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APPENDIX B

Nunes Dairy NMP and WMP

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**Nutrient Management Plan Report**  
General Order No. R5-2007-0035, Attachment C  
July 1, 2009 deadline

DAIRY FACILITY INFORMATION

**A. NAME OF DAIRY OR BUSINESS OPERATING THE DAIRY:** Nunes Dairy

Physical address of dairy:

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

Date facility was originally placed in operation: 01/01/1955

Regional Water Quality Control Board Basin Plan designation: San Joaquin River Basin

County Assessor Parcel Number(s) for dairy facility:

0066-0270-0003-0000

**B. OPERATOR NAME:** Nunes, Antonio Telephone no.: (209) 384-0948 (209) 658-6061  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Operator should receive Regional Board correspondence (check):  Yes  No

**OPERATOR NAME:** Nunes, Filomena Telephone no.: (209) 384-0948  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Operator should receive Regional Board correspondence (check):  Yes  No

**C. LEGAL OWNER NAME:** Nunes, Antonio Telephone no.: (209) 384-0948 (209) 658-6061  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Owner should receive Regional Board correspondence (check):  Yes  No

**LEGAL OWNER NAME:** Nunes, Filomena Telephone no.: (209) 384-0948  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Owner should receive Regional Board correspondence (check):  Yes  No

**D. CONTACT NAME:** Kashefi, Kion Telephone no.: \_\_\_\_\_ (209) 988-1724  
Landline Cellular

Title: Dairy Specialist/CCA

<u>624 E Service RD</u>	<u>Modesto</u>	<u>CA</u>	<u>95358</u>
Mailing Address Number and Street	City	State	Zip Code

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AVAILABLE NUTRIENTS

**A. HERD INFORMATION**

The milk cow dairy is currently regulated under individual Waste Discharge Requirements.

Total number of milk and dry cows combined as a baseline value in response to the Report of Waste Discharge (ROWD) request of October, 2005:

1,900 milk and dry cows combined (regulatory review is required for any expansion)

	Milk Cows	Dry Cows	Bred Heifers (15-24 mo.)	Heifers (7-14 mo. to breeding)	Calves (4-6 mo.)	Calves (0-3 mo.)
Present count	1,600	300	0	0	150	150
Maximum count	1,600	300	0	0	150	150
Avg live weight (lbs)	1,400	1,500	0	0		
Daily hours on flush	22	18	0	0	0	24

Predominant milk cow breed: Holstein

Average milk production: 68 pounds per cow per day

**B. IRRIGATION SOURCES**

Irrigation Source Name	Type	Nitrogen (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Discharge Rate
Field 4 Well	Groundwater (well)	0.01	0.00		3,000 <i>gpm</i>
IW1	Groundwater (well)	3.42	0.00	0.00	3,000 <i>gpm</i>
MID Canal	Surface water (canal, river)	0.73	0.00	0.00	3 <i>cfs</i>
Pump Water	Groundwater (well)	3.42	0.00	0.00	2,000 <i>gpm</i>

**C. NUTRIENT IMPORTS**

Nutrient Type/Name	Quantity	Moisture	Nitrogen	Phosphorus (as P2O5)	Potassium (as K2O)
4-10-10	9.50 <i>ton</i>	5.0%	4.000%	10.000%	10.000%
UN-32	984.00 <i>gal</i>	0.0%	32.000%	0.000%	0.000%
27-0-0-6	1,320.00 <i>gal</i>	0.0%	27.000%	0.000%	0.000%
Amm Sulfate	38.50 <i>ton</i>	5.0%	21.000%	0.000%	0.000%

Total nitrogen imported: 21,685.33 lbs

Total phosphorus imported: 788.79 lbs

Total potassium imported: 1,498.15 lbs

**D. NUTRIENT EXPORTS**

Nutrient Type/Name	Quantity	Moisture	Nitrogen	Phosphorus (as P2O5)	Potassium (as K2O)
Corral Solids	8,200.00 <i>ton</i>	11.6%	2.600%	0.800%	2.000%

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Total nitrogen exported: 376,937.60 *lbs*

Total phosphorus exported: 50,683.61 *lbs*

Total potassium exported: 240,660.16 *lbs*

**E. STORAGE PERIOD**

Storage period is the maximum period of time anticipated between land application of process wastewater (from storage ponds/lagoons) to croplands. A qualified agronomist and civil engineer should collaborate and collectively consider predominant soil types, soil infiltration rates, maximum depth, available water, field capacity, permanent wilting point, allowable depletion, crop water use, evapotranspiration, precipitation, irrigation system capacity, water delivery constraints, crop nutrient requirements, soil nutrient adsorption/desorption, rooting depth, nutrient accumulation/availability for current and future crop needs, facility wide process wastewater storage capacity and other factors as deemed necessary across all croplands where process wastewater is applied in selecting a storage period. In many cases conflicts will arise between crop water demands, crop nutrient demands and insufficient process wastewater storage capacity. Process wastewater may not be the best choice as a source of either water and/or nutrients to meet crop demands throughout the year. Groundwater and surface water vulnerability has been considered.

The storage period selected in this Nutrient Management Plan is consistent with the storage period selected in the Waste Management Plan.

Storage period: 120 *days*

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APPLICATION AREA

**A. ASSESSOR PARCEL NUMBER:** 0066-0033-0004-0000

Legal owner of parcel: Owned by Dairy

**ASSESSOR PARCEL NUMBER:** 0066-0110-0030-0000

Legal owner of parcel: Owned by Dairy

**ASSESSOR PARCEL NUMBER:** 0066-0271-0002-0000

Legal owner of parcel: Owned by Dairy

**ASSESSOR PARCEL NUMBER:** 0066-0271-0003-0000

Legal owner of parcel: Owned by Dairy

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**B. FIELD NAME:** Field 1

Cropable acres: 77

Predominant soil type: Silty clay loam

Do irrigation system head-to-head flow conditions exist on the field? [ ] Yes [X] No

Can fresh water for irrigation purposes be delivered to the field year round? [X] Yes [ ] No

Can process wastewater be delivered to the field at agronomic rates and times? [X] Yes [ ] No

Tailwater management method: Tail water pond

**Crops grown and rotation:**

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Late October	Late April	77
Sudangrass, silage	Early May	Late July	77

**FIELD NAME:** Field 2

Cropable acres: 63

Predominant soil type: Silty clay loam

Do irrigation system head-to-head flow conditions exist on the field? [ ] Yes [X] No

Can fresh water for irrigation purposes be delivered to the field year round? [ ] Yes [X] No

Can process wastewater be delivered to the field at agronomic rates and times? [X] Yes [ ] No

Tailwater management method: Bermed

**Crops grown and rotation:**

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Late October	Late April	63
Corn, silage	Early May	Late August	63

**FIELD NAME:** Field 3

Cropable acres: 17

Predominant soil type: Silty clay loam

Do irrigation system head-to-head flow conditions exist on the field? [ ] Yes [X] No

Can fresh water for irrigation purposes be delivered to the field year round? [X] Yes [ ] No

Can process wastewater be delivered to the field at agronomic rates and times? [ ] Yes [X] No

Tailwater management method: Bermed

**Crops grown and rotation:**

Crop Type	Plant Date	Harvest Date	Acres Planted
Pasture	Early January	Early January	17

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**FIELD NAME:** Field 4

Cropable acres: 28

Predominant soil type: Silty clay loam

Do irrigation system head-to-head flow conditions exist on the field?       Yes    No

Can fresh water for irrigation purposes be delivered to the field year round?       Yes    No

Can process wastewater be delivered to the field at agronomic rates and times?       Yes    No

Tailwater management method: Bermed

**Crops grown and rotation:**

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Late October	Late April	28

**C. LAND APPLICATION AREA FIELDS AND PARCELS**

Field name	Cropable acres	Total harvests	Parcel number
Field 1	77	2	0066-0271-00030000
Field 2	63	2	0066-0110-00300000
Field 3	17	1	0066-0271-00020000
Field 4	28	1	0066-0033-00040000
Land application area totals	185	6	

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**NUTRIENT BUDGET**

**A. NUTRIENT BUDGET FOR CROP:** Field 1 / Oats, silage-soft dough

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Existing soil nutrient content <i>Nutrient source:</i> Soil <i>Application method:</i> Lab results	1	10.0 50%	124.0 50%	999.0 50%	10.0
Pre-irrigation prior to planting (with fertilizer) <i>Nutrient source:</i> Retention pond (lagoon) <i>Application method:</i> Pipeline	1	160.0 35%	35.0 50%	300.0 85%	160.0
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	1	0.0 0%	0.0 0%	0.0 0%	0.2
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
MID Canal		0.2	0.0	0.0	36.0
		0.2	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.2	0.0	0.0
Existing soil nutrient content	10.0	124.0	999.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	0.0	0.0	0.0
Liquid manure	160.0	35.0	300.0
Other	0.0	0.0	0.0
Atmospheric deposition	7.0		
<b>Nutrients applied</b>	<b>177.2</b>	<b>159.0</b>	<b>1,299.0</b>
Potential crop nutrient removal	142.0	21.0	170.0
<b>Nutrient balance</b>	<b>35.2</b>	<b>138.0</b>	<b>1,129.0</b>
Applied to removal ratio	1.25	7.57	7.64

Fresh water applied: 0.12 feet Total harvests: 1

**NUTRIENT BUDGET FOR CROP:** Field 1 / Sudangrass, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Existing soil nutrient content <i>Nutrient source:</i> Soil <i>Application method:</i> Lab results	1	10.0 50%	124.0 50%	999.0 50%	10.0



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**NUTRIENT BUDGET FOR CROP (CONTINUED):** Field 1 / Sudangrass, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)															
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	1	0.0 0%	0.0 0%	0.0 0%	0.2															
<table border="1" style="width: 100%;"> <thead> <tr> <th>Irrigation Source</th> <th>N (lbs/acre)</th> <th>P (lbs/acre)</th> <th>K (lbs/acre)</th> <th>Runtime (hrs)</th> </tr> </thead> <tbody> <tr> <td>MID Canal</td> <td>0.2</td> <td>0.0</td> <td>0.0</td> <td>36.0</td> </tr> <tr> <td></td> <td>0.2</td> <td>0.0</td> <td>0.0</td> <td></td> </tr> </tbody> </table>						Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)	MID Canal	0.2	0.0	0.0	36.0		0.2	0.0	0.0	
Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)																
MID Canal	0.2	0.0	0.0	36.0																
	0.2	0.0	0.0																	
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	2	0.0 0%	0.0 0%	0.0 0%	12.0															
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Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)																
IW1	6.0	0.0	0.0	90.0																
	6.0	0.0	0.0																	
In season irrigation (with fertilizer) <i>Nutrient source:</i> Retention pond (lagoon) <i>Application method:</i> Pipeline	2	30.0 35%	8.0 50%	65.0 85%	60.5															
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Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)																
MID Canal	0.2	0.0	0.0	36.0																
	0.2	0.0	0.0																	
In season irrigation (with fertilizer) <i>Nutrient source:</i> Retention pond (lagoon) <i>Application method:</i> Pipeline	2	30.0 35%	8.0 50%	65.0 85%	72.0															
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Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)																
IW1	6.0	0.0	0.0	90.0																
	6.0	0.0	0.0																	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	24.7	0.0	0.0
Existing soil nutrient content	10.0	124.0	999.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	0.0	0.0	0.0
Liquid manure	120.0	32.0	260.0
Other	0.0	0.0	0.0
Atmospheric deposition	7.0		
Nutrients applied	161.7	156.0	1,259.0
Potential crop nutrient removal	120.0	18.0	96.0
Nutrient balance	41.7	138.0	1,163.0
Applied to removal ratio	1.35	8.67	13.11

Fresh water applied: 2.93 feet Total harvests: 1

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**NUTRIENT BUDGET FOR CROP:** Field 2 / Oats, silage-soft dough

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Existing soil nutrient content <i>Nutrient source:</i> Soil <i>Application method:</i> Lab results	1	46.0 50%	138.0 50%	238.0 50%	46.0
Nutrient sources other than manure or process wastewater <i>Nutrient source:</i> Amm Sulfate <i>Application method:</i> Broadcast	1	125.0 25%	0.0 0%	0.0 0%	125.0
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	1	0.0 0%	0.0 0%	0.0 0%	0.9
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
MID Canal		0.9	0.0	0.0	120.0
		0.9	0.0	0.0	
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	1	0.0 0%	0.0 0%	0.0 0%	2.8
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
MID Canal		2.8	0.0	0.0	360.0
		2.8	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	3.7	0.0	0.0
Existing soil nutrient content	46.0	138.0	238.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	0.0	0.0	0.0
Liquid manure	0.0	0.0	0.0
Other	125.0	0.0	0.0
Atmospheric deposition	7.0		
Nutrients applied	181.7	138.0	238.0
Potential crop nutrient removal	142.0	21.0	170.0
Nutrient balance	39.7	117.0	68.0
Applied to removal ratio	1.28	6.57	1.40

Fresh water applied: 1.89 feet Total harvests: 1

**NUTRIENT BUDGET FOR CROP:** Field 2 / Corn, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
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**NUTRIENT BUDGET FOR CROP (CONTINUED):** Field 2 / Corn, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Existing soil nutrient content <i>Nutrient source:</i> Soil <i>Application method:</i> Lab results	1	46.0 50%	138.0 50%	238.0 50%	46.0
Dry manure <i>Nutrient source:</i> From dairy <i>Application method:</i> Broadcast/incorporate	1	160.0 25%	50.0 50%	250.0 85%	160.0
Starter fertilizer at planting <i>Nutrient source:</i> Commercial fertilizer <i>Application method:</i> Broadcast 4-10-10	1	12.0 25%	30.0 25%	30.0 25%	12.0
In season fertilizer sidedress 1 <i>Nutrient source:</i> Commercial fertilizer <i>Application method:</i> Sidedress	1	9.0 25%	0.0 0%	0.0 0%	9.0
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	6	0.0 0%	0.0 0%	0.0 0%	22.0
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
IW1		3.7	0.0	0.0	45.0
		3.7	0.0	0.0	
In season irrigation (with fertilizer) <i>Nutrient source:</i> Commercial fertilizer <i>Application method:</i> Pipeline	2	50.0 25%	0.0 0%	0.0 0%	107.3
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
IW1		3.7	0.0	0.0	45.0
		3.7	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	29.4	0.0	0.0
Existing soil nutrient content	46.0	138.0	238.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	121.0	30.0	30.0
Dry manure	160.0	50.0	250.0
Liquid manure	0.0	0.0	0.0
Other	0.0	0.0	0.0
Atmospheric deposition	7.0		
<b>Nutrients applied</b>	<b>363.4</b>	<b>218.0</b>	<b>518.0</b>
Potential crop nutrient removal	267.0	66.0	324.0
<b>Nutrient balance</b>	<b>96.4</b>	<b>152.0</b>	<b>194.0</b>
Applied to removal ratio	1.36	3.30	1.60

Fresh water applied: 3.16 feet Total harvests: 1

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**NUTRIENT BUDGET FOR CROP:** Field 3 / Other

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Existing soil nutrient content <i>Nutrient source:</i> Soil <i>Application method:</i> Estimated	1	22.0 50%	134.0 50%	952.0 50%	22.0
Nutrient sources other than manure or process wastewater <i>Nutrient source:</i> Amm Sulfate <i>Application method:</i> Broadcast	3	70.0 50%	0.0 0%	0.0 0%	210.0
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	3	0.0 0%	0.0 0%	0.0 0%	49.9
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
IW1		16.6	0.0	0.0	55.0
		16.6	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	49.9	0.0	0.0
Existing soil nutrient content	22.0	134.0	952.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	0.0	0.0	0.0
Liquid manure	0.0	0.0	0.0
Other	210.0	0.0	0.0
Atmospheric deposition	14.0		
Nutrients applied	295.9	134.0	952.0
Potential crop nutrient removal	272.0	26.4	168.0
Nutrient balance	23.9	107.6	784.0
Applied to removal ratio	1.09	5.08	5.67

Fresh water applied: 5.36 feet Total harvests: 1

**NUTRIENT BUDGET FOR CROP:** Field 4 / Oats, silage-soft dough

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Existing soil nutrient content <i>Nutrient source:</i> Soil <i>Application method:</i> Lab results	1	22.0 50%	134.0 50%	952.0 50%	22.0
Nutrient sources other than manure or process wastewater <i>Nutrient source:</i> 21-0-0 <i>Application method:</i> Broadcast	1	150.0 25%	0.0 0%	0.0 0%	150.0

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**NUTRIENT BUDGET FOR CROP (CONTINUED):** Field 4 / Oats, silage-soft dough

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
In season irrigation (no fertilizer) <i>Nutrient source:</i> Water only <i>Application method:</i> Surface	1	0.0 0%	0.0 0%	0.0 0%	4.2
<b>Irrigation Source</b>		<b>N (lbs/acre)</b>	<b>P (lbs/acre)</b>	<b>K (lbs/acre)</b>	<b>Runtime (hrs)</b>
MID Canal		4.2	0.0	0.0	240.0
		4.2	0.0	0.0	

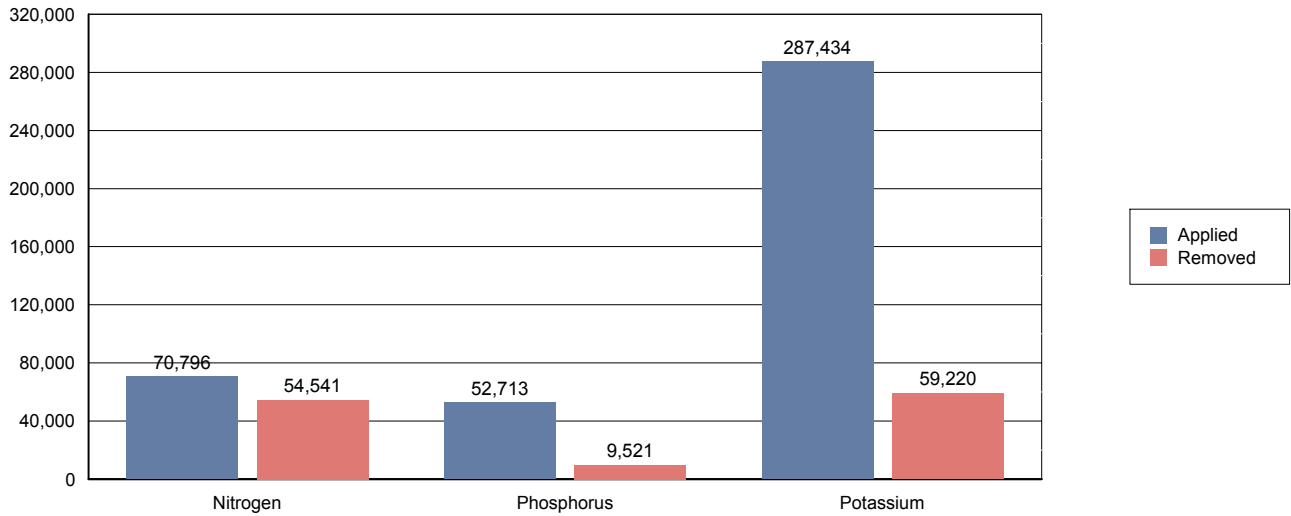
	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	4.2	0.0	0.0
Existing soil nutrient content	22.0	134.0	952.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	0.0	0.0	0.0
Liquid manure	0.0	0.0	0.0
Other	150.0	0.0	0.0
Atmospheric deposition	14.0		
<b>Nutrients applied</b>	<b>190.2</b>	<b>134.0</b>	<b>952.0</b>
Potential crop nutrient removal	142.0	21.0	170.0
<b>Nutrient balance</b>	<b>48.2</b>	<b>113.0</b>	<b>782.0</b>
Applied to removal ratio	1.34	6.38	5.60

