DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
1010 10TH Street, Suite 3400, Modesto, CA 95354
Planning Phone: (209) 525-6330 Fax: (209) 525-5911
Building Phone: (209) 525-6557 Fax: (209) 525-7759

CEQA Referral Initial Study And Notice of Intent to Adopt a Mitigated Negative Declaration

Date:	**March 15, 2024**
To:	**Distribution List (See Attachment A)**
From:	**Emily DeAnda, Associate Planner Planning and Community Development**
Subject:	**USE PERMIT APPLICATION NO. PLN2021-0104 – KOOISTRA DAIRY**
Comment Period:	**March 15, 2024 – April 17, 2024**
Respond By:	**April 17, 2024**
Public Hearing Date:	**May 2, 2024**
Time:	**6:00 P.M.**
Location:	**Tenth Street Place 1010 10th Street, Modesto, CA 95354 Chambers – Basement Level**

You may have previously received an Early Consultation Notice regarding this project, and your comments, if provided, were incorporated into the Initial Study. Based on all comments received, Stanislaus County anticipates adopting a Mitigated Negative Declaration for this project. This referral provides notice of a 30-day comment period during which Responsible and Trustee Agencies and other interested parties may provide comments to this Department regarding our proposal to adopt the Mitigated Negative Declaration.

All applicable project documents are available for review at: Stanislaus County Department of Planning and Community Development, 1010 10th Street, Suite 3400, Modesto, CA 95354. Please provide any additional comments to the above address or call us at (209) 525-6330 if you have any questions. Thank you.

Applicant:	**Sam and Cynthia Kooistra, Kooistra Dairy**
Project Location:	**5831 and 5837 Hultberg Road, between Ehrlich and Bradbury Roads, northwest of the Merced County border, in the Turlock area.**
APN:	**057-017-005**
Williamson Act Contract:	**N/A**
General Plan:	**Agriculture**
Current Zoning:	**General Agriculture (A-2-40)**

Project Description: **Request to expand the herd of an existing dairy facility on a 19.11± acre parcel in the General Agricultural (A-2-40) zoning district. The applicant proposes to expand the heard from 436 to 1,000 mature cows, which includes an increase of 425 milk and 139 dry cows.**

Full document with attachments available for viewing at:
http://www.stancounty.com/planning/pl/act-projects.shtm

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USE PERMIT APPLICATION NO. PLN2021-0104 – KOOISTRA DAIRY

Attachment A

Distribution List

	CA DEPT OF CONSERVATION Land Resources		STAN CO ALUC
X	CA DEPT OF FISH & WILDLIFE		STAN CO ANIMAL SERVICES
	CA DEPT OF FORESTRY (CAL FIRE)	X	STAN CO BUILDING PERMITS DIVISION
	CA DEPT OF TRANSPORTATION DIST 10	X	STAN CO CEO
X	CA OPR STATE CLEARINGHOUSE		STAN CO CSA
X	CA RWQCB CENTRAL VALLEY REGION	X	STAN CO DER
	CA STATE LANDS COMMISSION		STAN CO ERC
	CEMETERY DISTRICT	X	STAN CO FARM BUREAU
	CENTRAL VALLEY FLOOD PROTECTION	X	STAN CO HAZARDOUS MATERIALS
	CITY OF	X	STAN CO MILK AND DAIRY
	COMMUNITY SERVICES/SANITARY DIST	X	STAN CO PUBLIC WORKS
X	COOPERATIVE EXTENSION		STAN CO RISK MANAGEMENT
X	COUNTY OF: MERCED	X	STAN CO SHERIFF
X	DER - GROUNDWATER RESOURCES DIVISION	X	STAN CO SUPERVISOR DIST 2: CHIESA
X	FIRE PROTECTION DIST: MOUNTAIN VIEW	X	STAN COUNTY COUNSEL
X	GSA: WEST TURLOCK SUBBASIN		StanCOG
	HOSPITAL DIST:	X	STANISLAUS FIRE PREVENTION BUREAU
X	IRRIGATION DIST: TURLOCK	X	STANISLAUS LAFCO
X	MOSQUITO DIST: TURLOCK	X	STATE OF CA SWRCB – DIV OF DRINKING WATER DIST. 10
X	STANISLAUS COUNTY EMERGENCY MEDICAL SERVICES	X	SURROUNDING LAND OWNERS
	MUNICIPAL ADVISORY COUNCIL:	X	TELEPHONE COMPANY: AT&T
X	PACIFIC GAS & ELECTRIC		TRIBAL CONTACTS (CA Government Code §65352.3)
	POSTMASTER:		US ARMY CORPS OF ENGINEERS
	RAILROAD:	X	US FISH & WILDLIFE
X	SAN JOAQUIN VALLEY APCD		US MILITARY (SB 1462)
X	SCHOOL DIST 1: CHATOM UNION		USDA NRCS
X	SCHOOL DIST 2: TURLOCK UNIFIED		WATER DIST:
	WORKFORCE DEVELOPMENT		
X	STAN CO AG COMMISSIONER		

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STANISLAUS COUNTY
CEQA REFERRAL RESPONSE FORM

TO: **Stanislaus County Planning & Community Development**
1010 10th Street, Suite 3400
Modesto, CA 95354

FROM: _____

SUBJECT: **USE PERMIT APPLICATION NO. PLN2021-0104 – KOOISTRA DAIRY**

Based on this agency's particular field(s) of expertise, it is our position the above described project:

_____ Will not have a significant effect on the environment.
_____ May have a significant effect on the environment.
_____ No Comments.

Listed below are specific impacts which support our determination (e.g., traffic general, carrying capacity, soil types, air quality, etc.) – (attach additional sheet if necessary)

1.
2.
3.
4.

Listed below are possible mitigation measures for the above-listed impacts: *PLEASE BE SURE TO INCLUDE WHEN THE MITIGATION OR CONDITION NEEDS TO BE IMPLEMENTED (PRIOR TO RECORDING A MAP, PRIOR TO ISSUANCE OF A BUILDING PERMIT, ETC.):*

1.
2.
3.
4.

In addition, our agency has the following comments (attach additional sheets if necessary).

_____

_____

Response prepared by:

_____

Name Title Date

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CEQA INITIAL STUDY

Adapted from CEQA Guidelines APPENDIX G Environmental Checklist Form, Final Text, January 1, 2020

1.	**Project title:**	Use Permit Application No. PLN2021-0104 – Kooistra Dairy
2.	**Lead agency name and address:**	Stanislaus County 1010 10th Street, Suite 3400 Modesto, CA 95354
3.	**Contact person and phone number:**	Emily DeAnda, Associate Planner
4.	**Project location:**	5831 and 5837 Hultberg Road, between Ehrlich and Bradbury Roads, between Ehrlich and Bradbury Roads, in the Turlock area. (APN: 057-017-005).
5.	**Project sponsor's name and address:**	Sam and Cynthia Kooistra, Kooistra Dairy. 5387 Hultberg Road, Turlock, CA 95380
6.	**General Plan designation:**	Agriculture
7.	**Zoning:**	General Agriculture (A-2-40)

8. Description of project:

Request to expand the herd of an existing dairy facility on a 19.11± acre parcel in the General Agricultural (A-2-40) zoning district. The applicant proposes to expand the heard from 436 to 1,000 mature cows, which includes an increase of 425 milk and 139 dry cows. Currently, no support stock is located on-site, which will remain unchanged. The existing facility is currently improved with: 85,153 square feet of free stall barns and other accessory structures associated with the dairy, a dry manure storage area, feed storage area, and three wastewater ponds. Additionally, two single-family residences have been developed on the property which are utilized by the property owner, and one employee who lives on-site. This request will not increase the number of employees living on-site. The applicant proposes to demolish three existing structures totaling approximately 3,700 square feet in order to construct a 14,352 square-foot free stall barn for animal housing as well as install a mechanical manure separator adjacent to an existing wastewater storage pond to process wastewater before it reaches the pond.

The applicant anticipates an increase of 1,156 cubic feet of additional manure per-day generated from the proposed herd expansion, for a total of 2,056 cubic feet of manure per-day for the entire dairy operation. Nutrients produced from the herd will be used to fertilize irrigated cropland on parcels located in both Stanislaus and Merced Counties on land owned by the diary operator as well as parcels under different ownership. Hours of operation are up to 24 hours per-day, seven days a week.

There are currently five employees on a maximum shift. The proposed request is expected to decrease the number of employees by one for a total of four employees on a maximum shift: three employees will continue to live off-site and one employee will continue to live on-site. The applicant does not anticipate any customers on-site. The dairy currently receives five truck trips for tallow, feed, and veterinary services every two weeks, and a total of two milk truck trips per-day. The proposed request is expected to increase the number of feed truck trips from one to three per-week and decrease milk truck trips from two to one per-day for a new combined total of nine truck trips for tallow, feed, and veterinary services every two weeks, and one milk truck trip per-day.

The project site is served by private well and septic system and has access to a County-maintained road by way of Hultberg Road. Confined Animal Facilities (CAF), which include dairies, are considered to be permitted agricultural

uses; however, a use permit is required for new or expanding CAFs requiring a new or modified permit waiver, order, or Waste Discharge Requirements (WDRs) from the Regional Water Quality Control Board (RWQCB), where the issuance of such permit, waiver, order, or WDR requires compliance with the California Environmental Quality Act (CEQA) (Section 21.20.030 (F) of the Stanislaus County Zoning Code). The County adopted the use permit requirement in 2003 in order to allow the County to facilitate the environmental review (in accordance with CEQA) required for issuance of any permit, waiver, order, or WDR by the RWQCB.

9.	**Surrounding land uses and setting:**	Dairy and County of Merced to the south; scattered single-family dwellings, corn, wheat, and oats in all directions; and almonds southwest of the project site.
10.	**Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):**	Stanislaus County Department of Public Works Department of Environmental Resources Milk and Dairy Division Regional Water Quality Control Board San Joaquin Valley Air Pollution Control District
11.	**Attachments:**	I. Nutrient Management Plan prepared by Patrick Machado, dated October 8, 2021 II. Waste Management Plan prepared by Sousa Engineering, dated October 2021 III. Health Risk Assessment and Ambient Air Quality Analysis prepared by Trinity Consultants, dated January 2024

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:
The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ **Aesthetics**	☐ **Agriculture & Forestry Resources**	☐ **Air Quality**
☐ **Biological Resources**	☐ **Cultural Resources**	☐ **Energy**
☐ **Geology / Soils**	☐ **Greenhouse Gas Emissions**	☐ **Hazards & Hazardous Materials**
☒ **Hydrology / Water Quality**	☐ **Land Use / Planning**	☐ **Mineral Resources**
☐ **Noise**	☐ **Population / Housing**	☐ **Public Services**
☐ **Recreation**	☐ **Transportation**	☐ **Tribal Cultural Resources**
☐ **Utilities / Service Systems**	☐ **Wildfire**	☐ **Mandatory Findings of Significance**

DETERMINATION: (To be completed by the Lead Agency)
On the basis of this initial evaluation:

☐ **I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.**

☒ **I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.**

☐ **I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.**

☐ **I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.**

☐ **I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.**

Signature on File. **March 11, 2024**
Prepared by Emily DeAnda, Associate Planner Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, than the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration.

Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

a) Earlier Analysis Used. Identify and state where they are available for review.

b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). References to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

a) the significant criteria or threshold, if any, used to evaluate each question; and

b) the mitigation measure identified, if any, to reduce the impact to less than significant.

ISSUES

I. AESTHETICS – Except as provided in Public Resources Code Section 21099, could the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

Discussion: The site itself is not considered to be a scenic resource or unique scenic vista. Aesthetics associated with the project site and proposed structures are not anticipated to change as a result of this project. The site is currently developed with an existing dairy facility. The proposed 14,352 square-foot free stall barn will be similar in nature to the other structures on-site and will be comprised of materials consistent with structures in and around the A-2 (General Agriculture) zoning district. Likewise, all proposed improvements are to occur within the footprint of the existing facility. Standard conditions of approval will be added to this project to address glare and nightglow from any proposed on-site lighting.

Mitigation: None.

References: Application information; Stanislaus County Zoning Ordinance; the Stanislaus County General Plan and Support Documentation[1].

II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?			X	

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?			X	
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?			X	
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?			X	

Discussion: This is a request to expand the herd size of an existing dairy. This project proposes to expand the number of milk and dry cows from 436 mature cows (375 milk cows and 61 dry) to 1,000 mature cows (800 milk and 200 dry). No support stock is located on-site which will remain unchanged. The total amount of animals is to increase by 564. The existing dairy operation is developed with 85,153 square feet of free stall barns and other accessory structures associated with the dairy, two single-family residences, a dry manure storage area, feed storage area, and three wastewater ponds. Due to the proposed increase in animal units, the applicant proposes to demolish three existing structures totaling approximately 3,700 square feet in order to construct a 14,352 square-foot free stall barn for animal housing located within the existing dairy facility footprint. The applicant also proposes to install a mechanical manure separator adjacent to an existing wastewater storage pond to process wastewater before it reaches the pond. Surrounding land uses consist of a dairy and the County of Merced to the south; scattered single-family dwellings, corn, wheat, and oats in all directions; and almonds southwest of the project site.

In determining most productive agricultural areas, factors to be considered include but are not limited to soil types and potential for agricultural production; the availability of irrigation water; and the existence of Williamson Act contracts. According to Goal Two, Policy 2.5, Implementation Measure 1, of the General Plan's Agricultural Element, when defining the County's most productive agricultural areas, it is important to recognize that soil types alone should not be the determining factor. Although soil types should be considered, the designation of "most productive agricultural areas" also should be based on existing uses and their contributions to the agricultural sector of our economy. The California Revised Storie Index is a rating system based on soil properties, including texture, steepness, and drainage, that dictate the potential for soils to be used for irrigated agricultural production in California. This rating system grades soils with an index rating between 81-100 to be excellent (Grade 1), 61-80 to be good (Grade 2), 41-60 to be fair (Grade 3), 21-40 to be poor (Grade 4), 11-20 to be very poor (Grade 5), and ten or less to be nonagricultural (Grade 6). While the project site is not enrolled in the Williamson Act, the 19.11± acre project site is developed with a confined animal facility. The project site is designated by the California Department of Conservation Farmland Mapping and Monitoring Program as Confined Animal Agriculture and Farmland of Statewide Importance. According to the California Department of Agriculture's Natural Resources Conservation Service's Soil Survey, the project site's soil is classified as being comprised of Hilmar loamy sand, 0 to 1 percent slopes (HfA – Storie Index Rating: 68, Grade 2). However, the site does qualify as prime agricultural land based on the site having irrigated land, which supports livestock used for the production of food and fiber. Based on this information, the project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use and will not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use, as the existing project site is developed with a confined animal facility and will remain a confined animal facility following project approval.

The Agricultural Element includes a requirement for an agricultural buffer to protect the long-term health of local agriculture by minimizing conflicts resulting from normal agricultural practices as a consequence of new or expanding uses approved in or adjacent to the A-2 (General Agriculture) zoning district. These guidelines apply to all new or expanding uses approved by discretionary permitting in the A-2 zoning district or on a parcel adjoining the A-2 zoning district. However, dairies are considered to be a permitted agricultural use in the A-2 zoning district in Stanislaus County. Use permits are only processed for the expansion of dairy facilities when the Regional Water Quality Control Board (RWQCB) determines that Waste Discharge Requirements (WDRs) are required, which requires CEQA compliance. As dairies are a permitted use, an agricultural buffer is not required for this project.

The existing dairy facility utilizes a scrape cleaning system and is already improved with all the necessary corrals, feed storage, waste management, and utilities necessary to accommodate the proposed herd expansion. The site is served by an on-site domestic well and private septic systems. The attached Waste Management Plan (WMP) and Nutrient Management Plan (NMP) provide details on managing the expanded dairy cow stock. Nutrients produced from the herd will be used to fertilize 68± acres of irrigated cropland on parcels located in both Stanislaus and Merced Counties on land owned by the diary operator as well as parcels under different ownership.

The project site is located within the Turlock Irrigation District (TID) boundaries. The project was referred to TID which responded stating the District's Lateral 5.5 is located along a portion on the southern boundary of the project site, and irrigation distribution pipelines are in the vicinity of the project. The District clarified that none of the irrigation facilities appear to be affected by the proposed project; however, the District shall review and approve all maps and plans of the project, and any improvements to the property which impact irrigation facilities will be subject to the District's approval and must meet all District standards and specifications. TID's comments will be applied to the project as conditions of approval.

The project will have no impact to forest land or timberland. If approved, the project will not conflict with any agricultural activities in the area and/or lands enrolled in the Williamson Act, as the parcels will continue to be used for agricultural purposes.

Based on the specific features and design of this project, it does not appear this project will impact the long-term productive agricultural capability of surrounding contracted lands in the A-2 zoning district. There is no indication this project will result in the removal of adjacent contracted land from agricultural use.

Mitigation: None.

References: Application information; E-mail correspondence Regional Water Quality Control Board, dated January 20, 2022; USDA – NRCS Web Soil Survey; California State Department of Conservation Farmland Mapping and Monitoring Program – Stanislaus County Farmland 2022; Waste Management Plan prepared by Sousa Engineering, dated October 2021; Nutrient Management Plan prepared by Patrick Machado, dated October 8, 2021; Stanislaus County Zoning Ordinance (Title 21); Stanislaus County General Plan and Support Documentation[1].

III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. -- Would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?			**X**	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			**X**	
c) Expose sensitive receptors to substantial pollutant concentrations?			**X**	
d) Result in other emissions (such as those odors adversely affecting a substantial number of people?			**X**	

Discussion: The proposed project is located within the San Joaquin Valley Air Basin (SJVAB) and, therefore, falls under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). In conjunction with the Stanislaus Council of Governments (StanCOG), the SJVAPCD is responsible for formulating and implementing air pollution control strategies. The SJVAPCD's most recent air quality plans are the 2007 PM10 (respirable particulate matter) Maintenance Plan, the 2008 PM2.5 (fine particulate matter) Plan, and the 2007 Ozone Plan. These plans establish a comprehensive air pollution control program leading to the attainment of state and federal air quality standards in the SJVAB, which has been classified as "extreme non-attainment" for ozone, "attainment" for respirable particulate matter (PM-10), and "non-attainment" for PM 2.5, as defined by the Federal Clean Air Act.

The project requests to expand the herd from 436 to 1,000 mature cows, which includes an increase of 425 milk and 139 dry cows. No support stock is located on-site which will remain unchanged. The existing facility is improved with 85,153

square feet of free stall barns and other accessory structures associated with the dairy, two single-family residences, a dry manure storage area, feed storage area, and three wastewater ponds. The applicant proposes to demolish three existing structures totaling approximately 3,700 square feet in order to construct a 14,352 square-foot free stall barn for animal housing as well as install a mechanical manure separator adjacent to an existing wastewater storage pond to process wastewater before it reaches the pond. Hours of operation are 24-hours a day, seven days a week. The dairy currently receives five truck trips for tallow, feed, and veterinary services every two weeks, a total of two milk truck trips per-day, and a total of eight employee vehicle trips per-day (inbound and outbound trips for the four employees living off-site). The proposed request is expected to increase the number of feed truck trips from one to three per-week and decrease milk truck trips from two to one per-day for a new combined total of nine truck trips for tallow, feed, and veterinary services every two weeks, and one milk truck trip per-day. The proposed request is expected to decrease the number of employees by one for a total of four employees on a maximum shift (three employees living off-site and one employee living on-site). No additional employees are proposed to live on-site. Employee trip numbers are proposed to decrease from eight to six per-day (three employees coming from off-site into and out of the project site). If all truck trips for tallow, feed, veterinary service, and milk were to fall on the same day, at most there will be a maximum total of 20 truck trips in one day (total inbound and outbound trips), and a total of six automobile trips per-day (anticipated inbound and outbound trips by the three employees not living on-site). The applicant does not anticipate any customers on-site.

A referral response was received from the SJVAPCD which recommended that a more detailed preliminary review of the project be conducted for the project's construction and operational emissions to determine whether the project will exceed the District's thresholds of significance for carbon monoxide (CO), oxides of nitrogen (NOx), reactive organic gases (ROG), oxides of sulfur (SOx), and particulate matter (PM10 and PM2.5). Further, the SJVAPCD recommended other potential air impacts related to Toxic Air Contaminants, Ambient Air Quality Standards, and Hazards and Odors be addressed. The SJVAPCD recommended the project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) resulting from operational and multiyear construction Toxic Air Contaminants (TAC) emissions and stated that a Health Risk Assessment should evaluate the risk associated with sensitive receptors in the area and mitigate any potentially significant risk to help limit emission exposure to sensitive receptors. The SJVAPCD also recommended the County advise the applicant to utilize zero emission equipment. Additionally, SJVAPCD recommended that if emissions exceed 100 pounds per-day of any pollutant, an Ambient Air Quality Analysis (AAQA) be performed. The SJVAPCD also recommended the environmental document include a discussion on nuisance odors; however, Stanislaus County has adopted a Right-to-Farm Ordinance (§9.32.050) which states that inconveniences associated with agricultural operations, such as noise, odors, flies, dust, or fumes shall not be considered to be a nuisance if agricultural operations are consistent with accepted customs and standards.

The SJVAPCD response indicated the project will be subject to District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), and Rule 4002 (National Emissions Standards for Hazardous Air Pollutants). The project may also be subject to the following rules: Regulation VIII, (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), Rule 4601 (Architectural Coatings), Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations), Rule 4550 (Conservation Management Practices), and Rule 4570 (Confined Animal Facilities). The project may be subject to other applicable District permits and rules, which must be met as part of the District's Authority to Construct (ATC) and Permit to Operate (PTO) permitting process.

In response to the Air District comments, a Health Risk Assessment (HRA) and Ambient Air Quality Analysis (AAQA) were prepared by Trinity Consultants, dated January 2024. The HRA evaluated the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed dairy expansion and the AAQA evaluated the criteria pollutants compared to the California and national ambient air quality standards. Emissions of hazardous air pollutants attributable to the proposed construction activities, animal movement, manure management, and on-site mobile sources were calculated using generally accepted emission factors and the California Emissions Estimator Model version 2020.4.0 (CalEEMod). Construction emissions were evaluated assuming construction would occur within one phase, to be conservative, and be completed within five years of issuance of a use permit. The actual total construction activities were estimated to be two months.

According to the assessment, construction equipment sources evaluated included: diesel-fueled dozers, loaders, backhoes, excavators, graders, cranes, forklifts, generator sets, concrete/industrial saws, and welders. CalEEMod default equipment listing for general heavy industrial usages were utilized. Default horsepower, daily operating hours, and load factors were also used. Operational mobile sources include: diesel-fueled solids manure removal trucks, commodity delivery trucks, a manure loading tractor, a feed loading tractor, and a feed delivery tractor. There will also be emissions from the housing barns, milk barn, lagoons, solid manure storage, and land application areas associated with increased herd size.

The air dispersion model, which calculates the concentration of selected pollutants at specific downwind points such as residential or off-site workplace receptors, used for this HRA was the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), which is the model recommended by the SJVAPCD. The construction activities, animal housing areas, milk barn, lagoons, solid manure storage, and land application areas were modeled as area sources. The travel route for the feed delivery tractor, bedding delivery tractor, commodity delivery trucks, and manure removal trucks were modeled as line sources. The feed loading tractor, the manure loading tractor, commodity truck idling, and manure removal truck idling were modeled as point sources. A total of one on-site residential receptor, and 265 off-site receptors, consisting of residences and workers, were assessed in the HRA modeling. The nearest off-site sensitive receptor is approximately 74± feet from the dairy.

Ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, concentrations of compounds with non-cancer adverse health effects were used to calculate health hazard indexes, which are the ratio of expected exposure to acceptable exposure. The Air District has set the level of significance for carcinogenic risk to 20 in one million and the maximum predicted cancer risk among the modeled receptors is 18.9 in one million. The level of significance for acute and chronic non-cancer risk is a hazard index of 1.0, and the maximum predicted acute and chronic non-cancer hazard index among the modeled receptors are 0.228 and 0.192, respectively. As both levels are below the SJVAPCD's level of significance, the potential health risk attributable to the proposed project is determined to be less than significant.

As stated previously, the Air District recommended that an AAQA be performed for all criteria pollutants when emissions of any criteria pollutant resulting from project construction or operational activities exceed the 100 pounds per-day screening level, after compliance with Rule 9510 requirements and implementation of all enforceable mitigation measures. The proposed project's construction emissions were estimated to be 0.07 NOx, 0.85 CO, 0.00 SOx, 0.06 PM10, and 0.04 PM2.5 (pounds per-day). Operational emissions were estimated to be 0.13 NOx, 2.05 CO, 0.004 SOx, 1.71 PM10, and 0.20 PM2.5 (pounds per-day). The proposed project's construction and operational activities will not exceed 100 pounds per-day of any criteria pollutant that has an ambient air quality standard. Therefore, the proposed project is considered less than significant for ambient air quality impacts.
The SJVAPCD reviewed the HRA/AAQA and responded with no comments or questions regarding the assessment and analysis. Therefore, impacts to air quality are anticipated to be less than significant.

Mitigation: None.

References: Application information; San Joaquin Valley Air Pollution Control District - Regulation VIII Fugitive Dust/PM-10 Synopsis; www.valleyair.org; Referral response from San Joaquin Valley Air Pollution Control District, dated December 16, 2021; Health Risk Assessment and Ambient Air Quality Analysis prepared by Trinity Consultants, dated January 2024; E-mail correspondence from San Joaquin Valley Air Pollution Control District, dated February 13, 2024; and the Stanislaus County General Plan and Support Documentation[1].

IV. BIOLOGICAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			**X**	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			**X**	

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			**X**	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			**X**	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			**X**	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?			**X**	

Discussion: The project is located within the Hatch Quad of the California Natural Diversity Database (CNDDB). There are seven species of animals and plants which are state or federally listed, threatened, or identified as species of special concern within the Hatch California Natural Diversity Database Quad. These species include the following: Swainson's hawk, cackling goose, tricolored blackbird, green sturgeon - southern DPS, steelhead - Central Valley DPS, western pond turtle, and California alkali grass. According to the CNDDB, none of the species have been sited within the project area. The Swainson's hawk has been sited approximately 1.4± miles southeast of the project site within the County of Merced. The project site is developed with an existing dairy and the area where the proposed constructed will be located is already disturbed. There are no known Waters of the United States on-site. It does not appear that this project will result in impacts to endangered species or habitats, locally designated species, wildlife dispersal, or mitigation corridors as the site is disturbed and improved. The project is anticipated to have a less than significant impact to biological resources.

The project was referred to the California Department of Fish and Wildlife, and no comments have been received to date.

Mitigation: None.

References: Application information; California Department of Fish and Wildlife's Natural Diversity Database Quad Species List; California Natural Diversity Database, Planning and Community Development GIS, accessed March 5, 2024; Stanislaus County General Plan and Support Documentation[1].

V. CULTURAL RESOURCES -- Would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?			**X**	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			**X**	
c) Disturb any human remains, including those interred outside of formal cemeteries?			**X**	

Discussion: As this project is not a General Plan Amendment it was not referred to the tribes listed with the Native American Heritage Commission (NAHC), in accordance with SB 18. Tribal notification of the project was not referred to any tribes in conjunction with AB 52 requirements, as Stanislaus County has not received any requests for consultation from the tribes listed with the NAHC. It does not appear this project will result in significant impacts to any archaeological or cultural resources. The project site is currently improved with 85,153 square feet of free stall barns and other accessory structures associated with the dairy, two single-family residences, a dry manure storage area, feed storage area, and three wastewater ponds. As part of this request, the applicant proposes to demolish three existing structures totaling approximately 3,700 square feet in order to construct a 14,352 square-foot free stall barn for animal housing as well as install a mechanical manure separator adjacent to an existing wastewater storage pond to process wastewater before it

reaches the pond. Standard conditions of approval regarding the discovery of cultural resources during the construction process will be added to the project. No significant impacts to cultural resources are anticipated to occur as a result of this project.

Mitigation: None.

References: Application information; Stanislaus County General Plan and Support Documentation[1].

VI. ENERGY. -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			**X**	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			**X**	

Discussion: The CEQA Guidelines Appendix F states that energy consuming equipment and processes, which will be used during construction or operation such as: energy requirements of the project by fuel type and end use, energy conservation equipment and design features, energy supplies that would serve the project, total estimated daily vehicle trips to be generated by the project, and the additional energy consumed per trip by mode, which shall be taken into consideration when evaluating energy impacts. Additionally, the project's compliance with applicable state or local energy legislation, policies, and standards must be considered.

All construction activities shall be in compliance with all SJVAPCD regulations and with Title 24, Green Building Code, which includes energy efficiency requirements. The operation proposes to operate out of existing buildings and proposes to demolish three existing structures totaling approximately 3,700 square feet in order to construct a 14,352 square-foot free stall barn for animal housing for which building permits will be required. Any future construction activities will be required to occur in compliance with all SJVAPCD regulations.

This is a request to expand the herd size of an existing dairy. This project proposes to expand the number of milk and dry cows from 436 mature cows (375 milk cows and 61 dry) to 1,000 mature cows (800 milk and 200 dry). No support stock is located on-site which will remain unchanged. The total amount of animals is to increase by 564. The existing dairy operation has been previously developed with 85,153 square feet of free stall barns and other accessory structures associated with the dairy; two single-family residences, a dry manure storage area, feed storage area, and three wastewater ponds. Additionally, the applicant also proposes to install a mechanical manure separator adjacent to an existing wastewater storage pond to process wastewater before it reaches the pond. The proposed request is expected to increase the number of feed truck trips from one to three per-week and decrease milk truck trips from two to one per-day for a new combined total of nine truck trips for tallow, feed, and veterinary services every two weeks, and one milk truck trip per-day. The proposed request is expected to decrease the number of employees by one for a total of four employees on a maximum shift (three employees living off-site and one employee living on-site). No additional employees are proposed to live on-site. Employee trip numbers are proposed to decrease from eight to six per-day (three employees coming from off-site into and out of the project site). If all truck trips for tallow, feed, veterinary service, and milk were to fall on the same day, at most there will be a maximum total of 20 truck trips in one day (total inbound and outbound trips), and a total of six automobile trips per-day (anticipated inbound and outbound trips by the three employees not living on-site). The applicant does not anticipate any customers on-site.

Energy consuming equipment and processes include construction and operational equipment, trucks, and the employee vehicles. As discussed in Section III – Air Quality, this project was estimated to utilize construction equipment sources consisting of diesel-fueled dozers, loaders, backhoes, excavators, graders, cranes, forklifts, generator sets, concrete/industrial saws, and welders. Operational mobile sources may include: diesel-fueled solids manure removal trucks, commodity delivery trucks, a manure loading tractor, a feed loading tractor, and a feed delivery tractor. The construction equipment will be temporary in nature and is not anticipated to consume a significant amount of energy resources. Additionally, operational equipment consisting of the vehicle and truck trips would not significantly increase Vehicle Miles Traveled (VMT), due to the number of vehicle trips not exceeding a total of 110 vehicle trips per-day. If all truck trips for

tallow, feed, veterinary service, and milk were to fall on the same day, at most there will be a maximum total of 20 truck trips in one day (total inbound and outbound trips), and a total of six automobile trips per-day (anticipated inbound and outbound trips by the three employees not living on-site). The trucks are the main consumers of energy associated with this project but shall be required to meet all Air District regulations, including rules and regulations that increase energy efficiency for heavy trucks. Consequently, emissions would be minimal. Therefore, consumption of energy resources would be less-than significant without mitigation for the proposed project.

The project was referred to Turlock Irrigation District (TID) which responded that should a facility change be required, the change will be performed at the developer's expense, and that the owner/developer must apply for a facility change for any pole or electrical facility relocation. The District also noted there are several overhead services feeding the customers panels on the project site. If any service removals or new services are required, then the applicant will be required to contact the District's Electrical Engineering Department. TID's comments will be added to the project as conditions of approval.

It does not appear that this project will result in significant impacts to the wasteful, inefficient, or unnecessary consumption of energy resources. A condition of approval will be added to this project to address compliance with Title 24, Green Building Code, for projects that require energy efficiency. Additionally, a condition of approval will be added requiring any site lighting to meet industry standards for energy efficiency.

Impacts to energy are considered to be less than significant.

Mitigation: None.

References: Application information; CEQA Guidelines; Title 16 of County Code; CA Building Code; Governor's Office of Planning and Research Technical Advisory, December 2018; Referral response from the San Joaquin Valley Air Pollution Control District (SJVAPCD) dated December 16, 2021; Health Risk Assessment (HRA) and Ambient Air Quality Analysis (AAQA) prepared by Trinity Consultants, dated January 2024; Referral response from Turlock Irrigation District, dated December 13, 2021; Stanislaus County General Plan and Support Documentation[1].

VII. GEOLOGY AND SOILS -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			**X**	
ii) Strong seismic ground shaking?			**X**	
iii) Seismic-related ground failure, including liquefaction?			**X**	
iv) Landslides?			**X**	
b) Result in substantial soil erosion or the loss of topsoil?			**X**	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			**X**	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			**X**	

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?			**X**	
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			**X**	

Discussion: The United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) Web Soil Survey indicates that the soil consists of Hilmar loamy sand. As contained in Chapter 5 of the General Plan Support Documentation, the areas of the County subject to significant geologic hazard are located in the Diablo Range, west of Interstate 5; however, as per the California Building Code, all of Stanislaus County is located within a geologic hazard zone (Seismic Design Category D, E, or F) and a soils test may be required at the building permit application. Results from the soils test will determine if unstable or expansive soils are present. If such soils are present, special engineering of the structure will be required to compensate for the soil deficiency. Any structures resulting from this project will be designed and built according to building standards appropriate to withstand shaking for the area in which they are constructed. Any earth moving is subject to Public Works Standards and Specifications, which consider the potential for erosion and run-off prior to permit approval. Likewise, any addition or expansion of a septic tank or alternative wastewater disposal system would require the approval of the Department of Environmental Resources (DER) through the building permit process, which also takes soil type into consideration within the specific design requirements.

The project was referred to the Stanislaus County Department of Environmental Resources (DER) who requested any new building requiring an on-site wastewater treatment system (OWTS) shall meet all Local Agency Management Program (LAMP) standards and be designed according to type and/or maximum occupancy of the proposed structure to the estimated waste/sewage design flow. DER also requested the applicant secure all necessary permits for the destruction/relocation of any on-site water wells and water distribution lines, and/or OWTS at the project site under the direction of DER. No new septic system, or well is proposed under this project. DER's comments will be added to the project as conditions of approval.

An Early Consultation referral response received from the Department of Public Works indicated that a grading, drainage, and erosion/sediment control plan will be required, subject to Public Works review and Standards and Specifications. Public Works' comment will be applied to the project as a condition of approval.

DER, Public Works, and the Building Permits Division review and approve any building or grading permit to ensure their standards are met. Conditions of approval regarding these standards will be applied to the project and will be triggered when a building permit is requested. Accordingly, the potential impacts to the soil are considered to be less-than significant.

The project site is not located near an active fault or within a high earthquake zone. Landslides are not likely due to the flat terrain of the area. Impacts to Geology and Soils are anticipated to be less than significant.

Mitigation: None.

References: Application information; USDA – NRCS Web Soil Survey; Referral response from the Department of Environmental Resources (DER), dated December 17, 2021; Referral response received from Stanislaus County Department of Public Works dated, December 7, 2021; Stanislaus County Zoning Ordinance (Title 21); Stanislaus County General Plan and Support Documentation[1].

