2001	10:00	AC	20	38	110*	108*	116*	120*	4	11	5	4	Raining hard; turned pile; little odor *Temperatures measured using Oxygen meter* and Reo temp **Turned windrow
					146	156	141	134					
12/19/2001	13:50	BF	21	44	136*	136*	126*	131*	1	1	1	2	Raining; leachate smells really bad; fluke had ambient temp reading of 79 degrees *Temperatures measured using Reo temp* and Fluke meter
					123.8	138.4	141.4	136.8					

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Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
12/20/2001	13:19	TM	22	50.1	122*	132*	133*	123*	1	2	4	9	No precipitation, no wind, clouds and blue sky; Plastic and cardboard visible; few flies; pile steaming; foul smell; emptied leachate bucket, sanitized and placed in shed *Temperatures measured using Demista oxygen probe* and new Fluke meter
					128.8	138.6	139.0	130.9					
12/21/2001	10:10	BF	23	46.6	139.4	149.9	148.1	147.8	13	18	19	2	Not Raining, Breezy, partly cloudy; no odor; no flies *Temperatures measured using new Fluke meter
12/22/2001	9:52	RAR	24	40	141.2	150.2	149.3	148.5	10	1	1	1	no odor *Temperatures measured using new Fluke meter
12/23/2001	8:30	RCN	25	31	150.4	159.0	160.1	159.5	9	1	1	0	Foggy and cold but no rain *Temperatures measured using new Fluke meter
12/24/2001	8:32	Ron	26	34.5	151.2	160.5	161.7	161.5	2	2	-	-	Foggy, no odor; oxygen probe not working, took to office to try out *Temperatures measured using new Fluke meter **Turned windrow
12/25/2001			27		-	-	-	-	-	-	-	-	*no temp or O2 readings taken
12/26/2001	14:15	AC	28	38	155.1	150.2	138.6	125.8	3	1	1	1	Sunny, no wind; no flies; some odor close up *Temperatures measured using new Fluke meter

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					A	B	C	D	A	B	C	D	
12/27/2001	10:00	TM	29	37.4	151*	148*	139*	140*	9	1	12	1	no wind; no rain during sampling; no offensive odors; collected pathogen compost & leachate samples; collected pathogen compost & leachate samples; collected stability samples; emptied leachate bucket, sanitized, and placed in shed *Temperatures measured using Demista oxygen probe* and new Fluke meter
					154.1	153.1	140.5	136.0					
12/28/2001	9:11	BF	30	40.8	150.8	156.9	144.3	150.5	18	12	11	3	No rain; light breeze; no odor; some food visible around pile; steaming; some food visible around pile *Temperatures measured using new Fluke meter
12/29/2001		RW	31	38.4	149.5	159.3	150.7	157.0	1	2	1	1	Light rain; some odor; some wind *Temperatures measured using new Fluke meter
12/30/2001		RW	32	37.7	144.9	158.9	154.2	157.4	10	7	6	6	partly cloudy; dry; no wind; not sure if oxygen meter working correctly; no odor; *Temperatures measured using new Fluke meter
12/31/2001	14:15	RAR	33	50	163.7	165.3	177.7	165.4	-	-	-	-	Foggy, slight breeze; no odor; Demista oxygen probe not working; leachate at a steady drip *Temperatures measured using new Fluke meter
1/1/2002	10:31	RAR	34	40.3	140.6	158.1	156.3	156.1	-	-	-	-	Steady rain; no odor; turning today; Demista oxygen probe still not working - will look at on Wednesday 1/2; *Temperatures measured using new Fluke meter **Turned window
1/2/2002	10:52	BF	35	51.3	156.8	146.3	147.6	145.9	3	1	2	1	No rain or wind; paper and plastic visible; some steam and a few fruit flies; unsure about Demista working properly; leachate bucket 1/4 full - took sample and emptied *Temperatures measured using new Fluke meter

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					A	B	C	D	A	B	C	D	
1/3/2002	14:00	TM	36	44.2 @ 9:20	161.2	152.5	149.8	143.5	8	7	3	13	Intermittent clouds/blue sky; many small flying insects at 13:00; no precipitation; sunny; Demista not working, cleaned tip & brush, changed battery; Ron Ray will work on tonight; emptied leachate bucket, sanitized and placed in shed; collected pathogen compost & leachate samples *Temps measured using new Fluke meter
1/4/2002	10:45	BF	37	45.1	157.1	160.9	150.9	147.1	-	-	-	-	Partly cloudy; no wind or odor; Demista not here *Temps measured using new Fluke meter
1/5/2002			38		-	-	-	-	-	-	-	-	*no temp or O2 readings taken
1/6/2002	8:15	RCN	39	approx. 50	156.3	162.8	156.5	150.1	-	-	-	-	Rainy and warm *Temps measured using old temp gage because batteries dead on new one
1/7/2002			40		-	-	-	-	-	-	-	-	*no temp or O2 readings taken
1/8/2002	8:35	RAR	41	52.6	146.0	163.0	155.5	151.4	9	3	2	3	Sunny; no wind; no odor; leachate at steady drip *Temps measured using new Fluke meter **Turned windrow
1/9/2002	14:00	BF & BB	42	52.3	132.4	135.5	145.3	139.5	1	1	0	0	Sunny; leachate bucket less than 1/4 full *Temps measured using new Fluke meter

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					A	B	C	D	A	B	C	D	
1/10/2002	12:30	TM/LJB	43	55.5	152.8	155.9	153.7	149.9	0	0	1	0	bad odor when we hit milk cartons; only 1/3 leachate bucket filled; identified what looked to be a chicken beak at point D; collected pathogen compost & leachate samples; collected stability samples *Temps measured using new Fluke meter
1/11/2002	9:15	BF	44	41.7	158.5	162.1	155.1	155.6	10	1	1	1	Foggy *Temps measured using new Fluke meter
1/12/2002			45	37.7	154.7	166.7	160.3	163.1	4	2	3	2	Foggy; slight breeze *Temps measured using new Fluke meter
1/13/2002			46		-	-	-	-	-	-	-	-	*no temp or O2 readings taken
1/14/2002	16:00	AD	47	39.3	149.7	165.4	162	163.7	2	0	0	0	Cloudy with patches of blue sky; light wind; no odors or vectors; connected leachate bucket *Temps measured using new Fluke meter
1/15/2002	9:24	RAR	48	37.1	146.5	159.9	159.9	161.8	3	3	1	4	cold; no wind *Temps measured using new Fluke meter **Turned window
1/16/2002	16:00	AD	49	37.9	-	-	132*	110*					slight drizzle and cool; no odors or vectors; NO leachate in the bucket except for 1-2 ounces - took the 1-2 ounce sample and reattached bucket *Temps measured using Long Reo*, Demista** and new Fluke meter
					179**	179**	178**	161**					
					134.2	150	143.5	126.3	1	0	0	0	

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					A	B	C	D	A	B	C	D	
1/17/2002	10:30	TM/LJB	50	40.0	137.0	160.3	153.1	143.0	-	-	-	-	Weather cold and gray, no precip; no leachate in bucket; sanitized and placed bucket in shed; leachate sample was a composited from Tues and Wed was sent to lab; collected pathogen compost & leachate samples; Demista oxygen probe not available *Temps measured using new Fluke meter
1/18/2002	15:02	BF	51	46.3	140.1	164.4	162.8	154.3	11	8	7	4	Demista temperature not working - pretty sure Demista oxygen working - Ron said it was fixed, appears to have worked *Temps measured using new Fluke meter
1/19/2002			52		-	-	-	-	-	-	-	-	*no temp or O2 readings taken
1/20/2002	8:34	RAR	53	39.5	142.2	163.1	161.4	168.5	15	6	4	5	Raining hard and windy; no odor; leachate at a slight drip *Temps measured using new Fluke meter
1/21/2002	13:58	RAR	54	39.9	137.9	157.9	154.7	157.6	-	-	-	-	Rain, snow, sunshine (you name it); didn't do O2 because of time restraints *Temps measured using new Fluke meter
1/22/2002	10:26	RAR	55	37.3	134.6	152.9	148.9	154.1	16	8	7	12	Raining *Temps measured using new Fluke meter **Turned windrow
1/23/2002	15:15	BF	56	43.2	104.1	142.7	136.9	130.1	14	2	0	1	cold; not raining; no odor *Temps measured using new Fluke meter

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					A	B	C	D	A	B	C	D	
1/24/2002	10:13	TM/LJB	57	46	115.3	142.4	143.8	136.2	8	5	0	3	Weather cold and gray, no precip; no leachate in bucket; no leachate sample collected for tues and wed; leachate sample was from thurs. only was sent to lab; sanitized and placed bucket in shed; collected pathogen compost & leachate samples; collected stability samples *Temps measured using new Fluke meter
2/7/2002	10:30	TM	70	45.9	124.8	126.6	138.8	143.3	18	18	16	6	Weather - rain progressively harder and wind; two worms found during sampling 3 foot height at point C; stability samples collected *Temps measured using new Fluke meter
2/21/2002	10:30	TM	84	64.7	120.9	124.7	128.7	131.7	11	14	14	13	Weather - no precipitation, warm; found liner 3 feet over and up from point B; collected stability samples *Temps measured using new Fluke meter
3/7/2002	11:00	TM	98	48.3	115.7	122.6	119.5	123.1	15	11	16	16	Weather - typical March - everything from snow, hail and sleet to warm sunshine; collected stability samples, microbial samples, and compost character samples *Temps measured using new Fluke meter

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Point C: Five feet from east end of pile

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Point B: Middle of pile side

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Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
11/29/2001	11:45	SAS	1	52.8	74.4	86.4	79.4	86.0	11	10	9	14	Cool, not raining, intermittent sun; maggots in pipes; leachate collection bucket full - emptied and unhooked *Temperatures measured using Fluke meter
11/30/2001	10:49	BRF	2	49.0	81.0	107.4	112.6	107.4	1	2	1	1	Cloudy, windy and cool; no leachate bucket; pipe dripping; not raining presently; mild odor different than biofilter odor - not bad and not sure from where *Temperatures measured using Fluke meter
12/1/2001	8:31	RAR	3	48.4	100.4	133	146	137.4	1	4	1	1	Windy and raining hard *Temperatures measured using Fluke meter
12/2/2001	8:30	RAR	4	41.2	119.6	148.8	153.4	151.4	1	3	5	0	Not raining, just sprinkles *Temperatures measured using Fluke meter
12/3/2001	9:00	AD& RB	5	39.8	128.4	151.8	156.6	158.6	-	-	-	-	Sunny & cool; no steam; no odors; leachate at slow trickle; O ₂ monitor plugged - called Jack & Stacey *Temperatures measured using Fluke meter
12/4/2001	10:17	RAR	6	41.4	134.2	154.6	158.8	155	0	1	3	1	No rain, Leachate full, dumped half *Temperatures measured using Fluke meter
12/5/2001	10:08	BF	7	50.4	137.0	157.5	161.6	172.6	1	2	2	1	Cover good; Mild odor on north end - think it is from biofilter, have to get close to smell it; leachate full - dumped 1/3 of it *Temperatures measured using Fluke meter