Fresh water applied: 2.13 feet Total harvests: 1

**Nutrient Management Plan Report**  
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NUTRIENT APPLICATIONS, POTENTIAL REMOVAL, AND BALANCE

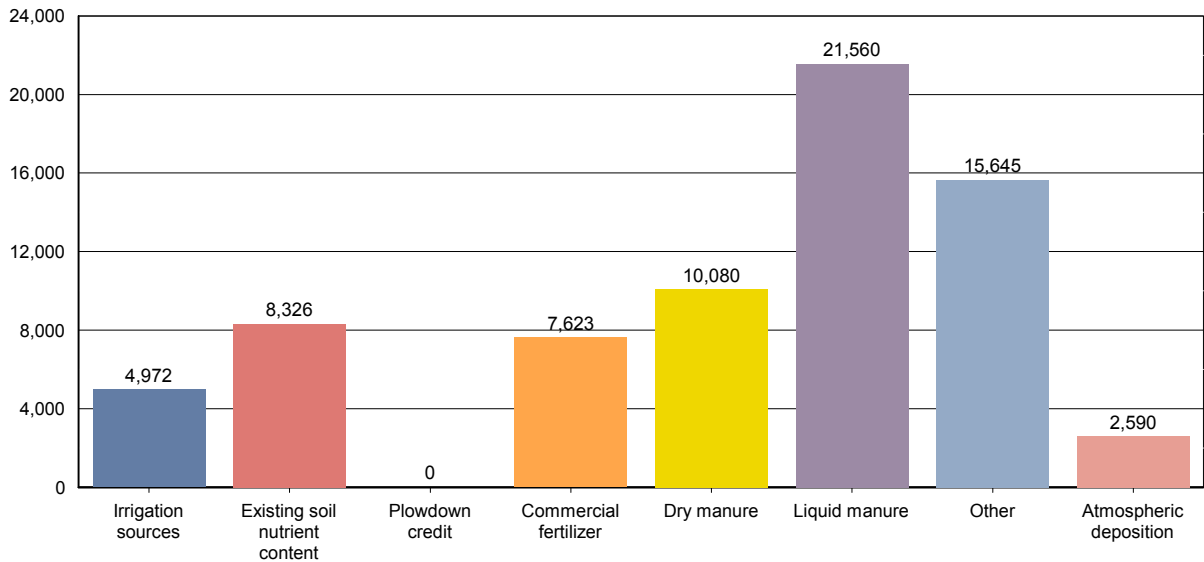
**A. POUNDS OF NUTRIENT APPLIED VS. CROP REMOVAL POTENTIAL**



	Total N (lbs)	Total P (lbs)	Total K (lbs)
Irrigation sources	4,971.6	0.0	0.0
Existing soil nutrient content	8,326.0	42,514.0	226,674.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	7,623.0	1,890.0	1,890.0
Dry manure	10,080.0	3,150.0	15,750.0
Liquid manure	21,560.0	5,159.0	43,120.0
Other	15,645.0	0.0	0.0
Atmospheric deposition	2,590.0		
<b>Nutrients applied to all crops</b>	<b>70,795.6</b>	<b>52,713.0</b>	<b>287,434.0</b>
<b>Potential crop nutrient removal</b>	<b>54,541.0</b>	<b>9,520.8</b>	<b>59,220.0</b>
<b>Nutrient balance</b>	<b>16,254.6</b>	<b>43,192.2</b>	<b>228,214.0</b>
<b>Applied to removal ratio</b>	<b>1.30</b>	<b>5.54</b>	<b>4.85</b>

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**B. POUNDS OF NITROGEN APPLIED BY NUTRIENT SOURCE**



	Total N (lbs)	Total P (lbs)	Total K (lbs)
Irrigation sources	4,971.6	0.0	0.0
Existing soil nutrient content	8,326.0	42,514.0	226,674.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	7,623.0	1,890.0	1,890.0
Dry manure	10,080.0	3,150.0	15,750.0
Liquid manure	21,560.0	5,159.0	43,120.0
Other	15,645.0	0.0	0.0
Atmospheric deposition	2,590.0		
Nutrients applied to all crops	70,795.6	52,713.0	287,434.0
Potential crop nutrient removal	54,541.0	9,520.8	59,220.0
Nutrient balance	16,254.6	43,192.2	228,214.0
Applied to removal ratio	1.30	5.54	4.85

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NUTRIENT BALANCE

**A. WHOLE FARM BALANCE**

	Total N (lbs)	Total P (lbs)	Total K (lbs)
Nutrients in storage from herd*			
Daily gross	1,648.7	269.2	833.7
Annual gross	601,777.9	98,252.7	304,312.4
Net to pond storage after ammonia losses (30% loss applied)	375,282.1	88,408.8	278,953.0
Net to drylot storage after ammonia losses (30% loss applied)	45,962.5	9,843.9	57,479.4
Net in storage (30% loss applied)	421,244.5	98,252.7	336,432.4
Irrigation sources	4,971.6	0.0	0.0
Atmospheric deposition	2,590.0		
Imports	21,685.3	788.8	1,498.2
Exports	376,937.6	50,683.6	240,660.2
Potential crop nutrient removal	54,541.0	9,520.8	59,220.0
<b>Nutrient balance</b>	<b>19,012.9</b>	<b>38,837.1</b>	<b>38,050.4</b>
<b>Nutrient balance ratio</b>	<b>1.35</b>	<b>5.08</b>	<b>1.64</b>

\* Potassium excretion from milk cows and dry cows only.



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SAMPLING AND ANALYSIS PLAN

**A. MANURE SAMPLING AND ANALYSIS PLAN**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Annually	<p>Annual estimation for total manure dry weight applied to each field will be quantified using the following:</p> <p>Dry weight applied from a source to a crop per application event = weight applied * (1 - (percent moisture / 100))</p> <p>Dry weight applied to crop per application event = sum of dry weights applied from each source</p> <p>Dry weight applied to a crop = sum of dry weights applied during each application</p> <p>Dry weight applied to a field = sum of dry weights applied to each crop</p>	<p>Corral solids</p> <p>Settling basin solids</p>	Total dry weight (tons) manure applied annually to each land application area.	None required
Twice per year	<p>For each manure source, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.</p>	<p>Corral solids</p> <p>Settling basin solids</p> <p>Freestall scrapings</p>	None required	Total nitrogen, total phosphorus, total potassium, and percent moisture
Once every two years (biennially)	<p>For each manure source, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.</p>	<p>Corral solids</p> <p>Settling basin solids</p> <p>Freestall scrapings</p>	None required	<p>General minerals, including:            calcium, magnesium, sodium, sulfate, chloride</p> <p>Fixed solids (ash)</p>

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**A. MANURE SAMPLING AND ANALYSIS PLAN (CONTINUED)**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Each application to each land application area	For each applied manure source, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.  For each applied manure source, a scaled weight by truckload will be recorded.	Corral solids Settling basin solids Freestall scrapings	Date applied and total weight (tons) applied	Percent moisture
Each offsite export of manure	For each manure source exported, a composite sample "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.  For each manure source exported, a scaled weight by truckload will be recorded.	Corral solids Settling basin solids Freestall scrapings	Date exported and total weight (tons) exported	Percent moisture

**B. PROCESS WASTEWATER SAMPLING AND ANALYSIS PLAN**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Each application	For each pond, a composite or grab sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	Wastewater Storage #3	Date applied and volume (gallons or acre-inches) applied	None required

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**B. PROCESS WASTEWATER SAMPLING AND ANALYSIS PLAN (CONTINUED)**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Anually	A composite or grab sample prior to blending with irrigation water per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	Wastewater Storage #3	None required	pH, total dissolved solids, electrical conductivity, nitrate-nitrogen, ammonion-nitrogen, total Kjeldahl nitrogen, total phosphorus, and total potassium
Quarterly during one application event	For field measurement: For each pond, a composite or grab sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.  For laboratory analyses: For each pond, a composite or grab sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	Wastewater Storage # 3	Date applied and electrical conductivity	Nitrate-nitrogen (only when pond is aerated), un-ionized ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, total potassium, and total dissolved solids

**C. SOIL SAMPLING AND ANALYSIS PLAN**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes

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**C. SOIL SAMPLING AND ANALYSIS PLAN (CONTINUED)**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Spring pre-plant for each crop	For each field, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	See LAA Table	None required	0 to 1 foot: Nitrate-nitrogen and organic matter  1 to 2 foot: Nitrate-nitrogen
Fall pre-plant for each crop	For each field, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	See LAA Table	None required	0 to 1 foot: Electrical conductivity, nitrate-nitrogen, soluble phosphorus, potassium, organic matter  1 to 2: Nitrate-nitrogen
Once every five years for each land application area (may be distributed over a 5-year period by sampling 20% of the land application areas annually)	For each field, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	See LAA Table	None required	Soluble phosphorus

**D. PLANT TISSUE SAMPLING AND ANALYSIS PLAN**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Mid-season, as necessary to assess need for additional nitrogen during the growing season (only required if Discharger wants to add fertilizer in excess of 1.4 times the nitrogen expected to be removed by the harvested portion of the crop)	For each field and crop, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	See LAA Table	None required	Total nitrogen, expressed on a dry weight basis

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**D. PLANT TISSUE SAMPLING AND ANALYSIS PLAN (CONTINUED)**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Each crop harvest from each land application area	For each field and crop, a composite sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.  For each field and crop, a scaled weight by truckload will be recorded.	See LAA Table	Date harvested and total weight (tons) of harvested material removed from each land application area	Percent wet weight of harvested plant removed  Laboratory analyses for total nitrogen, total phosphorus, total potassium (expressed on a dry weight basis), fixed solids (ash), and percent moisture

**E. IRRIGATION WATER SAMPLING AND ANALYSIS PLAN**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Each fresh water irrigation event for each land application area	Pump Water, IW1, MID Canal, Field 4 Well -flow rate multiplied by runtime	Pump Water IW1 MID Canal Field 4 Well	Date applied and volume (gallons or acre-inches) applied	None required
One irrigation event during each irrigation season during actual irrigation events – for each irrigation water source (well and canal)	For each irrigation source, a grab sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected. In lieu of sampling the irrigation water, the Discharger may provide equivalent data from the local irrigation district.	Pump Water IW1 MID Canal Field 4 Well	None required	Electrical conductivity, total dissolved solids, and total nitrogen

**F. GROUNDWATER MONITORING SAMPLING AND ANALYSIS PLAN**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes

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**F. GROUNDWATER MONITORING SAMPLING AND ANALYSIS PLAN (CONTINUED)**

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
Every five years (may be distributed over a 5-year period by sampling 20% of the wells annually)	For each domestic and agricultural supply well, a grab sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	Pump 1 DW1 DW2 DW3 DW4 IW1 Field 4 Well Pump Water	None required	General minerals, including: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, chloride  Total dissolved solids
Annually	For each domestic and agricultural supply well, a grab sample per the "Approved Sampling Procedures for Nutrient and Groundwater Monitoring at Existing Milk Cow Dairies" will be collected.	Pump 1 DW1 DW2 DW3 DW4 IW1 Field 4 Well Pump Water	Electrical conductivity and ammonium-nitrogen	Nitrate-nitrogen.  If field measurement indicates the presence of ammonium-nitrogen, the Discharger shall collect a sample for laboratory analysis of ammonium-nitrogen.

**NUTRIENT MANAGEMENT PLAN REVIEW**

**A. NUTRIENT MANAGEMENT PLAN REVIEW**

Person who created the NMP: Kashefi, Kion *See above for contact information.*  
 Date the NMP was drafted: 10/03/2017  
 Person who approved the final NMP: Kashefi, Kion *See above for contact information.*  
 Date of NMP implementation: 10/03/2017

**Nutrient Management Plan Report**  
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July 1, 2009 deadline

**ATTACHED MAP AND DOCUMENTATION REFERENCES**

The following list, based upon user selections and data entries, describes the minimum required attachments that must be submitted with the Nutrient Management Plan for the reporting schedule of 'July 1, 2009'.

**A. PRELIMINARY DAIRY FACILITY ASSESSMENT**

The NMP will include the initial Preliminary Dairy Facility Assessment (Attachment A) and the annual updates as required by Monitoring and Reporting Program No. R5-2007-0035. Copies of these assessments shall be maintained for 10 years.

**B. LAND AREA MAP(S)**

Identify each land application area (under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) on a single published base map

1. A field identification system (Assessor's Parcel Number; land application area; crops grown); indication if each land application is owned, rented, or leased by the Discharger; indication of what type of waste is applied (solid manure only, wastewater only, or both solid manure and wastewater); drainage flow direction in each field, nearby surface waters, and storm water discharge points; tailwater and storm water drainage controls; subsurface (tile) drainage systems (including discharge points and lateral extent); irrigation supply wells and groundwater monitoring wells; sampling locations for discharges of storm water and tailwater to surface water from the field.
2. Process wastewater conveyance structures, discharge points and discharge mixing points with irrigation water supplies; pumping facilities; flow meter locations; drainage ditches and canals, culverts, draining controls (berms, levees, etc.), and drainage easements.

Application area map reference number: Sheet 2 of 5 of WMP

Identify each field under control of the Discharger and within five miles of the dairy where neither process wastewater nor manure is applied. Each field shall be identified on a single published base map at an appropriate scale by the following:

1. Assessor's Parcel Number.
2. Total acreage.
3. Information on who owns or leases the field

Non-application area map reference number: None

Setbacks, Buffers, and Other Alternatives to Protect Surface Water (see Technical Standard VII):

1. Identify all potential surface waters or conduits to surface water that are within 100 feet of any land application area.
2. For each land application area that is within 100 feet of a surface water or a conduit to surface water, identify the setback, vegetated buffer, or other alternative practice that will be implemented to protect surface water (Technical Standard VII).

Setbacks and buffers map reference number: Sheet 2 of 5 of WMP

**C. PROCESS WASTEWATER WRITTEN AGREEMENTS**

Provide copies of written agreements with third parties that receive process wastewater for their own use from the Discharger's dairy (Technical Standards V.A.1 and V.A.3).

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SAMPLING AND ANALYSIS PLAN CERTIFICATION

**A. DAIRY FACILITY INFORMATION**

Name of dairy or business operating the dairy: Nunes Dairy

Physical address of dairy:

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Physical Address Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

**B. DOCUMENTATION OF QUALIFICATIONS AND PLAN DEVELOPMENT**

*I certify that I meet the requirements as a certified specialist in developing nutrient management plans as described in Attachment C of Waste Discharge Requirements General Order No. R5-2007-0035 and that I prepared the Sampling and Analysis plan.*

Dairy Specialist/CCA

TITLE/QUALIFICATIONS OF CERTIFIED NUTRIENT MANAGEMENT SPECIALIST

10/03/17



DATE

Kion Kashefi

PRINT OR TYPE NAME

624 E Service RD; Modesto, CA 95358

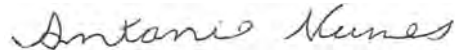
MAILING ADDRESS

(209) 988-1724

PHONE NUMBER

**C. OWNER AND/OR OPERATOR CERTIFICATION**

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*



SIGNATURE OF OWNER OF FACILITY

SIGNATURE OF OPERATOR OF FACILITY

Antonio Nunes

PRINT OR TYPE NAME

PRINT OR TYPE NAME

10/3/17

DATE

DATE



**Nutrient Management Plan Report**  
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July 1, 2009 deadline

NUTRIENT BUDGET CERTIFICATION

**A. DAIRY FACILITY INFORMATION**

Name of dairy or business operating the dairy: Nunes Dairy

Physical address of dairy:

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

**B. DOCUMENTATION OF QUALIFICATIONS AND PLAN DEVELOPMENT**

*I certify that I meet the requirements as a certified specialist in developing nutrient management plans as described in Attachment C of Waste Discharge Requirements General Order No. R5-2007-0035 and that I prepared the Nutrient Budget plan.*

Dairy Specialist/CCA

TITLE/QUALIFICATIONS OF CERTIFIED NUTRIENT MANAGEMENT SPECIALIST



SIGNATURE OF TRAINED PROFESSIONAL

10/03/17

DATE

Kion Kashefi

PRINT OR TYPE NAME

624 E Service RD; Modesto, CA 95358

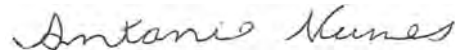
MAILING ADDRESS

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PHONE NUMBER

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SIGNATURE OF OWNER OF FACILITY

SIGNATURE OF OPERATOR OF FACILITY

Antonio Nunes

PRINT OR TYPE NAME

PRINT OR TYPE NAME

10/3/17

DATE

DATE

**Nutrient Management Plan Report**  
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STATEMENTS OF COMPLETION

Waste Discharge Requirements General Order No. R5-2007-0035 for Existing Milk Cow Dairies (General Order) requires owners and operators of existing milk cow dairies (Dischargers) to develop and implement a Nutrient Management Plan for their land application areas (land under control of the Discharger, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient cycling). The Discharger is required to maintain the NMP at the dairy, make the NMP available to Central Valley Water Board staff during their inspections, and submit the NMP to the Executive Officer upon request.

The General Order requires the Discharger to submit two Statements of Completion during development of the NMP. The Discharger may use this form to comply with the General Order requirement to submit one or both of these Statements of Completion. Parts A and E must be completed for each Statement of Completion. Parts B, C and D are to be completed for the Statements of Completion due by 1 July 2008, 31 December 2008 and 1 July 2009, respectively. Both the owner and the operator of the dairy must sign this form in Part E below.

**A. DAIRY FACILITY INFORMATION**

Name of dairy or business operating the dairy: Nunes Dairy

1730 S Healy RD	Merced	Merced	95340
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

Operator name: _____	Telephone no.: _____		
	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">Landline</td> <td style="width: 50%; border-bottom: 1px solid black;">Cellular</td> </tr> </table>	Landline	Cellular
Landline	Cellular		

Mailing Address Number and Street	City	State	Zip Code
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Legal owner name: <u>Nunes, Antonio</u>	Telephone no.: <u>(209) 384-0948</u> <u>(209) 658-6061</u>		
	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">Landline</td> <td style="width: 50%; border-bottom: 1px solid black;">Cellular</td> </tr> </table>	Landline	Cellular
Landline	Cellular		

1730 S Healy RD	Merced	CA	95340
Mailing Address Number and Street	City	State	Zip Code

**Nutrient Management Plan Report**  
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**B. STATEMENT OF COMPLETION DUE 1 JULY 2008**

I have completed the following items of the Nutrient Management Plan (check the boxes of completed sections), which are due 1 July 2008:

- Item I.A.1 Land Application Information**  
Identification of land used for manure application and needed information on a facility map.
- Item I.B Land Application Information**  
Information list for information provided on map above.
- Item I.C Land Application Information**  
Copies of written third-party process wastewater agreements.
- Item I.D Land Application Information**  
Identification of fields under control of the discharger within five miles of the dairy where neither process wastewater nor manure is applied.
- Item II Sampling and Analysis Plan**
- Item IV Setbacks, Buffers, and Other Alternatives to Protect Surface Water**  
Identification of all potential surface waters or conduits to surface waters within 100 feet of land application areas and appropriate protection.
- Item VI Record-Keeping Requirements**  
Identification of monitoring records that will be maintained as required in the production and land application areas.

Has Item II (Sampling and Analysis Plan) of the Nutrient Management Plan been certified by a Certified Nutrient Management Specialist as required in the General Order?

Yes       No

**C. STATEMENT OF COMPLETION DUE 31 DECEMBER 2008**

I have completed the following items of the Nutrient Management Plan (check the boxes of completed sections), which are due 31 December 2008:

- Item V Field Risk Assessment**  
Evaluation of the effectiveness of management practices used to control the discharge of waste constituents from land application areas by assessing the water quality monitoring results of discharges of manure, process wastewater, tailwater, subsurface (tile) drainage, or storm water from the land application areas.

