

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Jonah Aiyabei, AQE – Permit Services

From: David Garner – Technical Services

Date: March 12, 2007

Facility Name:

Location:

Application #(s):

Project #:

A. RMR SUMMARY

Categories	Milk Parlor (1-2)	Cow Housing (2-1)	Liquid Manure (3-1)	Solid Manure ¹ (4-1)	Project Totals	Facility Totals ²
Prioritization Score	0.4	39.1	26.6	NA ¹	66.1	66.1
Acute Hazard Index	0.01	1.00	0.27	NA ¹	1.28 ³	1.28
Chronic Hazard Index	0.00	0.45	0.03	NA ¹	0.48	0.48
Maximum Individual Cancer Risk (10⁻⁶)	0.09	5.14 ⁴	0.98	NA ¹	6.21	6.21
T-BACT Required?	No	Yes	No	No	Yes	
Special Permit Conditions?	No	No	No	No	No	

¹ Unit 4-1, Solid Manure Handling, was not modeled since the District has not developed toxic emission factors for this process.

² Facility totals do not include health risks associated with the existing dairy.

³ The acute hazard index is greater than one, therefore the project fails as proposed.

⁴ **T-BACT is required for this unit because of emissions of hexavalent chromium, which is a PM₁₀**

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Unit # 1-1, 2-1, 3-1 & 4-1

No special conditions are required.

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B. RMR REPORT

I. Project Description

Technical Services received a request on March 8, 2007, to perform a Risk Management Review and Ambient Air Quality Analysis for a proposed modification to a dairy. The modification consisted of an increase in cows by the following the numbers: 2,025 milk cows; 282 dry cows; 2,475 heifers and 140 calves. Cow housing and waste disposal will be expanded to accommodate the increase in livestock.

Per the engineering HRA request form, three residences were identified on the plans supplied by the applicant. In addition, one residence was identified near the southwest corner of the proposed dairy using a satellite image. These are the only residential receptors considered in this analysis. No worksite receptors were identified by the applicant, so worksite receptors were assumed at the property boundary.

II. Analysis

RMR. Technical Services performed a risk management review using the Dairy Air Toxics Spreadsheet. The cumulative prioritization scores were greater than 1.0, thus modeling was conducted using AERMOD. For this, the parameters outlined below and meteorological data for 2004 from Hanford were used to determine the maximum dispersion factor at the nearest residential and business receptors.

Analysis Parameters S-6036 Project 1053073			
Total Cows		4,922	
Total VOC Increase lb/yr	36,989	Total VOC Increase lb/hr	4.2
Total NH3 Increase lb/yr	247,561	Total NH3 Increase lb/hr	28.3
Total PM10 Increase lb/yr	11,098	Total PM10 Increase lb/hr	1.3

Analysis Parameters Unit 1-1 Milk Parlor			
Source Type	Area	Location Type	Rural
Approx. Area (m ²)	3,352	Closest Receptor (m)	10
Release Height (m)	1	Type of Receptor	Business

Analysis Parameters Unit 2-1 Cow Housing			
Source Type	Area	Location Type	Rural
Approx. Area (m ²)	240,610	Closest Receptor (m)	10
Release Height (m)	1	Type of Receptor	Business

Analysis Parameters Unit 3-1 Liquid Manure Handling			
Source Type	Area	Location Type	Rural
Approx. Area (m ²)	52,579	Closest Receptor (m)	10
Release Height (m)	0	Type of Receptor	Business

Note: Unit 4-1, Solid Manure Handling, was not modeled since the District has not developed toxic emission factors for this process.

The following table summarizes health risk calculated at the four residential receptors identified as well as risk to offsite workers at the facility fence line:

Receptor	On/Off Site	Risk		
		Cancer (x 10 ⁻⁶)	Chronic	Acute
1 (resident)	On	6.21 ¹	0.29	0.63
2 (resident)	On	5.64 ¹	0.28	0.58
3 (resident)	Off	4.58 ¹	0.10	0.78
4 (resident)	Off	1.73 ¹	0.08	0.21
161 (worker)	Off	3.09 ¹	0.34	1.06 ²
151 (worker)	Off	0.17	0.45	0.43
262 (worker)	Off	2.58 ¹	0.34	1.28 ²

¹Cancer risk exceeds the de minimis of 1 in a million, but is less than 10 in a million. Projects with this level of cancer risk can proceed with TBACT.

²Acute hazard index exceeds the threshold value of 1.0. Projects with this level of acute risk cannot proceed.