VIII. GREENHOUSE GAS EMISSIONS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			**X**	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			**X**	

Discussion: The principal Greenhouse Gasses (GHGs) are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and water vapor (H2O). CO2 is the reference gas for climate change because it is the predominant greenhouse gas emitted. To account for the varying warming potential of different GHGs, GHG emissions are often quantified and reported as CO2 equivalents (CO2e). In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] No. 32), which requires the California Air Resources Board (ARB) design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020. Two additional bills, SB 350 and SB32, were passed in 2015 further amending the states Renewables Portfolio Standard (RPS) for electrical generation and amending the reduction targets to 40 percent of 1990 levels by 2030.

This is a request to expand the herd size of an existing dairy. This project proposes to expand the number of milk and dry cows from 436 mature cows (375 milk cows and 61 dry) to 1,000 mature cows (800 milk and 200 dry). No support stock is located on-site which will remain unchanged. The total amount of animals is to increase by 564. The existing dairy operation has been previously developed with 85,153 square feet of free stall barns and other accessory structures associated with the dairy, two single-family residences, a dry manure storage area, feed storage area, and three wastewater ponds. Due to the proposed increase in animal units, the applicant proposes to demolish three existing structures totaling approximately 3,700 square feet in order to construct a 14,352 square-foot free stall barn for animal housing located within the existing dairy facility footprint. Additionally, the applicant also proposes to install a mechanical manure separator adjacent to an existing wastewater storage pond to process wastewater before it reaches the pond. The applicant does not anticipate any customers on-site. The dairy currently receives five truck trips for tallow, feed and veterinary services every two weeks, and a total of two milk truck trips per-day. The proposed request is expected to increase the number of feed truck trips from one to three per-week and decrease milk truck trips from two to one per-day for a new combined total of nine truck trips for tallow, feed, and veterinary services every two weeks, and one milk truck trip per-day. The proposed request is expected to decrease the number of employees by one for a total of four employees on a maximum shift (three employees living off-site and one employee living on-site). No additional employees are proposed to live on-site. Employee trip numbers are proposed to decrease from eight to six per-day (three employees coming from off-site into and out of the project site). If all truck trips for tallow, feed, veterinary service, and milk were to fall on the same day, at most there will be a maximum total of 20 truck trips in one day (total inbound and outbound trips), and a total of six automobile trips per-day (anticipated inbound and outbound trips by the three employees not living on-site). The applicant does not anticipate any customers on-site.

A referral response was received from the SJVAPCD indicating that emissions resulting from construction and/or operation of the project may exceed the District's thresholds of significance for carbon monoxide (CO), oxides of nitrogen (NOx), reactive organic gases (ROG), oxides of sulfur (SOx), (PM10), and particulate matter. The SJVAPCD recommended that a more detailed preliminary review of the project be conducted for the project's construction and operational emissions.

Construction and operational emissions were analyzed with the California Emissions Estimator Model (CalEEMOD), by Trinity Consultants, dated January 2024. The analysis evaluated construction and operational ROG, NOx, CO, SO2, PM10, PM2.5, CO2, CH4, and N2O emissions. CalEEMod default equipment listing for general heavy industrial usages were utilized. Default horsepower, daily operating hours, and load factors were also used. According to the analysis, construction equipment sources evaluated included: diesel-fueled dozers, loaders, backhoes, excavators, graders, cranes, forklifts, generator sets, concrete/industrial saws, and welders. Operational mobile sources include: diesel-fueled solids manure removal trucks, commodity delivery trucks, a manure loading tractor, a feed loading tractor, and a feed delivery tractor. The actual total construction activities were estimated to be over the course of two months. The analysis found the average daily emissions for construction and operational activities associated with this project would not exceed 100 pounds per-day for any criteria pollutant that has an ambient air quality standard and therefore are below the Air District's thresholds of significance. A more detailed discussion may be found in the Air Quality section of this checklist.

The SJVAPCD response indicated the project will be subject to District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), and Rule 4002 (National Emissions Standards for Hazardous Air Pollutants). The project may also be subject to the following rules: Regulation VIII, (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), Rule 4601 (Architectural Coatings), Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations), Rule 4550 (Conservation Management Practices), and Rule 4570 (Confined Animal Facilities). The project may be subject to other applicable District permits and rules, which must be met as part of the District's Authority to Construct (ATC) and Permit to Operate (PTO) permitting process.

The 2016 California Green Building Standards Code (CALGreen Code) went into effect on January 1, 2017, and includes mandatory provisions applicable to all new residential, commercial, and school buildings. The intent of the CALGreen Code

is to establish minimum statewide standards to significantly reduce the greenhouse gas emissions from new construction. The Code includes provisions to reduce water use, wastewater generation, and solid waste generation. It is the intent of the CALGreen Code that buildings constructed pursuant to the Code achieve at least a 15 percent reduction in energy usage when compared to the state's mandatory energy efficiency standards contained in Title 24. The Code also sets limits on VOCs (volatile organic compounds) and formaldehyde content of various building materials, architectural coatings, and adhesives. With the requirements of meeting the Title 24, Green Building Code energy impacts from the project are considered to be less-than significant. A condition of approval will be added to this project to address compliance with Title 24, Green Building Code, which includes energy efficiency requirements.

Impacts associated with greenhouse gas emissions are expected to have a less than significant impact.

Mitigation: None.

References: California Air Resources Board 2019 Edition, California Greenhouse Gas Emission Inventory: 2000 – 2017; Application information; Referral response from the San Joaquin Valley Air Pollution Control District (SJVAPCD) referral response, dated December 16, 2021; Health Risk Assessment (HRA) and Ambient Air Quality Analysis (AAQA) prepared by Trinity Consultants, dated January 2024; CA Building Code; Stanislaus County General Plan and Support Documentation[1].

IX. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			**X**	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			**X**	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			**X**	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			**X**	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?			**X**	
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			**X**	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			**X**	

Discussion: Cleaning chemicals are used to regularly clean the existing milk processing equipment in the milking parlor. These chemicals include acids, chlorine, and detergents which, after cleaning is complete, are discharged to the milking parlor sanitary sewer system after the equipment is rinsed. Iodine is applied to the cows' udders after milking; however, iodine is applied directly to the cows and is not discharged. The County Department of Environmental Resources – Hazardous Materials Division (DER HazMat) is responsible for overseeing hazardous materials. This project was referred to the DER HazMat who responded that the applicant should contact DER for any appropriate handling and permitting

requirements for hazardous materials and/or wastes. This will be added as a condition of approval to the project. Pesticide exposure is a risk in areas located in the vicinity of agriculture. Sources of exposure include contaminated groundwater from drift from spray applications. Application of sprays is strictly controlled by the Agricultural Commissioner and can only be accomplished after first obtaining permits.

Animal waste resulting from daily operations will be managed through Waste and Nutrient Management Plans, which have been submitted to the Central Valley Regional Water Quality Control Board (CVRWQCB).

The project site is not listed on the EnviroStor database managed by the CA Department of Toxic Substances Control or within the vicinity of any airport. The site is located in a Local Responsibility Area (LRA) for fire protection and is served by Mountain View Fire Protection District. The project was referred to the District and no comments have been received to date. The project was referred to the Environmental Review Committee (ERC), which responded with no comments. The project site is not within the vicinity of any airstrip or wildlands. No significant impacts associated with hazards or hazardous materials are anticipated to occur as a result of the proposed project.

Mitigation: None.

References: Application Information; Referral response from Stanislaus County Department of Environmental Resources – Hazardous Materials Division, dated December 15, 2021; Waste Management Plan prepared by Sousa Engineering, dated October 2021; Nutrient Management Plan prepared by Patrick Machado, dated October 8, 2021; Department of Toxic Substances Control's data management system (EnviroStar); Referral response from Stanislaus County Environmental Review Committee, dated December 17, 2021; Stanislaus General Plan and Support Documentation[1].

X. HYDROLOGY AND WATER QUALITY -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?		**X**		
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			**X**	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on – or off-site;			**X**	
(ii) substantially increase the rate of amount of surface runoff in a manner which would result in flooding on- or off-site;			**X**	
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			**X**	
(iv) impede or redirect flood flows?			**X**	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			**X**	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			**X**	

Discussion: Dairies pose a number of potential risks to water quality, primarily related to the amount of manure and wastewater that they generate. Manure and wastewater from animal confinement facilities can contribute pollutants such as nutrients (nitrogen), ammonia, phosphorus, organic matter, sediments, pathogens, hormones, antibiotics, and total dissolved solids (salts). These pollutants, if uncontrolled, can cause several types of water quality impacts, including contamination of drinking water, interference with irrigation systems, and impairment of surface water and groundwater quality. Federal, state, and local regulations have been implemented to protect the quality of surface water and groundwater resources. The primary federal laws for protection of water quality are the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA). Federal and state regulations based on this underlying legislation range from establishing maximum contaminant levels to setting antidegradation policies.

The primary regulatory program for implementing water quality standards is the federal National Pollutant Discharge Elimination System (NPDES) Program. The United States Environmental Protection Agency (EPA) has delegated NPDES enforcement and administration to the State of California Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB (CVRWQCB) administers the federal NPDES program for dairies within Stanislaus County. The CVRWQCB adopted the General Waste Discharge Requirements and General NPDES Permit for Existing Milk Cow Dairy Concentrated Animal Feeding Operations (CAFO) within the Central Valley Region, Revised Order No. R5-2011-0091, in December 2011. The CAFO Order serves as a NPDES permit. Under the CAFO Order, owners and operators ("dischargers") of dairies are required to apply for and receive an NPDES permit if the dairy is an operation that stables or confines 700 or more mature dairy cows, whether milked or dry (a Large CAFO) and the operator discharges, or proposes to discharge, pollutants to the waters of the United States. This project requests to expand the herd from 436 to 1,000 mature cows, which includes an increase of 425 milk and 139 dry cows. Currently, no support stock is located on-site which will remain unchanged. The CAFO Order was written to follow the format of the 2007 General Order for Existing Milk Cow Dairies and Individual Waste Discharge Requirements as closely as possible, while incorporating requirements of the Federal CAFO rule.

Large CAFOs are required to prepare and implement a Nutrient Management Plan (NMP) and Waste Management Plan (WMP), which describe the regulatory requirements for the facility, and together they serve as the primary tool to prevent groundwater contamination and to establish best management practices (BMP) for dairy waste management. The General Order establishes a schedule for dischargers to develop and implement their WMP and NMP, and requires them to make facility modifications as necessary to protect surface water, improve storage capacity, and improve the facility's nitrogen balance before all infrastructure changes are completed. In addition, BMPs intended to minimize surface water discharges and subsurface discharges at dairies are required.

The WMP and NMP have been submitted to the CVRWQCB staff to determine if the amount of wastewater generated was in accordance with the standards outlined in the General Order and whether new individual WDRs are needed. The purpose of review of these plans and compliance with the General Order is to ensure that approved plans are designed and implemented to ensure that the impact of animal waste on surface and groundwater quality is minimized and poses a less than significant impact on water quality. According to the WMP, the total process wastewater generated daily will be 30,967 gallons per-day under normal precipitation. The existing and required storage capacities were calculated to be 3,764,197 and 2,962,286 gallons, respectively. CVRWQCB staff is responsible for determining that the aforementioned plans are compliant with the General Order and that the existing lagoons are adequately sized to handle any additional waste resulting from the reorganization.

In May 2018, the CVRWQCB approved new Salt and Nitrate Control Programs. The Nitrate Control Program was developed to address widespread nitrate pollution in the Central Valley. The Board identified areas, referred to as Priority 1 and Priority 2 basins, where nitrates pose a high risk based on the presence of nitrates in groundwater that is being used for drinking water. The site is located within the Turlock Subbasin, which was included in one of these priority areas. Most nitrates in the Turlock Subbasin groundwater are from anthropogenic sources, such as nitrogen fertilizer, feedlot and dairy drainage, septic systems, or wastewater drainage. Nitrate concentrations are generally highest at shallow depths in the unconfined aquifer system but can reach deeper portions of aquifers by downward vertical hydraulic gradients, which can be exacerbated by pumping, or by intra-borehole flow through wells screened at multiple aquifer depths. During Water Year (WY) 2022, 174 of the 318 representative monitoring wells (RMWs) in the Groundwater Sustainability Plan (GSP) monitoring network were sampled for nitrate. In addition, 76 RMWs are classified in the western principal aquifers (western wells screened in both the upper and lower principal aquifers). Nitrate concentrations in the Turlock Subbasin groundwater ranged from not detected (ND) to 56 mg/L. In total, 31 wells (18 percent of all wells) had baseline values that are greater than the 10 mg/L minimum threshold (MT), and four of the wells had the maximum nitrate concentration measured for the first-time during WY 2022. Most of the WY 2022 RMWs are located in the Western Principal Aquifers. In total, 60 RMWs

are in the Eastern Subbasin Principal Aquifer, 29 are in the Western Lower Principal Aquifer, and 23 are in the Western Upper Principal Aquifer.

An email provided by CVRWQCB dated January 20, 2022, which was a direct response to the project which included information relating to all current dairy projects, stated the proposed NMP is in agreement with the current Dairy General Order; however, data collected by the Central Valley Dairy Representative Monitoring Program (CVDRMP) has indicated that these nutrient management practices are not sufficient to prevent the pollution of groundwater from cropland. CVRWQCB is placing the review of all NMP & WMP on hold and operators are to proceed at their own discretion; therefore, the proposed project could result in degradation of groundwater resources. The CVRWQCB suggested the CAFO enrolls in the Central Valley Dairy Representative Monitoring Program (CVDRMP) to meet the requirements for groundwater monitoring. While the proposed dairy expansion is not anticipated to increase the potential for impacts to groundwater quality, because elevated nitrate levels have been observed from agricultural operations in general in the Central Valley. Mitigation measures have been incorporated into the project requiring implementation of BMPs, compliance with their WMP and NMP, and enrollment in the CVDRMP. With mitigation in place impacts to hydrology and water quality are considered to be less than significant.

Stanislaus County adopted a Groundwater Ordinance in November 2014 (Chapter 9.37 of the County Code, hereinafter, the "Ordinance") that codifies requirements, prohibitions, and exemptions intended to help promote sustainable groundwater extraction in unincorporated areas of the County. The Ordinance prohibits the unsustainable extraction of groundwater and makes issuing permits for new wells, which are not exempt from this prohibition, discretionary. For unincorporated areas covered in an adopted GSP pursuant to SGMA, the County can require permit holders for wells as it reasonably concludes, are withdrawing groundwater unsustainably to provide substantial evidence that continued operation of such wells does not constitute unsustainable extraction and has the authority to regulate future groundwater extraction. The project site utilizes an existing septic system and on-site well and no additional septic systems or wells are included in the request. The project was referred to the Department of Environmental Resources and Environmental Review Committee, who had no comments regarding the project. Any future proposals for new wells will be subject to review under the County's Groundwater Ordinance and Well Permitting Program.

The Sustainable Groundwater Management Act (SGMA) was passed in 2014 with the goal of ensuring the long-term sustainable management of California's groundwater resources. SGMA requires agencies throughout California to meet certain requirements including forming Groundwater Sustainability Agencies (GSA), developing Groundwater Sustainability Plans (GSP), and achieving balanced groundwater levels within 20 years. The site is located in the West Turlock Subbasin covered by the West Turlock Subbasin GSA. The West Turlock Subbasin GSA (consisting of 12 public agencies) and the East Turlock Subbasin GSA (five agencies) are jointly developing a single GSP to manage groundwater sustainably through at least 2042. The GSAs adopted the Turlock Subbasin GSP on January 6, 2022, and submitted the GSP to the California Department of Water Resources (DWR) on January 28, 2022. DWR has until the end of 2024 to review the plan. The GSAs jointly prepared their second annual report for the Turlock Subbasin addressing groundwater and surface water conditions during Water Year (WY) 2022 and submitted the report to DWR on March 29, 2023. Total groundwater extractions in the Turlock Subbasin during WY 2022 were approximately 554,400 AF. This total is based on both direct measurements by local water agencies and estimates for private agricultural and domestic pumping. During WY 2022, agricultural groundwater extraction accounts for 93 percent (516,200 AF) of the total pumping in the Turlock Subbasin, while urban groundwater extraction accounts for the remaining seven percent (38,200 AF). The proposed dairy expansion would be subject to the requirements of the GSP for the region, when adopted, which would further minimize impacts to groundwater supplies.

Areas subject to flooding have been identified in accordance with the Federal Emergency Management Act (FEMA). Runoff is not considered an issue because of several factors which limit the potential impact. These factors include a relative flat terrain of the subject site and relatively low rainfall intensities. Areas subject to flooding have been identified in accordance with the Federal Emergency Management Act (FEMA). The project site is located in FEMA Flood Zone X, which includes areas determined to be outside the 0.2 percent annual chance floodplains. As such, flooding is not considered to be an issue with respect to this project. Flood zone requirements will be addressed by the Building Permits Division during the building permit application process. The Stanislaus County Department of Public Works has reviewed the project and is requiring a grading, drainage, and erosion/sediment control plan for any on-site work that will alter the building footprint for the site. Consequently, run-off associated with the construction of any new structure will be reviewed as part of the overall building permit review process.

The project site is located within the boundaries of the Turlock Irrigation District (TID). The project was referred to TID which responded stating the District's Lateral 5.5 is located along a portion on the southern boundary of the project site, and irrigation distribution pipelines are in the vicinity of the project. The District clarified that none of the irrigation facilities appear to be affected by the proposed project; however, the District shall review and approve all maps and plans of the project, and any improvements to the property which impact irrigation facilities will be subject to the District's approval and must meet all District standards and specifications. TID's comments will be applied to the project as conditions of approval.

Impacts to hydrology and water quality are considered to be less-than significant with mitigation.

Mitigation:

1. The following Best Management Practices shall be implemented as applicable:
    - Positive drainage shall be included in project design and construction to ensure that excessive ponding does not occur. The design shall comply with Title 3, Division 2, Chapter 1, Article 22, Section 646.1 of the Food and Agriculture Code for construction and maintenance of dairy or facility surroundings, corrals, and ramps, as described below.
    - Dirt or unpaved corrals, or unpaved lanes, shall not be located closer than 25 feet from the milking barn or closer than 50 feet from the milk house. Corral drainage must be provided.
    - A paved (concrete or equivalent) ramp or corral shall be provided to allow the animals to enter and leave the milking barn. This paved area shall be curbed (minimum of six inches high and six inches wide) and sloped to a drain. Cow washing areas shall be paved (concrete or equivalent) and sloped to a drain. The perimeter of the area shall be constructed in a manner that will retain the wash water to a paved drained area. Paved access shall be provided to permanent feed racks, mangers, and water troughs. Water troughs shall be provided with: (1) a drain to carry the water from the corrals; and (2) pavement (concrete or equivalent) which is at least ten feet wide at the drinking area.
    - The cow standing platform at permanent feed racks shall be paved with concrete or equivalent for at least ten feet back of the stanchion line.
    - As unpaved areas are cleaned, depressions tend to form, allowing ponding and increased infiltration. Regular maintenance shall include filling of depressions. Personnel shall be taught the correct use of manure collection machines (wheel loaders or elevating scrapers).

    The dairy operator/property owner shall be responsible for verifying, to the satisfaction of the Planning Director, implementation of the aforementioned Best Management Practices. The dairy operator/property owner shall be responsible for paying the County's actual costs of verifying compliance. If the County finds any of the applicable Best Management Practices have not been implemented, the dairy operator/property owner shall implement said Best Management Practices within the time frame specified in writing by the County. The dairy operator/property owner's verification shall be submitted to the Stanislaus County Planning Department within 60-days of written notice being delivered to the dairy operator/property owner.

2. The applicant shall comply with requirements of the Nutrient Management Plan (NMP) and Waste Management Plan (WMP) submitted to the County, as part of the Use Permit approval. The application rates of liquid and/or solid manure identified within the NMP shall not result in total nitrogen applied to the land application areas exceeding 1.65 times total nitrogen that will be removed from the field in the harvested portion of the crop. Upon request, compliance shall be verified by the collection of nutrient samples for nitrogen, potassium, phosphorus, and salts prior to and during application periods to confirm agronomic rates within all portions of cropped areas receiving manure, and to protect water supplies. The dairy operator/property owner shall be responsible for hiring a qualified professional, approved by the Planning Director, to collect nutrient samples, interpret the results, and provide said results to the County for review. If determined necessary by the Planning Director, the dairy operator/property owner shall pay for the County's actual costs to hire a third party to review the annual results.

3. The applicant shall enroll in the Central Valley Dairy Representative Monitoring Program (CVDRMP) to meet the requirements for groundwater monitoring prior to increasing the herd.

References: Application information; Waste Management Plan prepared by Sousa Engineering, dated October 2021; Nutrient Management Plan prepared by Patrick Machado, dated October 8, 2021; Referral response from the Environmental Review Committee, dated December 17, 2021; Email from the Central Valley Regional Water Quality Control Board (CVRWQCB), dated January 20, 2022; West Turlock Subbasin and East Turlock Subbasin Groundwater Sustainability

Agencies (GSAs) Turlock Subbasin Groundwater Sustainability Plan (GSP) First Annual Report Water Year 2022; Valley Water Collaborative Interactive Ambient Nitrate Map; Referral response received from Stanislaus County Department of Public Works, dated December 7, 2021; Stanislaus County General Plan and Support Documentation[1].

XI. LAND USE AND PLANNING -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Physically divide an established community?			**X**	
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			**X**	

Discussion: The project site is designated Agriculture in the County General Plan and is zoned A-2-40 (General Agriculture).

Dairies are considered to be a permitted agricultural use in the A-2 zoning district in Stanislaus County. Use permits are only processed for the expansion of dairy facilities when the Regional Water Quality Control Board (RWQCB) determines that Waste Discharge Requirements (WDRs) are required. The RWQCB has determined that the proposed project required amended Waste Discharge Requirements (WDR) which is subject to CEQA and, therefore, requires that the applicants obtain a Use Permit in accordance with §21.20.030(F) of the Stanislaus County Zoning Ordinance. Agricultural uses requiring a Use Permit which do not fall under Tier One, Two, or Three uses may be allowed when the Planning Commission finds that the establishment, maintenance, and operation of the proposed use or buildings applied for are consistent with the General Plan and will not, under the circumstances of the particular case, be detrimental to the health, safety, and general welfare of persons residing or working in the neighborhood of the use, and that it will not be detrimental or injurious to property and improvements in the neighborhood or to the general welfare of the County.

The Agricultural Element of the General Plan includes a requirement for an agricultural buffer to protect the long-term health of local agriculture by minimizing conflicts resulting from normal agricultural practices as a consequence of new or expanding uses approved in or adjacent to the A-2 (General Agriculture) zoning district. These guidelines apply to all new or expanding uses approved by discretionary permit in the A-2 zoning district or on a parcel adjoining the A-2 zoning district. Dairies are considered a permitted use under the A-2 Zoning Ordinance. Use permits are only processed for the expansion of dairy facilities when the Regional Water Quality Control Board (RWQCB) determines that Waste Discharge Requirements (WDRs) are required, which requires CEQA compliance. Therefore, an agricultural buffer is not required for this project as the use of a dairy facility is a permitted use within the A-2 zoning district.

Based on the specific features and design of this project, it does not appear this project will impact the long-term productive agricultural capability of surrounding contracted lands in the A-2 zoning district. There is no indication this project will result in the removal of adjacent contracted land from agricultural use.

The project will not physically divide an established community nor conflict with any habitat conservation plans.
Mitigation: None.

References: Application information; Waste Management Plan prepared by Sousa Engineering, dated October 2021; Nutrient Management Plan prepared by Patrick Machado, dated October 8, 2021; E-mail correspondence Regional Water Quality Control Board, dated January 20, 2022; Stanislaus County Zoning Ordinance (Title 21); Stanislaus County General Plan and Support Documentation[1].

XII. MINERAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			**X**	
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			**X**	

Discussion: The location of all commercially viable mineral resources in Stanislaus County has been mapped by the State Division of Mines and Geology in Special Report 173. There are no known significant resources on the site, nor is the project site located in a geological area known to produce resources.

Mitigation: None.

References: Stanislaus County General Plan and Support Documentation[1].

XIII. NOISE -- Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			**X**	
b) Generation of excessive groundborne vibration or groundborne noise levels?			**X**	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			**X**	

Discussion: The Stanislaus County General Plan identifies noise levels up to 75 dB Ldn (or CNEL) as the normally acceptable level of noise for agricultural uses. The Stanislaus County General Plan identifies noise levels for residential or other noise-sensitive land uses of up to 55 hourly Leq, dBA and 75 Lmax, dBA from 7 a.m. to 10 p.m. and 45 hourly Leq, dBA and 65 Lmax, dBA from 10 p.m. to 7 a.m. Pure tone noises, such as music, shall be reduced by five dBA; however, when ambient noise levels exceed the standards, the standards shall be increased to the ambient noise levels. The closest sensitive noise receptors are agricultural storage buildings and a residence located within approximately 85-268± feet from the project site to the south. On-site grading and construction may result in a temporary increase in the area's ambient noise levels; however, noise impacts associated with on-site activities and traffic are not anticipated to exceed the normally acceptable level of noise. Permanent increases may result as the number of animal units is increased on-site; however, Stanislaus County has adopted a Right-to-Farm Ordinance (§9.32.050) which states that inconveniences associated with agricultural operations, such as noise, odors, flies, dust, or fumes shall not be considered to be a nuisance if agricultural operations are consistent with accepted customs and standards. The site itself is impacted by noise generated by vehicular traffic on Hultberg Road, and neighboring dairy operations.
The site is not located within an airport land use plan. Impacts associated with noise are considered to be less than significant.

Mitigation: None.

References: Application information; Stanislaus County Noise Control Ordinance (Title 10); Stanislaus County General Plan and Support Documentation[1].

XIV. POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			**X**	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?			**X**	

Discussion: The site is not included in the vacant sites inventory for the 2016 Stanislaus County Housing Element, which covers the 5th cycle Regional Housing Needs Allocation (RHNA) for the County and will therefore not impact the County's ability to meet their RHNA. No population growth will be induced nor will any existing housing be displaced as a result of this project. The project site is adjacent to large scale agricultural operations, and the nature of the use is considered consistent with the General Agriculture (A-2) zoning district.

There are two single-family residences that have been developed on the property which are utilized by the property owner, and one employee who lives on-site. No additional employee housing is proposed as part of this project, therefore the project is not required to obtain a Permit to Operate Employee Housing through the Department of Environmental Resources, which addresses housing standards. Should any additional employee housing be proposed in the future, it will be evaluated to determine which permits are necessary or if environmental review is required. The provisions of the California Building Standards Code (Title 24) govern the construction of permanent buildings used for employee housing. Additionally, Title 25 of the California Code of Regulations includes specific requirements for the construction of housing, maintenance of grounds and buildings, minimum allowable sleeping space and facilities, sanitation, and heating.

Mitigation: None.

References: Application information; (Cal. Code Regs., Title 24); Employee Housing (Cal Code Regs., Title 25, Division 1, Chapter 1, Subchapter 3); Stanislaus County General Plan and Support Documentation[1].

XV. PUBLIC SERVICES --	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Would the project result in the substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			**X**	
Police protection?			**X**	
Schools?			**X**	
Parks?			**X**	
Other public facilities?			**X**	

Discussion: The County has adopted Public Facilities Fees, as well as one for Fire Facility Fees on behalf of the appropriate fire district, to address impacts to public services. Such fees are required to be paid at the time of building permit issuance.

The project was referred to the appropriate public service agencies, as well as the Stanislaus County Environmental Review Committee (ERC). This project was circulated to all applicable school, fire, police, irrigation, public works departments, and

districts including Chatom Union School District, Turlock Unified School District, Mountain View Fire Protection District, Stanislaus County Sheriff's Office, Turlock Irrigation District and Stanislaus County Public Works Department during the Early Consultation referral period and no concerns were identified with regard to public services.

A referral response received from TID for the project stated that the District's Lateral 5.5 is located along a portion on the southern boundary of the project site, and irrigation distribution pipelines are in the vicinity of the project. The District clarified that none of the irrigation facilities appear to be affected by the proposed project; however, the District shall review and approve all maps and plans of the project, and any improvements to the property which impact irrigation facilities will be subject to the District's approval and must meet all District standards and specifications. The owner/developer must apply for a facility change for any pole or electrical facility relocation and contact the District's Electrical Engineering Department to request any service removals or new services for overhead lines. TID's comments will be applied to the project as conditions of approval.

The Department of Public Works indicated in a referral response to the project that a grading, drainage, and erosion/sediment control plan for the project shall be submitted prior to the issuance of any building permit. A Storm Water Pollution Prevention Plan (SWPPP) will be required for future construction prior to the approval of any grading. Public Works requested an Encroachment Permit for the unpaved driveways that access the dairy site from Hultberg Road; the driveways will need to be installed as per Public Works' Standards and Specifications. Public Works also requested a road dedication be provided for the half-width of Hultberg Road. These comments will be applied as conditions of approval.

Mitigation: None.

References: Application information; Referral response from Turlock Irrigation District, dated December 13, 2021; Referral response from Stanislaus County Environmental Review Committee, dated December 17, 2021; Referral response received from Stanislaus County Public Works Department, dated December 7, 2021; Stanislaus County General Plan and Support Documentation[1].

XVI. RECREATION --	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			**X**	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			**X**	

Discussion: This project will not increase demands for recreational facilities, as such impacts typically are associated with residential development.

Impacts to recreation are considered to be less than significant.

Mitigation: None.

References: Application information; Stanislaus County General Plan and Support Documentation[1].

XVII. TRANSPORTATION-- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			**X**	

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?			**X**	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			**X**	
d) Result in inadequate emergency access?			**X**	

Discussion: The project site has access to County-maintained Hultberg Road, which is classified as 60-foot-wide local road. It is not anticipated that the project would substantially affect the level of service on Hultberg Road. The project was referred to the Stanislaus County Department of Public Works, which has requested conditions of approval to address driveway approaches installed according to Public Works' Standards and Specifications, restrictions on loading, parking, unloading within the County right-of-way, the need for road reservations, and a grading, drainage, and sediment management plan. These conditions will be applied to the project.

Section 15064.3 of the CEQA Guidelines establishes specific considerations for evaluating a project's transportation impacts. The CEQA Guidelines identify vehicle miles traveled (VMT), which is the amount and distance of automobile travel attributable to a project, as the most appropriate measure of transportation impacts. A technical advisory on evaluating transportation impacts in CEQA published by the Governor's Office of Planning and Research (OPR) in December of 2018 clarified the definition of automobiles as referring to on-road passenger vehicles, specifically cars and light trucks. While heavy trucks are not considered in the definition of automobiles for which VMT is calculated for, heavy duty truck VMT could be included for modeling convenience. According to the same technical advisory from OPR, projects that generate or attract fewer than 110 trips per-day generally may be assumed to cause a less-than significant transportation impact.

There are currently five truck trips for tallow, feed, and veterinary services every two weeks, a total of two milk truck trips per-day and a total of eight employee vehicle trips per-day (inbound and outbound trips for the four employees living off-site). The proposed request is expected to increase the number of feed truck trips from one to three per-week and decrease milk truck trips from two to one per-day for a new combined total of nine truck trips for tallow, feed, and veterinary services every two weeks, and one milk truck trip per-day. As part of this request, employee numbers are anticipated to decrease by one for a total of four employees with three employees continuing to live off-site and one employee who will continue to live on-site. Accordingly, employee trip numbers are proposed to decrease from eight to six per-day. If all truck trips for tallow, feed, veterinary service, and milk were to fall on the same day, at most there will be a maximum total of 20 truck trips in one day (total inbound and outbound trips), and a total of six automobile trips per-day (anticipated inbound and outbound trips by the three employees not living on-site). VMT increase associated with the proposed project is less-than significant as the number of vehicle trips will not exceed 110 per-day.

Transportation impacts associated with the project are considered to be less than significant.

Mitigation: None.

References: Application information; Governor's Office of Planning and Research Technical Advisory, December 2018; Referral response received from Stanislaus County Department of Public Works, dated December 7, 2021; Stanislaus County General Plan and Support Documentation[1].

XVIII. TRIBAL CULTURAL RESOURCES -- Would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California native American tribe, and that is:				

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or			**X**	
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set for the in subdivision (c) of Public Resource Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			**X**	

Discussion: It does not appear that this project will result in significant impacts to any archaeological or cultural resources. The project site is already improved with multiple buildings. In accordance with SB 18 and AB 52, this project was not referred to the tribes listed with the Native American Heritage Commission (NAHC) as the project is not a General Plan Amendment and no tribes have requested consultation or project referral noticing. While the site is already developed, if any resources are found during future construction, construction activities would halt until a qualified survey takes place and the appropriate authorities are notified.

Mitigation: None.

References: Application information; Stanislaus County General Plan and Support Documentation[1].

XIX. UTILITIES AND SERVICE SYSTEMS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			**X**	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			**X**	
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			**X**	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			**X**	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			**X**	

Discussion: Limitations on providing services have not been identified. The project proposes to utilize an existing well and existing septic facilities. The project was referred to the Turlock Irrigation District (TID) which responded stating the District's Lateral 5.5 is located along a portion on the southern boundary of the project site, and irrigation distribution pipelines are in the vicinity of the project. The District clarified that none of the irrigation facilities appear to be affected by the proposed project; however, the District shall review and approve all maps and plans of the project, and any improvements to the property which impact irrigation facilities will be subject to the District's approval and must meet all District standards and specifications. The owner/developer must apply for a facility change for any pole or electrical facility relocation and contact the District's Electrical Engineering Department to request any service removals or new services for

overhead lines. TID's comments will be applied to the project as conditions of approval. A referral response received from the Department of Public Works indicated that a grading, drainage, and erosion/sediment control plan for the project shall be submitted prior to the herd increase, or issuance of any building permit or grading permit. A Storm Water Pollution Prevention Plan (SWPPP) will be required for future construction prior to the approval of any grading. These comments will be applied as conditions of approval.

The project was also referred to PG&E and AT&T and no response has been received to date.

No new wells or septic systems are proposed for this expansion; installation of any future wells or septic systems must be reviewed and approved by the Department of Environmental Resources (DER) and must adhere to current Local Agency Management Program (LAMP) standards. LAMP standards include minimum setbacks from wells to prevent negative impacts to groundwater quality. The project was referred to DER, which responded requiring that any new building requiring an on-site wastewater treatment system (OWTS) shall meet LAMP standards and be designed according to type and/or maximum occupancy of the proposed structure to the estimated waste/sewage design flow. DER also requested the applicant secure all necessary permits for the destruction/relocation of any on-site water wells and water distribution lines, and/or OWTS at the project site under the direction of DER. DER's comments will be added to the project as conditions of approval.

The project was also referred to the Environmental Review Committee who responded with no comment.

Impacts to utilities and services are considered to be less than significant.

Mitigation: None.

References: Application information; Referral response received from Turlock Irrigation District, dated December 13, 2021; Referral response received from Stanislaus County Department of Public Works, dated December 7, 2021; Referral response received from Stanislaus County Department of Environmental Resources, dated December 17, 2021; Referral Response received from Stanislaus County Environmental Review Committee, dated December 17, 2021; Stanislaus County General Plan and Support Documentation[1].

XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	**Potentially Significant Impact**	**Less Than Significant With Mitigation Included**	**Less Than Significant Impact**	**No Impact**
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			**X**	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			**X**	
c) Require the installation of maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			**X**	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			**X**	

Discussion: The Stanislaus County Local Hazard Mitigation Plan identifies risks posed by disasters and identifies ways to minimize damage from those disasters. The terrain of the site is relatively flat, and the site has access to a County-maintained road. The site is located in a Local Responsibility Area (LRA) for fire protection and is served by Mountain View Fire Protection District. The project was referred to the District, and no comments have been received to date. California Building and Fire Code establishes minimum standards for the protection of life and property by increasing the ability of a

building to resist intrusion of flame and burning embers. The building permit for the 14,352± square-foot free stall barn will be reviewed by the County's Building Permits Division and Fire Prevention Bureau to ensure all State of California Building and Fire Code requirements are met prior to construction. Wildfire risk and risks associated with postfire land changes are considered to be less-than significant.