**D. STATEMENT OF COMPLETION DUE 1 JULY 2009**

I have completed the following items of the Nutrient Management Plan (check the boxes of completed sections), which are due 1 July 2009:

- Item I.A.2 Land Application Area Information**  
Identification of process wastewater conveyance, mixing and drainage information for each land application area on a facility map.
- Item III Nutrient Budget**  
Established planned rates of nutrient applications by crop based on nutrient monitoring results for each land application area.

Has Item III (Nutrient Budget) of the Nutrient Management Plan been certified by a Certified Nutrient Management Specialist as required in the General Order?

Yes       No

**Nutrient Management Plan Report**  
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July 1, 2009 deadline

**E. CERTIFICATION STATEMENT**

*I certify under penalty of law that I have completed the items of the Nutrient Management Plan that are checked in Parts B, C and/or D above for the dairy identified in Part A above and that the appropriate certified nutrient management specialist has certified the items requiring such certification as noted in part B and/or D above and that I have personally examined and am familiar with the information submitted in Parts A, B, C and D of this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

*Antonio Nunes*

SIGNATURE OF OWNER OF FACILITY

SIGNATURE OF OPERATOR OF FACILITY

Antonio Nunes

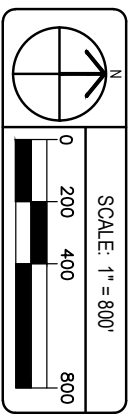
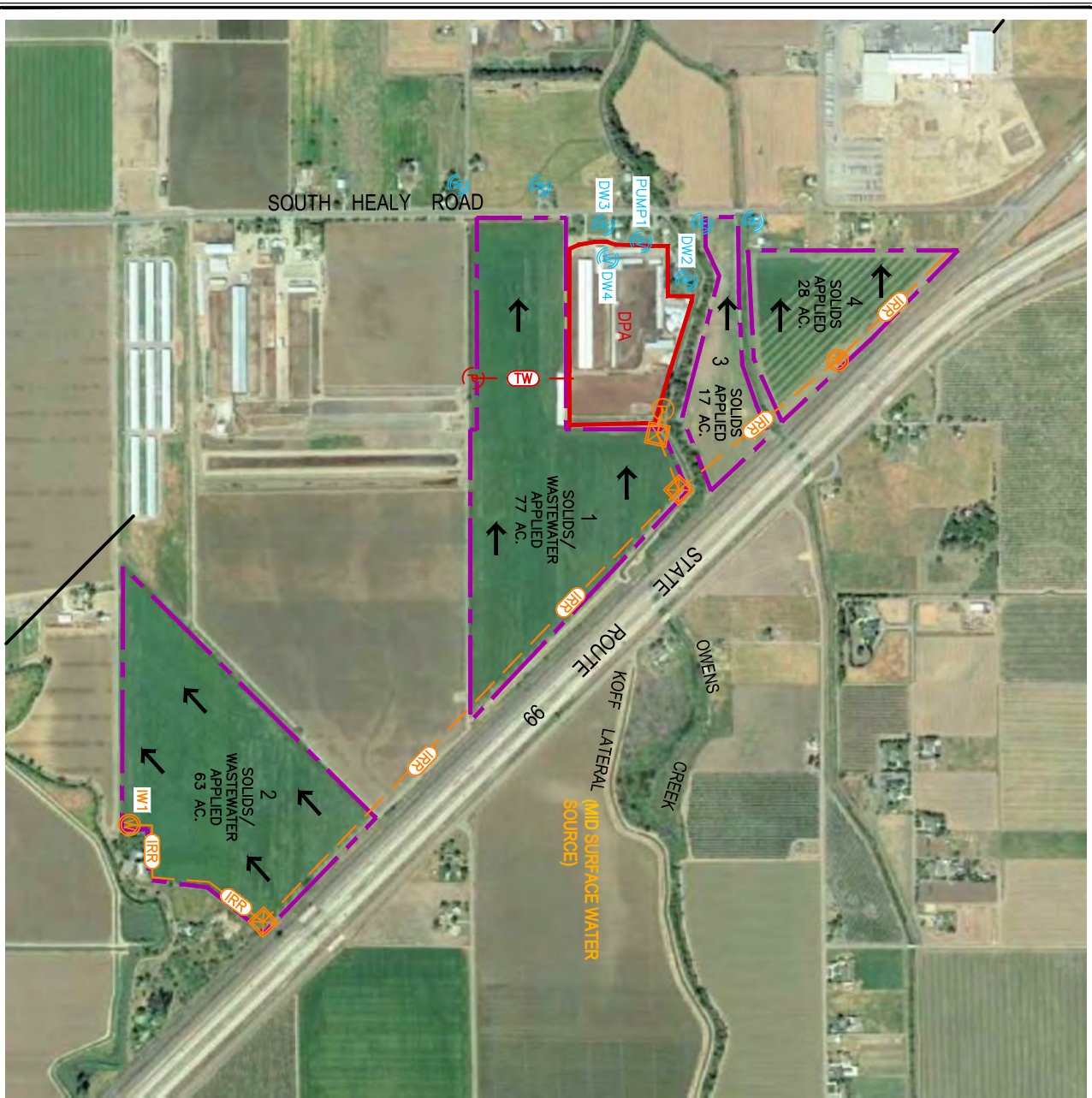
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PRINT OR TYPE NAME

10-3-17

DATE

DATE



DISCHARGE POINTS		
LAND APP. AREA	LATITUDE	LONGITUDE
1	N37° 15' 35.11"	W120° 25' 35.30"
2	N37° 15' 10.69"	W120° 25' 09.45"
3	N37° 15' 47.64"	W120° 25' 48.36"
4	N37° 15' 55.72"	W120° 25' 55.51"

- LEGEND**
- LAND APPLICATION AREA (COMPLETELY BERMEAD)
  - WATER LINE
  - IRRIGATION LINE
  - IRRIGATION DITCH
  - P IRRIGATION PUMP (PUMP WATER)
  - W1 IRRIGATION WELL (WITH WELL RING)
  - IRRIGATION CONTROL BOX
  - PUMP1/DW2 ON-SITE DOMESTIC WELL
  - DW3 OFF-SITE DOMESTIC WELL
  - DW4 OFF-SITE DOMESTIC WELL
  - TW GENERAL SLOPE AND DIRECTION OF FLOW
  - WASTEWATER LINE
  - TAILWATER LINE
  - TAILWATER DITCH
  - WASTEWATER OR TAILWATER SUMP WITH PUMP

DRAWN BY: MS		
DATE: 10/29/2015		
FILE: 02_aite.dwg		
JOB NO.: 2015-041		
REVISIONS		
SYMBOL	DESCRIPTION	APPD.

SITE MAP  
LAND APPLICATION AREAS  
ANTONIO NUNES DAIRY

MERCED COUNTY, CA



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**WASTE MANAGEMENT PLAN  
FOR  
ANTONIO NUNES DAIRY  
MERCED COUNTY, CA**

**TABLE OF CONTENTS**

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- b. Sheet 2 – Site Map – Land Application Areas
- c. Sheet 3 – Site Map – Production Area
- d. Sheet 4 – Production Area Hydrologic Map
- e. Sheet 5 – FEMA Panel No. 06047C0150G

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- b. Production Area Design & Construction Report
- c. Backflow Prevention Documentation
- d. Flood Protection Analysis
- e. Vector Control Plan

1. NARRATIVE

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## **INTRODUCTION**

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This Waste Management Plan (WMP) has been prepared at the request of the subject dairy's owner and/or operator in conjunction with a Conditional Use Permit (CUP) Application being made to Merced County and a Report of Waste Discharge (ROWD) being made to the California Regional Water Quality Control Board (CRWQCB) Central Valley Region. The criteria used for development of this WMP are those contained in Section H.1.b., Waste Management Plan, of Order No. R5-2013-0122, Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies, (Order) adopted by the CRWQCB. Per the requirements set forth by the aforementioned Order it is the intent of this plan to provide an evaluation of the existing and proposed milk cow facility's design, construction, operation, and maintenance for flood protection and waste containment and to determine whether the facility complies with Prohibition A.14 and General Specifications B.1 through B.3 and B.10 through B.16. Should the evaluation provided by this plan determine that the existing facility and its proposed improvements do not comply with the requirements of the Order, then modifications will be proposed for the facility that will bring it into compliance and those modifications shall be made a part of this plan.



## **COMPLIANCE CRITERIA**

---

As required by the Order this plan must evaluate the existing facility's compliance with Prohibition A.14 and General Specifications B.1 through B.3 and B.10 through B.16. The criteria set forth by this Prohibition and General Specifications are as follows:

**Prohibition A.14:** *"The direct discharge of wastewater into groundwater via backflow through water supply or irrigation supply wells is prohibited."*

The water, irrigation, and wastewater systems of this facility have been examined by a Registered Civil Engineer licensed in the State of California. It has been determined and hereby documented that there are no existing conditions on the project site that would allow for direct discharge of wastewater into groundwater via backflow through water supply or irrigation supply wells. The existing well that supplies the irrigation system has been constructed with an air gap so as to prevent backflow of wastewater into the well.

**General Specification B.1:** *"The existing milk cow dairy shall have facilities that are designed, constructed, operated, and maintained to retain all facility process wastewater generated during the storage period (maximum period of time anticipated between land application of process wastewater), together with all precipitation on and drainage through manured areas, up to and including during a 25-year, 24-hour storm (see item II of Attachment B, which is attached to and made part of this Order)."*

Attachment B is contained in Section 3.d. of this plan and demonstrates the facility's ability to retain all process wastewater and precipitation generated by the 25-year, 24-hour storm. The tributary areas for storm drain runoff were determined by utilizing field measurements and aerial photography.

The existing Wastewater Basin (WW) and Solids Settling Basins (SSBs) were also field measured. Depths were determined by field measurements..

**General Specification B.2:** *"In the Sacramento and San Joaquin River Basins, ponds and manured areas at existing milk cow dairies in operation on or before 27 November 1984 shall be protected from inundation or washout by overflow from any stream channel during 20-year peak stream flows. Existing milk cow dairies that were in operation on or before 27 November 1984 and that are protected against 100-year peak stream flows must continue to provide such protection. Existing milk cow dairies built or expanded after 27 November 1984 shall be protected against 100-year peak stream flows (Title 27 Section 22562(c))."*

The facility is in the San Joaquin River Basin and was constructed before 27 November 1984. However the facility has been expanded since 27 November 1984 and thus must have protection against the 100-year storm event. The relevant Flood Zone Maps published by the Federal Emergency Management Agency (FEMA) are Panel Nos. 06047C150G and 06047C350G. This map indicates that the existing dairy facility is in Zone AO (Depth = 1') and is thus subject to inundation by the 100-year storm event. An analysis describing locations and levels of inundation and recommended protection measures is included in the Plan in Section 3.d.

**General Specification B.3:** *“In the Tulare Lake Basin, existing milk cow dairies that existed as of 25 July 1975 shall be protected from inundation or washout from overflow from any stream channel during 20-year peak stream flows and existing milk cow dairies constructed after 25 July 1975 shall be protected from 100-year peak stream flows. Existing milk cow dairies expanded after 8 December 1984 shall be protected from 100-year peak stream flows.”*

As the facility is in the San Joaquin River Basin this specification is not applicable.

**General Specification B.10:** *“The level of waste in the process wastewater retention ponds shall be kept a minimum of two (2) feet from the top of each aboveground embankment and a minimum of one (1) foot from the ground surface of each belowground pond. Less freeboard may be approved by the Executive Officer when a Civil Engineer who is registered pursuant to California law, or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work, demonstrates that the structural integrity of the pond will be maintained with the proposed freeboard.*

2' of freeboard has been assigned to the all wastewater retention ponds as all have been constructed above grade.

**General Specification B.11:** *“Ponds shall be managed and maintained to prevent breeding of mosquitoes and other vectors. In particular,*

- a. Small coves and irregularities shall not be allowed around the perimeter of the water surface;*
- b. Weeds shall be minimized through control of water depth, harvesting, or other appropriate method;*
- c. Dead algae, vegetation, and debris shall not accumulate on the water surface; and*
- d. Management shall be in accordance with the requirements of the Mosquito Abatement District.”*

An Operations and Maintenance Plan addressing these items has been included with Attachment B and is hereby made a part of this plan.

**General Specification B.12:** *“All precipitation and surface drainage from outside of the existing milk cow dairy (i.e., “run on”) shall be diverted away from any manured areas unless such drainage is fully contained (Title 27 Section 22562(b)).”*

Precipitation and surface drainage outside of the Dairy Production Area (DPA, Exhibit Sheet 3) are diverted away from the DPA or are self-contained.

**General Specification B.13:** *“Ponds designated to contain the 25-year, 24-hour storm event runoff must have a depth marker that clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation from a 25-year, 24-hour storm event.”*

A marker meeting this specification will be installed in all of the facility's ponds by the compliance date.

**General Specification B.14:** *“All roofs, buildings, and non-manured areas located in the production area of the existing milk cow dairy shall be constructed or otherwise designed so that clean rainwater is diverted away from manured areas and waste containment facilities, unless such drainage is fully contained in the wastewater retention system (Title 27 Section 22562(b)).”*

Exhibit Sheet 4, “Hydrologic Map – Production Area”, indicates all areas that contribute runoff to the wastewater retention system. All other areas are diverted away from the wastewater retention system or are self-contained.

**General Specification B.15:** *“Roof drainage from barns, milk houses, or shelters shall not drain into the corrals unless the corrals are properly graded and drained (Title 3 CCR, Division 2, Chapter 1, Article 22, Section 661).”*

Roof drainage on this facility is collected by gutters and directed to flush lanes with downspouts or are directed to fields; the destination of roof drainage for structures in the DPA is indicated in Section 3.a., *Waste Management Plan Report*.

**General Specification B.16:** *“The milk parlor, animal confinement area (including corrals), and manure and feed storage areas shall be designed and maintained to convey all water that has contacted animal wastes or feed to the wastewater retention system and to minimize standing water as of 72 hours after the last rainfall and the infiltration of water into the underlying soils.*

The milk parlor, some animal confinement areas, and the feed storage area are constructed in such a manner to convey water that has contacted animal wastes or feed to the wastewater retention system and to minimize standing water.

## **RESULTS AND CONCLUSIONS**

---

After conducting a visual inspection of the site, obtaining herd and facility information from the operator, performing the required measurements of facility improvements, and performing the calculations included in Attachment B it has been determined that the majority of the design, construction, operation, and waste containment of this facility are in compliance with Prohibition A.14 and General Specifications B.1 through B.3 and B.10 through B.16 of Order No. R5-2013-0122, *Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies*. However, the following improvements are recommended to ensure complete compliance with the General Order and are incorporated into this Plan:

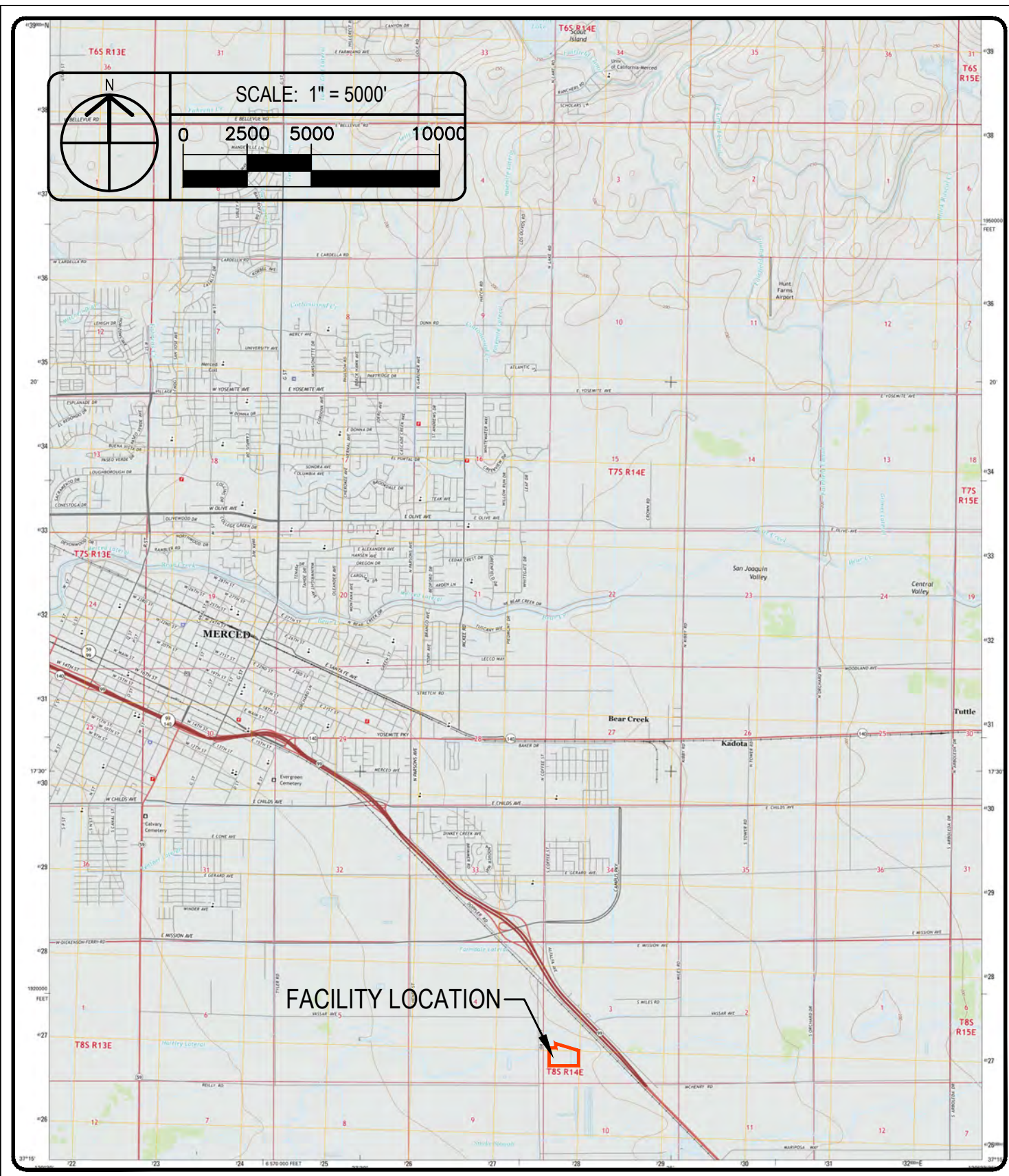
1. Construct a collection sump, pump, and conveyance piping in the corral low point near the east end of Animal Shelter 1 (AS1) to convey wastewater to the existing storage ponds.
2. Implement one of the following or equal at AS1:
  - a. Extend existing flush system to AS1 to convey manure to proposed collection sump at the east end of AS1, or;
  - b. Implement regular dry scraping at AS1 to remove manure from lanes.

Reference Exhibit Sheet 3 for locations and nature of these recommended improvements.

The proposed facility improvements of structure demolition and construction of an additional free stall barn must maintain compliance with the General Order and local agency building requirements.