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					A	B	C	D	A	B	C	D					
12/6/2001	14:14	TM	8	61.6	158*	155*	156*	139*	148.2	168.2	172.4	169.4	9	6	1	2	Leachate full - emptied to half; human tracks across NW end top; *Temperatures measured using oxygen meter* at 3' up and 4' in and Fluke meter
12/7/2001	14:34	BF	9	66.4	152.8	166.4	165.4	164.0	2	1	6	10	2	1	6	10	Sunny and warm; O ₂ numbers don't seem to jive with Thursday's #'s; double checked location ids and my numbers are correct *Temperatures measured using Fluke meter
12/8/2001	7:18	RAR	10	36	154	162	152	152	5	2	3	2	5	2	3	2	Fluke not working - will change battery; changed battery and still not working; temps were measured with oxygen probe
12/9/2001	8:15	RON	11	34	133*	138*	130*	136*	128	132	136	144	3	1	3	2	Clear and cold; no rain; seems like a lot of difference between temperature readings from yesterday *temperatures measured using oxygen meter* and reotemp
12/10/2001	8:30	AD	12	43.4	150.4	157.4	162.4	157.2	150.4	157.4	162.4	157.2	1	3	2	4	Lightly raining. Some unpleasant odor when standing next to and downwind of pile. Not noticeable 20-30 feet away. Fluke temp monitor working fine. Leachate bucket full, drained half, leachate at a slow trickle. Small sawdust deposit flowed from the pipe when I removed the bucket. Steady trickle followed. Some paper, and one chicken foot surfacing on the pile (not dug out, just finding it's way to the surface)
12/11/2001	9:35	RAR	13	39	157	167.6	169.2	163	157	167.6	169.2	163	0	7	8	10	Windy and cold; Fluke left on all day and isn't working; *temperatures measured using Fluke meter
12/12/2001	13:54	BF	14	53.8	155.8	162.6	165.6	156.2	155.8	162.6	165.6	156.2	0	2	10	4	Overcast; not raining; breezy *Temperatures measured using Fluke meter

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Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
12/13/2001	14:30	TM	15	56.6	131*	160*	136*	136*	10	11	18	6	Hard rain and wind; collected pathogen compost and leachate samples *Temperatures measured using oxygen meter* and Fluke meter
					154.0	176.6	174.8	170.2					
12/14/2001	16:30	AD	16	38.8	160.6	170.4	163	162	-	-	-	-	Rain with hail, no other vectors, not enough light left for taking O2 measurements; left a note asking Rexius to take one over the weekend. *Temperatures measured using Fluke meter
12/15/2001		JG	17	47.1	160	170	166	162	13	12	12	12	Cloudy, little odor *Temperatures measured using oxygen meter
12/16/2001			18		142	154	166	163	-	-	-	-	Rain & wind; little odor; no oxygen reading - probe not working *Temperature measured using reotemp
12/17/2001	15:00	AD	19	44	140*	160*	171*	168*	1	1	8	4	Sunny & clear; Fluke reading ambient @89 degrees; changed battery, still not reading correctly; took temps using the O2 monitor* and long Reo probe; ron dried out the O2 monitor from the morning - seemed to be working fine in the after noon - not sure
					146	154	142	143					
12/18/2001	10:30	AC	20	38	144*	165*	142*	122*	4	14	14	8	Raining hard; *Temperatures measured using oxygen meter* and reotemp
					144	154	142	150					
12/19/2001	13:50	BF	21	44	110*	116*	118*	120*	3	14	14	8	Raining; leachate stinky; out of gloves; bleach spray not working *Temperatures measured using reotemp* and Fluke
					169.8	174.2	167.8	178.6					

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoeck for assistance, if not available contact Stacey Servo

Period 1 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Point A: Five feet from west end of pile

Point C: Five feet from east end of pile

Phase: Composting & Curing

Point B: Middle of pile side

Point D: Middle of east end of pile

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)				
					A	B	C	D	A	B	C	D					
12/20/2001	13:22	TM	22	50.1 @ 10:30	122*	147*	138*	143*	157.0	159.0	153.4	143.9	16	16	18	14	Clouds and blue sky; no precipitation; no wind; flies resting on PAW; emptied leachate buckets, sanitized, and put in shed *Temperatures measured using Demista oxygen meter* and new Fluke meter
12/21/2001	10:15	BF	23	46.6	158.1	159.1	152.9	145.5	3	2	13	18					Not Raining, Breezy, partly cloudy; no odor; no flies *Temperatures taken using new Fluke meter
12/22/2001	9:42	RAR	24	40	156.9	158.2	151.8	143.9	4	11	12	8					no wind; scattered showers -not raining at the time; no odor *Temperatures taken using new Fluke meter
12/23/2001	8:15	RCH	25	31	156.7	157.9	150.9	135.7	7	6	14	9					Foggy and cold but no rain *Temperatures taken using new Fluke meter
12/24/2001	8:57	Ron	26	34.5	157.7	158.2	150.1	137.7	-	-	-	-					Foggy, no odor; oxygen probe not working, took to office to try out *Temperatures taken using new Fluke meter *Turned windrow
12/25/2001			27														*no temperature or oxygen readings taken
12/26/2001	14:00	AC	28	38	157.9	160.9	162.2	160.1	3	2	1	5					Sunny! No wind; no odor; no flies *Temperatures taken using new Fluke meter

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Pile ID: PAW

Point A: Five feet from west end of pile

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Phase: Composting & Curing

Point B: Middle of pile side

Point D: Middle of east end of pile

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
12/27/2001	10:00	TM	29	37.4	168*	166*	172*	173*	1	12	6	6	no wind; no rain during sampling; no offensive odors; collected pathogen compost & leachate samples; collected stability samples; emptied leachate bucket, sanitized, and placed in shed *Temperatures measured using Demista oxygen probe* and new Fluke meter
					158.5	162.0	163.2	161.7					
12/28/2001	9:11	BF	30	40.8	157.1	160.1	161.9	159.0	4	7	7	5	no rain; new Fluke meter; light breeze; steam coming out of west pipe; no odor *Temperatures measured using new Fluke meter
12/29/2001		RW	31	38.4	159.1	159.9	160.1	161.3	2	6	6	6	Sprinkling; no wind; some odor *Temperatures measured using new Fluke meter
12/30/2001		RW	32	37.7	158.3	156.9	159.2	157.9	6	8	7	8	Partly cloudy; dry; no wind; no odor; oxygen probe not working well? *Temperatures measured using new Fluke meter
12/31/2001	14:10	RAR	33	50	158.7	158.2	158.8	156.0	-	-	-	-	Foggy; no odor; slight breeze; Demista oxygen probe not working *Temperatures measured using new Fluke meter
1/1/2002	10:36	RAR	34	40.3	157.5	157.5	158.1	155.5	-	-	-	-	Raining; no odor; leachate at a steady drip; Demista oxygen probe still not working will take a look at on Wednesday 1/2 *Temperatures measured using new Fluke meter
1/2/2002	10:52	BF	35	51.3	155.2	157.9	157.8	153.5	7	6	8	9	Some steam; no rain/wind; leachate bucket 3/4 full - took sample and emptied; not sure if Demista working correctly *Temperatures measured using new Fluke meter

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Period 1 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Point A: Five feet from west end of pile

Point C: Five feet from east end of pile

Phase: Composting & Curing

Point B: Middle of pile side

Point D: Middle of east end of pile

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
1/3/2002	14:05	TM	36	44.2 @ 9:20	155.7	159.5	159.3	159.7	-	-	-	-	Intermittent clouds/blue sky; Demista not working for temps or O2 - Ron Ray will work on tonight; plastic and cardboard visible at surface of pile; few flies; emptied leachate buckets, sanitized and placed in shed; collected pathogen compost & leachate samples *Temps measured using new Fluke meter
1/4/2002	10:45	BF	37	45.1	155.9	160.1	158.6	152.1	-	-	-	-	Partly cloudy; no odor or wind; Demista not working *Temps measured using Fluke meter
1/5/2002			38		-	-	-	-	-	-	-	-	*no temperature or oxygen readings taken
1/6/2002	8:00	RCH	39	approx. 50	162.0	166.4	162.8	151.4	-	-	-	-	Rainy and warm *Temps measured using old temp gage because batteries dead on new one
1/7/2002			40		-	-	-	-	-	-	-	-	*no temperature or oxygen readings taken
1/8/2002	9:07	RAR	41	52.6	152.5	161.3	158.1	146.1	7	2	2	5	Sunny; slight odor @ west end of pile; leachate at steady drip *Temps measured using new Fluke meter
1/9/2002	14:00	BF & BB	42	52.3	152.1	161.3	157.5	144.7	7	11	14	9	Sunny; leachate bucket full and smelly *Temps measured using new Fluke meter

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Pile ID: PAW

Point A: Five feet from west end of pile

Point C: Five feet from east end of pile

Phase: Composting & Curing

Point B: Middle of pile side

Point D: Middle of east end of pile

Date	Time	ID (Initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
1/10/2002	13:10	TMLJB	43	55.5	150.7	160.9	155.9	142.7	9	11	6	0	found fish bones & undecomposed broccoli while digging; identified chicken toes at points A and B; collected pathogen compost & leachate samples; collected stability samples *Temps measured using new Fluke meter
1/11/2002	9:15	BF	44	41.7	147.3	158.7	154.1	144.6	8	11	13	5	Foggy *Temps measured using new Fluke meter
1/12/2002		RCW	45	37.7	147.9	159.9	153.6	143.3	3	6	9	7	Foggy; slight breeze *Temps measured using new Fluke meter
1/13/2002			46		-	-	-	-	-	-	-	-	*no temperature or oxygen readings taken
1/14/2002	16:00	AD	47	39.3	145.9	157.2	153.1	145.3	1	2	8	6	Cloudy with patches of blue sky; light wind; no odors; attached leachate buckets *Temps measured using new Fluke meter
1/15/2002	9:31	RAR	48	37.1	156.6	155.9	150.8	143.1	6	7	13	10	no odor; leachate 1/2 full *Temps measured using new Fluke meter
1/16/2002	16:00	AD	49	37.9	143.3	156.1	150.0	142.9	1	0	1	5	Cool, light drizzle; no odor or vectors; empties leachate to 1/3 bucket; took 8 ounce sample *Temps measured using Fluke meter

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Period 1 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

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Point D: Middle of east end of pile