AAQA. In addition to the RMR, Technical Services performed modeling for the criteria pollutant PM₁₀ using AERMOD. The emission rate used was 11,098 lb PM₁₀/year, and these emissions were assumed to occur uniformly over the areas identified cow housing. The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results

Values are in µg/m³

Category	1 Hour	3 Hours	8 Hours.	24 Hours
PM ₁₀	X	X	X	17.8
Localized Significance Threshold	X	X	X	10.4
Result	X	X	X	Fail ¹

¹The District's Localized Significance Threshold for fugitive emissions of PM₁₀ is 10.4 µg per cubic meter on a 24 hour average. Thresholds for non-fugitive emissions are established by EPA as found in 40 CFR Part 51.165 (b)(2).

III. Conclusion

RMR. The chronic hazard index is below 1.0 and the cancer risk associated with the dairy is greater than 1.0 in a million, but less than 10 in a million; however the acute hazard index is greater than 1.0. **In accordance with the District's Risk Management Policy, the project fails as proposed.**

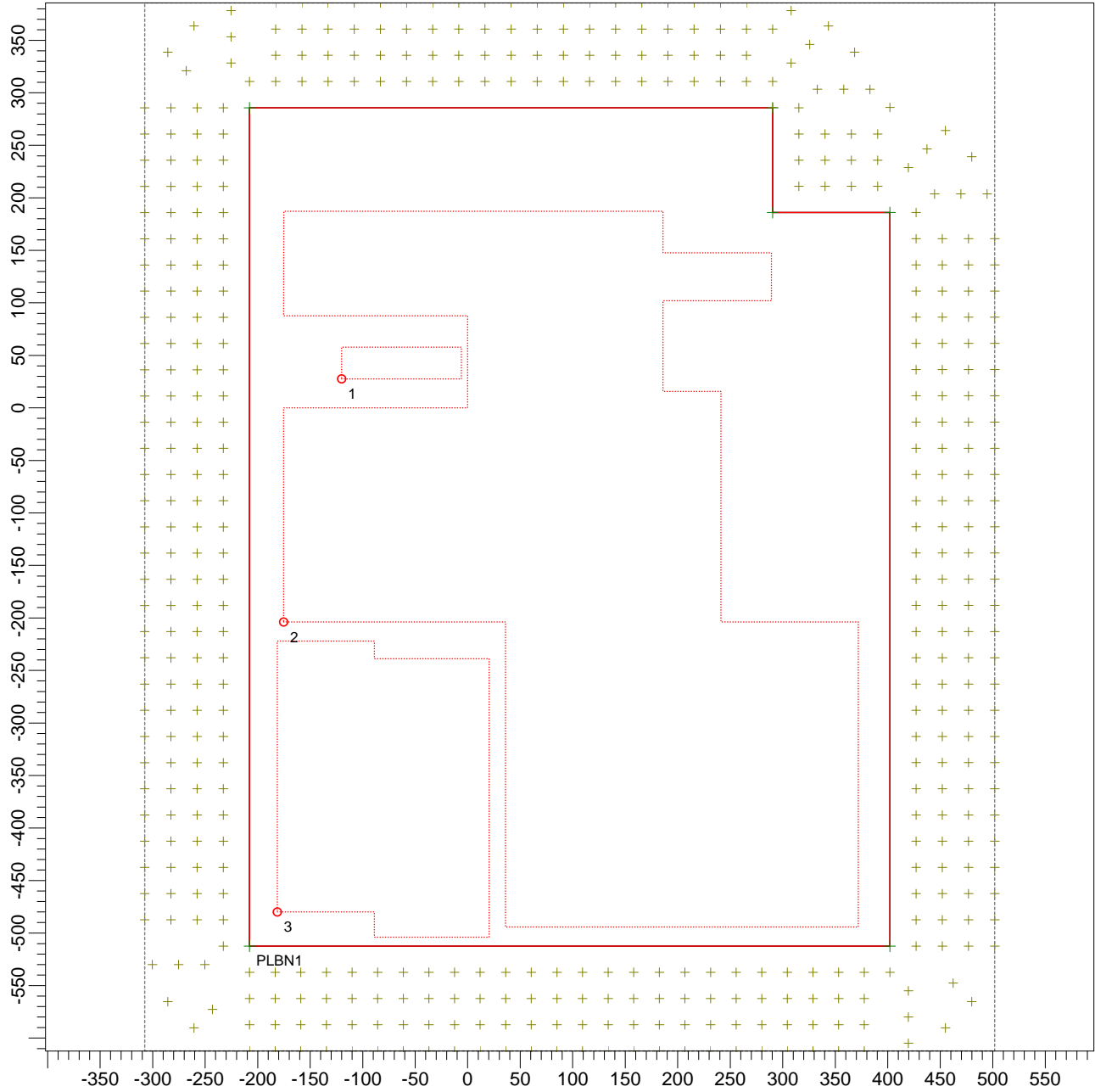
AAQA. The PM₁₀ emissions from the proposed dairy modification exceed the 24 hour Localized Significance Threshold established by the District.