## 2. EXHIBITS

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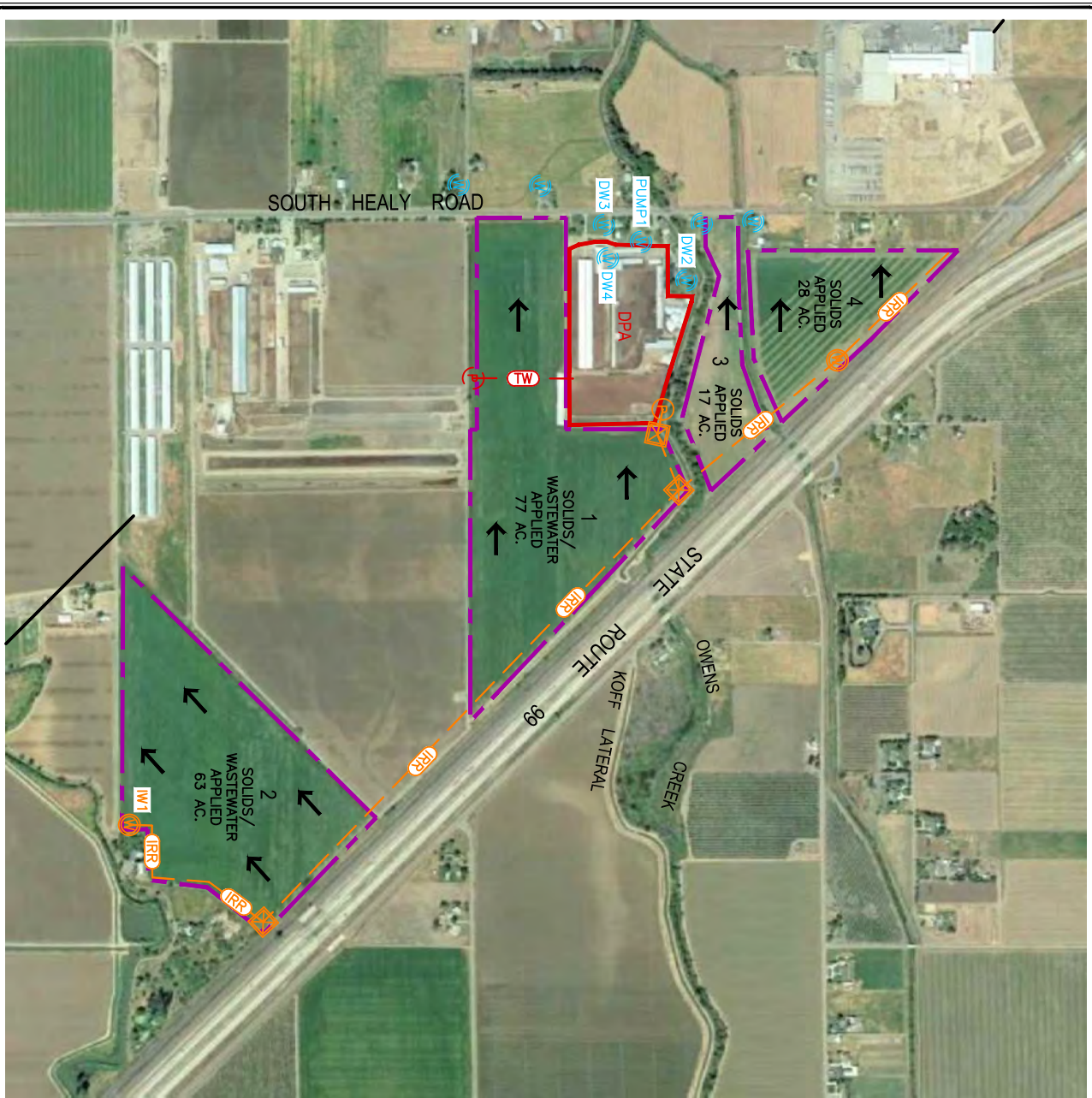
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VICINITY MAP  
 ANTONIO NUNES DAIRY

MERCED COUNTY,

CA

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FILE:01_VIC
JOB NO.:2015-041

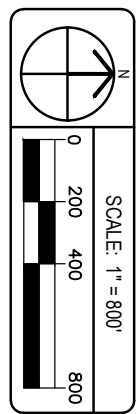


**LEGEND**

- LAND APPLICATION AREA
- WATER LINE
- IRRIGATION LINE
- IRRIGATION DITCH
- IRRIGATION PUMP
- IRRIGATION CONTROL BOX
- ON-SITE DOMESTIC WELL
- ON-SITE DOMESTIC WELL
- OFF-SITE DOMESTIC WELL
- GENERAL SLOPE AND DIRECTION OF FLOW
- WASTEWATER LINE
- TAILWATER LINE
- TAILWATER DITCH
- WASTEWATER OR TAILWATER SUMP WITH PUMP

**DISCHARGE POINTS**

LAND APP. AREA	LATITUDE	LONGITUDE
1	N37° 15' 35.11"	W120° 25' 35.30"
2	N37° 15' 10.69"	W120° 25' 09.45"
3	N37° 15' 47.64"	W120° 25' 48.36"
4	N37° 15' 55.72"	W120° 25' 55.51"



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DATE: 10/29/2015		
FILE: 02_aite.dwg		
JOB NO.: 2015-041		
REVISIONS		
SYMBOL	DESCRIPTION	APPD.

SITE MAP  
LAND APPLICATION AREAS  
ANTONIO NUNES DAIRY

MERCED COUNTY, CA

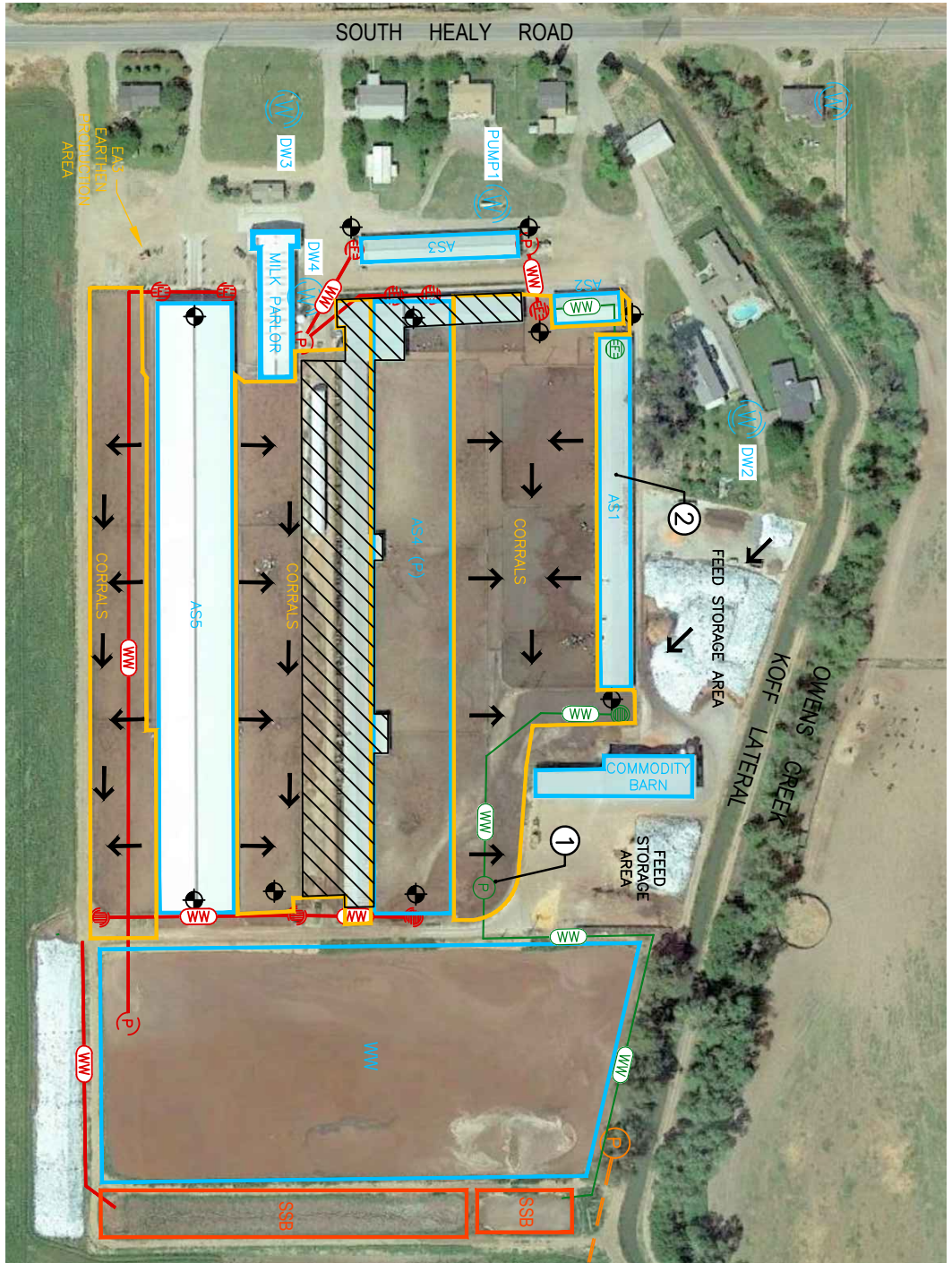


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**RECOMMENDED IMPROVEMENTS**

- ① CONSTRUCT SUMP AND PUMP IN CORRAL LOW POINT TO COLLECT WASTEWATER AND CONVEY IT TO EXISTING WASTEWATER STORAGE PONDS.
- ② ANIMAL SHELTER 1 (AS1) WILL REQUIRE ONE OF THE FOLLOWING, OR AN EQUAL IMPROVEMENT, TO BE IMPLEMENTED:
  1. EXTEND EXISTING FLUSH SYSTEM TO AS1 TO CONVEY MANURE TO PROPOSED SUMP AT EAST END OF AS1;
  2. IMPLEMENT REGULAR DRY SCRAPING TO REMOVE MANURE FROM LANES.

**LEGEND**

- AS ROOF AREA (AS = ANIMAL SHELTER)
- AS (P) ROOF AREA OR STRUCTURE, PROPOSED
- CORRAL AREA
- EXISTING STRUCTURES AND IMPERVIOUS AREAS TO BE REMOVED
- IRRIGATION LINE
- IRRIGATION PUMP
- WASTEWATER LINE
- WASTEWATER SUMP WITH PUMP
- FLUSH SYSTEM DRAIN INLET
- FLUSH SYSTEM VALVE
- PUMP 1/DW2 ON-SITE DOMESTIC WELL
- OFF-SITE DOMESTIC WELL
- GENERAL SLOPE AND DIRECTION OF FLOW
- INSPECTION POINT FOR MONITORING ANIMAL HOUSING AND FLUSH WATER CONVEYANCE SYSTEM
- WASTEWATER LINE - PROPOSED
- WASTEWATER SUMP WITH PUMP - PROPOSED
- FLUSH SYSTEM DRAIN INLET - PROPOSED
- FLUSH SYSTEM VALVE - PROPOSED



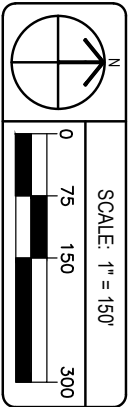
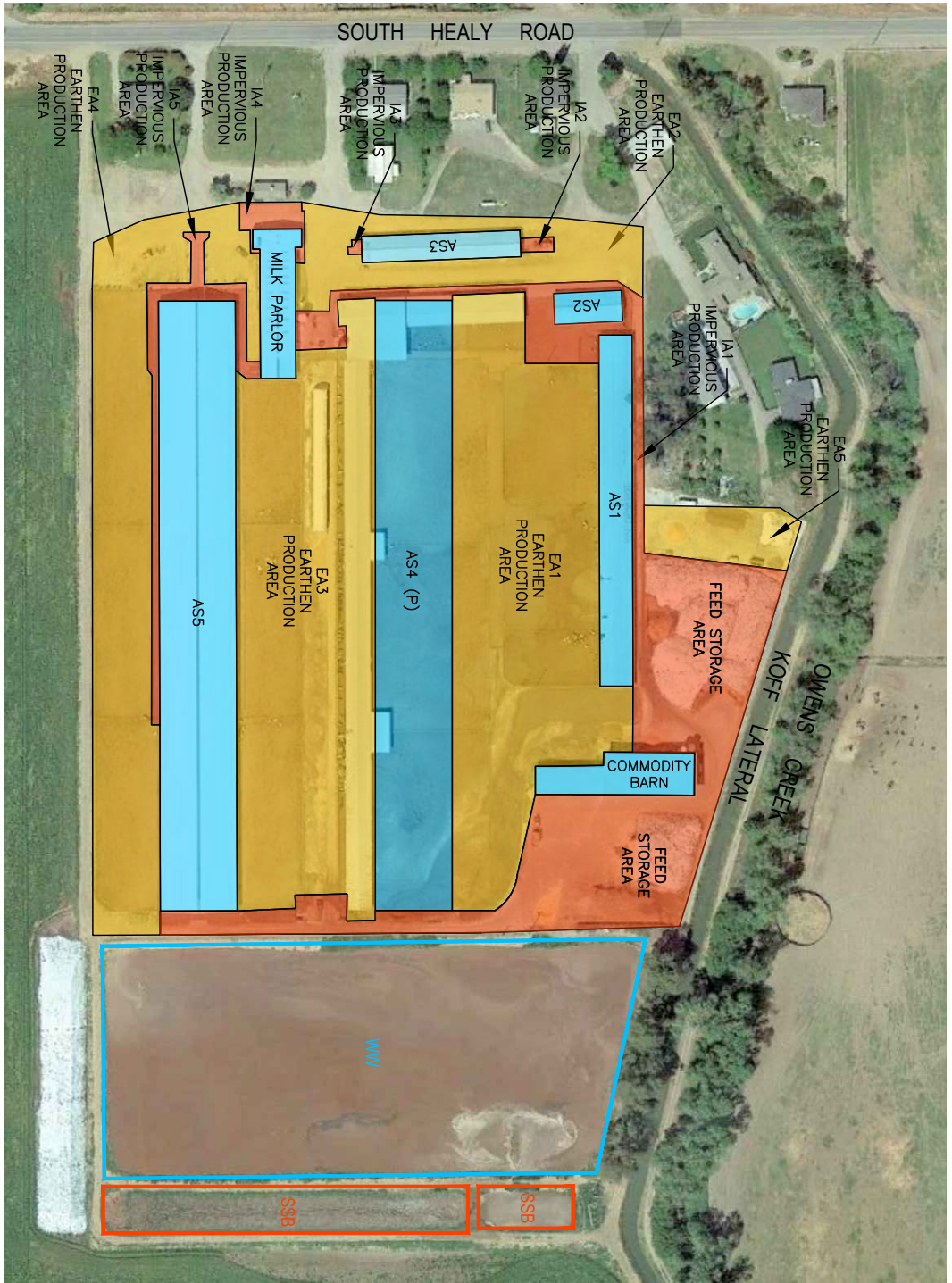
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JOB NO.: 2015-041		
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SYMBOL	DESCRIPTION	APPD.

SITE MAP - PRODUCTION AREA  
 ANTONIO NUNES DAIRY  
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JOB NO.: 2015-041		
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SYMBOL	DESCRIPTION	APPD.

HYDROLOGIC MAP -  
PRODUCTION AREA  
ANTONIO NUNES DAIRY

MERCED COUNTY, CA

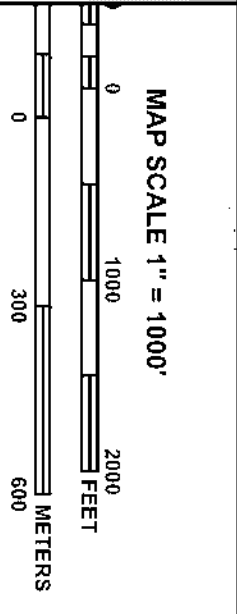
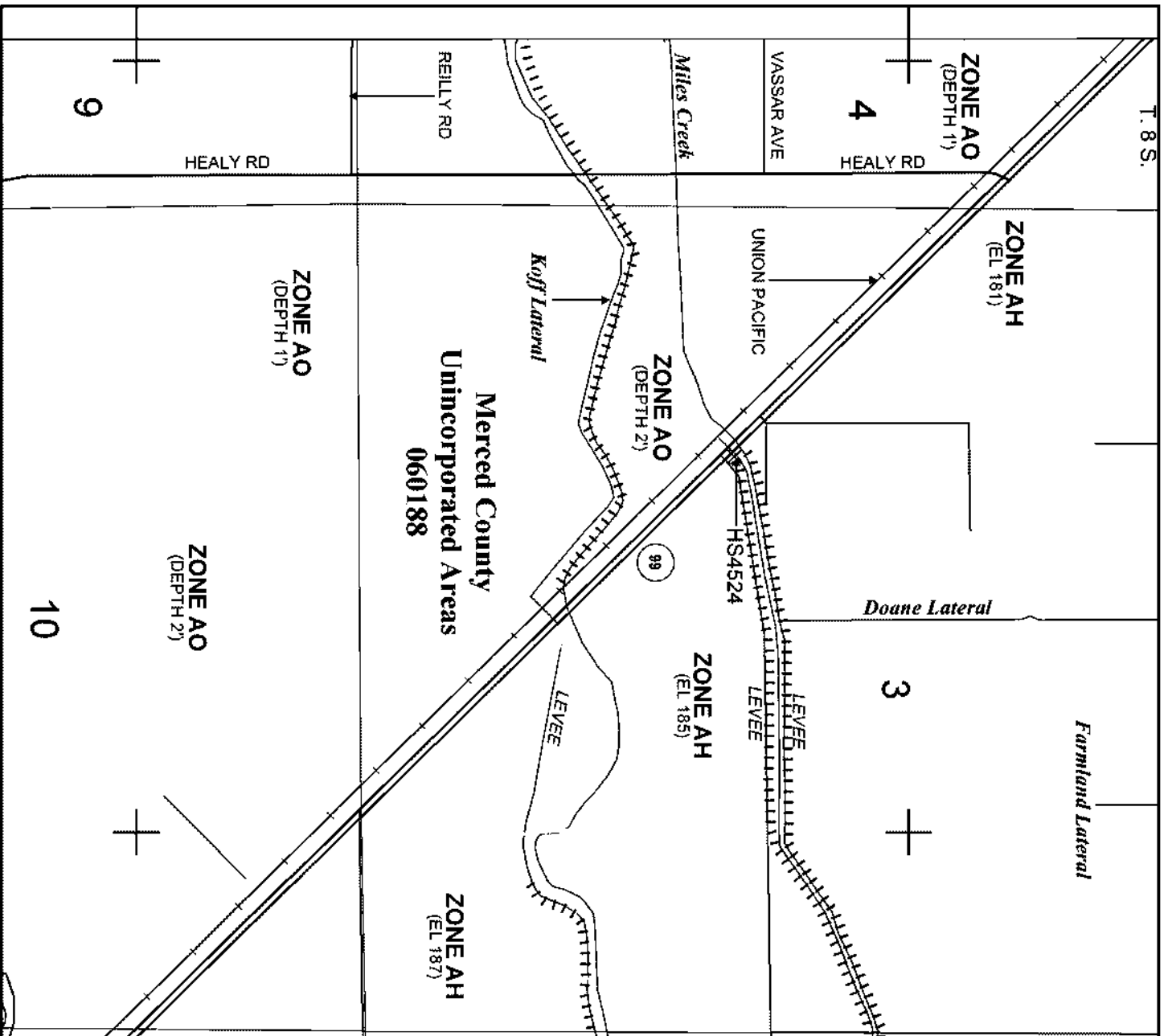


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**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM**

**PANEL 0445G**

**FLOOD INSURANCE RATE MAP**

**MERCED COUNTY, CALIFORNIA**

**AND INCORPORATED AREAS**

**PANEL 445 OF 1225**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS	
COMMUNITY	NUMBER PANEL SUFFIX
MERCED CITY OF	060181 0445 G
MERCED COUNTY	060188 0445 G

**Notice to User:** The Map Number above should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
06047C0445G

**MAP REVISED**  
DECEMBER 2, 2008

**Federal Emergency Management Agency**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

3. DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE DOCUMENTATION

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

DAIRY FACILITY INFORMATION

**A. NAME OF DAIRY OR BUSINESS OPERATING THE DAIRY:** Nunes Dairy

Physical address of dairy:

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

TRS Data and Coordinates:

<u>8S</u>	<u>14E</u>	<u>3</u>	<u>Mt. Diablo</u>	<u>37° 15' 37.60" N</u>	<u>120° 25' 59.90" W</u>
Township (T_)	Range (R_)	Section (S_)	Baseline meridian	Latitude (N)	Longitude (W)

Date facility was originally placed in operation: 01/01/1955

Regional Water Quality Control Board Basin Plan designation: San Joaquin River Basin

County Assessor Parcel Number(s) for dairy facility:

0066-0271-0003-0000

**B. OPERATOR NAME:** Nunes, Antonio Telephone no.: (209) 384-0948 (209) 658-6061  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Operator should receive Regional Board correspondence (check):  Yes  No

**OPERATOR NAME:** Nunes, Filomena Telephone no.: (209) 384-0948  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Operator should receive Regional Board correspondence (check):  Yes  No

**C. LEGAL OWNER NAME:** Nunes, Antonio Telephone no.: (209) 384-0948 (209) 658-6061  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Owner should receive Regional Board correspondence (check):  Yes  No

**LEGAL OWNER NAME:** Nunes, Filomena Telephone no.: (209) 384-0948  
Landline Cellular

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>CA</u>	<u>95340</u>
Mailing Address Number and Street	City	State	Zip Code

Owner should receive Regional Board correspondence (check):  Yes  No

**D. CONTACT NAME:** Sousa, Manny Telephone no.: (209) 238-3151  
Landline Cellular

Title: Registered Civil Engineer

<u>P.O. Box 1613</u>	<u>Oakdale</u>	<u>CA</u>	<u>95361</u>
Mailing Address Number and Street	City	State	Zip Code

**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

<b>CONTACT NAME:</b> <u>Avila, John</u>	Telephone no.:	<u>(209) 669-7919</u>	
		Landline	Cellular
Title: <u>Consultant</u>			
<u>8119 Ellington AVE</u>	<u>Hilmar</u>	<u>CA</u>	<u>95324</u>
Mailing Address Number and Street	City	State	Zip Code

**Waste Management Plan Report**  
 General Order No. R5-2007-0035, Attachment B  
 July 1, 2010 deadline

HERD AND MILKING EQUIPMENT

**A. HERD AND MILKING**

The milk cow dairy is currently regulated under individual Waste Discharge Requirements.