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
1/17/2002	11:30	TM/LJB	50	40.0	142.9	157.1	150.1	141.3	-	-	-	-	Weather cold and gray, no precip; Demista oxygen probe not available; Dark reddish brown full bucket of leachate; emptied leachate buckets, sanitized, and placed in shed; leachate sample composite from tues, wed and thurs; collected pathogen compost & leachate samples *Temps measured using new Fluke meter
1/18/2002	15:02	BF	51	46.3	143.3	158.3	149.5	139.7	11	11	11	18	Demista temps not working - pretty sure Demista oxygen working - Ron said it was fixed, but the 11, 11, 11 readings made me a little suspicious - appears to have worked though *Temps measured using new Fluke meter
1/19/2002			52		-	-	-	-	-	-	-	-	*no temp or O2 readings taken
1/20/2002	8:25	RAR	53	39.5	140.8	156.8	148.5	149.5	6	5	7	10	Raining hard and windy; no odor *Temps measured using new Fluke meter
1/21/2002	13:54	RAR	54	39.9	133.7	156.9	146.9	125.7	-	-	-	-	Rain, snow, sleet, sunshine (you name it); didn't do O2 because of time restraints *Temps measured using new Fluke meter
1/22/2002	10:32	RAR	55	37.3	135.1	151.5	144.7	122.5	10	12	9	12	Raining *Temps measured using new Fluke meter
1/23/2002	15:15	RAR	56	43.2	135.9	151.8	143.3	123.9	13	12	10	17	Cold; not raining; no odor *Temps measured using new Fluke meter

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Period 1 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

Point B: Middle of pile side

Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures (F)				Pile Oxygen Levels (%)				Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	A	B	C	D	
1/24/2002	10:13	TM/LJB	57	46	135.5	153.3	142.6	126.2	16	6	5	18	Weather cold and gray, no precip; full bucket of leachate; emptied leachate bucket, sanitized, and placed in shed; leachate sample composite from tues, wed and thurs; collected pathogen compost & leachate samples; collected stability samples *Temps measured using new Fluke meter
2/7/2002	10:30	TM	70	45.9	131.3	153.2	135.8	127.1	14	14	14	17	Weather - wind and raining progressively harder; less sawdust color on surface of pile; checked Demista readings and much lower than Fluke readings; collected stability samples *Temps measured using new Fluke meter
2/21/2002	10:30	TM	84	64.7	125.2	148.3	128.2	-	11	11	12	12	Weather - no precip, warm; greenish-white yeast-like growth (10" by 7") near ground between B & C; onions growing under ventilation pipe near A; D temp not collected; collected stability samples *Temps measured using new Fluke meter
3/7/2002	11:00	TM	98	48.3	121.5	141.3	120.9	117.7	9	4	16	15	Weather - typical March, everything from snow, hail, and sleet to warm sunshine; collected stability samples, microbial samples, and compost character samples *Temps measured using new Fluke meter

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APPENDIX B

Period 2 Field Monitoring Forms

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
3/14/2002	1030	TM	1	51.6	76.8	75.8	77.6	77.2	76.9	76.5	1	3	1	0	0	0	Weather - cold, some wind, occasional rain; smells like sawdust *Temps measured using new Fluke meter; oxygen levels - Demista
3/15/2002	1112	BF	2	46.6	93	90.3	98.8	88.1	78.2	-	2	1	1	0	1	1	Weather - overcast, not raining; Thermocouple F not working *Temps measured using new Fluke meter, oxygen levels - Demista
3/16/2002	1436	RAR	3	39.5	109.1	99.7	115.8	110.7	82.1	78.3	-	-	-	-	-	-	Weather - now sunshine; piles steaming; slight odor; repaired Thermocouple F - had open line *Temps measured using new Fluke meter; oxygen levels - not collected
3/17/2002	950	RAR	4	44.7	116.3	106.1	121.0	118.1	84.3	82.6	4	3	3	3	3	4	Weather - cloudy, no rain at this time *Temps measured using new Fluke meter; oxygen levels - Demista
3/18/2002	1400	AD	5	46	128	121.1	133.1	138.5	89	86.1	6	6	4	6	3	6	cloudy sky; very little odor; no visible food *Temps measured using new Fluke meter; oxygen levels - Demista
3/19/2002	1004	RAR	6	51.3	132.7	126.1	137.3	147.3	92.8	88.5	-	-	-	-	-	-	Weather - Overcast, not raining; no odor *Temps measured using new Fluke meter; oxygen levels - not collected
3/20/2002	1034	BF	7	62.3	140.9	132.7	140.8	151.3	97.8	95.1	12	7	13	7	6	9	Weather - sunny; no odor; leachate pipe has steady drip *Temps measured using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
3/21/2002	1247	TM	8	64.5	144.9	137.1	141.4	156.4	102.3	99.9	11	11	7	9	6	13	Weather - cool, slight breeze, no precip; ambient temps behine shed 54 and in front of shed 64.5; some trouble with thermocouples, retaped with wires touching rod; no unusual odors *Temps measured using new Fluke meter; oxygen levels - Demista
3/22/2002	1429	BF	9	54.1	144.5	135.3	142.0	156.8	113.0	106.7	9	10	8	11	7	11	Weather overcast; piles look good *Temps measured using new Fluke meter; oxygen levels - Demista
3/23/2002	1016	RAR	10	61.1	145.7	137.6	142.8	156.2	114.9	110.9	.	.	.	.	.	.	Weather - slight overcast; no breeze; slight manure odor *Temps measured using new Fluke meter; oxygen levels - not collected
3/24/2002	733	RAR	11	45.5	146.2	138.7	142.3	154.1	117.3	110.5	4	3	3	2	3	3	Weather - cloudy, no rain, but rained entire night before; slight manure odor *Temps measured using new Fluke meter; oxygen levels - Demista
3/25/2002	1425	AD	12	55 shade 77 sun	150.1	143.2	145	160.6	122	118	1	1	1	1	1	1	Weather - sunny; soft breeze; no vectors or pile tampering; bucket not in place - too much water on lid? *Temps measured using new Fluke meter; oxygen levels - Demista
3/26/2002	812	RAR	13	54.3	153	143.3	145.3	161.1	123.3	119.3	4	1	1	1	5	1	Weather - sunny; no odor; at turning pile odor like sheep stew *Temps measured using new Fluke meter; oxygen levels - Demista **Turned pile**
3/27/2002	1117	RAR	14	63.9	117.9	124.1	125.9	115.5	122.5	114.8	4	3	3	4	3	4	Strong manure smell; looks like someone was messing around pile area *Temps measured using new Fluke meter; oxygen levels - Demista

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Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

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Point C: Five feet from north end of pile

Point D: Middle of north end of pile

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Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
3/28/2002	1645	TM	15	66.1	139.1	144.3	139.8	127.7	129.6	128.3	4	4	3	6	3	11	Weather - overcast and sunny; no precip; microbial samples sent to BAL (to FedEx by 1510); kids playing around shed when I arrived; problems with three thermocouples - repaired and collected readings *Temps collected using new Fluke meter; oxygen levels - Demista
3/29/2002	830	AD	16	64.4	145.7	147.9	141.4	130.7	130.6	.	.	.	.	.	.	.	Weather: sunny; lots of steam; odors; an exposed ear of corn (from the turning) has not been touched by vectors *Temps collected using new Fluke meter; oxygen levels - not collected
3/30/2002	749	RAR	17	51.5	151.7	151.1	145.2	135.7	134.4	137.3	6	6	7	7	7	6	Weather: sunny; lots of steam *Temps collected using new Fluke meter; oxygen levels - Demista
3/31/2002	718	RAR	18	46.1	155.5	154.7	152.8	145.4	136.8	141.6	.	.	.	.	.	.	Weather: sunny; pile steaming; slight odor of manure *Temps collected using new Fluke meter; oxygen levels - not collected
4/1/2002	1615	AD	19	69.2	155.7	163.0	117.3	166.9	154.1	154.3	7	10	8	8	7	15	Weather: sunny; pile steaming; some odors; 2 sheep skulls pulled out from pile, recovered them *Temps collected using new Fluke meter; oxygen levels - Demista
4/2/2002	852	RAR	20	67.1	156.9	162.9	162.3	157.2	147.5	153.7	7	11	9	9	9	11	Weather: sunny, breezy; some odor; no skulls present *Temps collected using new Fluke meter; oxygen levels - Demista **Turned pile**
4/3/2002	1123	RAR	21	sun 80.8 shade 64.7	155.3	164.7	160	141.1	152.5	162.5	4	4	4	2	3	4	Weather: sunny, breeze out of west; manure odor *Temps collected using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/4/2002	1421	TM/EG	22	71.2	155.6	164.5	166.3	157.3	155.7	157.9	1	5	0	1	2	5	Weather: sunny & warm; no samples collected; leachate buckets washed and placed in shed; assisted by Eric Fale; repaired thermocouple E - may have affected results from day before; ambient temps behind shed = 71.2, front = 85.7 *Temps collected using new Fluke meter; oxygen levels - Demista
4/5/2002		BF	23	55.5	160.5	165.4	166.1	164.9	155.9	156.9	.	.	.	.	.	.	*Temps collected using new Fluke meter; oxygen levels - not collected
4/6/2002	1213	RAR	24	58.5	168.4	171.3	170.9	172.6	164.3	163.7	.	.	.	.	.	.	Weather: cool cloudy day, no rain at time; some odor *Temps collected using new Fluke meter; oxygen levels - not collected
4/7/2002	835	RAR	25	48.1	168.4	171.3	170.9	172.6	164.3	163.7	.	.	.	.	.	.	Weather: cloudy, no rain; no steam *Temps collected using new Fluke meter; oxygen levels - not collected
4/8/2002	1430	AD	26	73.4	162	167	166	166.1	160.4	163.1	.	.	.	.	.	.	Weather: sunny; buckets in place; no steam, Demista clogged *Temps collected using new Fluke meter; oxygen levels - not collected
4/9/2002	1010	RAR	27	53.4	161.1	165.5	164.1	165.1	159	160.9	7	8	7	5	9	5	Weather: drizzle, rain on and off; no odor, no steam *Temps collected using new Fluke meter; oxygen levels - Demista **Turned pile**
4/10/2002	1630	BF	28	64.8	153.9	150.2	156.5	150.1	130.2	142.8	6	8	4	4	6	7	Weather: partly cloudy; odor within 15 feet, little to no leachate *Temps collected using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