Mitigation: None.

References: Application information; California Fire Code Title 24, Part 9; California Building Code Title 24, Part 2, Chapter 7; Stanislaus County Local Hazard Mitigation Plan; Stanislaus County General Plan and Support Documentation[1].

XXI. MANDATORY FINDINGS OF SIGNIFICANCE --	Potentially Significant Impact	Less Than Significant With Mitigation Included	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			**X**	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			**X**	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			**X**	

Discussion: The project has a General Plan designation of Agriculture and zoning designation of General Agriculture with a 40-acre minimum (A-2-40) which allows dairies as a permitted agricultural use; however, a use permit is required if a dairy is expanding and a new or modified permit, waiver, order, or waste discharge requirement is needed from the Regional Water Quality Control Board which requires CEQA compliance. In this case, discretionary approval is required for the expansion of the dairy to allow for amendments to the operation's Waste Discharge Requirements.

The project will not conflict with a Habitat Conservation Plan, a Natural Community Conservation Plan, or other locally approved conservation plans. Impacts to endangered species or habitats, locally designated species, or wildlife dispersal or mitigation corridors are considered to be less than significant.

It does not appear that this project will result in significant impacts to any archaeological or cultural resources. The project site is already developed, and no new construction is proposed. The project site has already been disturbed. Standard conditions of approval regarding the discovery of cultural resources during any future construction resulting from this request will be added to the project.

The project will not physically divide an established community. The site is surrounded by A-2-40 zoned parcels and parcels within the County of Merced improved with agricultural uses, including dairies and other confined animal facilities, irrigated cropland, orchards, and scattered single-family dwellings in all directions. Development of the surrounding area is subject to the permitted uses and uses allowed when a use permit is obtained as permitted by the A-2 zoning district. Additionally, the majority of the surrounding parcels located within Stanislaus County are restricted by Williamson Act Contracts and are limited to the uses found to be compatible with the Williamson Act. Any uses beyond the uses permitted in the A-2 zoning district would require a General Plan Amendment and rezoning of the property which would be evaluated through additional

environmental review and would take into consideration impacts from the loss of farmland and the potential for farmland conversion and cumulative impacts to the surrounding area.

The proposed project will generate a low amount of vehicle trips. If all truck trips for tallow, feed, veterinary service, and milk were to fall on the same day, at most there will be a maximum total of 20 truck trips in one day (total inbound and outbound trips), and a total of six automobile trips per-day (anticipated inbound and outbound trips by the three employees not living on-site). As this is below the threshold of significance for vehicle and heavy truck trips as discussed in Section XVII - *Transportation*, no significant impacts from the one vehicle trip to transportation are anticipated.

Review of this project has not indicated any features which might significantly impact the environmental quality of the site and/or the surrounding area.

Mitigation: None.

References: Application information; Initial Study; Stanislaus County General Plan and Support Documentation[1].

Stanislaus County General Plan and Support Documentation[1] adopted in August 23, 2016, as amended. ***Housing Element*** adopted on April 5, 2016.

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
1010 10th Street, Suite 3400, Modesto, CA 95354
Planning Phone: (209) 525-6330 Fax: (209) 525-5911
Building Phone: (209) 525-6557 Fax: (209) 525-7759

Stanislaus County

Planning and Community Development

Mitigation Monitoring and Reporting Program

Adapted from CEQA Guidelines APPENDIX G Environmental Checklist Form, Final Text, January 1, 2020

March 11, 2024

1. Project title and location:	Use Permit Application No. PLN2021-0104 – Kooistra Dairy 5831 and 5837 Hultberg Road, between Ehrlich and Bradbury Roads, in the Turlock area. (APN: 057-017-005).
2. Project Applicant name and address:	Sam and Cynthia Kooistra 5837 Hultberg Road Turlock, CA 95380
3. Person Responsible for Implementing Mitigation Program (Applicant):	Sam and Cynthia Kooistra Dairy Operator/Property Owner
4. Contact person at County:	Emily DeAnda, Associate Planner, (209) 525-6330

MITIGATION MEASURES AND MONITORING PROGRAM:

List all Mitigation Measures by topic as identified in the Mitigated Negative Declaration and complete the form for each measure.

X. HYDROLOGY AND WATER QUALITY

No.1 Mitigation Measure: The following Best Management Practices shall be implemented as applicable:

- Positive drainage shall be included in project design and construction to ensure that excessive ponding does not occur. The design shall comply with Title 3, Division 2, Chapter 1, Article 22, Section 646.1 of the Food and Agriculture Code for construction and maintenance of dairy or facility surroundings, corrals, and ramps, as described below.
- Dirt or unpaved corrals, or unpaved lanes, shall not be located closer than 25 feet from the milking barn or closer than 50 feet from the milk house. Corral drainage must be provided.
- A paved (concrete or equivalent) ramp or corral shall be provided to allow the animals to enter and leave the milking barn. This paved area shall be curbed (minimum of six inches high and six inches wide) and sloped to a drain. Cow washing areas shall be paved (concrete or equivalent) and sloped to a drain. The perimeter of the area shall be constructed in a manner that will retain the wash water to a paved drained area. Paved access shall be provided to permanent feed racks, mangers, and water troughs. Water troughs shall be provided with: (1) a drain to carry the water from the corrals; and (2) pavement (concrete or equivalent) which is at least ten feet wide at the drinking

area.

- The cow standing platform at permanent feed racks shall be paved with concrete or equivalent for at least ten feet back of the stanchion line.
- As unpaved areas are cleaned, depressions tend to form, allowing ponding and increased infiltration. Regular maintenance shall include filling of depressions. Personnel shall be taught the correct use of manure collection machines (wheel loaders or elevating scrapers).

The dairy operator/property owner shall be responsible for providing, to the satisfaction of the Planning Director, documentation of the implementation of the aforementioned Best Management Practices. The dairy operator/property owner shall be responsible for paying the County's actual costs of verifying compliance. If the County finds any of the applicable Best Management Practices have not been implemented, the dairy operator/property owner shall implement said Best Management Practices within the time frame specified in writing by the County.

Who Implements the Measure:	Dairy Operator/Property Owner
When should the measure be implemented:	Prior to increase in herd size
When should it be completed:	Prior to increase in herd size
Who verifies compliance:	Stanislaus County Department of Planning and Community Development
Other Responsible Agencies:	Department of Environmental Resources, Milk and Dairy Inspections

No.2 Mitigation Measure: The applicant shall comply with requirements of the Nutrient Management Plan (NMP) and Waste Management Plan (WMP) submitted to the County, as part of the Use Permit approval. The application rates of liquid and/or solid manure identified within the NMP shall not result in total nitrogen applied to the land application areas exceeding 1.65 times total nitrogen that will be removed from the field in the harvested portion of the crop. Upon request, compliance shall be verified by the collection of nutrient samples for nitrogen, potassium, phosphorus, and salts prior to and during application periods to confirm agronomic rates within all portions of cropped areas receiving manure, and to protect water supplies. The dairy operator/property owner shall be responsible for hiring a qualified professional, approved by the Planning Director, to collect nutrient samples, interpret the results, and provide said results to the County for review. If determined necessary by the Planning Director, the dairy operator/property owner shall pay for the County's actual costs to hire a third party to review the annual results.

Who Implements the Measure:	Dairy Operator/Property Owner
When should the measure be implemented:	Prior to increase in herd size
When should it be completed:	Ongoing
Who verifies compliance:	Stanislaus County Department of Planning and Community Development

	Other Responsible Agencies:	None

No.3	Mitigation Measure:	The applicant shall enroll in the Central Valley Dairy Representative Monitoring Program (CVDRMP) to meet the requirements for groundwater monitoring. Documentation reflecting enrollment shall be provided to the Stanislaus County Department of Planning and Community Development prior to increasing the herd.
	Who Implements the Measure:	Dairy Operator/Property Owner
	When should the measure be implemented:	Prior to increase in herd size
	When should it be completed:	Prior to increase in herd size
	Who verifies compliance:	Stanislaus County Department of Planning and Community Development
	Other Responsible Agencies:	None

I, the undersigned, do hereby certify that I understand and agree to be responsible for implementing the Mitigation Program for the above listed project.

Signature on File _____

Signature

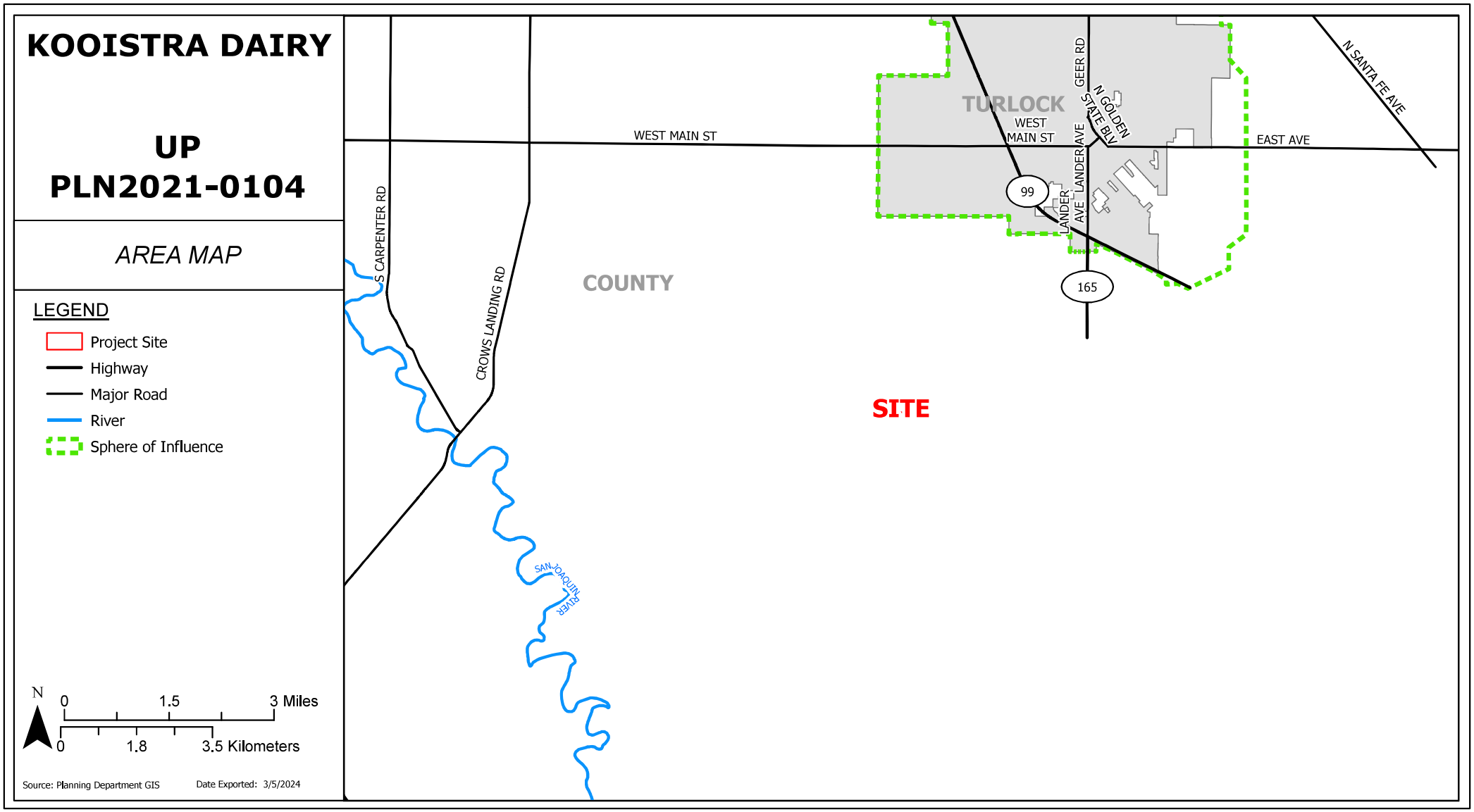
_____

Date

KOOISTRA DAIRY

UP PLN2021-0104

AREA MAP



Source: Planning Department GIS Date Exported: 3/5/2024

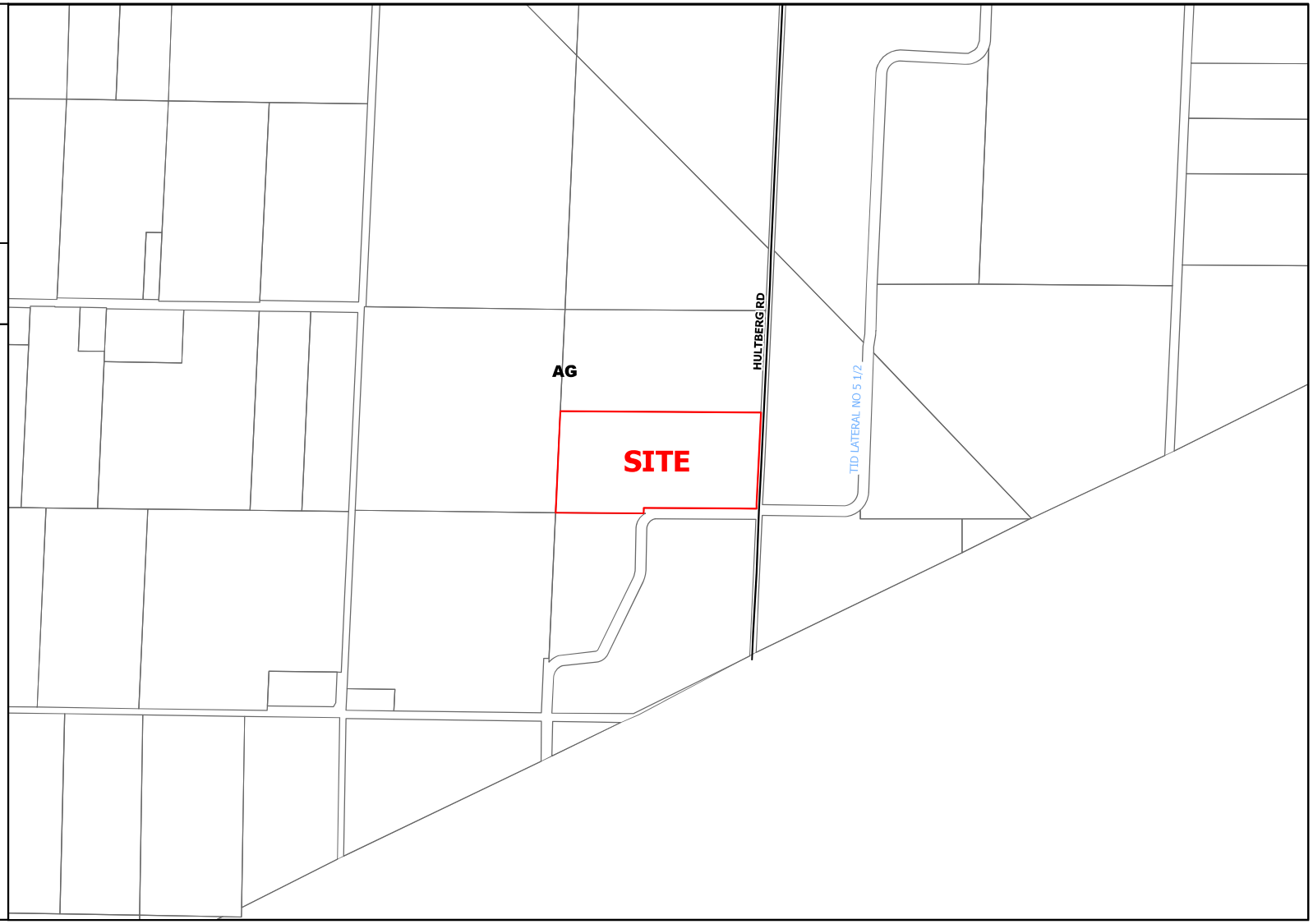
KOOISTRA DAIRY

UP PLN2021-0104

GENERAL PLAN MAP

LEGEND

- Project Site
- Parcel
- Canal
- Agriculture
- Street



N

0 500 1,000 US Feet

0 215 430 Meters

Source: Planning Department GIS

Date Exported: 3/5/2024

KOOISTRA DAIRY

UP PLN2021-0104

ZONING MAP

LEGEND

- Project Site
- Parcel
- Canal

Zoning Designation

- General Agriculture 40 Acre
- Street

N

0 500 1,000 US Feet

0 215 430 Meters

Source: Planning Department GIS

Date Exported: 3/5/2024

KOOISTRA DAIRY

UP
PLN2021-0104

2023 AERIAL AREA MAP

LEGEND

- Project Site
- Parcel
- Canal
- Street

N

0 500 1,000 US Feet

0 215 430 Meters

Source: Planning Department GIS

Date Exported: 3/5/2024

KOOISTRA DAIRY

UP PLN2021-0104

2023 AERIAL SITE MAP

LEGEND

- Project Site
- Parcel
- Canal
- Street

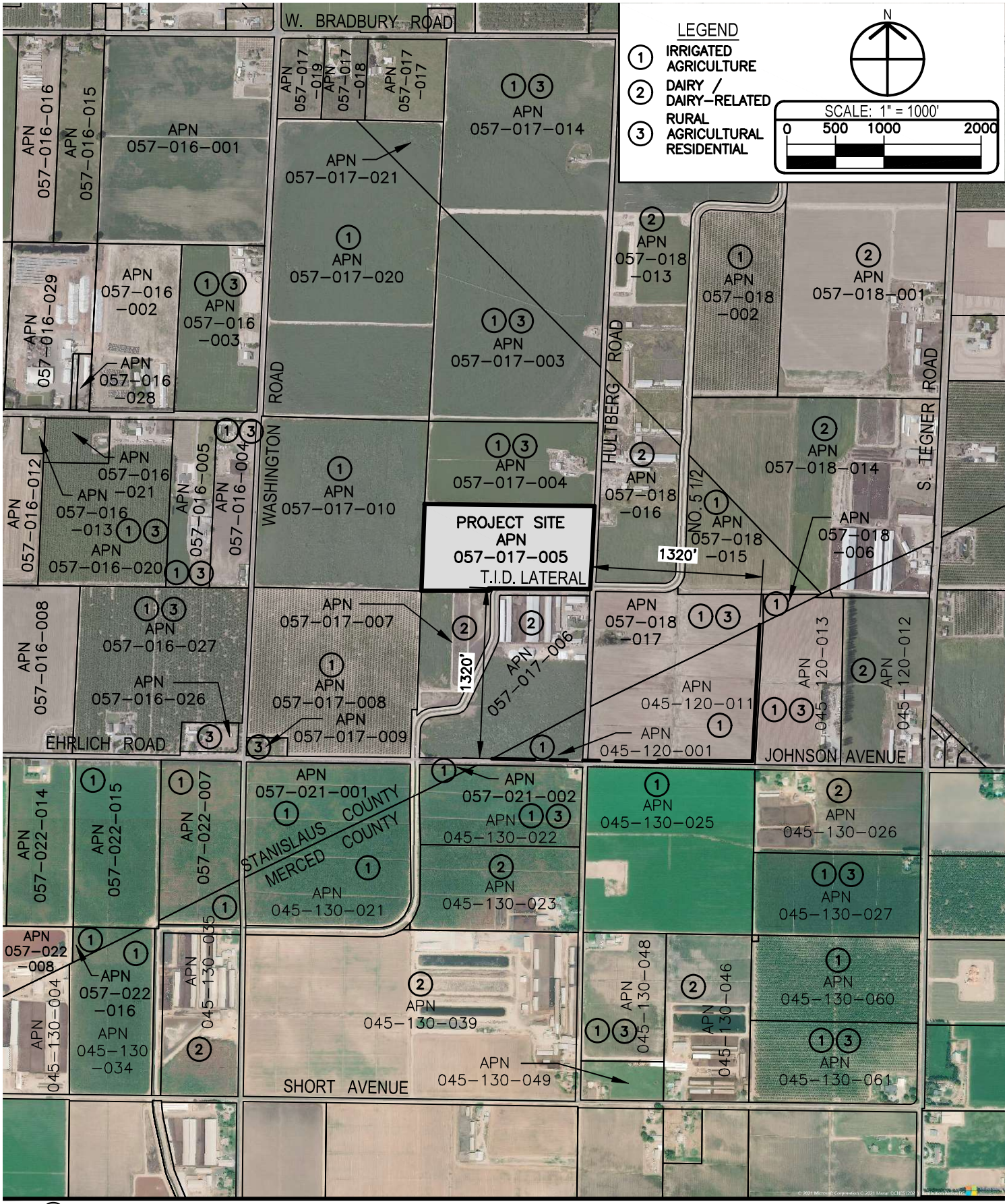
N

0 115 230 US Feet

0 30 60 Meters

Source: Planning Department GIS

Date Exported: 3/5/2024



SOUSA
ENGINEERING
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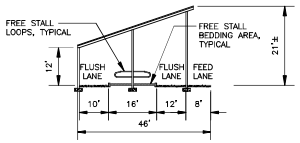
PO BOX 1613
OAKDALE, CA 95361

PH: (209)238-3151
WWW.SOUSAENG.COM

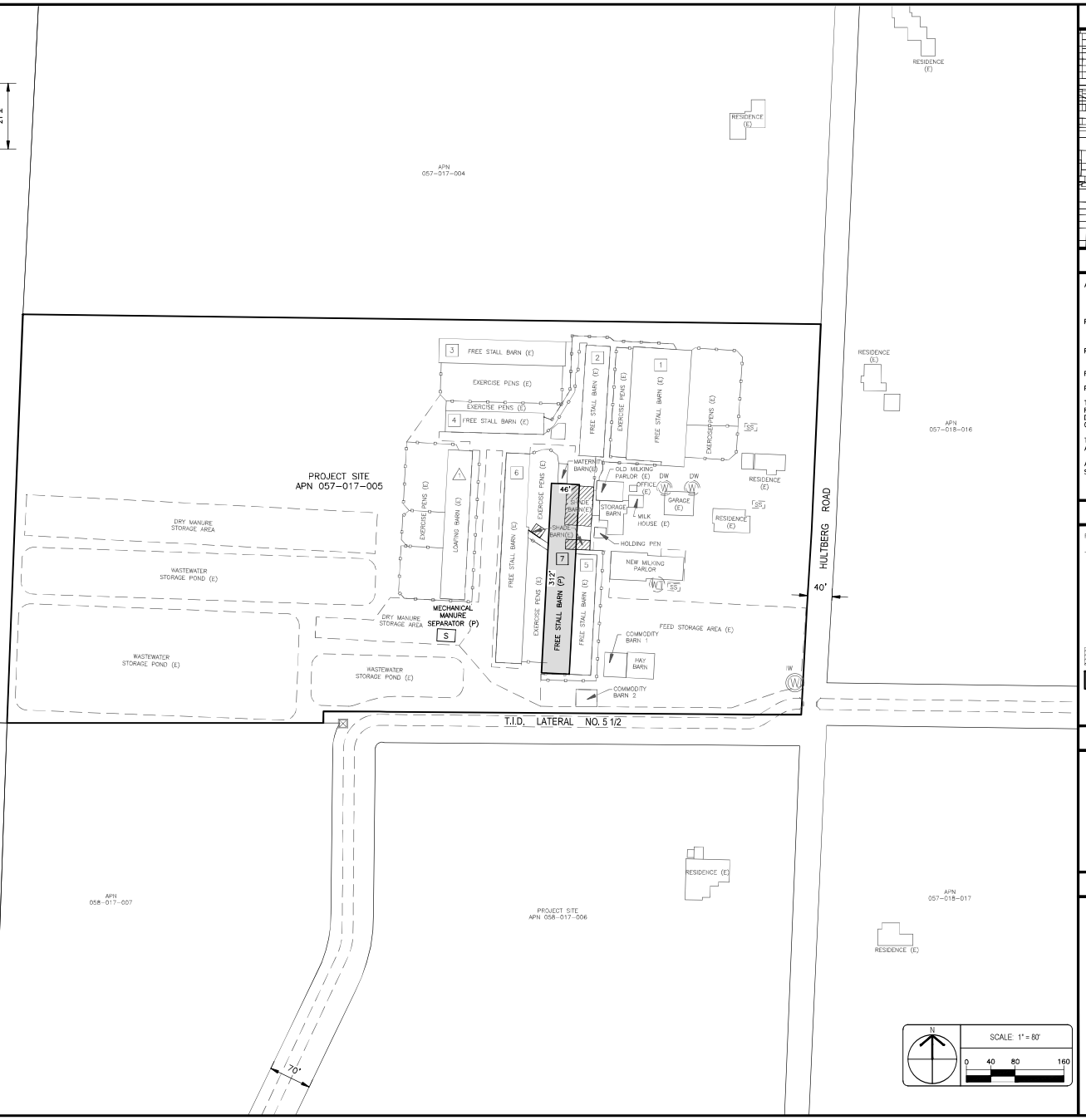
AREA LAND USE MAP
KOOISTRA DAIRY

STANISLAUS COUNTY, CA

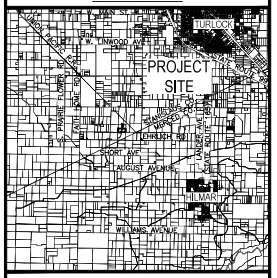


FREE STALL BARN END ELEVATION
SCALE: 1" = 20'

NOTE: FEATURES AND DIMENSIONS SHOWN ARE CONCEPTUAL ONLY. DETAILS MAY DIFFER AT THE TIME OF BUILDING DEPARTMENT SUBMITTAL.



VICINITY MAP



PROJECT SITE INFORMATION

APPLICANT: KOOISTRA DAIRY
ATTN: SAM AND CYNTHIA KOOISTRA
5837 HULTBERG ROAD
TURLOCK, CA 95380

PROPERTY OWNER: SAM AND CYNTHIA KOOISTRA
5837 HULTBERG ROAD
TURLOCK, CA 95380

PROPERTY ADDRESS: 5837 HULTBERG ROAD
TURLOCK, CA 95380

PROPERTY ASSESSOR'S PARCEL NUMBER: 057-017-005

PROPOSED BUILDING SQUARE FOOTAGE: 14,352 S.F.

THE PROJECT SITE IS LOCATED IN ZONE X PER FEMA FLOOD INSURANCE RATE MAP 06099C0800F. ZONE X IS DEFINED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

THE PROJECT SITE IS LOCATED NEAR THE 80' CONTOUR ACCORDING TO USGS TOPOGRAPHIC MAPS (NAVD88 DATUM).

ALL STRUCTURES LABELED "LOAFING BARN" OR "FREE STALL BARN" ARE ANIMAL HOUSING STRUCTURES.

LEGEND

FREE STALL BARN (E)	EXISTING FACILITY IMPROVEMENT
	EXISTING FENCE
DW	EXISTING DOMESTIC WELL
IW	EXISTING IRRIGATION WELL
SS	APPROXIMATE LOCATION OF EXISTING SEPTIC TANK AND LEACH FIELD
WT	EXISTING WATER TANK
	EXISTING IRRIGATION BOX OR VALVE
	EXISTING STRUCTURE TO BE REMOVED
FREE STALL BARN (P)	PROPOSED STRUCTURE OR IMPROVEMENT
S	MECHANICAL MANURE SEPARATOR – PROPOSED

ANIMAL HOUSING IDENTIFICATION LEGEND

4	EXISTING LOAFING BARN NUMBER
5	EXISTING FREE STALL BARN NUMBER
5	PROPOSED FREE STALL BARN NUMBER

FACILITY BUILDING DIMENSIONS

BUILDING NO.	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ. FT.)
FREE STALL 1	187.5	96	18,000
FREE STALL 2	182	40	7,280
FREE STALL 3	208	40	8,320
FREE STALL 4	162	35	5,670
FREE STALL 5	198	35	6,930
FREE STALL 6	345	VARIES	14,355
FREE STALL 7	312	46	14,352
LOAFING BARN 1	245	40	9,800
MATERNITY BARN	32	15	480
OLD MILKING	44	32	1,408
OFFICE	12	10	120
MILK HOUSE	24	20	480
STORAGE BARN	IRREGULAR	IRREGULAR	2,030
HOLDING PEN	20	16	320
NEW MILKING	IRREGULAR	IRREGULAR	5,040
COMMODITY 1	40	37	1,480
COMMODITY 2	35	28	980
HAY BARN	45	42	1,890

SHEET 1 OF 1

SOUSA ENGINEERING
INFRASTRUCTURE - DEVELOPMENT - AGRICULTURE
PO BOX 1613
OAKDALE, CA 95361
PH: (209)238-3151
WWW.SOUSAENG.COM

SITE PLAN
TO ACCOMPANY USE PERMIT APPLICATION
KOOISTRA DAIRY
STANISLAUS COUNTY, CA

SYMBOL	REVISIONS DESCRIPTION	APPD.

DRAWN BY: MS
DATE: 11/16/2021
FILE: 01_site.dwg
JOB NO.: 2021-014

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: Kooistra Dairy

Physical address of dairy:

5837 Hultberg RD	Turlock	Stanislaus	95380
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address):

Date facility was originally placed in operation: 05/01/1980

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

County Assessor Parcel Number(s) for dairy facility:

0045-0001-0003-0026 0057-0017-0005-0000

B. OPERATOR NAME: Kooistra, Cynthia Lea Telephone no.: (209) 634-2311 (Landline) (209) 678-3112 (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

OPERATOR NAME: Kooistra, Sam Sikke Telephone no.: (209) 634-2311 (Landline) (209) 678-3114 (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

C. LEGAL OWNER NAME: Kooistra, Cynthia Lea Telephone no.: (209) 634-2311 (Landline) (209) 678-3112 (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

LEGAL OWNER NAME: Kooistra, Sam Sikke Telephone no.: (209) 634-2311 (Landline) (209) 678-3114 (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

D. CONTACT NAME: Machado, Patrick Telephone no.: (Landline) (209) 678-6720 (Cellular)

Title: CCA # 385124

7112 Metcalf WAY	Hughson	CA	95326
Mailing Address Number and Street	City	State	Zip Code

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

CONTACT NAME: Kashefi, Kion | Telephone no.: | Landline | (209) 988-1724 Cellular

Title: CCA/Dairy Specialist

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

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:

1,000 *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	800	200	0	0	0	0
Maximum count	800	200	0	0	0	0
Avg live weight (lbs)	1,250	1,300	0	0		
Daily hours on flush	20	18	0	0	0	0

Predominant milk cow breed: Jersey

Average milk production: 72 *pounds per cow per day*

B. IRRIGATION SOURCES

Irrigation Source Name	Type	Nitrogen (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Discharge Rate
Canal Water	Surface water (canal, river)	0.05	0.00	0.00	15 *cfs*

C. NUTRIENT IMPORTS

No nutrient imports entered.