Total number of milk and dry cows combined as a baseline value in response to the Report of Waste Discharge (ROWD) request of October, 2005:

1,800 milk and dry cows combined (regulatory review is required for any expansion)

Type of Animal	Present Count	Maximum Count	Daily Flush Hours	Avg Live Weight (lbs)
Milk Cows	1,500	1,500	22	1,400
Dry Cows	300	300	18	1,500
Bred Heifers (15-24 mo.)	0	0	0	0
Heifers (7-14 mo.)	0	0	0	0
Calves (4-6 mo.)	150	150	0	
Calves (0-3 mo.)	150	150	24	

Predominant milk cow breed:

Holstein

Average milk production:

68 pounds per cow per day

Average number of milk cows per string sent to the milkbarn:

169 milk cows per string

Number of milkings per day:

2.0 milkings per day

Number of times milk tank is emptied/filled each day:

1.0 per day

Number of hours spent milking each day:

20.0 hours per day

**B. MILKBARN EQUIPMENT AND FLOOR WASH**

Bulk tank wash and sanitizing:

3.0 run cycles/wash

Bulk tank wash vat volume:

75 gallons/cycle

Bulk tank wash wastewater:

225.0 gallons/day

Pipeline wash and sanitizing:

3.0 run cycles/wash

Pipeline wash vat volume:

200 gallons/cycle

Pipeline wash wastewater:

1,200.0 gallons/day

Reused / recycled water is the source of parlor floor wash water:

Yes [ ] No

Milkbarn / parlor floor wash volume:

10,000 gallons/day

Plate coolers type:

Well Water Cooled (Water Reused/Recycled)

Plate coolers volume:

25,300 gallons/day

Vacuum pumps / air compressors / chillers type:

Well Water Cooled (Water Reused/Recycled)

Vacuum pumps / air compressors / chillers volume:

3,000 gallons/day

Milkbarn and equipment wastewater volume generated daily:

29,725 gallons/day



**Waste Management Plan Report**  
 General Order No. R5-2007-0035, Attachment B  
 July 1, 2010 deadline

**B. SOLIDS SEPARATION PROCESS**

Combined manure solids separation efficiency (weight basis): \_\_\_\_\_ 0 %

Description of all solids separation equipment used in flushed lane manure management systems:

Solids are removed with two settling basins.

**C. MANURE AND BEDDING SOLIDS SUMMARY**

	cubic feet		gallons	
	day	storage period	day	storage period
Manure generated by the herd (pre-separation):	3,813.96	457,675	28,530.39	3,423,647
Manure generated by the herd sent to pond(s):	3,395.01	407,401	25,396.41	3,047,569
Manure generated by the herd sent to dry lot(s):	418.95	50,274	3,133.99	376,078
Manure solids (herd) removed by separation:	0.00	0	0.00	0
Liquid component in separated solids not send to pond(s):	0.00	0	0.00	0
Imported and facility generated bedding sent to pond(s):	38.83	4,660	290.49	34,859
Total manure and bedding sent to pond(s):	3,433.84	412,061	25,686.90	3,082,428
Residual manure solids and bedding sent to pond(s) w/factor:	290.50	34,860	2,173.08	260,770
	cubic feet per year		gallons per year	
Residual manure solids and bedding sent to pond(s) w/factor:	106,032		793,174	

**RAINFALL AND RUNOFF**

**A. RAINFALL ESTIMATES**

Rainfall station nearest the facility: Merced

25 year/24 hour storm event (default NOAA Atlas 2, 1973): 2.50 inches/storage period

25 year/24 hour storm event (user-override): \_\_\_\_\_ inches/storage period

Storage period rainfall (default DWR climate data): 8.05 inches/storage period

Storage period rainfall (user-override): \_\_\_\_\_ inches/storage period

Flood zone: Zone AO

**B. IMPERVIOUS AREAS**

Name	Surface Area (sq. ft.)	Quantity	25yr/24hr Storm Runoff Coefficient	Storage Period Runoff Coefficient	Runoff Destination
Impervious Area - IA1	127,000	1	0.95	0.50	Drains into pond(s).
Impervious Area - IA2	900	1	0.95	0.50	Drains into pond(s).
Impervious Area - IA3	320	1	0.95	0.50	Drains into pond(s).
Impervious Area - IA4	3,700	1	0.95	0.50	Drains into pond(s).
Impervious Area - IA5	12,900	1	0.95	0.50	Drains into pond(s).



**Waste Management Plan Report**  
 General Order No. R5-2007-0035, Attachment B  
 July 1, 2010 deadline

Surface area that does not run off into pond(s): 0 sq. ft.  
 Surface area that runs off into pond(s): 144,820 sq. ft.  
 Total surface area: 144,820 sq. ft.  
 Runoff from normal storage period rainfall: 363,367 gallons/storage period  
 Runoff from normal storage period rainfall with 1.5 factor: 545,050 gallons/storage period  
 25 year/24 hour storm event runoff: 214,409 gallons/storage period  
 Total surface area runoff: 577,775 gallons/storage period  
 Total surface area runoff with 1.5 factor: 759,459 gallons/storage period

**C. ROOF AREAS**

Name	Surface Area (sq. ft.)	Quantity	Runoff Destination
Animal Shelter - AS1	21,375	1	Wastewater pond
Animal Shelter - AS2	3,850	1	Wastewater pond
Animal Shelter - AS3	7,750	1	Wastewater pond
Animal Shelter - AS4 (proposed free stall barn)	85,800	1	Wastewater pond
Animal Shelter - AS5	85,800	1	Wastewater pond
Commodity Barn	10,730	1	Wastewater pond
Milking Parlor	10,200	1	Wastewater pond

Surface area that does not run off into pond(s): 0 sq. ft.  
 Surface area that runs off into pond(s): 225,505 sq. ft.  
 Total surface area: 225,505 sq. ft.  
 Runoff from normal storage period rainfall: 1,131,625 gallons/storage period  
 Runoff from normal storage period rainfall with 1.5 factor: 1,697,438 gallons/storage period  
 25 year/24 hour storm event runoff: 351,436 gallons/storage period  
 Total surface area runoff: 1,483,061 gallons/storage period  
 Total surface area runoff with 1.5 factor: 2,048,874 gallons/storage period

**D. EARTHEN AREAS**

Name	Surface Area (sq. ft.)	Quantity	25yr/24 Storm Coefficient	Storage Period Coefficient	Runoff Destination
Earthen Area - EA1	140,000	1	0.35	0.20	Drains into pond(s).
Earthen Area - EA2	36,500	1	0.35	0.20	Drains into pond(s).
Earthen Area - EA3	141,000	1	0.35	0.20	Drains into pond(s).
Earthen Area - EA4	92,000	1	0.35	0.20	Drains into pond(s).
Earthen Area - EA5	15,100	1	0.35	0.20	Drains into pond(s).

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Surface area that does not run off into pond(s):	<u>0</u> sq. ft.
Surface area that runs off into pond(s):	<u>424,600</u> sq. ft.
Total surface area:	<u>424,600</u> sq. ft.
Runoff from normal storage period rainfall:	<u>426,144</u> gallons/storage period
Runoff from normal storage period rainfall with 1.5 factor:	<u>639,216</u> gallons/storage period
25 year/24 hour storm event runoff:	<u>231,600</u> gallons/storage period
Total surface area runoff:	<u>657,744</u> gallons/storage period
Total surface area runoff with 1.5 factor:	<u>870,816</u> gallons/storage period

**E. TAILWATER MANAGEMENT**

*No fields with tailwater entered.*

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LIQUID STORAGE

**A. POND OR BASIN DESCRIPTION:** SSB1

Pond is rectangular in shape:  Yes  No

Dimensions			
Earthen Length (EL):	<u>132</u> ft.	Earthen Depth (ED):	<u>16</u> ft.
Earthen Width (EW):	<u>60</u> ft.	Side Slope (S):	<u>1.0</u> ft. (h:1v)
Free Board (FB):	<u>2</u> ft.	Dead Storage Loss (DS):	<u>0.0</u> ft.
Calculations			
Liquid Length (LL):	<u>128</u> ft.	Storage Volume Adjusted for Dead Storage Loss:	<u>67,947</u> cu. ft.
Liquid Width (LW):	<u>56</u> ft.		
Pond Surface Area:	<u>7,920</u> sq. ft.	Pond Marker Elevation:	<u>13.3</u> ft.
Storage Volume:	<u>67,947</u> cu. ft.	Evaporation Volume:	<u>44,190</u> gals/period
		Adjusted Surface Area:	<u>7,043</u> sq. ft.

**POND OR BASIN DESCRIPTION:** SSB2

Pond is rectangular in shape:  Yes  No

Dimensions			
Earthen Length (EL):	<u>488</u> ft.	Earthen Depth (ED):	<u>13</u> ft.
Earthen Width (EW):	<u>60</u> ft.	Side Slope (S):	<u>1.0</u> ft. (h:1v)
Free Board (FB):	<u>2</u> ft.	Dead Storage Loss (DS):	<u>0.0</u> ft.
Calculations			
Liquid Length (LL):	<u>484</u> ft.	Storage Volume Adjusted for Dead Storage Loss:	<u>234,579</u> cu. ft.
Liquid Width (LW):	<u>56</u> ft.		
Pond Surface Area:	<u>29,280</u> sq. ft.	Pond Marker Elevation:	<u>10.3</u> ft.
Storage Volume:	<u>234,579</u> cu. ft.	Evaporation Volume:	<u>167,803</u> gals/period
		Adjusted Surface Area:	<u>26,745</u> sq. ft.

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**POND OR BASIN DESCRIPTION:** WWS

Pond is rectangular in shape:  Yes  No

Dimensions			
Earthen Length (EL):	<u>710</u> ft.	Earthen Depth (ED):	<u>11</u> ft.
Earthen Width (EW):	<u>315</u> ft.	Side Slope (S):	<u>1.4</u> ft. (h:1v)
Free Board (FB):	<u>2</u> ft.	Dead Storage Loss (DS):	<u>3.0</u> ft.
Calculations			
Liquid Length (LL):	<u>704</u> ft.	Storage Volume Adjusted for Dead Storage Loss:	<u>1,257,117</u> cu. ft.
Liquid Width (LW):	<u>309</u> ft.		
Pond Surface Area:	<u>223,650</u> sq. ft.	Pond Marker Elevation:	<u>8.4</u> ft.
Storage Volume:	<u>1,848,412</u> cu. ft.	Evaporation Volume:	<u>1,361,793</u> gals/period
		Adjusted Surface Area:	<u>217,043</u> sq. ft.

Potential storage losses (due to dead storage): 591,295.0 cubic feet - or - 4,423,193.8 gallons

Liquid storage surface area: 252,213 sq. ft.

Rainfall onto retention pond(s): 1,308,993 gallons/storage period

Rainfall runoff into retention pond(s): 1,921,136 gallons/storage period

Normal rainfall onto retention pond(s) with 1.5 factor: 1,963,489 gallons/storage period

Normal rainfall runoff into retention pond(s) with 1.5 factor: 2,881,703 gallons/storage period

Storage period evaporation (default): 13.42 inches/storage period

Storage period evaporation (user-override): \_\_\_\_\_ inches/storage period

Storage period evaporation volume: 1,573,786 gallons/storage period

Manure and bedding sent to pond(s): 3,082,428 gallons/storage period

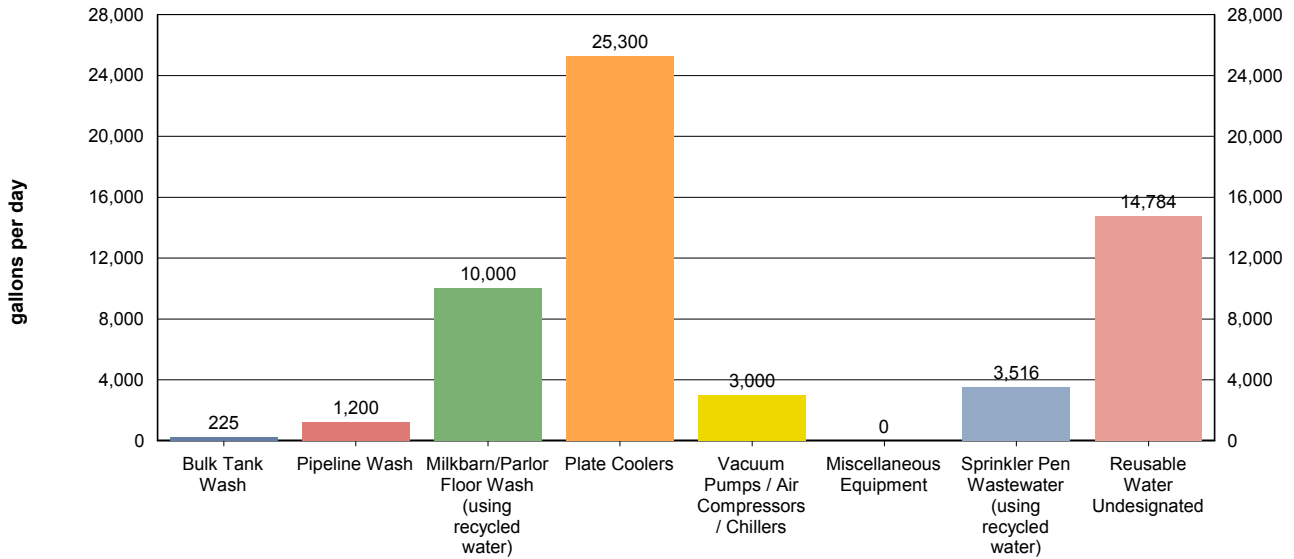
Milkbarn water sent to pond(s): 3,567,000 gallons/storage period

Fresh flush water for storage period: 0 gallons/storage period

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CHARTS

**A. MILKBARN WASTEWATER SENT TO POND(S)**

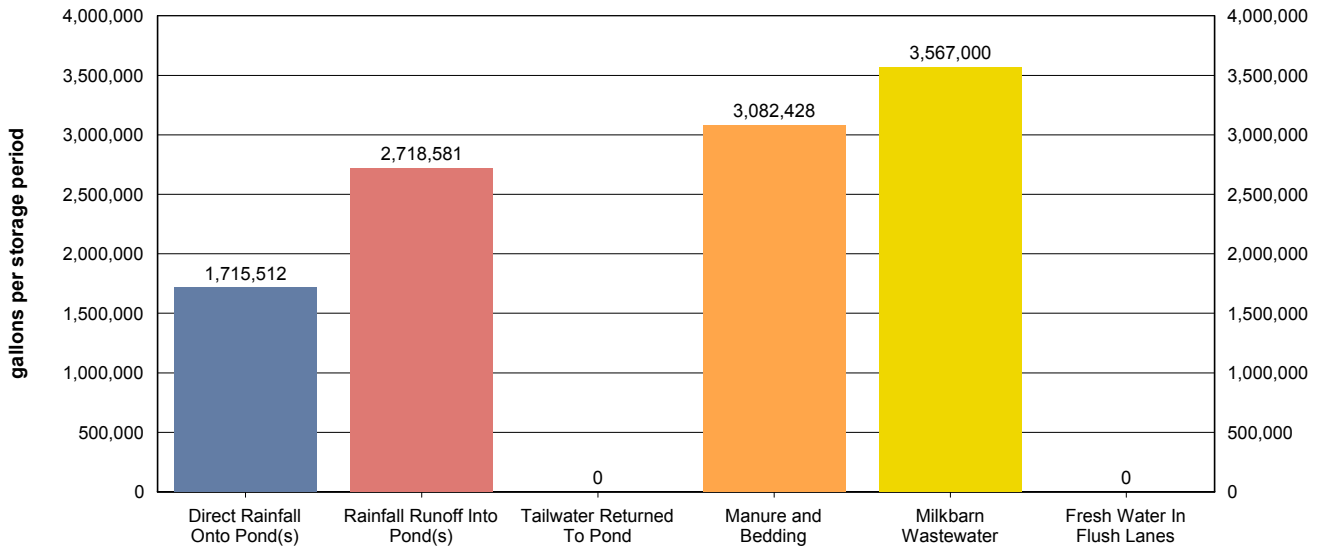


*Values shown in chart are approximate values per day.*

Total milkbarn wastewater generated daily: 29,725 gallons/day  
 Total milkbarn wastewater generated per period: 3,567,000 gallons/storage period

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**B. PROCESS WASTEWATER (NORMAL PRECIPITATION)**



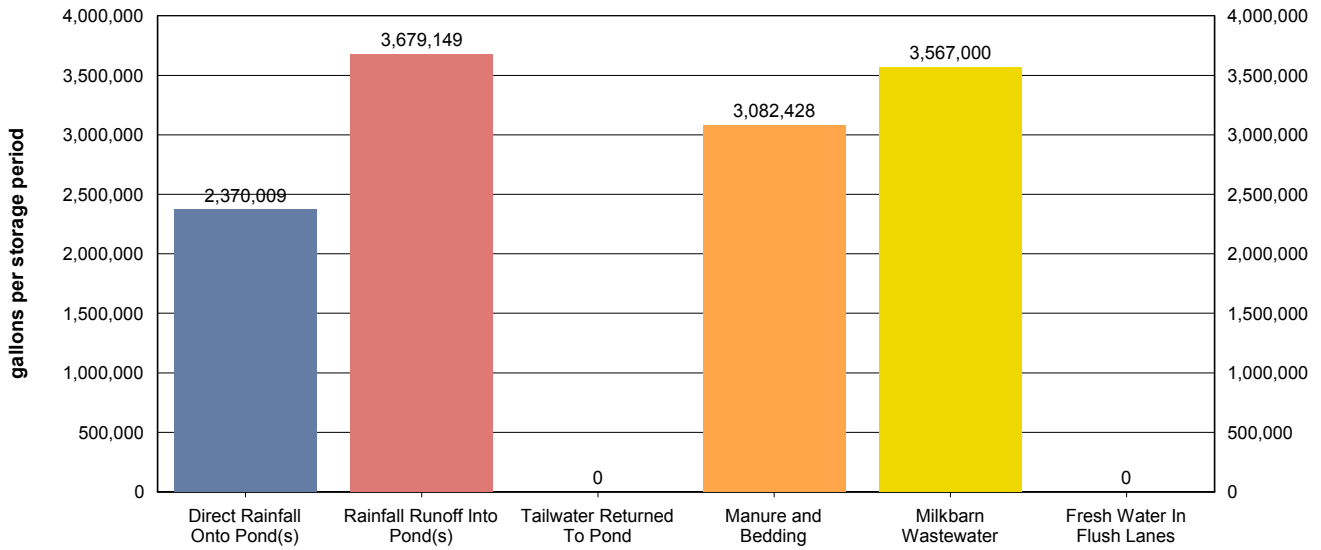
*Values shown in chart are approximate values for storage period.*

Storage period:	<u>120</u> days
Total process wastewater generated daily:	<u>92,363</u> gallons/day
Total process wastewater generated per period:	<u>11,083,521</u> gallons/storage period
Total process wastewater removed due to evaporation:	<u>1,573,786</u> gallons/storage period
Total storage capacity required:	<u>9,509,735</u> gallons
	<u>1,271,267</u> cu. ft.
Existing storage capacity (adjusted for dead storage loss):	<u>11,666,940</u> gallons
	<u>1,559,643</u> cu. ft.