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Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/11/2002	1725	TM/CS/BB	29	63.1 front 64.1 back	155.9	148.3	157.7	173.3	131.1	140.7	7	14	5	5	8	9	Weather: cloudy w/ few sprinkles, some sun; microbial compost samples sent to BAL (FedEx by 15:00); stability samples collected; TW seems dry - very little clear leachate present; Jack and AOR tour group visited; skull w/out jaw found at B; several leg bones present in both piles *Temps collected using new Fluke meter; oxygen levels - Demista
4/12/2002	944	BF	30	59.5	157.1	149.1	155.3	158.6	131.3	141.7	4	8	5	6	6	8	no odor *Temps collected using new Fluke meter; oxygen levels - Demista
4/13/2002	813	RAR	31	56.1	160.2	150.5	160.3	162	132.5	144.2	4	4	4	4	3	5	Weather: raining, no odor *Temps collected using new Fluke meter; oxygen levels - Demista
4/14/2002	838	RAR	32	49.5	157	152.4	159.9	162.1	131.3	143.6	.	.	.	.	.	.	Weather: sunny right now; no odor; steam on east side of pile *Temps collected using new Fluke meter; oxygen levels - Demista
4/15/2002	1500	AD	33	50.9	159.3	155.9	161.3	164.1	135.5	147.3	7	8	6	5	10	5	Weather: sunny w/ showers; no steam; no vectors - few flies; no odor except slight smell of manure; small mushrooms growing on east side; no leachate drips; bucket in place *Temps collected using new Fluke meter; oxygen levels - Demista
4/16/2002	1015	RAR	34	45.6	157.5	160.2	161.7	164.5	135.9	147.9	12	8	11	8	9	11	Weather: windy, cold; no odor, no steam *Temps collected using new Fluke meter; oxygen levels - Demista **Turned pile**
4/17/2002	1344	BF	35	51.4	144.2	142.6	148.6	147.9	141.2	145.2	7	5	4	5	4	3	Weather: strong wind gusts; slight odor; no steam; less than 1 oz of leachate in bucket *Temps collected using new Fluke meter; oxygen levels - Demista

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoeck for assistance, if not available contact Stacey Servo

Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/18/2002	1522	TM	36	55.2	158.1	157.6	155.7	149.5	139.2	145.3	4	7	7	15	6	16	Weather: overcast & sunny, no precip, cold breeze; microbial compost samples sent to BAL (FedEx by 1511); found shed unlocked; no skull or jaw bones - found a few leg bones; less than 10 mL leachate; need face masks - will pick some up; smells like stinky compost - a bit better this week *Temps collected using new Fluke meter; oxygen levels - Demista
4/19/2002	1410	BF	37	54.1	167.3	160.3	160.7	155.8	142.2	148.4	6	2	6	7	2	1	Weather: mostly cloudy, light wind; some odor *Temps collected using new Fluke meter; oxygen levels - Demista
4/20/2002	730	RDW	38	45.2	166.6	161.2	160.6	159.2	142.9	148.8	.	.	.	.	.	.	Weather: overcast, light wind; some odor *Temps collected using new Fluke meter; oxygen levels - not collected
4/21/2002	1415	RDW	39	59.6	167.7	166.0	165.8	163.8	150.0	156.1	.	.	.	.	.	.	Weather: sunny & clear, some wind; no odor *Temps collected using new Fluke meter; oxygen levels - not collected
4/22/2002	1415	AD	40	61	166.1	165.1	165.0	165.4	151.0	160.9	.	.	.	.	.	.	Weather: sunny; no odors, Demista clogged *Temps collected using new Fluke meter; oxygen levels - not collected
4/23/2002	858	RAR	41	50.3	163.5	162.8	162.7	164.3	149.3	161.9	7	2	7	4	3	2	Weather: sunny, light breeze; no odor *Temps collected using new Fluke meter; oxygen levels - Demista **Turned pile**
4/24/2002	1015	BF	42	50.4	162.1	152.4	161.8	156.1	135.9	161.9	2	2	2	1	1	2	Weather: sunny; faint odor; no leachate in bucket *Temps collected using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/25/2002	1500	TM/CS	43	66.7	162.5	158.1	162.9	163.9	141.4	163.4	6	1	1	2	1	1	Weather: sunny, no clouds; no leachate samples available - buckets dry; microbial compost samples sent to BAL delivered by Cindy; typical compost odor; stability samples to OSU *Temps collected using new Fluke meter; oxygen levels - Demista
4/26/2002	.	.	44	.	.	.	.	.	.	.	.	.	.	.	.	.	No data collected
4/27/2002	930	RAR	45	50.9	161.1	163.5	172.1	172.7	145.7	171.5	5	2	1	1	3	1	Weather: cloudy, no rain at this time; no odor *Temps collected using new Fluke meter; oxygen levels - Demista
4/28/2002	805	RAR	46	49.1	157.3	159	150.3	162.6	147.9	163.5	.	.	.	.	.	.	Weather: Sunny; lots of steam; no odor *Temps collected using new Fluke meter; oxygen levels - Demista
4/29/2002	1450	AD	47	70.1	158.4	163.4	163.8	162.7	153.9	168.9	1	1	2	2	2	6	Weather: hot & sunny; no odor; bucket in place *Temps collected using new Fluke meter; oxygen levels - Demista
4/30/2002	1500	RAR	48	61.2	154.9	163.3	163.9	159.4	155.7	165.5	6	2	2	6	3	5	Weather: cloudy, no rain; no odor *Temps collected using new Fluke meter; oxygen levels - Demista **Turned pile**
5/1/2002	1531	TM	49	69.5	149.6	163.1	163.8	158.4	155.9	167.0	12	3	4	12	3	8	Weather: overcast & warm; microbial compost samples sent to BAL (FedEx by 1507); no leachate samples available, buckets dry; no odor; few flies; repaired thermocouple C in TW *Temps collected using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
5/2/2002	1335	BF	50	58.7	152.1	163.5	166.8	153.4	159.6	164.5	9	8	4	6	4	8	Weather: cloudy; outside dry *Temps collected using new Fluke meter; oxygen levels - Demista
5/3/2002	1414	BF	51	62.5	150.5	165.6	166.5	153.3	163.1	169.1	9	12	6	15	8	16	*Temps collected using new Fluke meter; oxygen levels - Demista
5/4/2002	1600	RW	52	66.4	151.0	163.9	167.7	150.2	165.0	166.7	.	.	.	.	.	.	Weather: clear, some wind *Temps collected using new Fluke meter; oxygen levels - not collected
5/5/2002	840	RAR	53	50.6	148.6	161	163.6	147.3	160.3	163.9	8	9	9	9	5	9	Weather: cloudy, windy; no odor *Temps collected using new Fluke meter; oxygen levels - Demista
5/6/2002	1445	AD	54	51.2	146.1	162.0	164.6	146.2	161.4	165.2	.	.	.	.	.	.	Weather: Cool and windy; no time to take O2 levels *Temps collected using new Fluke meter; oxygen levels - not collected
5/7/2002	1410	RAR	55	64.1	144.5	162.5	164	145.2	162.7	167.5	11	7	10	13	6	13	Weather: sunny, occasional wind; no odor; didn't turn pile, will turn 1st thing in morning *Temps collected using new Fluke meter; oxygen levels - Demista **Turned pile**
5/8/2002	1332	BF	56	63.9	151.5	147.3	131.0	160.0	151.3	148.6	3	4	3	3	3	3	Mild odor; looked like pile was turned *Temps collected using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: LTW

Phase: Composting & Curing

Point A: Five feet from south end of pile

Point B: Middle of pile east side

Point C: Five feet from north end of pile

Point D: Middle of north end of pile

Point E: Core of pile on east side

Point F: Core of pile on north side

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
5/9/2002	1430	TM	57	59.1	157.1	151.5	151.4	158.7	153.9	149.9	6	7	8	6	5	5	Weather: cloudy; microbial compost samples sent to BAL (FedEx by 14:30); no leachate available for sample; few bones on exterior of piles; *Temps measured using new Fluke meter; oxygen levels - Demista
5/20/2002	1315	TM	68	68.3	164.8	157.4	153.2	162.0	163.8	160.4	10	10	11	10	9	9	Weather: 13:15- cloudy with cool breeze, 15:24 - dark clouds, lightening, wind, and hard rain; sweet compost smell; few bones; distinct layer of actino-like material established between 5-12 inches below surface of TW - more present lower in pile *Temps measured using new Fluke meter; oxygen levels - Demista
6/6/2002	1350	TM	85	67.7	155.3	148.2	147.4	161.1	160.3	157.3	17	16	18	17	16	20	Weather: warm, windy; stability samples collected; few bones - jaw and ends of leg bones, mostly on surface of pile; plastic and cardboard contamination becoming more of an issue in sampling; *Temps measured using new Fluke meter; oxygen levels - Demista
6/19/2002	1830	TM	98	71.3	150.4	144.7	144.8	156.5	161.6	158.3	13	13	14	15	11	17	Weather: warm, sunny, breezy; samples collected on June 20, 2002 0600 - 1000; microbial compost samples sent to BAL; character samples sent to Soil Control Lab; stability samples sent to OSU; project supplies sent to Tetra Tech, Inc. *Temps measured using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

Point B: Middle of pile north side

Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
3/14/2002	1030	TM	1	51.6	83.4	80.7	78.5	79.1	80.0	76.8	0	0	1	2	1	0	Weather - cold, some wind, occasional rain; smells like sawdust *Temps measured using new Fluke meter; oxygen levels - Demista
3/15/2002	1115	BF	2	46.6	89.9	91.4	86.8	91.3	83.3	81.5	2	0	3	1	1	0	Weather - overcast, not raining; mild odor *Temps measured using new Fluke meter; oxygen levels - Demista
3/16/2002	1431	RAR	3	39.5	103.6	111.9	97.7	110.6	90.7	91.8	.	.	.	.	.	.	Weather - Snowing/sunshine/windy/light breeze/rain *Temps measured using new Fluke meter; oxygen levels- not collected
3/17/2002	931	RAR	4	44.7	114.2	128.1	103.4	119.5	95.6	97.5	2	0	0	5	1	1	Weather - cloudy, no rain at this time; slight manure odor *Temps measured using new Fluke meter; oxygen levels - Demista
3/18/2002	1500	AD	5	46	128.8	141.5	114.7	132.5	107.7	110	7	5	8	11	5	3	Some odor on North Side (lamb stew?); visible chicken foot, onion, cardboard; Thermocouple F not registering - Jack and Alex re-taped the end to ensure good wire contact, worked ok after that *Temps measured using new Fluke meter; oxygen levels - Demista
3/19/2002	959	RAR	6	51.3	139.9	150.8	120.5	139.2	112.5	117.5	.	.	.	.	.	.	Weather - overcast, not raining *Temps measured using new Fluke meter; oxygen levels - not collected
3/20/2002	1029	BF	7	62.3	150.6	157.7	128.3	146.1	122.5	124.7	11	7	7	7	6	5	Weather - sunny; no odor *Temps measured using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