D. NUTRIENT EXPORTS

Nutrient Type/Name	Quantity	Moisture	Nitrogen	Phosphorus (as P2O5)	Potassium (as K2O)
Wastewater	3,200,000.00 *gal*	0.0%	0.100%	0.030%	0.170%
Corral Solids	3,700.00 *ton*	10.5%	2.020%	1.240%	4.540%

Total nitrogen exported: 160,488.60 *lbs*

Total phosphorus exported: 39,389.61 *lbs*

Total potassium exported: 287,247.23 *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 adsorbtion/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*

APPLICATION AREA

A. ASSESSOR PARCEL NUMBER: 0045-0120-0011-0000

Legal owner of parcel: Owned by Dairy

ASSESSOR PARCEL NUMBER: 0045-0120-0013-0000

Legal owner of parcel: Fernandes, Robert Telephone no.: (Landline) (209) 495-0708 (Cellular)

22132 W Johnson AVE	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

ASSESSOR PARCEL NUMBER: 0045-0130-0026-0000

Legal owner of parcel: Owned by Dairy

ASSESSOR PARCEL NUMBER: 0057-0017-0005-0000

Legal owner of parcel: Owned by Dairy

B. FIELD NAME: 1-Kooistra Dairy

Cropable acres: 5

Predominant soil type: Loamy sand

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

Can fresh water for irrigation purposes be delived 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: Berm

Crops grown and rotation:

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Early October	Early April	5
Corn, silage	Middle April	Middle August	5
Sudangrass, silage	Late August	Late September	5

FIELD NAME: 2-Kooistra

Cropable acres: 36

Predominant soil type: Loamy sand

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

Can fresh water for irrigation purposes be delived 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: Berm

Crops grown and rotation:

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Early October	Early April	36
Corn, silage	Middle April	Middle August	36
Sudangrass, silage	Late August	Late September	36

FIELD NAME: 3-Kooistra heifer

Cropable acres: 10

Predominant soil type: Loamy sand

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

Can fresh water for irrigation purposes be delived 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: Berm

Crops grown and rotation:

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Early October	Early April	10
Corn, silage	Middle April	Middle August	10

Sudangrass, silage	Late August	Late September	10

FIELD NAME: 4-Fernandes

Cropable acres: 17

Predominant soil type: Loamy sand

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

Can fresh water for irrigation purposes be delived 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: Berm

Crops grown and rotation:

Crop Type	Plant Date	Harvest Date	Acres Planted
Oats, silage-soft dough	Early October	Early April	17
Corn, silage	Middle April	Middle August	17
Sudangrass, silage	Late August	Late September	17

C. LAND APPLICATION AREA FIELDS AND PARCELS

Field name	Cropable acres	Total harvests	Parcel number
1-Kooistra Dairy	5	3	0057-0017-00050000
2-Kooistra	36	3	0045-0120-00110000
3-Kooistra heifer	10	3	0045-0130-00260000
4-Fernandes	17	3	0045-0120-00130000
Land application area totals	68	12	

NUTRIENT BUDGET

A. NUTRIENT BUDGET FOR CROP: 1-Kooistra Dairy / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
Dry manure	1	95.0	61.4	224.8	95.0
Nutrient source: From dairy		25%	50%	85%	
Application method: Broadcast/incorporate					
Pre-irrigation prior to planting (with fertilizer)	1	90.0	60.0	205.0	90.1
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	2.0
	0.1	0.0	0.0	

In season irrigation (no fertilizer)	2	0.0	0.0	0.0	0.1
Nutrient source: Water only		0%	0%	0%	
Application method: Surface					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	2.0
	0.1	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	0.0	0.1	0.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	95.0	61.4	224.8
Liquid manure	90.0	60.0	205.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	189.9	121.5	429.8
Potential crop nutrient removal	160.0	25.6	132.8
Nutrient balance	29.9	95.9	297.0
Applied to removal ratio	1.19	4.75	3.24

Fresh water applied: 1.49 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 1-Kooistra Dairy / Corn, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)

NUTRIENT BUDGET FOR CROP (CONTINUED): 1-Kooistra Dairy / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
Pre-irrigation prior to planting (no fertilizer)	1	0.0	0.0	0.0	0.1
Nutrient source: Water only		0%	0%	0%	
Application method: Surface					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	2.0
	0.1	0.0	0.0	

In season irrigation (no fertilizer)	4	0.0	0.0	0.0	0.3
Nutrient source: Water only		0%	0%	0%	
Application method: Surface					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	2.0
	0.1	0.0	0.0	

In season irrigation (with fertilizer)	3	100.0	50.0	270.0	300.1
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	1.0
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.4	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	300.0	150.0	810.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	305.1	150.1	810.0
Potential crop nutrient removal	256.0	48.0	211.2
Nutrient balance	49.1	102.1	598.8
Applied to removal ratio	1.19	3.13	3.84

Fresh water applied: 3.22 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 1-Kooistra Dairy / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
In season irrigation (with fertilizer)	1	100.0	50.0	270.0	100.1
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	1.5
	0.1	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.1	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	100.0	50.0	270.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	104.7	50.1	270.0
Potential crop nutrient removal	110.0	17.0	120.0
Nutrient balance	-5.3	33.1	150.0
Applied to removal ratio	0.95	2.95	2.25

Fresh water applied: 0.37 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 2-Kooistra / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
Dry manure	1	100.0	61.4	224.8	100.0
Nutrient source: From dairy		25%	50%	85%	
Application method: Broadcast/incorporate					

NUTRIENT BUDGET FOR CROP (CONTINUED): 2-Kooistra / Oats, silage-soft dough

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Pre-irrigation prior to planting (with fertilizer)	1	80.0	40.0	200.0	80.0
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	10.0
	0.0	0.0	0.0	

In season irrigation (no fertilizer)	2	0.0	0.0	0.0	0.1
Nutrient source: Water only		0%	0%	0%	
Application method: Surface					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	10.0
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.1	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	100.0	61.4	224.8
Liquid manure	80.0	40.0	200.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	184.8	101.5	424.8
Potential crop nutrient removal	160.0	25.6	132.8
Nutrient balance	24.8	75.9	292.0
Applied to removal ratio	1.16	3.96	3.20

Fresh water applied: 1.03 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 2-Kooistra / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					

NUTRIENT BUDGET FOR CROP (CONTINUED): 2-Kooistra / Corn, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Pre-irrigation prior to planting (no fertilizer) *Nutrient source:* Water only *Application method:* Surface	1	0.0 0%	0.0 0%	0.0 0%	0.1

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	11.0
	0.1	0.0	0.0	

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) *Nutrient source:* Water only *Application method:* Surface	4	0.0 0%	0.0 0%	0.0 0%	0.2

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	11.0
	0.1	0.0	0.0	

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
In season irrigation (with fertilizer) *Nutrient source:* Retention pond (lagoon) *Application method:* Pipeline	3	100.0 35%	50.0 50%	250.0 85%	300.2

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	11.0
	0.1	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.4	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	300.0	150.0	750.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	305.1	150.1	750.0
Potential crop nutrient removal	256.0	48.0	211.2
Nutrient balance	49.1	102.1	538.8
Applied to removal ratio	1.19	3.13	3.55

Fresh water applied: 3.03 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 2-Kooistra / Sudangrass, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)

NUTRIENT BUDGET FOR CROP (CONTINUED): 2-Kooistra / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
In season irrigation (with fertilizer)	1	100.0	50.0	270.0	100.0
Nutrient source: Retention pond (lagoon)		50%	50%	50%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	6.0
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.0	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	100.0	50.0	270.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	104.7	50.1	270.0
Potential crop nutrient removal	110.0	17.0	120.0
Nutrient balance	-5.3	33.1	150.0
Applied to removal ratio	0.95	2.95	2.25

Fresh water applied: 0.21 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 3-Kooistra heifer / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
Dry manure	1	100.0	61.4	224.8	100.0
Nutrient source: From dairy		25%	50%	85%	
Application method: Broadcast/incorporate					

NUTRIENT BUDGET FOR CROP (CONTINUED): 3-Kooistra heifer / Oats, silage-soft dough

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Pre-irrigation prior to planting (with fertilizer)	1	80.0	40.0	200.0	80.0
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	2.5
	0.0	0.0	0.0	

In season irrigation (no fertilizer)	2	0.0	0.0	0.0	0.1
Nutrient source: Water only		0%	0%	0%	
Application method: Surface					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	2.5
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.1	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	100.0	61.4	224.8
Liquid manure	80.0	40.0	200.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	184.8	101.5	424.8
Potential crop nutrient removal	160.0	25.6	132.8
Nutrient balance	24.8	75.9	292.0
Applied to removal ratio	1.15	3.96	3.20

Fresh water applied: 0.93 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 3-Kooistra heifer / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					

NUTRIENT BUDGET FOR CROP (CONTINUED): 3-Kooistra heifer / Corn, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Pre-irrigation prior to planting (no fertilizer) *Nutrient source:* Water only *Application method:* Surface	1	0.0 0%	0.0 0%	0.0 0%	0.1

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	4.0
	0.1	0.0	0.0	

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) *Nutrient source:* Water only *Application method:* Surface	4	0.0 0%	0.0 0%	0.0 0%	0.3

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	4.0
	0.1	0.0	0.0	

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
In season irrigation (with fertilizer) *Nutrient source:* Retention pond (lagoon) *Application method:* Pipeline	3	100.0 35%	50.0 50%	270.0 85%	300.1

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	2.0
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.4	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	300.0	150.0	810.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	305.1	150.1	810.0
Potential crop nutrient removal	256.0	48.0	211.2
Nutrient balance	49.1	102.1	598.8
Applied to removal ratio	1.19	3.13	3.84

Fresh water applied: 3.22 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 3-Kooistra heifer / Sudangrass, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)

NUTRIENT BUDGET FOR CROP (CONTINUED): 3-Kooistra heifer / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
In season irrigation (with fertilizer)	1	100.0	50.0	270.0	100.0
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	2.5
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.0	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	100.0	50.0	270.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	104.7	50.1	270.0
Potential crop nutrient removal	110.0	17.0	120.0
Nutrient balance	-5.3	33.1	150.0
Applied to removal ratio	0.95	2.95	2.25

Fresh water applied: 0.31 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 4-Fernandes / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
Dry manure	1	100.0	61.4	224.8	100.0
Nutrient source: From dairy		25%	50%	85%	
Application method: Broadcast/incorporate					

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

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Pre-irrigation prior to planting (with fertilizer)	1	80.0	40.0	200.0	80.0
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	3.8
	0.0	0.0	0.0	

In season irrigation (no fertilizer)	2	0.0	0.0	0.0	0.1
Nutrient source: Water only		0%	0%	0%	
Application method: Surface					

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	3.8
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.1	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	100.0	61.4	224.8
Liquid manure	80.0	40.0	200.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	184.8	101.5	424.8
Potential crop nutrient removal	160.0	25.6	132.8
Nutrient balance	24.8	75.9	292.0
Applied to removal ratio	1.15	3.96	3.20

Fresh water applied: 0.83 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 4-Fernandes / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					

NUTRIENT BUDGET FOR CROP (CONTINUED): 4-Fernandes / Corn, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
Pre-irrigation prior to planting (no fertilizer) *Nutrient source:* Water only *Application method:* Surface	1	0.0 0%	0.0 0%	0.0 0%	0.1

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	7.0
	0.1	0.0	0.0	

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) *Nutrient source:* Water only *Application method:* Surface	4	0.0 0%	0.0 0%	0.0 0%	0.3

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	7.0
	0.1	0.0	0.0	

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)
In season irrigation (with fertilizer) *Nutrient source:* Retention pond (lagoon) *Application method:* Pipeline	3	100.0 35%	50.0 50%	270.0 85%	300.1

Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.0	0.0	0.0	3.0
	0.0	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.4	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	300.0	150.0	810.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	305.1	150.1	810.0
Potential crop nutrient removal	256.0	48.0	211.2
Nutrient balance	49.1	102.1	598.8
Applied to removal ratio	1.19	3.13	3.84

Fresh water applied: 3.21 *feet* Total harvests: 1

NUTRIENT BUDGET FOR CROP: 4-Fernandes / Sudangrass, silage

Activity / Event	# of Events	N (lbs/acre) % avail.	P (lbs/acre) % avail.	K (lbs/acre) % avail.	Total N (lbs/acre)

NUTRIENT BUDGET FOR CROP (CONTINUED): 4-Fernandes / 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	1	0.0	0.1	0.0	0.0
Nutrient source: Soil		50%	50%	50%	
Application method: Lab results					
In season irrigation (with fertilizer)	1	100.0	50.0	270.0	100.1
Nutrient source: Retention pond (lagoon)		35%	50%	85%	
Application method: Pipeline					

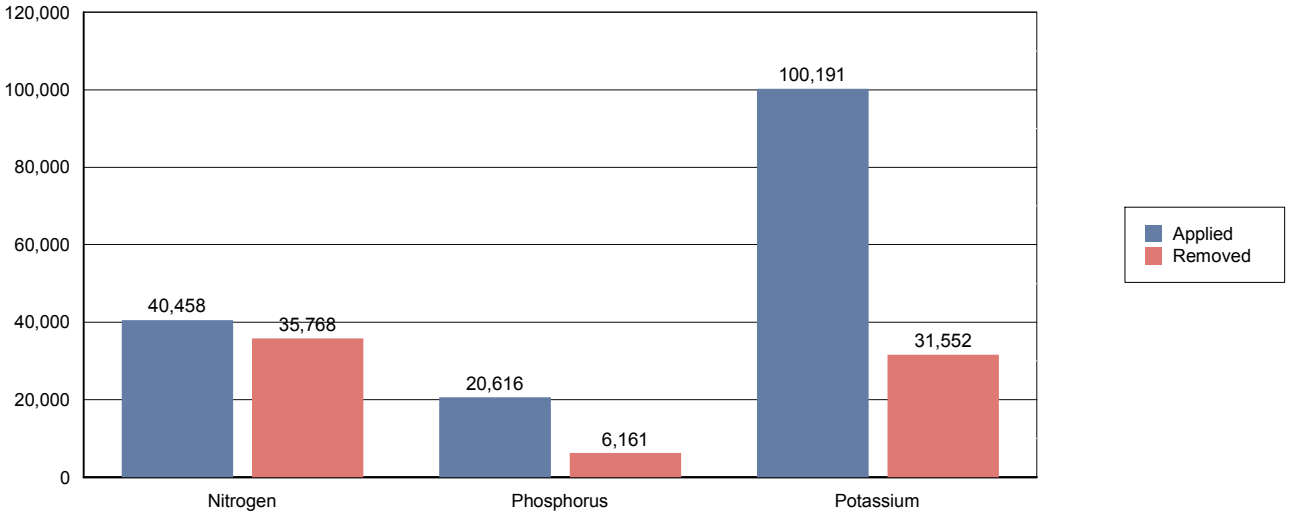
Irrigation Source	N (lbs/acre)	P (lbs/acre)	K (lbs/acre)	Runtime (hrs)
Canal Water	0.1	0.0	0.0	6.0
	0.1	0.0	0.0	

	Total N (lbs/acre)	Total P (lbs/acre)	Total K (lbs/acre)
Irrigation sources	0.1	0.0	0.0
Existing soil nutrient content	0.0	0.1	0.0
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	100.0	50.0	270.0
Other	0.0	0.0	0.0
Atmospheric deposition	4.7		
Nutrients applied	104.7	50.1	270.0
Potential crop nutrient removal	110.0	17.0	120.0
Nutrient balance	-5.3	33.1	150.0
Applied to removal ratio	0.95	2.95	2.25

Fresh water applied: 0.44 *feet* Total harvests: 1

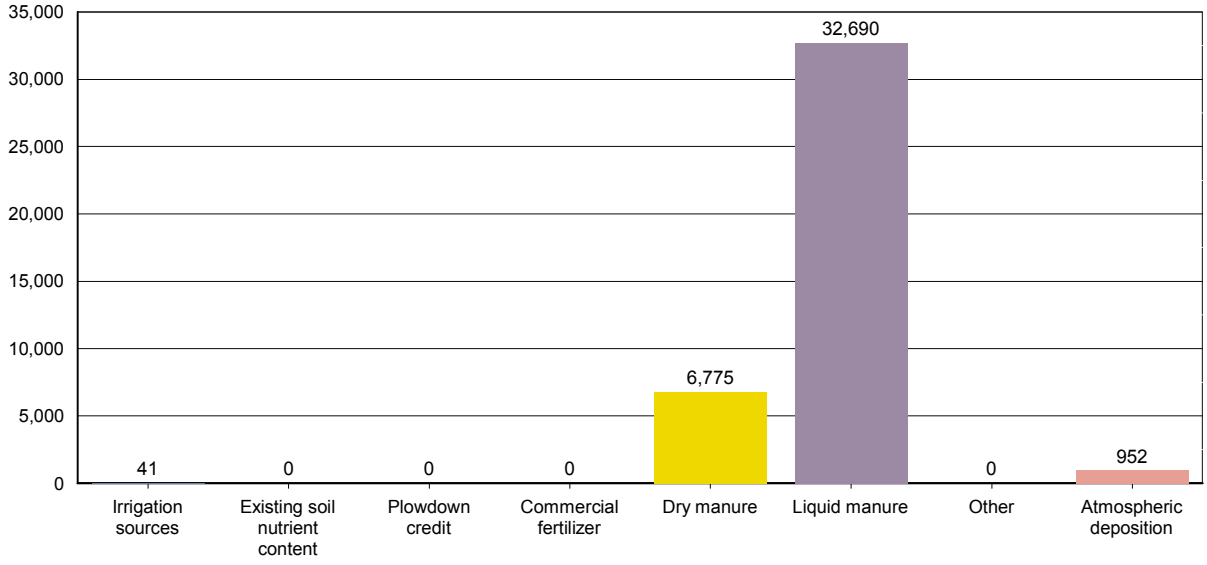
NUTRIENT APPLICATIONS, POTENTIAL REMOVAL, AND BALANCE

A. POUNDS OF NUTRIENT APPLIED VS. CROP REMOVAL POTENTIAL



	Total N (lbs)	Total P (lbs)	Total K (lbs)
Irrigation sources	40.8	0.0	0.0
Existing soil nutrient content	0.0	20.4	0.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	6,775.0	4,175.2	15,286.4
Liquid manure	32,690.0	16,420.0	84,905.0
Other	0.0	0.0	0.0
Atmospheric deposition	952.0		
Nutrients applied to all crops	40,457.8	20,615.6	100,191.4
Potential crop nutrient removal	35,768.0	6,160.8	31,552.0
Nutrient balance	4,689.8	14,454.8	68,639.4
Applied to removal ratio	1.13	3.35	3.18

B. POUNDS OF NITROGEN APPLIED BY NUTRIENT SOURCE



	Total N (lbs)	Total P (lbs)	Total K (lbs)
Irrigation sources	40.8	0.0	0.0
Existing soil nutrient content	0.0	20.4	0.0
Plowdown credit	0.0	0.0	0.0
Commercial fertilizer	0.0	0.0	0.0
Dry manure	6,775.0	4,175.2	15,286.4
Liquid manure	32,690.0	16,420.0	84,905.0
Other	0.0	0.0	0.0
Atmospheric deposition	952.0		
Nutrients applied to all crops	40,457.8	20,615.6	100,191.4
Potential crop nutrient removal	35,768.0	6,160.8	31,552.0
Nutrient balance	4,689.8	14,454.8	68,639.4
Applied to removal ratio	1.13	3.35	3.18

NUTRIENT BALANCE

A. WHOLE FARM BALANCE

	Total N (lbs)	Total P (lbs)	Total K (lbs)
Nutrients in storage from herd*			
Daily gross	841.8	138.9	422.6
Annual gross	307,259.2	50,691.7	154,258.6
Net to pond storage after ammonia losses (30% loss applied)	177,105.4	41,841.6	128,548.8
Net to drylot storage after ammonia losses (30% loss applied)	37,976.1	8,850.1	33,739.8
Net in storage (30% loss applied)	215,081.5	50,691.7	162,288.6
Irrigation sources	40.8	0.0	0.0
Atmospheric deposition	952.0		
Imports	0.0	0.0	0.0
Exports	160,488.6	39,389.6	287,247.2
Potential crop nutrient removal	35,768.0	6,160.8	31,552.0
Nutrient balance	19,817.6	5,141.3	-156,510.6
Nutrient balance ratio	1.55	1.83	-3.96

* Potassium excretion from milk cows and dry cows only.

SAMPLING AND ANALYSIS PLAN

A. MANURE SAMPLING AND ANALYSIS PLAN

			Minimum data collection requirements	
Frequency	Sampling Methods	Source	Field Analytes	Lab Analytes
Annually	Annual estimation for total manure dry weight applied to each field will be quantified using the following: Dry weight applied from a source to a crop per application event = weight applied * (1 - (percent moisture / 100)) Dry weight applied to crop per application event = sum of dry weights applied from each source Dry weight applied to a crop = sum of dry weights applied during each application Dry weight applied to a field = sum of dry weights applied to each crop Annual estimation for total manure dry weight exported will be quantified using the following: Dry weight exported from a source per event = weight exported * (1 - (percent moisture / 100)) Dry weight exported per event = sum of dry weights exported from each source Dry weight exported to any offsite destination = sum of dry weights exported per event	Corral solids Settling basin solids Freestall scrapings	Total dry weight (tons) manure applied annually to each land application area, and total dry weight (tons) manure exported offsite annually	None required

A. MANURE SAMPLING AND ANALYSIS PLAN (CONTINUED)

			Minimum data collection requirements	
Frequency	Sampling Methods	Source	Field Analytes	Lab Analytes
Twice per year	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.	Corral solids Settling basin solids Freestall scrapings	None required	Total nitrogen, total phosphorus, total potassium, and percent moisture
Once every two years (biennially)	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.	Corral solids Settling basin solids Freestall scrapings	None required	General minerals, including: calcium, magnesium, sodium, sulfate, chloride Fixed solids (ash)
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

A. MANURE SAMPLING AND ANALYSIS PLAN (CONTINUED)

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
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
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.	Lagoon	None required	pH, total dissolved solids, electrical conductivity, nitrate-nitrogen, ammonion-nitrogen, total Kjeldahl nitrogen, total phosphorus, and total potassium
Once every two years (biennially)	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.	Lagoon	None required	General minerals, including: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride

B. PROCESS WASTEWATER SAMPLING AND ANALYSIS PLAN (CONTINUED)

			Minimum data collection requirements	
Frequency	Sampling Methods	Source	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.	Lagoon	Date applied and volume (gallons or acre-inches) applied	None required
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.	Lagoon	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

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

C. SOIL SAMPLING AND ANALYSIS PLAN (CONTINUED)

Frequency	Sampling Methods	Source	Minimum data collection requirements	
			Field Analytes	Lab Analytes
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
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, and organic matter 1 to 2 feet: Nitrate-nitrogen
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

D. PLANT TISSUE SAMPLING AND ANALYSIS PLAN

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

D. PLANT TISSUE SAMPLING AND ANALYSIS PLAN (CONTINUED)

			Minimum data collection requirements	
Frequency	Sampling Methods	Source	Field Analytes	Lab Analytes
Mid-season, as necessary to assess need for additional nitrogen fertilizer 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

E. IRRIGATION WATER SAMPLING AND ANALYSIS PLAN

			Minimum data collection requirements	
Frequency	Sampling Methods	Source	Field Analytes	Lab Analytes
Each fresh water irrigation event for each land application area	List individual irrigation sources and the measurement method, e.g.: Irrigation Well 1 - inline totalizing flow meter Irrigation Well 2 - flow rate multiplied by runtime Canal 1 - flow rate multiplied by runtime	Canal Water	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.	Canal Water	None required	Electrical conductivity, total dissolved solids, and total nitrogen

NUTRIENT MANAGEMENT PLAN REVIEW

A. NUTRIENT MANAGEMENT PLAN REVIEW

Person who created the NMP:	Machado, Patrick	*See above for contact information.*
Date the NMP was drafted:	10/08/2021	
Person who approved the final NMP:	Machado, Patrick	*See above for contact information.*
Date of NMP implementation:	10/08/2021	

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: Maps #1

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: N/A

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: Setback form

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).

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

SAMPLING AND ANALYSIS PLAN CERTIFICATION

A. DAIRY FACILITY INFORMATION

Name of dairy or business operating the dairy: Kooistra Dairy

Physical address of dairy:

5837 Hultberg RD	Turlock	Stanislaus	95380
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.

CCA # 385124

TITLE/QUALIFICATIONS OF CERTIFIED NUTRIENT MANAGEMENT SPECIALIST

[redacted]

10/8/2021

SIGNATURE OF TRAINED PROFESSIONAL — DATE

Patrick Machado

PRINT OR TYPE NAME

7112 Metcalf WAY; Hughson, CA 95326

MAILING ADDRESS

(209) 678-6720

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.

[redacted]

SIGNATURE OF OWNER OF FACILITY	SIGNATURE OF OPERATOR OF FACILITY
Sam Sikke Kooistra	
PRINT OR TYPE NAME	PRINT OR TYPE NAME
10/8/2021	
DATE	DATE

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

NUTRIENT BUDGET CERTIFICATION

A. DAIRY FACILITY INFORMATION

Name of dairy or business operating the dairy: Kooistra Dairy

Physical address of dairy:

5837 Hultberg RD	Turlock	Stanislaus	95380
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.

CCA # 385124

TITLE/QUALIFICATIONS OF CERTIFIED NUTRIENT MANAGEMENT SPECIALIST

[redacted] 10/8/2021

SIGNATURE OF TRAINED PROFESSIONAL DATE

Patrick Machado

PRINT OR TYPE NAME

7112 Metcalf WAY; Hughson, CA 95326

MAILING ADDRESS

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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.

[redacted]

SIGNATURE OF OWNER OF FACILITY | SIGNATURE OF OPERATOR OF FACILITY

Sam Sikke Kooistra

PRINT OR TYPE NAME | PRINT OR TYPE NAME

10/8/2021

DATE | DATE

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

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: Kooistra Dairy

5837 Hultberg RD	Turlock	Stanislaus	95380
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address):

Operator name: _____ Telephone no.: _____ (Landline) _____ (Cellular)

_____	_____	_____	_____
Mailing Address Number and Street	City	State	Zip Code

Legal owner name: Kooistra, Sam Sikke Telephone no.: (209) 634-2311 (Landline) (209) 678-3114 (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

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.

[redacted]

SIGNATURE OF OWNER OF FACILITY | SIGNATURE OF OPERATOR OF FACILITY

Sam Sikke Kooistra

PRINT OR TYPE NAME | PRINT OR TYPE NAME

10/8/2021

DATE | DATE

Waste Management Plan
For
Kooistra Dairy
Stanislaus County, CA

Prepared For:
Kooistra Dairy
5837 Hultberg Road
Turlock, CA 95380

SOUSA
ENGINEERING
INFRASTRUCTURE-DEVELOPMENT-
AGRICULTURE

ATTACHMENT II

SOUSA
ENGINEERING
INFRASTRUCTURE-DEVELOPMENT-
AGRICULTURE

PO BOX 1613
OAKDALE, CA 95361
PHONE: (209)238-3151
www.sousaeng.com

WASTE MANAGEMENT PLAN
FOR
KOOISTRA DAIRY
STANISLAUS COUNTY, CA

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1. NARRATIVE

INTRODUCTION

This Waste Management Plan (WMP) has been prepared at the request of the subject dairy's owner and/or operator to comply with 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 California Regional Water Quality Control Board (CRWQCB) Central Valley Region. Per the requirements set forth by the aforementioned Order it is the intent of this plan to provide an evaluation of the existing 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, General Specifications B.1 through B.3, Pond Specifications C.1 through C.3, and Production Area Specifications D.1, D.4, and D.5. Should the evaluation provided by this plan determine that the existing facility does 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, General Specifications B.1 through B.3, Pond Specifications C.1 through C.3, and Production Area Specifications D.1, D.4, and D.5. 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.

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)."*

> Section 3.a. of this plan contains calculations that demonstrate 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 Basins (Ponds 1, 2, and 3) were field measured.

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 relevant Flood Zone Map published by the Federal Emergency Management Agency (FEMA) is Panel No. 06099C0800F. This map indicates that the existing dairy facility is in Zone X and is thus outside of the 1% annual chance, or 100-year, floodplain.

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.

Pond Specification C.1: *"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 wastewater retention Pond 2 as it has been constructed above grade. 1' of freeboard has been assigned to Ponds 1 and 3 as they have been constructed in ground or below grade.

Pond Specification C.2: *"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 in Section 3.a. and is hereby made a part of this plan.

Pond Specification C.3: "*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 the facility's ponds by the compliance date.

Production Area Specification D.1: *"All dirt or unpaved corrals shall be graded to promote drainage. Cow washing areas shall be paved (concrete or equivalent) and sloped to a drain. Water troughs, permanent feed racks, and mangers shall have paved access, and water troughs shall have a drain to carry water away from the corrals. (Cal Code Regs., title 3, § 646.1.)."*

Dirt or unpaved areas are graded to promote drainage.

All cow washing areas are paved with Portland Cement Concrete (PCC) and sloped to a drain which conveys wastewater to the retention ponds.

Water troughs, feed racks, and mangers have access paved with PCC. Water troughs have drains which convey wastewater to the retention ponds.

Production Area Specification D.4: *"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 ponds. (Title 27, § 22562(b).)."*

The production area is designed such that rainwater that is not diverted away from manured areas and waste containment facilities is collected and conveyed to the wastewater retention ponds.

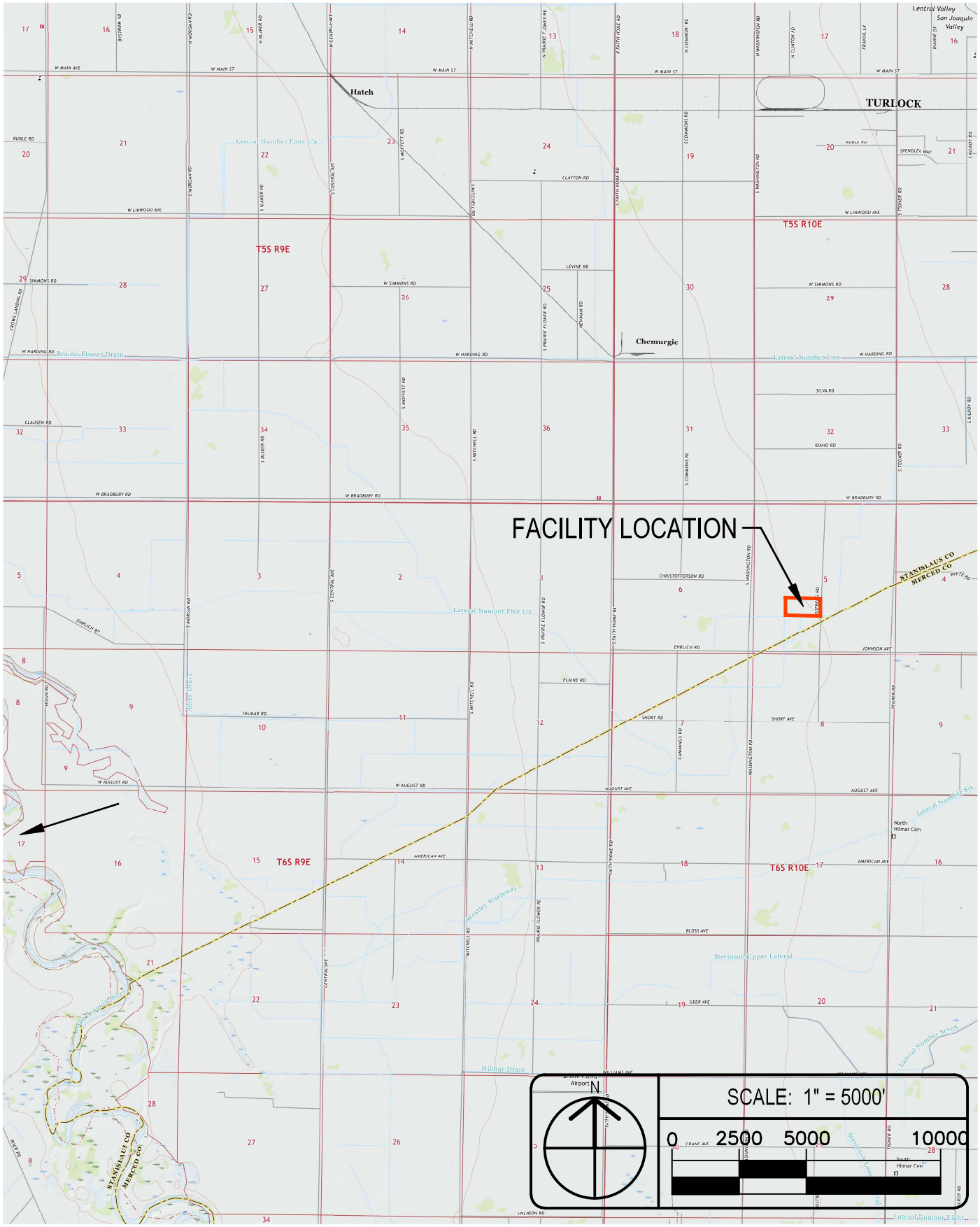
Production Area Specification D.5: *"Roof drainage from barns, milk houses, or shelters shall not drain into the corrals unless the corrals are properly graded and drained. (Cal Code Regs., title 3, § 661.)."*

Roof drainage is collected by gutters, downspouts, and drains and is conveyed to the wastewater retention ponds.

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 Section 3.a. it has been determined that 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.*

2. EXHIBITS



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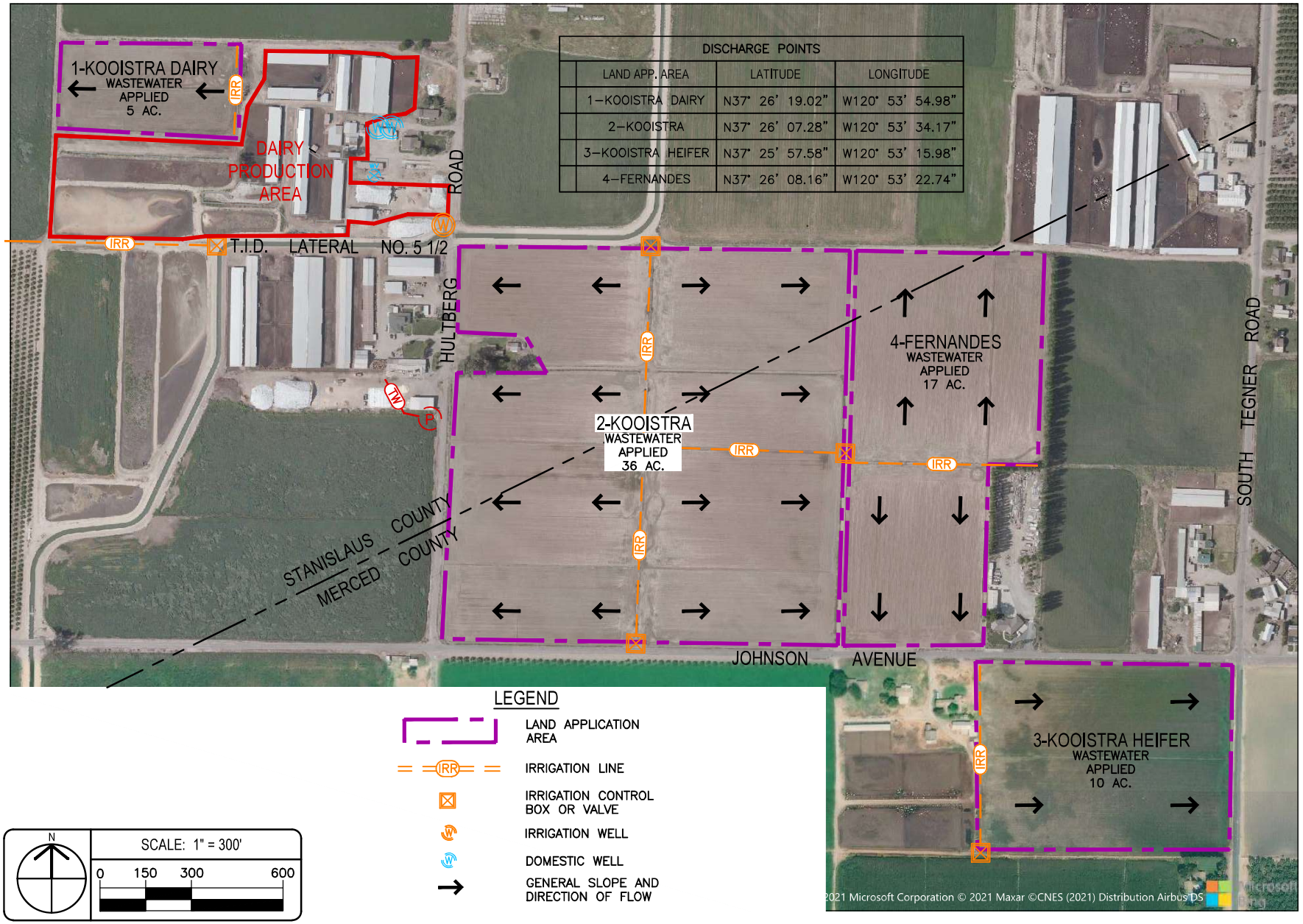
VICINITY MAP
KOOISTRA DAIRY

STANISLAUS COUNTY, CA



DISCHARGE POINTS		
LAND APP. AREA	LATITUDE	LONGITUDE
1–KOOISTRA DAIRY	N37° 26' 19.02"	W120° 53' 54.98"
2–KOOISTRA	N37° 26' 07.28"	W120° 53' 34.17"
3–KOOISTRA HEIFER	N37° 25' 57.58"	W120° 53' 15.98"
4–FERNANDES	N37° 26' 08.16"	W120° 53' 22.74"

LEGEND

- LAND APPLICATION AREA
- IRRIGATION LINE
- IRRIGATION CONTROL BOX OR VALVE
- IRRIGATION WELL
- DOMESTIC WELL
- GENERAL SLOPE AND DIRECTION OF FLOW

N

SCALE: 1" = 300'

0 150 300 600

SHEET 2 OF 5

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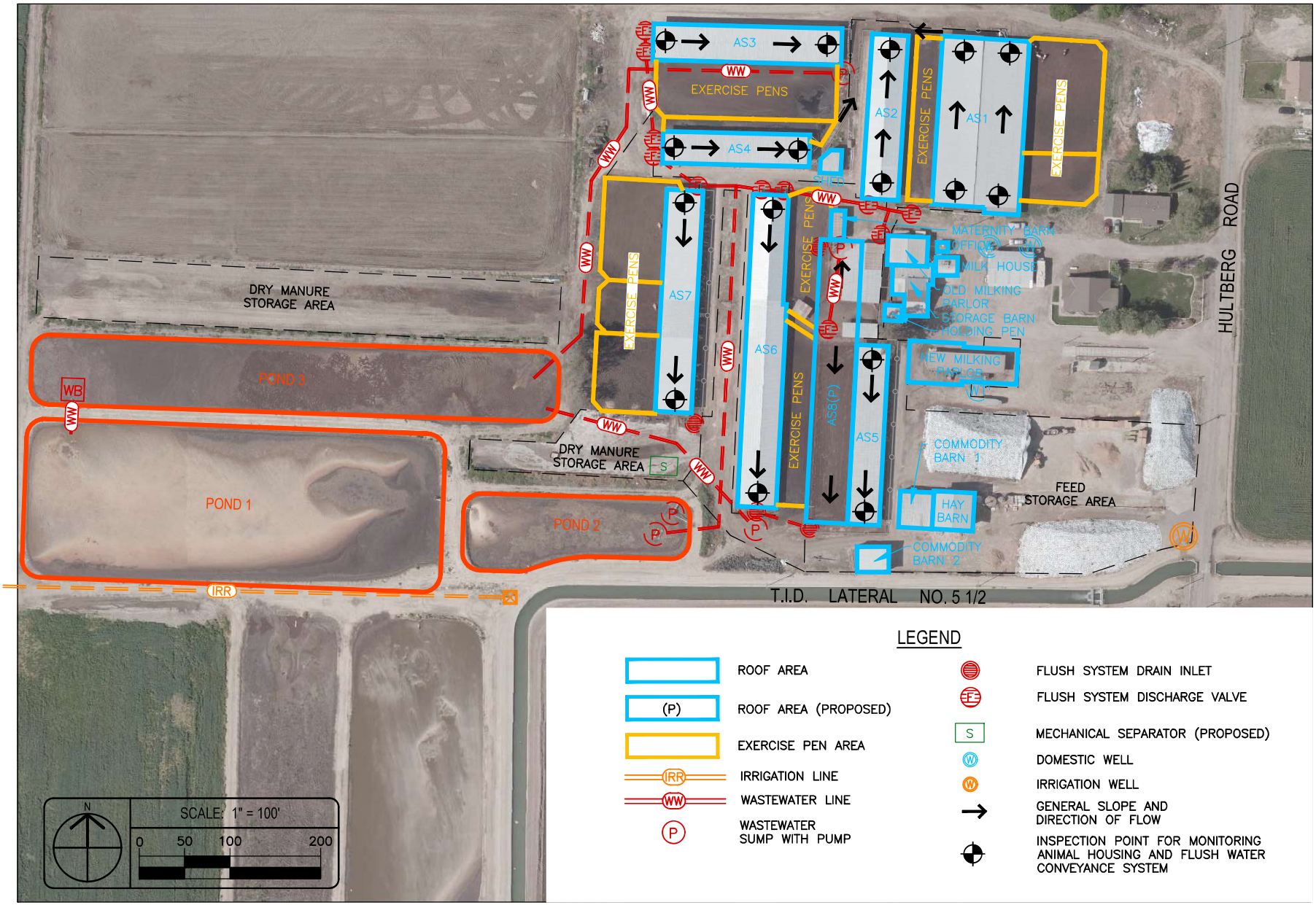
SITE MAP
LAND APPLICATION AREAS
KOOISTRA DAIRY
MERCED COUNTY, CA