**Considering normal precipitation, existing capacity meets estimated storage needs:**       Yes     No

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**C. PROCESS WASTEWATER (NORMAL PRECIPITATION WITH 1.5 FACTOR)**



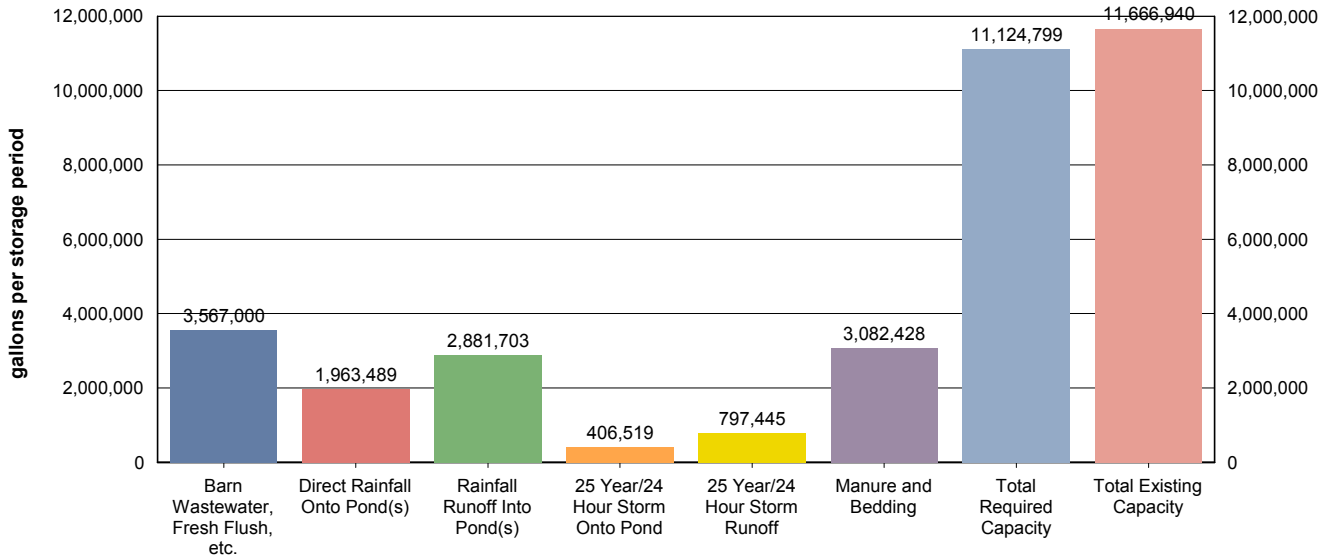
*Values shown in chart are approximate values for storage period.*

Storage period:	<u>120 days</u>
Total process wastewater generated daily:	<u>105,822 gallons/day</u>
Total process wastewater generated per period:	<u>12,698,585 gallons/storage period</u>
Total process wastewater removed due to evaporation:	<u>1,573,786 gallons/storage period</u>
Total storage capacity required:	<u>11,124,799 gallons</u>
	<u>1,487,169 cu. ft.</u>
Existing storage capacity (adjusted for dead storage loss):	<u>11,666,940 gallons</u>
	<u>1,559,643 cu. ft.</u>

**Considering factored precipitation, existing capacity meets estimated storage needs:**     Yes     No

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**D. STORAGE VOLUME ASSESSMENT (NORMAL PRECIPITATION WITH 1.5 FACTOR)**



*Values shown in chart are approximate values for storage period.*

Storage period:	<u>120</u> days
Barn wastewater, fresh flush water, and tailwater:	<u>3,567,000</u> gallons/storage period
Manure and bedding sent to pond:	<u>3,082,428</u> gallons/storage period
Precipitation onto pond:	<u>1,963,489</u> gallons/storage period
Precipitation runoff:	<u>2,881,703</u> gallons/storage period
25 year/24 hour storm onto pond:	<u>406,519</u> gallons/storage period
25 year/24 hour storm runoff:	<u>797,445</u> gallons/storage period
Residual solids after liquids have been removed (liquid equivalent):	<u>260,770</u> gallons/storage period
Total process wastewater removed due to evaporation:	<u>1,573,786</u> gallons/storage period
Total required capacity:	<u>11,124,799</u> gallons/storage period
Total existing capacity:	<u>11,666,940</u> gallons/storage period
<b>Existing capacity meets estimated storage needs:</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



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OPERATION AND MAINTENANCE PLAN

The goal of the Operation and Maintenance Plan is to eliminate discharges of waste or storm water to surface waters from the production area and the protection of underlying soils and ground water.

**A. POND MAINTENANCE**

i. FREEBOARD MONITORING

1. Freeboard will be monitored monthly from June 1 through September 1 (dry season) and weekly from October 1 through May 31 (wet season). The results will be recorded on a Dairy Production Area Visual Inspection Form.
2. Freeboard will be monitored during and after each significant storm event and the results recorded on a Production Area Significant Storm Event Inspection Form.
3. Ponds will be photographed on the first day of each month. Pond photos will be labeled and maintained with the dairy's monitoring records.

ii. PREPARATION FOR MAINTAINING WINTER STORAGE CAPACITY

1. The retention pond(s) will begin to be lowered to the minimum operating level on or before a designated date each year.
2. The minimum operating level will include the necessary storage volume as identified in Section II .A in Attachment B of the General Order.

iii. OTHER POND MONITORING

1. At the time of each monitoring for freeboard, the pond(s) will be inspected for evidence of excessive odors, mosquito breeding, algae, or equipment damage; and issues with berm integrity, including cracking, slumping, erosion, excess vegetation, animal burrows, and seepage. Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Other Pond Monitoring.
2. At the time of each monitoring during and after each significant storm event, the ponds will be inspected for evidence of any discharge and issues with berm integrity, including cracking, slumping, erosion, excess vegetation, animal burrows, and seepage. Any issues identified and corrective actions performed will be recorded on a Production Area Significant Storm Event Inspection Form.

iv. SOLIDS REMOVAL PROCEDURES

1. The average thickness of the solids accumulated on the bottom of the pond (s) will be measured on the designated interval using the owner, operator, and/or designer specified procedure.
2. Once solids/sludge on the bottom of the pond(s) reach the owner, operator, and/or designer specified critical thickness, solids/sludge will be removed so that adequate capacity is maintained.
3. When necessary, solids/sludge will be removed using the owner, operator, and/or designer specified methods for protecting any pond liner.

**OPERATIONS AND MAINTENANCE PLAN FOR POND: SSB1**

Dry season freeboard monitoring will occur on the 1st of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 0.0 feet above the pond invert beginning in May of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Sludge accumulation will be measured at pond drawdown with a probe that can indicate sludge thickness.

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When solids/sludge accumulate to a thickness of 13.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids are removed with a front-end loader, backhoe, or excavator.

**OPERATIONS AND MAINTENANCE PLAN FOR POND: SSB2**

Dry season freeboard monitoring will occur on the 1st of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 0.0 feet above the pond invert beginning in May of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Sludge accumulation will be measured at pond drawdown with a probe that can indicate sludge thickness.

When solids/sludge accumulate to a thickness of 10.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids are removed with a front end loader or excavator.

**OPERATIONS AND MAINTENANCE PLAN FOR POND: WWS**

Dry season freeboard monitoring will occur on the 1st of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 3.0 feet above the pond invert beginning in May of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Sludge accumulation will be measured with a probe that can indicate sludge thickness.

When solids/sludge accumulate to a thickness of 3.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids are removed with a front-end loader, backhoe, or excavator.

**B. RAINFALL COLLECTION SYSTEM MAINTENANCE**

i. Annually, rainfall collection systems will be assessed to ensure:

1. Conveyances are free of debris and operating within designer/manufacturer specifications.
2. Components are properly fastened according to designer/manufacturer specifications.
3. All downspouts and related infrastructure are connected to conveyances that divert water away from manured areas.
4. Water from the rainfall collection system(s) is diverted to an appropriate destination.

<b><i>Buildings with rooftop rainfall collection systems</i></b>	<b>Quantity</b>	<b>Surface Area (sq. ft.)</b>
Animal Shelter - AS1	1	21,375
Animal Shelter - AS2	1	3,850
Animal Shelter - AS3	1	7,750
Animal Shelter - AS4 (proposed free stall barn)	1	85,800

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Animal Shelter - AS5	1	85,800
Commodity Barn	1	10,730
Milking Parlor	1	10,200

Assessment for buildings with rooftop rainfall collection systems will occur on or before: 1st of October

Assessment for other rainfall collections systems will occur on or before: 1st of October

Description of how rainfall collection systems will be assessed:

Gutters, downspouts, and conveyance system will be inspected, cleaned, and prepared as required prior to rain season.

**C. CORRAL MAINTENANCE**

- i. Monthly from June 1st through September 30th (dry season) and weekly from October 1st through May 31st (wet season), the perimeter of the corrals and pens will be assessed to ensure that runoff controls such as berms are functioning correctly, and that all water that contacts waste is collected and diverted into the wastewater retention pond (s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Corrals.
- ii. The corrals will be assessed by the designated date to determine:
  - 1. Whether manure needs to be removed from the corrals based on the owner, operator, and/or designer specified conditions.
  - 2. Whether there are depressions within the corrals that should be filled/groomed to prevent ponding.
- iii. Removal of manure and/or regrading, when necessary, will be completed on or before the designated month/day of each year.

Day of the month dry season assessment will occur: 1st of each month

Day of the week wet season assessment will occur: Monday

Solid manure removal and regrading assessment will occur on or before: 1st of October

Conditions requiring manure removal and/or regrading:

Corrals will be scraped twice per year to remove excess manure and maintain proper runoff conveyance.

Solid manure removal and/or regrading will occur on or before: 1st of November

**D. FEED STORAGE AREA MAINTENANCE**

- i. During the dry season and prior to the wet season, the perimeter of storage areas will be assessed to ensure all runoff controls such as berms are functioning correctly and runoff and leachate from the areas are collected and diverted into the wastewater pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Manure and Feed Storage Areas.
- ii. During the wet season, feed storage area(s) will be assessed to determine if there are depressions within any feed storage area that should be filled or repaired to prevent ponding.
- iii. Any necessary regrading/resurfacing and berm/conveyance maintenance will be completed on an annual basis.

Day of the month dry season assessment will occur: 1st of each month

Day of the week wet season assessment will occur: Monday

Regrading/resurfacing and berm maintenance assessment will occur on or before: 1st of October

Regrading/resurfacing and berm maintenance completion will occur on or before: 1st of November

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**E. SOLID MANURE STORAGE AREA MAINTENANCE**

- i. During the dry season and prior to the wet season, the perimeter of manure storage areas will be assessed to ensure all runoff and runoff controls such as berms are functioning correctly and runoff and leachate from the areas are collected and diverted into the wastewater pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Manure and Feed Storage Areas.
- ii. During the wet season, manure storage area(s) will be assessed to determine if there are depressions within any manure storage area that should be filled to prevent ponding.
- iii. Any necessary regrading/resurfacing and berm/conveyance maintenance will be completed on an annual basis.

Day of the month dry season assessment will occur: 1st of each month

Day of the month wet season assessment will occur: Monday

Regrading/resurfacing and berm maintenance assessment will occur on or before: 1st of September

Regrading/resurfacing and berm maintenance completion will occur on or before: 1st of November

**F. ANIMAL HOUSING AND FLUSH WATER CONVEYANCE SYSTEM MAINTENANCE**

- i. A map will be attached that identifies critical points for monitoring the animal housing and flush water conveyance system to verify that water is being managed as identified in this Waste Management Plan. These points will be maintained at owner, operator, and/or designer specified intervals.

Animal housing area assessment will occur on or before: 1st of October

Animal housing drainage system maintenance will occur on or before: 1st of October

Animal housing area drainage system assessment and maintenance methods:

Animal housing drainage system will be monitored daily and repaired as required.

**G. MORTALITY MANAGEMENT**

- i. Dead animals will be stored, removed, and disposed of properly.

Rendering company or landfill name: Central Valley Hide, Inc.

Rendering company or landfill telephone number: (323) 816-0754

**H. ANIMALS AND SURFACE WATER MANAGEMENT**

- i. A system will be in place, monitored, and maintained to prevent animals from entering any surface waters when a stream or other surface water crosses or adjoins the corral(s).

Does a stream or any other surface water cross or adjoin the corrals?      Yes    No

**I. MONITORING SALT IN ANIMAL RATIONS**

- i. The combined quantity of minerals as salt in animal drinking water and feed rations will be reviewed by a qualified nutritionist on a routine basis to verify that minerals are limited to the amount required to maintain animal health and optimum production. As feed rations change, mineral content may change.

Assessment interval: Annually

**J. CHEMICAL MANAGEMENT**

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- i. Chemicals and other contaminants handled at the facility will not be disposed of in any manure or process wastewater, storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.

Chemical Name	Quantity	Units	Frequency	Usage Area	Destination (Used Chemical / Container)	Disposal Company		Collection Frequency
						Name	Phone	
Acid	215	gallons	year	Milking parlor	Picked up by distributor			
Chlorine	127	gallons	year	Milking parlor	Picked up by distributor			
Iodine	3,000	gallons	year	Milking parlor	Picked up by distributor			
Liquid soap	630	gallons	year	Milking Parlor	Picked up by distributor			

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REQUIRED ATTACHMENTS

The following list, based upon user selections and data entries, describes the minimum required attachments that must be submitted with the Waste Management Plan for the reporting schedule of 'July 1, 2010'.

**A. SITE MAP(S)**

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of the production area including the following in sufficient detail: structures used for animal housing, milk parlor, and other buildings; corrals and ponds; solids separation facilities (settling basins or mechanical separators); other areas where animal wastes are deposited or stored; feed storage areas; drainage flow directions and nearby surface waters; all water supply wells (domestic, irrigation, and barn wells) and groundwater monitoring wells.

Production area map reference number: Exhibit Sheet 3

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of all land application areas (land under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) including the following in sufficient detail: a field identification system (Assessor's Parcel Number; field by name or number; total acreage of each field; crops grown; indication if each field is owned, leased, or used pursuant to a formal agreement); indication of what type of waste is applied (solid manure only, wastewater only, or both solid manure and wastewater); drainage flow direction in each field, nearby surface waters, and storm water discharge points; tailwater and storm water drainage controls; subsurface (tile) drainage systems (including discharge points and lateral extent); irrigation supply wells and groundwater monitoring wells; sampling locations for discharges of storm water and tailwater to surface water from the field.

Application area map reference number: Exhibit Sheet 2

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of all cropland (land that is part of the dairy but not used for dairy waste application) including the following in sufficient detail: Assessor's Parcel Number, total acreage, crops grown, and information on who owns or leases the field. The Waste Management Plan shall indicate if such cropland is covered under the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R5-2006-0053 for Coalition Group or Order No. R5-2006-0054 for Individual Discharger, or updates thereto).

Non-application area map reference number: n/a

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of all off-property domestic wells within 600 feet of the production area or land application area(s) associated with the dairy and the location of all municipal supply wells within 1,500 feet of the production area or land application area(s) associated with the dairy.

Well area map reference number: Exhibit Sheets 2 & 3

Provide a site map (or maps) of appropriate scale to show property boundaries and a vicinity map, north arrow and the date the map was prepared. The map shall be drawn on a published base map (e.g., a topographic map or aerial photo) using an appropriate scale that shows sufficient details of all facilities.

Vicinity map reference number: Exhibit Sheet 1

**B. PROCESS WASTEWATER MAP(S)**

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of the production area including the following in sufficient detail: process wastewater conveyance structures, discharge points, and discharge /mixing points with irrigation water supplies; pumping facilities and flow meter locations; upstream diversion structures, drainage ditches and canals, culverts, drainage controls (berms/levees, etc.), and drainage easements; and any additional components of the waste handling and storage system.

Production infrastructure system area map reference number: Exhibit Sheets 2 & 3

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Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of all land application areas (land under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) including the following in sufficient detail: process wastewater conveyance structures, discharge points and discharge mixing points with irrigation water supplies; pumping facilities; flow meter locations; drainage ditches and canals, culverts, drainage controls (berms, levees, etc.), and drainage easements.

Land application infrastructure system area map reference number: Exhibit Sheet 2

**C. EXCESS PRECIPITATION CONTINGENCY REPORT**

*There were no attachment references entered or required for this attachment section.*

**D. OPERATION AND MAINTENANCE PLAN**

Attach a map that identifies critical points for monitoring the system to verify that water is being managed as identified in this Waste Management Plan (see Attachment B, Pg B-7 V.F, V.G, and V.H for additional requirements).

Animal housing assessment map reference number: Exhibit Sheet 3

**E. FLOOD PROTECTION / INUNDATION REPORT**

Provide an engineering report showing that the facility has adequate flood protection.

Flood zone map and/or document reference number: Sec 3c Fld. Analysis

**F. BACKFLOW PROTECTION**

Attach documentation from a trained professional (i.e. a person certified by the American Backflow Prevention Association, an inspector from a state or local governmental agency who has experience and/or training in backflow prevention, or a consultant with such experience and/or training), as specified in Required Reports and Notices H.1 of Waste Discharge Requirements General Order No. R5-2007-0035, that there are no cross-connections that would allow the backflow of wastewater into a water supply well, irrigation well, or surface water as identified on the Site Map.

Backflow documentation reference number: Sec 3b Backflow form

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CERTIFICATION

**A. DAIRY FACILITY INFORMATION**

Name of dairy or business operating the dairy: Nunes Dairy

Physical address of dairy:

<u>1730 S Healy RD</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address): \_\_\_\_\_

**B. DOCUMENTATION OF QUALIFICATIONS AND PLAN DEVELOPMENT**

*I have reviewed the portion of the waste management plan that is related to storage capacity facility and design specifications in accordance with Item II, Attachment B of the Waste Discharge Requirements General Order for Existing Milk Cow Dairies - Order No. R5-2007-0035 and certify that this plan was prepared by, or under the responsible charge of, and certified by a civil engineer who is registered pursuant to California law or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work.*

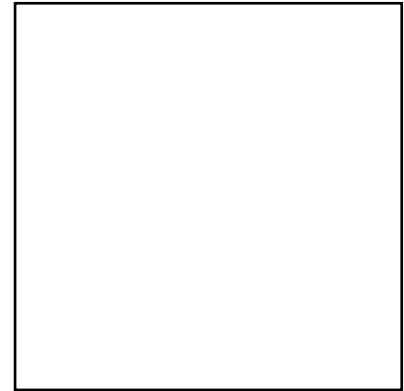
Storage capacity is:

Insufficient

- Retrofitting Plan/Schedule/Design Criteria attached in accordance with Attachment B, II.B. 1-5 and Attachment B, II. C.

Sufficient

- Certification 1 - Certified in accordance with Attachment B, II. A. 1-8. (no contingency plan)
- Certification 2 - Certified in accordance with Attachment B, II. A. 1-8, II. C. (with contingency plan attached)



CIVIL ENGINEER'S WET STAMP

11/21/2019

SIGNATURE OF CIVIL ENGINEER

DATE

Manny Sousa

PRINT OR TYPE NAME

P.O. Box 1613; Oakdale, CA 95361

MAILING ADDRESS

(209) 238-3151

PHONE NUMBER



**Waste Management Plan Report**  
General Order No. R5-2007-0035, Attachment B  
July 1, 2010 deadline

**C. OWNER AND/OR OPERATOR CERTIFICATION**

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

\_\_\_\_\_  
SIGNATURE OF OWNER

\_\_\_\_\_  
SIGNATURE OF OPERATOR

Antonio Nunes

\_\_\_\_\_  
PRINT OR TYPE NAME

\_\_\_\_\_  
PRINT OR TYPE NAME

\_\_\_\_\_  
DATE

\_\_\_\_\_  
DATE



## PRODUCTION AREA DESIGN & CONSTRUCTION REPORT

### PART I: DAIRY FACILITY INFORMATION

A. Name of Dairy or Business Operating the Dairy: \_\_\_\_\_

Physical address of Dairy:

Number and Street	City	County	Zip Code
-------------------	------	--------	----------

B. Operator Name: \_\_\_\_\_ Telephone No: \_\_\_\_\_

Operator mailing address:

Number and Street	City	County	Zip Code
-------------------	------	--------	----------

C. Owner Name: \_\_\_\_\_ Telephone No: \_\_\_\_\_

Owner Mailing Address:

Number and Street	City	County	Zip Code
-------------------	------	--------	----------

### PART II: DESIGN AND CONSTRUCTION DETAILS

#### A. Corrals and Pens

(1) Is all process wastewater collected in the retention pond?  Yes  No

If Yes, describe how (circle all that apply):

ditch   curbs   berm(s)   drainpipe   sumps   pumps   other

Explain how your system works: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If No, describe what is done with it: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(2) Is all run on water (clean precipitation and surface drainage) diverted away from the production area?  Yes  No

If Yes, describe how (circle all that apply):

ditch   curbs   berm(s)   slope   elevation   other

Explain how your system works: \_\_\_\_\_

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If No, identify areas where the run on occurs: \_\_\_\_\_

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If No, identify how the run on is contained: \_\_\_\_\_

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- (3) If run on water has the potential to contact manure and is not contained, explain what modifications or improvements are proposed, and provide a schedule for construction. (Note: a certification of completion must be provided when complete): \_\_\_\_\_

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- (4) Are there areas where water contacting manure stands for more than 72 hours?  Yes  No

If No, explain how standing water is avoided: \_\_\_\_\_

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If Yes, describe what modifications or improvements are proposed, and provide a schedule for construction. (Note: a certification of completion must be provided when complete.): \_\_\_\_\_

A collection sump and pump should be constructed in the corral area southwest of the existing commodity barn to collect and convey wastewater to the wastewater storage ponds.

- (5) Are there conveyance structures such as earthen ditches, bermed channels, or swales where manure water stands for more than 72 hours?  Yes  No

If No, explain how standing water is avoided: \_\_\_\_\_

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If Yes, explain what modifications or improvements are proposed, and provide a schedule for construction. Note: a certification of completion must be provided when complete): \_\_\_\_\_

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**B. Animal Housing Area**

- (1) Is the animal housing area (i.e., barn, shed, milk parlor, paved and unpaved roadways and areas within the production area, etc.) designed, and constructed to drain all water that has contacted animal wastes to the retention pond? Yes No Partially

If Yes, describe how (circle all that apply)

ditch curbs berm(s) slope elevation drainpipe other

Explain how your system works: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If No or Partially, describe the areas not diverted to the retention pond: As shown on Exhibit Sheet 3, Animal Shelter 1 (AS1) and the corral area east of AS1 have areas needing improvementa  
in order to convey all water to the wastewater storage pond.

\_\_\_\_\_

For the areas not diverted to the retention pond, explain what modifications or improvements are proposed, and a schedule for construction. (Note: a certification of completion must be provided when complete): \_\_\_\_\_

east of AS1 will be constructed to collect wastewater and pump it to the retention ponds; and AS1 will require a flush system or regular dry scraping to remove manure from lanes.

\_\_\_\_\_

- (2) Are there any areas, outside of the retention system, where water that has contacted manure stands for more than 72 hours? Yes No

If No, describe how your system works to avoid standing water: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If Yes, explain what modifications or improvements are proposed, and provide a schedule for construction. A certification of completion must be provided when complete: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- (3) Are there conveyance structures such as earthen ditches, bermed channels, or swales where water that has contacted manure stands for more than 72 hours, or where parts of the conveyance system are used for storage of manure water? Yes No

If Yes, explain what modifications or improvements are proposed to prevent this condition, and provide a schedule for construction. (Note: a certification of completion must be provided when complete): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**C. Manure and Feed Storage Area**

- (1) Is all leachate or water that has contacted stored manure, bedding, or feed collected in the retention pond? Yes  No

If Yes, describe how (circle all that apply):

ditch curbs berm(s) drainpipe sumps pumps other

Explain how your system works: \_\_\_\_\_

\_\_\_\_\_

If No, describe where it is collected and what is done with it: \_\_\_\_\_

\_\_\_\_\_

If necessary, explain what modifications or improvements are proposed, and provide a schedule for construction. (Note: a certification of completion must be provided when complete): \_\_\_\_\_

\_\_\_\_\_

- (2) Are there any areas where leachate or water contacting stored manure, bedding, or feed stands for more than 72 hours? Yes  No

If No, describe how standing leachate and water is prevented or handled: \_\_\_\_\_

\_\_\_\_\_

If Yes, explain what modifications or improvements are proposed, and provide a schedule for construction. (Note: a certification of completion must be provided when complete): \_\_\_\_\_

\_\_\_\_\_

- (3) Are there conveyance structures such as earthen ditches, bermed channels, or swales where leachate or water that has contacted stored manure, bedding, or feed stands for more than 72 hours, or are there parts of the system that are used for storage of leachate or manure water? Yes  No

If Yes, explain what modifications or improvements are proposed to prevent this condition, and provide a schedule for construction. (Notes: a certification of completion must be provided when complete): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

I certify that the modifications or improvements identified above or similar alternatives were completed to achieve collection and management of all process wastewater, water that has contacted animal wastes, and runoff and leachate from manure and feed storage areas.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Antonio Nunes  
SIGNATURE OF OWNER

\_\_\_\_\_  
SIGNATURE OF OPERATOR

ANTONIO NUNES  
PRINT OR TYPE NAME

\_\_\_\_\_  
PRINT OR TYPE NAME

1.29.14  
DATE

\_\_\_\_\_  
DATE

**FORM FOR DOCUMENTING BACKFLOW PREVENTION  
UNDER  
WASTE DISCHARGE REQUIREMENTS GENERAL ORDER NO. R5-2007-0035  
FOR  
EXISTING MILK COW DAIRIES**



This form consists of six parts and can be used to document compliance with the requirements in Waste Discharge Requirements General Order No. R5-2007-0035 for owners/operators of existing milk cow dairies (Dischargers) to:

1. Identify cross-connections that would allow the backflow of wastewater into a water supply well, irrigation well, or surface water as identified on the dairy's Site Map;
2. Propose and schedule corrective action to prevent backflow of wastewater into a water supply well, irrigation well, or surface water as identified on the dairy's Site Map; and/or
3. Document there are no cross-connections that would allow the backflow of wastewater into a water supply well, irrigation well, or surface water as identified on the dairy's Site Map.

The Discharger must complete this form except for Parts IV and V, which are to be completed by a trained professional<sup>1</sup>. Both the owner and the operator of the dairy must sign the certification statement in Part VI. Additional sheets may be attached as necessary to complete Parts I, II, and III.

A Site Map must be attached to this form that shows all water supply wells, irrigation wells, and surface water bodies in the dairy's Production Area and all Land Application Areas that are under the Discharger's control. The Site Map must also show all wastewater conveyance structures, wastewater discharge points to surface water, and where wastewater is mixed/blended with fresh irrigation water in these areas. Each of these locations must be identified by a name or number and listed in Part II below. Completion of Part II will identify how backflow can or does occur at each location and any current backflow preventive measures.

**PART I: DAIRY FACILITY INFORMATION**

A. Name of Dairy or Business Operating the Dairy: Nunes Dairy

Physical address of Dairy:

<u>1730 S. Healy Road</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

B. Operator Name: Antonio Nunes Telephone No: (209) 384-0948

Operator mailing address:

<u>1730 S. Healy Road</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

C. Owner Name: Antonio & Filomena Nunes Telephone No: (209) 384-0948

Owner Mailing Address:

<u>1730 S. Healy Road</u>	<u>Merced</u>	<u>Merced</u>	<u>95340</u>
Number and Street	City	County	Zip Code

<sup>1</sup> A trained professional could be a person certified by the American Backflow Prevention Association, an inspector for a state or local governmental agency who has experience and/or training in backflow prevention, or a consultant with such experience and/or training.





**FORM FOR DOCUMENTING BACKFLOW PREVENTION  
UNDER  
WASTE DISCHARGE REQUIREMENTS GENERAL ORDER NO. R5-2007-0035  
FOR  
EXISTING MILK COW DAIRIES**



**PART III: PROPOSED BACKFLOW CORRECTIVE ACTIONS AND SCHEDULE (due by 1 July 2008)**

For each location identified in Part II above where there is currently no backflow prevention, the table below identifies:

- a. The method proposed to be implemented that will prevent backflow, and
- b. A schedule to install the preventive measure.

If there are no current or potential backflow problems identified in Part II above, this Part does not need to be completed.

Location With No Current Backflow Prevention	Proposed Backflow Prevention Method	Schedule to Install Proposed Backflow Prevention Method

**PART IV: DOCUMENTATION OF EXISTING BACKFLOW CONDITIONS AND PROPOSED BACKFLOW PREVENTION METHODS (due by 1 July 2008)**

*As a trained professional in backflow prevention, I certify that, based on the information provided to me by the Discharger named above and my personal examination of the wastewater system, the above information in Part II above is true, accurate, and complete and the proposed backflow prevention method in Part III above will be effective to prevent the backflow of wastewater into a water supply well, irrigation well, or surface water at the dairy named in Part I above.*

\_\_\_\_\_  
QUALIFICATIONS OF TRAINED PROFESSIONAL (EDUCATION AND/OR EXPERIENCE)

\_\_\_\_\_  
SIGNATURE OF TRAINED PROFESSIONAL

\_\_\_\_\_  
DATE

\_\_\_\_\_  
PRINT OR TYPE NAME

FORM FOR DOCUMENTING BACKFLOW PREVENTION  
UNDER  
WASTE DISCHARGE REQUIREMENTS GENERAL ORDER NO. R5-2007-0035  
FOR  
EXISTING MILK COW DAIRIES



**PART V: DOCUMENTATION THAT THERE ARE NO CROSS-CONNECTIONS THAT WOULD ALLOW THE BACKFLOW OF WASTEWATER INTO A WATER SUPPLY WELL, IRRIGATION WELL, OR SURFACE WATER (due by 1 July 2009)**

*As a trained professional in backflow prevention, I certify that, based on the information provided to me by the Discharger named in Part I above and my personal examination of the wastewater system, that the backflow prevention methods proposed in Part III above (if any) have been completed, and/or there are currently no cross-connections that would allow the backflow of wastewater into a water supply well, irrigation well, or surface water at the dairy named in Part I above.*

CA Registered Civil Engineer No. 65379

QUALIFICATIONS OF TRAINED PROFESSIONAL (EDUCATION AND/OR EXPERIENCE)

*Manuel R. Sousa*

*1.29.16*

SIGNATURE OF TRAINED PROFESSIONAL

DATE

Manny Sousa

PRINT OR TYPE NAME

**PART VI: OWNER AND/OR OPERATOR CERTIFICATION**

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

*Antonio Nunes*

SIGNATURE OF OWNER

SIGNATURE OF OPERATOR

*ANTONIO NUNES*

PRINT OR TYPE NAME

PRINT OR TYPE NAME

*1.29.16*

DATE

DATE



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ENGINEERING**

INFRASTRUCTURE-DEVELOPMENT-  
AGRICULTURE

PO BOX 1613  
OAKDALE, CA 95361  
PHONE: (209)238-3151  
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**FLOOD PROTECTON ANALYSIS  
FOR  
ANTONIO NUNES DAIRY  
MERCED COUNTY, CA**

**TABLE OF CONTENTS**

1. **Introduction / Project Overview**
2. **Determination of Elevations of Dairy Production Area**
3. **Determination of Levels of Flood Protection and Inundation**
4. **Exhibits**
  - a. **Vicinity Map**
  - b. **FIRM Panel No. 06047C0445G**
  - c. **Existing Topography – Existing and Proposed Improvements**



*Manuel R. Sousa*

## **INTRODUCTION / PROJECT OVERVIEW**

---

This analysis has been prepared to accompany an application for the proposed expansion of the existing Nunes Dairy facility in Merced County, CA. A Waste Management Plan (WMP) describing the generation and management of dairy wastewater under the proposed expanded conditions must be prepared in accordance with Merced County and Central Valley Regional Water Quality Control Board (CVRWQCB) requirements. CVRWQCB General Order No. R5-20013-0122, *Reissued Waste Discharge Requirements General Order for Existing Milk Cow Dairies*, (Order) was adopted by the California Regional Water Quality Control Board (CRWQCB) Central Valley Region in 2013 and establishes the criteria for preparation of the WMP.

Per the requirements set forth by the aforementioned Order each existing milk cow dairy in the Central Valley Region that is located in an area subject to inundation from the prescribed flood event must have or must construct improvements that provide protection from that flood event. More particularly the aforementioned Order states the following:

**General Specification B.2:** *“In the Sacramento and San Joaquin River Basins, ponds and manured areas at existing milk cow dairies in operation on or before 27 November 1984 shall be protected from inundation or washout by overflow from any stream channel during 20-year peak stream flows. Existing milk cow dairies that were in operation on or before 27 November 1984 and that are protected against 100-year peak stream flows must continue to provide such protection.*

*Existing milk cow dairies built or expanded after 27 November 1984 shall be protected against 100-year peak stream flows (Title 27 Section 22562(c)).”*

Given the proposed expansion of this existing dairy facility it will be required to provide protection against 100-year peak stream flows.

The above referenced section of Title 27 (Section 22562 of Chapter 7, Subchapter 2) also states the following criterion in its item (3):

*“The determination of peak stream flows shall be from data provided by a recognized federal, state, local, or other agency.”*

The source of flood information for this analysis is Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) Flood Insurance Studies (FISs). FIRMs and FISs are industry standard sources of flood information for engineers, scientists, lending institutions, and other industries with a vested interest in the location of real property as it relates to areas subject to flood inundation.

The existing Dairy Production Area (DPA) lies within a FEMA Zone AO 1', or an area determined to be subject to 1' of inundation by the 100-year flood event. It is the intent of this analysis to do the following:

1. Determine the elevations of existing Dairy Production Area (DPA) improvements relative to the surrounding area.
  - a. If the DPA is currently protected from inundation by the design storm event, then the extent of this protection will be demonstrated.
  - b. If the DPA is not protected from inundation by the design storm event, then the extent of

inundation will be demonstrated.

2. If portions of the existing and proposed DPA are determined not to be protected from the design storm event by existing conditions, then a plan for constructing improvements to provide adequate protection will be developed.

Neither this analysis nor any of the information contained herein represent a certificate of elevation or Letter of Map Revision or Amendment (LOMR / LOMA) for the project site.

## **DETERMINATION OF ELEVATIONS DAIRY PRODUCTION AREA**

An engineering survey was performed in order to determine the actual existing elevations of facilities within the DPA relative to the estimated flood elevation. Elevations outside of the DPA along its perimeter were also obtained in order to determine any difference in elevation between the DPA and the surrounding area. A three dimensional model of the existing terrain was generated using the engineering survey data. Contours of that model are shown on Exhibit C, Existing Topography – Existing and Proposed Improvements.

It is apparent upon visual inspection that the DPA was raised significantly above existing grade during construction. Portions of the facility were raised approximately 6' and this was verified by the survey data. As shown on Exhibit C, Existing Topography – Existing and Proposed Improvements, the elevations of the DPA are consistently above those of the surrounding area, with elevation differences ranging from 2' to 6'. In general the elevations of the area of the DPA are between 177' to 182', or 2' to 7' above the elevations of the surrounding area.

## **DETERMINATION OF LEVELS OF FLOOD PROTECTION AND INUNDATION**

Zones AO are defined as “*areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet.*” For this site the designated inundation depth is 1’, and the depth is determined from “*existing natural grade*”.

As discussed in the previous section the existing DPA has been elevated to elevations between 177’ to 182’. The existing natural grade at unimproved areas around the perimeter of the DPA ranges from 175’ to 177’ as shown on Exhibit C, Existing Topography – Existing and Proposed Improvements. Thus the DPA appears to have been elevated by 2’ to 7’ above existing natural grade.

Based on this information it appears the DPA has adequate flood protection in accordance with General Specification B.2. of the General Order. No further improvements are recommended.

## **EXHIBITS**

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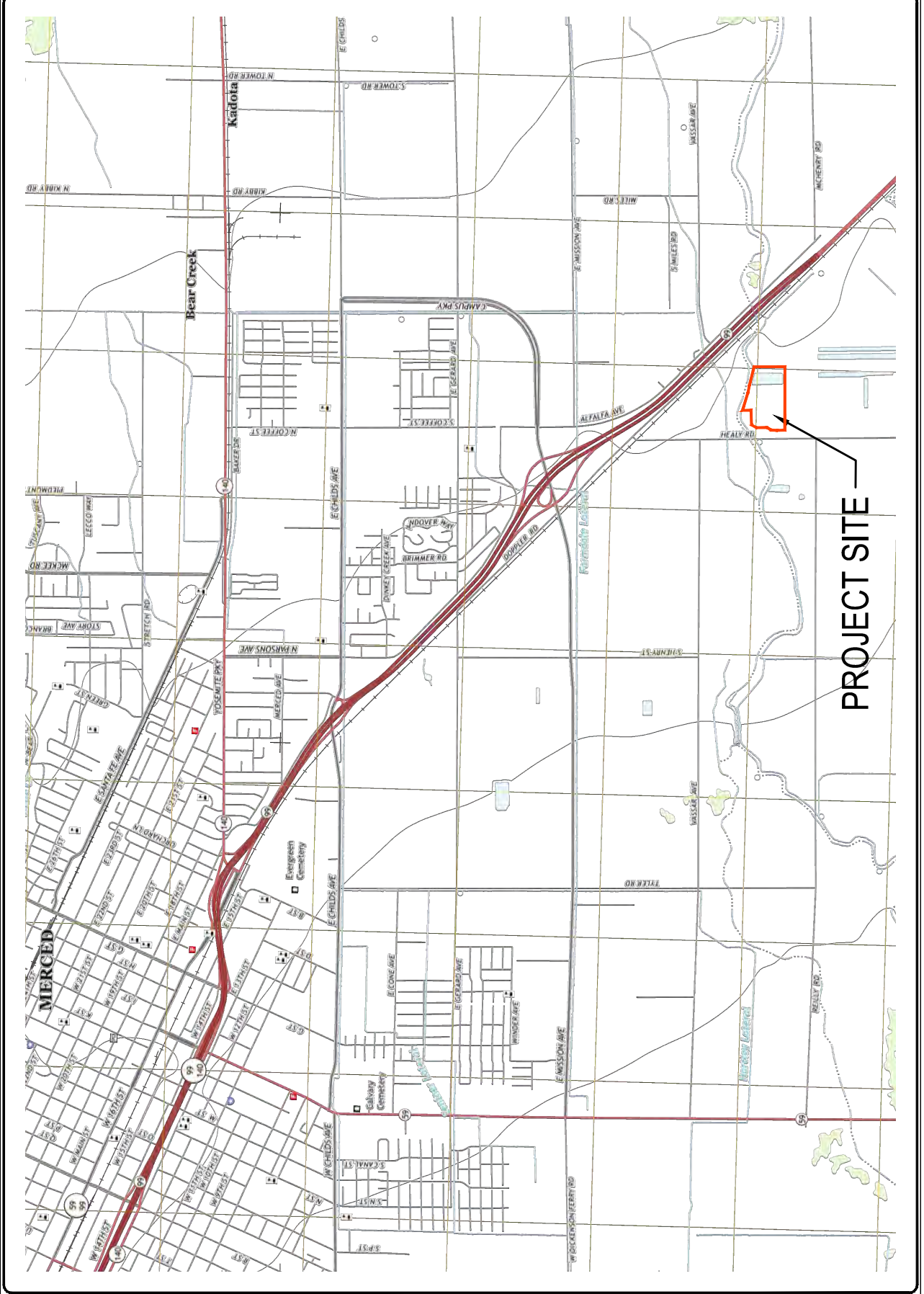
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FILE NO.	150404
JOB NO.	150404
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TITLE	

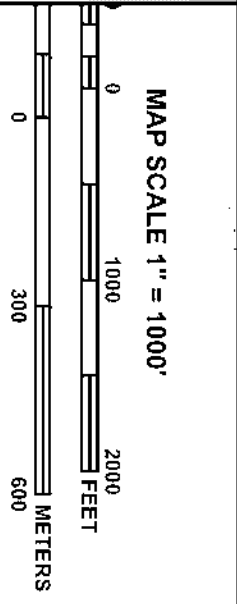
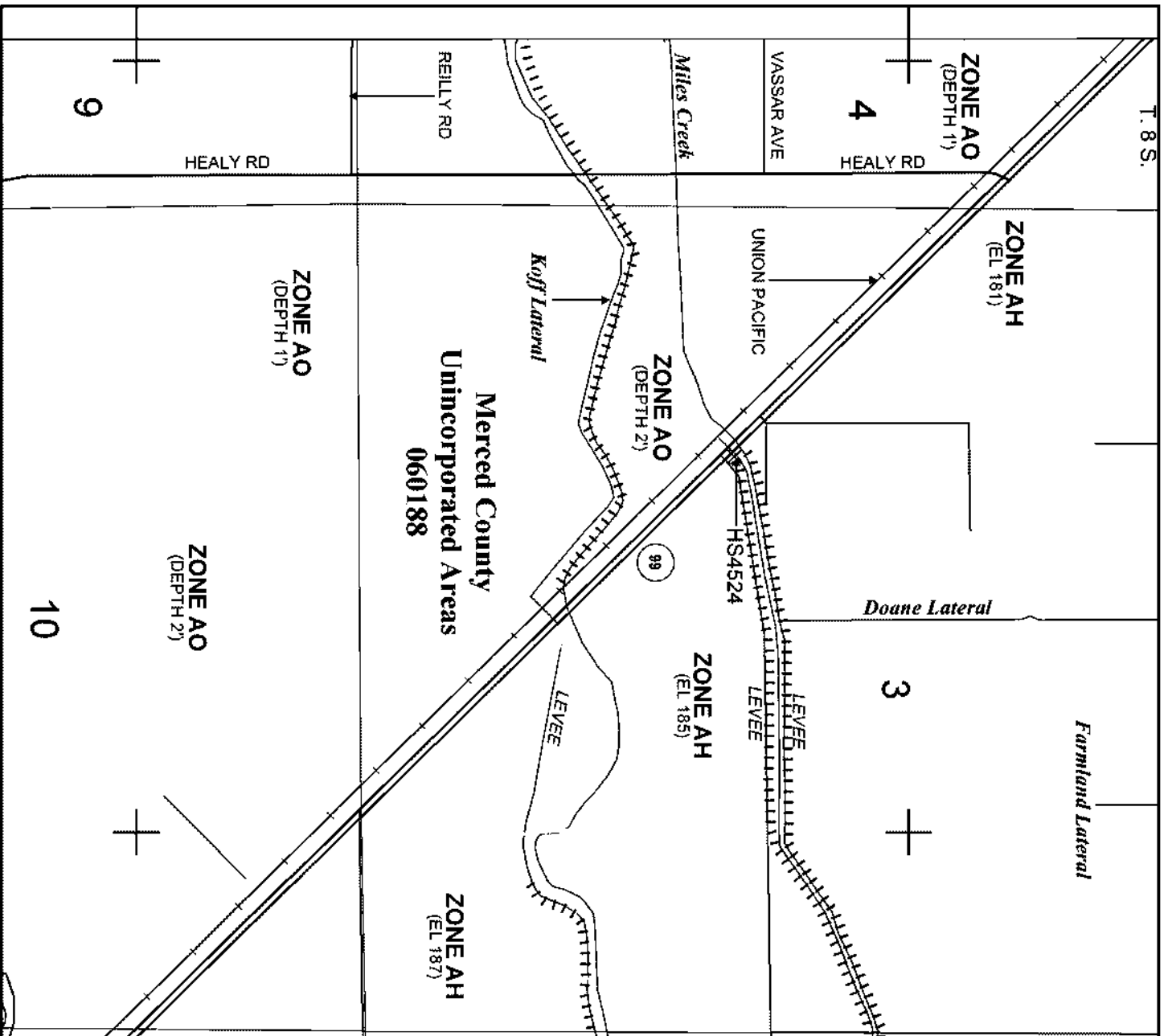
ANTONIO NUNES DAIRY  
 EXHIBIT A  
 VICINITY MAP  
 CA  
 MERCED COUNTY,



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 WWW.SOUSAENG.COM  
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 OAKDALE, CA 95361

SHEET 1 OF 3





**NATIONAL FLOOD INSURANCE PROGRAM**

**NFIP**

PANEL 0445G

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**MERCED COUNTY,**  
**CALIFORNIA**  
**AND INCORPORATED AREAS**  
**PANEL 445 OF 1225**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MERCED CITY OF	060191	0445	G
MERCED COUNTY	060188	0445	G

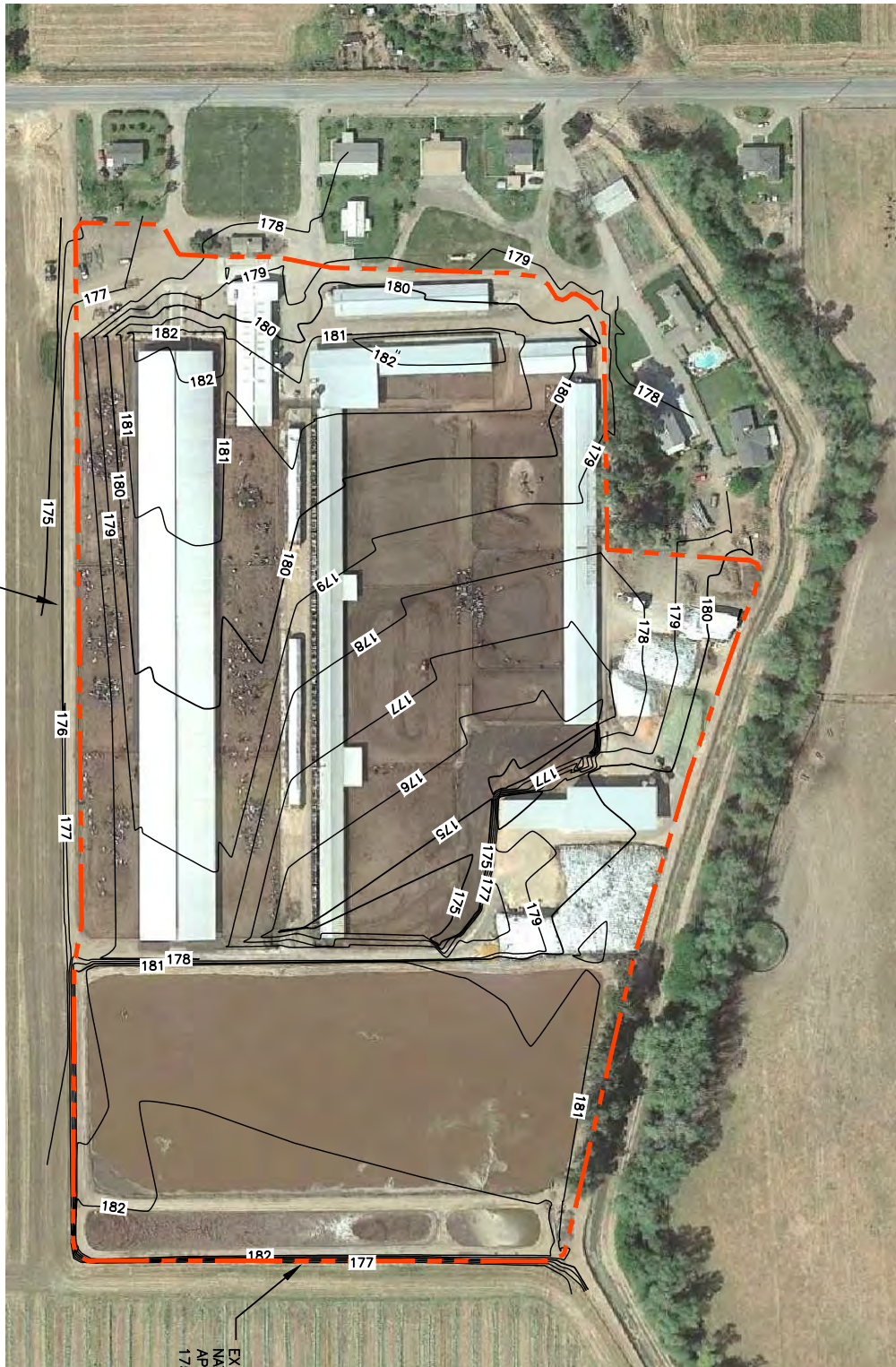
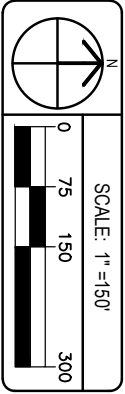
Notice to User: The Map Number above should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**06047C0445G**  
**MAP REVISED**  
**DECEMBER 2, 2008**



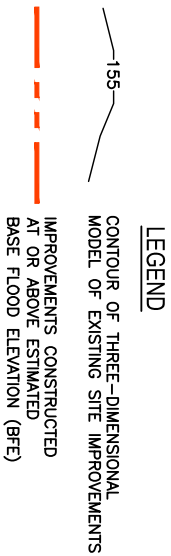
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



EXISTING NATURAL  
GRADE, APPROXIMATELY  
175 TO 177'

EXISTING  
NATURAL GRADE,  
APPROXIMATELY  
175 TO 177'



**LEGEND**

DRAWN BY: MS		
DATE: 12/27/2015		
FILE: 03_survey.dwg		
JOB NO.: 2015-041		
REVISIONS		
SYMBOL	DESCRIPTION	APPD.

EXHIBIT C  
EXISTING TOPOGRAPHY -  
EXISTING AND PROPOSED  
IMPROVEMENTS  
ANTONIO NUNES DAIRY  
MERCED COUNTY, CA

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**VECTOR CONTROL PLAN  
FOR  
ANTONIO NUNES DAIRY  
MERCED COUNTY, CA**

**TABLE OF CONTENTS**

- 1. INTRODUCTION**
- 2. BEST MANAGEMENT PRACTICES**
  - a. Land Application Areas
  - b. Dairy Production Area (DPA)
- 3. CONTACT INFORMATION**

## 1. INTRODUCTION

---

Vector control is an important aspect of disease prevention and public health. Without proper management, agricultural production facilities can create or enhance opportunities for vectors to develop and proliferate. Certain land management practices can reduce vector populations thereby reducing long-term vector treatment costs, reducing the amount of pesticides used in vector control operations, helping to protect public health, and contributing to an integrated pest management (IPM) approach to vector control.

Integrated Pest Management is an approach that focuses on site-specific, scientifically sound decisions to manage pest populations by matching a wide variety of techniques with the conditions found on site. These techniques are commonly grouped into four categories:

1. Source reduction or physical control—environmental manipulation that results in a reduction of vector development sites.
2. Biological Control—use of biological agents to limit vector populations
3. Chemical Control—larvicides (materials that kill immature larval vectors and mosquitoes) and adulticides (materials that kill adult vectors and mosquitoes)
4. Cultural Control—change the behavior of people so that their actions prevent the development of vectors or the transmission of vector-borne disease.

Through the adoption of these policies and procedures, this Plan will provide an outline to effectively control vectors by physical, cultural, and biological means.

The Vector Reduction Best Management Practices (BMPs) referred to in this document are the recommended land management practices that can provide a reduction in vector populations by various means including: reducing or eliminating breeding areas, increasing the efficacy of biological controls, increasing the efficacy of chemical controls, and improving access for control operations.

While it is generally accepted that vector production from all sources may be reduced through the widespread implementation of vector Reduction BMPs, these policies specifically target the most severe vector problems with the greatest likelihood of responding through the use of BMPs.

## 2. BEST MANAGEMENT PRACTICES (BMPs)

- a. **Land Application Areas:** for Land Application Areas, the following are areas of concern and recommended BMPs for vector control:

### Common Vector Development Areas

- Vegetated ditches
- Seepage or flooding of fallow fields
- Irrigation tail water return sumps
- Blocked ditches or culverts
- Leaky water control structures
- Irrigated pastures
- Low areas caused by improper grading
- Broken or leaky irrigation pipes or valves

### Special Concerns

Agricultural practices vary among growers, locations, and conventional or organic production methods. Pesticide regulations can affect the ability to use chemical control. The Best Management Practices below are offered as tools to balance the economic and agronomic requirements of the growers and land owners with the need for effective vector control.

### General Vector Reduction Principles

1. Prevent or eliminate unnecessary standing water that stands for more than 72 –96 hours during mosquito season which can start as early as March and extend through October depending on weather.
2. Maintain access for Abatement District staff to monitor and treat mosquito breeding sources.
3. Minimize emergent vegetation and surface debris on the water.
4. Inspect Common Vector Development Areas monthly for evidence of presence of vectors.
5. Contact the County Department of Environmental Health or Mosquito Abatement District for technical guidance or assistance in implementing vector reduction BMPs.

### **Vector Reduction BMPs for Land Application Areas**

#### Ditches and Drains

**DD-1** Construct or improve ditches with at least 2:1 slopes and a minimum 4-foot bottom. Consider a 3:1 slope or greater to discourage burrowing animal damage, potential seepage problems, and prevent unwanted vegetation growth. Other designs may be approved by the MVCD based on special circumstances.

**DD-2** Keep ditches clean and well-maintained. Periodically remove accumulated sediment and vegetation. Maintain ditch grade to prevent areas of standing water.

**DD-3** Design irrigation systems to use water efficiently and drain completely to avoid standing water.

#### Irrigated Pastures

**IP-1** Grade field to achieve efficient use of irrigation water. Use NRCS guidelines for irrigated pastures. Initial laser leveling and periodic maintenance to repair damaged areas are needed to maintain efficient water flow.

**IP-2** Irrigate only as frequently as is needed to maintain proper soil moisture. Check soil moisture regularly until you know how your pasture behaves

**IP-3** Do not over fertilize. Excess fertilizers can leach into irrigation tail water, making mosquito production more likely in ditches or further downstream

**IP-4** Apply only enough water to wet the soil to the depth of rooting.

**IP-5** Drain excess water from the pasture within 24 hours following each irrigation. This prevents scalding and reduces the number of weeds in the pasture. good check slopes are needed to achieve drainage. A drainage ditch may be used to remove water from the lower end of the field.

**IP-6** Inspect fields for drainage and broken checks to see whether re-leveling or reconstruction of levees is needed. Small low areas that hold water can be filled and replanted by hand. Broken checks create cross-leakage that provide habitat for vectors.

**IP-7** Keep animals off the pasture while the soil is soft. An ideal mosquito habitat is created in irrigated pastures when water collects in hoof prints of livestock that were run on wet fields or left in the field during irrigation. Keeping animals off wet fields until soils stiffen also protects the roots of the forage crop and prevents soil compaction that interferes with plant growth.

**IP-8** Break up pastures into smaller fields so that the animals can be rotated from one field to another. This allows fields to dry between irrigations and provides a sufficient growth period between grazings. It also prevents hoof damage (pugging), increases production from irrigated pastures, and helps improve water penetration into the soil by promoting a better root system.

**b. Dairy Production Area (DPA):** for the Dairy Production Area, the following are areas of concern and recommended BMPs for vector control:

#### Common Vector Development Areas

- Wastewater lagoons

- Animal washing areas
- Drain ditches
- Sumps/ponds
- Watering troughs
- Corrals
- Milk barn
- Calf areas
- Free stalls and flush lanes
- Shades
- Feed storage and feeding areas

#### Special Concerns

Dairy and associated agricultural practices vary; however, these practices need to consider mosquito and vector control issues. The Best Management Practices for Vector Reduction below offer options to balance the requirements of the dairy operators with the need for effective vector control.

#### General Vector Control Principles

1. Prevent or eliminate unnecessary standing water that remains for more than 72 –96 hours during mosquito season which can start as early as March and extend through October depending on weather.
2. Maintain access for Abatement District staff to monitor and treat mosquito breeding sources.
3. Minimize emergent vegetation and surface debris on the water.
4. Inspect Common Vector Development Areas monthly for evidence of presence of vectors.
5. Contact the County Department of Environmental Health or Mosquito Abatement District for technical guidance or assistance in implementing vector reduction BMPs.

#### **Vector Reduction BMPs for Dairy Production Area**

- DA-1 All holding ponds should be surrounded by lanes of adequate width to allow safe passage of vector control equipment. This includes keeping the lanes clear of any materials or equipment (e.g. trees, calf pens, hay stacks, silage, tires, equipment, etc.).
- DA-2 If fencing is used around the holding ponds, it should be placed on the outside of the lanes with gates provided for vehicle access.
- DA-3 It is recommended that all interior banks of the holding ponds should have a grade of at least 2:1.
- DA-4 An effective solids separation system should be utilized such as a mechanical separator or two or more solids separator ponds. If ponds are used, they should not exceed sixty feet in surface width.



- DA-5 Drainage lines should not by-pass the separator ponds whenever possible, except those that provide for normal corral run-off and do not contain solids. All drain inlets must be sufficiently graded to prevent solids accumulation.
- DA-6 Floating debris should be minimized in all ponds; mechanical agitators may be used to break up crusts.
- DA-7 Vegetation should be controlled regularly to prevent emergent vegetation and barriers to access. This includes access lanes, interior pond embankments and any weed growth that might become established within the pond surface.
- DA-8 Dairy wastewater discharged for irrigation purposes should be managed so that it does not stand for more than three days.
- DA-9 All structures and water management practices should meet current California Regional Water Quality Control Board requirements.
- DA-10 Tire sidewalls or other objects that will not hold water should be used to hold down tarps (e.g. on silage piles). Whole tires or other water-holding objects should be replaced.

### 3. **CONTACT INFORMATION**

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