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Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
3/21/2002	1247	TM	8	64.5	157.3	164.7	135.9	150.3	132.8	132.7	15	12	12	7	11	8	Weather - cool, slight breeze, no precip; ambient temps behind shed 54 and in front of shed 64.5; some trouble with thermocouples, retaped with wires touching rod; no unusual odors *Temps measured using new Fluke meter; oxygen levels - Demista
3/22/2002	1422	BF	9	54.1	162.3	161.2	143.5	153.9	137.3	141.0	4	6	8	10	2	12	Weather - overcast; very faint odor *Temps measured using new Fluke meter; oxygen levels - Demista
3/23/2002	1011	RAR	10	61.1	164.1	159.9	144.8	155.1	141.5	144.0	.	.	.	.	.	.	Weather - slight overcast, no breeze; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
3/24/2002	720	RAR	11	45.5	163.9	159.8	143.9	156.3	143	145.1	5	3	3	5	4	3	Weather - cloudy, no rain, but rained entire night before *Temps measured using new Fluke meter; oxygen levels - Demista
3/25/2002	1420	AD	12	55 shade 77 sun	163	162.9	147	158.6	152	153	7	7	5	5	6	5	Weather - sunny, soft breeze; no pile tampering by vectors; slight odor from tubes; bucket in place *Temps measured using new Fluke meter; oxygen levels - Demista
3/26/2002	859	RAR	13	54.3	163.6	163.5	142.3	159.7	153.5	153.1	.	.	.	.	.	.	Weather - Sunny; no odor *Temps measured using new Fluke meter; oxygen levels - not collected
3/27/2002	1155	RAR	14	63.9	166.5	167.3	146.5	162.2	155.3	149.4	11	14	9	8	8	5	Looks like someone tampered with pile - removed thermocouple E and maybe moved F, replaced F and couldn't find thermocouple E - so replace with ambient thermocouple, made new ambient thermocouple *Temps measured using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

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Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
3/28/2002	1645	TM	15	66.1	164.2	165.6	143.4	164.2	165.1	140.8	14	16	12	8	14	11	Weather - overcast and sunny; no precip; microbial samples sent to BAL (to FedEx by 1510); kids playing around shed when I arrived; problems with three thermocouples - repaired and collected readings *Temps collected using new Fluke meter; oxygen levels - Demista
3/29/2002	800	AD	16	64.4	166.3	166.1	122.4	166	163.9	151.5	-	-	-	-	-	-	Weather: sunny; little odor, less than LTW; no vectors *Temps collected using new Fluke meter; oxygen levels - not collected
3/30/2002	812	RAR	17	51.5	163.8	167	121.5	166.9	146.6	155.1	11	9	8	5	11	9	Weather: sunny; pile steaming ,but not as much as LTW *Temps collected using new Fluke meter; oxygen levels - Demista
3/31/2002	715	RAR	18	46.1	163.8	166.3	126.0	189.1	153.9	155.1	-	-	-	-	-	-	Weather: sunny; steam on south side of pile; no real odor *Temps collected using new Fluke meter; oxygen levels - not collected
4/1/2002	1645	AD	19	69.2	161.1	162.6	162.8	155.6	146.2	156.8	6	8	11	9	7	8	Weather: sunny; no steam; no odors *Temps collected using new Fluke meter; oxygen levels - Demista
4/2/2002	903	RAR	20	67.1	161.3	168.2	119.6	166.4	155.1	159.7	16	15	8	10	15	17	Weather: sunny & breezy; little steam at peak of pile; breeze blowing to SW direction; no odor *Temps collected using new Fluke meter; oxygen levels - Demista
4/3/2002	1139	RAR	21	sun 80.8 shade 64.7	161.9	168.8	119.5	163.1	159.9	163.9	12	7	11	11	16	18	Weather: sunny, breeze out of west; no odor *Temps collected using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

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Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/4/2002	1421	TM/EG	22	71.2	159.7	166.1	154.8	162.5	158.5	161.3	14	7	4	7	5	0	Weather: sunny and warm; no samples collected; leachate buckets washed and placed in shed; assisted by Eric Gale; thermocouple C repaired - may have affected temp reading on 4/3 at 119; ambient temp behind shed = 71.2 and front = 85.7 *Temps measured using new Fluke meter; oxygen levels - Demista
4/5/2002		BF	23	55.5	159.9	166.9	157.3	164.7	160.1	.	.	.	.	.	.	.	*Temps measured using new Fluke meter - thermocouple F not collected; oxygen levels - not collected
4/6/2002	1218	RAR	24	58.5	163.0	168.0	159.0	164.5	162.5	160.7	.	.	.	.	.	.	Weather: cool, cloudy day, no rain at time; no odor *Temps measured using new Fluke meter; oxygen levels - not collected
4/7/2002	830	RAR	25	48.1	160.2	165.7	175	171.5	174.0	169.9	.	.	.	.	.	.	Weather: cloudy, no rain: no steam, no odor *Temps measured using new Fluke meter; oxygen levels - not collected
4/8/2002	1630	AD	26	73.5	157.7	167	159.7	164.6	165.0	168.5	.	.	.	.	.	.	Weather: sunny; buckets in place; Demista clogged; no odors/steam *Temps measured using new Fluke meter; oxygen levels - not collected
4/9/2002	1006	RAR	27	53.4	157.6	165.5	167.9	164.1	166.1	165.8	6	12	5	7	13	14	Weather: drizzle, rain on and off; no odor/steam *Temps measured using new Fluke meter; oxygen levels - Demista **Turned pile**
4/10/2002	1630	BF	28	64.8	142.1	117.9	148.8	153.8	145.1	155.0	8	12	7	6	8	6	Weather: partly cloudy; odor within 15 feet; visible fruits *Temps measured using new Fluke meter; oxygen levels - Demista

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Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

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Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/11/2002	1725	TM/CS/BB	29	front 63.1 back 64.1	146.6	138.7	155.7	160.2	151.1	163.5	10	6	7	16	11	9	Weather: cloudy w/ few sprinkles and some sun; microbial compost samples sent to BAL (FedEx by 1500); stability samples collected; smells sour; leachate has fatty layer; Jack and AOR tour group visited site; jaw bone @ C *Temps measured using new Fluke meter; oxygen levels - Demista
4/12/2002	944	BF	30	59.5	152.3	153.8	160.4	162.7	-	166.5	4	4	6	4	2	3	Pile still smells; thermocouple E not working: *Temps measured using new Fluke meter; oxygen levels - Demista
4/13/2002	820	RAR	31	56.1	158.6	160.5	164.9	167.8	139.5	173.3	4	4	5	4	4	3	Weather: raining; some odor; repaired thermocouple E *Temps measured using new Fluke meter; oxygen levels - Demista
4/14/2002	844	RAR	32	49.5	161.6	161.9	163.5	162.7	152.2	171.9	.	.	.	.	.	.	Weather: sunny; no vectors; odor on East end *Temps measured using new Fluke meter; oxygen levels - not collected
4/15/2002	1415	AD	33	50.9	164.3	163.5	165.5	164.8	157.7	173.9	8	6	5	11	6	120	Weather: sunny with showers; steam at west end of pile; no vectors; some odor; small gnats at east end and rare beetle; no leachate *Temps measured using new Fluke meter; oxygen levels - not collected
4/16/2002	955	RAR	34	45.6	165.4	163	164.5	159.2	158.9	170.9	6	6	9	8	6	12	Weather: cold wind; no steam; some odor *Temps measured using new Fluke meter; oxygen levels - Demista
4/17/2002	1344	BF	35	51.4	167.1	164.3	165.5	165.3	162.1	173.5	9	14	18	14	9	9	Less than 8 oz of leachate in bucket; no odor; some steam *Temps measured using new Fluke meter; oxygen levels - Demista

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Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

Point B: Middle of pile north side

Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/18/2002	1522	TM	36	55.2	160.8	161.9	165.3	165.9	165.5	174.6	19	18	19	17	19	19	Weather: overcast & sunny; no precip; cold breeze; microbial compost samples sent to BAL (FedEx by 1511); found shed unlocked; no skull or jaw bones found, but a few leg bones; need face masks - will pick up; smells like stinky compost - odor a bit better this week *Temps measured using new Fluke meter; oxygen levels - Demista
4/19/2002	1410	BF	37	54.1	160.7	158.7	163.5	166.8	169.2	.	9	7	15	5	13	9	Weather: partly cloudy; no odors; thermocouple F not working *Temps measured using new Fluke meter; oxygen levels - Demista
4/20/2002	610	RDW	38	45.2	160.3	157.5	161.7	165.9	165.1	.	.	.	.	.	.	.	Weather: overcast, light wind; some odor; thermocouple F not working *Temps measured using new Fluke meter; oxygen levels - not collected
4/21/2002	1415	RDW	39	45.2	157.3	158.1	164.5	165.8	169.2	.	.	.	.	.	.	.	Weather: clear & sunny, some wind; no odor; thermocouple F not working *Temps measured using new Fluke meter; oxygen levels - not collected
4/22/2002	1345	AD	40	61	160.1	157.8	164.4	165.1	170.1	.	1	.	.	.	.	.	Weather: sunny; no odor; Thermocouple F not working; Demista clogged *Temps measured using new Fluke meter; oxygen levels - not collected
4/23/2002	914	RAR	41	50.3	155.7	154	162.7	162.9	167.2	166.3	6	10	5	3	5	8	Weather: sunny, light breeze; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
4/24/2002	1015	BF	42	50.4	151.4	147.7	160.7	161.5	168.6	167.6	13	13	2	1	3	12	Weather: sunny; no odor; no leachate in bucket *Temps measured using new Fluke meter; oxygen levels - Demista

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoek for assistance, if not available contact Stacey Servo

Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

Point B: Middle of pile north side

Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
4/25/2002	1500	TM	43	66.7	152.1	147.5	162.1	162.7	169.6	163.8	3	9	9	5	10	5	Weather: sunny, no clouds; no leachate samples available - buckets dry; microbial compost samples sent to BAL - delivered by Cindy; repaired thermocouples E & F; typical compost odor; stability samples to OSU *Temps measured using new Fluke meter; oxygen levels - Demista
4/26/2002	.	.	44	.	.	.	.	.	.	.	.	.	.	.	.	.	no data collected
4/27/2002	940	RAR	45	50.9	162.6	159.4	170.4	166.9	177.5	174	2	14	4	5	3	5	Weather: cloudy, no rain at time; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
4/28/2002	755	RAR	46	49.1	162.3	151.3	154.9	158.8	169.3	169.8	.	.	.	.	.	.	Weather: sunny; lots of steam; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
4/29/2002	1515	AD	47	70.1	157.7	150.8	157.6	161	170	171.8	1	11	2	2	5	4	Weather: hot & sunny; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
4/30/2002	1445	RAR	48	61.2	159.1	148	156.8	159.8	167.1	169.7	5	8	5	5	6	9	Weather: cloudy, no rain; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
5/1/2002	1320	TM	49	69.5	162.7	143.7	157.0	159.0	167.8	171.4	6	11	11	7	12	9	Weather: overcast & warm; microbial samples sent to BAL (FedEx by 1507); no leachate samples available - buckets dry; no odor; few flies; found worm at C *Temps measured using new Fluke meter; oxygen levels - Demista

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoeck for assistance, if not available contact Stacey Servo

Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

Point B: Middle of pile north side

Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
5/2/2002	1335	BF	50	58.7	160.9	147.0	155.2	158.4	166.9	169.9	9	15	14	6	15	10	Weather cloudy; outside dry *Temps measured using new Fluke meter; oxygen levels - Demista
5/3/2002	1414	BF	51	62.5	161.3	145.0	155.0	158.9	169.4	172.6	17	17	16	7	18	16	*Temps measured using new Fluke meter; oxygen levels - Demista
5/4/2002	1600	RW	52	66.4	156.5	141.2	154.3	158.3	166.7	170.5	.	.	.	.	.	.	Weather: clear, some wind; some odor *Temps measured using new Fluke meter; oxygen levels - not collected
5/5/2002	832	RAR	53	50.6	156.6	140.5	151.9	156.4	165.2	168.4	6	8	6	6	7	11	Weather: cloudy and windy; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
5/6/2002	1435	AD	54	51.2	155.8	140.5	151.0	153.6	166.6	169.9	.	.	.	.	.	.	Weather: cool and windy; no time to take O2 measurements *Temps measured using new Fluke meter; oxygen levels - not collected
5/7/2002	1400	RAR	55	64.1	153.7	158.3	151.0	154.8	167.4	170.0	17	15	12	4	16	16	Weather: sunny, occational breeze; no odor *Temps measured using new Fluke meter; oxygen levels - Demista
5/8/2002	1332	BF	56	63.9	151.7	138.0	150.7	153.5	166.7	170.7	18	19	18	11	19	18	No leachate; Biofilter sprinkler watering small portion of pile *Temps measured using new Fluke meter; oxygen levels - Demista

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoeck for assistance, if not available contact Stacey Servo

Period 2 - Field Monitoring Form - OR DEQ Food Waste Composting Study

Pile ID: PAW

Phase: Composting & Curing

Point A: Five feet from west end of pile

Point B: Middle of pile north side

Point C: Five feet from east end of pile

Point D: Middle of east end of pile

Point E: Core of pile

Point F: Directly Over Aeration Pipe

Date	Time	ID (initials)	Process Day	Ambient Temp	Pile Temperatures						Pile Oxygen Levels						Notes (odor, weather, pests & access, visible steam/food waste)
					A	B	C	D	E	F	A	B	C	D	E	F	
5/9/2002	14:30	TM	57	59.1	151.0	132.7	148.9	152.5	163.3	166.2	10	11	16	10	10	9	Weather: cloudy; microbial compost samples sent to BAL (FedEx by 14:30; no leachate available for sample; sprinkler hitting edge of PAW; few bones on exterior of piles; *Temps measured using new Fluke meter; oxygen levels - Demista
5/20/2002	1315	TM	68	68.3	153.5	137.2	150.9	151.9	161.9	166.8	14	13	15	8	13	14	Weather: 13:15- cloudy with cool breeze, 15:24 - dark clouds, lightening, wind, and hard rain; repaired thermocouple E; worms at location C; sweet compost smell; few bones; white ashy material suggestive of actinomycetes present in later weeks of Phase I and II, especially closer to bottom of pile *Temps measured using new Fluke meter; oxygen levels - Demista
6/6/2002	13:50	TM	85	67.7	144.5	131.0	149.6	148.2	161.5	162.7	20	20	20	16	20	20	Weather: warm, windy; stability samples collected; repaired thermocouple E twice; few bones - jaw and ends of leg bones, mostly on surface of pile; plastic and carboard contamination becoming more of an issue in sampling; earthworm at location B; *Temps measured using new Fluke meter; oxygen levels - Demista
6/19/2002	1830	TM	98	71.3	142.1	129.3	144.4	146.1	149.2	151.9	19	20	18	16	17	19	Weather: warm, sunny, breezy; samples collected on June 20, 2002 0600 - 1000; microbial compost samples sent to BAL; character samples sent to Soil Control Lab; stability samples sent to OSU; project supplies sent to Tetra Tech, Inc. *Temps measured using new Fluke meter; oxygen levels - Demista

Supplies running low? - Contact Stacey Servo - Tt at 206.728.9655 ext 124

Equipment not operating correctly? - Ask Jack Hoeck for assistance, if not available contact Stacey Servo

APPENDIX C

Field Monitoring Temperature Data

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Period 1 - Limited Turn Windrow Daily Temperatures (C)

Process Day	Temp (C)				Average	Min	Max
	A	B	C	D			
1	26.9	20.0	23.9	23.9	23.7	20.0	26.9
2	36.7	22.1	27.9	24.7	27.8	22.1	36.7
3	48.3	28.0	33.8	27.8	34.5	27.8	48.3
4	53.7	40.3	33.7	39.1	41.7	33.7	53.7
5	54.8	43.9	42.0	36.6	44.3	36.6	54.8
6	56.2	45.4	44.3	37.6	45.9	37.6	56.2
7	57.8	47.1	46.2	39.7	47.7	39.7	57.8
8	63.1	57.7	53.0	46.1	55.0	46.1	63.1
9	67.6	59.4	53.7	46.4	56.8	46.4	67.6
10	63.3	50.6	48.3	48.9	52.8	48.3	63.3
11	45.6	50.0	47.8	38.9	45.6	38.9	50.0
12	71.9	65.4	58.1	53.6	62.3	53.6	71.9
13	74.2	73.8	63.9	60.3	68.1	60.3	74.2
14	53.2	47.1	51.9	47.4	49.9	47.1	53.2
15	65.7	57.4	64.1	55.8	60.8	55.8	65.7
16	68.9	70.2	73.9	68.9	70.5	68.9	73.9
17	67.2	72.8	75.0	73.3	72.1	67.2	75.0
18	61.7	53.9	55.0	56.1	56.7	53.9	61.7
19	62.2	62.2	67.8	61.1	63.3	61.1	67.8
20	63.3	68.9	60.6	56.7	62.4	56.7	68.9
21	51.0	59.1	60.8	58.2	57.3	51.0	60.8
22	53.8	59.2	59.4	54.9	56.8	53.8	59.4
23	59.7	65.5	64.5	64.3	63.5	59.7	65.5
24	60.7	65.7	65.2	64.7	64.1	60.7	65.7
25	65.8	70.6	71.2	70.8	69.6	65.8	71.2
26	66.2	71.4	72.1	71.9	70.4	66.2	72.1
28	68.4	65.7	59.2	52.1	61.3	52.1	68.4
29	67.8	67.3	60.3	57.8	63.3	57.8	67.8
30	66.0	69.4	62.4	65.8	65.9	62.4	69.4
31	65.3	70.7	65.9	69.4	67.8	65.3	70.7
32	62.7	70.5	67.9	69.7	67.7	62.7	70.5
33	73.2	74.1	80.9	74.1	75.6	73.2	80.9
34	60.3	70.1	69.1	68.9	67.1	60.3	70.1
35	69.3	63.5	64.2	63.3	65.1	63.3	69.3
36	71.8	66.9	65.4	61.9	66.5	61.9	71.8
37	69.5	71.6	66.1	63.9	67.8	63.9	71.6
39	69.1	72.7	69.2	65.6	69.1	65.6	72.7
41	63.3	72.8	68.6	66.3	67.8	63.3	72.8
42	55.8	57.5	62.9	59.7	59.0	55.8	62.9
43	67.1	68.8	67.6	65.5	67.3	65.5	68.8
44	70.3	72.3	68.4	68.7	69.9	68.4	72.3
45	68.2	74.8	71.3	72.8	71.8	68.2	74.8
47	65.4	74.1	72.2	73.2	71.2	65.4	74.1
48	63.6	71.1	71.1	72.1	69.5	63.6	72.1
49	56.8	65.6	61.9	52.4	59.2	52.4	65.6
50	58.3	71.3	67.3	61.7	64.6	58.3	71.3
51	60.1	73.6	72.7	67.9	68.6	60.1	73.6
53	61.2	72.8	71.9	75.8	70.4	61.2	75.8
54	58.8	69.9	68.2	69.8	66.7	58.8	69.9
55	57.0	67.2	64.9	67.8	64.2	57.0	67.8
56	40.1	61.5	58.3	54.5	53.6	40.1	61.5
57	46.3	61.3	62.1	57.9	56.9	46.3	62.1
70	51.6	52.6	59.3	61.8	56.3	51.6	61.8
84	49.4	51.5	53.7	55.4	52.5	49.4	55.4
98	46.5	50.3	48.6	50.6	49.0	46.5	50.6

PFRP >55oC

Turned Windrow

Turned Windrow

Turned Windrow

Turned Windrow

Turned Windrow

Turned Windrow

Turned Windrow

Period 1 - Passive Aerated Windrow Daily Temperatures (C)

Process Day	Temp (C)				Average	Min	Max
	A	B	C	D			
1	23.6	30.2	26.3	30.0	27.5	23.6	30.2
2	27.2	41.9	44.8	41.9	38.9	27.2	44.8
3	38.0	56.1	63.3	58.6	54.0	38.0	63.3
4	48.7	64.9	67.4	66.3	61.8	48.7	67.4
5	53.6	66.6	69.2	70.3	64.9	53.6	70.3
6	56.8	68.1	70.4	68.3	65.9	56.8	70.4
7	58.3	69.7	72.0	78.1	69.5	58.3	78.1
8	64.6	75.7	78.0	76.3	73.6	64.6	78.0
9	67.1	74.7	74.1	73.3	72.3	67.1	74.7
10	67.8	72.2	66.7	66.7	68.3	66.7	72.2
11	53.3	55.6	57.8	62.2	57.2	53.3	62.2
12	65.8	69.7	72.4	69.6	69.4	65.8	72.4
13	69.4	75.3	76.2	72.8	73.4	69.4	76.2
14	68.8	72.6	74.2	69.0	71.1	68.8	74.2
15	67.8	80.3	79.3	76.8	76.1	67.8	80.3
16	71.4	76.9	72.8	72.2	73.3	71.4	76.9
17	71.1	76.7	74.4	72.2	73.6	71.1	76.7
18	61.1	67.8	74.4	72.8	69.0	61.1	74.4
19	63.3	67.8	61.1	61.7	63.5	61.1	67.8
20	62.2	67.8	61.1	65.6	64.2	61.1	67.8
21	76.6	79.0	75.4	81.4	78.1	75.4	81.4
22	69.4	70.6	67.4	62.2	67.4	62.2	70.6
23	70.1	70.6	67.2	63.1	67.7	63.1	70.6
24	69.4	70.1	66.6	62.2	67.1	62.2	70.1
25	69.3	69.9	66.1	57.6	65.7	57.6	69.9
26	69.8	70.1	65.6	58.7	66.1	58.7	70.1
28	69.9	71.6	72.3	71.2	71.3	69.9	72.3
29	70.3	72.2	72.9	72.1	71.9	70.3	72.9
30	69.5	71.2	72.2	70.6	70.8	69.5	72.2
31	70.6	71.1	71.2	71.8	71.2	70.6	71.8
32	70.2	69.4	70.7	69.9	70.0	69.4	70.7
33	70.4	70.1	70.4	68.9	70.0	68.9	70.4
34	69.7	69.7	70.1	68.6	69.5	68.6	70.1
35	68.4	69.9	69.9	67.5	68.9	67.5	69.9
36	68.7	70.8	70.7	70.9	70.3	68.7	70.9
37	68.8	71.2	70.3	66.7	69.3	66.7	71.2
39	72.2	74.7	72.7	66.3	71.5	66.3	74.7
41	66.9	71.8	70.1	63.4	68.1	63.4	71.8
42	66.7	71.8	69.7	62.6	67.7	62.6	71.8
43	65.9	71.6	68.8	61.5	67.0	61.5	71.6
44	64.1	70.4	67.8	62.6	66.2	62.6	70.4
45	64.4	71.1	67.6	61.8	66.2	61.8	71.1
47	63.3	69.6	67.3	62.9	65.8	62.9	69.6
48	69.2	68.8	66.0	61.7	66.4	61.7	69.2
49	61.8	68.9	65.6	61.6	64.5	61.6	68.9
50	61.6	69.5	65.6	60.7	64.4	60.7	69.5
51	61.8	70.2	65.3	59.8	64.3	59.8	70.2
53	60.4	69.3	64.7	65.3	64.9	60.4	69.3
54	56.5	69.4	63.8	52.1	60.4	52.1	69.4
55	57.3	66.4	62.6	50.3	59.1	50.3	66.4
56	57.7	66.6	61.8	51.1	59.3	51.1	66.6
57	57.5	67.4	61.4	52.3	59.7	52.3	67.4
70	55.2	67.3	57.7	52.8	58.3	52.8	67.3
84	51.8	64.6	53.4		56.6	51.8	64.6
98	49.7	60.7	49.4	47.6	51.9	47.6	60.7