DRAWN BY: MS
DATE: 10/1/2021
FILE: 02_site.dwg
JOB NO.: 2021-014

SYMBOL	DESCRIPTION	APPD.
	REVISIONS	



LEGEND

- ROOF AREA
- (P) ROOF AREA (PROPOSED)
- EXERCISE PEN AREA
- IRRIGATION LINE
- WASTEWATER LINE
- P WASTEWATER SUMP WITH PUMP
- FLUSH SYSTEM DRAIN INLET
- FLUSH SYSTEM DISCHARGE VALVE
- S MECHANICAL SEPARATOR (PROPOSED)
- W DOMESTIC WELL
- W IRRIGATION WELL
- GENERAL SLOPE AND DIRECTION OF FLOW
- INSPECTION POINT FOR MONITORING ANIMAL HOUSING AND FLUSH WATER CONVEYANCE SYSTEM

SHEET 3 OF 5

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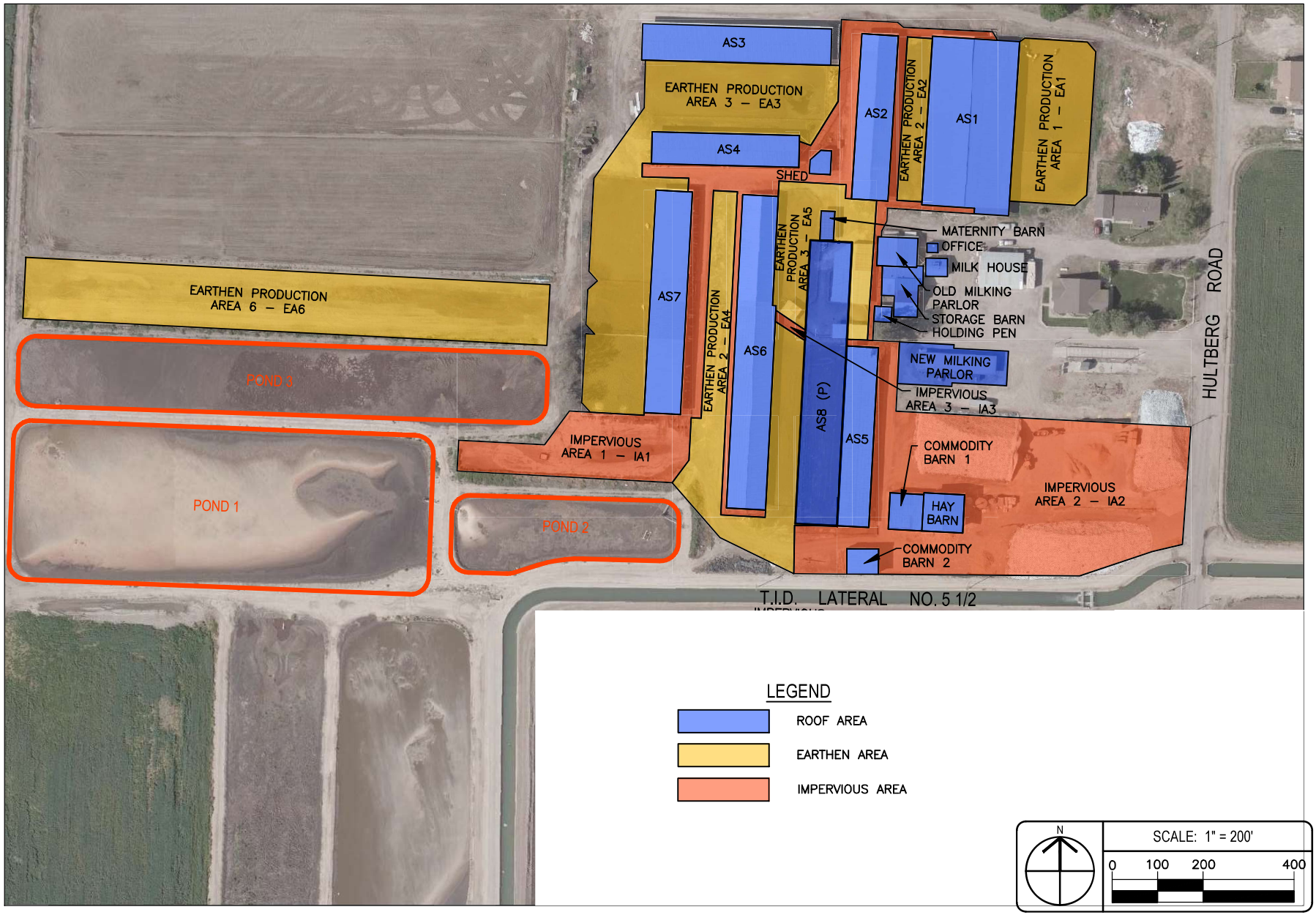
SITE MAP - PRODUCTION AREA

KOOISTRA DAIRY

MERCED COUNTY, CA

DRAWN BY: MS
DATE: 10/1/2021
FILE: 03_dpa.dwg
JOB NO.: 2021-014

SYMBOL	DESCRIPTION	APPD.
	REVISIONS	



SHEET 4 OF 5

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PRODUCTION AREA
HYDROLOGIC MAP

KOOISTRA DAIRY

MERCED COUNTY, CA

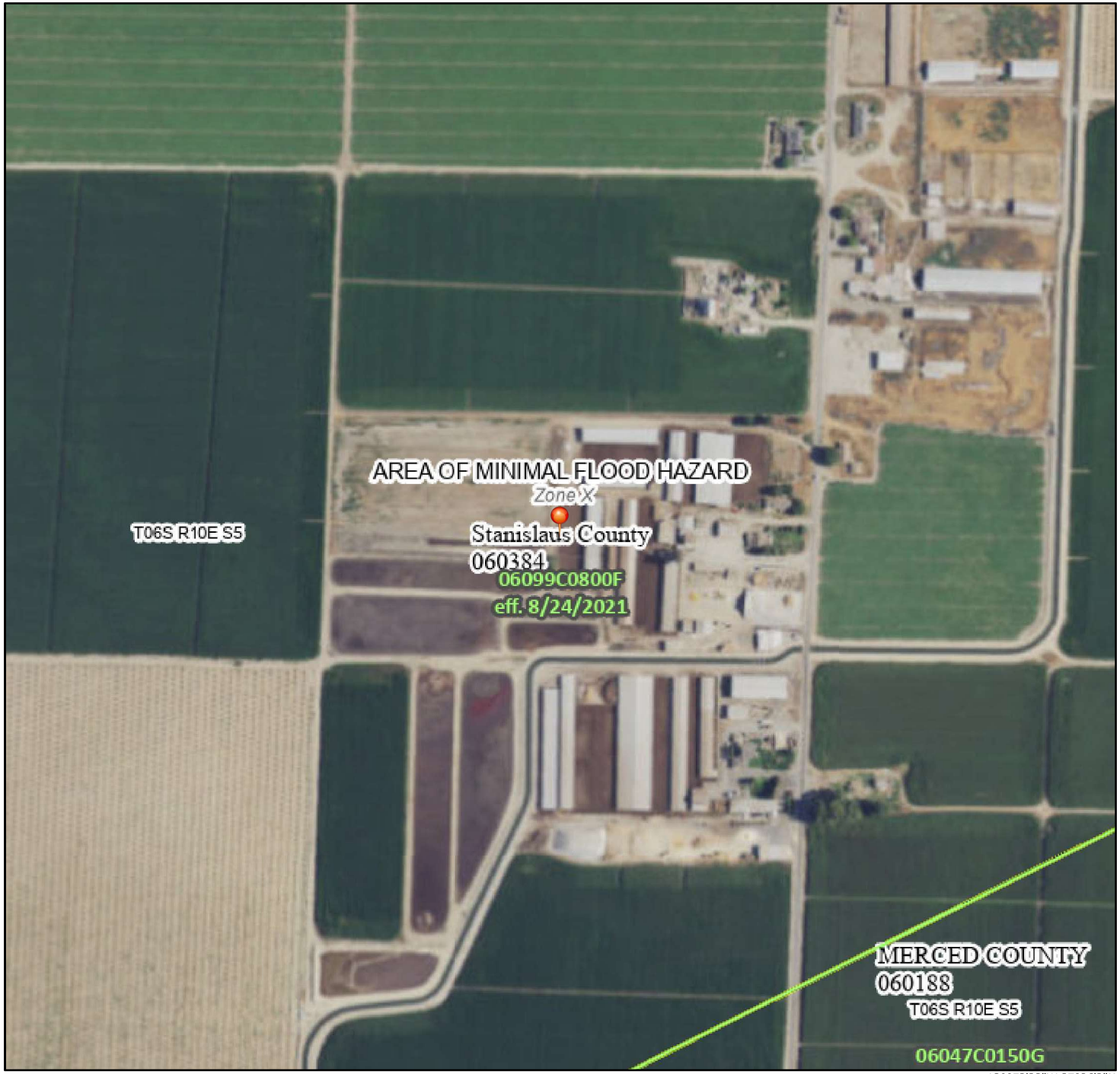
DRAWN BY: MS
DATE: 10/1/2021
FILE: 04_hydro.dwg
JOB NO.: 2021-014

SYMBOL	REVISIONS DESCRIPTION	APPD.

National Flood Hazard Layer FIRMette

FEMA

120°54'9"W 37°26'32"N



120°53'32"W 37°26'3"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/13/2021 at 5:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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: Kooistra Dairy

Physical address of dairy:

5837 Hultberg RD	Turlock	Stanislaus	95380
Number and Street	City	County	Zip Code

Street and nearest cross street (if no address):

TRS Data and Coordinates:

6S	10E	5	Mt. Diablo	37° 26' 16.46" N	120° 53' 45.58" W
Township (T_)	Range (R_)	Section (S_)	Baseline meridian	Latitude (N)	Longitude (W)

Date facility was originally placed in operation: 05/01/1980

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

County Assessor Parcel Number(s) for dairy facility:

0057-0017-0005-0000

B. OPERATOR NAME: Kooistra, Cynthia Lea Telephone no.: (209) 634-2311 (Landline) (Cellular)

5837 Kooistra RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

OPERATOR NAME: Kooistra, Sam Sikke Telephone no.: (209) 634-2311 (Landline) (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

C. LEGAL OWNER NAME: Kooistra, Cynthia Lea Telephone no.: (209) 634-2311 (Landline) (Cellular)

5837 Kooistra RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

LEGAL OWNER NAME: Kooistra, Sam Sikke Telephone no.: (209) 634-2311 (Landline) (Cellular)

5837 Hultberg RD	Turlock	CA	95380
Mailing Address Number and Street	City	State	Zip Code

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

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

Title: Civil Engineer

P.O. Box 1613	Oakdale	CA	95361
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:

1,000 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	800	800	20	1,250
Dry Cows	200	200	18	1,300
Bred Heifers (15-24 mo.)	0	0	0	0
Heifers (7-14 mo.)	0	0	0	0
Calves (4-6 mo.)	0	0	0	
Calves (0-3 mo.)	0	0	0	

Predominant milk cow breed: Jersey

Average milk production: 72 pounds per cow per day

Average number of milk cows per string sent to the milkbarn: 115 milk cows per string

Number of milkings per day: 2.0 milkings per day

Number of times milk tank is emptied/filled each day: 2.0 per day

Number of hours spent milking each day: 14.0 hours per day

B. MILKBARN EQUIPMENT AND FLOOR WASH

Bulk tank wash and sanitizing: 3.0 run cycles/wash

Bulk tank wash vat volume: 30 gallons/cycle

Bulk tank wash wastewater: 180.0 gallons/day

Pipeline wash and sanitizing: 3.0 run cycles/wash

Pipeline wash vat volume: 40 gallons/cycle

Pipeline wash wastewater: 240.0 gallons/day

Reused / recycled water is the source of parlor floor wash water: [X] Yes [ ] No

Milkbarn / parlor floor wash volume: 2,000 gallons/day

Plate coolers type: Well Water Cooled (Water Reused/Recycled)

Plate coolers volume: 13,395 gallons/day

Vacuum pumps / air compressors / chillers type: Mechanically/Air Cooled

Vacuum pumps / air compressors / chillers volume: 0 gallons/day

Milkbarn and equipment wastewater volume generated daily: 2,420 gallons/day

C. OTHER WATER USES

Reused/recycled water is the source of herd drinking water: [X] Yes [ ] No

	Milk Cows	Dry Cows	Bred Heifers (15-24 mo.)	Bred Heifers (7-14 mo.)	Calves (4-6 mo.)	Calves (0-3 mo.)
Number of cows drinking from reusable water:	800 *of 800*	200 *of 200*	0 *of 0*	0 *of 0*	0 *of 0*	0 *of 0*
Gallons per head per day:	28	12	0	0	0	0

Total reusable water consumed by herd: 24,800 gallons/day

Reused/recycled water is the source of sprinkler pen water: [X] Yes [ ] No

Number of sprinklers in the holding pen: 0 sprinklers

Duration of each sprinkler cycle: 1.0 minutes

Number of sprinkler pen runs/milking: 0 cycles/milking

Flow rate for each sprinkler head: 1.0 gallons/minute

Total sprinkler pen wastewater volume: 0 gallons/day

Total fresh water used in manure flush lane system(s): 0 gallons/day

D. MISCELLANEOUS EQUIPMENT

No miscellaneous equipment entered.

E. MILKBARN AND EQUIPMENT SUMMARY

Number of days in storage period: 120 days

Water available for reuse/recycle: 13,395 gallons/day

Recycled water reused: 26,800 gallons/day

Recycled water leaving system: 24,800 gallons/day

Reusable water balance: 0 gallons/day

Volume of milkbarn and equipment wastewater generated for storage period: 290,400 gallons/storage period

MANURE AND BEDDING SOLIDS

A. IMPORTED AND FACILITY GENERATED BEDDING

Bedding Type	Imported or Generated (tons)	Density (lbs/cu. ft.)	Applied Separation Efficiency (default)	Solids to Pond (cu. ft./period)
Facility generated bedding	100	40.0	50%	2,500
			Total:	2,500

B. SOLIDS SEPARATION PROCESS

Combined manure solids separation efficiency (weight basis): 35 %

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

Solid manure separator (proposed).

C. MANURE AND BEDDING SOLIDS SUMMARY

	cubic feet		gallons	
	day	storage period	day	storage period
Manure generated by the herd (pre-separation):	2,056.30	246,756	15,382.21	1,845,865
Manure generated by the herd sent to pond(s):	1,498.90	179,868	11,212.56	1,345,507
Manure generated by the herd sent to dry lot(s):	362.77	43,532	2,713.70	325,644
Manure solids (herd) removed by separation:	94.22	11,306	704.82	84,578
Liquid component in separated solids not send to pond(s):	100.41	12,049	751.13	90,136
Imported and facility generated bedding sent to pond(s):	20.83	2,500	155.84	18,701
Total manure and bedding sent to pond(s):	1,519.73	182,368	11,368.40	1,364,208
Residual manure solids and bedding sent to pond(s) w/factor:	97.91	11,749	732.40	87,888
	cubic feet per year		gallons per year	
Residual manure solids and bedding sent to pond(s) w/factor:	35,736		267,325	

RAINFALL AND RUNOFF

A. RAINFALL ESTIMATES

Rainfall station nearest the facility: Turlock

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): 8.56 inches/storage period

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

Flood zone: Zone X

B. IMPERVIOUS AREAS

Name	Surface Area (sq. ft.)	Quantity	25yr/24hr Storm Runoff Coefficient	Storage Period Runoff Coefficient	Runoff Destination
Impervious Area 1 - IA1	37,800	1	0.95	0.50	Drains into pond(s).
Impervious Area 2 - IA2	59,800	1	0.95	0.50	Drains into pond(s).
Impervious Area 3 - IA3	400	1	0.95	0.50	Drains into pond(s).

Surface area that does not run off into pond(s): 0 sq. ft.

Surface area that runs off into pond(s): 98,000 sq. ft.

Total surface area: 98,000 sq. ft.

Runoff from normal storage period rainfall: 261,469 gallons/storage period

Runoff from normal storage period rainfall with 1.5 factor: 392,204 gallons/storage period

25 year/24 hour storm event runoff: 145,091 gallons/storage period

Total surface area runoff: 406,560 gallons/storage period

Total surface area runoff with 1.5 factor: 537,295 gallons/storage period

C. ROOF AREAS

Name	Surface Area (sq. ft.)	Quantity	Runoff Destination
Animal Shelter 1 - AS1	18,000	1	Adjacent field
Animal Shelter 2 - AS2	7,280	1	Adjacent field
Animal Shelter 3 - AS3	8,320	1	Adjacent field
Animal Shelter 4 - AS4	5,670	1	Field to west
Animal Shelter 5 - AS5	6,930	1	Wastewater pond
Animal Shelter 6 - AS6	14,355	1	Wastewater pond
Animal Shelter 7 - AS7	9,800	1	Field to west
Animal Shelter 8 - AS8	14,352	1	Wastewater pond
Commodity Barn 1	1,480	1	Wastewater pond
Commodity Barn 2	980	1	Wastewater pond
Hay Barn	1,890	1	Wastewater pond
Holding Pen	320	1	Wastewater pond
Maternity Barn	480	1	Wastewater pond
Milk House	480	1	Wastewater pond
New Milking Parlor	5,040	1	Wastewater pond
Office	120	1	Wastewater pond
Old Milking Parlor	1,408	1	Wastewater pond
Storage Barn	2,030	1	Wastewater pond

Surface area that does not run off into pond(s): 49,070 sq. ft.

Surface area that runs off into pond(s): 49,865 sq. ft.

Total surface area: 98,935 sq. ft.

Runoff from normal storage period rainfall: 266,085 gallons/storage period

Runoff from normal storage period rainfall with 1.5 factor: 399,127 gallons/storage period

25 year/24 hour storm event runoff: 77,712 gallons/storage period

Total surface area runoff: 343,797 gallons/storage period

Total surface area runoff with 1.5 factor: 476,839 gallons/storage period

D. EARTHEN AREAS

Name	Surface Area (sq. ft.)	Quantity	25yr/24 Storm Coefficient	Storage Period Coefficient	Runoff Destination
Earthen Area 1 - EA1	15,000	1	0.35	0.20	Drains into pond(s).
Earthen Area 2 - EA2	4,960	14	0.35	0.20	Drains into pond(s).
Earthen Area 3 - EA3	37,000	1	0.35	0.20	Drains into pond(s).
Earthen Area 4 - EA4	21,700	1	0.35	0.20	Drains into pond(s).

Earthen Area 5 - EA5	11,600	1	0.35	0.20	Drains into pond(s).
Earthen Area 6 - EA6	38,700	1	0.35	0.20	Drains into pond(s).

Surface area that does not run off into pond(s):	0	sq. ft.
Surface area that runs off into pond(s):	193,440	sq. ft.
Total surface area:	193,440	sq. ft.
Runoff from normal storage period rainfall:	206,443	gallons/storage period
Runoff from normal storage period rainfall with 1.5 factor:	309,665	gallons/storage period
25 year/24 hour storm event runoff:	105,513	gallons/storage period
Total surface area runoff:	311,956	gallons/storage period
Total surface area runoff with 1.5 factor:	415,178	gallons/storage period

E. TAILWATER MANAGEMENT

No fields with tailwater entered.

LIQUID STORAGE

A. POND OR BASIN DESCRIPTION: Pond 1

Pond is rectangular in shape: [X] Yes [ ] No

Dimensions			
Earthen Length (EL):	462 ft.	Earthen Depth (ED):	5 ft.
Earthen Width (EW):	175 ft.	Side Slope (S):	1.0 ft. (h:1v)
Free Board (FB):	1 ft.	Dead Storage Loss (DS):	0.0 ft.

Calculations			
Liquid Length (LL):	460 ft.	Storage Volume Adjusted for Dead Storage Loss:	308,277 cu. ft.
Liquid Width (LW):	173 ft.		
Pond Surface Area:	80,850 sq. ft.	Pond Marker Elevation:	3.5 ft.
Storage Volume:	308,277 cu. ft.	Evaporation Volume:	426,106 gals/period
		Adjusted Surface Area:	79,252 sq. ft.

POND OR BASIN DESCRIPTION: Pond 2

Pond is rectangular in shape: [X] Yes [ ] No

Dimensions			
Earthen Length (EL):	250 ft.	Earthen Depth (ED):	10 ft.
Earthen Width (EW):	77 ft.	Side Slope (S):	1.0 ft. (h:1v)
Free Board (FB):	2 ft.	Dead Storage Loss (DS):	1.0 ft.

Calculations			
Liquid Length (LL):	246 ft.	Storage Volume Adjusted for Dead Storage Loss:	110,532 cu. ft.
Liquid Width (LW):	73 ft.		
Pond Surface Area:	19,250 sq. ft.	Pond Marker Elevation:	7.4 ft.
Storage Volume:	123,931 cu. ft.	Evaporation Volume:	95,615 gals/period
		Adjusted Surface Area:	17,783 sq. ft.

POND OR BASIN DESCRIPTION: Pond 3

Pond is rectangular in shape: [X] Yes [ ] No

Dimensions			
Earthen Length (EL):	582 ft.	Earthen Depth (ED):	3 ft.
Earthen Width (EW):	77 ft.	Side Slope (S):	1.0 ft. (h:1v)
Free Board (FB):	1 ft.	Dead Storage Loss (DS):	0.0 ft.

Calculations			
Liquid Length (LL):	580 ft.	Storage Volume Adjusted for Dead Storage Loss:	84,391 cu. ft.
Liquid Width (LW):	75 ft.		
Pond Surface Area:	44,814 sq. ft.	Pond Marker Elevation:	1.5 ft.
Storage Volume:	84,391 cu. ft.	Evaporation Volume:	232,030 gals/period
		Adjusted Surface Area:	43,155 sq. ft.

Potential storage losses (due to dead storage): 13,399.0 cubic feet - or - 100,231.5 gallons

Liquid storage surface area: 141,038 sq. ft.

Rainfall onto retention pond(s): 773,276 gallons/storage period

Rainfall runoff into retention pond(s): 733,997 gallons/storage period

Normal rainfall onto retention pond(s) with 1.5 factor: 1,159,914 gallons/storage period

Normal rainfall runoff into retention pond(s) with 1.5 factor: 1,100,996 gallons/storage period

Storage period evaporation (default): 11.50 inches/storage period

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

Storage period evaporation volume: 753,751 gallons/storage period

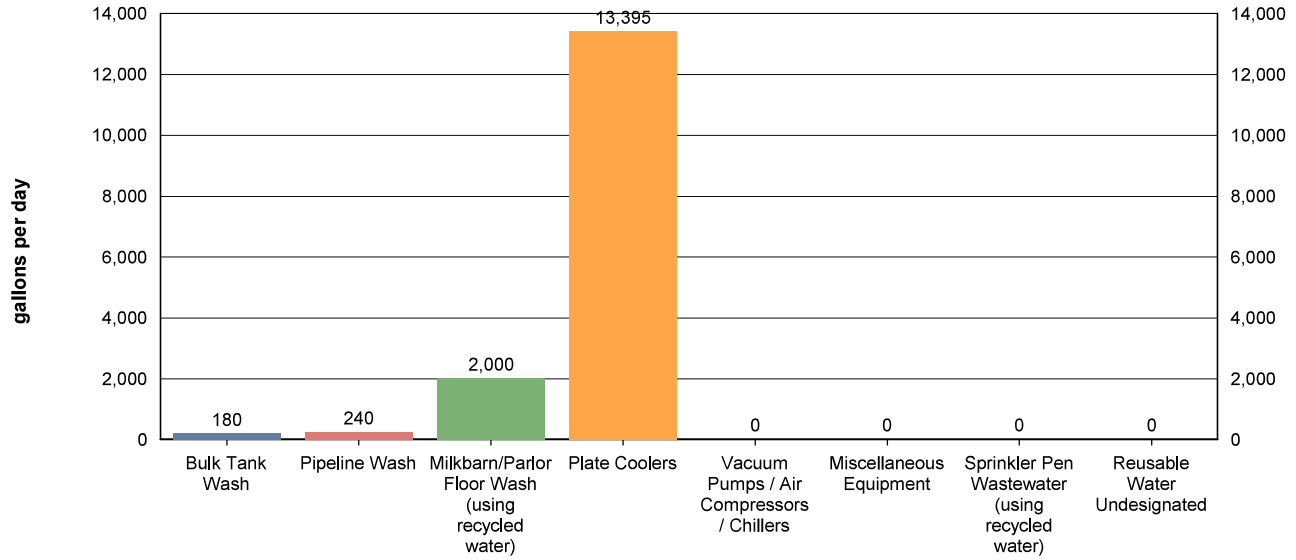
Manure and bedding sent to pond(s): 1,364,208 gallons/storage period

Milkbarn water sent to pond(s): 290,400 gallons/storage period

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

CHARTS

A. MILKBARN WASTEWATER SENT TO POND(S)

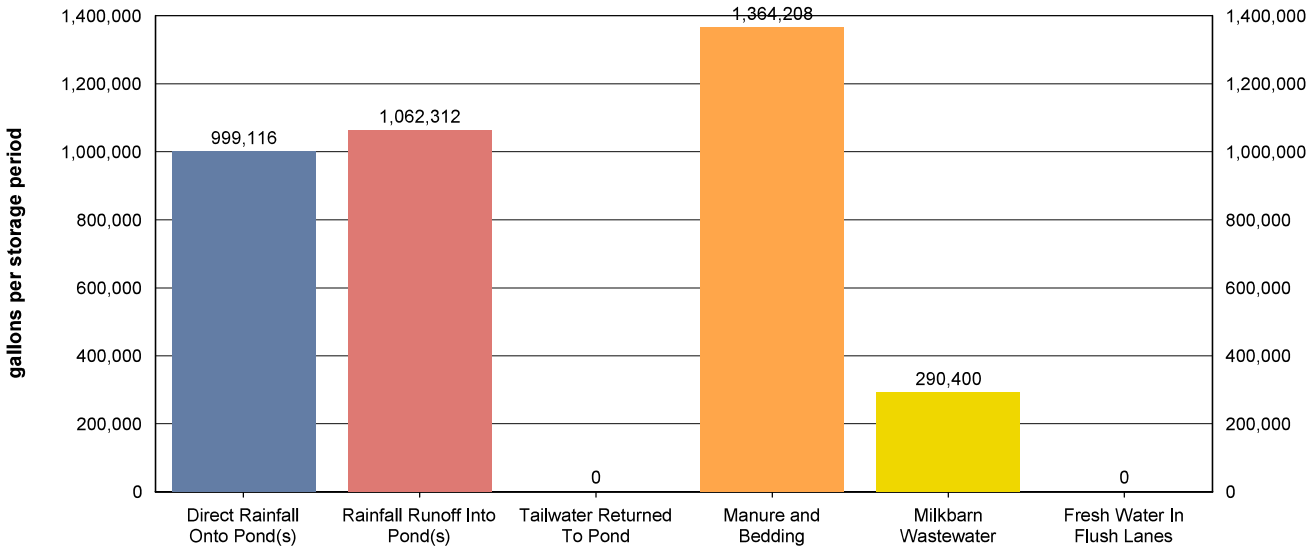


Values shown in chart are approximate values per day.

Total milkbarn wastewater generated daily: 2,420 gallons/day

Total milkbarn wastewater generated per period: 290,400 gallons/storage period

B. PROCESS WASTEWATER (NORMAL PRECIPITATION)

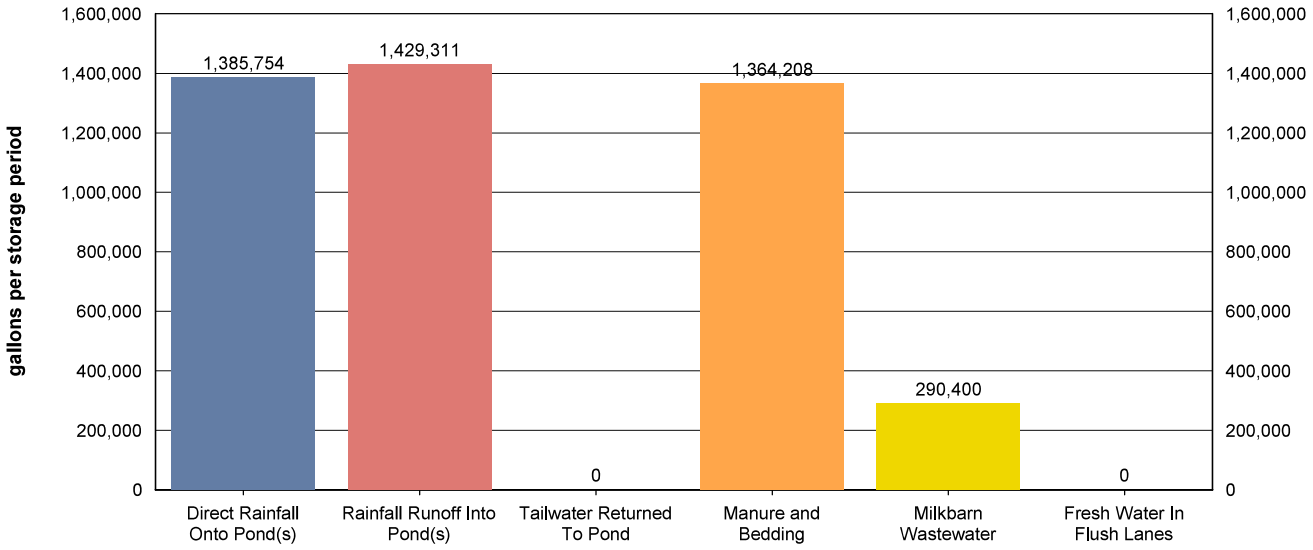


Values shown in chart are approximate values for storage period.

Storage period:	120	days
Total process wastewater generated daily:	30,967	gallons/day
Total process wastewater generated per period:	3,716,037	gallons/storage period
Total process wastewater removed due to evaporation:	753,751	gallons/storage period
Total storage capacity required:	2,962,286	gallons
	396,000	cu. ft.
Existing storage capacity (adjusted for dead storage loss):	3,764,197	gallons
	503,200	cu. ft.

Considering normal precipitation, existing capacity meets estimated storage needs: [X] Yes [ ] No

C. PROCESS WASTEWATER (NORMAL PRECIPITATION WITH 1.5 FACTOR)

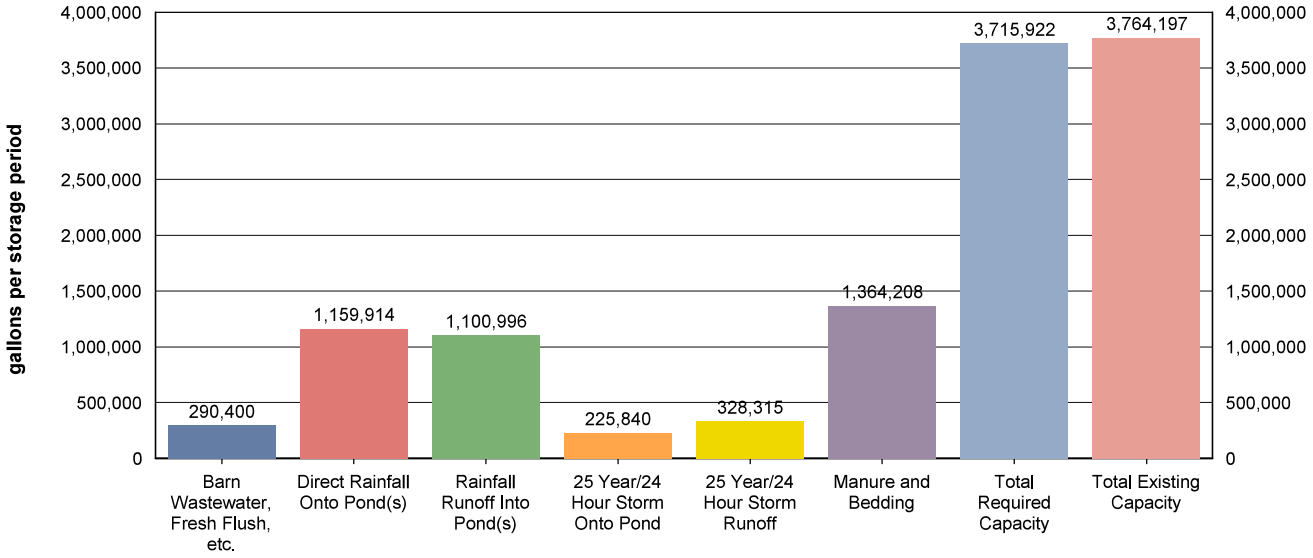


Values shown in chart are approximate values for storage period.

Storage period:	120	days
Total process wastewater generated daily:	37,247	gallons/day
Total process wastewater generated per period:	4,469,673	gallons/storage period
Total process wastewater removed due to evaporation:	753,751	gallons/storage period
Total storage capacity required:	3,715,922	gallons
	496,747	cu. ft.
Existing storage capacity (adjusted for dead storage loss):	3,764,197	gallons
	503,200	cu. ft.

Considering factored precipitation, existing capacity meets estimated storage needs: [X] Yes [ ] No

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



Values shown in chart are approximate values for storage period.

Storage period:	120	days
Barn wastewater, fresh flush water, and tailwater:	290,400	gallons/storage period
Manure and bedding sent to pond:	1,364,208	gallons/storage period
Precipitation onto pond:	1,159,914	gallons/storage period
Precipitation runoff:	1,100,996	gallons/storage period
25 year/24 hour storm onto pond:	225,840	gallons/storage period
25 year/24 hour storm runoff:	328,315	gallons/storage period
Residual solids after liquids have been removed (liquid equivalent):	87,888	gallons/storage period
Total process wastewater removed due to evaporation:	753,751	gallons/storage period
Total required capacity:	3,715,922	gallons/storage period
Total existing capacity:	3,764,197	gallons/storage period
Existing capacity meets estimated storage needs:	[X] Yes [ ] No	

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: Pond 1

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 March of each year.

Sludge accumulation will be measured annually.

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

Solids will be measured manually after lowering of the liquid pond level.

When solids/sludge accumulate to a thickness of 1.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids will be removed with an excavator.