Attachments:

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Prioritization score with toxic emissions summary
- D. Dairy Worksheets

PROJECT TITLE:

Worker Receptors



COMMENTS:

SOURCES:

3

COMPANY NAME:

RECEPTORS:

476

MODELER:

SCALE:

1:6,092

0



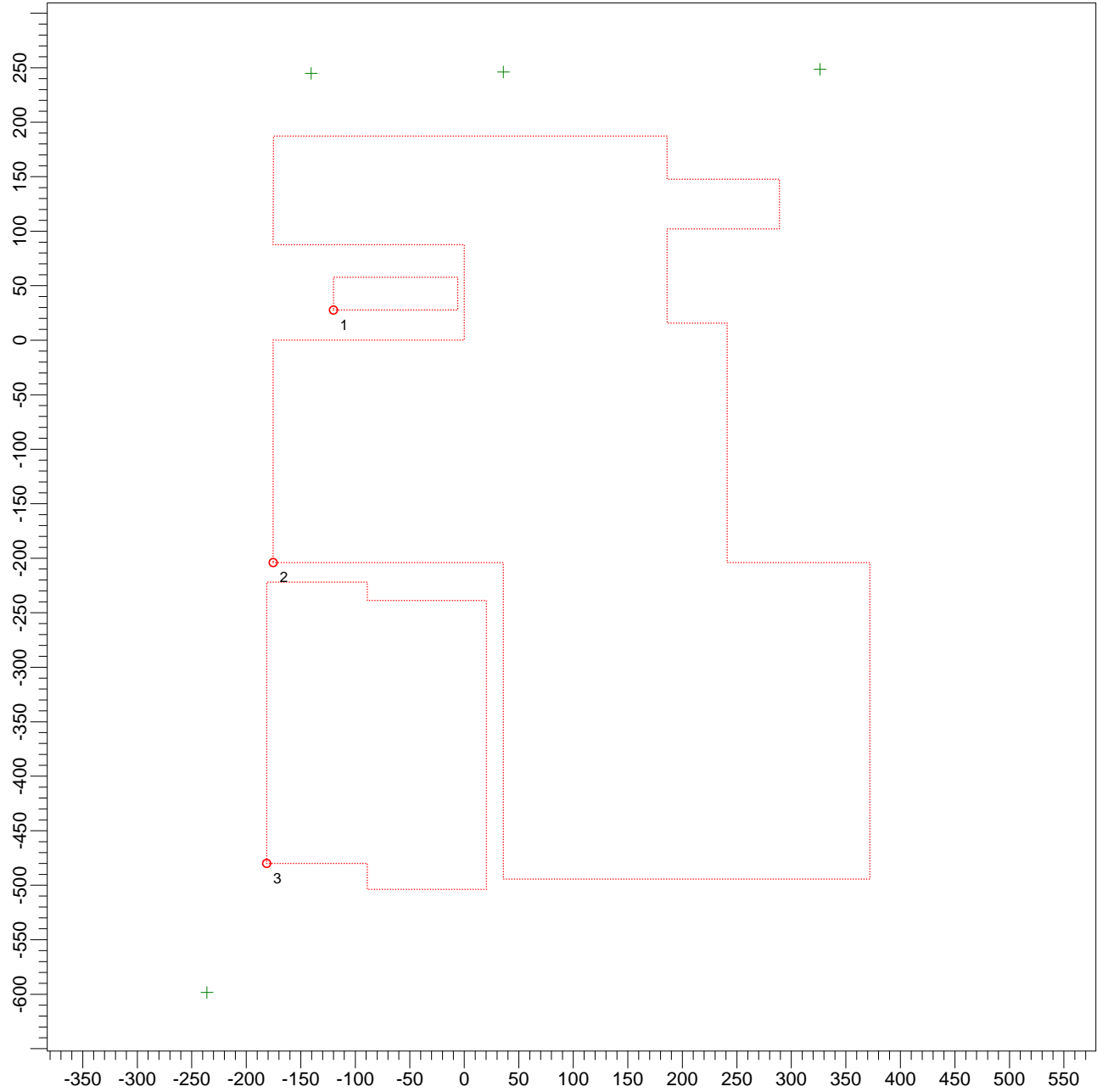
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DATE:

4/18/2008

PROJECT NO.:

PROJECT TITLE:



COMMENTS:

SOURCES:

COMPANY NAME:

3

RECEPTORS:

MODELER:

4

SCALE:

1:5,870

0  0.2 km

DATE:

4/18/2008

PROJECT NO.: