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California Regional Water Quality Control Board

Central Coast Region

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Arnold Schwarzenegger
Governor

ORDER NO. R3-2010-0004
NPDES NO. CA0050601

WASTE DISCHARGE REQUIREMENTS FOR THE GALLO CATTLE COMPANY JOSEPH GALLO FARMS FEED LOT

Table 1. Discharger Information

Discharger	Gallo Cattle Company
Name of Facility	Joseph Gallo Farms Feed Lot
Facility Address	31701 Johnson Canyon Road
	Gonzales, CA 93926
	Monterey County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a minor discharge.	

Discharges by the Gallo Cattle Company from the discharge point identified below are subject to waste discharge requirements as set forth in this Order.

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Wastewater from Concentrated Animal (Heifer) Operation	36° 36' 55.8" N	121° 53' 41.0" W	Land Application
002	Site Wastewater Discharged from Pond 2 during the 25 Year, 24-Hour Storm Event	---	---	Johnson Creek

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**February 4, 2010**
This Order shall become effective on:	**March 1, 2010**
This Order shall expire on:	**March 1, 2015**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

IT IS HEREBY ORDERED, that in order to meet the provisions contained in division 7 of the California Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Roger Briggs Executive Officer, do hereby certify that this Order, with all attachments, is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coastal Region, on February 4, 2010.

Roger W. Briggs, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	Gallo Cattle Company
Name of Facility	Joseph Gallo Farms Feed Lot
Facility Address	31701 Johnson Canyon Road
	Gonzales, California 93926
	Monterey County
Facility Contact, Title, and Phone	Roland Perez, M.S., Environmental Administrator, 209-394-7984
Mailing Address	10561 West Highway 140, PO Box 775, Atwater, California 95301
Type of Facility	CAFO (concentrated animal feeding operation)
Facility Design Flow	The facility is designed to contain storm runoff up to the 25-year, 24-hour event, and thereby preclude discharges to surface water.

II. FINDINGS

The California Regional Water Quality Control Board, Central Coast Region (hereinafter the Regional Water Board), finds:

A. Background. The Gallo Cattle Company (hereinafter the Discharger) is currently discharging pursuant to Order No. R3-2003-0126 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0050601. The Discharger submitted a Report of Waste Discharge, dated August 19, 2008, and applied to renew its NPDES permit to discharge wastewater and contaminated storm water onsite via spray irrigation to 64 acres of oat fields, which are regularly harvested for the exclusive use of feeding cattle onsite. The Report of Waste Discharge was deemed complete on July 27, 2009, following receipt of the Discharger's Nutrient Management Plan, which was updated to adhere to the requirements of the revised NPDES regulations and effluent limitations guidelines for CAFOs (effective on December 22, 2008)**.**

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description. The Discharger owns and operates a concentrated animal feeding operation (CAFO) that contains and feeds up to 30,000 head of cattle on 101 acres of a 373.2-acre parcel. The remaining 272 acres are used for dry storage, manure composting, runoff containment ponding, and irrigated croplands. The runoff containment ponding/ treatment system consists of nine ponds — three wastewater holding ponds, three storm water retention ponds, and three irrigation holding ponds. Wastewater disposal occurs by evaporation from the wastewater holding ponds and the irrigation holding ponds. Additional wastewater disposal occurs on 64 acres of spray irrigated, regularly harvested, oat fields. The Salinas River, a water of the State, is located 3 miles southwest of the facility. The Salinas River is in the Salinas River watershed. Johnson Creek, a tributary to the Salinas River, flows east to west, 200 to 1,000 feet south of the facility. Attachment B provides a location map of the area around the facility. Attachment C provides a facility map showing pertinent structures and facilities.

C. Legal Authorities. This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information, including a site visit on September 25, 2008. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into

this Order and constitutes part of the Findings for this Order. Attachments A through E are also incorporated into this Order.

E. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. Technology-Based Effluent Limitations. CWA Section 301 (b) and USEPA's NPDES regulations at 40 CFR 122.44 require that permits include, at a minimum, conditions meeting applicable technology-based requirements and any more stringent effluent limitations necessary to meet applicable water quality standards. Discharges authorized by this Order must meet minimum federal technology-based requirements based on Effluent Limitation Guidelines and Standards for the CAFO Point Source Category established at 40 CFR Part 412 and Best Professional Judgment (BPJ) in accordance with 40 CFR 125.3. A detailed discussion of development of technology-based effluent limitations is included in the Fact Sheet (Attachment F).

G. Water Quality-Based Effluent Limitations. CWA Section 301 (b) and NPDES regulations at 40 CFR 122.44 (d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

NPDES regulations at 40 CFR 122.44 (d)(1)(i) mandate that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential is established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304 (a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided at 40 CFR 122.44 (d)(1)(vi).

H. Water Quality Control Plans. The Regional Water Board has adopted a *Water Quality Control Plan for the Central Coast Region* (the Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for receiving waters within the Region. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which establishes State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

In accordance with Chapter 2 of the Basin Plan, surface water bodies that do not have beneficial uses specifically identified by the Basin Plan (e.g., Johnson Creek) are assigned the beneficial uses of:

- Municipal and domestic supply

- Protection of both recreation and aquatic life.

Requirements of this Order implement the Basin Plan.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR). USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the State. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants that are applicable to discharges from Gallo Cattle Company facility.

J. State Implementation Policy. On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. Compliance Schedules and Interim Requirements. Section 2.1 of the SIP provides that, based on a Discharger's request and demonstration that it is infeasible for an existing Discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or May 18, 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may also be granted to allow time to implement a new or revised water quality objective. This Order does not include compliance schedules or interim effluent limitations.

L. Alaska Rule. On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and tribal water quality standards (WQS) become effective for CWA purposes [65 Fed. Reg. 24641 (April 27, 2000) (codified at 40 CFR 131.21)]. Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000 must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000 may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and water quality-based effluent limitations and/or conditions. The Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

Water quality based requirements have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. All beneficial uses and water quality objectives contained in the Basin Plan were approved under State law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to NPDES regulations at 40 CFR 131.21 (c) (1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

N. Antidegradation Policy. NPDES regulations at 40 CFR 131.12 require that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings. The Basin Plan implements and incorporates by reference both the State and federal antidegradation policies. As discussed in sections III.C.5 and IV.D.2 of the Fact Sheet, the provisions of this Order are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements. CWA sections 402 (o) (2) and 303 (d) (4) and NPDES regulations at 40 CFR 122.44 (l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

P. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the State. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. Monitoring and Reporting. NPDES regulations at 40 CFR 122.48 require that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 also authorize the Regional Water Board to require technical

and monitoring reports. The Monitoring and Reporting Program, provided as Attachment E to the Order, establishes monitoring and reporting requirements to implement federal and State requirements.

R. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable pursuant to 40 CFR 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

S. Provisions and Requirements Implementing State Law. The provisions/ requirements in subsection IV. B, IV. C, and V.B of this Order are included to implement State law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

T. Notification of Interested Parties. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order

U. Consideration of Public Comment. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the public hearing are provided in the Fact Sheet of this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater to areas other than land application areas identified by the facility's Nutrient Management Plan is prohibited unless approved by the Executive Officer.

B. Land application of any wastes other than cattle feedlot wastewater and storm water runoff to the Discharger's irrigation/land disposal area is prohibited, except as clarified in section IV. A. 2 of the Fact Sheet.

C. Discharge of any wastes including overflow, bypass, seepage, and overspray, from transport, treatment, storage, or disposal systems to adjacent drainage ways or adjacent properties, except as authorized pursuant to section IV. A. 1. B, is prohibited.

D. Animals within concentrated areas shall be prohibited from entering surface waters or tributaries thereof.

E. Mortalities must not be placed in any liquid manure or process wastewater system and must be handled in a way to prevent the discharge of pollutants to surface water.

F. Application of wastewater to land shall be managed to minimize percolation to groundwater.

G. Application of wastewater to land for other than nutrient recycling and/or crop production is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations

1. Final Effluent Limitations

a. In accordance with site-specific nutrient management practices described by the Discharger's Nutrient Management Plan (NMP), available nitrogen from wastewater shall not be land applied at a rate greater than 250 pounds N per acre per year.

b. There shall be no discharge of manure, litter, or process wastewater into waters of the United States or into surface waters of the State from the production area. Whenever precipitation causes an overflow of manure, litter, or process wastewater, pollutants in the overflow may be discharged into waters of the United States or into surface waters of the State if the production area is designed, constructed, operated, and maintained to contain all manure, litter, process wastewater, including the runoff and direct precipitation from a 25-year, 24-hour storm event, and if the facility is, prior to the overflow, practicing the measures and record keeping requirements established at 40 CFR 412.37 (a) and (b). Any such discharge resulting from a 25-year, 24-hour storm event shall not cause exceedances of applicable receiving water limitations established by section V of this Order.

c. The Discharger shall maintain, update as necessary, and implement a Nutrient Management Plan (NMP) in accordance with section VI. C. 3 of this Order.

B. Land Discharge Specifications

This section of the standardized permit template is not applicable.

C. Reclamation Specifications

This section of the standardized permit template is not applicable.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. Discharges and activities at the concentrated animal operation shall not cause the following in the Salinas River or Johnson Creek:

1. Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses. Coloration attributable to materials of waste origin shall not be greater than 15 units or 10 percent above natural background color, whichever is greater.

2. Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance, or that adversely affect beneficial uses.

3. Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

4. Waters shall not contain suspended material in concentrations that causes nuisance or adversely affects beneficial uses.

5. Waters shall not contain settleable material in concentrations that result in deposition of material that causes nuisance or adversely affects beneficial uses.

6. Waters shall not contain oils, greases, waxes, or other similar materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

7. Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

8. The suspended sediment load and suspended sediment discharge rate to surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

9. Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits.

    a. Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent.

    b. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU.

    c. Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.

10. The pH value shall not be depressed below 7.0 nor raised above 8.5. The change in normal ambient pH levels shall not exceed 0.5 in fresh water.

11. Dissolved oxygen concentrations in receiving waters shall not be reduced below 5.0 mg/L at any time.

12. Natural temperature of receiving waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

13. All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life. Survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality conditions shall not be less than that for the same water body in areas unaffected by the waste discharge.

14. The discharge of wastes shall not cause concentrations of unionized ammonia (NH3) to exceed 0.025 mg/L (as N) in the receiving water.

15. No individual pesticide or combination of pesticides shall reach concentrations that adversely affect the beneficial uses of the receiving water. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life. For waters where existing concentrations are presently nondetectable or where beneficial uses would be impaired by concentrations in excess of nondetectable levels, total identifiable chlorinated hydrocarbon pesticides shall not be present at concentrations detectable within the accuracy of analytical methods as prescribed in *Standard Methods for the Examination of Water and Wastewater*, latest edition, or other equivalent methods approved by the Executive Officer.

16. Waters shall not contain organic substances in concentrations greater than the following.

Methylene Blue Activated Substances	0.2 mg/L
Total Phenols	0.1 mg/L
PCBs	0.3 µg/L
Phthalate Esters	0.002 µg/L

17. Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life; or result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life. . In no circumstance shall receiving waters contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) for radioactivity presented in Table 4 of Title 22 California Code of Regulations, Division 4, Chapter 15, Article 5.

18. Receiving waters shall not contain concentrations of chemical constituents in excess of the primary maximum contaminant levels (MCLs) specified for drinking water in Table 64431-A (Primary MCLs for Inorganic Chemicals) and Table 64444-A (Primary MCLs for Organic Chemicals) of Title 22 California Code of Regulations, Division 4, Chapter 15.

19. Fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200 per 100 mL, nor shall more than 10 percent of samples collected during any 30-day period exceed 400 per 100 mL.

20. The following concentrations of metals shall not be exceeded for the protection of aquatic life.

Parameter	Receiving Water Hardness	
	> 100 mg/L $CaCO_3$	< 100 mg/L $CaCO_3$
Cadmium	0.03 mg/L	0.004 mg/L
Chromium	0.05 mg/L	0.05 mg/L
Copper	0.03 mg/L	0.01 mg/L
Lead	0.03 mg/L	0.03 mg/L
Mercury	0.0002 mg/L	0.0002 mg/L
Nickel	0.4 mg/L	0.1 mg/L
Zinc	0.2 mg/L	0.004 mg/L

B. Groundwater Limitations

Activities, including the land application of wastewater, at the concentrated animal feeding operation shall not cause exceedances/deviation from the following water quality objectives for groundwater or degrade downstream or downgradient beneficial uses established by the Basin Plan:

1. The discharge shall not cause groundwater to exceed the following limitations as measured in groundwater downgradient of the disposal area:

Parameter	Limitation
TDS	1500 mg/L
Sodium	250 mg/L
Chloride	250 mg/L
Sulfate	600 mg/L
Boron	0.5 mg/L
Nitrogen	1.0 mg/L

These values are based on specific objectives for the adjacent 180-foot aquifer of the Salinas River sub-basin taken from the Basin Plan.

2. Groundwater shall not contain taste or odor producing substances in concentrations that adversely affect beneficial uses.

3. Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life; or result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

4. The median concentration of coliform organisms in groundwater, over any seven-day period, shall be less than 2.2 organisms per 100 milliliters.

5. Groundwater shall not contain nitrate concentrations exceeding 10 mg/L N (45 mg/L NO_3).

6. Activities, including land application of wastewater, at the site shall not cause groundwater pH to deviate from the range of 6.5 – 8.3.

7. Groundwater shall not contain concentrations of chemical constituents in excess of the primary maximum contaminant levels (MCLs) specified for drinking water in Table 64431-A (Primary MCLs for Inorganic Chemicals) and Table 64444-A (Primary MCLs for Organic Chemicals) of Title 22 California Code of Regulations, Division 4, Chapter 15.

8. Groundwater shall not contain concentrations of chemical constituents in amounts that adversely affect the agricultural beneficial uses of irrigation and livestock watering. Interpretation of adverse effect to agricultural beneficial uses shall be based on the numeric guidelines and limitations established by Tables 3-3 and 3-4 of the Basin Plan.

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order. All monitoring shall be conducted according to 40 CFR Part 136, *Guidelines Establishing Test Procedures for Analysis of Pollutants*.

C. Special Provisions

1. Reopener Provisions

a. This permit may be reopened and modified in accordance with NPDES regulations at 40 CFR 122 and 124, as necessary, to include additional conditions or limitations based on newly available information or to implement any USEPA approved, new, State water quality objective.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

This section of the standardized permit template is not applicable to this facility.

3. Best Management Practices and Pollution Prevention

The Discharger shall maintain, update as necessary, and implement a Nutrient Management Plan (NMP). In accordance with NPDES regulations at 40 CFR 122.42 (e) (1) the NMP shall include best management practices (BMPs), limitations, and standards necessary to meet applicable requirements of the *Effluent Limitations Guidelines for the CAFO Point Source Category* at 40 CFR Part 412 (specifically, that portion of the *Effluent Limitations Guidelines*, which establish BMPs for the land application of manure, litter, and process wastewater at 40 CFR 412.4). The NMP must also address nine specific requirements established by NPDES regulations at 40 CFR 122.42 (e) (1) (i – ix).

A copy of the Discharger's site-specific NMP shall be maintained onsite and shall be available to the Regional Water Board upon request.

When changes are made to the site-specific NMP, the Discharger shall provide to the Regional Water Board the most current version of its NMP and identify changes from the previous version, except that the results of calculations made in accordance with the requirements of 40 CFR 122.42 (e)(5)(i)(B) and (e)(5)(ii)(D) are not required for this submittal.

a. Effluent Limitations Guidelines. Applicable requirements of the Effluent Limitations Guidelines, which shall be addressed by the NMP, are summarized by Table 5, below.

Table 5. Effluent Limitations Guidelines Summary

	Requirement	Reference
1	For the control of discharges from land application areas, the Discharger shall develop and implement BMPs required by 40 CFR 412.4 and shall maintain records required by 40 CFR 412.37 (c).	40 CFR 412.31 (c)
2	The discharger shall land apply manure, litter, and process wastewater in accordance with the following practices.	40 CFR 412.4 (c)
	(1) The NMP shall incorporate the requirements of (2) – (5), below, based on a field specific assessment of the potential for nitrogen and phosphorous transport from the field, and shall address the form, source, amount, timing, and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorous movement to surface waters.	40 CFR 412.4 (c) (1)
	(2) Application rates for manure, litter, and other process wastewater shall minimize phosphorus and nitrogen transport from the field to surface waters and shall be consistent with the National Resource Conservation Service (NRCS) Practice Standard for Nutrient Management, Code 590; and with technical standards established by the State (State standards are not in place at the time this Order is being written).	40 CFR 412.4 (c) (2)
	(3) Manure and/or wastewater must be analyzed a minimum of once annually for nitrogen and phosphorus content, and soil analyzed a minimum of once every five years for phosphorus content. The results of these analyses shall be used in determining application rates for manure, litter, and other process wastewater.	40 CFR 412.4 (c) (3)

	(4) The operator must periodically inspect equipment used for land application of manure, litter, or process wastewater.	40 CFR 412.4 (c) (4)
	(5) Unless the Discharger exercises one of the compliance alternatives provided for in i or ii, below, manure, litter, and process wastewater may not be applied closer than 100 feet to any down-gradient surface waters, open tile line intake structures, sinkholes, agricultural well heads, or other conduits to surface water. (i) As an alternative, the Discharger may substitute the 100-foot setback with a 35-foot wide vegetated buffer where applications of manure, litter, or process wastewater are prohibited. (ii) As an alternative, the Discharger may demonstrate that a setback or buffer is not necessary because implementation of alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions that would be achieved by the 100-foot setback.	40 CFR 412.4 (c) (5)
3	Each CAFO must maintain on-site a copy of its site-specific NMP. Each CAFO must maintain on-site for a period of five years from the date they are created a complete copy of the information required by 40 CFR 412.4 and 40 CFR 122.42(e)(1)(ix) and the records specified in 40 CFR 412.37 (c)(1 - 10), below. These records must be available to the Regional Water Board upon request. (1) Expected crop yields; (2) The date(s) manure, litter, or process waste water is applied to each field; (3) Weather conditions at time of application and for 24 hours prior to and following application; (4) Test methods used to sample and analyze manure, litter, process waste water, and soil; (5) Results from manure, litter, process waste water, and soil sampling, (6) Explanation of the basis for determining manure application rates, as provided in the technical standards established by the Regional Water Board. (7) Calculations showing the total nitrogen and phosphorus to be applied to each field, including sources other than manure, litter, on process wastewater; (8) Total amount of nitrogen and phosphorus actually applied to each field, including documentation of calculations for the total amount applied; (9) The method used to apply the manure, litter, or process wastewater; (10) Date(s) of manure application equipment inspection.	40 CFR 412.37 (c).

b. 40 CFR 122.42 (e) (1) (i – ix). The nine specific requirements established by NPDES regulations at 40 CFR 122.42 (e) (1) (i – ix), which shall be addressed by the NMP are summarized in Table 6, below.

Table 6. Nine Specific Requirements of 40 CFR 122.42 (e) (1)

	Requirement	Reference
1	Ensure adequate storage of manure, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities.	40 CFR 122.42 (e) (1) (i)
2	Ensure proper management of mortalities to ensure that they are not	40 CFR 122.42 (e) (1) (ii)

	disposed of in a liquid manure, storm water, or process wastewater storage or treatment system that is not specifically designed to treat animal mortalities.	
3	Ensure that clean water is diverted from the production area.	40 CFR 122.42 (e) (1) (iii)
4	Prevent direct contact of concentrated animals with waters of the U.S.	40 CFR 122.42 (e) (1) (iv)
5	Ensure that chemicals and other contaminants handled on site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.	40 CFR 122.42 (e) (1) (v)
6	Identify site-specific conservation practices to be implemented, including appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the U.S.	40 CFR 122.42 (e) (1) (vi)
7	Identify protocols for appropriate testing of manure, litter, process wastewater, and soil.	40 CFR 122.42 (e) (1) (vii)
8	Establish protocols to land apply manure in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater. The NMP shall identify fields available for land application and any timing limitations for those fields, and shall express application rates using one of the two following approaches, (i) or (ii) below.	40 CFR 122.42 (e) (1) (viii)
	(i) Linear Approach (an approach that expresses rates of application as pounds of nitrogen and phosphorus). The Discharger shall adhere to the procedure, summarized here, from 40 CFR 122.42 (e) (5) (i). (A) NMP terms must include maximum application rates for each year of permit coverage - for each crop identified in the NMP, expressed as pounds per acre and pounds per year, for each field to be used for land application. The NMP must identify certain factors necessary to determine application rates, including: the outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field; the crops to be planted in each field or any other uses of a field (e.g., pasture or fallow field); the realistic yield goal for each crop or use identified for each field; the nitrogen and phosphorus recommendations from sources approved by the Regional Water Board for each crop or use identified for each field; credits for all nitrogen in the field that will be plant available; consideration of multi-year phosphorus application; and accounting for all other additions of plant available nitrogen and phosphorus to the field. In addition, NMP terms must include the form and source of manure, litter, and process wastewater to be land-applied; the timing and method of land application; and the methodology by which the NMP accounts for the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied. (B) At least one time each year, the Discharger shall calculate the maximum amount of manure, litter, and process wastewater to be land applied using the results of the most recent representative manure, litter, and process wastewater tests for nitrogen and phosphorus taken within 12 months.	40 CFR 122.42 (e) (5) (i)
	(ii) Narrative Approach (an approach that expresses rates of application as a narrative rate of application that results in the amount, in tons or gallons, of manure, litter, and process	40 CFR 122.42 (e) (5) (ii)

wastewater to be land applied). The Discharger shall adhere to the procedure, summarized here, from 40 CFR 122.42 (e) (5) (ii).

(A) NMP terms must include maximum amounts of nitrogen and phosphorus derived from all sources of nutrients, for each crop identified in the nutrient management plan, expressed in pounds per acre for each field. The NMP must identify certain factors necessary to determine application rates, including: the outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field; the crops to be planted in each field or any other uses (e.g., pasture or fallow fields), including alternative crops identified in accordance with 40 CFR 122.42 (e)(5)(ii)(B); the realistic yield goal for each crop or use identified for each field; and the nitrogen and phosphorus recommendations from sources from sources approved by the Regional Water Board for each crop or use identified for each field. In addition, NMP terms must describe the methodology by which the NMP accounts for the following factors when calculating the amounts of manure, litter, and process wastewater to be land applied: results of soil tests conducted in accordance with protocols identified in the NMP, as required by 40 CFR 122.42 (e)(1)(vii); credits for all nitrogen in the field that will be plant available; the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied; consideration of multi-year phosphorus application; accounting for all other additions of plant available nitrogen and phosphorus to the field; the form and source of manure, litter, and process wastewater; the timing and method of land application; and volatilization of nitrogen and mineralization of organic nitrogen.

(B) The NMP may identify alternative crops that are not in the planned crop rotation. When alternative crops are identified in the NMP, such crops shall be listed by field in addition to the crops identified in the planned crop rotation for that field, and the NMP shall include realistic crop yield goals and the nitrogen and phosphorus recommendations from sources approved by the Regional Water Board for each crop. Maximum amounts of nitrogen and phosphorus from all sources of nutrients and the amounts of manure, litter, and process wastewater to be applied must be determined in accordance with the methodology described at 40 CFR 122.42 (e)(5)(ii)(A).

(C) If the narrative approach is used, the following projections shall be included in the NMP but will not be incorporated into the terms of this Order: planned crop rotations for each field for the period of permit coverage; the projected amount of manure, litter, or process wastewater to be applied; projected credits for all nitrogen in the field that will be plant available; consideration of multi-year phosphorus application; accounting for all other additions of plant available nitrogen and phosphorus to the field; and the predicted form, source, and method of application of manure, litter, and process wastewater for each crop. Timing of application for each field, insofar as it concerns the calculation of rates of application, shall not be incorporated into the terms of this Order.

(D) At least one time each year, CAFOs using the narrative approach shall calculate maximum amounts of manure, litter, and process wastewater to be land applied using the methodology established at 40 CFR 122.42 (e)(5)(ii)(A) before land applying

	manure, litter, and process wastewater and must rely on the following data (1 and 2): (1) A field-specific determination of soil levels of nitrogen and phosphorus, including, for nitrogen, a concurrent determination of nitrogen that will be plant available, consistent with the methodology established by 40 CFR 122.42 (e)(5)(ii)(A), and for phosphorus, the results of the most recent soil test conducted in accordance with soil testing requirements approved by the Regional Water Board; and (2) The results of most recent representative manure, litter, and process wastewater tests for nitrogen and phosphorus taken within 12 months of the date of land application, in order to determine the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied.	
9	Identify specific records that will be maintained to document the implementation and management of the minimum elements described above from 40 CFR 122.42 (e) (1) (i - viii).	40 CFR 122.42 (e) (1) (ix)

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c. All NMP recommendations must be implemented.

4. Additional Construction, Operation and Maintenance Specifications

a. Operation of CAFOs and the treatment or disposal of wastes from the facility shall not cause pollution or nuisance as defined in section 13050 of Division 7 of the California Water Code.

b. The determination of the necessary storage volume for wastewater facilities shall reflect the maximum length of time anticipated between emptying events. The design storage volume must reflect manure, wastewater, and other wastes accumulated during the storage period; normal precipitation less evaporation on the surface area during the entire storage period; normal runoff from the facility's drainage area during the storage period; 25-year, 24- hour precipitation on the surface of the wastewater facilities; 25-year, 24-hour runoff from the facility's drainage area; residual solids after liquids have been removed; and necessary freeboard.) Facilities shall be protected from any washout or erosion of wastes or covering material, and from any inundation which could occur as a result of floods having a predicted frequency of once in 25 years.

c. All new roofs, buildings, and non-manured areas located on the CAFO shall be constructed or otherwise designed so that clean rainwater is diverted away from the sources of animal manure and waste containment facilities unless such containment facilities are adequate to contain the increase in contaminated storm water.

d. The corrals and pens shall be designed to convey all water that has contacted animal wastes to the wastewater holding and disposal system, and to minimize the infiltration of water into the underlying soils.

e. Wastewater holding ponds shall be lined or underlain by soils that contain at least 10 percent clay and not more than 10 percent gravel, or by artificial materials of equivalent impermeability.

f. The Discharger shall prepare and implement a groundwater monitoring plan pursuant to section VIII. B of the attached Monitoring and Reporting Plan (Attachment E of this Order).

g. Wastewater containment ponds that do not overflow to other ponds shall have sufficient freeboard, no less than 2 feet (measured vertically, from the water surface up to the point on the surrounding berm or dike having the lowest elevation), and shall be designed and constructed to prevent overtopping as a result of windy storm conditions. Lesser freeboard, no less than 1 foot, may be approved by the Executive Officer if documented by a registered civil engineer that structural integrity and required capacity will not be compromised with proposed freeboard.

h. No new containment structures shall be constructed of manure, and manure shall not be used to improve or raise existing containment structures.

i. Ponds shall be managed to prevent breeding of mosquitoes and other vectors.

   (1) An erosion control program shall ensure small coves and irregularities are not created around the perimeter of the water surface.

   (2) Weeds shall be minimized through control of water depth, harvesting, or herbicides.

   (3) Dead algae, vegetation, and debris shall not accumulate on the water surface.

j. Open surface impoundments shall have depth markers which indicate the minimum capacity necessary to contain the runoff and direct precipitation of the 25-year, 24-hour rainfall event.

k. Manure and feed storage areas shall be designed and managed to direct leachate and runoff to the wastewater holding and disposal system and minimize infiltration of water to underlying soils.

l. Routine inspections of the production area shall be conducted and shall include: weekly inspections of storm water diversion devices, runoff diversion structures, and devices channeling storm water to wastewater and manure containment structures; daily inspections of water lines, including drinking and cooling water lines; and weekly inspections of manure, litter, and process wastewater impoundments, including the levels in liquid impoundments. [40 CFR 412.37 (a) (1)] Deficiencies found as a result of inspections shall be corrected as soon as possible. [40 CFR 412.37 (a) (3)] The Discharger shall record results of

inspections and provide a summary of results with each semi-annual monitoring report.

m. Salt in animal rations shall be limited to the amount required to maintain animal health and optimum production.

n. Land application of wastewater shall be managed to minimize its percolation to groundwater.

o. Wastewater shall not be land applied within 100 feet of an existing water supply well or of any down-gradient surface waters, open tile line intake structures, sinkholes, agricultural well heads, or other conduits to surface water.

p. Lands receiving dry manure shall be managed to minimize erosion and preclude storm water runoff to surface water. Applied manure shall be incorporated into surface soils soon after manure application.

q. All storm water contacting or contaminated by concentrated animal areas shall be contained and disposed of onsite, except as authorized by Discharge Prohibition III. C.

r. The Discharger shall maintain a minimum, 120-day wastewater storage capacity of 13.56 million gallons to accommodate normal precipitation and runoff and direct precipitation for the 25-year, 24-hour rainfall event.

s. In the event that one of the facility's storage ponds reaches capacity, water/wastewater shall be land applied in accordance with the Discharger's NMP or pumped to a pond that has storage capacity.

t. Mortalities shall be placed in a designated, fenced and secure area, where runoff is directed to a wastewater storage pond, until mortalities are removed from the site.

u. The site shall be managed to ensure that clean "run on" water is diverted from the production area, in a manner as described by the NMP (Ponds 12B, 13N and 13S at the east end of the site serve as retention ponds to keep clean up-gradient runoff from entering the production area).

v. Chemicals and chemical contaminants, including petroleum products, handled onsite shall not be placed or disposed of within any onsite manure, litter, process wastewater storage or treatment system. Chemicals and chemical contaminants handled on site shall be managed to prevent spills to onsite manure, litter, and process wastewater storage or treatment systems.

w. The application rates of nutrient to the land application area shall take into account current soil test results, realistic yield goals, and management capabilities.

x. Planned application rates shall match nitrogen availability with plant uptake characteristics as closely as possible, taking into account the timing of nutrient application(s) in order to minimize leaching and atmospheric losses.

y. The Discharger shall implement, as appropriate, the conservation practices established by NRCS Conservation Practice Standard Code 590 for Nutrient Management (CPS 590) and by NRCS Conservation Practice Standard Code 449 for Irrigation Water Management (CPS 449).

z. Nutrient materials shall be applied to land uniformly through proper use of irrigation equipment.

aa. The Discharger shall adhere to rates of application and timing limitations established by the NMP to avoid over-irrigation.

ab. The Discharger shall land apply manure, litter, and process wastewater in accordance with the following site-specific nutrient management practices.

- Wastewater shall be land applied to Field 1 as identified by the NMP.
- Nitrogen shall not be applied to land during periods of soil saturation.
- Nitrogen shall be land applied in a manner to achieve maximum crop utilization.
- As described by Appendix C of the NMP, Field 1 shall be triple-cropped (3 plantings) in oats in each year covered by the NMP.
- Wastewater shall be land applied via a sprinkler irrigation system in accordance with Table 1 (Crop Watering Requirements for Oats) and Appendix C of the NMP.

5. Special Provisions for Municipal Facilities (POTWs Only)

This section of the standardized permit template is not applicable.

6. Compliance Schedules

This section of the standardized permit template is not applicable.

7. Transfer of Waste

Prior to transferring manure, litter, or process wastewater to other persons, the Discharger shall provide the recipient of the manure, litter, or process wastewater with the most current nutrient analysis, which must conform to the requirements of 40 CFR Part 412. The Discharger shall retain, for 5 years, records of the date,

recipient name and address, and approximate amount of manure, litter, or process wastewater transferred.

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order will be determined as specified below:

A. General

If applicable, compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Multiple Sample Data

If applicable, when determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

ATTACHMENT A – DEFINITIONS

Agricultural Material
Material of plant or animal origin, which result from the production and processing of farm, ranch, agricultural, horticultural, aquacultural, silvicultural, floricultural, vermicultural, or viticultural products, including manures, orchard and vineyard prunings, and crop residues.

Animal Feeding Operation
A lot or facility (other than an aquatic animal production facility) where the following conditions are met: (i) animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and (ii) crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Application
The EPA standard national forms for seeking coverage under for an NPDES permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in "approved States," including any approved modifications or revisions [e.g. for NPDES general permits, a written "notice of intent" pursuant to section122.28; for NPDES individual permits, Form 1 and 2B pursuant to section 122.1(d)].

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$

where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Concentrated Animal Feeding operation (CAFO)
An animal feeding operation which is defined as a Large CAFO or Medium CAFO by section 122.23 (4) and (6), or that is designated as a CAFO.

Carcinogenic
Pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water

within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Fecal Coliform
The bacterial count (Parameter 1) at section 136.3 in Table 1A, which also cites the approved methods of analysis.

Grab Sample
A sample which is taken from a waste stream on a one-time basis without consideration of the flow rate of the waste stream and without consideration of time.

Inland Surface Waters
All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Land Application
The application of manure, litter, or process wastewater onto or incorporated into the soil.

Land Application Area
Land under the control of a CAFO owner or operator, whether it is owned, rented, or leased, to which manure, litter, or process wastewater from the production area is or may be applied.

Large CAFO
An animal feeding operation that stables or confines as many as or more than the numbers of animals specified in any of the following categories: (i) 700 mature dairy cattle, whether milked or dry; (ii)1,000 veal calves; (iii)1,000 cattle other than mature dairy cows or veal calves. Cattle includes but is not limited to heifers, steers, bulls and cow/calf pairs; (iv) 2,500 swine each weighing 55 pounds or more; (v)10,000 swine each weighing less than 55 pounds; (vi) 500 horses; (vii) 10,000 sheep or lambs; (viii) 55,000 turkeys; (ix) 30,000 laying hens or broilers, if the animal feeding operation uses a liquid manure handling system; (x)125,000 chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system; (xi) 82,000 laying hens, if the animal feeding operation uses other than a liquid manure handling system; (xii) 30,000 ducks (if the animal feeding operation uses other than a liquid manure handling system); or (xiii) 5,000 ducks (if the animal feeding operation uses a liquid manure handling system).

Liquid Manure Handling System
A system that collects and transports or moves waste material with the use of water, such as in washing of pens and flushing of confinement facilities. This would include the use of water impoundments for manure and/or wastewater treatment.

Manure
Defined to include manure, litter, bedding, compost and raw materials or other materials commingled with manure or set aside for land application or other use.

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results which are less than the laboratory's MDL.

Notice of Intent (NOI)
A form submitted by the owner/operator applying for coverage under a general permit. It requires the applicant to submit the information necessary for adequate program implementation, including, at a minimum, the legal name and address of the owner or operator, the facility name and address, type of facility or discharges, and the receiving stream(s). [(40 CFR §128.28(b)(2)(ii)].

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Process Wastewater
Water directly or indirectly used in the operation of the CAFO for any or all of the following:

spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other AFO facilities; direct contact swimming, washing, or spray cooling of animals; or dust control. Process wastewater also includes any water which comes into contact with or is a constituent of raw materials, products, or byproducts including manure, litter, feed, milk, eggs, or bedding.

Production Area
That part of an animal feeding operation that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The animal containment area includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milkrooms, milking centers, cowyards, barnyards, medication pens, walkers, animal walkways, and stables. The manure storage area includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes but is not limited to feed silos, silage bunkers, and bedding materials. The waste containment area includes but is not limited to settling basins, and areas within berms and diversions which separate uncontaminated storm water. Also included in the definition of production area is any egg washing or egg processing facility, and any area used in the storage, handling, treatment, or disposal of mortalities.

Reporting Level (RL)
RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Setback
A specified distance from waters of the United States or potential conduits to waters of the United States where manure, litter, and process wastewater may not be land applied. Examples of conduits to surface waters include but are not limited to: Open tile line intake structures, sinkholes, and agricultural well heads.

Significant Storm Event
A storm event which results in continuous discharge of storm water for a minimum of one hour, or intermittent discharge of storm water for a minimum of three hours in a 12-hour period.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

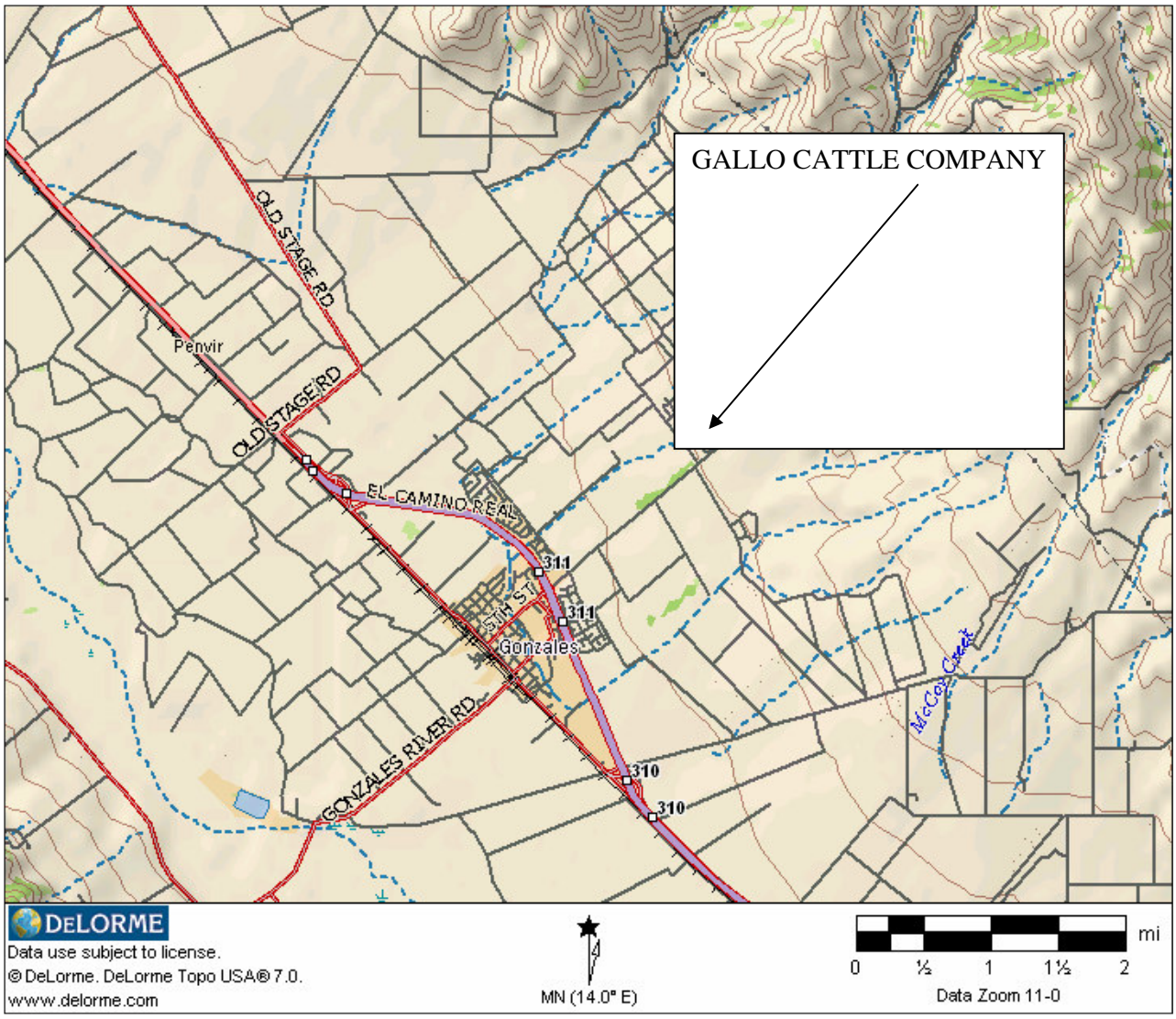
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

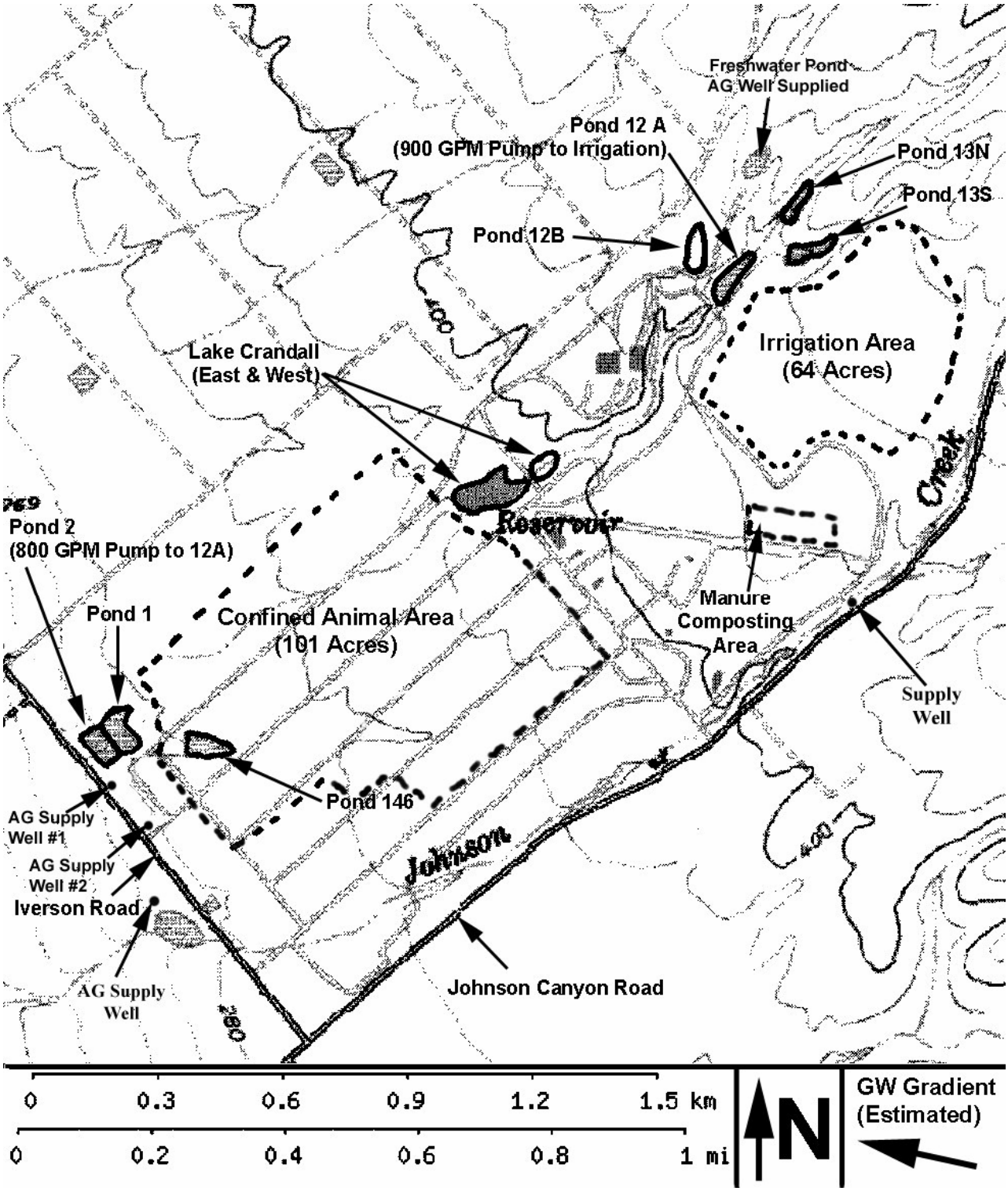
Vegetated Buffer
A narrow, permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for the purposes of slowing water runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the field and reaching waters of the United States.

Waters of the United States
(1) all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; (2) all interstate waters, including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, and streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters: (a) which are or could be used by interstate or foreign travelers for recreational or other purposes; from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or, which are or could be used for industrial purposes by industries in interstate commerce; (4) all impoundments of waters otherwise defined as waters of the United States; (5) tributaries of waters identified in (1) through (4) of this definition; (6) the territorial sea; and (7) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in items (1) through (6) of this definition.

ATTACHMENT B – LOCATION MAP



ATTACHMENT C – FACILITY MAP



ATTACHMENT D – STANDARD PROVISIONS

I. FEDERAL STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions

1. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

2. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was

caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. FEDERAL STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

III. FEDERAL STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).) (Note: "sludge" refers to solids removed from a municipal wastewater treatment plant, and does not refer to manure or other solids generated at the Joseph Gallo Farms Feed Lot.)

IV. FEDERAL STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and

6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. FEDERAL STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)

2. All permit applications shall be signed by a responsible corporate officer ,as defined at 40 CFR 122.22 (a) (1).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.22(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it

is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):

a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)

b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R.§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. FEDERAL STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387

VII. FEDERAL ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs) (Not Applicable to the Gallo Farms Feedlot)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 C.F.R. § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 C.F.R. § 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

ATTACHMENT D-1 - CENTRAL COAST WATER BOARD STANDARD PROVISIONS (JANUARY 1985)

I. Central Coast General Permit Conditions

A. Central Coast Standard Provisions – Prohibitions

1. Introduction of "incompatible wastes" to the treatment system is prohibited.

2. Discharge of high-level radiological waste and of radiological, chemical, and biological warfare agents is prohibited.

3. Discharge of "toxic pollutants" in violation of effluent standards and prohibitions established under Section 307(a) of the Clean Water Act is prohibited.

4. Discharge of sludge, sludge digester or thickener supernatant, and sludge drying bed leachate to drainageways, surface waters, or the ocean is prohibited.

5. Introduction of pollutants into the collection, treatment, or disposal system by an "indirect discharger" that:

   a. Inhibit or disrupt the treatment process, system operation, or the eventual use or disposal of sludge; or,

   b. Flow through the system to the receiving water untreated; and,

   c. Cause or "significantly contribute" to a violation of any requirement of this Order, is prohibited.

6. Introduction of "pollutant free" wastewater to the collection, treatment, and disposal system in amounts that threaten compliance with this order is prohibited.

B. Central Coast Standard Provisions – Provisions

1. Collection, treatment, and discharge of waste shall not create a nuisance or pollution, as defined by Section 13050 of the California Water Code.

2. All facilities used for transport or treatment of wastes shall be adequately protected from inundation and washout as the result of a 25-year frequency flood.

3. Operation of collection, treatment, and disposal systems shall be in a manner that precludes public contact with wastewater.

4. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed in a manner approved by the Executive Officer.

5. Publicly owned wastewater treatment plants shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Title 23 of the California Administrative Code.

6. After notice and opportunity for a hearing, this order may be terminated for cause, including, but not limited to:

   a. violation of any term or condition contained in this order;

   b. obtaining this order by misrepresentation, or by failure to disclose fully all relevant facts;

   c. a change in any condition or endangerment to human health or environment that requires a temporary or permanent reduction or elimination of the authorized discharge; and,

   d. a substantial change in character, location, or volume of the discharge.

7. Provisions of this permit are severable. If any provision of the permit is found invalid, the remainder of the permit shall not be affected.

8. After notice and opportunity for hearing, this order may be modified or revoked and reissued for cause, including:

   a. Promulgation of a new or revised effluent standard or limitation;

   b. A material change in character, location, or volume of the discharge;

   c. Access to new information that affects the terms of the permit, including applicable schedules;

   d. Correction of technical mistakes or mistaken interpretations of law; and,

   e. Other causes set forth under Sub-part D of 40 CFR Part 122.

9. Safeguards shall be provided to assure maximal compliance with all terms and conditions of this permit. Safeguards shall include preventative and contingency plans and may also include alternative power sources, stand-by generators, retention capacity, operating procedures, or other precautions. Preventative and contingency plans for controlling and minimizing the affect of accidental discharges shall:

   a. identify possible situations that could cause "upset", "overflow" or "bypass", or other noncompliance. (Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.)

   b. evaluate the effectiveness of present facilities and procedures and describe procedures and steps to minimize or correct any adverse environmental impact resulting from noncompliance with the permit.

10. Physical Facilities shall be designed and constructed according to accepted engineering practice and shall be capable of full compliance with this order when

properly operated and maintained. Proper operation and maintenance shall be described in an Operation and Maintenance Manual. Facilities shall be accessible during the wet-weather season.

11. Production and use of reclaimed water is subject to the approval of the Regional Water Board. Production and use of reclaimed water shall be in conformance with reclamation criteria established in Chapter 3, Title 22, of the California Administrative Code and Chapter 7, Division 7, of the California Water Code. An engineering report pursuant to section 60323, Title 22, of the California Administrative Code is required and a waiver or water reclamation requirements from the Regional Water Board is required before reclaimed water is supplied for any use, or to any user, not specifically identified and approved either in this Order or another order issued by this Board.

C. Central Coast Standard Provisions – General Monitoring Requirements

1. If results of monitoring a pollutant appear to violate effluent limitations based on a weekly, monthly, 30-day, or six-month period, but compliance or non-compliance cannot be validated because sampling is too infrequent, the frequency of sampling shall be increased to validate the test within the next monitoring period. The increased frequency shall be maintained until the Executive Officer agrees the original monitoring frequency may be resumed.

   For example, if copper is monitored annually and results exceed the six-month median numerical effluent limitation in the permit, monitoring of copper must be increased to a frequency of at least once every two months (Central Coast Standard Provisions – Definitions I.G.13.). If suspended solids are monitored weekly and results exceed the weekly average numerical limit in the permit, monitoring of suspended solids must be increased to at least four (4) samples every week (Central Coast Standard Provisions – Definitions I.G.14.).

2. Water quality analyses performed in order to monitor compliance with this permit shall be by a laboratory certified by the State Department of Health Services for the constituent(s) being analyzed. Bioassay(s) performed in order to monitor compliance with this permit shall be in accord with guidelines approved by the State Water Resources Control Board and the State Department of Fish and Game. If the laboratory used or proposed for use by the discharger is not certified by the California Department of Health Services or, where appropriate, the Department of Fish and Game due to restrictions in the State's laboratory certification program, the discharger shall be considered in compliance with this provision provided:

   a. Data results remain consistent with results of samples analyzed by the Central Coast Water Board;

   b. A quality assurance program is used at the laboratory, including a manual containing steps followed in this program that is available for inspections by the staff of the Central Coast Water Board; and,

c. Certification is pursued in good faith and obtained as soon as possible after the program is reinstated.

3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Samples shall be taken during periods of peak loading conditions. Influent samples shall be samples collected from the combined flows of all incoming wastes, excluding recycled wastes. Effluent samples shall be samples collected downstream of the last treatment unit and tributary flow and upstream of any mixing with receiving waters.

4. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

D. Central Coast Standard Provisions – General Reporting Requirements

1. Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of the Monitoring and Reporting Program shall include at least the following information:

   a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.).

   b. A description of sampling stations, including differences unique to each station (e.g., station location, grain size, rocks, shell litter, calcareous worm tubes, evident life, etc.).

   c. A description of the sampling procedures and preservation sequence used in the survey.

   d. A description of the exact method used for laboratory analysis. In general, analysis shall be conducted according to Central Coast Standard Provisions – C.1 above, and Federal Standard Provision – Monitoring III.B. However, variations in procedure are acceptable to accommodate the special requirements of sediment analysis. All such variations must be reported with the test results.

   e. A brief discussion of the results of the survey. The discussion shall compare data from the control station with data from the outfall stations. All tabulations and computations shall be explained.

2. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule shall be submitted within 14 days following each scheduled date unless otherwise specified within the permit. If reporting noncompliance, the report shall include a description of the reason, a description and schedule of tasks necessary to achieve compliance, and an estimated date for achieving full compliance. A second report shall be submitted within 14 days of full compliance.

3. The “Discharger” shall file a report of waste discharge or secure a waiver from the Executive Officer at least 180 days before making any material change or proposed change in the character, location, or plume of the discharge.

4. Within 120 days after the discharger discovers, or is notified by the Central Coast Water Board, that monthly average daily flow will or may reach design capacity of waste treatment and/or disposal facilities within four (4) years, the discharger shall file a written report with the Central Coast Water Board. The report shall include:

   a. the best estimate of when the monthly average daily dry weather flow rate will equal or exceed design capacity; and,

   b. a schedule for studies, design, and other steps needed to provide additional capacity for waste treatment and/or disposal facilities before the waste flow rate equals the capacity of present units.

   In addition to complying with Federal Standard Provision – Reporting V.B., the required technical report shall be prepared with public participation and reviewed, approved and jointly submitted by all planning and building departments having jurisdiction in the area served by the waste collection, treatment, or disposal facilities.

5. All “Dischargers” shall submit reports to the:

   California Regional Water Quality Control Board
   Central Coast Region
   895 Aerovista Place, Suite 101
   San Luis Obispo, CA 93401-7906

   In addition, "Dischargers" with designated major discharges shall submit a copy of each document to:

   Regional Administrator
   US Environmental Protection Agency, Region 9
   Attention: CWA Standards and Permits Office (WTR-5)
   75 Hawthorne Street
   San Francisco, California 94105

6. Transfer of control or ownership of a waste discharge facility must be preceded by a notice to the Central Coast Water Board at least 30 days in advance of the proposed transfer date. The notice must include a written agreement between the existing “Discharger” and proposed “Discharger” containing specific date for transfer of responsibility, coverage, and liability between them. Whether a permit may be transferred without modification or revocation and reissuance is at the discretion of the Board. If permit modification or revocation and reissuance is necessary, transfer may be delayed 180 days after the Central Coast Water Board's receipt of a complete permit application. Please also see Federal Standard Provision – Permit Action II.C.

7. Except for data determined to be confidential under Section 308 of the Clean Water Act (excludes effluent data and permit applications), all reports prepared in accordance with this permit shall be available for public inspection at the office of the Central Coast Water Board or Regional Administrator of EPA. Please also see Federal Standard Provision – Records IV.C.

8. By January 30th of each year, the discharger shall submit an annual report to the Central Coast Water Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. The discharger shall discuss the compliance record and corrective actions taken, or which may be needed, to bring the discharge into full compliance. The report shall address operator certification and provide a list of current operating personnel and their grade of certification. The report shall inform the Regional Water Board of the date of the facility's Operation and Maintenance Manual (including contingency plans as described Central Coast Standard Provision – Provision B.9., above), of the date the manual was last reviewed, and whether the manual is complete and valid for the current facility. The report shall restate, for the record, the laboratories used by the discharger to monitor compliance with effluent limits and provide a summary of performance relative to Section C above, General Monitoring Requirements.

   If the facility treats industrial or domestic wastewater and there is no provision for periodic sludge monitoring in the Monitoring and Reporting Program, the report shall include a summary of sludge quantities, analyses of its chemical and moisture content, and its ultimate destination.

   If applicable, the report shall also evaluate the effectiveness of the local source control or pretreatment program using the State Water Resources Control Board's "Guidelines for Determining the Effectiveness of Local Pretreatment Programs."

E. Central Coast Standard Provisions – General Pretreatment Provisions

1. Discharge of pollutants by "indirect dischargers" in specific industrial sub-categories (appendix C, 40 CFR Part 403), where categorical pretreatment standards have been established, or are to be established, (according to 40 CFR Chapter 1, Subchapter N), shall comply with the appropriate pretreatment standards:

   a. By the date specified therein;

   b. Within three (3) years of the effective date specified therein, but in no case later than July 1, 1984; or,

   c. If a new indirect discharger, upon commencement of discharge.

F. Central Coast Standard Provisions – Enforcement

1. Any person failing to file a report of waste discharge or other report as required by this permit shall be subject to a civil penalty not to exceed $5,000 per day.

2. Upon reduction, loss, or failure of the treatment facility, the "Discharger" shall, to the extent necessary to maintain compliance with this permit, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided.

G. Central Coast Standard Provisions – Definitions

(Not otherwise included in Attachment A to this Order)

1. A “composite sample" is a combination of no fewer than eight (8) individual samples obtained at equal time intervals (usually hourly) over the specified sampling (composite) period. The volume of each individual sample is proportional to the flow rate at the time of sampling. The period shall be specified in the Monitoring and Reporting Program ordered by the Executive Officer.

2. “Daily Maximum” limit means the maximum acceptable concentration or mass emission rate of a pollutant measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling. It is normally compared with results based on "composite samples” except for ammonia, total chlorine, phenolic compounds, and toxicity concentration. For all exceptions, comparisons will be made with results from a “grab sample”.

3. “Discharger", as used herein, means, as appropriate: (1) the Discharger, (2) the local sewering entity (when the collection system is not owned and operated by the Discharger), or (3) "indirect discharger" (where "Discharger" appears in the same paragraph as "indirect discharger”, it refers to the discharger.)

4. “Duly Authorized Representative" is one where:

   a. the authorization is made in writing by a person described in the signatory paragraph of Federal Standard Provision V.B.;

   b. the authorization specifies either an individual or the occupant of a position having either responsibility for the overall operation of the regulated facility, such as the plant manager, or overall responsibility for environmental matters of the company; and,

   c. the written authorization was submitted to the Central Coast Water Board.

5. A "grab sample" is defined as any individual sample collected in less than 15 minutes. "Grab samples” shall be collected during peak loading conditions, which may or may not be during hydraulic peaks. It is used primarily in determining compliance with the daily maximum limits identified in Central Coast Standard Provision – Provision G.2. and instantaneous maximum limits.

6. "Hazardous substance” means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

7. "Incompatible wastes" are:

   a. Wastes which create a fire or explosion hazard in the treatment works;

   b. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0 unless the works is specifically designed to accommodate such wastes;

   c. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation of treatment works;

   d. Any waste, including oxygen demanding pollutants (BOD, etc), released in such volume or strength as to cause inhibition or disruption in the treatment works and subsequent treatment process upset and loss of treatment efficiency; and,

   e. Heat in amounts that inhibit or disrupt biological activity in the treatment works or that raise influent temperatures above 40°C (104°F) unless the treatment works is designed to accommodate such heat.

8. "Indirect Discharger" means a non-domestic discharger introducing pollutants into a publicly owned treatment and disposal system.

9. "Log Mean" is the geometric mean. Used for determining compliance of fecal or total coliform populations, it is calculated with the following equation:

   Log Mean = (C1 x C2 x...x Cn)1/n,

   in which "n" is the number of days samples were analyzed during the period and any "C" is the concentration of bacteria (MPN/100 ml) found on each day of sampling. "n" should be five or more.

10. "Mass emission rate" is a daily rate defined by the following equations:

    mass emission rate (lbs/day) = 8.34 x Q x C; and,
    mass emission rate (kg/day) = 3.79 x Q x C,

    where "C" (in mg/L) is the measured daily constituent concentration or the average of measured daily constituent concentrations and "Q" (in mgd) is the measured daily flow rate or the average of measured daily flow rates over the period of interest.

11. The "Maximum Allowable Mass Emission Rate," whether for a month, week, day, or six-month period, is a daily rate determined with the formulas in paragraph G.10, above, using the effluent concentration limit specified in the permit for the period and the average of measured daily flows (up to the allowable flow) over the period.

12. "Maximum Allowable Six-Month Median Mass Emission Rate" is a daily rate determined with the formulas in Central Coast Standard Provision – Provision G.10, above, using the "six-month Median" effluent limit specified in the permit, and the average of measured daily flows (up to the allowable flow) over a 180-day period.

13. "Median" is the value below which half the samples (ranked progressively by increasing value) fall. It may be considered the middle value, or the average of two middle values.

14. "Monthly Average" (or "Weekly Average", as the case may be) is the arithmetic mean of daily concentrations or of daily mass emission rates over the specified 30-day (or 7-day) period.

    Average = (X1 + X2 + ... + Xn) / n

    in which "n" is the number of days samples were analyzed during the period and "X" is either the constituent concentration (mg/L) or mass emission rate (kg/day or lbs/day) for each sampled day. "n" should be four or greater.

15. "Municipality" means a city, town, borough, county, district, association, or other public body created by or under state law and having jurisdiction over disposal of sewage, industrial waste, or other waste.

16. "Overflow" means the intentional or unintentional diversion of flow from the collection and transport systems, including pumping facilities.

17. "Pollutant-free wastewater" means inflow and infiltration, storm waters, and cooling waters and condensates which are essentially free of pollutants.

18. "Primary Industry Category" means any industry category listed in 40 CFR Part 122, Appendix A.

19. "Removal Efficiency" is the ratio of pollutants removed by the treatment unit to pollutants entering the treatment unit. Removal efficiencies of a treatment plant shall be determined using "Monthly averages" of pollutant concentrations (C, in mg/L) of influent and effluent samples collected about the same time and the following equation (or its equivalent):

    $C_{Effluent}$ Removal Efficiency (%) = 100 x (1 – $C_{effluent}$ / $C_{influent}$)

20. "Severe property damage" means substantial physical damage to property, damage to treatment facilities which causes them to become inoperable, or substantial and permanent loss to natural resources which can reasonably be expected to occur in the absence of a "bypass". It does not mean economic loss caused by delays in production.

21. "Sludge" means the solids, residues, and precipitates separated from, or created in, wastewater by the unit processes of a treatment system.

22. To "significantly contribute" to a permit violation means an "indirect discharger" must:

    a. Discharge a daily pollutant loading in excess of that allowed by contract with the "Discharger" or by Federal, State, or Local law;

b. Discharge wastewater which substantially differs in nature or constituents from its average discharge;

c. Discharge pollutants, either alone or in conjunction with discharges from other sources, which results in a permit violation or prevents sewage sludge use or disposal; or

d. Discharge pollutants, either alone or in conjunction with pollutants from other sources that increase the magnitude or duration of permit violations.

23. "Toxic Pollutant" means any pollutant listed as toxic under Section 307 (a) (1) of the Clean Water Act or under 40 CFR Part 122, Appendix D. Violation of maximum daily discharge limitations are subject to 24-hour reporting (Federal Standard Provisions V.E.).

24. “Zone of Initial Dilution" means the region surrounding or adjacent to the end of an outfall pipe or diffuser ports whose boundaries are defined through calculation of a plume model verified by the State Water Resources Control Board.

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Laboratories analyzing monitoring samples shall be certified by the Department of Health Services, in accordance with Water Code section 13176, and must include quality assurance/quality control data with their reports.

B. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and approval of the Regional Water Board.

C. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±10 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

1. A Guide to Methods and Standards for the Measurement of Water Flow, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 96 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421)

2. Water Measurement Manual, U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington D.C. 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027).

3. Flow Measurement in Open Channels and Closed Conduits, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Services (NTIS) Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)

4. NPDES Compliance Sampling Manual, U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp (Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, CO 80225.)

D. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this MRP.

F. The Discharger shall adhere to the monitoring protocols for manure, process wastewater, and soil described by Appendix E (Sampling and Record Keeping) of the site-specific Nutrient Management Plan (NMP). If monitoring procedures are not addressed by Appendix E of the NMP, all monitoring shall be conducted according to test procedures established at 40 CFR 135, *Guidelines Establishing Test Procedures for Analysis of Pollutants*. All analyses shall be conducted using the lowest practical quantification limit achievable using the specified methodology. Where effluent limitations are set below the lowest achievable quantitation limits, pollutants not detected at the lowest practical quantitation limits will be considered in compliance with effluent limitations. Analysis for toxics listed by the California Toxics Rule shall also adhere to guidance and requirements contained in the Policy for *Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2005). Analyses for toxics listed in Table B of the California Ocean Plan (2005) shall adhere to guidance and requirements contained in that document.

G. The Discharger shall adhere to the record keeping procedures established by Appendix E (Sampling and Record Keeping Requirements) of its NMP.

H. The Discharger shall maintain records to document implementation of operation and maintenance standards included in NRCS Conservation Practice Standard Codes 590 (Nutrient Management) and 449 (Irrigation Water Management)

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
---	PND-001	Location where representative samples of water in Holding Pond 1 can be collected. PND-001 may also refer to the location where freeboard is measured.
---	PND-002	Location where representative samples of water in Holding Pond 2 can be collected. PND-002 may also refer to the location where freeboard is measured.
---	PND-146	Location where representative samples of water in Holding Pond 146 can be collected. PND-146 may also refer to the location where freeboard is measured.
---	PND-12A	Location where representative samples of water in Holding Pond 12A can be collected. PND-12A may also refer to the location where freeboard is measured.
---	PND-Lake Crandall East	Location where representative samples of water in Lake Crandall East can be collected. PND-Lake Crandall East may also refer to the location where freeboard is measured.
---	PND-Lake Crandall West	Location where representative samples of water in Lake Crandall West can be collected. PND-Lake Crandall West may also refer to the location where freeboard is measured.
001	EFF-001	Location where representative samples of wastewater being discharged/land applied to the spray irrigation and cropland areas as described by the Discharger's NMP can be collected
---	MAN-001	Location where representative samples of the manure to be disposed of or transferred can be collected
---	IRR-001	Location where representative samples of soil from the crop irrigation / land disposal area can be collected
---	RSW-001	Johnson Creek, 100 feet upstream
---	RSW-002	Johnson Creek, less than 50 feet downstream from Discharge Point 001

III. INFLUENT MONITORING REQUIREMENTS

This section of the standardized permit template is not applicable.

IV. EFFLUENT MONITORING REQUIREMENTS

This section of the standardized permit template is not applicable.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

This section of the standardized permit template is not applicable.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor representative samples of wastewater being discharged to the spray irrigation and cropland areas at EFF-001 as follows.

Table E-2. Effluent (Land Application) Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	AF/Day	Measurement	Each Application Area, Each Event [1]	NA
Application Area	Acres	Estimated	Each Application Area, Each Event [1]	NA
pH	s.u.	Composite [2]	Semi-Annually [3]	[5]
BOD_5	mg/L	Composite [2]	Semi-Annually [3]	[5]
Total Dissolved Solids	mg/L	Composite [2]	Semi-Annually [3]	[5]
General Minerals [4]	mg/L	Composite [2]	Semi-Annually [3]	[5]
Nitrite	mg/L N	Composite [2]	Semi-Annually [3]	[5]
Nitrate	mg/L N	Composite [2]	Semi-Annually [3]	[5]
Ammonia	mg/L N	Composite [2]	Semi-Annually [3]	[5]
Total Kjeldahl Nitrogen	mg/L N	Composite [2]	Semi-Annually [3]	[5]
Total Nitrogen	mg/L N	Composite [2]	Semi-Annually [3]	[5]
Phosphorus	mg/L	Composite [2]	Semi-Annually [3]	[5]

[1] Flow shall be measured to gauge the hydraulic and nutrient application of the cropland during each irrigation event. Nutrient loading is to be consistent with the uptake capacity for the crop during the growing season. The wastewater application data and total acre-feet of wastewater applied to each field shall be recorded for each application.

[2] A representative composite sample shall be prepared based on a minimum of three time-series samples collected during an irrigation event that are representative of the beginning, middle, and the end of the wastewater discharge. Due to the stratification of ponds, a time-series composite is needed so the representative nutrient loading rates may be calculated.

[3] Semi-annual monitoring shall be conducted in about April and October to correspond to the spring and fall planting seasons.

[4] General minerals include bicarbonate, boron, calcium, carbonate, chloride, magnesium, potassium, sodium, and sulfate reported individually.

[5] The analytical method selected for a parameter shall be the one that can measure at the lowest detection limit for that parameter.

2. The Discharger shall perform additional monitoring of wastewater as necessary to adhere to the terms of this Order which address site-specific nutrient management.

3. The Discharger shall use the following equation, established by Appendix E (Sampling and Record Keeping Requirements) of its NMP for determining the volume (gallons) of wastewater to apply:

Volume to apply per 1,000 acres = Target application rate / [(NO3-N x 0.008345) + (NH4-N x 0.008345) + (Organic N x 0.008345)]

The "Target application rate" is determined using procedures described in the NMP, which are promulgated in the CAFO Rule (40 CFR 412.4(c)).

VII. RECLAMATION MONITORING REQUIREMENTS

This section of the standardized permit template is not applicable.

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. Surface Water Monitoring -- Monitoring Locations RSW-001 and RSW-002

1. If wastewater is discharged to surface waters, representative samples of the receiving water samples shall be collected at Monitoring Locations RSW-001 and RSW-002 and analyzed in accordance with the following schedule.

Table E-3. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Coliform Bacteria	MPN/ 100 ml	Grab	Daily [1]	[3]
pH	s.u.	Grab	Daily [1]	[3]
BOD_5	mg/L	Grab	Daily [1]	[3]
Nitrite	mg/L N	Grab	Daily [1]	[3]
Nitrate	mg/L N	Grab	Daily [1]	[3]
Ammonia	mg/L N	Grab	Daily [1]	[3]
Total Kjeldahl Nitrogen	mg/L N	Grab	Daily [1]	[3]
Total Nitrogen	mg/L N	Grab	Daily [1]	[3]
Phosphorus	mg/L	Grab	Daily [1]	[3]
Total Dissolved Solids	mg/L	Grab	Once [4]	[3]
General Minerals [2]	mg/L	Grab	Once [4]	[3]

[1] First sample should be collected within 1 hour of the initial discharge and daily thereafter, during each discharge event..
[2] General minerals include bicarbonate, boron, calcium, carbonate, chloride, magnesium, potassium, sodium, and sulfate reported individually.
[3] The analytical method selected for a parameter shall be the one that can measure the lowest detection limit for that parameter.
[4] Sample shall be collected within 1 hour of the initial discharge

2. The Discharger shall record the approximate time of each storm-related discharge that results in off-property discharges of storm water that has mixed with wastewater, litter, or manure, and the approximate duration and amount of wastes discharged.

B. Groundwater Monitoring

Within 120 days following adoption of this Order, the Discharger shall submit to the Regional Water Board a groundwater monitoring plan, which proposes on-going monitoring to assess the migration of pollutants from wastewater holding ponds and land application areas to shallow groundwater. The plan shall include installation of an appropriate number of upgradient and downgradient monitoring wells to characterize background conditions of groundwater quality and to identify the presence of pollutants in shallow groundwater attributable to migration from wastewater holding ponds and land application areas. Monitoring wells shall be located based on knowledge of local groundwater conditions (depth, direction of flow, etc). The plan shall identify pollutants or pollutant parameters, which will be appropriate indicators of wastewater originating at the facility and shall include nitrate and nitrite-nitrogen and coliform bacteria. In addition to groundwater monitoring, the plan shall include provisions for wastewater holding pond, seepage rate determinations on a periodic basis (at least two such determinations shall be conducted (on different ponds) every five years until all ponds have been so characterized. Groundwater monitoring results and seepage rate determinations shall be reported annually to the Regional Water Board and shall be compared with applicable groundwater limitations established by section V. B of the Order.

The Discharger shall begin implementation of its groundwater monitoring plan within 180 days following its approval by Regional Water Board staff.

IX. OTHER MONITORING REQUIREMENTS

A. Monitoring Location IRR-001 – Land Application Areas

1. The Discharger shall monitor soil from crop and irrigation disposal areas at IRR-001 as follows.

Table E-4. Soil Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Nitrate	mg N/kg	Grab	Annually [1]	[2]
Ammonia	mg N/kg	Grab	Annually [1]	[2]
Total Kjeldahl Nitrogen	mg N/kg	Grab	Annually [1]	[2]
Phosphorus	mg P/kg	Grab	Annually [1]	[2]

[1] Soil monitoring shall occur one time per year in September.
[2] The analytical method selected for a parameter shall be the one that can measure the lowest detection limit for that parameter.

2. The Discharger shall perform additional monitoring of soil within the land application area as necessary to adhere to the terms of this Order which address site-specific nutrient management.

3. The Discharger shall inspect any cropland on which wastewater is applied at least once daily during each irrigation event.

4. A log of these inspections shall be maintained and a summary of observations made during the inspections shall be submitted with each semi-annual monitoring report.

5. The Discharger shall also document and submit the following information with each semi-annual monitoring report:

   a. Identification of crop, acreage, and dates of planting, harvest, and routine maintenance of cropland;

   b. Expected crop yields;

   c. The date(s) of manure, litter, process wastewater is applied to each field;

   d. Weather conditions at the time of application and for 24 hours prior to and following application;

   e. Results from manure, little, process wastewater and soil sampling;

   f. Explanation of the basis for determining manure application rates;

   g. Calculations showing the total nitrogen and phosphorus to be applied to each field, including sources other than manure, litter, or process wastewater;

   h. Total amount of nitrogen and phosphorus actually applied to each field, including documentation of calculations for the total amount applied;

   i. The method used to apply the manure, litter, or process wastewater.

6. The Discharger shall maintain on-site for a period of five years from the date they are created a complete copy of the information required by 40 CFR 122.21(i)(1) and 40 CFR 122.42(e)(1)(ix) and the records specified in 40 CFR 412.37 (b)(1 - 6), below. [40 CFR 412.37 (b)]

   a. Records documenting inspections required in accordance with 40 CFR 412.37 (a)(1), [40 CFR 412.37 (b) (1)]

   b. Weekly records of the depth of the manure and process wastewater in liquid impoundments as indicated by the depth marker in accordance with 40 CFR 412.37 (a)(2), [40 CFR 412.37 (b) (2)]

   c. Records documenting actions taken to correct deficiencies in accordance with 40 CFR 412.37 (a)(3). Deficiencies not corrected within 30 days shall be accompanied by an explanation of the factors preventing immediate correction, [40 CFR 412.37 (b) (3)]

d. Records of mortalities management and practices used to meet the requirements of 40 CFR 412.37 (a)(4), [40 CFR 412.37 (b) (4)]

e. Records documenting the current design of any manure or litter storage structures, including volume for solids accumulation, design treatment volume, total design volume, and approximate number of days of storage capacity, [40 CFR 412.37 (b) (5)]

f. Records of the date, time, and estimated volume of any overflow. [40 CFR 412.37 (b) (6)]

B. Monitoring Location MAN-001 - Manure

1. The Discharger shall monitor manure to be placed at MAN-001 as follows.

Table E-5. Manure Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Quantity	Tons or yds[3]	Measured during removal	Each load	NA
Moisture Content	Percent	Grab	Annually [2]	NA
Nitrate	mg N/kg	Grab	Annually [2]	[3]
Ammonia	mg N/kg	Grab	Annually [2]	[3]
Total Kjeldahl Nitrogen	mg N/kg	Grab	Annually [2]	[3]
Phosphorus	mg P/kg	Grab	Annually [2]	[3]
General Minerals [1]	mg/kg	Grab	Annually [2]	[3]

[1] General Minerals include bicarbonate, boron, calcium, carbonate, chloride, magnesium, potassium, sodium, and sulfate reported individually.

[2] Monitoring shall occur one time per year in September.

[3] The analytical method selected for a parameter shall be the one that can measure the lowest detected limit for that parameter.

2. The Discharger shall perform additional monitoring of manure as necessary to adhere to the terms of this Order which address site-specific nutrient management.

3. The Discharger shall submit a summary of activities regarding solids handling with each semiannual monitoring report.

4. Prior to transferring manure to other persons, the Discharger must provide the recipient of the manure, litter, or process wastewater with the most current analysis. The analysis must be consistent with manure monitoring required by this MRP.

5. The Discharger shall document and make available to the Regional Water Board, upon request, the following information:

   a. Manure hauler

   b. Destination of manure

c. Dates hauled

d. Amount hauled

C. Pond Freeboard Monitoring - Monitoring Locations PND-001, PND-002, PND-12A, PND-146, PND-Lake Crandall East, PND Lake Crandall West

1. The Discharger shall monitor Holding Ponds 1, 2, 12A, 146, and Lake Crandall East and West.

Table E-6. Pond Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Freeboard	Feet	Measure	Weekly	NA

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and record keeping.

B. Self Monitoring Reports

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. The Discharger shall submit semi-annual SMRs, which include the results of all monitoring required by this Monitoring and Reporting Program and by the facility's Nutrient Management Program. If the Discharger monitors any pollutant or parameter more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. SMRs shall be submitted by the July 30 and January 30 and shall summarize results for the appropriate six month period. The SMR due on January 30 may be included in the Annual Report, which is also due on January 30 of each year.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-7. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Semi-Annual	Permit effective date	January – June and July - December	July 30 and January 30
Annually	Permit effective date	January - December	January 30

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

      For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

   d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. Compliance Determination. Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

6. Multiple Sample Data. When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

7. The Discharger shall submit SMRs in accordance with the following requirements:

   a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

   b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

   c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

      Central Coast Region
      895 Aerovista Place, Suite 101
      San Luis Obispo, California 93401

C. Annual Report

The Discharger shall submit an Annual Report one time per year by the 30th of January each year. The Annual Report shall include the SMR which covers the period of July – December of each year; it shall summarize SMR information and data for the pervious period of January – December; and it shall include the following information [a – h are required by 40 CFR 122.42 (e) (4) (i – viii)].

a. The number and type of animals, whether in open confinement or housed under roof,

b. Estimate of the amount of manure, litter, and process wastewater generated by the CAFO in the previous 12 months (tons/gallons),

c. Estimate of the amount of total manure, litter, and process wastewater transferred to other persons in the previous 12 months,

d. Total number of acres for land application covered by the NMP;

e. Total number of acres under the control of the CAFO that were used for land application of manure, litter, and process wastewater in the previous 12 months,

f. Summary of discharges of manure, litter, and process wastewater from the production area in the previous 12 months, including date, time, and approximate volume,

g. A statement indicating whether the current version of the CAFO's NMP was developed or approved by a certified nutrient management planner,

h. Summary of crops planted and yield for each field; the nitrogen and phosphorus content of the manure, litter, and process wastewater; results of calculations conducted in accordance with 40 CFR 122.42 (e) (5) (i) (B) and (e) (5) (ii) (D); and the amount of manure, litter, and process wastewater applied to each field during the previous 12 months. If a NMP that addresses rates of application in accordance with 40 CFR 122.42 (e) (5) (ii) is implemented, the Annual Report shall include the results of any soil testing for nitrogen and phosphorus conducted in the preceding 12 months, data used in calculations conducted in accordance with 40 CFR 122.42 (e) (5) (ii) (D), and the amount of any supplemental fertilizer applied during the previous 12 months.

i. The Discharger shall certify in its Annual Report that, during the previous calendar year, mortalities were placed in a designated, fenced and secure area, where runoff is directed to a wastewater storage pond, until mortalities were removed from the site.

j. The Discharger shall certify in its Annual Report that, during the previous calendar year, no chemicals handled onsite, including petroleum products, were placed, disposed of, or spilled to any onsite manure, litter, process wastewater storage or treatment system.

D. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring

Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

E. Other Reports

Within 60 days of adoption of the proposed permit, the discharger shall submit a report detailing all chemicals used at the feedlot, including pharmaceuticals and pesticides that have the potential to be released to surface waters or groundwater. For each chemical used, the report shall describe the quantity, quality, and timing of the chemical used, and management practices to limit transport of these chemicals to surface water or groundwater.

F. Record Keeping and Retention of Records

1. The Discharger shall maintain a copy onsite and make available to the Regional Water Board upon request, a copy of its site-specific NMP.

2. The Discharger shall create and maintain for 5 years, and make available to the Regional Water Board upon request:

   a. Applicable records identified pursuant to 40 CFR 122.42 (e) (1) (ix).

   b. Records specified in 40 CFR 412.37 (b and c).

3. Each CAFO must maintain on-site for a period of five years from the date they are created a complete copy of the information required by 40 CFR 412.4 and 40 CFR 122.42(e)(1)(ix) and the records specified in 40 CFR 412.37 (c)(1 - 10). The following records must be available to the Regional Water Board upon request.

   a. Expected crop yields,

   b. The date(s) manure, litter, or process waste water is applied to each field,

c. Weather conditions at time of application and for 24 hours prior to and following application,

d. Test methods used to sample and analyze manure, litter, process waste water, and soil,

e. Results from manure, litter, process waste water, and soil sampling,

f. Explanation of the basis for determining manure application rates, as provided in the technical standards established by the Regional Water Board,

g. Calculations showing the total nitrogen and phosphorus to be applied to each field, including sources other than manure, litter, on process wastewater,

h. Total amount of nitrogen and phosphorus actually applied to each field, including documentation of calculations for the total amount applied,

i. The method used to apply the manure, litter, or process wastewater,

j. Date(s) of manure application equipment inspection.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	3 270308064
Discharger	Gallo Cattle Company
Name of Facility	Joseph Gallo Farms Feed Lot
Facility Address	31701 Johnson Canyon Road
	Gonzales, California 93926
	Monterey County
Facility Contact, Title and Phone	Roland Perez, M.S., Environmental Administrator, 209-394-7984
Authorized Person to Sign and Submit Reports	Roland Perez, M.S., Environmental Administrator
Mailing Address	10561 West Highway 140, PO Box 775, Atwater, California 95301
Billing Address	10561 West Highway 140, PO Box 775, Atwater, California 95301
Type of Facility	Concentrated Animal Feeding Operation (CAFO)
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	c
Pretreatment Program	NA
Reclamation Requirements	NA
Facility Permitted Flow	0.0
Facility Design Flow	0 .0
Watershed	Salinas River
Receiving Water	Johnson Creek/Salinas River
Receiving Water Type	Inland Surface Water

A. The Gallo Cattle Company (hereinafter the Discharger) is the owner and operator of the Joseph Gallo Farms Feed Lot, a Concentrated Animal Feeding Operation (CAFO).

B. The facility land applies wastewater and contaminated storm water via spray irrigation to 64 acres of regularly harvested hay fields. The facility is designed to contain process wastewater and storm water from the 25-year, 24-hour storm event and thereby preclude discharges to surface water.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and State laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

C. The Discharger filed a Report of Waste Discharge and submitted an application to renew the facility's Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on August 19, 2008. A site visit was conducted on September 25, 2008, to observe operations and collect additional data to develop permit limitations and conditions. In July 2009, in response to new federal regulations for CAFOs, which became effective on December 22, 2008, the Discharger submitted a revised/updated nutrient management plan to complete its application requirements to renew the facility's WDRs and NPDES permit.

II. FACILITY DESCRIPTION

The Joseph Gallo Farms Feed Lot is a cattle containment and feeding operation for up to 30,000 head of cattle, located on 373.2 acres. Approximately 101 acres are used for confined animal pens and feeding operations, and the remaining 272 acres are used for dry storage, manure composting, runoff containment ponding, and irrigated croplands. Only dairy heifers, being raised for a production herd, are kept at the site. Animals are typically maintained at the site for 18 months, and then are moved to one of several dairies owned by the Gallo Cattle Company. Only 10,000 to 20,000 head of cattle are typically on site. The facility land applies wastewater and contaminated storm water onsite via spray irrigation to 64 acres of regularly harvested oat fields. The oats are used exclusively for consumption by the cattle onsite.

Manure in the animal pens and the wastewater ponds is removed frequently and composted onsite by a contractor, Central Coast Composting. Manure remains onsite for a minimum of 120 days during the composting operations and is ultimately shipped offsite.

A. Description of Wastewater Treatment or Controls

The pond system consists of a total of nine ponds as shown in Attachment B. Ponds 1, 2, and 146 are wastewater holding ponds that operate in series and collect gravity-flow contaminated runoff from the CAFO. Ponds 12B, 13N, and 13S are storm water retention ponds that collect storm water runoff from watersheds upgradient of the facility, thereby preventing flow onto the CAFO. Lake Crandall East and West and Pond 12A are irrigation holding ponds, which receive wastewater pumped from the three wastewater holding ponds, overflow from the storm water retention ponds, and storm water runoff from much of the site.

The three wastewater holding ponds (Ponds 1, 2, and 146) are located at the southwest, downgradient corner of the facility and have a total capacity of 58.22 acre-feet with 47.8 acre-feet below the 2-foot freeboard. These ponds contain runoff from 185 acres, which include 101 acres of confined animal pens and roads and 84 acres that are not used by the confined animals. Pond 2, which is the last of three ponds in series, has an outfall structure that would discharge to Johnson Creek, although the facility is designed to

contain runoff from the 25-year, 24-hour storm event, thereby precluding discharges to surface water except in extreme circumstances.

The three storm water retention ponds (Ponds 12B, 13N, and 13S) are located in the northwest area of the facility and had a total combined capacity of 32 acre-feet based on measurements in 1974. These ponds have since been enlarged by approximately 8 to 10 acre-feet. Ponds 12B, 13N, and 13S receive runoff from drainage areas of 68, 88, and 47 acres, respectively.

The centrally located irrigation holding ponds (Lake Crandall East and West) and the irrigation holding pond located in the northeast area of the facility (Pond 12A) had a total combined capacity of at least 24 acre-feet, based on 1974 measurements. These ponds have since been enlarged by 5 to 6 acre-feet, for a total capacity of approximately 30 acre-feet. Lake Crandall East and West, and Pond 12A receive wastewater pumped from the wastewater holding ponds, overflow from the northeasterly ponds (if necessary), and runoff from a drainage area of 152 acres (which includes the 64-acre spray disposal site, two mill buildings, and approximately 4 acres of paved areas).

Some wastewater disposal occurs by evaporation in ponds 1, 2, 146, 12A, and Lake Crandall East and West., although the principle means of disposal is land application via spray irrigation on 64 acres of regularly harvested oat fields.

Manure generated from the concentrated animal pens is allowed to air dry and is then scraped for removal. Once removed from the pens, manure is temporarily stored and composted onsite until it is hauled offsite for use as fertilizer.

B. Discharge Points and Receiving Waters

The facility land applies wastewater via spray irrigation on 64 acres of oat fields. The facility contains adequate storage capacity, pumping facilities, and irrigated cropland to contain and provide onsite disposal for the direct precipitation and runoff anticipated from up to a 25-year, 24-hour storm event.

From information developed at the adjacent landfill, staff extrapolates that three hydrogeologic units underlie the feedlot: crystalline bedrock, weathered bedrock, and Quaternary Alluvium/Colluvium. Granodiorite of the Salinian Block lies at increasing depth westward below the feedlot. This granitic basement rock below the feedlot is highly fractured to massive and is variably weathered. Fresh (unweathered) bedrock has low permeability, and contains and transmits water only through joints and fractures. Groundwater beneath the feedlot occurs primarily in alluvium and generally flows from northeast to southwest. The water table occurs at approximately 190 to 285 feet below ground surface, and ranges in elevation from approximately 85 to 150 feet above mean sea level. According to monitoring reports, groundwater is estimated to flow between 0.017 and 0.47 feet per day beneath the site. Based on monitoring results from the adjacent landfill's background monitoring well JC-3, upgradient inorganic constituent concentrations average approximately 120 mg/L of chloride, 22 mg/L of sulfate, 6.5 mg/L of nitrate, and 540 mg/L of total dissolved solids. Monitoring results from wells closer to the feedlot have similar chemical quality.

If a discharge to surface water were to occur, that discharge would occur at Discharge Point 002, which is the outfall from Pond 2 to Johnson Creek.

Johnson Creek, tributary to the Salinas River within the Salinas River Watershed, flows east to west approximately 200 to 1,000 feet south of the facility. The facility is located above the East Side Aquifer Subarea of the Salinas River Sub-basin. Depth to groundwater in the area is estimated to be 200 feet.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

The existing Order does not contain numeric effluent limitations but (1) prohibits discharges to surface waters except during a 25 year, 24 hour storm event, (2) limits the total amount of wastewater handled onsite to that which could be generated by 30,000 cattle plus runoff from the production area, and (3) requires development and implementation of a Nutrient Management Plan. The existing Order also establishes specific objectives to prevent degradation of surface and ground water quality attributable to activities at the feedlot, and it establishes numerous requirements regarding feedlot operation and water/wastewater management, meant to protect local surface and ground water quality.

D. Compliance Summary

The facility has maintained compliance with the terms and conditions of Order No. R3-2003-0126 during the term of that Order.

E. Planned Changes

There are no planned changes, which could impact water/wastewater management, for the facility during the anticipated five year term of the proposed Order.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100 through 21177.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Regional Water Board has adopted a *Water Quality Control Plan for the Central Coast Region* (the Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for receiving waters within the Region. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which establishes State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. In accordance with Chapter 2 of the Basin Plan, surface water bodies that do not have beneficial uses specifically identified by the Basin Plan, like Johnson Creek, are assigned the beneficial uses of:

   - Municipal and domestic supply
   - Protection of both recreation and aquatic life.

   Requirements of this Order implement the Basin Plan.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the State. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes [65 Fed. Reg. 24641 (April 27, 2000) (codified at 40 C.F.R. 131.21)]. Under the revised regulation (also known as the Alaska Rule), new and revised

standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

5. **Antidegradation Policy.** NPDES regulations at 40 CFR 131.12 require that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements and incorporates by reference both the State and federal antidegradation policies. As discussed herein, the permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

6. **Anti-Backsliding Requirements.** CWA Sections 402 (o) (2) and 303 (d) (4) and NPDES regulations at 40 CFR 122.44 (l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. As discussed in this Fact Sheet, effluent limitations and other requirements established by this Order satisfy applicable anti-backsliding provisions of the CWA and NPDES regulations.

D. Impaired Water Bodies on CWA 303(d) List

CWA section 303 (d) requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology based limitations on point sources. For all 303 (d) listed water bodies, the Regional Water Board must develop and implement TMDLs (total maximum daily loads) that specify WLAs (waste load allocations) for point sources and load allocations for non-point sources.

The State's 2006 303 (d) list of impaired water bodies, which was approved by USEPA in June 2008, does not identify Johnson Creek as impaired but does identify the Lower Salinas River (below Gonzales Road to the estuary) as impaired by fecal coliform bacteria, nitrate, nutrients, pesticides, salinity / TDS / chlorides, and toxaphene; and the Middle Salinas River (above Gonzales Road to the confluence with the Nacimiento River) as impaired by pesticides, and salinity / TDS / chlorides. TMDLs for the Salinas River have not been developed.

E. Other Plans, Polices and Regulations

This section of the standardized permit template is not applicable.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. NPDES regulations establish two principal bases for effluent limitations. At 40 CFR 122.44 (a) permits are required to include applicable technology-based limitations and standards; and at 40 CFR 122.44 (d) permits are required to include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. When numeric water quality objectives have not been established, but a discharge has the reasonable potential to cause or contribute to an excursion above a narrative criterion, WQBELs may be established using one or more of three methods described at 40 CFR 122.44 (d) - 1) WQBELs may be established using a calculated water quality criterion derived from a proposed State criterion or an explicit State policy or regulation interpreting its narrative criterion; 2) WQBELs may be established on a case-by-case basis using U.S. EPA criteria guidance published under CWA Section 304 (a); or 3) WQBELs may be established using an indicator parameter for the pollutant of concern.

A. Discharge Prohibitions

1. **Discharge Prohibition III. A**. (Land application of wastewater to areas other than land application areas, identified by the site-specific NMP, is prohibited.) This discharge prohibition is retained from the previous permit. The application of wastewater to land not described by the Discharger to the Regional Water Board would represent an unauthorized application of wastewater in violation of this permit.

2. **Discharge Prohibition III. B**. (Land application of wastewater other than feedlot wastewater and runoff, is prohibited.) This discharge prohibition is retained from the previous permit. Because the permit is written based on a specific understanding of the nature of the wastewaters to be applied to land, land application of wastewaters not contemplated during the drafting of the permit would represent an unauthorized application of wastewater in violation of this permit. The prohibition restricts the land application of nutrients to the form and source described in the Discharger's Nutrient Management Plan. Other forms and sources of nutrients may be land applied only following approval of changes to the Nutrient Management Plan prepared in accordance with NPDES regulations at 40 CFR 122.42 (e) (6).

3. **Discharge Prohibition III. C**. (Discharges, including overflow, bypass, seepage, and overspray from transport, treatment, storage, or disposal systems to adjacent drainage ways or adjacent properties, except as described by section IV. A. 1. B of the permit, are prohibited.) This discharge prohibition is retained from the previous permit and reflects the fundamental tenet of the *Effluent Limitations Guidelines for the Concentrated Animal Feeding Operation Point Source Category* prohibiting discharges from CAFOs to surface waters except during extreme circumstances.

4. **Discharge Prohibition III. D**. (Animals within confined areas shall be prohibited from entering surface waters.) This discharge prohibition is retained from the previous permit and is a restatement of the requirement established by NPDES regulations at 40 CFR 122.42 (e) (1) (iv) that animals at CAFOS shall not have direct contact with waters of the U.S..

5. **Discharge Prohibition III. E**. (Mortalities must not be placed in any liquid manure or process wastewater system and must be handled in a way to prevent the discharge of pollutants to surface water.) This discharge prohibition is a restatement of the *Effluent Limitations Guidelines for the Concentrated Animal Feeding Operation Point Source Category* at 40 CFR 412.37 (a) (4).

6. **Discharge Prohibition III. F**. (Application of wastewater to land shall not cause degradation of any water supply.) This discharge prohibition is retained from the previous permit and reflects the mandate of the Basin Plan that activities at the concentrated animal feeding operation not adversely impact the designated water supply use of local groundwater.

7. **Discharge Prohibition III. G**. (Application of wastewater to land for other than nutrient recycling and/or crop production is prohibited.) This discharge prohibition is retained from the previous permit and reflects the goal of the permit that land application of wastewater occur in a controlled manner suitable for efficient crop production.

B. Technology-Based Effluent Limitations

1. Scope and Authority

NPDES regulations at 40 CFR 122.44 (a) require that permits include applicable technology-based limitations and standards. Where the USEPA has not yet developed technology based standards for a particular industry or a particular pollutant, CWA Section 402 (a) (1) and USEPA regulations at 40 CFR 125.3 authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis. When BPJ is used, the permit writer must consider specific factors outlined at 40 CFR 125.3.

U.S. EPA has established applicable standards of performance (technology-based limitations and standards) at 40 CFR 412, *Effluent Limitations Guidelines for the Concentrated Animal Feeding Operation Point Source Category*. The Effluent Limitations Guidelines for CAFOs were first promulgated in 1974 and underwent significant revision in 2003. In response to legal challenges, the 2003 Effluent Limitations Guidelines were most recently revised in 2008, with the revised rules becoming effective on December 22, 2008.

2. Applicable Technology-Based Effluent Limitations

As described above, applicable technology-based requirements, which have been promulgated by EPA and must be incorporated into the provisions of this discharge

permit are established at 40 CFR Part 412. Some technology-based requirements for CAFOs have also been established within EPA's NPDES permitting rules at 40 CFR 122. Technology based requirements, applicable to the Joseph Gallo Farms Feedlot, from 40 CFR Parts 122 and 412 are summarized in Attachment G of this Order. This summary reflects the work of Regional Water Board staff in developing this permit and provides a cross reference to sections of the Order where provisions of the Effluent Limitations Guidelines have been incorporated. Attachment G is included for guidance and explanation only, and, if necessary, interested parties should consult the full text of the Effluent Limitations Guidelines from the appropriate legal resources.

As a result of legal challenges to EPA's CAFO rules established at 40 CFR Parts 122 and 412, these technology-based requirements were revised as recently as December 2008, with two significant revisions being: (1) at the time that an application is submitted for an NPDES permit, the Regional Water Board must now review a CAFO's Nutrient Management Plan (NMP) and provide the public with an opportunity for meaningful review of and comment regarding the NMP, and (2) the Regional Water Board is now required to incorporate certain terms of a CAFO's NMP into the NPDES permit as enforceable permit conditions. The Permittee's NMP therefore accompanies this draft permit as Attachment H. The NMP was submitted to the Regional Water Board as part of the application to renew NPDES Permit No. CA-0050601, and Regional Water Board staff have reviewed the NMP and found it consistent with current regulatory requirements.

NPDES rules at 40 CFR 122.42 (e) (5) describe what terms of the NMP shall become enforceable permit conditions.

> *Any permit issued to a CAFO must require compliance with the terms of the CAFO's site-specific nutrient management plan. The terms of the nutrient management plan are the information, protocols, best management practices, and other conditions in the nutrient management plan determined by the Director to be necessary to meet the requirements of paragraph (e)(1) of this section.*

The requirements of "paragraph (e) (1)," which refers to 40 CFR 122.42 (e) (1), are summarized below, although the NPDES rules expand and clarify upon these specific requirements and should be consulted if a thorough understanding of the requirements is necessary. From 40 CFR 122.42 (e) (1), the terms of the NMP which shall be enforceable terms of the permit are those "protocols, best management practices, and other conditions" of the NMP necessary to:

(i) Ensure adequate storage of manure, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities;

(ii) Ensure proper management of mortalities (i.e., dead animals) to ensure that they are not disposed of in a liquid manure, storm water, or process

wastewater storage or treatment system that is not specifically designed to treat animal mortalities;

(iii) Ensure that clean water is diverted, as appropriate, from the production area;

(iv) Prevent direct contact of concentrated animals with waters of the United States;

(v) Ensure that chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants;

(vi) Identify appropriate site specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the United States;

(vii) Identify protocols for appropriate testing of manure, litter, process wastewater, and soil;

(viii) Establish protocols to land apply manure, litter or process wastewater in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter or process wastewater; and

(ix) Identify specific records that will be maintained to document the implementation and management of the minimum elements described in paragraphs (e)(1)(i) through (e)(1)(viii) of this section.

As required by NPDES rules at 40 CFR 122.42 (e) (5), certain specific terms of the Discharger's NMP have been incorporated directly into the permit. (See Table F-2 of this Fact Sheet.)

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

NPDES regulations at 40 CFR 122.44 (d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards, including numeric and narrative objectives within a standard.

The process for determining "reasonable potential" and calculating WQBELs, when necessary, is intended to protect the designated uses of receiving waters as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in the Basin Plan and in other applicable State and federal

rules, plans, and policies, including applicable water quality criteria from the CTR and the NTR.

Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established in accordance with the requirements of 40 CFR 122.44 (d) (1) (vi), using (1) USEPA criteria guidance under CWA section 304 (a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

In accordance with Chapter 2 of the Basin Plan, surface water bodies that do not have beneficial uses specifically identified by the Basin Plan, like the receiving water for potential discharges from this facility (Johnson Creek), are assigned the beneficial uses of municipal and domestic supply, recreation, and aquatic life habitat. Water quality criteria applicable to this receiving water are established by the CTR, the NTR, and by the Basin Plan.

3. Determining the Need for WQBELs

NPDES regulations at 40 CFR 122.44 (d) require effluent limitations to control all pollutants which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard.

Because the feedlot has been designed to contain production wastewaters plus runoff from the 25-year, 24 hour rainfall event, the Regional Water Board has determined that there is no reasonable potential for discharges to cause or contribute to excursions from applicable water quality criteria applicable to Johnson Creek and established by the CTR, the NTR, and by the Basin Plan; and therefore, specific water quality based effluent limitations are not established by the Order. A discharge during the 25-year, 24-hour rainfall event must, however, not cause exceedances of receiving water limitations, which reflect water quality objectives of the Basin Plan, and which are established in section V. A of the Order.

Regarding possible runoff and discharge of pollutants to surface waters from the land application area, NPDES regulations at 40 CFR 122.23 (e) exempt such discharges (as agricultural storm water runoff) from NPDES regulation, if they occur from land where manure, litter or process wastewater has been applied in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients [in accordance with specifications established at 40 CFR 122.42 (e) (1) (vi - ix)]. Because the technology based requirements of the Order require development and implementation of a Nutrient Management Plan, thereby ensuring the appropriate land application of CAFO wastes (in accordance

with site specific nutrient management practices), precipitation-related runoff from the land application area will be viewed as routine agricultural storm water runoff.

4. WQBEL Calculations

This section of the standardized permit template is not applicable.

5. Whole Effluent Toxicity (WET)

This section of the standardized permit template is not applicable.

D. Final Effluent Limitations

Final, technology-based and water quality-based effluent limitations established by the Order are discussed in the preceding sections of the Fact Sheet.

1. Satisfaction of Anti-Backsliding Requirements

The Order satisfies applicable anti-backsliding provisions of the Clean Water Act, as all limitations and requirements of the Order are at least as stringent as those of the previous permit.

2. Satisfaction of Antidegradation Policy

Provisions of the Order are consistent with applicable anti-degradation policy expressed by NPDES regulations at 40 CFR 131.12 and by State Water Board Resolution No. 68-16, as limitations and conditions of the Order ensure maintenance of the existing quality of receiving waters, ensure that applicable water quality objectives for surface and groundwaters are met at all times, and do not authorize increased rates of discharge or increased pollutant loadings to receiving waters.

3. Stringency of Requirements for Individual Pollutants

This section of the standardized permit template is not applicable.

E. Interim Effluent Limitations

The Order does not establish interim effluent limitations and schedules for compliance with final effluent limitations.

F. Land Discharge Specifications

This section of the standardized permit template is not applicable.

G. Reclamation Specifications

This section of the standardized permit template is not applicable.

VI. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

Receiving water quality is a result of many factors, some unrelated to the discharge. This Order considers these factors and is designed to minimize the influence of the discharge on the receiving water. Specific water quality objectives established by the Basin Plan to meet this goal for all inland surface waters are included as Receiving Water Limitations in Section V. A of this Order.

B. Groundwater

Groundwater limitations established by the Order include general objectives for groundwater established by the Basin Plan for Central Coast Region.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

NPDES regulations at 40 CFR 122.48 require that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 also authorize the Regional Water Board to require technical and monitoring reports. Rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program (MRP), which is presented in Attachment E of this Order, is presented below.

Note that the Discharger may be obligated to perform monitoring in addition to that required by the MRP to satisfactorily implement its Nutrient Management Plan.

A. Influent Monitoring

This section of the standardized permit template is not applicable.

B. Effluent Monitoring

Effluent monitoring requirements are unchanged from the expiring permit.

C. Whole Effluent Toxicity Testing Requirements

This section of the standardized permit template is not applicable.

D. Receiving Water Monitoring

Surface, receiving water monitoring requirements are unchanged from the expiring permit; however, the Order adds requirements for the Discharger to develop and implement a groundwater monitoring plan to ensure that pollutants are not migrating from land application areas and from wastewater holding ponds to groundwater at levels that cause exceedances of applicable water quality objectives. The Discharger must develop a monitoring plan based on knowledge of local groundwater conditions and must implement the plan within 180 days following Regional Water Board staff's approval of the plan. Monitoring results must be submitted annually to Regional Water Board staff.

E. Other Monitoring Requirements

Monitoring requirements for the land application areas and manure are unchanged from the previous permit; however, requirements for soil monitoring in pens has not been retained. Requirements to observe and record pond freeboard are retained from the previous permit.

VIII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D to the Order.

NPDES regulations at 40 CFR 122.41 (a) (1) and (b - n) establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25 (a) (12) allows the State to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41 (j) (5) and (k) (2), because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387 (e).

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

The Order may be modified in accordance with the requirements set forth at 40 CFR 122 and 124, to include appropriate conditions or limits based on newly available information, or to implement any, new State water quality objectives that are approved by the U.S. EPA. If a need for additional effluent limitations and/or requirements becomes apparent, the Order will be reopened to incorporate such limitations.

2. Special Studies and Additional Monitoring Requirements

This section of the standardized permit template is not applicable.

3. Best Management Practices and Pollution Prevention

The principal control measures in the permit are a prohibition (permit section IV. A. 1. b) against the discharge of manure and process wastewater to waters of the U.S.

and a requirement (permit section VI. C. 3) to develop and implement a Nutrient Management Plan (NMP). The requirement to develop and implement an NMP reflects a national strategy established by the U.S. Department of Agriculture and EPA in 1999 to bring concentrated animal feeding operations into compliance with CWA requirements and to minimize impacts to groundwater and surface water such facilities by implementation of best management practices.

In accordance with NPDES regulations at 40 CFR 122.42 (e) (1) the NMP must include best management practices (BMPs), limitations, and standards necessary to meet applicable requirements of the *Effluent Limitations Guidelines for the CAFO Point Source Category* at 40 CFR Part 412. The NMP must also address nine specific requirements established by NPDES regulations at 40 CFR 122.42 (e) (1) (i – ix). Table 5 of the permit is a summary of the requirements of the *Effluent Limitations Guidelines*, which must be addressed by "BMPs, limitations, and standards;" and Table 6 is a summary of the nine specific requirements established by NPDES regulations at 40 CFR 122.42 (e) (1) (i – ix), which must also be addressed by "BMPs, limitations, and standards."

In accordance with 40 CFR 122.42 (e) (5), the terms of the NMP, which address application rates pursuant to of 40 CFR 122.42 (e) (1) (viii), shall become enforceable terms of this Order. In response to this requirement and following review of the Discharger's NMP, which was revised in July 2009, the Regional Water Board has directly incorporated certain NMP provisions as enforceable terms of the Order. The enforceable NMP provisions are summarized in Table F-2, below. NMP provisions are incorporated into the Order as enforceable terms in the section of the Order indicated in Table F-2. If no section of the Order is identified, the NMP provision is hereby incorporated into this Fact Sheet as information provided by the Discharger as bases for site-specific nutrient management practices established in its NMP.

Table F-2. NMP Provisions Incorporated Into the Order as Permit Terms

Regulatory Requirement	NMP Provision (source within the NMP)	Incorporated into the Order as an Enforceable Term at:
40 CFR 122.42 (e) (1) (i) – Regarding storage of manure, litter, and process wastewater, including operation and maintenance of storage facilities	• The Discharger shall maintain a minimum, 120-day wastewater storage capacity of 13.56 million gallons to accommodate normal precipitation and runoff and direct precipitation for the 25-year, 24-hour rainfall event. (NMP section 3.0) • In the event that one of the facility's storage ponds reaches capacity, water/wastewater shall be pumped to a pond that has storage capacity. (NMP section 3.0)	Order section VI. C. 4
40 CFR 122.42 (e) (1) (ii) – Regarding mortality management	• Mortalities shall be placed in a designated, fenced and secure area, where runoff is directed to a wastewater storage pond, until mortalities are removed from the site. (NMP section 3.0)	Order section VI. C. 4
40 CFR 122.42 (e) (1) (iii) – Regarding diversion of	• The site shall be managed to ensure that clean "run on" water is diverted from the production area, in a	Order section VI. C. 4

clean water from the production area	manner as described by the NMP (Ponds 12B, 13N and 13S at the east end of the site serve as retention ponds to keep clean up gradient runoff from entering the production area). (NMP section 3.0)	
40 CFR 122.42 (e) (1) (iv) – Regarding direct contact of concentrated animals with waters of the U.S.	• There are no waters of the U.S. within the animal confinement area, and therefore, the NMP does not address this requirement.	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (1) (v) – Regarding disposal of chemicals	• Chemicals and chemical contaminants, including petroleum products, handled onsite shall not be placed or disposed of within any onsite manure, litter, process wastewater storage or treatment system. Chemicals and chemical contaminants handled on site shall be managed to prevent spills to onsite manure, litter, and process wastewater storage or treatment systems. (NMP section 3.0)	Order section VI. C. 4
40 CFR 122.42 (e) (1) (vi) – Regarding site specific conservation practices to control runoff of pollutants to waters of the U.S.	• The application rates of nutrient to the land application area shall take into account current soil test results, realistic yield goals, and management capabilities. (NMP section 8.0) • Planned application rates shall match nitrogen availability with plant uptake characteristics as closely as possible, taking into account the timing of nutrient application(s) in order to minimize leaching and atmospheric losses. (NMP section 8.0) • The Discharger shall implement, as appropriate, the conservation practices established by *NRCS Conservation Practice Standard Code 590 for Nutrient Management* (CPS 590) and by *NRCS Conservation Practice Standard Code 449 for Irrigation Water Management* (CPS 449). (NMP section 8.0) • There shall be no nitrogen application to land during periods of soil saturation. (NMP section 8.0) • Nutrient materials shall be applied to land uniformly through proper use of irrigation equipment. (NMP section 8.0) • Nitrogen shall be applied in a manner to achieve maximum crop utilization. (NMP section 8.0) • The Discharger shall adhere to rates of application and timing limitations established by the NMP to avoid over-irrigation. (NMP section 8.0)	Order section VI. C. 4 Order section VI. C. 4 Order section VI. C. 4 Order section VI. C. 4 Order section VI. C. 4 Order section VI. C. 4 Order section VI. C. 4
40 CFR 122.42 (e) (1) (vii) – Regarding testing of manure, litter, process wastewater, and soil.	• The Discharger shall adhere to the monitoring protocols for manure, process wastewater, and soil described by Appendix E (Sampling and Record Keeping) of its NMP.	MRP section I. F
40 CFR 122.42 (e) (1) (viii) – Regarding site specific nutrient management practices	• The Discharger shall land apply manure, litter, and process wastewater in accordance with the following (in *italics*) site-specific nutrient management practices.	Order section VI. C. 4
40 CFR 122.42 (e) (5) –	• *Wastewater shall be land applied to Field 1 as*	Order section VI. C. 4

<table>
<tr><td>Regarding identification of fields available for land application</td><td>identified by the NMP. (NMP Appendix C)</td><td></td></tr>
<tr><td>40 CFR 122.42 (e) (5) – Regarding timing limitations</td><td>• Nitrogen shall not be applied to land during periods of soil saturation. (NMP section 9.0)
• Nitrogen shall be land applied in a manner to achieve maximum crop utilization. (NMP section 8.0)</td><td>Order section VI. C. 4

Order section VI. C. 4</td></tr>
<tr><td>40 CFR 122.42 (e) (5) – Regarding field-specific rates of land application</td><td>• In accordance with site-specific nutrient management practices described by the NMP, available nitrogen from wastewater shall not be land applied at a rate greater than 250 pounds N per acre per year.</td><td>Order section VI. C. 4</td></tr>
<tr><td>40 CFR 122.42 (e) (5) – Regarding the linear approach to express rates of application of N and P

40 CFR 122.42 (e) (5) (i) (A) – Regarding maximum application rates for each year of permit coverage and for each crop identified</td><td>• NMP rate calculations are based on the crop nitrogen need, and the Discharger has used the linear approach, as described at 40 CFR 122.42 (e) (5) (i), to express land application rates for N.

Section 4.0 of the NMP provides the following annual nutrient loadings to the 64-acre field from wastewater (applied at a rate of 13,560,000 gallons annually and accounting for N residuals from the prior year’s manure applications). The amount of nitrogen provided from organic N for the present year’s application is not discounted to account for N mineralization. Instead, the NMP assumes that “the minimal mineralization from organic material applied in 2009 is compensated by the cumulative mineralization of organic material applied in previous years.”

<table>
<tr><th rowspan="2">Constituent</th><th colspan="2">Annual Contribution (lbs) from Wastewater</th></tr>
<tr><th>Total for field</th><th>Per acre</th></tr>
<tr><td>P_2O_5</td><td>458</td><td>7.2</td></tr>
<tr><td>NH_4-N</td><td>215</td><td>3.4</td></tr>
<tr><td>NO_3-N</td><td>1,085</td><td>17</td></tr>
<tr><td>Organic N</td><td>215</td><td>3.4</td></tr>
</table>

The data, above, show 23.8 pounds N per acre from wastewater being available to the land application area per year.

Based on a total expected crop yield of 36 tons of oats per acre per year (from three plantings of oats per year) and a crop nitrogen requirement of 14 pounds N per ton of crop yield, the facility’s total nitrogen requirement is 504 lbs N per acre per year (36 x 14 = 504).

NMP section 4.0 indicates that 11,951 pounds of available N is applied to the land application area annually via fresh water (186.7 pounds/acre/year),</td><td>Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices</td></tr>
</table>

	with no other nutrient sources (besides fresh water and wastewater) being available to the land application area. The figures above indicate a total nitrogen requirement of 504 lbs N per acre per year, with total nitrogen being land applied at a rate of 210.5 lbs per acre per year (23.8 + 186.7 = 210.5). These figures also indicate a deficit of 293.5 lbs N per acre per year (504 – 210.5 = 293.5). Because the Discharger, in NMP section 6.0, reports a deficit of 75 lbs N per acre per crop (75 x 3 = 225 lbs per acre per year with 3 plantings), for determining a maximum nitrogen application rate, the Regional Water Board has used the more conservation figure of 225 lbs N per acre per year to reflect the nitrogen deficit. The Regional Water Board has accounted for the deficit in establishing, at section VI. C. 4 of the Order, the maximum allowable nitrogen application rate of 250 pounds N per acre per year (225 + 23.8 = 248.8).	
40 CFR 122.42 (e) (5) (i) (A) – Regarding nitrogen and phosphorus transport	• Land application rates are based on nitrogen loadings (not phosphorous), consistent with the Discharger's determination of a low phosphorous index, or a low potential for phosphorous movement from the land application area. (NMP section 7.0)	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding crops to be planted	• *As described by Appendix C of the NMP, Field 1 shall be triple-cropped (3 plantings) in oats in each year covered by the NMP.*	Order section VI. C. 4
40 CFR 122.42 (e) (5) (i) (A) – Regarding yield goal for each crop or use	• Land application rates determined by the NMP are based on an expected crop yield of 12 tons/acre/year. (Gallo plants and harvests oats three times per year from the land application area, establishing a total expected crop yield of 36 tons of oats per acre per year.)	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding nitrogen and phosphorus requirements	• Land application rates are based on a crop nitrogen requirement of 14 pounds N per ton of crop yield.	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding credits for nitrogen in the field	• The NMP assumes that, if rates of N application from wastewater are consistent from year to year, credit for residual nitrogen in the field from previous applications will be similar to that portion of organic nitrogen from the current year's wastewater application that is not mineralized.	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding multi-year phosphorus application	• Multiyear phosphorous applications are not planned.	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding accounting for other	• NMP section 4.0 indicates that 11,951 pounds of available N is applied to the land application area annually via freshwater (186.7 pounds/acre/year).	Incorporated into the Fact Sheet as a basis of site-specific nutrient

additions of plant available nitrogen and phosphorus	No other nutrient sources, in addition to freshwater and wastewater sources, are available to the land application area.	management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding the form and source of manure, litter, and process wastewater	• NMP section 3.0 and Appendix C indicate that Pond 12A is the source for all wastewater irrigation. Pond 12A receives wastewater from Pond 2 (and from Ponds 1 and 146 via Pond 2), and from Lake Crandall West. NRCS Code 590 and NMP Appendix E include protocols to ensure representative sampling of the applied wastewater.	Incorporated into the Fact Sheet as a basis of site-specific nutrient management practices
40 CFR 122.42 (e) (5) (i) (A) – Regarding the timing and method of land application	• *Wastewater shall be land applied via a sprinkler irrigation system in accordance with Table 1 (Crop Watering Requirements for Oats) and Appendix C of the NMP.*	Order section VI. C. 4
40 CFR 122.42 (e) (5) (i) (A) – Regarding methodology to account for the amounts of nitrogen and phosphorus to be land applied.	• *The Discharger shall use the following equation, established by Appendix E, Sampling and Record Keeping Requirements, of its NMP for determining the volume (gallons) of wastewater to apply per acre.* *Volume to apply per 1,000 acres = Target application rate / [(NO_3-N x 0.008345) + (NH_4-N x 0.008345) + (Organic N x 0.008345)]*	MRP section IX. B
40 CFR 122.42 (e) (1) (ix) – Regarding record keeping	• The Discharger shall adhere to the record keeping procedures established by Appendix E (Sampling and Record Keeping Requirements) of its NMP. • The Discharger shall maintain records to document implementation of operation and maintenance standards included in *NRCS Conservation Practice Standard Codes 590* (Nutrient Management) and *449* (Irrigation Water Management) • The Discharger shall certify in its Annual Report that, during the previous calendar year, mortalities were placed in a designated, fenced and secure area, where runoff is directed to a wastewater storage pond, until mortalities were removed from the site. • The Discharger shall certify in its Annual Report that, during the previous calendar year, no chemicals handled onsite, including petroleum products, were placed, disposed of, or spilled to any onsite manure, litter, process wastewater storage or treatment system.	MRP section I. G MRP section I. H MRP section X. C MRP section X. C

4. Construction, Operation, and Maintenance Specifications

Most construction, operation, and maintenance specifications have been retained from the previous permit; however, additional specifications have been added as enforceable permit terms as indicated by Table F-2, above. These "additional specifications" have been established pursuant to NPDES regulations at 40 CFR 122.42 (e) (5), which require that terms of the NMP, which address application rates

pursuant to 40 CFR 122.42 (e) (1) (viii) must be established as enforceable terms of the Order.

5. Special Provisions for Municipal Facilities (POTWs Only)

This section of the standardized permit template is not applicable.

6. Compliance Schedules

This section of the standardized permit template is not applicable.

7. Transfer of Waste

This provision of the Order restates the requirements of the NPDES regulations at 40 CFR 122.42 (e) (3), which are applicable when manure and/or process wastewater is transferred from the CAFO to another person.

IX. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Coast Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Joseph Gallo Farms Feed Lot. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations.

In an October 30, 2009 Regional Water Board letter, staff informed the discharger of our intent to have the Regional Water Board hear this item at its February 4, 2010 meeting. The letter also transmitted instructions (and a Public Notice) for the discharger to publish in a local newspaper. The discharger published the Public Notice on November 11, 2009, in the South County Newspapers, which consists of The King City Rustler, The Greenfield News, The Soledad Bee, and The Gonzales Tribune, stating that comments were due by December 18, 2009.

B. Written Comments

Interested persons were invited to submit written comments concerning these tentative WDRs. Monterey Coastkeeper submitted comments. In response to Monterey Coastkeeper's comments, Attachment C was replaced with a figure that shows the location of the on-site irrigation area and supply wells.

No other comments were received on the draft proposed Order.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: February 4, 2010
Time 8:30 am
Location: Central Coast Water Board Offices
895 Aerovista Place - Suite 101
San Luis Obispo, CA 93401

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/centralcoast/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling 805-549-3147.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Tom Kukol at (805) 549-3689 or Tkukol@waterboards.ca.gov.

ATTACHMENT G – SUMMARY OF CAFO REQUIREMENTS FROM 40 CFR 122 AND 412

Federal Rule	Requirement	Addressed by Order R3-2010-0004 at:
40 CFR 122.23 (b) (3)	Land application area is defined as land under control of the CAFO owner or operator, whether it is owned, rented, or leased, to which manure, litter, or process wastewater from the production area is or may be applied.	Attachment A
40 CFR 122.23 (b) (4)	A large CAFO is defined to include an animal feeding operation that confines 1,000 cattle or more, other than mature dairy cattle or veal calves, including heifers, steers, bulls, and cow/calf pairs.	Attachment A
40 CFR 122.23 (b) (7)	Process wastewater is defined to include water directly or indirectly used in the operation of a CAFO, including spillage or overflow from animal watering systems; washing, cleaning, flushing pens, barns, manure pits, or other CAFO facilities; direct contact washing of animals; and any water that comes into contact with raw materials, products, or byproducts such as manure, litter, and bedding.	Attachment A
40 CFR 122.23 (b) (8)	Production area is defined to include the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The definition provides several examples of animal confinement areas, manure storage areas, raw materials storage areas, and waste containment areas.	Attachment A
40 CFR 122.23 (d) (1)	Requires an NPDES permit if a CAFO discharges or proposes to discharge. A CAFO proposes to discharge if it is designed, constructed, operated, or maintained such that a discharge will occur.	Not directly addressed by the Order. Regional Water Board's requirement for permit coverage does address.
40 CFR 122.23 (i) (3)	Establishes procedures for a CAFO to certify that it does not discharge or propose to discharge. Important to note that 40 CFR 122.23 (i) (3) describes specific submittals that a CAFO owner or operator must submit to the permitting authority to certify that it does not discharge or propose to discharge. (i.e., the onus is on the Discharger to gain a "No Discharge" certification, and therefore fall out of the permit requirement.	Not addressed by the Order
40 CFR 122.42 (e)	All permits issued to CAFOs must include the following 9 requirements.	
40 CFR 122.42 (e) (1)	Permit must require implementation of a Nutrient Management Plan that includes, at a minimum, BMPs and limitations and standards to meet applicable ELGs at 40 CFR Part 412. To the extent applicable, the NMP must address 9 requirements established at 40 CFR 122.42 (e) (1) (i – ix).	VI. C. 3
40 CFR 122.42 (e) (1) (i – viii)	To the extent applicable, the NMP must address 9 requirements established at 40 CFR 122.42 (e) (1) (i – ix). i. Ensure adequate storage of manure, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities. ii. Ensure proper management of mortalities to ensure that they are not disposed of in a liquid manure, storm water, or process wastewater storage or treatment system that is not specifically designed to treat animal mortalities.	VI. C. 3. b

	iii. Ensure that clean water is diverted from the production area. iv. Prevent direct contact of concentrated animals with waters of the U.S. v. Ensure that chemicals and other contaminants handled on site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants. vi. Identify site-specific conservation practices to be implemented, including appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the U.S. vii. Identify protocols for appropriate testing of manure, litter, process wastewater, and soil. viii. Establish protocols to land apply manure in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater. ix. Identify specific records that will be maintained to document the implementation and management of the minimum elements described in i through viii, above.	
40 CFR 122.42 (e) (2)	A copy of the Permittee's site-specific Nutrient Management Plan must be maintained onsite and be available to the Regional Water Board upon request. The Permittee must create and maintain for 5 years, and make available to the permitting authority: (A) Applicable records identified pursuant to 40 CFR 122.42 (e) (1) (ix). (B) Records specified in 40 CFR 412.37 (b and c).	MRP X. F
40 CFR 122.42 (e) (3)	Prior to transferring manure, litter, or process wastewater to other persons, large CAFOs must provide the recipient of the manure, litter, or process wastewater witht e most current nutrient analysis, which must conform to the requirements of 40 CFR Part 412. Large CAFOs must retain, for 5 years, records of the date, recipient name and address, and approximate amount of manure, litter, or process wastewater transferred.	VI. C. 7
40 CFR 122.42 (e) (4)	Requires submittal of an Annual Report to the Regional Water Board, which must include the following items (i – viii)	MRP X. C
40 CFR 122.42 (e) (4) (i)	The number and type of animals (mature dairy cows, dairy heifers, veal calves, etc) in confinement, whether in open confinement or under roof.	MRP X. C
40 CFR 122.42 (e) (4) (ii)	Estimate of the amount of manure, litter, and process wastewater generated in the previous 12 months.	MRP X. C
40 CFR 122.42 (e) (4) (iii)	Estimate of the amount of manure, litter, and process wastewater transferred to another person in the previous 12 months.	MRP X. C
40 CFR 122.42 (e) (4) (iv)	Number of acres for land application covered by the NMP.	MRP X. C
40 CFR 122.42 (e) (4) (v)	Number of acres under control of the CAFO that were used for land application of manure, litter, and process wastewater in the previous 12 months.	MRP X. C
40 CFR 122.42 (e) (4) (vi)	Summary of discharges of manure, litter, and process wastewater from the production area in the previous 12 months, including date, time, and approximate volume.	MRP X. C
40 CFR 122.42 (e) (4) (vii)	A statement indicating whether the current NMP was developed or approved by a certified nutrient management planner.	MRP X. C
40 CFR 122.42	Crops planted and yield for each field, the nitrogen and phosphorus	MRP X. C

(e) (4) (viii)	content of the manure, litter, and process wastewater, results of calculations conducted in accordance with 40 CFR 122.42 (e)(5)(i)(B) and (e)(5)(ii)(D), and the amount of manure, litter, and process wastewater applied to each field during the previous 12 months. For any CAFO that implements an NMP that addresses rates of application in accordance with 40 CFR 122.42 (e)(5)(ii), the results of any soil testing for nitrogen and phosphorus conducted in the preceding 12 months, data used in calculations conducted in accordance with 40 CFR 122.42 (e)(5)(ii)(D), and the amount of any supplemental fertilizer applied during the previous 12 months.	
40 CFR 122.42 (e) (5)	**This provision of the new (2008) CAFO rule establishes what terms of the NMP shall become enforceable terms of the NPDES permit.** The permit must require compliance with information, protocols, BMPs, and other conditions of the NMP, which are necessary to meet the requirements of 40 CFR 122.42 (e)(1). The terms of NMP regarding land application established at 40 CFR 122.42 (e) (1) (viii) and 40 CFR 412.4 (c) must include: the fields available for land application; field-specific rates of application developed in accordance with 40 CFR 122.42 (e)(5)(i and ii); and any timing limitations identified in the NMP regarding land application on the fields available. The NMP must address rates of application using **one of the following two approaches (i or ii)**, unless the Regional Water Board specifies that only one of these approaches may be used.	See Fact Sheet VIII. C. 3
40 CFR 122.42 (e) (5) (i)	Linear Approach (an approach that expresses rates of application as pounds of nitrogen and phosphorus) – Instruct the Discharger to consult the specific language and requirements established by the USEPA at 40 CFR 122.42 (e) (5) (i). Those requirements are summarized as follows. (A) NMP terms must include maximum application rates for each year of permit coverage - for each crop identified in the NMP, expressed as pounds per acre and pounds per year, for each field to be used for land application. The NMP must identify certain factors necessary to determine application rates, including: the outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field; the crops to be planted in each field or any other uses of a field (e.g., pasture or fallow field); the realistic yield goal for each crop or use identified for each field; the nitrogen and phosphorus recommendations from sources approved by the Regional Water Board for each crop or use identified for each field; credits for all nitrogen in the field that will be plant available; consideration of multi-year phosphorus application; and accounting for all other additions of plant available nitrogen and phosphorus to the field. In addition, NMP terms must include the form and source of manure, litter, and process wastewater to be land-applied; the timing and method of land application; and the methodology by which the NMP accounts for the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied. (B) At least one time each year, large CAFOs must calculate the maximum amount of manure, litter, and process wastewater to be land applied using the results of the most recent representative manure, litter, and process wastewater tests for nitrogen and phosphorus taken within 12 months.	See Fact Sheet VIII. C. 3

40 CFR 122.42 (e) (5) (ii)	Narrative Approach (an approach that expresses rates of application as a narrative rate of application that results in the amount, in tons or gallons, of manure, litter, and process wastewater to be land applied) - Instruct the Discharger to consult the specific language and requirements established by the USEPA at 40 CFR 122.42 (e) (5) (ii). Those requirements are summarized as follows. (A) NMP terms must include maximum amounts of nitrogen and phosphorus derived from all sources of nutrients, for each crop identified in the nutrient management plan, expressed in pounds per acre for each field. The NMP must identify certain factors necessary to determine application rates, including: the outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field; the crops to be planted in each field or any other uses (e.g., pasture or fallow fields), including alternative crops identified in accordance with 40 CFR 122.42 (e)(5)(ii)(B); the realistic yield goal for each crop or use identified for each field; and the nitrogen and phosphorus recommendations from sources from sources approved by the Regional Water Board for each crop or use identified for each field. In addition, NMP terms must describe the methodology by which the NMP accounts for the following factors when calculating the amounts of manure, litter, and process wastewater to be land applied: results of soil tests conducted in accordance with protocols identified in the NMP, as required by 40 CFR 122.42 (e)(1)(vii); credits for all nitrogen in the field that will be plant available; the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied; consideration of multi-year phosphorus application; accounting for all other additions of plant available nitrogen and phosphorus to the field; the form and source of manure, litter, and process wastewater; the timing and method of land application; and volatilization of nitrogen and mineralization of organic nitrogen. (B) The NMP identifies alternative crops that are not in the planned crop rotation. When alternative crops are identified in the NMP, such crops must be listed by field in addition to the crops identified in the planned crop rotation for that field, and the nutrient management plan must include realistic crop yield goals and the nitrogen and phosphorus recommendations from sources approved by the Regional Water Board for each crop. Maximum amounts of nitrogen and phosphorus from all sources of nutrients and the amounts of manure, litter, and process wastewater to be applied must be determined in accordance with the methodology described at 40 CFR 122.42 (e)(5)(ii)(A). (C) For CAFOs using a narrative approach, the following projections must be included in the NMP but are not terms of the NMP: planned crop rotations for each field for the period of permit coverage; the projected amount of manure, litter, or process wastewater to be applied; projected credits for all nitrogen in the field that will be plant available; consideration of multi-year phosphorus application; accounting for all other additions of plant available nitrogen and phosphorus to the field; and the predicted form, source, and method of application of manure, litter, and process wastewater for each crop. Timing of application for each field, insofar as it concerns the calculation of rates of application, is not a term of the NMP. (D) At least one time each year, CAFOs using the narrative approach must calculate maximum amounts of manure, litter, and	Not Applicable as the Discharger has used the linear approach to express application rates

	process wastewater to be land applied using the methodology established at 40 CFR 122.42 (e)(5)(ii)(A) before land applying manure, litter, and process wastewater and must rely on the following data (1 and 2): (1) A field-specific determination of soil levels of nitrogen and phosphorus, including, for nitrogen, a concurrent determination of nitrogen that will be plant available, consistent with the methodology established by 40 CFR 122.42 (e)(5)(ii)(A), and for phosphorus, the results of the most recent soil test conducted in accordance with soil testing requirements approved by the Regional Water Board; and (2) The results of most recent representative manure, litter, and process wastewater tests for nitrogen and phosphorus taken within 12 months of the date of land application, in order to determine the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied.	
40 CFR 122.42 (e) (6)	Permit must require the following procedures when changes are made to an NMP plan, which has previously been submitted to the Regional Water Board.	VI. C. 3
40 CFR 122.42 (e) (6) (i)	The owner or operator must provide to the Regional Water Board the most current version of the NMP and identify changes from the previous version, except that the results of calculations made in accordance with the requirements of 40 CFR 122.42 (e)(5)(i)(B) and (e)(5)(ii)(D) are not required for this submittal.	VI. C. 3
40 CFR 122.42 (e) (6) (ii)	Based on review of the revised NMP, the Regional Water Board must determine whether the changes to the NMP necessitate revision to the terms of the NMP, which are incorporated into the. If revision to the terms of the NMP is not necessary, the Regional Water Boardr must notify the owner or operator, and upon such notification the CAFO may implement the revised NMP. If revision to the terms of the NMP is necessary, the Regional Water Board must determine whether such changes are substantial changes as described at 40 CFR 122.42 (e)(6)(iii). (A) If the Regional Water Board determines that changes to the terms of the NMP are not substantial, the Regional Water Board must make the revised NMP publicly available and include it in the permit record, revise the terms of the NMP incorporated into the permit, and notify the owner or operator and inform the public of any changes to the terms of the NMP that are incorporated into the permit. (B) If the Director determines that the changes to the terms of the NMP are substantial, the Director must notify the public and make the proposed changes and the information submitted by the owner or operator available for public review and comment. The process for public comments, hearing requests, and the hearing process must follow procedures applicable to draft permits set forth in 40 CFR 124.11 - 124.13. The Regional Water Board may establish, either by regulation or in the permit, an appropriate period of time for the public to comment and request a hearing on the proposed changes that differs from the time period specified in 40 CFR 124.10. The Regional Water Board must respond to all significant comments received during the comment period as provided in 40 CFR 124,17, and require the owner or operator to further revise the NMP if necessary to approve the revision to the terms of the NMP incorporated into the permit. Once the Regional Water Board incorporates the revised terms of the NMP into the permit, the	These are responsibilities of the Regional Water Board

	Regional Water Board must notify the owner or operator and inform the public of the final decision concerning revisions to the terms and conditions of the permit.	
40 CFR 122.42 (e) (6) (iii)	Substantial changes to the terms of an NMP incorporated as terms and conditions of a permit include, but are not limited to: (A) Addition of new land application areas not previously included in the NMP, except that if the land application area that is being added to the NMP is covered by terms of an NMP incorporated into an existing NPDES permit in accordance with the requirements of 40 CFR 122.42 (e)(5), and the owner or operator applies manure, litter, or process wastewater on the newly added land application area in accordance with the existing field-specific permit terms applicable to the newly added land application area, such addition of new land would be a change to the new owner or operator's NMP but not a substantial change for purposes of this section; (B) Any changes to the field-specific maximum annual rates for land application, as set forth at 40 CFR 122.42 (e)(5)(i), and to the maximum amounts of nitrogen and phosphorus derived from all sources for each crop, as set forth at 40 CFR 122.42 (e)(5)(ii); (C) Addition of any crop or other uses not included in the terms of the NMP and corresponding field-specific rates of application expressed in accordance with 40 CFR 122.42 (e)(5); and (D) Changes to site-specific components of the NMP, where such changes are likely to increase the risk of nitrogen and phosphorus transport to waters of the U.S.	These are definitions which are not incorporated into the permit but are still applicable.
40 CFR 412.4 (c)	CAFOS must land apply manure, litter, and process wastewater in accordance with the following practices (1 – 5)	VI. C. 3
40 CFR 412.4 (c) (1)	CAFOs must develop and implement NMPs that incorporate the requirements of (2 – 5), below, based on a field specific assessment of the potential for nitrogen and phosphorous transport from the field and that addresses the form, source, amount, timing, and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorous movement to surface waters.	VI. C. 3. a
40 CFR 412.4 (c) (2)	Application rates for manure, litter, and other process wastewater must minimize phosphorus and nitrogen transport from the field to surface waters in compliance with the technical standards for nutrient management established by the Regional Water Board. Such technical standards for nutrient management shall: (i) Include a field-specific assessment of the potential for nitrogen and phosphorus transport from the field to surface waters, and address the form, source, amount, timing, and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorus movement to surface waters; and (ii) Include appropriate flexibilities to implement nutrient management practices to comply with the technical standards, including consideration of multi-year phosphorus application on fields that do not have a high potential for phosphorus runoff to surface water, phased implementation of phosphorus-based nutrient management, and other components, as determined appropriate by the Regional Water Board.	VI. C. 4
40 CFR 412.4 (c) (3)	Manure must be analyzed a minimum of once annually for nitrogen and phosphorus content, and soil analyzed a minimum of once	MRP IX. B

	every five years for phosphorus content. The results of these analyses shall be used in determining application rates for manure, litter, and other process wastewater.	
40 CFR 412.4 (c) (4)	The operator must periodically inspect equipment used for land application of manure, litter, or process wastewater.	VI. C. 4
40 CFR 412.4 (c) (5)	Unless the CAFO exercises one of the compliance alternatives provided for in 40 CFR 412.4 (c)(5)(i or ii), manure, litter, and process wastewater may not be applied closer than 100 feet to any down-gradient surface waters, open tile line intake structures, sinkholes, agricultural well heads, or other conduits to surface water. (i) As an alternative, the CAFO may substitute the 100-foot setback with a 35-foot wide vegetated buffer where applications of manure, litter, or process wastewater are prohibited. (ii) As an alternative, the CAFO may demonstrate that a setback or buffer is not necessary because implementation of alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions that would be achieved by the 100-foot setback.	VI. C. 4
40 CFR 412.31 (a)	There shall be no discharge of manure, litter, or process wastewater pollutants into waters of the U.S. from the production area. Whenever precipitation causes an overflow of manure, litter, or process wastewater, pollutants in the overflow may be discharged if the production area is designed, constructed, operated, and maintained to contain all manure, litter, and process wastewater including the runoff and the direct precipitation from a 25 year, 24 hour rainfall event.	IV. A. 1. b
40 CFR 412.31 (c)	For the control of discharges from land application areas, CAFOs must develop and implement BMPs required by 40 CFR 412.4 and must maintain records required by 40 CFR 412.37 (c).	VI. C. 3. a
40 CFR 412.37 (a)	Each CAFO subject to this subpart must implement the following requirements:	
40 CFR 412.37 (a) (1)	There must be routine visual inspections of the CAFO production area. At a minimum, the following must be visually inspected: (i) Weekly inspections of all storm water diversion devices, runoff diversion structures, and devices channelling contaminated storm water to the wastewater and manure storage and containment structure; (ii) Daily inspection of water lines, including drinking water or cooling water lines; (iii) Weekly inspections of the manure, litter, and process wastewater impoundments; the inspection will note the level in liquid impoundments as indicated by the depth marker in paragraph (a)(2) of this section.	VI. C. 4
40 CFR 412.37 (a) (2)	Open surface impoundments must have a depth marker which indicates the minimum capacity necessary to contain the runoff and direct precipitation of the 25-year, 24-hour rainfall event.	VI. C. 4
40 CFR 412.37 (a) (3)	Deficiencies found as a result of inspections must be corrected as soon as possible.	VI. C. 4
40 CFR 412.37 (a) (4)	Mortalities must not be placed in any liquid manure or process wastewater system and must be handled in a way to prevent the discharge of pollutants to surface water, unless alternative technologies pursuant to 40 CFR 412.31(a)(2) and approved by the Regional Water Board are designed to handle mortalities.	III. E

40 CFR 412.37 (b)	Each CAFO must maintain on-site for a period of five years from the date they are created a complete copy of the information required by 40 CFR 122.21(i)(1) and 40 CFR 122.42(e)(1)(ix) and the records specified in 40 CFR 412.37 (b)(1 - 6). These records shall be available to the Regional Water Board upon request. (1) Records documenting the inspections required under paragraph 40 CFR 412.37 (a)(1) of this section; (2) Weekly records of the depth of the manure and process wastewater in liquid impoundments as indicated by the depth marker under 40 CFR 412.37 (a)(2); (3) Records documenting actions taken to correct deficiencies required under 40 CFR 412.37 (a)(3). Deficiencies not corrected within 30 days must be accompanied by an explanation of the factors preventing immediate correction; (4) Records of mortalities management and practices used to meet the requirements of 40 CFR 412.37 (a)(4) of this section; (5) Records documenting the current design of any manure or litter storage structures, including volume for solids accumulation, design treatment volume, total design volume, and approximate number of days of storage capacity; (6) Records of the date, time, and estimated volume of any overflow.	MRP X. F
40 CFR 412.37 (c)	Each CAFO must maintain on-site a copy of its site-specific NMP. Each CAFO must maintain on-site for a period of five years from the date they are created a complete copy of the information required by 40 CFR 412.4 and 40 CFR 122.42(e)(1)(ix) and the records specified in 40 CFR 412.37 (c)(1 - 10). These records must be available to the Regional Water Board upon request. (1) Expected crop yields; (2) The date(s) manure, litter, or process waste water is applied to each field; (3) Weather conditions at time of application and for 24 hours prior to and following application; (4) Test methods used to sample and analyze manure, litter, process waste water, and soil; (5) Results from manure, litter, process waste water, and soil sampling: (6) Explanation of the basis for determining manure application rates, as provided in the technical standards established by the Regional Water Board. (7) Calculations showing the total nitrogen and phosphorus to be applied to each field, including sources other than manure, litter, on process wastewater; (8) Total amount of nitrogen and phosphorus actually applied to each field, including documentation of calculations for the total amount applied; (9) The method used to apply the manure, litter, or process wastewater; (10) Date(s) of manure application equipment inspection.	MRP X. F

ATTACHMENT H – NUTRIENT MANAGEMENT PLAN

NUTRIENT MANAGEMENT PLAN
REVISED

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Prepared For:
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by Joseph Gallo Farms to complete a Nutrient Management Plan (NMP) for their feedlot located at 31701 Johnson Canyon Road, Gonzales California in the County of Monterey (Site).

The NMP will accompany a water discharge permit application and was designed to meet the requirements of the Environmental Protection Agency (EPA) Revised National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines for Concentrated Animal Feeding Operations in Response to the Waterkeeper Decision, Final Rule (EPA, 2008) as shown in Appendix A. The NMP is valid during the 5-year period of 2009 to 2014 as required by the term of the permit. The NMP was developed by Lolita Aumuller of CRA, who is an agronomist and Certified Nutrient Management Planner.

This report is based on information provided by Joseph Gallo Farms outlined in Section 2.0 and a site visit conducted in February 2009. It has been revised to incorporate more detail based on a series of questions and recommendations provided by the Water Board in a Memorandum dated May 27, 2009 prepared by Tetra Tech.

2.0 METHODOLOGY

Information for the NMP was obtained by Joseph Gallo Farms and included the 2004 Comprehensive Nutrient Management Plan (Joseph Gallo Farms, 2004), 2008 2nd Semi-Annual Report of Effluent Analysis Results and Weekly Freeboard Measurements for Joseph Gallo Farms' Feed Lot (Joseph Gallo Farms, 2008) and
Annual Report for Joseph Gallo Farms Gonzales Feedlot (Joseph Gallo Farms, 2009). Information related to the pond storage capacity included previous engineering measurements summarized in the revised Permit No. CA0050601 and a recent Aerial Survey completed in January, 2009.

As per regulatory requirements, the NMP was developed using the Manure Management Planner (MMP) with applications based on crop nitrogen requirements. Due to the inability of the MMP as discussed throughout this report, additional data was calculated using the Dairy Planning Tool (DPT) and the Animal Waste Management Software (AWM) as provided by the United States Department of Agriculture, Natural Resource Conservation Service (USDA-NRCS).

The DPT was utilized to provide supporting calculations to determine if the existing storage capacity was adequate. The limitations of the MMP included lack of consideration of rainfall runoff from the Site that is collected in the waste storage ponds, whereas the DPT is capable of providing this calculation. Additionally, the MMP does not have the capabilities for triple cropping of oat silage. Additional calculations and application rate descriptions are provided in this report to overcome the MMP limitations and were based on nitrogen requirements of the crop.

3.0 GENERAL OPERATIONAL DESCRIPTION/STORAGE

Based on previous surveys, the site is comprised of approximately 529 acres which include 101 acres of animal housing on earthen lots/corrals, 5 acres of feed storage, 26 acres used for composting activities, 64 acres of irrigated cropland, 2.5 acres of roofed area, and the remaining acreage being undeveloped land outside of these production areas.

At the present time the Site houses approximately 10,890 head of cattle of which 10,243 are heifers, 552 are bulls, and 95 are dry cows. The herd consists of approximately 70% Holsteins, 25% Jerseys, and 5% cross-breeds. All animals are housed in open animal pens. The Site has the capacity to house 30,000 head of cattle.

There are nine ponds on-site that hold waste water, clean storm water runoff or a combination of both. These ponds serve as evaporation/holding ponds for waste water and storm water prior to land application.

Ponds 1, 2 and 146 located on the northwest side of the Site are only used for waste water storage. The total storage capacity (excluding two-foot of freeboard) of these three wastewater ponds, based on earlier measurements, is 47.8 acre-feet. The wastewater stored in these ponds is precipitation runoff from the corrals and livestock housing areas. This area is approximately 101 acres in size and includes all earthen lots, gravel drives and concrete feed lanes. There is no contribution of freshwater to these ponds from the animal operations as this is not a dairy so there are no liquids generated from equipment or animal washing.

Ponds Lake Crandall West, Lake Crandall East, and 12A, located east of the corrals and production area, are used for storage of clean water runoff and/or waste water pumped from one of the three waste water ponds (1,2 or 146). The combined capacity of these three ponds is approximately 30 acre-feet based on earlier measurements. The runoff to these ponds includes approximately 31.1 acres that comprise the feed storage area and

the compost site. The ponds can also act as overflow ponds when the waste water storage ponds (1, 2 and 146) reach capacity or if the fresh water ponds (12B, 13N and 13S) up gradient reach capacity. Current management practices include weekly pond inspections and inspections after significant precipitation events. Waste water is balanced in the system by pumping or gravity flow to distribute the water from a full pond to a pond(s) that have capacity

Ponds 12B, 13N and 13S are located to the far east of the Site and are used for storage of clean water runoff from up gradient land that is not used for agricultural production. These ponds have a total estimated capacity of 41 acre-feet and receive runoff from an estimated 203 acres. This clean water is diverted to the freshwater ponds by diversion swales. Ponds 12B, 13N and 13S act as retention ponds to keep clean upgradient runoff from entering the production area with the water used for irrigation when necessary.

When the wastewater ponds are to be emptied, or irrigation water is needed, the wastewater is pumped from Pond 2 to Pond 12A which acts as the main irrigation pond for the cropland. Wastewater is gravity drained from Pond 146 to Pond 1 to Pond 2 through a series of valves and overflows. In a similar fashion, water from Lake Crandall West can be pumped to the irrigation pond 12A as necessary.

As part of the routine inspections of the Operation, the pond levels are inspected weekly and after significant precipitation events. The inspections are recorded and kept on file at the main Office. In the event that one of the waste water ponds reaches capacity, the water is pumped to a pond that has additional storage capacity to maintain the necessary freeboard. Equipment used for transferring water and wastewater are also inspected, prior to use. In addition, when the ponds are pumped down, the depth of solids is noted and these solids are cleaned out on an as required basis which generally occurs annually with solids taken to the composting site and ultimately transferred off-site.

Excreted solid manure collected from the animal pens is transported to a composting facility outside of the production area. Solid manure is not land applied. Collected waste water includes rainfall runoff from the animal pens and silage storage areas and rainfall directly into the ponds. The storage capacity was estimated to be 3,038,535 cubic feet (22,728,242 gallons) for ponds 1, 2, 146 and 12A based on the 2003 evaluation. In addition, there is additional storage volume in the Lake Crandall East and Lake Crandall West ponds that may be used as backup in the event that the waste water ponds could not be emptied due to wet field conditions.

The estimated volume of wastewater collected is provided by the DPT found in Appendix B. The volume of wastewater collected from runoff during the 120 day storage period of November to February was estimated at 1,950,280 cubic feet (ft^3) (14,588,000 gallons). The calculation assumed that all roof runoff, gravel and concrete drives, and other earthen surfaces were directed to the waste water ponds. The DPT calculations assumed that all roofed areas (110,128 ft^2) and all concrete feed lanes and pads (176,443 ft^2) drained to the wastewater ponds in addition to 132 acres of potentially manured surfaces. This 132 acres included the actual animal housing areas, the feed storage areas and the compost pad area. The DPT also calculated the existing storage capacity for waste water to be 2,266,400ft^2 (16,953,000 gallons using a conservative 2 foot freeboard for all ponds when in fact, ponds 1 and 146 would not require this much freeboard as they gravity drain to Pond 2. This assumption is a conservative approach and overestimates the volume of waste water collected.

As a second check on calculated volumes from the production area, the AWM was used to predict the volume of waste water that could be generated from the production area. The AWM software (AWM version 2.3.0) is a very conservative tool that generally over estimates the volume of water generated at a given site. The program was run using 101 acres, precipitation values for the Salinas station and a runoff curve number of 90. Based on the AWM results, the total volume of waste water generated from normal precipitation runoff was 9.0 million gallons. The total for the 25 year/24 hour storm event was an additional 4.56 million for a total of 13.56 million gallons.

As a final check on the minimum available storage, a topographic aerial survey was used to calculate the volume of wastewater storage on site. This survey was flown with contours generated at 5 foot intervals. Therefore the accuracy may be +/- 2.5 feet, however as a spot check, the contour lines were used to develop volume estimates for Ponds 1, 2, 146, Lake Crandall West and Lake Crandall East. This exercise showed that the estimated volume for the five ponds listed above was 1,881,500ft^3 (14.1 million gallons).

Based on the above ranges of estimated waste water production the conservative, higher end estimate (13.56 million gallons of wastewater produced) was used to determine the maximum waste water production. This was compared to the lower volume for required storage capacity (14.1 million gallons) to substantiate that the Site has sufficient storage to contain the generated wastewater.

Mortalities are managed by relocating the animals to a designated, fenced secured area for temporary storage until they can be picked up by the local rendering company which

is called when needed. This temporary storage area is designed to direct any runoff to the waste water storage pond.

Petroleum and chemical storage includes an above ground diesel storage tank (AST) located within a concrete secondary containment structure along with small quantities of "point of use" sized containers. There is no disposal of petroleum or chemicals compounds in the waste water ponds.

4.0 NUTRIENT APPLICATIONS

Nutrient applications at the Site consist of wastewater applications from Pond 12A as described in Section 3.0 of this report and freshwater irrigations from the Site's irrigation well. This section discusses the nitrogen (N) and phosphorus (P) nutrients available from these sources.

In order to characterize the wastewater, a wastewater sample was collected on October 28, 2008 and analyzed for constituents including total phosphorus, total Kjeldahl nitrogen, nitrate-nitrogen (NO_3-N), organic nitrogen, and total nitrogen. The analytical results and associated nutrient concentrations are as follows:

Constituent	*Concentration*	*Nutrient Concentration*
Phosphorus	1.8 mg/L	0.015 lbs/1,000 gallon
Total Kjeldahl Nitrogen	3.8 mg/L	0.032 lbs/1,000 gallon
Nitrate - Nitrogen	9.6 mg/L	0.080 lbs/1,000 gallon
Organic Nitrogen	1.9 mg/L	0.016 lbs/1,000 gallon
Total Nitrogen	13.0 mg/L	0.109 lbs/1,000 gallon

Note: lbs/1,000 gallons = concentration (mg/L) X 0.008345

The constituents utilized for the MMP are phosphorus oxide (P_2O_5), total nitrogen, and ammonium-nitrogen on a pound per 1,000 gallon basis. The calculated P_2O_5 is 0.034 pounds per 1,000 gallons (1.8 mg/L x 0.008345 x 2.3 P_2O_5/P). The calculated ammonium-nitrogen (NH_4-N) concentration (total Kjeldahl nitrogen minus organic matter) is 1.8 mg/L or 0.016 pounds per 1,000 gallons. The nutrient concentrations for P_2O_5, total nitrogen, and ammonium-nitrogen were too low to be entered in the MMP program; therefore, default values of 0.1 pounds per 1,000 gallons were entered.

Based on the analytical data, the estimated available nutrient concentration in the wastewater collected over a one year period was determined by multiplying the nutrient concentration by the total estimated volume of wastewater of 13,560,000 gallons, collected annually. The results are as follows:

Nutrient Concentration	*Nutrient Contribution from Wastewater per Year*
0.03 lbs/1,000 gallons P_2O_5	458 lbs
0.016 lbs/1,000 gallons NH_4-N	215 lbs
0.08 lbs/1,000 gallons NO_3-N	1,085 lbs
0.016 lbs/1,000 gallons Organic N	215 lbs

Additional N is available through mineralization of organic N. The concentration of organic N added to the system via wastewater applications is 215 pounds (1.9 mg/L X 0.008345 X 13,560,000 gallons). The rate of mineralization is dependent on several factors including C:N ratio, soil temperatures, and soil microbial populations. Assuming similar rates of application in the past and in the future, the N credits can be assumed to be similar. i.e. the minimal mineralization from organic material applied in 2009 is compensated by the cumulative mineralization of organic material applied in previous years.

Additional nutrient applications include nutrients added as a result of freshwater applications. Well analysis exhibited a nitrate concentration of 21 mg/L that contributes 0.175 pounds of available N per 1,000 gallons (21mg/L x 0.00835). The total estimated available N from freshwater applications, based on the total required freshwater requirement of 68,293,018 gallons provided in Table 1, is 11,951 pounds. An explanation of freshwater irrigations is further discussed in Section 6.0 of this report.

Therefore the annual available N from freshwater and wastewater, for crop uptake, through NO3-N, NH4-H, and mineralized organic matter is estimated at 13,927 pounds per the land application area (218 pounds per acre).

No other immediately available nutrient sources, such as fertilizers or solid manure, are added to the field.

It is recommended that wastewater and irrigation water samples continue to be collected and analyzed using methods described in Appendix E.

5.0 LAND APPLICATION

This section discusses the land application area and the N and P uptake potential for nutrients described in Section 4.0 of this report.

All wastewater collected on site is land applied on 64 acres of cropland via sprinkler irrigation. The soil within this land application area is described as a Gloria sandy loam with slopes ranging from 2 to 9%. An intermittent stream is located approximately 670 feet south of the land application area. The 100-foot set-back from this stream is therefore maintained.

The field is triple cropped to oats with an approximate yield of 12 tons per acre. California NRCS values for nitrogen (N) uptake of oats is 14 pounds of N per ton of oats per crop, which correlates to 168 pounds of N per acre or 504 pounds per acre of N annually, for the triple crop. Therefore, the triple-cropped field is capable of taking up 32,256 pounds of N annually.

Phosphorus (P) uptake values, based on 3.7 pounds of P per ton of oats, correlates to 44.4 pounds per acre or 133 pounds per acre annually. Therefore, the triple-cropped field is capable of taking up 8,525 pounds of P annually.

6.0 RATES OF APPLICATION

This section discusses the rates of application for wastewater and freshwater irrigations.

Reports produced by the MMP are presented in Appendix C and include the Annual Field Nutrient Needs, Field Nutrient Balance, and Field Nutrient Status Details.

The Annual Field Nutrient Needs supports the annual field crop requirements of 32,256 pounds of N and 8,512 pounds of P as calculated in Section 5.0 above.

The Field Nutrient Balance Report shows an N and P deficit for the field, for all years of application. The annual N available in the wastewater and freshwater was calculated in Section 4.0 at 13,927 pounds of N. Compared to the annual plant uptake of 32,256 pounds of N, the N deficit would be 18,329 pounds. Therefore, an additional 18,329 pounds of N (75 pounds per acre per crop) could be applied to meet the recommended agronomic rates.

Similarly, the annual P available in the wastewater was calculated at 458 pounds. Compared to the annual plant uptake of 8,525 pounds of P, the P deficit would be 8,068 pounds. Therefore, an additional 8,068 pounds of P (42 pounds of P per acre per crop) could be applied to meet the recommended agronomic rates. Note that the calculated deficits will not directly correlate to those provided in the Field Nutrient Balance Report due to the MMP limitations discussed earlier.

The Field Nutrient Status Details Report provides an outline of wastewater and freshwater applications. The application rates were based on the monthly crop water needs provided in Table 1. Approximately 16,950,000 gallons (0.97 acre-inches) would be applied to the field each month, from March to October of each year, via sprinkler irrigation. The Field Nutrient Status Details Report shows an N and P deficit for each year of maximum wastewater applications.

7.0 POTENTIAL NITROGEN AND PHOSPHOROUS TRANSPORT

The Revised Universal Soil Loss Equation (RUSLE2) was used to calculate soil loss due to sheet and rill erosion from the field. The soil loss was found to be below the tolerable (T) soil loss value for the field. It should be noted that RUSLE2 is not well equipped to handle triple cropping of oat silage. The T-value is 4 tons per acre per year. Comparatively, the Web Soil Survey provided a lower classification with a T-value of 2 tons per acre per field. N losses from the field include leaching of nitrate and soil transport of ammonium although the anticipated N loss from the field is low due to the low concentration of nitrate and ammonium applied to the field.

Phosphorus management involves planning the rates of P application for manure, commercial fertilizer, or other organic byproducts. The planned application rates must be consistent with the P Index.

Nutrients applied to fields pose a risk to degrading surface water from polluted runoff entering water bodies. Soil erosion will be controlled to tolerable soil loss limits as determined by RUSLE2. By reducing soil erosion, the risk of nutrients entering waterbodies via runoff is also reduced.

Phosphorus management involves planning the rates of P application for manure, commercial fertilizer, or other organic byproducts. The planned application rates must be consistent with the P Index. The P Index is a planning tool designed to evaluate risk of P loss from individual agricultural fields to water bodies of concern for P pollution. The P index can help determine appropriate practices to minimize phosphorus transport

into surface waters through Low, Medium, High, and Very High ratings. A Low P Index rating allows the field to have nutrient recommendation based on nitrogen application. A Medium P Index rating also allows the nutrient application plan to be nitrogen based, but additional best management practices (BMP) should be followed in order to reduce the risk of phosphorous movement. When the P Index moves into a High rating, the field will be managed on a phosphorous-based plan, which includes a phosphorous reduction. Reducing the fertilizer application rate does not necessarily lower the P Index sufficiently to obtain a low phosphorus movement risk level. Ensuring that the nutrients are applied in the spring and incorporated within 24 hours will significantly reduce the risk of phosphorus movement from fields

RUSLE2 was used to calculate soil loss due to erosion from the field. Soil phosphorous content values from soil analytical results for the Site were used in the P Index calculations. The P Index should be re-calculated each time soil analytical reports become available or the field cropping plan affecting RUSLE2 changes in the future.

The P Index for this field indicated a Low potential for phosphorus movement from the field. The Initial Risk Assessment indicated that further use of the P Index was not required as there are no pathways for P to move off-site (i.e. surface runoff collected by ponds, no tailwater system, no tile drainage, no sub-surface piping, and no seepage from shallow groundwater to surface water). Additionally, the field is described with a low T value between 2.0 and 4.0 tons/acre/year; no ephemeral gully erosion, no tailwater discharge, no subsurface drainage, no efficient outlet to a drainage system no flooding hazard, distance to perennial surface water greater than 500 feet; and low soil P concentration and organic P application.

8.0 CONSERVATION PRACTICES

Nutrient application rates should consider current soil test results, realistic yield goals, and management capabilities. When manure or organic by-products are used, the nitrogen availability of the planned application rates shall match plant uptake characteristics as closely as possible, taking into consideration the timing of nutrient application(s) in order to minimize leaching and atmospheric losses. Application of manure and/or other organic byproducts can lead to the need for an additional nitrogen application, if the planning is based on phosphorus requirements, to ensure the recommended amounts of nitrogen are applied.

Conservation practices will include the NRCS Conservation Practice Standard Code 590 for Nutrient Management (CPS 590) provided in Appendix D. The CPS-590 includes

soil, manure, irrigation water and tissue sampling and laboratory analyses; nutrient application rates, timing, and methods; and record keeping. The sampling protocols and schedules and the record keeping requirements are outlined in Appendix E. The nutrient application rates, timing, and methods were discussed in Section 6.0.

Additional considerations include the NRCS Conservation Practice Standard Code 449 for Irrigation Water Management (CPS 449) is provided in Appendix D. The purpose of the CPS-449 is to manage soil moisture; optimize available water supplied; minimize irrigation induced soil erosion; decrease non-point source pollution; manage salts in the crop root zone; manage the air soil and/or plant micro-climate; properly and safely chemigate or fertilize; and improve air quality. For the purpose of nutrient management the focus was placed on managing soil moisture and minimizing irrigation induced soil erosion

The Gloria sandy loam soil type is classified as Hydrologic Group D. Soils in Hydrologic Group D typically have the lowest potential for N leaching from the root zone but the highest potential for N runoff. The following practices will also be implemented to reduce the potential for runoff:

- Eliminate N applications during periods of soil saturation that tend to occur from November to February;
- Apply nutrient materials uniformly to the field through proper use of irrigation equipment;
- Split N applications to provide nutrients at times of maximum crop utilization; and
- Avoid excessive irrigation by applying the recommended rate and following the timing of applications as discussed in section 6.0.

9.0 REVIEW AND CHANGES TO THE NUTRIENT MANAGEMENT PLAN

Review and changes to the NMP are not expected until permit renewal in 2014. However, it is recommended that the NMP be reviewed annually in conjunction with any new soil or liquid testing results to ensure that applications are conducted as recommended. Any changes to the current procedures would also warrant a review of the NMP.

10.0 REFERENCES

EPA, 2008. Revised National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines for Concentrated Animal Feeding Operations in Response to the Waterkeeper Decision, Final Rule.

Joseph Gallo Farms, 2004. Comprehensive Nutrient Management Plan.

Joseph Gallo Farms, 2008. 2nd Semi-Annual Report of Effluent Analysis Results and Weekly Freeboard Measurement for Joseph Gallo Feed Lot.

Joseph Gallo Farms, 2009. Annual Report for Joseph Gallo Farms Gonzales Feedlot.

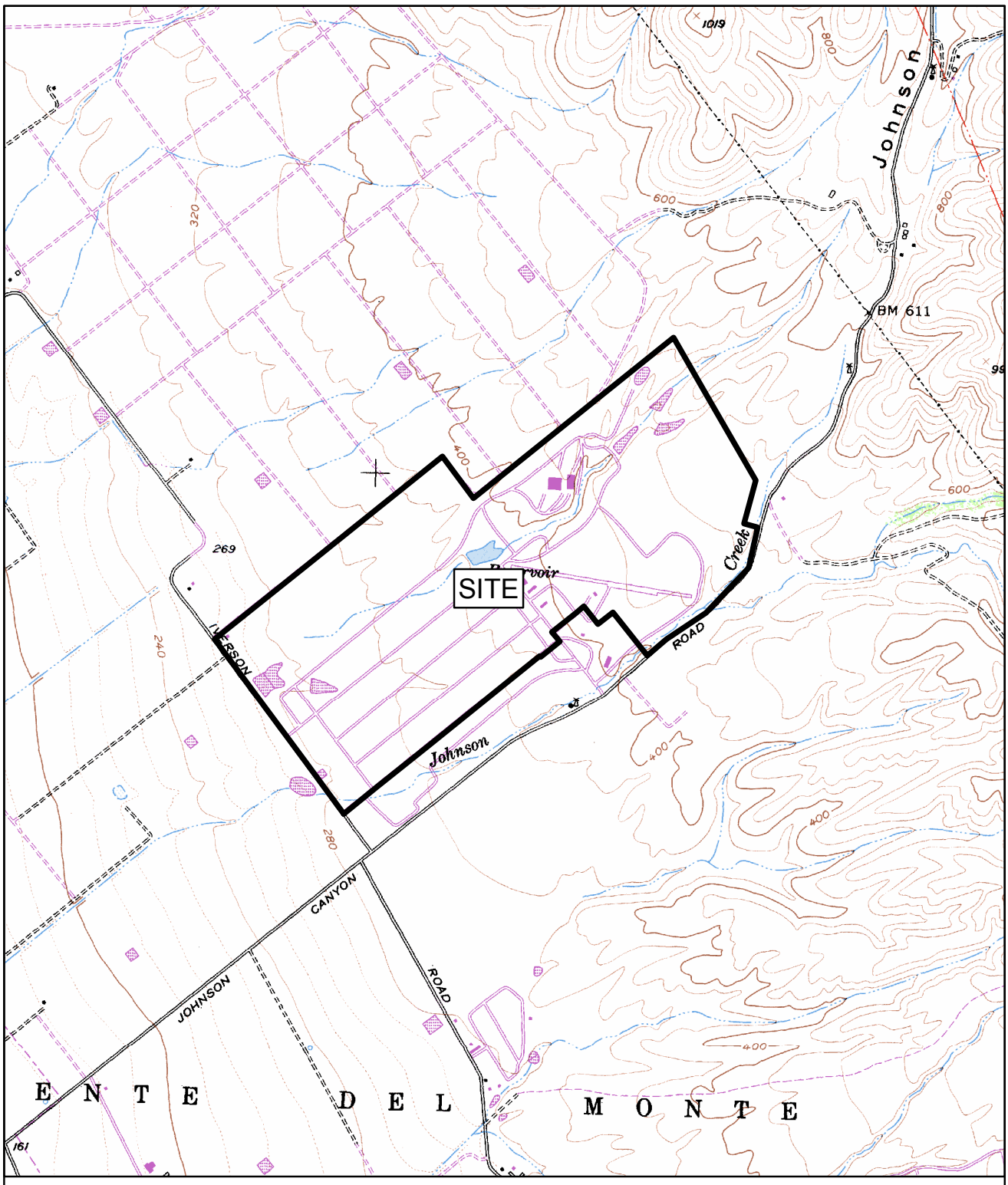
USDA-NRCS Agricultural Waste Management Field Handbook, Chapter 4 - Agricultural Waste Characteristics.

USDA-NRCS National Agronomy Manual (NAM) Section 503.

USDA-NRCS, 2004. Guide for Completing a Comprehensive Nutrient Management Plan (CNMP) for Confined Animal Facilities in California (Dairies), Version 3, Draft 1.

USDA-NRCS Revised Universal Soil Loss Equation. http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm

USDA-NRCS Web Soil Survey. http://websoilsurvey.nrcs.usda.gov



SOURCE:
USGS 7.5 MINUTE QUAD
GONZALES, CA

N

0 1,000 2,000

Feet

figure 1

SITE LOCATION
GALLO FARMS - HEIFER CITY
Gonzales, California

52271-00(MISC001)GIS-SP001 MAR 30/2009

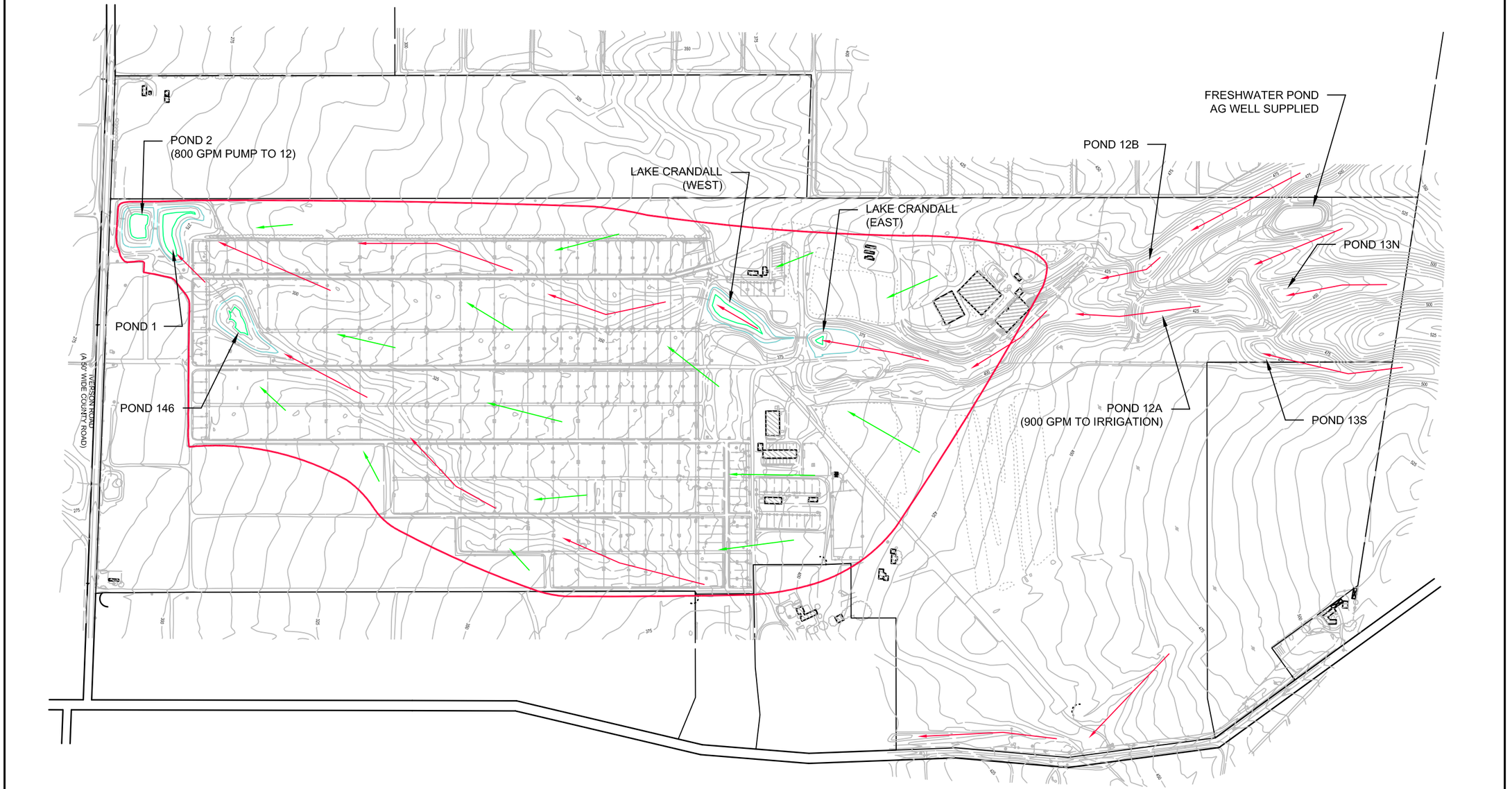


figure 2

SURFACE WATER FLOW
HEIFER CITY
GALLO FARMS
Gonzales, California

052271-00(PERE001)GN-SP001 Jul 13/2009

TABLE 1

CROP WATER REQUIREMENTS FOR OATS
JOSEPH GALLO FARMS
GONZALES CALIFORNIA

Month	*Crop Water Use* [1] *(in./day)*	*Days / Month*	*Crop Water Use (in./month)*	*Precipitation* [2] *(in./month)*	*Irrigation Requirements* [(3)] *(in./month/acre)*	*Irrigation Requirements* [(3)] *(gal/month/acre)*	*Irrigation Requirements* [(3)] *(gal/month/field)*	*Maximum Wastewater Applications* [(4)] *(gal/month/field)*	*Freshwater Applications* [(5)] *(gal/month/field)*
January	0.03	31	0.93	2.15	-1.22	0	0	0	0
February	0.06	28	1.68	1.84	-0.16	0	0	0	0
March	0.11	31	3.41	2.13	1.28	34,757	2,224,456	1,695,000	529,456
April	0.17	30	5.1	1.06	4.04	109,702	7,020,938	1,695,000	5,325,938
May	0.24	31	7.44	0.16	7.28	197,681	12,651,592	1,695,000	10,956,592
June	0.28	30	8.4	0.09	8.31	225,650	14,441,583	1,695,000	12,746,583
July	0.3	31	9.3	0.04	9.26	251,446	16,092,547	1,695,000	14,397,547
August	0.26	31	8.06	0.06	8	217,232	13,902,848	1,695,000	12,207,848
September	0.19	30	5.7	0.23	5.47	148,532	9,506,072	1,695,000	7,811,072
October	0.13	31	4.03	0.57	3.46	93,953	6,012,982	1,695,000	4,317,982
November	0.04	30	1.2	1.78	-0.58	0	0	0	0
December	0.03	31	0.93	2.02	-1.09	0	0	0	0

68293017.6

Notes:

(1) Guide for Completing a Comprehensive Nutrient Management Plan (CNMP) for Confined Animal Facilities in California (Dairies), Version 3, Draft 1. June 1, 2004. Table 4-C-2. Normal Year Crop Water Use for Cool Season.
(2) Climate Data from Animal Waste Management Software (Monterey County, Salinas FFA Airport).
(3) Irrigation Requirements = Crop Water Use (in./month) - Precipitation (in./month)
(4) Maximum Wastewater Requirements = Total Volume of Wastewater Produced (13,560,000 gallons) / 8 application months
(5) Freshwater Applications = Irrigation Requirements (gal/month/field) - Maximum Wastewater Applications (gal/month/field)

APPENDIX A

EPA REVISED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT REGULATION AND EFFLUENT LIMITATIONS GUIDELINES FOR CONCENTRATED ANIMAL FEEDING OPERATIONS IN RESPONSE TO THE WATERKEEPER DECISION, FINAL RULE

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F			D
1 2	13	14	15

LABEL ITEMS	
I.	EPA I.D. NUMBER
III.	FACILITY NAME
V.	FACILITY MAILING ADDRESS
VI.	FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)	X		X
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

Joseph Gallo Farms-Heifer City

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: Roland Perez; Environmental Administrator

B. PHONE *(area code & no.)*: (209) 394-7984

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX: 10561 West Highway 140

B. CITY OR TOWN: Atwater

C. STATE: CA

D. ZIP CODE: 95301

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 31701 Johnson Canyon Road

B. COUNTY NAME: Monterey

C. CITY OR TOWN: Gonzales

D. STATE: CA

E. ZIP CODE: 93926

F. COUNTY CODE *(if known)*:

EPA Form 3510-1 (8-90)

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
0241 *(specify)* Dairy Replacement Stock-Heifers	*(specify)*

C. THIRD	D. FOURTH
(specify)	*(specify)*

VIII. OPERATOR INFORMATION

A. NAME: Joseph Gallo Farms

B. Is the name listed in Item VIII-A also the owner? ☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P *(specify)*

D. PHONE *(area code & no.)*: A (209) 394-7984

E. STREET OR P.O. BOX: 10561 West Highway 140

F. CITY OR TOWN: Atwater

G. STATE: CA

H. ZIP CODE: 95301

IX. INDIAN LAND: Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
N CA0050601	P

B. UIC *(Underground Injection of Fluids)*	E. OTHER *(specify)*
U	R3-2003-0126 *(specify)* WDR Order

C. RCRA *(Hazardous Wastes)*	E. OTHER *(specify)*
R	*(specify)*

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

The Joseph Gallo Farms-Heifer City Facility raises dairy replacement cattle (heifers) for its operating dairy farms. Young calves are brought to this facility where they are raised to 22-24 months. The heifers are then brought back to one of the operating Farms. The bull calves are sold.

The site is approximately 529 acres in size, 101 acres of this site is used as a production area and 31 acres is used for feed storage and solid manure composting. The remaining land is open land with portions being used storm water retention ponds and cropland. Figure 1 shows the facility location on a USGS topographic map and includes surface water features. Figure 2 shows the site features including pens, feed lanes, buildings, cropland and stormwater and wastewater evaporation/storage ponds. In addition, Figure 2 shows the surface water flow patterns based on a recent survey of the site.

Waste water is collected and contained in 3 ponds (ponds 1,2 and 146). Stormwater from the site is contained in ponds 12B, 13N and 13S. The center ponds (Lake Crandall East and West, and 12A) are used to contain either waste water or storm water as necessary. Stormwater and waste water that has not evaporated is used as irrigation water on a 64 acre field in the north east portion of the site. Solid manure is composted on site and shipped off site as fertilizer.

See the Nutrient Management Plan dated March 2009 (attached) for additional detail in volumes generated, storage capacity and end use (irrigation) of the liquids.

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, 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.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
Michael D. Gallo - CEO		07-20-09

COMMENTS FOR OFFICIAL USE ONLY

EPA Form 3510-1 (8-90)

Form Approved
OMB No. 2040-0250
Approval expires 12-15-05

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)

FORM 2B NPDES	**EPA**	U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATIONS FOR PERMIT TO DISCHARGE WASTEWATER CONCENTRATED ANIMAL FEEDING OPERATIONS AND AQUATIC ANIMAL PRODUCTION FACILITIES

I. GENERAL INFORMATION Applying for: Individual Permit ☒ Coverage Under General Permit ☐

A. TYPE OF BUSINESS	B. CONTACT INFORMATION	C. FACILITY OPERATION STATUS
☒ 1. Concentrated Animal Feeding Operation (complete items B, C, D, and Section II) ☐ 2. Concentrated Aquatic Animal Production Facility (complete items B, C, and section III)	Owner/or Operator Name: Joseph Gallo Farms Telephone: (209.0( ) 3,947,984.00 Address: 10561 West Highway 140 Facsimile: (209.0( ) 394-4988 City: Gonzales State: CA Zip Code: 95301	☒ 1. Existing Facility ☐ 2. Proposed Facility

D. FACILITY INFORMATION

Name: Joseph Gallo Farms-Heifer City Telephone: (209.0( ) 3,947,984.00
Address: 31701 Johnson Canyon Road Facsimile: (209.00) 3944988
City: Gonzales State: CA Zip Code: 93926
County: Monterey Latitude: 36.32.12N Longitude: 121.24.37W

If contract operation: Name of Integrator: _____
Address of Integrator: _____

II. CONCENTRATED ANIMAL FEEDING OPERATION CHARACTERISTICS

A. TYPE AND NUMBER OF ANIMALS

1. TYPE	2. ANIMALS: NO. IN OPEN CONFINEMENT	2. ANIMALS: NO. HOUSED UNDER ROOF
☐ Mature Dairy Cows		
☒ Dairy Heifers	30,000.00	
☐ Veal Calves		
☐ Cattle (not dairy or veal)		
☐ Swine (55 lbs. or over)		
☐ Swine (under 55 lbs.)		
☐ Horses		
☐ Sheep or Lambs		
☐ Turkeys		

B. Manure, Litter and/or Wastewater Production and Use

a) How much manure, litter and wastewater is generated annually by the facility? 34,700 tons 6,200,00(gallons

b) If land applied how many acres of land under the control of the applicant are available for applying the CAFOs manure/litter/wastewater? 64.00 acres

c) How many tons of manure or litter, or gallons of waste-water produced by the CAFO will be transferred annually to other persons? tons/gallons (*circle one*) 36,000.00 tons

EPA Form 3510-2B (12-02)

❑ Chickens (Broilers)			[redacted]
❑ Chickens (Layers)			
❑ Ducks			
❑ Other Specify _____			
3. TOTAL ANIMALS			

C. ☒ TOPOGRAPHIC MAP

D. TYPE OF CONTAINMENT, STORAGE AND CAPACITY

1. Type of Containment	Total Capacity (in gallons)
❑ Lagoon	
❑ Holding Pond	
☒ Evaporation Pond	22,728,000.00
❑ Other: Specify _____	

2. Report the total number of acres contributing drainage: 132.00 acres

3. Type of Storage	Total Number of Days	Total Capacity (gallons/tons)
❑ Anaerobic Lagoon		
❑ Storage Lagoon		
☒ Evaporation Pond	120.00	22,728,000.00
❑ Aboveground Storage Tanks		
❑ Belowground Storage Tanks		
❑ Roofed Storage Shed		
❑ Concrete Pad		
❑ Impervious Soil Pad		
❑ Other: Specify _____		

E. NUTRIENT MANAGEMENT PLAN

A. Has a nutrient management plan been developed? ☒ Yes ☐ No

B. Is a nutrient management plan being implemented for the facility? ☒ Yes ☐ No

C. If no, when will the nutrient management plan be developed? Date: _____

D. The date of the last review or revision of the nutrient management plan. Date: 07/10/2009

E. If not land applying, describe alternative use(s) of manure, litter and or wastewater: Soild manure is composted and exported. Liquid is irrigated on 64 acres.

EPA Form 3510-2B (12-02)

F. LAND APPLICATION BEST MANAGEMENT PRACTICES
Please check any of the following best management practices that are being implemented at the facility to control runoff and protect water quality:

❑ Buffers ☒ Setbacks ❑ Conservation tillage ❑ Constructed wetlands ❑ Infiltration field ❑ Grass filter ❑ Terrace

III. CONCENTRATED AQUATIC ANIMAL PRODUCTION FACILITY CHARACTERISTICS

A. For each outfall give the maximum daily flow, maximum 30-day flow, and the long-term average flow.

1. Outfall No.	2. Flow (*gallons per day*)		
	a. Maximum Daily	b. Maximum 30 Day	c. Long Term Average

B. Indicate the total number of ponds, raceways, and similar structures in your facility.

1. Ponds	2. Raceways	3. Other

C. Provide the name of the receiving water and the source of water used by your facility.

1. Receiving Water	2. Water Source

D. List the species of fish or aquatic animals held and fed at your facility. For each species, give the total weight produced by your facility per year in pounds of harvestable weight, and also give the maximum weight present at any one time.

1. Cold Water Species			2. Warm Water Species		
a. Species	b. Harvestable Weight (*pounds*)		a. Species	b. Harvestable Weight (*pounds*)	
	(1) Total Yearly	(2) Maximum		(1) Total Yearly	(2) Maximum

E. Report the total pounds of food during the calendar month of maximum feeding.

1. Month	2. Pounds of Food

IV. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application 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.

A. Name and Official Title (*print or type*)	B. Phone No. ( )
Michael D. Gallo	(209) 394-7984
C. Signature	D. Date Signed
	07-20-09

EPA Form 3510-2B (12-02)

APPENDIX B

DAIRY PLANNING TOOL

Dairy Waste Storage Pond Design

Producer: Gallo-Heifer City
Date: 07/14/09

Entered by: CRA
Checked by:

	Flushed Freestall	Flushed Lanes	Scraped Freestall	Scraped Drylot	Animal Weight lbs	Daily Waste ft^3/day
Milking Cows					1,400	
Dry Cows				95	1,500	195
Bred Heifers					1,100	
Heifers, 1 year to breeding				10243	700	9,830
Calves, 3 months to 1 year					470	
Calves, birth to 3 months					140	

Days of Storage	120	days
Net Daily Water Use per Milking Cow		gal/cow/day
Other Daily Fresh Water added to the pond		gal/day
25 year 24 hour Storm Rainfall	2.7	inches
Manured surfaces draining to the pond	132.1	acres
Concrete surfaces draining to the pond	176,443	ft^2
Roof surfaces draining to the pond	110,128	ft^2

Storage Volume Calculations

1) Animal Waste Volume

Manure Waste to be stored in the Pond			1,003	ft^3/day
Manure Waste handled dry and not stored in the Pond			9023	ft^3/day
Total Manure waste volume for the storage period of	120	days =	120,360	ft^3

2) Barn Water Volume

Wash Water used during the Storage Period of	120	days =		ft^3
Other Fresh Water used during the Storage Period o	120	days =		ft^3
		Total =		ft^3

3) Rainfall and Runoff Volume

	25 YR. STORM	NORMAL	
Runoff Volume from Manured Surfaces	798,657	745,179	ft^3
Runoff Volume from Concrete Surfaces	33,993	57,123	ft^3
Runoff Volume from Roof Surfaces	24,309	71,308	ft^3
Rainfall on Pond Surface	53,966	158,233	ft^3
Rainfall Subtotals	910,925	1,031,843	ft^3
Total Rainfall Influence (25 Yr. + Normal)		1,942,768	ft^3
Evaporation Credit		112,848	ft^3

4) Total Required Volume **1,950,280** ft^3

APPENDIX C

MANURE MANAGEMENT PLANNER

-ANNUAL FIELD NUTRIENT NEEDS
-FIELD NUTRIENT BALANCE
-FIELD NUTRIENT STATUS DETAILS

Annual Field Nutrient Needs

Plan File: 052271-RPT26-APPC.mmp
Operation: Joseph Gallo Farms
State: California
Last Saved: 7/24/2009
Init. File Rev: 5/29/2008

Year	Field ID	Sub ID	Size	Crop	Yield Goal	N	P_2O_5	K_2O	N	P_2O_5	K_2O
			Acres		/Acre	Lb/Acre	Lb/Acre	Lb/Acre	Lb/Field	Lb/Field	Lb/Field
2009	Field 1		64	Oats, silage, soft dough	36	504	133	360	32,256	8,512	23,040
Total			64						32,256	8,512	23,040
2010	Field 1		64	Oats, silage, soft dough	36	504	133	360	32,256	8,512	23,040
Total			64						32,256	8,512	23,040
2011	Field 1		64	Oats, silage, soft dough	36	504	133	360	32,256	8,512	23,040
Total			64						32,256	8,512	23,040
2012	Field 1		64	Oats, silage, soft dough	36	504	133	360	32,256	8,512	23,040
Total			64						32,256	8,512	23,040
2013	Field 1		64	Oats, silage, soft dough	36	504	133	360	32,256	8,512	23,040
Total			64						32,256	8,512	23,040

Notes
¤ Indicates a custom fertilizer recommendation.

Field Nutrient Balance

Plan File: \052271-RPT26-APPC.mmp
Operation: Joseph Gallo Farms
State: California
Last Saved: 7/24/2009
Init. File Rev: 5/29/2008

Year	Field ID	Sub ID	Size	Crop	Yield Goal	Fertilizer Recs[2]			Nutrients Applied[3]			Balance After Recs[4]			After Removal[5]	
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	P_2O_5	K_2O
			Acres[1]		/Acre	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A
2009	Field 1		64	Oats, silage, soft dough	36	504	133	360	153	15	0	-351	-118	-360	-118	-360
2010	Field 1		64	Oats, silage, soft dough	36	504	133	360	191	24	0	-313	-109	-360	-109	-360
2011	Field 1		64	Oats, silage, soft dough	36	504	133	360	191	24	0	-313	-109	-360	-109	-360
2012	Field 1		64	Oats, silage, soft dough	36	504	133	360	191	24	0	-313	-109	-360	-109	-360
2013	Field 1		64	Oats, silage, soft dough	36	504	133	360	191	24	0	-313	-109	-360	-109	-360
Total	**Field 1**		**64**			**2,520**	**665**	**1,800**	**917**	**111**	**0**					

Notes

1 If a field has a non-spreadable area, it is listed separately following the field's spreadable area.

2 Fertilizer Recs are the crop fertilizer recommendations. The N rec accounts for any N credit from previous legume crop.

3 Nutrients Applied are the nutrients expected to be available to the crop from that year's manure applications plus nutrients from that year's commercial fertilizer applications. With a double crop year, the total nutrients applied for both crops and the year's balances are listed on the second crop's line.

4 Nutrients Applied minus Fertilizer Recs through indicated crop year. With N, includes amount of residual N expected to become available that year from prior years' manure applications. Negative values indicate a potential need to apply additional nutrients.

5 Nutrients Applied minus amount removed by harvested portion of crop through indicated crop year.

¤ Indicates a custom fertilizer recommendation in the Fertilizer Recs columns.

[a] Indicates in the Balance After Recs N column that the legume crop is assumed to utilize some or all of the supplied N.

† Indicates in the Balance After Recs N column that the value includes residual N expected to become available that year from prior years' manure applications.

Field Nutrient Status Details

Plan File: 052271-RPT26-APPC.mmp
Operation: Joseph Gallo Farms
State: California
Last Saved: 7/24/2009
Init. File Rev: 5/29/2008

Year	Field ID	Sub ID	Nutrient Needs	Crop	Yield Goal	Acres	N	P_2O_5	K_2O
2009	Field 1		Crop Fertilizer Recs	Oats, silage, soft dough	36 Ton	64	504	133	360
2009	Field 1		Crop Nutrient Removal	Oats, silage, soft dough	36 Ton	64	360	133	360

Date	Field ID	Sub ID	Nutrient Activity	Source	Equipment/Method	Rate	Acres	N	P_2O_5	K_2O
Apr 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
May 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jun 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jul 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Aug 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	3.1 In	64	15		
May 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	6.3 In	64	30		
Jun 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7.3 In	64	35		
Jul 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	8.3 In	64	40		
Aug 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7 In	64	33		
2009	Field 1		Total Nutrients Applied	Spreadable Area			64	153	15	0
2009	Field 1		Balance After Recs	Spreadable Area			64	-351	-118	-360
2009	Field 1		Balance After Removal	Spreadable Area			64	-207	-118	-360

Year	Field ID	Sub ID	Nutrient Needs	Crop	Yield Goal	Acres	N	P_2O_5	K_2O
2010	Field 1		Crop Fertilizer Recs	Oats, silage, soft dough	36 Ton	64	504	133	360
2010	Field 1		Crop Nutrient Removal	Oats, silage, soft dough	36 Ton	64	360	133	360

Date	Field ID	Sub ID	Nutrient Activity	Source	Equipment/Method	Rate	Acres	N	P_2O_5	K_2O
Sep 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Oct 09	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Mar 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
May 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jun 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jul 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Aug 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	3.1 In	64	15		
May 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	6.3 In	64	30		
Jun 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7.3 In	64	35		
Jul 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	8.3 In	64	40		
Aug 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7 In	64	33		
Sep 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	4.5 In	64	21		
Oct 09	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	2.5 In	64	12		
Mar 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	1 In	64	5		
2010	Field 1		Total Nutrients Applied	Spreadable Area			64	191	24	0
2010	Field 1		Balance After Recs	Spreadable Area			64	-313	-109	-360
2010	Field 1		Balance After Removal	Spreadable Area			64	-169	-109	-360

Year	Field ID	Sub ID	Nutrient Needs	Crop	Yield Goal	Acres	N	P_2O_5	K_2O
2011	Field 1		Crop Fertilizer Recs	Oats, silage, soft dough	36 Ton	64	504	133	360
2011	Field 1		Crop Nutrient Removal	Oats, silage, soft dough	36 Ton	64	360	133	360

Date	Field ID	Sub ID	Nutrient Activity	Source	Equipment/Method	Rate	Acres	N	P_2O_5	K_2O
Sep 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Oct 10	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Mar 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
May 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jun 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jul 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Aug 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	3.1 In	64	15		
May 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	6.3 In	64	30		
Jun 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7.3 In	64	35		
Jul 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	8.3 In	64	40		
Aug 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7 In	64	33		
Sep 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	4.5 In	64	21		
Oct 10	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	2.5 In	64	12		
Mar 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	1 In	64	5		

2011	Field 1	Total Nutrients Applied	Spreadable Area		64	191	24	0
2011	Field 1	Balance After Recs	Spreadable Area		64	-313	-109	-360
2011	Field 1	Balance After Removal	Spreadable Area		64	-169	-109	-360

Year	Field ID	Sub ID	Nutrient Needs	Crop	Yield Goal	Acres	N	P_2O_5	K_2O
2012	Field 1		Crop Fertilizer Recs	Oats, silage, soft dough	36 Ton	64	504	133	360
2012	Field 1		Crop Nutrient Removal	Oats, silage, soft dough	36 Ton	64	360	133	360

Date	Field ID	Sub ID	Nutrient Activity	Source	Equipment/Method	Rate	Acres	N	P_2O_5	K_2O
Sep 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Oct 11	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Mar 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
May 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jun 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jul 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Aug 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	3.1 In	64	15		
May 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	6.3 In	64	30		
Jun 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7.3 In	64	35		
Jul 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	8.3 In	64	40		
Aug 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7 In	64	33		
Sep 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	4.5 In	64	21		
Oct 11	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	2.5 In	64	12		
Mar 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	1 In	64	5		

2012	Field 1	Total Nutrients Applied	Spreadable Area		64	191	24	0
2012	Field 1	Balance After Recs	Spreadable Area		64	-313	-109	-360
2012	Field 1	Balance After Removal	Spreadable Area		64	-169	-109	-360

Year	Field ID	Sub ID	Nutrient Needs	Crop	Yield Goal	Acres	N	P_2O_5	K_2O
2013	Field 1		Crop Fertilizer Recs	Oats, silage, soft dough	36 Ton	64	504	133	360
2013	Field 1		Crop Nutrient Removal	Oats, silage, soft dough	36 Ton	64	360	133	360

Date	Field ID	Sub ID	Nutrient Activity	Source	Equipment/Method	Rate	Acres	N	P_2O_5	K_2O
Sep 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Oct 12	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Mar 13	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 13	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
May 13	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jun 13	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Jul 13	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Aug 13	Field 1		Manure App	Pond 12A	Sprinkler	26,500 Gal	64.0		3	
Apr 13	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	3.1 In	64	15		
May 13	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	6.3 In	64	30		
Jun 13	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7.3 In	64	35		
Jul 13	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	8.3 In	64	40		
Aug 13	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	7 In	64	33		
Sep 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	4.5 In	64	21		
Oct 12	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	2.5 In	64	12		
Mar 13	Field 1		Irrigation Water	21 ppm nitrates	Sprinkler irrigation	1 In	64	5		
2013	Field 1		Total Nutrients Applied	Spreadable Area			64	191	24	0
2013	Field 1		Balance After Recs	Spreadable Area			64	-313	-109	-360
2013	Field 1		Balance After Removal	Spreadable Area			64	-169	-109	-360

Notes

(1) If a field has a non-spreadable area, it is listed in a separate section following the field's spreadable area.
(2) Yield Goal, Rate, N, P2O5 and K2O values are all per acre.
(3) The crop's N fertilizer rec accounts for any N credit from a previous legume crop.
(4) If a field has more than one manure application in the same crop year, or if the total area covered that year is less than or greater than the field's area, a field average is used in calculating balances. This field average is the sum of each manure application's area times its per-acre amount of nutrient applied, divided by the field's area.
(5) Any positive P2O5 or K2O balance is carried over to the next year. Available N not utilized in the current crop year is assumed lost.
¤ Indicates a custom fertilizer recommendation in the Crop Fertilizer Recs columns.
[a] Indicates in the Balance After Recs N column that the legume crop is assumed to utilize some or all of the supplied N.

APPENDIX D

NRCS CPS-590 NUTRIENT MANAGEMENT

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

NUTRIENT MANAGEMENT

(Ac.)

CODE 590

DEFINITION

Managing the amount, source, placement, form and timing of the application of plant nutrients and soil amendments.

PURPOSE

- To budget and supply nutrients for plant production.
- To properly utilize manure or organic by-products as a plant nutrient source.
- To minimize agricultural nonpoint source pollution of surface and ground water resources.
- To protect air quality by reducing nitrogen emissions (ammonium and NO_x compounds) and the formation of atmospheric particulates.
- To maintain or improve the physical, chemical and biological condition of soil.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where plant nutrients and soil amendments are applied.

CRITERIA

General Criteria Applicable to All Purposes

A nutrient budget for nitrogen, phosphorus, and potassium shall be developed that considers all potential sources of nutrients including, but not limited to animal manure and organic by-products, waste water, commercial fertilizer, crop residues, legume credits, and irrigation water. The nutrient budget shall use reasonable yields to set nutrient requirements based on currently accepted University of California guidance, or industry standards when acceptable to University of California.

Realistic yield goals shall be established based on soil productivity information, historical yield data, climatic conditions, level of management and/or local research on similar soil, cropping systems, and soil, tissue, and manure/organic by-products tests.

For new crops or varieties, industry yield recommendations may be used until documented yield information is available.

Plans for nutrient management shall specify the source, amount, timing and method of application of nutrients on each field to achieve realistic production goals, while minimizing movement of nutrients and other potential contaminants to surface and/or ground waters.

Areas contained within established minimum application setbacks (e.g., sinkholes, wells, gullies, ditches, surface inlets or rapidly permeable soil areas) shall not receive direct application of nutrients.

On irrigated lands, irrigation management shall be optimized based on Practice 449 “Irrigation Water Management”. This applies whether or not nutrients are being applied with the irrigation water.

Nutrient loss to erosion, leaching, runoff, and subsurface drainage shall be addressed, as needed.

Soil, Manure, and Tissue Sampling and Laboratory Analyses (Testing) Nutrient planning shall be based on current soil, manure, and tissue test results developed in accordance with University of California guidance, or industry practice if recognized by

the University of California. When used to assess P and K, current soil tests are no older than three years. Soil sampling used for managing N applications shall be timely, collected very near anticipated application times and considering previous and planned irrigation events or N applications.

Soil, manure, irrigation water, and tissue samples shall be collected and prepared according to University of California guidance or standard industry practice. Soil, water, manure, and tissue test analyses shall be performed by laboratories that are accepted in one or more of the following:

- Laboratories successfully meeting the requirements and performance standards of the North American Proficiency Testing Program (NAPT) under the auspices of the Soil Science Society of America http://www.naptprogram.org/about/participants/, or
- Environmental Laboratory Accreditation Program (ELAP) http://www.dhs.ca.gov/ps/ls/elap/default.htm
- For manure, laboratories successfully meeting the requirements and performance standards of the Manure Proficiency (MAP) Program http://ghex.colostate.edu/map/

Soil and tissue testing shall include analyses for any nutrients for which specific information is needed to develop the nutrient plan. Request analyses pertinent to monitoring or amending the annual nutrient budget, e.g. pH, electrical conductivity (EC), soil organic matter, texture, nitrogen, phosphorus and potassium.

Nutrient Application Rates. Soil amendments shall be applied as needed, to adjust soil properties, including soil pH, to adequately provide for crop nutrient availability and utilization.

Recommended nutrient application rates shall be based on current (updated, as appropriate) University of California recommendations, (and/or industry practice when recognized by the university) that consider current soil test results, tissue tests, realistic yield goals and management capabilities. If University of California does not provide state or regional recommendations, then UC guidance from County Farm Advisors on nutrient application rates, or industry practice when consistent with local UC guidance, is acceptable. The planned rates of nutrient application, as documented in the nutrient budget, shall be determined based on the following guidance:

- Nitrogen Application **-** Planned nitrogen application rates shall match the recommended rates as closely as possible, except when manure or organic by-products are a source of nutrients. When manure or organic by-products are a source of nutrients, see “Additional Criteria” below.
- Phosphorus Application **-** Planned phosphorus application rates shall match the recommended rates as closely as possible, except when manure or organic by-products are sources of nutrients. When manure or organic by-products are a source of nutrients, see “Additional Criteria” below.
- Potassium Application - When forage quality is impaired by excess soil potassium levels, application of potassium shall be reduced or suspended until desirable levels in the soil and forage are regained.
- Other Plant Nutrients - The planned rates of application of other nutrients shall be consistent with University of California guidance or industry practice if recognized by University of California.
- Starter Fertilizers - When starter fertilizers are used, they shall be included in the overall nutrient budget, and applied in accordance with University of California recommendations, or industry practice if recognized by University of California.

Nutrient Application Timing. Timing of nutrient application (particularly nitrogen) shall correspond as closely as possible with plant nutrient uptake characteristics, while considering cropping system limitations, weather and climatic conditions, risk assessment tools (e.g., leaching index, P index) and field accessibility.

Nutrient Application Methods. Application methods to reduce the risk of nutrient transport to surface and ground water, or into the atmosphere shall be employed.

To minimize nutrient losses:

- Apply nutrient materials uniformly to application area(s) unless precision application technology indicates variable rates are appropriate. Precise placement with banding, use of drip irrigation, or other strategies to maximize root access to nutrients, is desirable.
- Nutrients shall not be applied to frozen, snow-covered or saturated soil if the potential risk for runoff exists.
- Nutrients shall be applied considering plant nutrient uptake patterns during the growing season, root growth patterns, irrigation practices, nutrient mobility, and other conditions so as to maximize availability to the plant and minimize the risk of runoff, leaching, and volatilization losses.
- Nutrient applications associated with irrigation systems shall be applied in a manner that prevents or minimizes leaching, runoff, or volatilization of nutrients.
- Incorporate or irrigate in any broadcast fertilizers within the shortest practicable timeframe. Apply nitrogen fertilizers as close to anticipated plant need as is possible.

Conservation Management Unit (CMU) Risk Assessment. In areas with identified or designated agricultural phosphorus related water quality impairment, a CMU specific risk assessment of the potential for phosphorus transport from the area shall be completed using the California P Index. In areas with identified or designated agricultural nitrogen related water quality impairment, a CMU specific risk assessment of the potential for nitrogen transport from the area to ground water or surface water shall be completed by evaluating the irrigation, soils, cropping, runoff management, nitrogen application strategies in use, and other factors pertinent to the site.

Note: California regulators may select an alternative method to the PI to manage P application. California NRCS is developing a tool for evaluating risk of N loss. This section will be revised in either case.

Additional Criteria Applicable to Manure and Organic By-Products or Biosolids Applied as a Plant Nutrient Source

When animal manures or organic by-products are applied, a risk assessment of the potential for nutrient transport from the CMU shall be completed using the California P Index to adjust the management of nutrient applications.

Nutrient values of manure and organic by-products shall be determined prior to land application. Samples will be taken and analyzed for nutrient concentration, moisture content, and Ec, as appropriate, with each hauling/emptying cycle for a storage/treatment facility. Manure sampling frequency may vary based on the operation's manure handling strategy and spreading schedule. Dilute manure storage ponds shall be tested at least seasonally when drawdown occurs, with testing at each application recommended. If "stable" (maintaining a certain nutrient concentration with minimal variation) levels are found after three years or more of sampling average values from all sampling may be used for planning manure applications unless continued testing is desirable for other purposes or required by law. When changes occur in manure collection, treatment, storage, herd size, or any other factor capable of significantly altering manure nutrient characteristics renew sampling to establish new characteristics. Samples shall be collected and prepared according to University of California guidance or industry practice. Manure exported from any facility shall be tested and measured as required by law.

In planning for new operations, acceptable "book values" recognized by the NRCS and/or University of California may be used (e.g., NRCS Agricultural Waste Management Field Handbook, UCCE publications, regulatory guidelines, ASABE standards, or unpublished data when appropriate).

Biosolids (sewage sludge) shall be applied in accordance with USEPA regulations. (40 CFR Parts 403 (Pretreatment) and 503 (Biosolids) and other state and/or local regulations regarding the use of biosolids as a nutrient source.

Manure and Organic By-Product Nutrient Application Rates. Manure and organic by-product nutrient application rates shall be based on nutrient analyses procedures recommended by state regulation, or University of California. As indicated above, "book values" may be used in planning for new operations. At a minimum, manure analyses shall include appropriate nutrient and specific ion concentrations. Solid manure test results will include percent moisture. Salt concentration (Ec) shall be monitored so that manure applications do not cause plant damage or negatively impact soil or water quality.

When applying manure with sprinkler irrigation, the application rate (in/hr) of liquid materials applied shall not exceed the soil intake/infiltration rate. All applications with irrigation water shall be managed to minimize ponding, minimize leaching below the root zone, and avoid runoff. Applications with irrigation water shall conform to the principles found in NRCS Practice 449, Irrigation Water Management.

The planned rates of nitrogen and phosphorus application recorded in the plan shall be determined based on the following guidance:

Nitrogen Application Rates

- When manure or organic by-products are used, the nitrogen availability of the planned application rates shall match plant uptake characteristics as closely as possible, taking into consideration the timing of nutrient application(s) in order to minimize leaching and atmospheric losses.
- Management activities and technologies shall be used that effectively utilize mineralized nitrogen and that minimize nitrogen losses through denitrification, leaching, and ammonia volatilization.
- Manure or organic by-products may be applied on legumes at rates equal to the estimated removal of nitrogen in harvested plant biomass.
- When the nutrient management plan component is being implemented on a phosphorus basis, manure or organic by-products shall be applied at rates consistent with a phosphorus limited application rate. In such situations, an additional nitrogen application, from non-organic sources, may be required to supply, but not exceed, the recommended amounts of nitrogen in any given year.

Phosphorus Application Rates

- When manure or organic by-products are used, the planned rates of phosphorus application shall be consistent with state regulation or the Phosphorus Index (PI) Rating. **

  ** Acceptable phosphorus-based manure application rates shall be determined as a function of soil test recommendation or estimated phosphorus removal in harvested plant biomass.
- The application of phosphorus applied as manure may be made at a rate equal to the recommended phosphorus application or estimated phosphorus removal in harvested plant biomass for the crop rotation or multiple years in the crop sequence. When such applications are made, the application rate shall:
  - ◊ Not exceed the recommended nitrogen application rate during the year of application, or
  - ◊ Not exceed the estimated nitrogen removal in harvested plant biomass during the year of application when there is no recommended nitrogen application.
  - ◊ Not be made on sites considered vulnerable to off-site phosphorus transport unless appropriate conservation practices, best

management practices or management activities are used to reduce the vulnerability.

Heavy Metal Monitoring. When sewage sludge (biosolids) is applied, the accumulation of potential pollutants (including arsenic, cadmium, copper, lead, mercury, selenium, and zinc) in the soil shall be monitored in accordance with the US Code, Reference 40 CFR, Parts 403 and 503, and/or any applicable state and local laws or regulations.

Additional Criteria to Protect Air Quality by Reducing Nitrogen and/or Particulate Emissions to the Atmosphere

In areas with an identified or designated nutrient management related air quality concern, any component(s) of nutrient management (i.e., amount, source, placement, form, timing of application) identified by available risk assessment tools as a potential source of atmospheric pollutants shall be adjusted, as necessary, to minimize the loss(es).

Comply with any Federal, State, or Local air quality regulations governing the use of fertilizers or the application of manure or biosolids to land.

When tillage can be performed, surface applications of manure and fertilizer nitrogen formulations that are subject to volatilization on the soil surface (e.g., urea) shall be incorporated into the soil within 24 hours after application.

When manure or organic by-products are applied to grassland, hayland, pasture or minimum-till areas the rate, form and timing of application(s) shall be managed to minimize volatilization losses.

When liquid forms of manure are applied with irrigation equipment, operators will select weather conditions during application that will minimize volatilization losses.

Operators will handle and apply poultry litter or other dry types of animal manures when the potential for wind-driven loss is low and there is less potential for transport of particulates into the atmosphere.

Weather and climatic conditions during manure or organic by-product application(s) shall be recorded and maintained in accordance with the operation and maintenance section of this standard.

CAFO operations seeking permits under CARB or USEPA regulations (40 CFR Parts 122 and 412) should consult with their respective state or local permitting authority for additional criteria.

Additional Criteria to Improve the Physical, Chemical and Biological Condition of the Soil

Nutrients shall be applied and managed in a manner that maintains or improves the physical, chemical and biological condition of the soil.

Minimize the use of nutrient sources with high salt content unless provisions are made to leach salts below the crop root zone and water quality impacts to receiving waters are considered.

To the extent practicable nutrients shall not be applied when the potential for soil compaction and rutting is high.

CONSIDERATIONS

The use of management activities and technologies listed in this section may improve both the production and environmental performance of nutrient management systems.

The addition of these management activities, when applicable, increases the management intensity of the system and is recommended in a nutrient management system.

Action should be taken to protect National Register listed and other eligible cultural resources.

The nutrient budget should be reviewed annually to determine if any changes are needed for the next planned crop.

For some sites specific soil sampling techniques may be appropriate to better manage nitrogen. These include post-harvest deep soil profile sampling for nitrogen, Pre-Sidedress Nitrogen Test (PSNT), Pre-Plant

Soil Nitrate Test (PPSN) or soil surface sampling for phosphorus accumulation or pH changes.

Additional practices to enhance the producer's ability to manage manure effectively include modification of the animal's diet to reduce the manure nutrient content, or utilizing manure amendments that stabilize or tie-up nutrients.

Soil test information should be no older than one year when developing new plans, particularly if animal manures are to be used as a nutrient source.

Excessive levels of some nutrients can cause induced deficiencies of other nutrients.