OPERATIONS AND MAINTENANCE PLAN FOR POND: Pond 3

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 March of each year.

Sludge accumulation will be measured annually.

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

Solids will be measured manually after lowering of the liquid pond level.

When solids/sludge accumulate to a thickness of 1.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids will be removed with an excavator.

OPERATIONS AND MAINTENANCE PLAN FOR POND: Pond 2

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 1.0 feet above the pond invert beginning in March of each year.

Sludge accumulation will be measured annually.

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

Solids will be measured manually after lowering of the liquid pond level.

When solids/sludge accumulate to a thickness of 1.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids will be removed with an 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.

Buildings with rooftop rainfall collection systems	Quantity	Surface Area (sq. ft.)
Animal Shelter 1 - AS1	1	18,000
Animal Shelter 2 - AS2	1	7,280
Animal Shelter 3 - AS3	1	8,320
Animal Shelter 4 - AS4	1	5,670

Animal Shelter 5 - AS5	1	6,930
Animal Shelter 6 - AS6	1	14,355
Animal Shelter 7 - AS7	1	9,800
Animal Shelter 8 - AS8	1	14,352
Commodity Barn 1	1	1,480
Commodity Barn 2	1	980
Hay Barn	1	1,890
Holding Pen	1	320
Maternity Barn	1	480
Milk House	1	480
New Milking Parlor	1	5,040
Office	1	120
Old Milking Parlor	1	1,408
Storage Barn	1	2,030

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 all other collection and conveyance systems are to be inspected, cleaned, and/or repaired as required.

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 runon and 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 September

Conditions requiring manure removal and/or regrading:

Solids will be removed with scrapers and/or loaders. Regrading will be performed as necessary after solids removal to ensure proper drainage.

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 runon 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, 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

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 runon 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 October
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:

Flush and/or wastewater conveyance lanes are to be inspected and cleared of debris and/or other obstructions as required. Defects in said conveyance systems, such as failed concrete and/or pipes, shall be repaired as needed.

G. MORTALITY MANAGEMENT

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

Rendering company or landfill name:	Sisk Tallow
Rendering company or landfill telephone number:	(209) 667-1451

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 [X] 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

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	
Iodine / Teat Dip	200	gallons	year	Milking Parlor	Picked up by distributor			
Acid	60	gallons	year	Milking Parlor	Picked up by distributor			
CIP Detergent	100	gallons	year	Milking Parlor	Picked up by distributor			

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 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: 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 a published flood zone map that shows the facility is outside the relevant flood zones.

Flood zone map and/or document reference number: Exhibit Sheet 5

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: WMP Section 1.b.

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

CERTIFICATION

A. DAIRY FACILITY INFORMATION

Name of dairy or business operating the dairy: Kooistra Dairy

Physical address of dairy:

5837 Hultberg RD	Turlock	Stanislaus	95380
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:

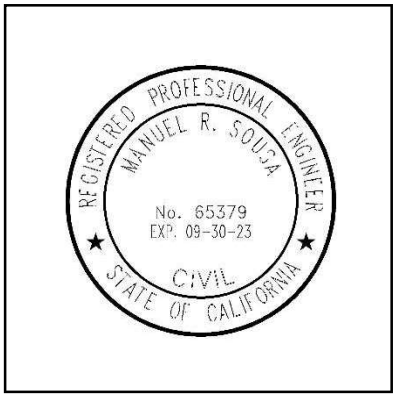
Insufficient

☐ 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

[redacted]
Digitally signed by Manny Sousa
Date: 2021.10.20 17:04:16 -07'00'

10/20/2021

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

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.

[redacted]

SIGNATURE OF OWNER

SIGNATURE OF OPERATOR

Sam Sikke Kooistra

PRINT OR TYPE NAME

PRINT OR TYPE NAME

10-19-21

DATE

DATE

SOUSA
ENGINEERING
INFRASTRUCTURE-DEVELOPMENT-
AGRICULTURE

PO BOX 1613
OAKDALE, CA 95361
PHONE: (209)238-3151
www.sousaeng.com

VECTOR CONTROL PLAN
FOR
KOOISTRA DAIRY
STANISLAUS COUNTY, CA

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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. 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

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. 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

a. Stanislaus County Department of Environmental Health
3800 Cornucopia Way, Suite C
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Health Risk Assessment and Ambient Air Quality Analysis

Kooistra Dairy Facility

5837 Hultberg Road
Turlock, CA 95380
Stanislaus County

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ATTACHMENT III

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1. EXECUTIVE SUMMARY

This document contains the health risk assessment (HRA) and ambient air quality analysis (AAQA) performed on behalf of Sousa Engineering for the Kooistra Dairy facility operation in Stanislaus County, California. As part of the development requirements for the project, an assessment is required of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed dairy expansion and an ambient air quality analysis of the criteria pollutants compared to the California and national ambient air quality standards.

Emissions of hazardous air pollutants attributable to proposed construction activities, animal movement, manure management and on-site mobile sources were calculated using generally accepted emission factors and the California Emissions Estimator Model version 2020.4.0 (CalEEMod). Ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, concentrations of compounds with non-cancer adverse health effects were used to calculate hazard indices (HIs), which are the ratio of expected exposure to acceptable exposure.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has set the level of significance for carcinogenic risk to twenty in one million (20×10^{-6}), which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for acute and chronic non-cancer risk is a hazard index of 1.0. The maximum predicted cancer risk among the modeled receptors is 18.9 in one million, which is below the significance level of twenty in one million. The maximum predicted acute and chronic non-cancer hazard indices among the modeled receptors are 0.228 and 0.192, respectively, which is below the significance level for chronic and acute significance level.

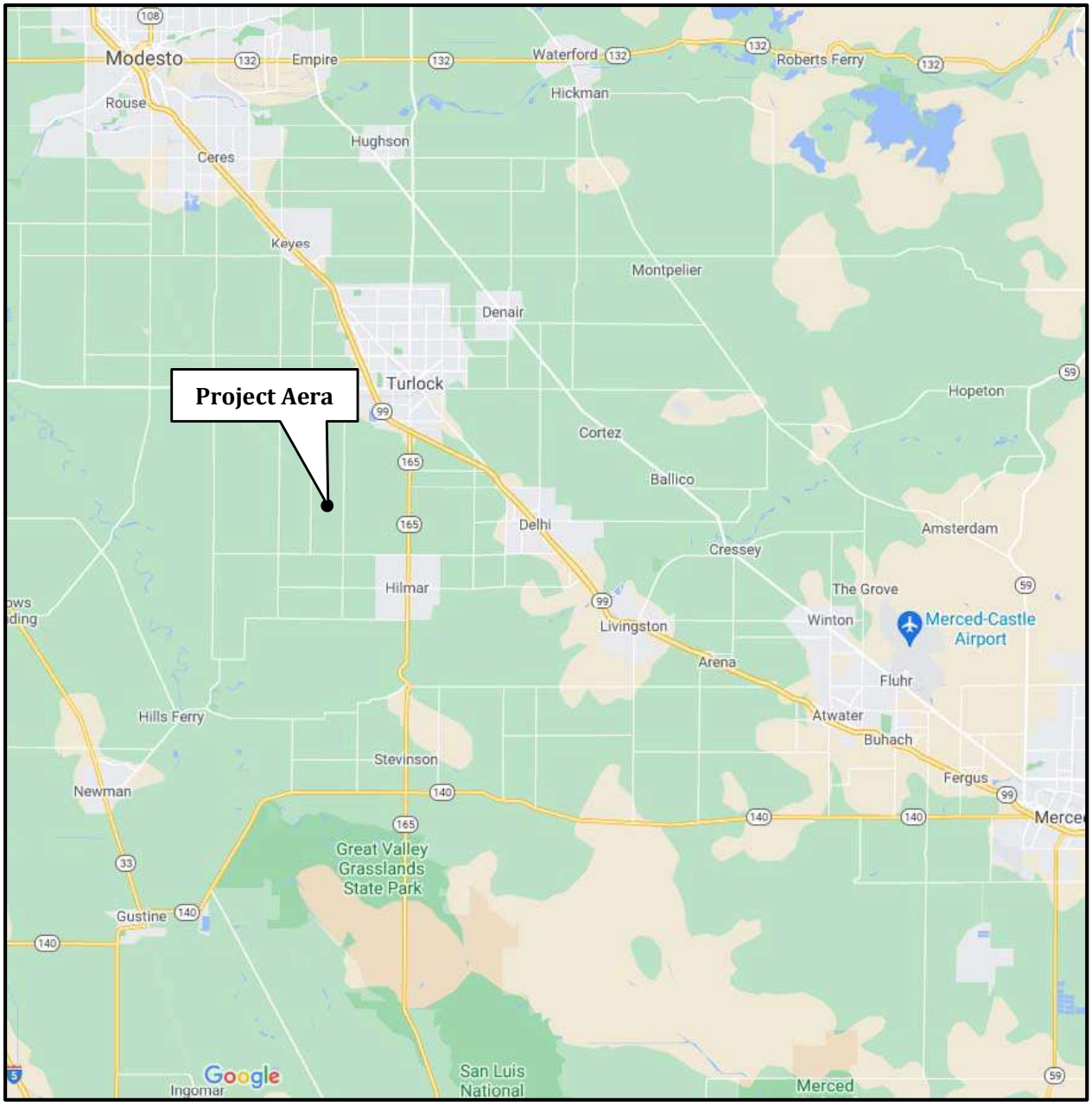
In accordance with the SJVAPCD's *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and polices (SJVAPCD 2015b; SJVAPCD 2015c) the potential health risk attributable to the proposed project is determined to be less than significant.

Emissions of criteria pollutants attributable to proposed construction activities animal movement, manure management and on-site mobile sources were calculated using generally accepted emission factors. The SJVAPCD has developed screening levels for requiring an AAQA. The SJVAPCD recommends that an AAQA be performed for all criteria pollutants when emissions of any criteria pollutant resulting from project construction or operational activities exceed the 100 pounds per day screening level, after compliance with Rule 9510 requirements and implementation of all enforceable mitigation measures. The proposed project's construction and operational activities will not exceed 100 pounds per day of any criteria pollutant that has an ambient air quality standard. Therefore, an AAQA is not required, and the proposed Project is considered less than significant for ambient air quality impacts.

2. INTRODUCTION

This Health Risk Assessment (HRA) is provided as a service of Trinity Consultants, performed on behalf of Sousa Engineering for the Kooistra Dairy facility operation in Stanislaus County, California (**Figure 2-1**). As part of the development requirements for the property, an HRA and AAQA are required.

Figure 2-1. Location Map



2.1. PROJECT DESCRIPTION

The existing dairy is located at 5837 Hultberg Road in Turlock, California, which is in the County of Stanislaus. The facility will not be located within 1,000 feet of a K-12 school.

The proposed structure construction would occur in up to two phases; however, construction was modeled as one phase to be conservative. Construction would include the construction of a new animal housing structure totaling 14,352 square feet. Construction was estimated to take approximately two active months. All construction is expected to be completed within a five-year period after the issuance of a Conditional Use Permit (CUP).

After modification, the dairy will house approximately 1,000 head of cattle. The existing and proposed herd configuration is provided in Table 2-1. The dairy will continue to operate 24 hours per day and 365 days per year.

Table 2-1. Herd Configuration – Existing and Proposed

Cow Type	Current	Proposed	Increment
Milk Cows	375	800	1,055
Dry Cows	56	200	210
Support Stock	0	0	0
Calves	0	0	0
TOTAL	**431**	**1,000**	**569**

3. AMBIENT AIR QUALITY ANALYSIS

As stated in the GAMAQI (2015, p 96-97), SJVAPCD has developed screening levels for requiring an Ambient Air Quality Analysis (AAQA). The SJVAPCD recommends that an AAQA be performed for all criteria pollutants when emissions of any criteria pollutant resulting from project construction or operational activities exceed the 100 pounds per day screening level, after compliance with Rule 9510 requirements and implementation of all enforceable mitigation measures.

As shown below in **Table 3-1**, average daily emissions for construction and operational activities associated with this Project would not exceed 100 pounds per day for any criteria pollutant or ammonia. *Therefore, an AAQA is not required for this Project.*

Table 3-1. Average Daily Criteria Pollutant Emissions

Emissions Source	Pollutant (lbs/day)						
	NOX	VOC	CO	SOX	PM_{10}	$PM_{2.5}$	NH3
Construction Emissions							
Year 2024	0.07	0.08	0.85	0.00	0.06	0.04	0.00
Operational Emissions							
Milk Parlor	-	0.50	-	-	-	-	0.20
Cow Housing	-	17.10	-	-	1.70	0.19	28.80
Liquid Manure	-	3.60	-	-	-	-	5.10
Solid Manure	-	0.30	-	-	-	-	1.80
Feed Handling*	-	10.30	-	-	-	-	0.00
Mobile Sources	0.13	0.15	2.05	0.004	0.01	0.01	0.00
Total Average Daily Operational Emissions	**0.20**	**32.03**	**2.05**	**0.004**	**1.77**	**0.24**	**35.90**
SJVAPCD AAQA Screening Threshold	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Is Threshold Exceeded?	No	No	No	No	No	No	No
*No change is the size of the silage piles of corn, wheat or alfalfa. Emissions from TMR only.							

4. RISK ASSESSMENT METHODOLOGY

This section describes the methodology used to predict the potential health risk to the population attributable to emissions of hazardous air pollutants from the proposed expansion of the dairy operation.

4.1. HAZARD IDENTIFICATION

The basis for evaluating potential health risk is the identification of sources of hazardous air pollutants (HAPs). The proposed dairy expansion will include sources with the potential to emit HAPs.

Construction equipment sources include diesel-fueled dozers, loaders, backhoes, excavators, graders, cranes, forklifts, generator sets, concrete/industrial saws, and welders. CalEEMod default equipment listing for general heavy industrial usages were utilized. Default horsepower, daily operating hours, and load factors were also used. Operational mobile sources with increased usage includes a diesel-fueled solids manure removal trucks, commodity delivery trucks, a manure loading tractor, feed loading tractor and a feed delivery tractor. There will also be emissions from the housing barns, milk barn, lagoons, solid manure storage and land application areas associated with increased herd size. HRA emission sources are listed in **Table 4-1**.

Table 4-1. Sources of Potential Emissions

Source ID	Description
SMTI	Solid Manure Truck Idling
SMTT	Solid Manure Truck Travel
MLT	Manure Loading Tractor
FLT	Feed Load Tractor
FDTT	Feed Delivery Tractor
LB1	Loafing Barn
FS1-7	Free Stall Barns
MILK1	Milk Parlor
LAGOON	Lagoon
SMS	Solid Manure Storage
LLA1-2	Liquid Land Application
CTI	Commodity Truck Idling
CTT	Commodity Truck Travel
CONST	Construction Activities
OSTT	Off-Site Truck Travel (1/4 Mile)

Table 4-2 lists the toxic substances emitted from each of these activities and also presents the classification of these species as to their potential for producing carcinogenic and non-cancer acute or chronic health impacts, if any.

Table 4-2. Chemicals of Potential Concern

CAS	Pollutant	Source	Cancer	Non-Cancer	
				Acute	Chronic
9901	Diesel Exhaust, Particulate Matter	Tractors, Diesel Trucks	X		X
9960	Sulfates	Animal Movement		X	X
50000	Formaldehyde	Animal Movement	X	X	X
56235	Carbon tetrachloride	Animal Movement, Lagoons	X	X	X
67630	Isopropyl Alcohol	Animal Movement		X	X
67663	Chloroform	Animal Movement, Lagoons	X	X	X
71432	Benzene	Animal Movement, Lagoons	X	X	X
71556	1,1,1-trichloroethane	Lagoons		X	X
74873	Methyl Chloride	Animal Movement	X	X	X
75003	Ethyl Chloride	Animal Movement			X
75070	Acetaldehyde	Animal Movement	X		X
75150	Carbon disulfide	Animal Movement		X	X
75252	Tribromomethane *	Lagoons			
75694	Trichloromonofluoromethane *	Lagoons			
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	Lagoons			X
78933	Methyl Ethyl Ketone (MEK)	Animal Movement, Lagoons		X	X
79005	1,1,2-Trichloroethane	Animal Movement	X		
79016	Trichloroethylene	Animal Movement, Lagoons	X		X
79345	1,1,2,2-Tetrachloroethane	Animal Movement	X		
91203	Naphthalene	Animal Movement	X		X
95501	1,2-Dichlorobenzene *	Animal Movement, Lagoons			
95636	1,2,4-Trichlorobenzene *	Lagoons			
96128	1,2-Dibromo-3-chloropropane	Animal Movement	X		X
96184	1,2,3-Trichloropropane *	Animal Movement			
98828	Cumene *	Animal Movement			
100414	Ethylbenzene	Animal Movement			X
100425	Styrene	Animal Movement, Lagoons		X	X
100447	Benzyl chloride	Animal Movement	X	X	X
106467	1,4-Dichlorobenzene	Animal Movement, Lagoons	X		X
106934	1,2-Dibromoethane (EDB)	Animal Movement	X		X
106990	1,3-Butadiene	Lagoons	X		X
107062	1,2-Dichloroethane (EDC)	Animal Movement	X		X
107131	Acrylonitrile	Animal Movement	X		X
108054	Vinyl acetate	Animal Movement, Lagoons			X
108101	Methyl Isobutyl Ketone *	Animal Movement, Lagoons			
108883	Toluene	Animal Movement, Lagoons		X	X
108907	Chlorobenzene	Animal Movement			X
110543	Hexane	Animal Movement			X
110827	Cyclohexane *	Animal Movement, Lagoons			
115071	Propylene	Lagoons			X

CAS	Pollutant	Source	Cancer	Non-Cancer	
				Acute	Chronic
120821	1,2,4-Trichlorobenzene *	Animal Movement			
123728	Butyraldehyde *	Animal Movement			
123911	1,4 Dioxane	Animal Movement	X	X	X
127184	Tetrachloroethene	Animal Movement	X	X	X
541731	1,3-Dichlorobenzene *	Animal Movement, Lagoons			
764410	t-1,4-Dichloro-2-butene *	Animal Movement			
1330207	Xylene Isomers	Animal Movement, Lagoons		X	X
4170303	Crotonaldehyde *	Animal Movement			
7429905	Aluminum *	Animal Movement			
7439921	Lead	Animal Movement	X		
7439965	Manganese	Animal Movement			X
7439976	Mercury	Animal Movement		X	X
7440020	Nickel	Animal Movement	X	X	X
7440360	Antimony *	Animal Movement			
7440382	Arsenic	Animal Movement	X	X	X
7440393	Barium *	Animal Movement			
7440439	Cadmium	Animal Movement	X		X
7440473	Chromium *	Animal Movement			
7440508	Copper	Animal Movement		X	X
7440622	Vanadium	Animal Movement	X		
7440666	Zinc	Animal Movement			X
7664417	Ammonia	Animal Movement, Lagoons Wastewater Application		X	X
7723140	Phosphorus *	Animal Movement			
7726956	Bromine	Animal Movement			X
7782492	Selenium	Animal Movement			X
7782505	Chlorine	Animal Movement		X	X
18540299	Hexavalent Chromium	Animal Movement	X	X	X

*Health risk assessment values have not yet been assigned for this chemical.

4.2. EXPOSURE ASSESSMENT

4.2.1. Source Emissions and Characterization

Peak one-hour emission rates and annual-averaged emission rates were calculated for all pollutants for each modeled source. Emissions attribute to animal movement and manure management were estimated by the SJVAPCD using PM_{10} emission factors and HAPs speciation spreadsheets. The project applicant provided cattle numbers. Emissions for tractors were calculated using the EPA's *Nonroad Compression-Ignition Engines - Exhaust Emission Standards* for the appropriate engine horsepower (HP) and year and load factors for the appropriate engine horsepower from California Emissions Estimator Model (CalEEMod) Appendix D, Tables 3.3 and 3.4. Diesel truck running and idling emissions are based on EMFAC2021 emission factors specific to Stanislaus County for vehicle category "T7 Single Other Class 8." Diesel trucks were assumed to have 15 minutes of idling per visit.

The actual total construction activities were estimated to be two months. Therefore, a one-year exposure HRA was conducted and added to the operational HRA results. Construction emissions will be restricted to occur between the hours of 7am and 5pm.

The calculation worksheets and CalEEMod output files for the emissions are provided in **Appendix A.** Hourly and annual emissions for each source are also provided in the HARP output files, electronic copies of which are provided in **Appendix B.**

4.2.2. Dispersion Modeling

A version of EPA's AMS/EPA Regulatory Model - AERMOD (recompiled for the Lakes ISC-AERMOD View interface) was used to predict the dispersion of emissions from the dairy expansion. The construction activities, animal housing areas, milk barn, lagoons, solid manure storage, and land application areas were modeled as area sources. Unit emission rates for the area sources of 1 g/sec divided by the area of the source were input into AERMOD. The travel route for the feed delivery tractor, bedding delivery tractor, commodity delivery trucks, and manure removal trucks were modeled as line sources, which represents a series of volume sources, with a unit emission rate of 1 g/sec. The feed loading tractor, the manure loading tractor, commodity truck idling, and manure removal truck idling were modeled as point sources, with a unit emission rate of 1 g/sec. Modeled sources are identified in **Table 4-1.**

All of the AERMOD regulatory default parameters were employed. Rural dispersion parameters were used because the facility and surrounding land are considered "rural" under the Auer land use classification method. The AERMOD files are provided in electronic format in **Appendix B.**

4.2.2.1. Meteorological Data

The SJVAPCD provided meteorological data for Modesto, California to be used for projects within Stanislaus County. SJVAPCD-approved, AERMET processed meteorological datasets for calendar years 2013 through 2017[1] was input into AERMOD. This was the most recent available dataset available at the time the modeling runs were conducted.

4.2.2.2. Receptors

Existing land uses in the area where the proposed dairy expansion will be located are predominantly agriculture. There are scattered rural residences in the general area of the project; most of which are associated with local agricultural operations. A total of 1 on-site residential receptor and 265 off-site receptors of residences and workers were assessed during the preparation of this HRA. Coordinates for the point of maximum impact (PMI) receptors are provided in **Table 4-3.**

4.2.3. HARP Post-Processing

The files generated in AERMOD were uploaded to the Air Dispersion Modeling and Risk Assessment Tool (ADMRT) program in the Hotspots Analysis and Reporting Program Version 2 (HARP2) (CARB 2015). ADMRT post-processing was used to assess the potential for excess cancer risk and chronic and acute non-cancer effects using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA). ADMRT site parameters were set for mandatory minimum exposure pathways with the addition of the homegrown produce pathway as recommended by the SJVAPCD for carcinogenic risk. The

[1] Provided via website, San Joaquin Valley Air Pollution Control District (SJVAPCD), ftp://12.219.204.27/public/Modeling/Meteorological_Data/AERMET_v16216/Modesto_23258/

deposition rate was set to 0.02 m/s. Risk reports were generated for carcinogenic risk, non-carcinogenic chronic risk and non-carcinogenic acute risk. Site parameters are included in the HARP output files.

4.3. RISK CHARACTERIZATION

For permitting and CEQA purposes, SJVAPCD has set the level of significance for carcinogenic risk at 20 in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people (SJVAPCD 2015b). The level of significance for chronic and acute non-cancer risk is a hazard index of one (SJVAPCD 2015c).

HARP2 post-processing was used to assess the potential for the following: excess cancer risk, acute non-cancer effects, and chronic non-cancer effects. Total cancer risk was predicted for inhalation and non-inhalation pathways at each receptor. The hazard index is computed by endpoint as the sum of the hazard indices for all relevant pollutants, the highest of which is designated as the total hazard index.

The carcinogenic risk predicted at the potentially impacted receptors does not exceed the significance level of twenty in one million (20×10^{-6}). The health hazard index (HI) for chronic and acute non-cancer risk is below the significance level of 1.0 at all modeled receptors. The excess cancer risk, acute non-cancer HI, and chronic non-cancer HI for the maximum modeled receptor are provided in **Table 4-3.** The HARP2 output files for cancer, acute, and chronic risks are provided in electronic format on **Appendix B.**

As shown below in **Table 4-3,** the maximum predicted cancer risk is 18.9E-06. Cancer risks are primarily attributable to emissions of naphthalene through the inhalation pathway. Carcinogenic risks are tabulated by pollutant in **Table 4-4.**

The maximum predicted acute non-cancer hazard index is 0.228. Acute risks are primarily attributable to emissions of ammonia, which affects the respiratory system and eyes. Acute risks are tabulated by pollutant in **Table 4-5.**

The maximum predicted chronic non-cancer hazard index is 0.192. Chronic risks, tabulated by pollutant in **Table 4-6**, are primarily attributable to emissions of arsenic which affect the respiratory system, the skin, cardiovascular system and the central nervous system.

Table 4-3. Risk Predicted By HARP

	Maximum Lifetime Excess Cancer Risk	Maximum Non-Cancer Chronic Hazard Index	Maximum Non-Cancer Acute Hazard Index
Construction	1.06E-06	4.50E-04	0.00E+00
Operational	17.9E-06	1.91E-01	2.28E-01
Total	18.9E-06	1.92E-01	2.28E-01
Receptor #, Name	2, Off-Site Residence	1, On-Site Residence	1, On-site Residence
UTM Easting (m)	686166.39	686195.40	686195.40
UTM Northing (m)	4145368.31	4145588.53	4145588.53

Table 4-4. Risk by Pollutant – Maximum Cancer Risk at Receptor #2

CHEM	INHAL	SOIL	DERM	MOTHER	WATER	FISH	CROP	BEEF	DAIRY	PIG	CHICK	EGG	TOTAL
DieselExhPM	2.71E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-06
Arsenic	5.26E-08	3.55E-07	1.51E-08	0.00E+00	0.00E+00	0.00E+00	3.39E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.62E-07
Cr(VI)	1.60E-07	2.09E-09	7.36E-11	0.00E+00	0.00E+00	0.00E+00	1.04E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.66E-07
Lead	4.03E-10	4.41E-09	9.38E-11	7.31E-11	0.00E+00	0.00E+00	1.33E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.31E-09
Nickel	2.85E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.85E-09
TetraClEthane	1.35E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-06
1,1,2TriClEthan	1.48E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-07
DBCP	1.59E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E-06
1,4-Dioxane	3.07E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.07E-07
p-DiClBenzene	5.01E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.01E-07
Acetaldehyde	1.42E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-07
Acrylonitrile	2.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-06
Benzene	2.03E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-07
Benzyl Chloride	1.27E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E-06
CCl4	4.06E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.06E-08
Chloroform	1.15E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-08
Ethyl Benzene	3.09E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.09E-08
EDB	1.06E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-06
EDC	7.67E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.67E-08
Formaldehyde	7.19E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.19E-08
Naphthalene	5.04E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.04E-06
Perc	7.82E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.82E-07
TCE	1.53E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-08
SUM	1.81E-05	3.62E-07	1.53E-08	7.31E-11	0.00E+00	0.00E+00	4.44E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-05

Table 4-5. Risk by Pollutant – Maximum Acute Noncancer Risk at Receptor #1

CHEM	CV	CNS	IMMUN	KIDNEY	GILV	REPRO /DEVEL	RESP	SKIN	EYE	BONE /TEETH	ENDO	BLOOD	ODOR	GENERAL	MAX
Arsenic	3.09E-03	3.09E-03	0.00E+00	0.00E+00	0.00E+00	3.09E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.09E-03
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05
Mercury	0.00E+00	2.57E-04	0.00E+00	0.00E+00	0.00E+00	2.57E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-04
Nickel	0.00E+00	0.00E+00	1.35E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-03
SULFATES	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.34E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.34E-03
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.86E-05	0.00E+00	3.86E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.86E-05
NH3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.18E-01	0.00E+00	2.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.18E-01
1,4-Dioxane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E-04	0.00E+00	2.78E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E-04
Acetaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-03	0.00E+00	2.44E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-03
Benzene	0.00E+00	0.00E+00	5.93E-03	0.00E+00	0.00E+00	5.93E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.93E-03	0.00E+00	0.00E+00	5.93E-03
Benzyl Chloride	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-03	0.00E+00	1.83E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-03
CS2	0.00E+00	2.30E-04	0.00E+00	0.00E+00	0.00E+00	2.30E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-04
CCl4	0.00E+00	1.26E-05	0.00E+00	0.00E+00	1.26E-05	1.26E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-05
Chloroform	0.00E+00	3.57E-04	0.00E+00	0.00E+00	0.00E+00	3.57E-04	3.57E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.57E-04
Formaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-03
Isopropyl Alcoh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-04	0.00E+00	2.31E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-04
MEK	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.70E-04	0.00E+00	4.70E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.70E-04
Perc	0.00E+00	1.03E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-04	0.00E+00	1.03E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-04
Styrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-05	1.49E-05	0.00E+00	1.49E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-05
Toluene	0.00E+00	1.13E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-04	0.00E+00	1.13E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-04
Xylenes	0.00E+00	4.22E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.22E-05	0.00E+00	4.22E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.22E-05
SUM	3.09E-03	4.20E-03	7.28E-03	0.00E+00	1.26E-05	9.88E-03	2.26E-01	0.00E+00	2.28E-01	0.00E+00	0.00E+00	5.93E-03	0.00E+00	0.00E+00	2.28E-01

Table 4-6. Risk by Pollutant – Maximum Chronic Noncancer Risk at Receptor #1

CHEM	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/ DEVEL	RESP	SKIN	EYE	BONE/ TEETH	ENDO	BLOOD	ODOR	GENERAL	MAX
DieselExhPM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-04
Arsenic	1.00E-01	1.00E-01	0.00E+00	0.00E+00	0.00E+00	1.00E-01	1.00E-01	1.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-01
Cr(VI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.39E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.66E-06	0.00E+00	0.00E+00	9.66E-06
Manganese	0.00E+00	8.16E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.16E-03
Mercury	0.00E+00	5.26E-04	0.00E+00	5.26E-04	0.00E+00	5.26E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.26E-04
Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.67E-06	4.84E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.84E-04	0.00E+00	0.00E+00	4.84E-04
Selenium	1.09E-05	1.09E-05	0.00E+00	0.00E+00	1.09E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-05
NH3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.57E-02
1,4-Dioxane	5.46E-06	0.00E+00	0.00E+00	5.46E-06	5.46E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.46E-06
p-DiClBenzene	0.00E+00	1.27E-05	0.00E+00	1.27E-05	1.27E-05	0.00E+00	1.27E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E-05
Acetaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-04
Acrylonitrile	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.23E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.23E-04
Benzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-03	0.00E+00	0.00E+00	1.14E-03
CS2	0.00E+00	3.56E-05	0.00E+00	0.00E+00	0.00E+00	3.56E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.56E-05
CCl4	0.00E+00	1.45E-05	0.00E+00	0.00E+00	1.45E-05	1.45E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E-05
Chlorobenzn	0.00E+00	0.00E+00	0.00E+00	3.96E-06	3.96E-06	3.96E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E-06
Chloroform	0.00E+00	0.00E+00	0.00E+00	4.32E-06	4.32E-06	4.32E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.32E-06
Ethyl Chloride	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.38E-08	9.38E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.38E-08
Ethyl Benzene	0.00E+00	0.00E+00	0.00E+00	2.20E-06	2.20E-06	2.20E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-06	0.00E+00	0.00E+00	0.00E+00	2.20E-06
EDB	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.53E-03
EDC	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-06
Formaldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.25E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.25E-04
Hexane	0.00E+00	1.21E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-06
Isopropyl Alcoh	0.00E+00	0.00E+00	0.00E+00	2.39E-06	0.00E+00	2.39E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-06
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-03
Perc	0.00E+00	0.00E+00	0.00E+00	6.69E-04	6.69E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.69E-04
Styrene	0.00E+00	5.70E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.70E-06
Toluene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-05
Vinyl Acetate	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.74E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.74E-05
Xylenes	0.00E+00	2.80E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-05	0.00E+00	2.80E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-05
TCE	0.00E+00	1.81E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-06
SUM	1.00E-01	1.09E-01	0.00E+00	1.23E-03	7.25E-04	1.06E-01	1.92E-01	1.00E-01	5.79E-05	0.00E+00	2.20E-06	1.64E-03	0.00E+00	0.00E+00	1.92E-01

5. CONCLUSIONS

In accordance with the *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and San Joaquin Valley Air Pollution Control District policies (SJVAPCD 2015b; SJVAPCD 2016c), the unmitigated potential health risk attributable to the Kooistra Dairy facility for chronic and acute non-carcinogenic and carcinogenic risk is determined to be less than significant based on the following conclusion:

- Potential chronic carcinogenic risk from the facility expansion is *below* the significance level of twenty in one million at each of the modeled receptors.
- The hazard index for the potential chronic non-cancer risk from the facility expansion is *below* the significance level of 1.0 at each of the modeled receptors.
- The hazard index for the potential acute non-cancer risk from the facility expansion is *below* the significance level of 1.0 at each of the modeled receptors.

Additionally, the ambient air quality impact is determined to be less than significant based on the following conclusions:

- The average daily emissions for construction and operational activities associated with this Project would not exceed 100 pounds per day for any criteria pollutant that has an ambient air quality standard.

6. REFERENCES

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APPENDIX A: EMISSION ESTIMATION WORKSHEETS

Rev. January 6, 2020

Pre-Project Facility Information

1. Does this facility house Holstein or Jersey cows? Holstein
   Most facilities house Holstein cows unless explicitly stated on the PTO or application.
2. Does the facility have an anaerobic treatment lagoon? no
3. Does the facility land apply liquid manure? yes
   Answering "yes" assumes worst case.
4. Does the facility land apply solid manure? no
   Answering "yes" assumes worst case.
5. Is any scraped manure sent to a lagoon/storage pond? no
   Answering "yes" assumes worst case.

Pre-Project Herd Size

Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals
Milk Cows	375				375
Dry Cows	56				56
Support Stock (Heifers, Calves, and Bulls)					0
Large Heifers					0
Medium Heifers					0
Small Heifers					0
Bulls					0

	Calf Hutches				Calf Corrals		
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	Total # of Calves
Calves							0

Total Herd Summary	
Total Milk Cows	375
Total Mature Cows	431
Support Stock (Heifers, Calves, and Bulls)	0
Total Calves	0
Total Dairy Head	431

Pre-Project Silage Information

Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn			
Alfalfa			
Wheat			

Post-Project Facility Information

1. Does this facility house Holstein or Jersey cows? Holstein
   Most facilities house Holstein cows unless explicitly stated on the PTO or application.
2. Does the facility have an anaerobic treatment lagoon? no
3. Does the facility land apply liquid manure? yes
   Answering "yes" assumes worst case.
4. Does the facility land apply solid manure? no
   Answering "yes" assumes worst case.
5. Is any scraped manure sent to a lagoon/storage pond? no
   Answering "yes" assumes worst case.
6. Does this project result in an increase or relocation of uncovered surface area for any lagoon/storage pond? no

Post-Project Herd Size

Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals
Milk Cows	800				800
Dry Cows	200				200
Support Stock (Heifers, Calves, and Bulls)					0
Large Heifers					0
Medium Heifers					0
Small Heifers					0
Bulls					0

	Calf Hutches				Calf Corrals		
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	Total # of Calves
Calves							0

Total Herd Summary	
Total Milk Cows	800
Total Mature Cows	1,000
Support Stock (Heifers, Calves, and Bulls)	0
Total Calves	0
Total Dairy Head	1,000

Post-Project Silage Information

Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn			
Alfalfa			
Wheat			

VOC Mitigation Measures and Control Efficiencies

Milking Parlor				
Measure Proposed?		Mitigation Measure(s) per Emissions Point	VOC Control Efficiency (%)	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Enteric Emissions Mitigations		
☑	☑	(D) Feed according to NRC guidelines	10%	10%
		Total Control Efficiency	10%	10%
		Milking Parlor Floor Mitigations		
☑	☑	(D) Feed according to NRC guidelines	10%	10%
☑	☑	(D) Flush or hose milk parlor immediately prior to, immediately after, or during each milking. Note: If selected for dairies > 999 milk cows, control efficiency is already included in EF.	10%	10%
		Total Control Efficiency	19%	19%

Cow Housing				
Measure Proposed?		Mitigation Measure(s) per Emissions Point	VOC Control Efficiency (%)	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Enteric Emissions Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
		Total Control Efficiency	10%	10%
		Corrals/Pens Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☐	☐	Inspect water pipes and troughs and repair leaks at least once every seven days. Note: If selected for dairies > 999 milk cows, CE is already included in EF.	0%	0%
☐	☐	**Dairies:** Clean manure from corrals at least four times per year with at least 60 days between cleaning, or clean corrals at least once between April and July and at least once between September and December. Note: If selected for dairies > 999 milk cows, CE is already included in EF. Note: No additional control given for increased cleaning frequency (e.g. BACT requirement). **Heifer/Calf Ranches:** Scrape corrals twice a year with at least 90 days between cleanings, excluding in-corral mounds. Note: No additional control given for increased cleaning frequency (e.g. BACT requirement).	0%	0%
☑	☑	Scrape, vacuum, or flush concrete lanes in corrals at least once every day for mature cows and every seven days for support stock, or clean concrete lanes such that the depth of manure does not exceed 12 inches at any point or time. Note: No additional control given for increased cleaning frequency (e.g. BACT requirement).	10%	10%
☐	☐	Implement one of the following: 1) slope the surface of the corrals at least 3% where the available space for each animal is 400 sq ft or less and slope the surface of the corrals at least 1.5% where the available space for each animal is more than 400 sq ft; 2) maintain corrals to ensure proper drainage preventing water from standing more than 48 hrs; 3) harrow, rake, or scrape pens sufficiently to maintain a dry surface. Note: If selected for dairies > 999 milk cows, CE already included in EF.	0%	0%
☐	☐	Install shade structures such that they are constructed with a light permeable roofing material. Note: If selected for dairies > 999 milk cows, the control efficiency will be 5% since the EF used includes a partial control for this measure.	0%	0%
☐	☐	Install all shade structures uphill of any slope in the corral. Note: If selected for dairies > 999 milk cows, the control efficiency will be 5% since the EF used includes a partial control for this measure.		
☐	☐	Clean manure from under corral shades at least once every 14 days, when weather permits access into corral. Note: If selected for dairies > 999 milk cows, the control efficiency will be 5% since the EF used includes a partial control for this measure.		
☐	☐	Install shade structure so that the structure has a North/South orientation. Note: If selected for dairies > 999 milk cows, the control efficiency will be 5% since the EF used includes a partial control for this measure.		
☐	☐	Manage corrals such that the manure depth in the corral does not exceed 12 inches at any time or point, except for in-corral mounding. Manure depth may exceed 12 inches when corrals become inaccessible due to rain events. The manure facility must resume management of the manure depth of 12 inches or lower immediately upon the corral becoming accessible. Note: If selected for dairies > 999 milk cows, control efficiency is already included in EF.	0%	0%
☑	☑	Knockdown fence line manure build-up prior to it exceeding a height of 12 inches at any time or point. Manure depth may exceed 12 inches when corrals become inaccessible due to rain events. The facility must resume management of the manure depth of 12 inches or lower immediately upon the corral becoming accessible.	10%	10%
☐	☐	Use lime or a similar absorbent material in the corral according to the manufacturer's recommendation to minimize moisture in the corrals.	0%	0%
☐	☐	Apply thymol to the corral soil in accordance with the manufacturer's recommendation.	0%	0%
		Total Control Efficiency	27.10%	27.10%

		Bedding Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☐	☐	Use non-manure-based bedding and non-separated solids based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond shells, sand, or waterbeds).	0%	0%
☑	☑	For a large dairy (1,000 milk cows or larger) or a heifer/calf ranch - Remove manure that is not dry from individual cow freestall beds or rake, harrow, scrape, or grade freestall bedding at least once every 7 days.	10%	10%
☐	☐	**(D)** For a medium dairy only (500 to 999 milk cows) - Remove manure that is not dry from individual cow freestall beds or rake, harrow, scrape, or grade freestall bedding at least once every 14 days.	0%	0%
		Total Control Efficiency	19.00%	19.00%
		Lanes Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☑	☑	Pave feedlanes, where present, for a width of at least 8 feet along the corral side of the feedlane fence for milk and dry cows and at least 6 feet along the corral side of the feedlane for heifers. Note: No control efficiency at this time.	0%	0%
☑	☑	**Dairies:** Flush, scrape, or vacuum freestall flush lanes immediately prior to or after, or during each milking; or flush or scrape freestall flush lanes at least 3 times per day. **Heifer/Calf Ranches:** Vacuum, scrape, or flush freestalls at least once every seven days.	10%	10%
☐	☐	**(D)** Have no animals in exercise pens or corrals at any time.	0%	0%
		Total Control Efficiency	19.00%	19.00%

Liquid Manure Handling				
Measure Proposed?		**Mitigation Measure(s) per Emissions Point**	**VOC Control Efficiency (%)**	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Lagoons/Storage Ponds Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☐	☐	Use phototropic lagoon	0%	0%
☐	☐	Use an anaerobic treatment lagoon designed according to NRCS Guideline No. 359, or aerobic treatment lagoon, or mechanically aerated lagoon, or covered lagoon digester vented to a control device with minimum 95% control	0%	0%
☑	☑	Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon. Note: If selected for dairies > 999 milk cows, control efficiency is already included in EF.	10%	10%
☐	☐	Maintain lagoon pH between 6.5 and 7.5	0%	0%
		Total Control Efficiency	19.00%	19.00%
		Liquid Manure Land Application Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☐	☐	Only apply liquid manure that has been treated with an anaerobic or aerobic treatment lagoon, aerobic lagoon, or digester system	0%	0%
☑	☑	Allow liquid manure to stand in the fields for no more than 24 hours after irrigation. Note: If selected for dairies > 999 milk cows, control efficiency is already included in EF.	10%	10%
☐	☐	Apply liquid/slurry manure via injection with drag hose or similar apparatus	0%	0%
		Total Control Efficiency	19.00%	19.00%

Solid Manure Handling				
Measure Proposed?		**Mitigation Measure(s) per Emissions Point**	**VOC Control Efficiency (%)**	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Solid Manure Storage Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☐	☐	**LARGE CAFO ONLY**: Within 72 hours of removal from housing, either a) remove dry manure from the facility, or b) cover dry manure outside the housing with a weatherproof covering from October through May, except for times when wind events remove the covering, not to exceed 24 hours per event.	0%	0%
		Total Control Efficiency	10.00%	10.00%
		Separated Solids Piles Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☑	☑	**LARGE CAFO ONLY**: Within 72 hours of removal from the drying process, either a) remove separated solids from the facility, or b) cover separated solids outside the housing with a weatherproof covering from October through May, except for times when wind events remove the covering, not to exceed 24 hours per event.	10%	10%
		Total Control Efficiency	19.00%	19.00%
		Solid Manure Land Application Mitigations		
☑	☑	Feed according to NRC guidelines	10%	10%
☐	☐	Incorporate all solid manure within 72 hours of land application. Note: If selected for dairies > 999 milk cows, control efficiency is already included in EF. Note: No additional control given for rapid manure incorporation (e.g. BACT requirement).	0%	0%
☐	☑	Only apply solid manure that has been treated with an anaerobic treatment lagoon, aerobic lagoon or digester system.	0%	40%
☐	☐	Apply no solid manure with a moisture content of more than 50%	0%	0%
		Total Control Efficiency	10.00%	46.00%

Ammonia Mitigation Measures and Control Efficiencies

Milking Parlor				
Measure Proposed?		Mitigation Measure(s) per Emissions Point	NH3 Control Efficiency (%)	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Milking Parlor Floor Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
		Total Control Efficiency	28%	28%

Cow Housing				
Measure Proposed?		Mitigation Measure(s) per Emissions Point	NH3 Control Efficiency (%)	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Corrals/Pens Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
☑	☑	Clean manure from corrals at least four times per year with at least 60 days between cleaning, or clean corrals at least once between April and July and at least once between September and December. **OR** Use lime or a similar absorbent material in the corral according to the manufacturer's recommendation to minimize moisture in the corrals. **OR** Apply thymol to the corral soil in accordance with the manufacturer's recommendation.	50%	50%
		Total Control Efficiency	64%	64%
		Bedding Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
☑	☑	Use non-manure-based bedding and non-separated solids based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond shells, sand, or waterbeds). **OR** For a large dairy only (1,000 milk cows or larger) - Remove manure that is not dry from individual cow freestall beds or rake, harrow, scrape, or grade freestall bedding at least once every 7 days. **OR** For a medium dairy only (500 to 999 milk cows) - Remove manure that is not dry from individual cow freestall beds or rake, harrow, scrape, or grade freestall bedding at least once every 14 days.	47.7%	47.7%
		Total Control Efficiency	62.34%	62.34%
		Lanes Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
		Total Control Efficiency	28%	28%

Liquid Manure Handling				
Measure Proposed?		Mitigation Measure(s) per Emissions Point	NH3 Control Efficiency (%)	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Lagoons/Storage Ponds Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
☐	☑	Use phototropic lagoon **OR** Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon.	0%	80%
		Total Control Efficiency	28.0%	85.6%
		Liquid Manure Land Application Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
☐	☐	Only apply liquid manure that has been treated with an anaerobic treatment lagoon	0%	0%
		Total Control Efficiency	28.00%	28.00%

Solid Manure Handling				
Measure Proposed?		Mitigation Measure(s) per Emissions Point	NH3 Control Efficiency (%)	
Pre-Project	Post-Project		Pre-Project	Post-Project
		Solid Manure Land Application Mitigations		
☑	☑	Feed according to NRC guidelines	28%	28%
☐	☐	Incorporate all solid manure within 72 hours of land application. **AND** Only apply solid manure that has been treated with an anaerobic treatment lagoon, aerobic lagoon or digester system. **AND** Apply no solid manure with a moisture content of more than 50%	0%	0%
		Total Control Efficiency	28.00%	28.00%

Control Measure	PM10 Control Efficiency
Shaded corrals (milk and dry cows)	16.7%
Shaded corrals (heifers and bulls)	8.3%
Downwind shelterbelts	12.5%
Upwind shelterbelts	10%
Freestall with no exercise pens and non-manure based bedding	90%
Freestall with no exercise pens and manure based bedding	80%
Fibrous layer in dusty areas (i.e. hay, etc.)	10%
Bi-weekly corral/exercise pen scraping and/or manure removal using a pull type manure harvesting equipment in morning hours when moisture in air except during periods of rainy weather	15%
Sprinkling of open corrals/exercise pens	12.5%
Feeding young stock (heifers and calves) near dusk	10%

Pre-Project PM10 Mitigation Measures

Pre-Project PM10 Mitigation Measures

	Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Free Stall 1	freestall	milk cows	80	80	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
2	Free Stall 2	freestall	milk cows	60	60	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
3	Free Stall 3	freestall	milk cows	60	60	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
4	Free Stall 4	freestall	milk cows	60	60	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
5	Free Stall 5	freestall	milk cows	60	60	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
6	Free Stall 6	freestall	milk cows	55	55	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
7	Loafing Barn 1	loafing barn	dry cows	56	56	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
8							☐	☐	☐	☐	☐	☐	☐	☐	☐
9							☐	☐	☐	☐	☐	☐	☐	☐	☐
			Pre-Project Total # of Cows	431											

Pre-Project PM10 Control Efficiencies and Emission Factors

	Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Free Stall 1	freestall	milk cows	80	80	1.370							15%			1.17
2	Free Stall 2	freestall	milk cows	60	60	1.370							15%			1.17
3	Free Stall 3	freestall	milk cows	60	60	1.370							15%			1.17
4	Free Stall 4	freestall	milk cows	60	60	1.370							15%			1.17
5	Free Stall 5	freestall	milk cows	60	60	1.370							15%			1.17
6	Free Stall 6	freestall	milk cows	55	55	1.370							15%			1.17
7	Loafing Barn 1	loafing barn	dry cows	56	56	2.730										2.73
8																
9																
			Pre-Project Total # of Cows	431												

Post-Project PM10 Mitigation Measures

Post-Project PM10 Mitigation Measures

	Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Free Stall 1	freestall	milk cows	190	190	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
2	Free Stall 2	freestall	milk cows	90	90	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
3	Free Stall 3	freestall	milk cows	100	100	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
4	Free Stall 4	freestall	dry cows	80	80	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
5	Free Stall 5	freestall	milk cows	100	100	1	☐	☐	☐	☐	☑	☐	☑	☐	☐
6	Free Stall 6	freestall	milk cows	160	160	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
7	Loafing Barn 4	loafing barn	dry cows	120	120	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
8							☐	☐	☐	☐	☐	☐	☐	☐	☐
9							☐	☐	☐	☐	☐	☐	☐	☐	☐
10							☐	☐	☐	☐	☐	☐	☐	☐	☐
11							☐	☐	☐	☐	☐	☐	☐	☐	☐
12							☐	☐	☐	☐	☐	☐	☐	☐	☐

Post-Project PM10 Mitigation Measures for New Housing Units at an Expanding Dairy

	Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Free Stall 7	freestall	milk cows	160	160	1	☐	☐	☐	☐	☐	☐	☑	☐	☐
2							☐	☐	☐	☐	☐	☐	☐	☐	☐
3							☐	☐	☐	☐	☐	☐	☐	☐	☐

Post-Project Total # of Cows 1,000 (The post-project total includes dairy cows already on-site and new cows from the expansion.)

Post-Project PM10 Control Efficiencies and Emission Factors

	Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Free Stall 1	freestall	milk cows	190	190	1.370							15%			1.17
2	Free Stall 2	freestall	milk cows	90	90	1.370							15%			1.17
3	Free Stall 3	freestall	milk cows	100	100	1.370							15%			1.17
4	Free Stall 4	freestall	dry cows	80	80	1.370							15%			1.17
5	Free Stall 5	freestall	milk cows	100	100	1.370					80%		15%			0.23
6	Free Stall 6	freestall	milk cows	160	160	1.370							15%			1.17
7	Loafing Barn 4	loafing barn	dry cows	120	120	2.730							15%			2.32
8																
9																
10																
11																
12																

Post-Project PM10 Control Efficiencies and Emission Factors for New Housing Emissions Units

	Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Free Stall 7	freestall	milk cows	160	160	1.370							15%			1.17
2																
3																

Increase in Emissions

SSIPE (lb/yr)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	179	58	0
Cow Housing	0	0	620	0	6,224	10,522	0
Liquid Manure	0	0	0	0	1,287	1,873	0
Solid Manure	0	0	0	0	95	662	0
Feed Handling	0	0	0	0	3,774	0	0
Total	**0**	**0**	**620**	**0**	**11,558**	**13,115**	**0**

Total Daily Change in Emissions (lb/day)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0.0	0.0	0.00	0.00	0.50	0.20	0.00
Cow Housing	0.0	0.0	1.70	0.00	17.10	28.80	0.00
Liquid Manure	0.0	0.0	0.00	0.00	3.60	5.10	0.00
Solid Manure	0.0	0.0	0.00	0.00	0.30	1.80	0.00
Feed Handling	0.0	0.0	0.00	0.00	10.30	0.00	0.00
Total	**0.0**	**0.0**	**1.7**	**0.0**	**31.8**	**35.90**	**0.0**

Total Annual Change in Non-Fugitive Emissions (Major Source Emissions) (lb/yr)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	0	0	0
Cow Housing	0	0	0	0	0	0	0
Liquid Manure	0	0	0	0	619	0	0
Solid Manure	0	0	0	0	0	0	0
Feed Handling	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**619**	**0**	**0**

Name	Cow Housing Summary				*Notes:
Applicability	Use this spreadsheet to enter data from the Engineer's Dairy Calculator. Entries here will be linked to other worksheets. After completion, proceed to RMR worksheet for further entries.				
Author or updater	Matthew Cegielski	*Last Update*	September 24, 2018		
Facility:	Kooistra Dairy		0	Not Set	
ID#:					
Project #:					

Potential to Emit - Cow Housing

Housing Name(s) or #(s)	Type of Cow	# of Cows	VOC (lb/hr)	VOC (lb/yr)	NH_3 (lb/hr)	NH_3 (lb/yr)	PM_{10} (lb/hr)	PM_{10} (lb/yr)
Free Stall 1	Milk	190	0.1542	1,355	0.2667	2,324	0.0125	128
Free Stall 2	Milk	90	0.0417	370	0.0708	634	0.0042	35
Free Stall 3	Milk	100	0.0583	493	0.0958	845	0.0042	47
Free Stall 4	Dry	80	-0.0208	-190	-0.0500	-411	0.0042	23
Free Stall 5	Milk	100	0.0583	493	0.0958	845	-0.0042	-47
Free Stall 6	Milk	160	0.1458	1,293	0.2542	2,219	0.0125	122
Loafing Barn 1	Dry	120	0.0500	439	0.0792	685	0.0167	126
Free Stall 7	Milk	160	0.2250	1,971	0.3875	3,381	0.0208	186

Copy and paste values from the corresponding table in the Engineer Dairy Calculator's RMR Summary worksheet. Paste values only with matched destination formatting. Ensure the same names are lined up by row number. Zero and null entries will be highlighted in red after entry.

SSIPE RMR Summary							
	PM10 lb/hr	PM10 lb/yr	VOC lb/hr	VOC lb/yr	NH3 lb/hr	NH3 lb/yr	H2S lb/yr
Milking Parlor	-	-	0.02	179	0.01	58	-
Cow Housing	0.07	620	0.71	6,224	1.20	10,522	-
Liquid Manure	-	-	0.15	1,287	0.21	1,873	-
Solid Manure	-	-	0.01	95	0.08	662	-
Feed Handling	-	-	0.43	3,774	-	-	-
Lagoon/Storage Pond	-	-	0.07	621	-0.15	-1,351	0
Land Application (Liquid)	-	-	0.08	657	0.36	3,176	-
Land Application (Solid)	-	-	0.00	0	0.00	0	-
Solid Manure Storage	-	-	0.01	110	0.08	657	-

SSIPE Total Herd Summary	
Change in Milk Cows	425
Change in Dairy Head	569
Change in Dairy Head (Flushed)	569

PM_{10} based Agricultural Emissions from Operations generating Dust from Livestock Soil

Use this spreadsheet when the emissions are from a Feedlot Soil sources or Cow Housing and the PM_{10} rates are known (e.g. Dairy operations). Ammonia and PM_{10} Emission rates linked to Cow Housing worksheet. No entries required on this worksheet. Zero and null entries will be highlighted in red after entry.

Author or updater	Matthew Cegielski
Last Update	September 24, 2018
Facility:	Kooistra Dairy
ID#:	0
Project #:	0

Formula

Emission are calculated by the multiplication of the PM_{10} Rates and the Emission Factors.

			Free Stall 1		Free Stall 2		Free Stall 3		Free Stall 4		Free Stall 5		Free Stall 6		Loafing Barn 1		Free Stall 7	
			lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
PM_{10} Emissions Rates			1.25E-02	1.28E+02	4.17E-03	3.50E+01	4.17E-03	4.70E+01	4.17E-03	2.30E+01	0.00E+00	0.00E+00	1.25E-02	1.22E+02	0.02	126.00	2.08E-02	1.86E+02
Substances	**CAS#**	**Dust* lb/lb PM_{10}**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**
Aluminum	**7429905**	4.66E-02	5.83E-04	5.97E+00	1.94E-04	1.63E+00	1.94E-04	2.19E+00	1.94E-04	1.07E+00	0.00E+00	0.00E+00	5.83E-04	2.50E-01	7.77E-04	5.87E+00	9.71E-04	8.67E+00
Antimony	**7440360**	1.90E-05	2.38E-07	2.43E-03	7.92E-08	6.65E-04	7.92E-08	8.93E-04	7.92E-08	4.37E-04	0.00E+00	0.00E+00	2.38E-07	1.02E-04	3.17E-07	2.39E-03	3.96E-07	3.53E-03
Arsenic	**7440382**	1.60E-05	2.00E-07	2.05E-03	6.67E-08	5.60E-04	6.67E-08	7.52E-04	6.67E-08	3.68E-04	0.00E+00	0.00E+00	2.00E-07	1.95E-03	2.67E-07	2.02E-03	3.33E-07	2.98E-03
Barium	**7440393**	4.69E-04	5.86E-06	6.00E-02	1.95E-06	1.64E-02	1.95E-06	2.20E-02	1.95E-06	1.08E-02	0.00E+00	0.00E+00	5.86E-06	5.72E-02	7.82E-06	5.91E-02	9.77E-06	8.72E-02
Bromine	**7726956**	4.40E-05	5.50E-07	5.63E-03	1.83E-07	1.54E-03	1.83E-07	2.07E-03	1.83E-07	1.01E-03	0.00E+00	0.00E+00	5.50E-07	5.37E-03	7.33E-07	5.54E-03	9.17E-07	8.18E-03
Chromium	**7440473**	1.40E-05	1.75E-07	1.79E-03	5.83E-08	4.90E-04	5.83E-08	6.58E-04	5.83E-08	3.22E-04	0.00E+00	0.00E+00	1.75E-07	1.71E-03	2.33E-07	1.76E-03	2.92E-07	2.60E-03
Copper	**7440508**	1.32E-04	1.65E-06	1.69E-02	5.50E-07	4.62E-03	5.50E-07	6.20E-03	5.50E-07	3.04E-03	0.00E+00	0.00E+00	1.65E-06	1.61E-02	2.20E-06	1.66E-02	2.75E-06	2.46E-02
Hexavalent Chromium**	**18540299**	7.00E-07	8.75E-09	8.96E-05	2.92E-09	2.45E-05	2.92E-09	3.29E-05	2.92E-09	1.61E-05	0.00E+00	0.00E+00	8.75E-09	8.54E-05	1.17E-08	8.82E-05	1.46E-08	1.30E-04
Lead	**7439921**	3.50E-05	4.38E-07	4.48E-03	1.46E-07	1.23E-03	1.46E-07	1.65E-03	1.46E-07	8.05E-04	0.00E+00	0.00E+00	4.38E-07	4.27E-03	5.83E-07	4.41E-03	7.29E-07	6.51E-03
Manganese	**7439965**	7.59E-04	9.49E-06	9.72E-02	3.16E-06	2.66E-02	3.16E-06	3.57E-02	3.16E-06	1.75E-02	0.00E+00	0.00E+00	9.49E-06	9.26E-02	1.27E-05	9.56E-02	1.58E-05	1.41E-01
Mercury	**7439976**	4.00E-06	5.00E-08	5.12E-04	1.67E-08	1.40E-04	1.67E-08	1.88E-04	1.67E-08	9.20E-05	0.00E+00	0.00E+00	5.00E-08	4.88E-04	6.67E-08	5.04E-04	8.33E-08	7.44E-04
Nickel	**7440020**	7.00E-06	8.75E-08	8.96E-04	2.92E-08	2.45E-04	2.92E-08	3.29E-04	2.92E-08	1.61E-04	0.00E+00	0.00E+00	8.75E-08	8.54E-04	1.17E-07	8.82E-04	1.46E-07	1.30E-03
Phosphorus	**7723140**	4.01E-02	5.02E-04	5.14E+00	1.67E-04	1.40E+00	1.67E-04	1.89E+00	1.67E-04	9.23E-01	0.00E+00	0.00E+00	5.02E-04	4.90E+00	6.69E-04	5.06E+00	8.36E-04	7.47E+00
Selenium	**7782492**	1.00E-06	1.25E-08	1.28E-04	4.17E-09	3.50E-05	4.17E-09	4.70E-05	4.17E-09	2.30E-05	0.00E+00	0.00E+00	1.25E-08	1.22E-04	1.67E-08	1.26E-04	2.08E-08	1.86E-04
Sulfates	**9960**	7.28E-03	9.10E-05	9.32E-01	3.03E-05	2.55E-01	3.03E-05	3.42E-01	3.03E-05	1.68E-01	0.00E+00	0.00E+00	9.10E-05	8.89E-01	1.21E-04	9.18E-01	1.52E-04	1.35E+00
Vanadium	**7440622**	3.00E-05	3.75E-07	3.84E-03	1.25E-07	1.05E-03	1.25E-07	1.41E-03	1.25E-07	6.90E-04	0.00E+00	0.00E+00	3.75E-07	3.66E-03	5.00E-07	3.78E-03	6.25E-07	5.58E-03
Zinc	**7440666**	3.42E-04	4.28E-06	4.38E-02	1.43E-06	1.20E-02	1.43E-06	1.61E-02	1.43E-06	7.87E-03	0.00E+00	0.00E+00	4.28E-06	4.17E-02	5.70E-06	4.31E-02	7.13E-06	6.36E-02
Ammonia	**7664417**		2.67E-01	2.32E+03	7.08E-02	6.34E+02	9.58E-02	8.45E+02	0.00E+00	0.00E+00	9.58E-02	8.45E+02	2.54E-01	2.22E+03	7.92E-02	6.85E+02	3.88E-01	3.38E+03

Agricultural Miscellaneous Emissions from Dairy Operations (Cow Housing)

Use this spreadsheet to characterize the miscellanous emissions from Dairy sources when VOC rates are known. VOC emission rates linked to Cow Housing worksheet. No entries required on this worksheet. Zero and null entries will be highlighted in red after entry.

Author or updater	Matthew Cegielski
Last Update	September 24, 2018
Facility:	Kooistra Dairy
ID#:	0
Project #:	0

Formula

Emissions are calculated by the multiplication of the VOC Rates, and Emission Factors.

			Free Stall 1		Free Stall 2		Free Stall 3		Free Stall 4		Free Stall 5		Free Stall 6		Loafing Barn 1		Free Stall 7	
			lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
VOC Emission Rates			1.54E-01	1,355.0	4.17E-02	370.0	5.83E-02	493.0	0.00E+00	0.0	5.83E-02	493.0	1.46E-01	1,293.0	5.00E-02	439.0	2.25E-01	1,971.0
Substances	**CAS#**	**Volatiles (lb/lb VOC)***	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR
1,1,2,2-Tetrachloroethane	79345	8.73E-06	1.35E-06	1.18E-02	3.64E-07	3.23E-03	5.09E-07	4.30E-03	0.00E+00	0.00E+00	5.09E-07	4.30E-03	1.27E-06	4.91E-04	4.37E-07	3.83E-03	1.96E-06	1.72E-02
1,1,2-Trichloroethane	79005	2.26E-04	3.48E-05	3.06E-01	9.42E-06	8.36E-02	1.32E-05	1.11E-01	0.00E+00	0.00E+00	1.32E-05	1.11E-01	3.30E-05	2.92E-01	1.13E-05	9.92E-02	5.09E-05	4.45E-01
1,2,3-Trichloropropane	96184	2.76E-04	4.26E-05	3.74E-01	1.15E-05	1.02E-01	1.61E-05	1.36E-01	0.00E+00	0.00E+00	1.61E-05	1.36E-01	4.03E-05	3.57E-01	1.38E-05	1.21E-01	6.21E-05	5.44E-01
1,2,4-Trichlorobenzene	120821	7.79E-04	1.20E-04	1.06E+00	3.25E-05	2.88E-01	4.54E-05	3.84E-01	0.00E+00	0.00E+00	4.54E-05	3.84E-01	1.14E-04	1.01E+00	3.90E-05	3.42E-01	1.75E-04	1.54E+00
1,2-Dibromo-3-chloropropane	96128	4.94E-05	7.62E-06	6.69E-02	2.06E-06	1.83E-02	2.88E-06	2.44E-02	0.00E+00	0.00E+00	2.88E-06	2.44E-02	7.20E-06	6.39E-02	2.47E-06	2.17E-02	1.11E-05	9.74E-02
1,2-Dichlorobenzene	95501	5.48E-04	8.45E-05	7.43E-01	2.28E-05	2.03E-01	3.20E-05	2.70E-01	0.00E+00	0.00E+00	3.20E-05	2.70E-01	7.99E-05	7.09E-01	2.74E-05	2.41E-01	1.23E-04	1.08E+00
1,3-Dichlorobenzene	541731	4.90E-04	7.55E-05	6.64E-01	2.04E-05	1.81E-01	2.86E-05	2.42E-01	0.00E+00	0.00E+00	2.86E-05	2.42E-01	7.15E-05	6.34E-01	2.45E-05	2.15E-01	1.10E-04	9.66E-01
1,4 Dioxane	123911	1.41E-03	2.17E-04	1.91E+00	5.88E-05	5.22E-01	8.23E-05	6.95E-01	0.00E+00	0.00E+00	8.23E-05	6.95E-01	2.06E-04	1.82E+00	7.05E-05	6.19E-01	3.17E-04	2.78E+00
1,4-Dichlorobenzene	106467	5.19E-04	8.00E-05	7.03E-01	2.16E-05	1.92E-01	3.03E-05	2.56E-01	0.00E+00	0.00E+00	3.03E-05	2.56E-01	7.57E-05	6.71E-01	2.60E-05	2.28E-01	1.17E-04	1.02E+00
Acetaldehyde	75070	2.41E-03	3.72E-04	3.27E+00	1.00E-04	8.92E-01	1.41E-04	1.19E+00	0.00E+00	0.00E+00	1.41E-04	1.19E+00	3.51E-04	3.12E+00	1.21E-04	1.06E+00	5.42E-04	4.75E+00
Acrylonitrile	107131	2.43E-04	3.75E-05	3.29E-01	1.01E-05	8.99E-02	1.42E-05	1.20E-01	0.00E+00	0.00E+00	1.42E-05	1.20E-01	3.54E-05	3.14E-01	1.22E-05	1.07E-01	5.47E-05	4.79E-01
Benzene	71432	3.19E-04	4.92E-05	4.32E-01	1.33E-05	1.18E-01	1.86E-05	1.57E-01	0.00E+00	0.00E+00	1.86E-05	1.57E-01	4.65E-05	4.12E-01	1.60E-05	1.40E-01	7.18E-05	6.29E-01
Benzyl chloride	100447	2.89E-04	4.46E-05	3.92E-01	1.20E-05	1.07E-01	1.69E-05	1.42E-01	0.00E+00	0.00E+00	1.69E-05	1.42E-01	4.21E-05	3.74E-01	1.45E-05	1.27E-01	6.50E-05	5.70E-01
Butyraldehyde	123728	1.14E-04	1.76E-05	1.54E-01	4.75E-06	4.22E-02	6.65E-06	5.62E-02	0.00E+00	0.00E+00	6.65E-06	5.62E-02	1.66E-05	1.47E-01	5.70E-06	5.00E-02	2.57E-05	2.25E-01
Carbon Disulfide	75150	2.49E-03	3.84E-04	3.37E+00	1.04E-04	9.21E-01	1.45E-04	1.23E+00	0.00E+00	0.00E+00	1.45E-04	1.23E+00	3.63E-04	3.22E+00	1.25E-04	1.09E+00	5.60E-04	4.91E+00
Carbon tetrachloride	56235	5.87E-05	9.05E-06	7.95E-02	2.45E-06	2.17E-02	3.42E-06	2.89E-02	0.00E+00	0.00E+00	3.42E-06	2.89E-02	8.56E-06	7.59E-02	2.94E-06	2.58E-02	1.32E-05	1.16E-01
Chlorobenzene	108907	2.72E-04	4.19E-05	3.69E-01	1.13E-05	1.01E-01	1.59E-05	1.34E-01	0.00E+00	0.00E+00	1.59E-05	1.34E-01	3.97E-05	3.52E-01	1.36E-05	1.19E-01	6.12E-05	5.36E-01
Chloroform	67663	1.31E-04	2.02E-05	1.78E-01	5.46E-06	4.85E-02	7.64E-06	6.46E-02	0.00E+00	0.00E+00	7.64E-06	6.46E-02	1.91E-05	1.69E-01	6.55E-06	5.75E-02	2.95E-05	2.58E-01
Chloromethane	74873	7.93E-04	1.22E-04	1.07E+00	3.30E-05	2.93E-01	4.63E-05	3.91E-01	0.00E+00	0.00E+00	4.63E-05	3.91E-01	1.16E-04	1.03E+00	3.97E-05	3.48E-01	1.78E-04	1.56E+00
Crotonaldehyde	4170303	1.41E-04	2.17E-05	1.91E-01	5.88E-06	5.22E-02	8.23E-06	6.95E-02	0.00E+00	0.00E+00	8.23E-06	6.95E-02	2.06E-05	1.82E-01	7.05E-06	6.19E-02	3.17E-05	2.78E-01
Cyclohexane	110827	6.83E-03	1.05E-03	9.25E+00	2.85E-04	2.53E+00	3.98E-04	3.37E+00	0.00E+00	0.00E+00	3.98E-04	3.37E+00	9.96E-04	8.83E+00	3.42E-04	3.00E+00	1.54E-03	1.35E+01
Ethyl Chloride	75003	2.39E-04	3.68E-05	3.24E-01	9.96E-06	8.84E-02	1.39E-05	1.18E-01	0.00E+00	0.00E+00	1.39E-05	1.18E-01	3.49E-05	3.09E-01	1.20E-05	1.05E-01	5.38E-05	4.71E-01
Ethylbenzene	100414	3.47E-04	5.35E-05	4.70E-01	1.45E-05	1.28E-01	2.02E-05	1.71E-01	0.00E+00	0.00E+00	2.02E-05	1.71E-01	5.06E-05	4.49E-01	1.74E-05	1.52E-01	7.81E-05	6.84E-01
Ethylene Dibromide (EDB)	106934	3.06E-04	4.72E-05	4.15E-01	1.28E-05	1.13E-01	1.79E-05	1.51E-01	0.00E+00	0.00E+00	1.79E-05	1.51E-01	4.46E-05	3.96E-01	1.53E-05	1.34E-01	6.89E-05	6.03E-01
Ethylene Dichloride (EDC)	107062	5.89E-05	9.08E-06	7.98E-02	2.45E-06	2.18E-02	3.44E-06	2.90E-02	0.00E+00	0.00E+00	3.44E-06	2.90E-02	8.59E-06	7.62E-02	2.95E-06	2.59E-02	1.33E-05	1.16E-01
Formaldehyde	50000	3.98E-04	6.14E-05	5.39E-01	1.66E-05	1.47E-01	2.32E-05	1.96E-01	0.00E+00	0.00E+00	2.32E-05	1.96E-01	5.80E-05	5.15E-01	1.99E-05	1.75E-01	8.96E-05	7.84E-01
Hexane	110543	8.12E-04	1.25E-04	1.10E+00	3.38E-05	3.00E-01	4.74E-05	4.00E-01	0.00E+00	0.00E+00	4.74E-05	4.00E-01	1.18E-04	1.05E+00	4.06E-05	3.56E-01	1.83E-04	1.60E+00
Isopropyl Alchol	67630	1.62E-03	2.50E-04	2.20E+00	6.75E-05	5.99E-01	9.45E-05	7.99E-01	0.00E+00	0.00E+00	9.45E-05	7.99E-01	2.36E-04	2.09E+00	8.10E-05	7.11E-01	3.65E-04	3.19E+00
Isopropylbenzene (Cumene)	98828	5.61E-05	8.65E-06	7.60E-02	2.34E-06	2.08E-02	3.27E-06	2.77E-02	0.00E+00	0.00E+00	3.27E-06	2.77E-02	8.18E-06	7.25E-02	2.81E-06	2.46E-02	1.26E-05	1.11E-01
Methyl Ethyl Ketone (2-butanone)	78933	1.46E-02	2.25E-03	1.98E+01	6.08E-04	5.40E+00	8.52E-04	7.20E+00	0.00E+00	0.00E+00	8.52E-04	7.20E+00	2.13E-03	1.89E+01	7.30E-04	6.41E+00	3.29E-03	2.88E+01
Methyl Isobutyl Ketone	108101	7.09E-04	1.09E-04	9.61E-01	2.95E-05	2.62E-01	4.14E-05	3.50E-01	0.00E+00	0.00E+00	4.14E-05	3.50E-01	1.03E-04	9.17E-01	3.55E-05	3.11E-01	1.60E-04	1.40E+00
Napthalene	91203	1.16E-03	1.79E-04	1.57E+00	4.83E-05	4.29E-01	6.77E-05	5.72E-01	0.00E+00	0.00E+00	6.77E-05	5.72E-01	1.69E-04	1.50E+00	5.80E-05	5.09E-01	2.61E-04	2.29E+00
Perchloroethylene	127184	6.51E-04	1.00E-04	8.82E-01	2.71E-05	2.41E-01	3.80E-05	3.21E-01	0.00E+00	0.00E+00	3.80E-05	3.21E-01	9.49E-05	8.42E-01	3.26E-05	2.86E-01	1.46E-04	1.28E+00
Styrene	100425	3.59E-04	5.53E-05	4.86E-01	1.50E-05	1.33E-01	2.09E-05	1.77E-01	0.00E+00	0.00E+00	2.09E-05	1.77E-01	5.24E-05	4.64E-01	1.80E-05	1.58E-01	8.08E-05	7.08E-01
t-1,4-Dichloro-2-butene	764410	8.92E-04	1.38E-04	1.21E+00	3.72E-05	3.30E-01	5.20E-05	4.40E-01	0.00E+00	0.00E+00	5.20E-05	4.40E-01	1.30E-04	1.15E+00	4.46E-05	3.92E-01	2.01E-04	1.76E+00
Toluene	108883	1.07E-03	1.65E-04	1.45E+00	4.46E-05	3.96E-01	6.24E-05	5.28E-01	0.00E+00	0.00E+00	6.24E-05	5.28E-01	1.56E-04	1.38E+00	5.35E-05	4.70E-01	2.41E-04	2.11E+00
Trichlorofluoromethane*	75694	1.08E-07	1.67E-08	1.46E-04	4.50E-09	4.00E-05	6.30E-09	5.32E-05	0.00E+00	0.00E+00	6.30E-09	5.32E-05	1.58E-08	1.40E-04	5.40E-09	4.74E-05	2.43E-08	2.13E-04
Vinyl acetate	108054	1.97E-03	3.04E-04	2.67E+00	8.21E-05	7.29E-01	1.15E-04	9.71E-01	0.00E+00	0.00E+00	1.15E-04	9.71E-01	2.87E-04	2.55E+00	9.85E-05	8.65E-01	4.43E-04	3.88E+00
Xylenes	1330207	1.80E-03	2.78E-04	2.44E+00	7.50E-05	6.66E-01	1.05E-04	8.87E-01	0.00E+00	0.00E+00	1.05E-04	8.87E-01	2.63E-04	2.33E+00	9.00E-05	7.90E-01	4.05E-04	3.55E+00