PFRP >55oC

Turned Windrow

Period 2 - Limited Turn Windrow Daily Temperatures ©

Process Day	Temp (C)						
	A	B	C	D	E	F	
1	24.9	24.3	25.3	25.1	24.9	24.7	
2	33.9	32.4	37.1	31.2	25.7		
3	42.8	37.6	46.6	43.7	27.8	25.7	PFRP ≥ 55 C
4	46.8	41.2	49.4	47.8	29.1	28.1	
5	53.3	49.5	56.2	59.2	31.7	30.1	
6	55.9	52.3	58.5	64.1	33.8	31.4	
7	60.5	55.9	60.4	66.3	36.6	35.1	
8	62.7	58.4	60.8	69.1	39.1	37.7	
9	62.5	57.4	61.1	69.3	45.0	41.5	
10	63.2	58.7	61.6	69.0	46.1	43.8	
11	63.4	59.3	61.3	67.8	47.4	43.6	
12	65.6	61.8	62.8	71.4	50.0	47.8	
13	67.2	61.8	62.9	71.7	50.7	48.5	Turned Windrow
14	47.7	51.2	52.2	46.4	50.3	46.0	
15	59.5	62.4	59.9	53.2	54.2	53.5	
16	63.2	64.4	60.8	54.8	54.8		
17	66.5	66.2	62.9	57.6	56.9	58.5	
18	68.6	68.2	67.1	63.0	58.2	60.9	
19	68.7	72.8	47.4	74.9	67.8	67.9	
20	69.4	72.7	72.4	69.6	64.2	67.6	Turned Windrow
21	68.5	73.7	71.1	60.6	66.9	72.5	
22	68.7	73.6	74.6	69.6	68.7	69.9	
23	71.4	74.1	74.5	73.8	68.8	69.4	
24	75.8	77.4	77.2	78.1	73.5	73.2	
25	75.8	77.4	77.2	78.1	73.5	73.2	
26	72.2	75.0	74.4	74.5	71.3	72.8	
27	71.7	74.2	73.4	73.9	70.6	71.6	Turned Windrow
28	67.7	65.7	69.2	65.6	54.6	61.6	
29	68.8	64.6	69.8	78.5	55.1	60.4	
30	69.5	65.1	68.5	70.3	55.2	60.9	
31	71.2	65.8	71.3	72.2	55.8	62.3	
32	69.4	66.9	71.1	72.3	55.2	62.0	Turned Windrow
33	70.7	68.8	71.8	73.4	57.5	64.1	
34	69.7	71.2	72.1	73.6	57.7	64.4	
35	62.3	61.4	64.8	64.4	60.7	62.9	
36	70.1	69.8	68.7	65.3	59.6	62.9	
37	75.2	71.3	71.5	68.8	61.2	64.7	
38	74.8	71.8	71.4	70.7	61.6	64.9	
39	75.4	74.4	74.3	73.2	65.6	68.9	
40	74.5	73.9	73.9	74.1	66.1	71.6	
41	73.1	72.7	72.6	73.5	65.2	72.2	Turned Windrow
42	72.3	66.9	72.1	68.9	57.7	72.2	
43	72.5	70.1	72.7	73.3	60.8	73.0	
45	71.7	73.1	77.8	78.2	63.2	77.5	
46	69.6	70.6	65.7	72.6	64.4	73.1	
47	70.2	73.0	73.2	72.6	67.7	76.1	
48	68.3	72.9	73.3	70.8	68.7	74.2	Turned Windrow
49	65.3	72.8	73.2	70.2	68.8	75.0	
50	66.7	73.1	74.9	67.4	70.9	73.6	
51	65.8	74.2	74.7	67.4	72.8	76.2	
52	66.1	73.3	75.4	65.7	73.9	74.8	
53	64.8	71.7	73.1	64.1	71.3	73.3	
54	63.4	72.2	73.7	63.4	71.9	74.0	
55	62.5	72.5	73.3	62.9	72.6	75.3	
56	66.4	64.1	55.0	71.1	66.3	64.8	Turned Windrow
57	69.5	66.4	66.3	70.4	67.7	65.5	
68	73.8	69.7	67.3	72.2	73.2	71.3	
85	68.5	64.6	64.1	71.7	71.3	69.6	
98	65.8	62.6	62.7	69.2	72.0	70.2	

Period 2 - Passive Aerated Windrow Daily Temperatures (C)

Process Day	Temp (C)					
	A	B	C	D	E	F
1	28.6	27.1	25.8	26.2	26.7	24.9
2	32.2	33.0	30.4	32.9	28.5	27.5
3	39.8	44.4	36.5	43.7	32.6	33.2
4	45.7	53.4	39.7	48.6	35.3	36.4
5	53.8	60.8	45.9	55.8	42.1	43.3
6	59.9	66.0	49.2	59.6	44.7	47.5
7	65.9	69.8	53.5	63.4	50.3	51.5
8	69.6	73.7	57.7	65.7	56.0	55.9
9	72.4	71.8	61.9	67.7	58.5	60.6
10	73.4	71.1	62.7	68.4	60.8	62.2
11	73.3	71.0	62.2	69.1	61.7	62.8
12	72.8	72.7	63.9	70.3	66.7	67.2
13	73.1	73.1	61.3	70.9	67.5	67.3
14	74.7	75.2	63.6	72.3	68.5	65.2
15	73.4	74.2	61.9	73.4	73.9	60.4
16	74.6	74.5	50.2	74.4	73.3	66.4
17	73.2	75.0	49.7	74.9	63.7	68.4
18	73.2	74.6	52.2	87.3	67.7	68.4
19	71.7	72.6	72.7	68.7	63.4	69.3
20	71.8	75.7	48.7	74.7	68.4	70.9
21	72.2	76.0	48.6	72.8	71.1	73.3
22	70.9	74.5	68.2	72.5	70.3	71.8
23	71.1	74.9	69.6	73.7	71.2	
24	72.8	75.6	70.6	73.6	72.5	71.5
25	71.2	74.3	79.4	77.5	78.9	76.6
26	69.8	75.0	70.9	73.7	73.9	75.8
27	69.8	74.2	75.5	73.4	74.5	74.3
28	61.2	47.7	64.9	67.7	62.8	68.3
29	63.7	59.3	68.7	71.2	66.2	73.1
30	66.8	67.7	71.3	72.6		74.7
31	70.3	71.4	73.8	75.4	59.7	78.5
32	72.0	72.2	73.1	72.6	66.8	77.7
33	73.5	73.1	74.2	73.8	69.8	78.8
34	74.1	72.8	73.6	70.7	70.5	77.2
35	75.1	73.5	74.2	74.1	72.3	78.6
36	71.6	72.2	74.1	74.4	74.2	79.2
37	71.5	70.4	73.1	74.9	76.2	
38	71.3	69.7	72.1	74.4	73.9	
39	69.6	70.1	73.6	74.3	76.2	
40	71.2	69.9	73.6	73.9	76.7	
41	68.7	67.8	72.6	72.7	75.1	74.6
42	66.3	64.3	71.5	71.9	75.9	75.3
43	66.7	64.2	72.3	72.6	76.4	73.2
45	72.6	70.8	76.9	74.9	80.8	78.9
46	72.4	66.3	68.3	70.4	76.3	76.6
47	69.8	66.0	69.8	71.7	76.7	77.7
48	70.6	64.4	69.3	71.0	75.1	76.5
49	72.6	62.1	69.4	70.6	75.4	77.4
50	71.6	63.9	68.4	70.2	74.9	76.6
51	71.8	62.8	68.3	70.5	76.3	78.1
52	69.2	60.7	67.9	70.2	74.8	76.9
53	69.2	60.3	66.6	69.1	74.0	75.8
54	68.8	60.3	66.1	67.6	74.8	76.6
55	67.6	70.2	66.1	68.2	75.2	76.7
56	66.5	58.9	65.9	67.5	74.8	77.1
57	66.1	55.9	64.9	66.9	72.9	74.6
68	67.5	58.4	66.1	66.6	72.2	74.9
85	62.5	55.0	65.3	64.6	71.9	72.6
98	61.2	54.1	62.4	63.4	65.1	66.6

PFRP ≥ 55 C

Turned Windrow

APPENDIX D

Field Monitoring Oxygen Data

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Period 1 - Limited Turn Windrow Daily Oxygen Levels (%)

Process Day	Oxygen (%)			
	A	B	C	D
1	13	10	9	11
2	2	3	2	3
3	1	1	0	0
4	0	0	-	-
5	-	-	-	-
6	0	0	0	0
7	1	0	2	3
8	0	1	2	0
9	2	1	2	0
10	5	7	3	0
11	5	1	5	2
12	1	1	1	0
13	4	5	12	1
14	1	0	0	0
15	11	14	7	9
16	-	-	-	-
17	13	13	13	12
18	-	-	-	-
19	9	1	1	1
20	4	11	5	4
21	1	1	1	2
22	1	2	4	9
23	13	18	19	2
24	10	1	1	1
25	9	1	1	0
26	2	2	-	-
27	-	-	-	-
28	3	1	1	1
29	9	1	12	1
30	18	12	11	3
31	1	2	1	1
32	10	7	6	6
33	-	-	-	-
34	-	-	-	-
35	3	1	2	1
36	8	7	3	13
37	-	-	-	-
38	-	-	-	-
39	-	-	-	-
40	-	-	-	-
41	9	3	2	3
42	1	1	0	0
43	0	0	1	0
44	10	1	1	1
45	4	2	3	2
46	-	-	-	-
47	2	0	0	0
48	3	3	1	4
49	1	0	0	0
50	-	-	-	-
51	11	8	7	4
52	-	-	-	-
53	15	6	4	5
54	-	-	-	-
55	16	8	7	12
56	14	2	0	1
57	8	5	0	3
70	18	18	16	6
84	11	14	14	13
98	15	11	16	16

Period 1 - Passive Aerated Windrow Daily Oxygen Levels (%)

Process Day	Oxygen (%)			
	A	B	C	D
1	11	10	9	14
2	1	2	1	1
3	1	4	1	1
4	1	3	5	0
5	-	-	-	-
6	0	1	3	1
7	1	2	2	1
8	9	6	1	2
9	2	1	6	10
10	5	2	3	2
11	3	1	3	2
12	1	3	2	4
13	0	7	8	10
14	0	2	10	4
15	10	11	18	6
16	-	-	-	-
17	13	12	12	12
18	-	-	-	-
19	1	1	8	4
20	4	14	14	8
21	3	14	14	8
22	16	16	18	14
23	3	2	13	18
24	4	11	12	8
25	7	6	14	9
26	-	-	-	-
27	0	0	0	0
28	3	2	1	5
29	1	12	6	6
30	4	7	7	5
31	2	6	6	6
32	6	8	7	8
33	-	-	-	-
34	-	-	-	-
35	7	6	8	9
36	-	-	-	-
37	-	-	-	-
38	-	-	-	-
39	-	-	-	-
40	-	-	-	-
41	7	2	2	5
42	7	11	14	9
43	9	11	6	0
44	8	11	13	5
45	3	6	9	7
46	-	-	-	-
47	1	2	8	6
48	6	7	13	10
49	1	0	1	5
50	-	-	-	-
51	11	11	11	18
52	-	-	-	-
53	6	5	7	10
54	-	-	-	-
55	10	12	9	12
56	13	12	10	17
57	16	6	5	18
70	14	14	14	17
84	11	11	12	12
98	9	4	16	15

Period 1 - Limited Turn Windrow Intensive Oxygen Levels (%)

Locations	Heights (ft)	Process Week 1 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 2 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 3 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 4 Pile Oxygen Levels (%)* Pile Depths (ft)		
		1	2	4	1	2	4	1	2	4	1	2	4
A	1.5**	17	1	1	18	18	17	18	1	1	14	5	3
	3	18	6	0	13	11	7	15	1	1	12	9	10
	6	13	0	1	15	11	10	7	0	1	9	4	3
B	1.5**	19	2	1	18	17	18	17	0	1	14	10	10
	3	19	2	1	20	14	4	15	2	1	7	1	4
	6	19	2	1	16	2	2	4	1	1	14	3	1
C	1.5**	18	1	4	16	8	10	16	4	4	12	0	1
	3	18	1	2	16	7	5	15	4	1	4	12	9
	6	17	0	1	1	1	1	15	3	1	7	0	2
D	1.5**	17	9	2	16	7	5	17	1	1	18	1	3
	3	15	0	0	17	9	4	18	9	1	14	1	2
	6	13	4	0	17	8	5	16	4	3	1	1	3

Locations	Heights (ft)	Process Week 5 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 6 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 7 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 8 Pile Oxygen Levels (%)* Pile Depths (ft)		
		1	2	4	1	2	4	1	2	4	1	2	4
A	1.5	18	14	13	-	-	-	-	-	-	15	10	9
	3	18	8	6	8	10	2	-	-	-	12	8	5
	6	19	6	1	-	-	-	-	-	-	17	7	3
B	1.5	9	3	19	-	-	-	-	-	-	17	8	2
	3	16	7	2	0	1	0	-	-	-	17	5	3
	6	14	1	3	-	-	-	-	-	-	15	6	1
C	1.5	4	10	9	-	-	-	-	-	-	14	0	2
	3	9	3	17	1	1	0	-	-	-	17	0	1
	6	1	2	12	-	-	-	-	-	-	9	0	1
D	1.5	15	15	16	-	-	-	-	-	-	13	8	6
	3	13	13	14	4	1	1	-	-	-	17	3	1
	6	13	13	12	-	-	-	-	-	-	5	0	2

*Oxygen levels measured using Demista oxygen probe
 **Pile heights for week one measured at 2 foot not 1.5 feet

Period 1 - Passive Aerated Windrow Intensive Oxygen Levels (%)

Locations	Heights (ft)	Process Week 1 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 2 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 3 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 4 Pile Oxygen Levels (%)* Pile Depths (ft)		
		1	2	4	1	2	4	1	2	4	1	2	4
		A	1.5** 3 6	20 18 18	20 20 19	19 9 7	10 18 17	4 10 8	1 6 5	20 19 20	17 16 15	13 16 17	16 1 5	3 1 1	1 2 2
B	1.5** 3 6	20 19 17	20 11 7	20 6 1	11 16 18	13 11 15	16 14 11	12 21 20	16 16 16	20 10 8	17 17 7	13 12 4	10 9 1
C	1.5** 3 6	19 17 16	7 1 1	4 1 1	17 19 18	7 18 15	5 15 3	21 21 21	17 18 18	7 15 7	16 11 13	16 6 5	16 8 13
D	1.5** 3 6	19 18 19	4 3 8	3 2 4	19 10 16	16 6 11	10 5 12	20 20 19	20 14 9	17 11 14	14 10 1	9 6 2	10 3 11

Locations	Heights (ft)	Process Week 5 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 6 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 7 Pile Oxygen Levels (%)* Pile Depths (ft)			Process Week 8 Pile Oxygen Levels (%)* Pile Depths (ft)		
		1	2	4	1	2	4	1	2	4	1	2	4
A	1.5 3 6	- - -	- - -	- - -	- 13 -	- 8 -	- 10 -	- - -	- - -	- - -	16 18 3	9 16 9	9 12 7
B	1.5 3 6	- - -	- - -	- - -	- 2 -	- 11 -	- 2 -	- - -	- - -	- - -	4 14 12	12 6 4	10 4 2
C	1.5 3 6	- - -	- - -	- - -	- 7 -	- 13 -	- 3 -	- - -	- - -	- - -	11 12 8	9 5 3	1 3 1
D	1.5 3 6	- - -	- - -	- - -	- 11 -	- 5 -	- 2 -	- - -	- - -	- - -	16 19 14	4 18 4	1 16 6

*Oxygen levels measured using Demista oxygen probe
 **Pile heights for week one measured at 2 foot not 1.5 feet

Period 2 - Limited Turn Windrow Daily Oxygen Levels (%)

Process Day	Oxygen (%)					
	A	B	C	D	E	F
1	1	3	1	0	0	0
2	2	1	1	0	1	1
3	-	-	-	-	-	-
4	4	3	3	3	3	4
5	6	6	4	6	3	6
6	-	-	-	-	-	-
7	12	7	13	7	6	9
8	11	11	7	9	6	13
9	9	10	8	11	7	11
10	-	-	-	-	-	-
11	4	3	3	2	3	3
12	1	1	1	1	1	1
13	4	1	1	1	5	1
14	4	3	3	4	3	4
15	4	4	3	6	3	11
16	-	-	-	-	-	-
17	6	6	7	7	7	6
18	-	-	-	-	-	-
19	7	10	8	8	7	15
20	7	11	9	9	9	11
21	4	4	4	2	3	4
22	1	5	0	1	2	5
23	-	-	-	-	-	-
24	-	-	-	-	-	-
25	-	-	-	-	-	-
26	-	-	-	-	-	-
27	7	8	7	5	9	5
28	6	8	4	4	6	7
29	7	14	5	5	8	9
30	4	8	5	6	6	8
31	4	4	4	4	3	5
32	-	-	-	-	-	-
33	7	8	6	5	10	5
34	12	8	11	8	9	11
35	7	5	4	5	4	3
36	4	7	7	15	6	16
37	6	2	6	7	2	1
38	-	-	-	-	-	-
39	-	-	-	-	-	-
40	-	-	-	-	-	-
41	7	2	7	4	3	2
42	2	2	2	1	1	2
43	6	1	1	2	1	1
44	-	-	-	-	-	-
45	5	2	1	1	3	1
46	-	-	-	-	-	-
47	1	1	2	2	2	6
48	6	2	2	6	3	5
49	12	3	4	12	3	8
50	9	8	4	6	4	8
51	9	12	6	15	8	16
52	-	-	-	-	-	-
53	8	9	9	9	5	9
54	-	-	-	-	-	-
55	11	7	10	13	6	13
56	3	4	3	3	3	3
57	6	7	8	6	5	5
68	10	10	11	10	9	9
85	17	16	18	17	16	20
98	13	13	14	15	11	17

Period 2 - Passive Aerated Windrow Daily Oxygen Levels (%)

Process Day	Oxygen (%)					
	A	B	C	D	E	F
1	0	0	1	2	1	0
2	2	0	3	1	1	0
3	-	-	-	-	-	-
4	2	0	0	5	1	1
5	7	5	8	11	5	3
6	-	-	-	-	-	-
7	11	7	7	7	6	5
8	15	12	12	7	11	8
9	4	6	8	10	2	12
10	-	-	-	-	-	-
11	5	3	3	5	4	3
12	7	7	5	5	6	5
13	-	-	-	-	-	-
14	11	14	9	8	8	5
15	14	16	12	8	14	11
16	-	-	-	-	-	-
17	11	9	8	5	11	9
18	-	-	-	-	-	-
19	6	8	11	9	7	8
20	16	15	8	10	15	17
21	12	7	11	11	16	18
22	14	7	4	7	5	0
23	-	-	-	-	-	-
24	-	-	-	-	-	-
25	-	-	-	-	-	-
26	-	-	-	-	-	-
27	6	12	5	7	13	14
28	8	12	7	6	8	6
29	10	6	7	16	11	9
30	4	4	6	4	2	3
31	4	4	5	4	4	3
32	-	-	-	-	-	-
33	8	6	5	11	6	120
34	6	6	9	8	6	12
35	9	14	18	14	9	9
36	19	18	19	17	19	19
37	9	7	15	5	13	9
38	-	-	-	-	-	-
39	-	-	-	-	-	-
40	1	-	-	-	-	-
41	6	10	5	3	5	8
42	13	13	2	1	3	12
43	3	9	9	5	10	5
44	-	-	-	-	-	-
45	2	14	4	5	3	5
46	-	-	-	-	-	-
47	1	11	2	2	5	4
48	5	8	5	5	6	9
49	6	11	11	7	12	9
50	9	15	14	6	15	10
51	17	17	16	7	18	16
52	-	-	-	-	-	-
53	6	8	6	6	7	11
54	-	-	-	-	-	-
55	17	15	12	4	16	16
56	18	19	18	11	19	18
57	10	11	16	10	10	9
68	14	13	15	8	13	14
85	20	20	20	16	20	20
98	19	20	18	16	17	19