Name	Agricultural Miscellaneous Emissions from Dairy Operations (Milk Parlors)					
Applicability	Use this spreadsheet to characterize the miscellanous emissions from Dairy sources when VOC rates are known. VOC emission rates linked to RMR worksheet. Enter VOC and NH_3 rates if there is more than one Milk Parlor.					
Author or updater	Matthew Cegielski		*Last Update*	August 26, 2016		
Facility:	Kooistra Dairy					
ID#:	0					
Project #:	0					
More than one Milk Parlor?	N		**Formula**			
Inputs	VOC lb/yr	NH_3 lb/yr	Select N or Y from the dropdown. If there is more than one Milk Parlor, enter VOC and NH_3 rates. Toxic emissions are calculated by the multiplication of the VOC Rates and Emission Factors.			
Milk Parlor 1	179	58				
Milk Parlor 2	0	0	lb/hr	lb/yr	lb/hr	lb/yr
VOC Emission Rates			**2.04E-02**	**1.79E+02**	**0.00E+00**	**0.00E+00**
Substances	**CAS#**	**Toxic EF's (lb/lb VOC)***	**LB/HR**	**LB/YR**	**LB/HR**	**LB/YR**
1,1,2,2-Tetrachloroethane	**79345**	8.73E-06	1.78E-07	1.56E-03	0.00E+00	0.00E+00
1,1,2-Trichloroethane	**79005**	2.26E-04	4.61E-06	4.03E-02	0.00E+00	0.00E+00
1,2,3-Trichloropropane	**96184**	2.76E-04	5.62E-06	4.93E-02	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	**120821**	7.79E-04	1.59E-05	1.39E-01	0.00E+00	0.00E+00
1,2-Dibromo-3-chloropropane	**96128**	4.94E-05	1.01E-06	8.82E-03	0.00E+00	0.00E+00
1,2-Dichlorobenzene	**95501**	5.48E-04	1.12E-05	9.78E-02	0.00E+00	0.00E+00
1,3-Dichlorobenzene	**541731**	4.90E-04	9.98E-06	8.75E-02	0.00E+00	0.00E+00
1,4 Dioxane	**123911**	1.41E-03	2.87E-05	2.52E-01	0.00E+00	0.00E+00
1,4-Dichlorobenzene	**106467**	5.19E-04	1.06E-05	9.26E-02	0.00E+00	0.00E+00
Acetaldehyde	**75070**	2.41E-03	4.91E-05	4.30E-01	0.00E+00	0.00E+00
Acrylonitrile	**107131**	2.43E-04	4.95E-06	4.34E-02	0.00E+00	0.00E+00
Benzene	**71432**	3.19E-04	6.50E-06	5.69E-02	0.00E+00	0.00E+00
Benzyl chloride	**100447**	2.89E-04	5.89E-06	5.16E-02	0.00E+00	0.00E+00
Butyraldehyde	**123728**	1.14E-04	2.32E-06	2.03E-02	0.00E+00	0.00E+00
Carbon Disulfide	**75150**	2.49E-03	5.07E-05	4.44E-01	0.00E+00	0.00E+00
Carbon tetrachloride	**56235**	5.87E-05	1.20E-06	1.05E-02	0.00E+00	0.00E+00
Chlorobenzene	**108907**	2.72E-04	5.54E-06	4.86E-02	0.00E+00	0.00E+00
Chloroform	**67663**	1.31E-04	2.67E-06	2.34E-02	0.00E+00	0.00E+00
Chloromethane	**74873**	7.93E-04	1.62E-05	1.42E-01	0.00E+00	0.00E+00
Crotonaldehyde	**4170303**	1.41E-04	2.87E-06	2.52E-02	0.00E+00	0.00E+00
Cyclohexane	**110827**	6.83E-03	1.39E-04	1.22E+00	0.00E+00	0.00E+00
Ethyl Chloride	**75003**	2.39E-04	4.87E-06	4.27E-02	0.00E+00	0.00E+00
Ethylbenzene	**100414**	3.47E-04	7.07E-06	6.19E-02	0.00E+00	0.00E+00
Ethylene Dibromide (EDB)	**106934**	3.06E-04	6.24E-06	5.46E-02	0.00E+00	0.00E+00
Ethylene Dichloride (EDC)	**107062**	5.89E-05	1.20E-06	1.05E-02	0.00E+00	0.00E+00
Formaldehyde	**50000**	3.98E-04	8.11E-06	7.10E-02	0.00E+00	0.00E+00
Hexane	**110543**	8.12E-04	1.65E-05	1.45E-01	0.00E+00	0.00E+00
Isopropyl Alchol	**67630**	1.62E-03	3.30E-05	2.89E-01	0.00E+00	0.00E+00
Isopropylbenzene (Cumene)	**98828**	5.61E-05	1.14E-06	1.00E-02	0.00E+00	0.00E+00
Methyl Ethyl Ketone (2-butanone)	**78933**	1.46E-02	2.98E-04	2.61E+00	0.00E+00	0.00E+00
Methyl Isobutyl Ketone	**108101**	7.09E-04	1.44E-05	1.27E-01	0.00E+00	0.00E+00
Napthalene	**91203**	1.16E-03	2.36E-05	2.07E-01	0.00E+00	0.00E+00
Perchloroethylene	**127184**	6.51E-04	1.33E-05	1.16E-01	0.00E+00	0.00E+00
Styrene	**100425**	3.59E-04	7.32E-06	6.41E-02	0.00E+00	0.00E+00
t-1,4-Dichloro-2-butene	**764410**	8.92E-04	1.82E-05	1.59E-01	0.00E+00	0.00E+00
Toluene	**108883**	1.07E-03	2.18E-05	1.91E-01	0.00E+00	0.00E+00
Trichlorofluoromethane*	**75694**	1.08E-07	2.20E-09	1.93E-05	0.00E+00	0.00E+00
Vinyl acetate	**108054**	1.97E-03	4.01E-05	3.52E-01	0.00E+00	0.00E+00
Xylenes	**1330207**	1.80E-03	3.67E-05	3.21E-01	0.00E+00	0.00E+00
Ammonia	**7664417**		6.64E-03	5.81E+01	0.00E+00	0.0

Name	Agricultural Lagoon Emissior
Applicability	Use this spreadsheet when the emissions are from a Dairy Lagoon sources and the VO rates in 'Lagoon/Storage Pond row'. Enter values into the Lagoon area calculator on the worksheet cells, 'Lagoon/Storage Pond'. Individual Lagoon values are calculated by multi areas, output in g

Author or updater	Matthew Cegielski	*Last Update*	September 12, 2018
Facility:	Kooistra Dairy		
ID#:	0		
Project #:	0		

Inputs	lb/hr	lb/yr	**Formula**
VOC Rate	0.07	621	Emissions are calculated by the multiplication of the VOC rates, area fracton, and emission factors.

	Lagoon Area Fraction	**1.00**

Substances	CAS#	Emissions Factors lb/VOC*	LB/HR	LB/YR	Lagoon LB/HR	Lagoon LB/YR
1,1,2,2-Tetrachloroethane	79345	3.44E-02	2.43E-03	2.13E+01	2.43E-03	2.13E+01
1,1,2-Trichloroethane	79005	7.94E-03	5.62E-04	4.93E+00	5.62E-04	4.93E+00
1,2,4-Trimethylbenzene	95636	2.94E-02	2.08E-03	1.82E+01	2.08E-03	1.82E+01
1,2-Dichlorobenzene	95501	6.25E-02	4.43E-03	3.88E+01	4.43E-03	3.88E+01
1,3-Dichlorobenzene	541731	4.94E-02	3.50E-03	3.06E+01	3.50E-03	3.06E+01
1,3-Dichloropropene	542756	7.44E-03	5.27E-04	4.61E+00	5.27E-04	4.61E+00
1,4 Dioxane	123911	2.50E-02	1.77E-03	1.55E+01	1.77E-03	1.55E+01
1,4-Dichloro-2-butene	764410	6.88E-02	4.87E-03	4.27E+01	4.87E-03	4.27E+01
1,4-Dichlorobenzene	106467	5.19E-02	3.67E-03	3.22E+01	3.67E-03	3.22E+01
Acetaldehyde	75070	1.56E-02	1.11E-03	9.70E+00	1.11E-03	9.70E+00
Acrylonitrile	107131	7.31E-03	5.18E-04	4.54E+00	5.18E-04	4.54E+00
Benzene	71432	2.88E-03	2.04E-04	1.78E+00	2.04E-04	1.78E+00
Benzyl chloride	100447	3.13E-02	2.21E-03	1.94E+01	2.21E-03	1.94E+01
Carbon disulfide	75150	3.94E-02	2.79E-03	2.44E+01	2.79E-03	2.44E+01
Chlorobenzene	108907	1.31E-02	9.30E-04	8.14E+00	9.30E-04	8.14E+00
Cumene	98828	1.94E-02	1.37E-03	1.20E+01	1.37E-03	1.20E+01
Cyclohexane	110827	8.19E-03	5.80E-04	5.08E+00	5.80E-04	5.08E+00
Ethyl Chloride	75003	4.63E-03	3.28E-04	2.87E+00	3.28E-04	2.87E+00
Ethylbenzene	100414	1.00E-02	7.08E-04	6.21E+00	7.08E-04	6.21E+00
Ethylene Dibromide (EDB)	106934	1.44E-02	1.02E-03	8.92E+00	1.02E-03	8.92E+00
Ethylene Dichloride (EDC)	107062	4.06E-03	2.88E-04	2.52E+00	2.88E-04	2.52E+00
Formaldehyde	50000	8.13E-03	5.76E-04	5.04E+00	5.76E-04	5.04E+00
Hexane	110543	4.31E-03	3.05E-04	2.68E+00	3.05E-04	2.68E+00
Isopropyl Alchol	67630	7.50E-03	5.31E-04	4.65E+00	5.31E-04	4.65E+00
Methyl Ethyl Ketone	78933	1.38E-02	9.74E-04	8.53E+00	9.74E-04	8.53E+00
Methyl Isobutyl Ketone	108101	1.13E-02	8.01E-04	7.02E+00	8.01E-04	7.02E+00
Napthalene	91203	1.88E-01	1.33E-02	1.16E+02	1.33E-02	1.16E+02
Perchloroethylene	127184	1.75E-01	1.24E-02	1.09E+02	1.24E-02	1.09E+02
Styrene	100425	1.63E-02	1.15E-03	1.01E+01	1.15E-03	1.01E+01
Toluene	108883	1.25E-02	8.85E-04	7.76E+00	8.85E-04	7.76E+00
Trichloroethylene	79016	1.12E-02	7.92E-04	6.94E+00	7.92E-04	6.94E+00
Xylenes	1330207	1.88E-02	1.33E-03	1.16E+01	1.33E-03	1.16E+01
Ammonia	7664417				-1.542E-01	-1.351E+03

Table 1. Truck Travel: Diesel Particulate Matter Increased Emissions

Type of Vehicles	Source	Round Trip Distance (mi)	Emission Factor (g/mi)	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/day)
Milk Tankers		0.00	0.01	0	0.00E+00	0.00E+00
Commodity Delivery	CTT	0.13	0.01	104	3.02E-04	8.28E-07
Manure Transport	SMTT	0.25	0.01	120	7.06E-04	1.93E-06
Off-site Truck Travel	OSTT	0.25	0.01	224	1.29E-03	3.55E-06

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Traveling 10 MPH.
Note 2: Increases in trucks/yr is from the Initial Study, page 17

Table 2. Truck Idling: Diesel Particulate Matter Increased Emissions

Type of Vehicles	Source	Emission Factor (g/hr-vehicle)	Minutes Idling/Truck	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/day)
Milk Tankers		0.001	15	0	0.00E+00	0.00E+00
Commodity Delivery	CTI	0.001	15	104	7.77E-05	2.13E-07
Manure Transport	SMTI	0.001	15	120	8.97E-05	2.46E-07

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Idling.
Note 2: Increases in trucks/yr is from the Initial Study, page 17

Table 3. Tractors: Diesel Particulate Matter Increased Emissions

	Source (# Volume Sources)	HP	Load Factor	Hours/Year	Emission Factor (g/hp-hr)	Emissions (lb/yr)	Emissions (max lb/day)
Feed Loading	FLT	220	0.37	365	1.49E-02	9.77E-01	5.35E-03
Bedding Delivery		80	0.37	0	1.49E-02	0.00E+00	0.00E+00
Manure Scraping		150	0.37	0	1.49E-02	0.00E+00	0.00E+00
Manure Loading	MLT	150	0.37	40	1.49E-02	7.30E-02	0.00E+00
Feed Delivery	FDT	155	0.37	365	1.49E-02	6.88E-01	3.77E-03

Note1 : Emissions based on EPA's *Nonroad Compression-Ignition* Engines - Exhaust Emission Standards for the appropriate year and HP
https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf
Note 2: Increase in hours/day was provided by the project applicant

Table 4. Truck Travel: NOx Increased Emissions

	Source	Round Trip Distance (mi)	Emission Factor (g/mi)	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/Max day)	Emissions (lb/Max hr)
Milk Tankers		0.00	6.10	0	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTT	0.13	6.10	104	1.76E-01	1.69E-03	1.69E-03
Manure Transport	SMTT	0.25	6.10	120	4.10E-01	3.42E-03	3.42E-03

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Traveling 10 MPH.
Note 2: Increases in trucks/yr is from the applicant

Table 5. Truck Idling: NOx Increased Emissions

Type of Vehicles	Source	Emission Factor (g/hr-vehicle)	Minutes Idling/Truck	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/Max day)	Emissions (lb/Max hr)
Milk Tankers		0.94	15	0	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTI	0.94	15	104	5.37E-02	5.16E-04	5.16E-04
Manure Transport	SMTI	0.94	15	120	6.19E-02	5.16E-04	5.16E-04

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Idling.
Note 2: Increases in trucks/yr is from the Initial Study, page 17

Table 6. Tractors: NOx Increased Emissions

	Source (# Volume Sources)	HP	Load Factor	Hours/day	Hours/Year	Days/Year	Emission Factor (g/hp-hr)	Emissions (lb/yr)	Emissions (lb/Max day)	Emissions (lb/Max hr)
Feed Loading	FLT	220	0.37	1	365	365	2.98E-01	1.954E+01	5.353E-02	0.00E+00
Bedding Delivery	0	80	0.37	0	0	0	2.98E-01	0.00E+00	0.000E+00	0.00E+00
Manure Scraping	0	150	0.37	0	0	0	2.98E-01	0.00E+00	0.000E+00	0.00E+00
Manure Loading	MLT	150	0.37	1	40	365	2.98E-01	1.46E+00	3.650E-02	0.00E+00
Feed Delivery	FDT	155	0.37	1	365	365	2.98E-01	1.38E+01	3.771E-02	0.00E+00

Note1 : Emissions based on EPA's *Nonroad Compression-Ignition* Engines - Exhaust Emission Standards for the appropriate year and HP
https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf
Note 2: Increase in hours/day was provided by the project applicant
Note 3: Load factors from CalEEMod's Appendix D Table 3.3 *OFFROAD Default Horsepower and Load Factors*

Table 7. Truck Travel: SOx Increased Emissions

Type of Vehicles	Source	Round Trip Distance (mi)	Emission Factor (g/mi)	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/Max 24-hr)	Emissions (lb/Max 3-hr)	Emissions (lb/Max 1-hr)
Milk Tankers	MTT	0.00	0.03	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTT	0.13	0.03	104	8.15E-04	7.83E-06	7.83E-06	7.83E-06
Manure Transport	SMTT	0.25	0.03	120	1.90E-03	1.59E-05	1.59E-05	1.59E-05

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Traveling 10 MPH.
Note 2: Increases in trucks/yr is from the applicant

Table 8. Truck Idling: SOx Increased Emissions

Type of Vehicles	Source	Emission Factor (g/hr-vehicle)	Minutes Idling/Truck	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/Max 24-hr)	Emissions (lb/Max 3-hr)	Emissions (lb/Max 1-hr)
Milk Tankers	MTI	0.002	15	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTI	0.002	15	104	1.05E-04	1.01E-06	1.01E-06	1.01E-06
Manure Transport	SMTI	0.002	15	120	1.21E-04	1.01E-06	1.01E-06	1.01E-06

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Idling.
Note 2: Increases in trucks/yr is from the Initial Study, page 17

Table 9. Tractors: SOx Increase Emissions

	Source (# Volume Sources)	HP	Load Factor	Hours/day	Hours/Year	Days/Year	Emission Factor (g/hp-hr)	Emissions (lb/yr)	Emissions (lb/Max 24-hr)	Emissions (lb/Max 3-hr)	Emissions (lb/Max 1-hr)
Feed Loading	FLT	220	0.37	1	365	365	5.00E-03	3.28E-01	1.79E-03	0.00E+00	0.00E+00
Bedding Delivery	0	80	0.37	0	0	0	5.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manure Scraping	0	150	0.37	0	0	0	5.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manure Loading	MLT	150	0.37	1	40	365	5.00E-03	2.45E-02	6.12E-04	0.00E+00	0.00E+00
Feed Delivery	FDT	155	0.37	1	365	365	5.00E-03	2.31E-01	1.26E-03	0.00E+00	0.00E+00

Note1 : Emissions based on CalEEmod's Appendix D, dafualts for the appropriate year and HP
Note 2: Increase in hours/day was provided by the project applicant
Note 3: Load factors from CalEEMod's Appendix D Table 3.3 *OFFROAD Default Horsepower and Load Factors*

Table 10. Truck Travel: CO Increased Emissions

Type of Vehicles	Source	Round Trip Distance (mi)	Emission Factor (g/mi)	Increase in Trucks/Year	Emissions (lb/Max day)	Emissions (lb/Max 8-yr)	Emissions (lb/Max hr)
Milk Tankers	MTT	0.00	0.84	0	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTT	0.13	0.84	104	2.32E-04	2.32E-04	2.32E-04
Manure Transport	SMTT	0.25	0.84	120	4.69E-04	4.69E-04	4.69E-04

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Traveling 10 MPH.
Note 2: Increases in trucks/yr is from the applicant

Table 11. Truck Idling: CO Increased Emissions

Type of Vehicles	Source	Emission Factor (g/hr-vehicle)	Minutes Idling/Truck	Increase in Trucks/Year	Emissions (lb/Max day)	Emissions (lb/Max 8-hr)	Emissions (lb/Max hr)
Milk Tankers	MTI	1.11	15	0	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTI	1.11	15	104	6.10E-04	6.10E-04	6.10E-04
Manure Transport	SMTI	1.11	15	120	6.10E-04	6.10E-04	6.10E-04

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Idling.
Note 2: Increases in trucks/yr is from the Initial Study, page 17

Table 12. Tractors: CO Increase Emissions

	Source (# Volume Sources)	HP	Load Factor	Hours/day	Hours/Year	Days/Year	Emission Factor (g/hp-hr)	Emissions (lb/yr)	Emissions (lb/Max day)	Emissions (lb/Max 8-hr)	Emissions (lb/Max hr)
Feed Loading	FLT	220	0.37	1	365	365	2.61E+00	1.71E+02	9.37E-01	4.68E-01	0.00E+00
Bedding Delivery	0	80	0.37	0.00	0	0.00	3.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manure Scraping	0	150	0.37	0.00	0	0.00	3.73E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manure Loading	MLT	150	0.37	1.00	40	365.00	3.73E+00	1.82E+01	4.56E-01	0.00E+00	0.00E+00
Feed Delivery	FDT	155	0.37	1	365	365	2.61E+00	1.20E+02	6.60E-01	3.30E-01	0.00E+00

Note1 : Emissions based on EPA's *Nonroad Compression-Ignition* Engines - Exhaust Emission Standards for the appropriate year and HP
https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf
Note 2: Increase in hours/day was provided by the project applicant
Note 3: Load factors from CalEEMod's Appendix D Table 3.3 *OFFROAD Default Horsepower and Load Factors*

Table 13. Truck Travel: VOC Increased Emissions

Type of Vehicles	Source	Round Trip Distance (mi)	Emission Factor (g/mi)	Increase in Trucks/Year	Emissions (lb/Max day)	Emissions (lb/Max 8-yr)	Emissions (lb/Max hr)
Milk Tankers	MTT	0.00	0.10	0	0.00E+00	0.00E+00	0.00E+00
Commodity Delivery	CTT	0.13	0.10	104	2.64E-05	2.64E-05	2.64E-05
Manure Transport	SMTT	0.25	0.10	120	5.34E-05	5.34E-05	5.34E-05

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Traveling 10 MPH.
Note 2: Increases in trucks/yr is from the applicant

Table 14. Truck Idling: VOC Increased Emissions

Type of Vehicles	Source	Emission Factor (g/hr-vehicle)	Minutes Idling/Truck	Increase in Trucks/Year	Emissions (lb/Max day)	Emissions (lb/Max 8-hr)	Emissions (lb/Max hr)
Milk Tankers	MTI	2.00	15	0	0.00E+00	1.10E-03	1.10E-03
Commodity Delivery	CTI	2.00	15	104	1.10E-03	1.10E-03	1.10E-03
Manure Transport	SMTI	2.00	15	120	1.10E-03	1.10E-03	1.10E-03

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Stanislaus County (2023) with an Aggregate Fleet Mix Idling.
Note 2: Increases in trucks/yr is from the Initial Study, page 17

Table 15. Tractors: VOC Increase Emissions

	Source (# Volume Sources)	HP	Load Factor	Hours/day	Hours/Year	Days/Year	Emission Factor (g/hp-hr)	Emissions (lb/yr)	Emissions (lb/Max day)	Emissions (lb/Max 8-hr)	Emissions (lb/Max hr)
Feed Loading	FLT	220	0.37	1	365	365	2.09E-01	1.37E+01	3.75E-02	7.50E-02	0.00E+00
Bedding Delivery	0	80	0.37	0.00	0	0.00	5.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manure Scraping	0	150	0.37	0.00	0	0.00	4.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manure Loading	MLT	150	0.37	1.00	40	365.00	4.70E-01	2.30E+00	5.75E-02	0.00E+00	0.00E+00
Feed Delivery	FDT	155	0.37	1	365	365	3.89E-01	1.80E+01	4.92E-02	9.84E-02	0.00E+00

Note1 : Emissions based on CalEEmod's Appendix D, dafualts for the appropriate year and HP
Note 2: Increase in hours/day was provided by the project applicant
Note 3: Load factors from CalEEMod's Appendix D Table 3.3 *OFFROAD Default Horsepower and Load Factors*

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Kooistra Dairy Construction

Stanislaus County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	14.35	1000sqft	0.33	14,352.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	46
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Estimated COnstruction Schedule

Demolition -

Vehicle Trips - Construction Only

Consumer Products - Construction Only

Area Coating - Construction Only

Landscape Equipment - Construction Only

Energy Use - Construction Only

Water And Wastewater - Construction Only

Solid Waste - Construction Only

Construction Off-road Equipment Mitigation -

Kooistra Dairy Construction - Stanislaus County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	30.00
tblConstructionPhase	PhaseEndDate	9/4/2024	5/29/2024
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.75	0.00
tblEnergyUse	T24NG	16.86	0.00
tblLandscapeEquipment	NumberSummerDays	180	0
tblSolidWaste	SolidWasteGenerationRate	17.79	0.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.00
tblWater	IndoorWaterUseRate	3,318,437.50	0.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0137	0.1326	0.1548	2.7000e-004	9.7100e-003	6.0200e-003	0.0157	3.4100e-003	5.5800e-003	8.9900e-003	0.0000	24.0532	24.0532	6.3800e-003	2.1000e-004	24.2761
Maximum	**0.0137**	**0.1326**	**0.1548**	**2.7000e-004**	**9.7100e-003**	**6.0200e-003**	**0.0157**	**3.4100e-003**	**5.5800e-003**	**8.9900e-003**	**0.0000**	**24.0532**	**24.0532**	**6.3800e-003**	**2.1000e-004**	**24.2761**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0137	0.1326	0.1548	2.7000e-004	4.7600e-003	6.0200e-003	0.0108	1.5900e-003	5.5800e-003	7.1700e-003	0.0000	24.0532	24.0532	6.3800e-003	2.1000e-004	24.2760
Maximum	**0.0137**	**0.1326**	**0.1548**	**2.7000e-004**	**4.7600e-003**	**6.0200e-003**	**0.0108**	**1.5900e-003**	**5.5800e-003**	**7.1700e-003**	**0.0000**	**24.0532**	**24.0532**	**6.3800e-003**	**2.1000e-004**	**24.2760**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.01**	**0.00**	**50.98**	**0.00**	**31.47**	**53.37**	**0.00**	**20.24**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-1-2024	6-30-2024	0.1420	0.1420
		Highest	0.1420	0.1420

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2024	4/12/2024	5	10	
2	Site Preparation	Site Preparation	4/13/2024	4/15/2024	5	1	
3	Grading	Grading	4/16/2024	4/17/2024	5	2	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Building Construction	Building Construction	4/18/2024	5/29/2024	5	30	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Grading	Graders	1	6.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	23.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5400e-003	0.0000	2.5400e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0274	0.0370	6.0000e-005		1.2500e-003	1.2500e-003		1.2000e-003	1.2000e-003	0.0000	5.2104	5.2104	9.4000e-004	0.0000	5.2339
Total	**3.0800e-003**	**0.0274**	**0.0370**	**6.0000e-005**	**2.5400e-003**	**1.2500e-003**	**3.7900e-003**	**3.8000e-004**	**1.2000e-003**	**1.5800e-003**	**0.0000**	**5.2104**	**5.2104**	**9.4000e-004**	**0.0000**	**5.2339**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	1.4300e-003	3.0000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6390	0.6390	0.0000	1.0000e-004	0.6691
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	9.0000e-005	1.2100e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3108	0.3108	1.0000e-005	1.0000e-005	0.3137
Total	**1.7000e-004**	**1.5200e-003**	**1.5100e-003**	**1.0000e-005**	**6.0000e-004**	**1.0000e-005**	**6.1000e-004**	**1.6000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.9498**	**0.9498**	**1.0000e-005**	**1.1000e-004**	**0.9827**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.9000e-004	0.0000	9.9000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0274	0.0370	6.0000e-005		1.2500e-003	1.2500e-003		1.2000e-003	1.2000e-003	0.0000	5.2104	5.2104	9.4000e-004	0.0000	5.2339
Total	**3.0800e-003**	**0.0274**	**0.0370**	**6.0000e-005**	**9.9000e-004**	**1.2500e-003**	**2.2400e-003**	**1.5000e-004**	**1.2000e-003**	**1.3500e-003**	**0.0000**	**5.2104**	**5.2104**	**9.4000e-004**	**0.0000**	**5.2339**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	1.4300e-003	3.0000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6390	0.6390	0.0000	1.0000e-004	0.6691
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	9.0000e-005	1.2100e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3108	0.3108	1.0000e-005	1.0000e-005	0.3137
Total	**1.7000e-004**	**1.5200e-003**	**1.5100e-003**	**1.0000e-005**	**6.0000e-004**	**1.0000e-005**	**6.1000e-004**	**1.6000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.9498**	**0.9498**	**1.0000e-005**	**1.1000e-004**	**0.9827**

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5000e-004	2.8000e-003	1.9500e-003	0.0000		1.0000e-004	1.0000e-004		9.0000e-005	9.0000e-005	0.0000	0.4274	0.4274	1.4000e-004	0.0000	0.4309
Total	**2.5000e-004**	**2.8000e-003**	**1.9500e-003**	**0.0000**	**2.7000e-004**	**1.0000e-004**	**3.7000e-004**	**3.0000e-005**	**9.0000e-005**	**1.2000e-004**	**0.0000**	**0.4274**	**0.4274**	**1.4000e-004**	**0.0000**	**0.4309**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0155	0.0155	0.0000	0.0000	0.0157
Total	**1.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0155**	**0.0155**	**0.0000**	**0.0000**	**0.0157**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5000e-004	2.8000e-003	1.9500e-003	0.0000		1.0000e-004	1.0000e-004		9.0000e-005	9.0000e-005	0.0000	0.4274	0.4274	1.4000e-004	0.0000	0.4309
Total	**2.5000e-004**	**2.8000e-003**	**1.9500e-003**	**0.0000**	**1.0000e-004**	**1.0000e-004**	**2.0000e-004**	**1.0000e-005**	**9.0000e-005**	**1.0000e-004**	**0.0000**	**0.4274**	**0.4274**	**1.4000e-004**	**0.0000**	**0.4309**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0155	0.0155	0.0000	0.0000	0.0157
Total	**1.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0155**	**0.0155**	**0.0000**	**0.0000**	**0.0157**

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3100e-003	0.0000	5.3100e-003	2.5700e-003	0.0000	2.5700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1000e-004	9.7300e-003	5.5500e-003	1.0000e-005		4.0000e-004	4.0000e-004		3.7000e-004	3.7000e-004	0.0000	1.2380	1.2380	4.0000e-004	0.0000	1.2480
Total	**9.1000e-004**	**9.7300e-003**	**5.5500e-003**	**1.0000e-005**	**5.3100e-003**	**4.0000e-004**	**5.7100e-003**	**2.5700e-003**	**3.7000e-004**	**2.9400e-003**	**0.0000**	**1.2380**	**1.2380**	**4.0000e-004**	**0.0000**	**1.2480**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	1.9000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0497	0.0497	0.0000	0.0000	0.0502
Total	**2.0000e-005**	**2.0000e-005**	**1.9000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0497**	**0.0497**	**0.0000**	**0.0000**	**0.0502**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.0700e-003	0.0000	2.0700e-003	1.0000e-003	0.0000	1.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1000e-004	9.7300e-003	5.5500e-003	1.0000e-005		4.0000e-004	4.0000e-004		3.7000e-004	3.7000e-004	0.0000	1.2380	1.2380	4.0000e-004	0.0000	1.2480
Total	**9.1000e-004**	**9.7300e-003**	**5.5500e-003**	**1.0000e-005**	**2.0700e-003**	**4.0000e-004**	**2.4700e-003**	**1.0000e-003**	**3.7000e-004**	**1.3700e-003**	**0.0000**	**1.2380**	**1.2380**	**4.0000e-004**	**0.0000**	**1.2480**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	1.9000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0497	0.0497	0.0000	0.0000	0.0502
Total	**2.0000e-005**	**2.0000e-005**	**1.9000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0497**	**0.0497**	**0.0000**	**0.0000**	**0.0502**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9300e-003	0.0896	0.1060	1.7000e-004		4.2400e-003	4.2400e-003		3.9000e-003	3.9000e-003	0.0000	15.0364	15.0364	4.8600e-003	0.0000	15.1579
Total	**8.9300e-003**	**0.0896**	**0.1060**	**1.7000e-004**		**4.2400e-003**	**4.2400e-003**		**3.9000e-003**	**3.9000e-003**	**0.0000**	**15.0364**	**15.0364**	**4.8600e-003**	**0.0000**	**15.1579**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.3200e-003	3.8000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.5666	0.5666	0.0000	9.0000e-005	0.5921
Worker	2.7000e-004	1.7000e-004	2.1700e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5594	0.5594	2.0000e-005	2.0000e-005	0.5646
Total	**3.0000e-004**	**1.4900e-003**	**2.5500e-003**	**2.0000e-005**	**9.2000e-004**	**1.0000e-005**	**9.3000e-004**	**2.5000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**1.1260**	**1.1260**	**2.0000e-005**	**1.1000e-004**	**1.1567**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9300e-003	0.0896	0.1060	1.7000e-004		4.2400e-003	4.2400e-003		3.9000e-003	3.9000e-003	0.0000	15.0363	15.0363	4.8600e-003	0.0000	15.1579
Total	**8.9300e-003**	**0.0896**	**0.1060**	**1.7000e-004**		**4.2400e-003**	**4.2400e-003**		**3.9000e-003**	**3.9000e-003**	**0.0000**	**15.0363**	**15.0363**	**4.8600e-003**	**0.0000**	**15.1579**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.3200e-003	3.8000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.5666	0.5666	0.0000	9.0000e-005	0.5921
Worker	2.7000e-004	1.7000e-004	2.1700e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5594	0.5594	2.0000e-005	2.0000e-005	0.5646
Total	**3.0000e-004**	**1.4900e-003**	**2.5500e-003**	**2.0000e-005**	**9.2000e-004**	**1.0000e-005**	**9.3000e-004**	**2.5000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**1.1260**	**1.1260**	**2.0000e-005**	**1.1000e-004**	**1.1567**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.523257	0.051970	0.166194	0.158016	0.032160	0.007890	0.013191	0.016111	0.000841	0.000303	0.024837	0.001374	0.003856

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B: AERMOD AND HARP2 ELECTRONIC FILES