If increases in soil phosphorus levels are expected, consider a more frequent (annual) soil testing interval.

To manage the conversion of nitrogen in manure or fertilizer, use products or materials (e.g. nitrification inhibitors, urease inhibitors and slow or controlled release fertilizers) that more closely match nutrient release and availability for plant uptake. These materials may improve the nitrogen use efficiency (NUE) of the nutrient management system by reducing losses of nitrogen into water and/or air.

Sample the liquid manure/irrigation water mixture during each application to cropland.

Considerations to Minimize Agricultural Nonpoint Source Pollution of Surface and Ground Water

Erosion control and runoff reduction practices can improve soil nutrient and water storage, infiltration, aeration, tilth, diversity of soil organisms and protect or improve water and air quality (Consider installation of one or more NRCS FOTG, Section IV – Conservation Practice Standards).

Cover crops can effectively utilize and/or recycle residual nitrogen.

Application methods and timing that reduce the risk of nutrients being transported to ground and surface waters, or into the atmosphere include:

- Split applications of nitrogen to provide nutrients at the times of maximum crop utilization,
- Use corn stalk-test or other tissue tests to minimize risk of applying nitrogen in excess of crop needs.
- Where only summer crops are grown, avoid winter nutrient application for spring seeded crops,
- Band applications of phosphorus near the seed row,
- Incorporate surface applied manures or organic by-products as soon as possible after application to minimize nutrient losses,
- Delay field application of animal manures or organic by-products if precipitation capable of producing runoff and erosion is forecast within 24 hours of the time of the planned application.

Apply calcium or acidic soil amendments, as appropriate, to soils with infiltration rates reduced by low salt content in irrigation water or excessive sodium in the soil or irrigation water. This will improve crop health and help control runoff.

Use risk assessment tools for planning, such as the California P Index, where there is significant risk to water quality from nutrients even in areas without identified or designated nutrient related water quality impairment.

Considerations to Protect Air Quality by Reducing Nitrogen and/or Particulate Emissions to the Atmosphere

Odors associated with the land application of manures and organic by-products can be offensive to the occupants of nearby homes. Avoid applying these materials upwind of occupied structures when residents are likely to be home (evenings, weekends and holidays).

When applying manure with irrigation equipment, modifying the equipment can reduce the potential for volatilization of nitrogen from the time the manure leaves the application equipment until it reaches the surface of the soil (e.g., reduced pressure, drop down tubes for center pivots). N volatilization from manure in a surface

irrigation system will be reduced when applied under a crop canopy.

When planning nutrient applications and tillage operations, encourage soil carbon buildup while discouraging greenhouse gas emissions (e.g., nitrous oxide N_2O, carbon dioxide CO_2).

Storage and application of ammonia based materials will be done considering methods that limit volatilization.

Endangered Species Considerations

If during the Environmental Assessment, NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

Cultural Resources Considerations

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer.

http://www.nrcs.usda.gov/technical/cultural.html is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for nutrient management shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s), using nutrients to achieve production goals and to prevent or minimize resource impairment.

Nutrient management plans shall include a statement that the plan was developed based on requirements of the current standard and any applicable Federal, state, or local regulations, policies, or programs, which may include the implementation of other practices and/or management activities. Changes in any of these requirements may necessitate a revision of the plan.

The following components shall be included in the nutrient management plan:

- aerial site photograph(s) or site map(s), and a soil survey map of the site,
- location of designated sensitive areas or resources and the associated, nutrient management restriction,
- current and/or planned plant production sequence or crop rotation,
- results of soil, water, manure and/or organic by-product sample analyses,
- results of plant tissue analyses, when used for nutrient management,
- realistic yield goals for the crops,
- complete nutrient budget for nitrogen, phosphorus, and potassium for the crop rotation or sequence,
- listing and quantification of all nutrient sources,
- CMU specific recommended nutrient application rates, timing, form, and method of application and incorporation, and

- guidance for implementation, operation, maintenance, and recordkeeping

If increases in soil phosphorus levels are expected, the nutrient management plan shall document:

- the potential for soil phosphorus drawdown from the production and harvesting of crops when phosphorus inputs are reduced, and
- management activities or techniques used to reduce the potential for phosphorus loss

OPERATION AND MAINTENANCE

The owner/client is responsible for safe operation and maintenance of this practice including all equipment. Operation and maintenance addresses the following:

- periodic plan review to determine if adjustments or modifications to the plan are needed. As a minimum, plans will be reviewed and revised with each soil test cycle.
- significant changes in animal numbers and/or feed management will necessitate additional manure sampling and analyses to establish a revised average nutrient content.
- protection of fertilizer and organic by-product storage facilities from weather and accidental leakage or spillage.
- calibration of application equipment to ensure uniform distribution of material at planned rates.
- documentation of the actual rate at which nutrients were applied. When the actual rates used differ from the recommended and planned rates, records will indicate the reasons for the differences.
- Maintaining records to document plan implementation. As applicable, records include:
    - o Soil, plant tissue, water, manure, and organic by-product analyses resulting in recommendations for nutrient application,
    - o quantities, analyses and sources of nutrients applied,
    - o dates and method(s) of nutrient applications,
    - o weather conditions and soil moisture at the time of application; lapsed time to manure incorporation, rainfall or irrigation event.
    - o crops planted, planting and harvest dates, yields, and crop residues removed,
    - o dates of plan review, name of reviewer, and recommended changes resulting from the review.

Records should be maintained for five years; or for a period longer than five years if required by other Federal, state or local ordinances, or program or contract requirements.

Workers should be protected from and avoid unnecessary contact with plant nutrient sources. Extra caution must be taken when handling ammoniacal nutrient sources, or when dealing with organic wastes stored in unventilated enclosures.

Material generated from cleaning nutrient application equipment should be utilized in an environmentally safe manner. Excess material should be collected and stored or field applied in an appropriate manner.

Nutrient containers should be recycled in compliance with state and local guidelines or regulations.

REFERENCES

Follett, R.F. 2001. Nitrogen Transformation and Transport Processes. pp. 17-44, In R.F. Follett and J. Hatfield. (eds.). 2001. Nitrogen in the Environment; Sources, Problems, and Solutions. Elsevier Science Publishers. The Netherlands. 520 pp.

Sims, J.T. (ed.) 2005. Phosphorus: Agriculture and the Environment. Agron. Monogr. 46. ASA, CSSA, and SSSA, Madison, WI.

Stevenson, F.J. (ed.) 1982. Nitrogen in Agricultural Soils. Agron. Series 22. ASA, CSSA, and SSSA, Madison, WI.

Western Fertilizer Handbook, 8th Edition or later, Western Plant Health Association

University of California publications such as crop production manuals, crop specific IPM manuals, and crop or research group websites

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

IRRIGATION WATER MANAGEMENT

(Ac.)

CODE 449

DEFINITION

The process of determining and controlling the volume, frequency and application rate of irrigation water in a planned, efficient manner.

PURPOSE

- Manage soil moisture to promote desired crop response
- Optimize use of available water supplies
- Minimize irrigation induced soil erosion
- Decrease non-point source pollution of surface and groundwater resources
- Manage salts in the crop root zone
- Manage air, soil, or plant micro-climate
- Proper and safe chemigation or fertigation
- Improve air quality by managing soil moisture to reduce particulate matter movement

CONDITIONS WHERE PRACTICE APPLIES

This practice is applicable to all irrigated lands.

An irrigation system adapted for site conditions (soil, slope, crop grown, climate, water quantity and quality, air quality, etc.) must be available and capable of efficiently applying water to meet the intended purpose(s).

CRITERIA

General Criteria Applicable to All Purposes

Irrigation water shall be applied in accordance with federal, state, and local rules, laws, and regulations. Water shall not be applied in excess of the needs to meet the intended purpose.

Measurement and determination of flow rate is a critical component of irrigation water management and shall be a part of all irrigation water management purposes.

The irrigator or decision-maker must possess the knowledge, skills, and capabilities of management coupled with a properly designed, efficient and functioning irrigation system to reasonably achieve the purposes of irrigation water management.

An “Irrigation Water Management Plan” shall be developed to assist the irrigator or decision-maker in the proper management and application of irrigation water.

Irrigator Skills and Capabilities. Proper irrigation scheduling, in both timing and amount, control of runoff, minimizing deep percolation, and the uniform application of water are of primary concern. The irrigator or decision-maker shall possess or obtain the knowledge and capability to accomplish the purposes which include:

A. General

1. How to determine when irrigation water should be applied, based on the rate of water used by crops and on the stages of plant growth and/or soil moisture monitoring.
2. How to determine the amount of water required for each irrigation, including any leaching needs.
3. How to recognize and control erosion caused by irrigation.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office, or download it from the electronic Field Office Technical Guide.

NRCS, CA

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4. How to measure or determine the uniformity of application of an irrigation.
5. How to perform system maintenance to assure efficient operation.
6. Knowledge of "where the water goes" after it is applied considering soil surface and subsurface conditions, soil intake rates and permeability, crop root zones, and available water holding capacity.
7. How to manage salinity and shallow water tables through water management.
8. The capability to control the irrigation delivery.

B. Surface Systems

1. The relationship between advance rate, time of opportunity, intake rate, and other aspects of distribution uniformity and the amount of water infiltrated.
2. How to determine and control the amount of irrigation runoff.
3. How to adjust stream size, adjust irrigation time, or employ techniques such as "surge irrigation" to compensate for seasonal changes in intake rate or to improve efficiency of application.

C. Subsurface Systems

1. How to balance the relationship between water tables, leaching needs, and irrigation water requirements.
2. The relationship between the location of the subsurface system to normal farming operations.
3. How to locate and space the system to achieve uniformity of water application.
4. How to accomplish crop germination in arid climates and during dry periods.

D. Pressurized Systems

1. How to adjust the application rate and/or duration to apply the required amount of water.
2. How to recognize and control runoff.
3. How to identify and improve uniformity of water application.
4. How to account for surface storage due to residue and field slope in situations where sprinkler application rate exceeds soil intake rate.
5. How to identify and manage for weather conditions that adversely impact irrigation efficiency and uniformity of application.

System Capability. The irrigation system must be capable of applying water uniformly and efficiently and must provide the irrigator with adequate control over water application.

Additional Criteria to Manage Soil Moisture to Promote Desired Crop Response

The following principles shall be applied for various crop growth stages:

- The volume of water needed for each irrigation shall be based on plant available water-holding capacity of the soil for the crop rooting depth, management allowed soil water depletion, irrigation efficiency and water table contribution.
- The irrigation frequency shall be based on the volume of irrigation water needed and/or available to the crop, the rate of crop evapotranspiration, and effective precipitation.
- The application rate shall be based on the volume of water to be applied, the frequency of irrigation applications, soil infiltration and permeability characteristics, and the capacity of the irrigation system.

Appropriate field adjustments shall be made for seasonal variations and field variability.

Additional Criteria to Optimize Use of Water Supplies

Limited irrigation water supplies shall be managed to meet critical crop growth stages.

When water supplies are estimated to be insufficient to meet even the critical crop growth stage, the irrigator or decision-maker shall modify plant populations, crop and variety selection, and/or irrigated acres to match available or anticipated water supplies.

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Additional Criteria to Minimize Irrigation-Induced Soil Erosion

Application rates shall be consistent with local field conditions for long-term productivity of the soil.

Additional Criteria to Decrease Non-Point Source Pollution of Surface and Groundwater Resources

Water application shall be at rates that minimize transport of sediment, nutrients and chemicals to surface waters and that minimize transport of nutrients and chemicals to groundwater.

Additional Criteria to Manage Salts in the Crop Root Zone

The irrigation application volume shall be increased by the amount required to maintain an appropriate salt balance in the soil profile.

The requirement shall be based on the leaching procedure contained in the National Engineering Handbook (NEH) Part 623, Chapter 2 and NEH, Part 652, chapters 3 and 13.

Additional Criteria to Manage Air, Soil or Plant Micro-Climate

The irrigation system shall have the capacity to apply the required rate of water for cold or heat protection as determined by the methodology contained in NEH Part 623, Chapter 2.

Additional Criteria for Proper and Safe Chemigation or Fertigation

Chemigation or fertigation shall be done in accordance with all local, state and federal laws.

The scheduling of nutrient and chemical application should coincide with the irrigation cycle in a manner that will not cause excess leaching of nutrients or chemicals below the root zone to the groundwater or to cause excess runoff to surface waters.

Chemigation or fertigation should not be applied if rainfall is imminent. Application of chemicals or nutrients will be limited to the minimum length of time required to deliver them and flush the pipelines. Irrigation application amount shall be limited to the amount necessary to apply the chemicals or nutrients to the soil depth recommended by label. The timing and rate of application shall be based on the pest, herbicide, or nutrient management plan.

The irrigation and delivery system shall be equipped with properly designed and operating valves and components to prevent backflows into the water source(s) and/or contamination of groundwater, surface water, or the soil.

Additional Criteria to Reduce Particulate Matter Movement

Sprinkler irrigation water shall be applied at a rate and frequency sufficient to reduce the wind erodibility index (I Factor) of the soil by one class.

CONSIDERATIONS

The following items should be considered when planning irrigation water management:

- Consideration should be given to managing precipitation effectiveness, crop residues, and reducing system losses.
- Consider potential for spray drift and odors when applying agricultural and municipal waste waters. Timing of irrigation should be based on prevailing winds to reduce odor. In areas of high visibility, irrigating at night should be considered.
- Consider potential for overspray from end guns onto public roads.
- Equipment modifications and/or soil amendments such as polyacrylamides and mulches should be considered to decrease erosion.
- Consider the quality of water and the potential impact to crop quality and plant development.
- Quality of irrigation water should be considered relative to its potential effect on the soil's physical and chemical properties, such as soil crusting, pH, permeability, salinity, and structure.
- Avoid traffic on wet soils to minimize soil compaction.
- Consider the effects that irrigation water has on wetlands, water related wildlife

habitats, riparian areas, cultural resources, and recreation opportunities.

- Management of nutrients and pesticides.
- Schedule salt leaching events to coincide with low residual soil nutrients and pesticides.
- Water should be managed in such a manner as to not drift or come in direct contact with surrounding electrical lines, supplies, devices, controls, or components that would cause shorts in the same or the creation of an electrical safety hazard to humans or animals.
- Consideration should be given to electrical load control/interruptible power schedules, repair and maintenance downtime, and harvest downtime.
- Consider improving the irrigation system to increase distribution uniformity or application efficiency of irrigation water applications.

CULTURAL RESOURCES CONSIDERATIONS

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer.

http://www.nrcs.usda.gov/technical/cultural.html is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

Endangered Species Considerations

If during the Environmental Assessment NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

PLANS AND SPECIFICATIONS

Application of this standard may include job sheets or similar documents that specify the applicable requirements, system operations, and components necessary for applying and maintaining the practice to achieve its intended purpose(s).

OPERATION AND MAINTENANCE

The operation and maintenance (O&M) aspects applicable to this standard consist of evaluating available field soil moisture, changes in crop evapotranspiration rates and changes in soil intake rates and adjusting the volume, application rate, or frequency of water application to achieve the intended purpose(s). Other necessary O&M items are addressed in the physical component standards considered companions to this standard.

APPENDIX E

SAMPLING AND RECORD KEEPING REQUIREMENTS

SAMPLING AND RECORD KEEPING REQUIREMENTS

FOR NUTRIENT MANAGEMENT PLAN
JOSEPH GALLO FARMS
31701 JOHNSON CANYON ROAD
GONZALES, CALIFORNIA 93401

The Sample and Analytical Recommendations and the Record-Keeping Requirements listed below are for the 5-year period of the permit (2009 – 2013). The sampling and record keeping are NMP requirements and should supplement any sampling required by other permits.

SAMPLE AND ANALYTICAL RECOMMENDATIONS

The sample requirements outlined in the Best Management Practices (BMPs), 40 CFR Part 412, 4 requires sampling and analytical as follows:

- Manure samples annually and tested for total nitrogen and phosphorus
- Soil samples every five years and analyzed for phosphorus

It is recommended that the following sample and analytical be conducted:

1. Collect a representative wastewater sample from Pond 12A, during an irrigation event, twice a year. Sampling is recommended in late April, to represent the mid-way point through the spring applications and again in late August to represent the summer applications. Analyze the wastewater sample for nitrate-nitrogen (NO_3-N), ammonium-nitrogen (NH_4-N), total Kjeldahl nitrogen (TKN), and phosphorus.
2. Collect a representative freshwater sample, from each source during an irrigation event. Sampling is recommended in late April, to represent the mid-way point through the spring freshwater irrigations and again in late August to represent the summer freshwater irrigations. Analyze the freshwater sample for total nitrogen.
3. Collect a composite soil sample from the field, composed of 20 sub-samples, from the depth of 0 to 4 inches. Analyze the composite soil sample for pH, nitrate-nitrogen, ammonium-nitrogen, organic matter, potassium, and phosphorus.

RECORD KEEPING REQUIREMENTS

Record-keeping requirements to substantiate the Nutrient Management Plan include the following:

- Volume of liquid irrigated both waste water and clean water
- Date(s) of irrigation
- Irrigator's initials

- Soil conditions at time of irrigation (dry, moist, wet)
- Yield of plant material removed from the field annually

The BMPs also require periodic inspection of equipment used for the land application of manure, litter, or process wastewater. It is recommended that any faulty equipment and repairs be documented including the date, person, and method of who inspected and/or repaired the equipment.

SAMPLING LIQUID MANURE

Liquid manure is comprised of both solids and liquid. Dissolved in the liquid phase is the ammonium form of nitrogen, dissolved phosphorus, potassium and other soluble nutrients. The solids phase contains organic forms of nitrogen, phosphorus, potassium and other nutrients that are bound in the solid material. It is these organic solids that give liquid manure its brown color. In most cases, some, but not all, solids will tend to settle, so liquid drawn from the bottom of the pond will have more solids (and correspondingly higher amounts of the organic-forms of nitrogen) than one drawn from higher up in the pond. If a pump intake is located at the bottom of the pond, the liquid manure coming out of the pump will initially have more solids in it than later in the irrigation when more of the water is drawn from higher up in the pond. If the pump intake is near the top of the pond, such as with a floating pump, the reverse is true and the water will contain more solids during the latter part of the irrigation. It may be necessary to sample more frequently during the period when the portion of solids is changing during an irrigation.

How much a pond will vary depends on how the pond has been managed. For example, if fresh water has recently been added at the top of the pond, the difference in nitrogen concentration from top to bottom may be large.

Ideally, samples should be taken periodically throughout an irrigation because the concentration of nutrients in the pond may vary depending on where in the pond the water is being taken from. Ponds may vary more during an irrigation at some times of the year than at others, and many ponds will change in concentration from irrigation to irrigation. Experience with a particular pond will indicate how many samples will be needed over the course of an irrigation, but a minimum of one sample per irrigation is necessary in almost all cases.

If the liquid manure is in a pressurized pipe, the sample may be taken from a spigot installed in the pipe or from the outfall of the pipe, if accessible. Allow the spigot to run sufficient to clear the tube from previous material. Remove the container from the spigot or outlet as soon as it is full to avoid packing a disproportionate amount of solids into the sample. Samples taken from a box in a gravity flow system should be taken from the middle of the stream to avoid floating debris. This can be done by attaching a line to a cork in a narrow-mouth collection bottle and pulling the cork out and allowing the bottle to fill after lowering the bottle (attached to a pole) well into the main part of the flow.

It is best to sample directly into the container you will be analyzing. Do not try to pour a sample from one container into another unless the entire sample can be transferred, otherwise a disproportionate amount of solids may remain in the bottom of the original container.

Sometimes it is necessary to obtain a preliminary estimate of nutrient concentration in order to target the next application. In deciding where to take a sample, consider what

part of the pond water applied to the field will come from and try to take a sample from that location. A sample should be taken from the flush only if the irrigation pump and the flush pump share the same intake. A sample taken prior to the irrigation, regardless of where the sample was drawn from, should not substitute for samples drawn during the irrigation itself. A quick test procedure run on all samples will give an indication of the variability of the pond over the course of the irrigation. From these, representative sample should be sent to a laboratory to determine other nutrients and to confirm quick test values.

Usually, a 1 pint sample will be adequate. Samples should be analyzed for ammonium and organic nitrogen. Total phosphorus, potassium, and perhaps other nutrients may also be desirable.

Minimum 1 sample per irrigation, +/-15% accuracy ammonium, +/- 30% organic.

The above recommendation is for producers that have the capacity to apply liquid manure with the 10% accuracy called for in the CNMP. All producers with CNMPs applying liquid manure should be progressing to that capability. For those in transition, several samples per year, and at least one per season, are needed to establish the minimum information needed to evaluate current nutrient application rates and trends in nutrient content with respect to time for the pond and management system.

However, when managing liquid manure as a nitrogen source for crops, taking less than the recommended number of samples is very likely to result in over- or under-applications of the targeted rate, and the potential for reduced yields.

To estimate the N application per acre =

[NO3-N X 0.008345] + [NH4-N X 0.008345] + [Organic N X 0.008345] X volume applied per 1,000 gallons

To estimate the P application per acre =

[P X 0.008345] X volume applied per 1,000 gallons

SAMPLING SOLID MANURE

Each manure pile that comes from a different source, that has been stored for a different length of time, or that has undergone different storage conditions should be sampled separately. Manure piles should be sampled and analyzed as close to the time of usage as possible. Biological and chemical processes change the content of manure over time.

Nutrient content of solid manure depends on many factors. Manure from the milk cow corral that has been stored for 6 months will be different from manure in the dry cow lot that was just scraped. Rations fed to cows will affect manure constituents. Many biological and chemical processes occur as manure is stored. Length of storage, environmental conditions during storage, and whether the manure is spread out or in a pile affects nutrient content, especially nitrogen content.

It is critical for good nutrient management that the manure sample taken to the laboratory represents what is in the pile. Since conditions are different on the surface of a pile compared to areas inside the stack, it is important to take several samples from in the pile. From each manure pile that has been handled in a uniform manner, such as manure from a corral that was scraped and stored for 6 weeks, sample 8 to 12 random locations. Samples should represent both the outside of the stack and the inner portions as well. A shovel or auger can be used. Place samples in a clean bucket or bag and thoroughly mix them. Remove a representative composite subsample of approximately one pint in size and place it in a sealed bag. Keep it cool until it can be taken to the lab. A refrigerator or ice chest is best; avoid direct sunlight such as on the dashboard of a vehicle.

Ask the laboratory how large a sample they would like. Make your representative composite sample, described above, the appropriate size for your laboratory.

What should the laboratory analysis include?
Moisture content is critical to relating the tons applied to the nutrient analysis that is done on a dry weight basis. Moisture content is the most highly variable component of manure.
Nitrogen should be analyzed as Total Nitrogen (TN).
Phosphorus and **potassium** are important crop nutrients and manure can be an important source.
Electrical conductivity (EC) is a measurement of the total salts and reinforces the need for leaching, by sufficient rain or irrigation, before planting.

Other nutrients that are of interest to your farming operation, such as sulfur or micronutrients, may also be analyzed. Be certain to request the laboratory to report results in units convenient to you. Units you may want include ppm, %, and lbs (N,P, or K) per wet ton. Others may be available.

To estimate the nutrient quantity applied with the manure, measure the weight of material in a loaded manure truck and count the loads applied per field. Calculate the tons per acre, then utilize the example calculations below to estimate the nutrient content of the manure and the nutrient application rate. Alternatively, follow the calibration procedures contained in Appendix B3.

References:

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SAMPLE CALCULATIONS FOR SOLID MANURE ANALYSIS

Results from the laboratory:
Moisture: 46 %
Total Nitrogen (N): 2.8 % (the same as 28,000 ppm)
Phosphorus (P): 0.5 % (the same as 5,000 ppm)
Potassium (K):2.3 % (the same as 23,000 ppm)

The Total Nitrogen, Phosphorus and Potassium are reported on a dry weight basis.

For each ton of the manure "as is" in the pile, 46 % of the weight, or 920 lbs, is water. The remaining 54%, or 1,080 lbs., is dry weight.

$$1 \text{ ton} \times \frac{2000 \text{ lbs.}}{\text{ton}} \times .54 = 1{,}080 \text{ lbs. dry weight}$$

Total nitrogen is 2.8% of 1,080 lbs.

1,080 lbs. x 0.028 = 30.2 lbs. per ton of field applied manure.

Phosphorus (P) is 0.5 % of 1,080 lbs.

1,080 lbs. x 0.005 = 5.4 lbs. P per ton of field applied manure.

5.4 lbs. P x 2.27 = 12.3 lbs. of P_2O_5 per ton of field applied manure.

Potassium (K) is 2.3% of 1,080 lbs.

1,080 x 0.023 = 24.8 lbs K per ton of field applied manure.

24.8 lbs. K x 1.2 = 29.8 lbs. K_2O per ton of field applied manure.

To estimate the N application per acre:
Acres in the field: 30
Number of loads applied to the field: 20
Tons of manure applied per load: 3
Total tons applied per acre: $\frac{20 \times 3}{30}$ = 2 tons per acre

Using the above information about the manure N content:

2 tons per acre x 30.2 lbs. per ton of field applied manure = 60 lbs. N per acre

To estimate the loads needed for a planned N application per acre:
Target application rate is 80 lbs. N per acre to a 40-acre field

Measure the material applied per truckload. (For example, 3 tons)

Using the above calculations, 3 t x 30.2 lbs. N/t = 91 lbs. per load

$$\frac{\text{40 acres x 80 lbs/ac}}{\text{91 lbs. N per load}} = \frac{\text{3200 lbs.}}{\text{91 lbs.N/load}} = \text{about 35 loads for the field}$$

It is essential to distribute the manure evenly on the field to achieve the benefit of the manure and to avoid unnecessary leaching or runoff of nutrients.

APPENDIX D

SAMPLING PLANTS, SOILS, AND CROPS FOR NUTRIENT REMOVAL.

A key aspect of designing a nutrient application program is evaluating the needs of the crop to be grown. This can be done by evaluating previous crop management strategies, visual observation of the growing crop, keeping records of manure—both solid and liquid lagoon water nutrient applications, nutrients applied in irrigation water, soil analysis, plant tissue testing and crop nutrient removal. Using all of these tools in combination provides the best results. Apply manure, lagoon water or fertilizer to correct nutrient deficiencies after careful consideration of the amount of nutrients removed by the crop, the yield potential of the field, current soil-test levels, and historical responses to fertilization.

PREVIOUS CROP MANAGEMENT STRATEGIES

Careful evaluation of past fertilizer, manure and lagoon water nutrient applications, both timing and total amount relative to crop yields is the first step. Visual observation of the plants during the growing season for nutrient deficiencies, yellowing of leaves or possible excesses such as leaf burn caused by excess salt, very dark green leaves along with leaf or soil analysis will be tools to use to detect low or high nutrient applications and the need to increase or reduce rates of applied nutrients.

VISUAL OBSERVATION

Nutrient deficiencies may be indicated by visual plant symptoms such as obvious plant stunting or yellowing. Nitrogen deficiencies in corn and most cereals like wheat, oats, barley and rye usually show as general yellowing of the plant and "V-shaped" yellowing beginning at the tip of older leaves and extending down the midrib or center of the leaf. Very dark green leaves, particularly older leaves of more mature plants may indicate excessively high nitrogen rates have been applied. Premature dying of the lower leaves, often called "firing" in corn, is the result of nitrogen deficiency. Purple colored leaves particularly on young plants during the fall and winter or early in the spring may be the result of cool growing conditions or perhaps phosphorus deficiency. Potassium deficiencies begin to show as yellowing of the leaf tips and then extend down the edges or margins of the more mature leaves. As deficiencies become more severe, the leaf margins die and turn brown. Zinc deficiency may be found on recently graded or leveled fields where topsoil containing higher amounts of organic matter has been removed. Deficiency symptoms often appear on corn as yellowing in the middle of the leaf between the midrib or center of the leaf and the outer edge midway between the tip and base of the leaf. Animal manures are an excellent source to supply this essential nutrient. Unfortunately, visual symptoms are not definitive and may be confused or mistaken for symptoms caused by other factors—insect injury, diseases, restricted root growth. The other problem with using visual observation of plant symptoms to diagnose nutrient deficiencies is that significant yield losses may have already occurred by the time the symptoms appear. Always confirm visual diagnosis with plant tissue analysis or test strips with selected fertilizers.

SOIL SAMPLING AND TESTING FOR CROP NUTRIENT MANAGEMENT AND ENVIRONMENTAL CONCERNS

Both soil and plant tissue test results are used to detect plant nutrient deficiencies or in some cases excess nutrient applications. These two tests differ in their ability to reliably diagnose nutrition problems in corn, wheat, oats, barley and rye. To fully understand and correct deficiencies and excesses, testing both soil and plant tissue may be desirable.

Soil tests provide an estimate of nutrient availability for uptake by plants and are most useful for assessing the fertility of fields prior to planting or at the end of the cropping season. Soil sampling methods are critical, since soil samples must adequately reflect the nutrient status of the field. Because a representative sample of an entire field is intended to give an average of all the variation in that field, it is not the best way to develop recommendations for parts of the field that are less productive. The best technique is to divide each field into two or three areas representing good, medium, and poor crop growth. Within each area establish permanent benchmark locations approximately 50 x 50 feet in size (Figure 1). To ensure that you will be able to find each benchmark area again, describe it in relation to measured distances to specific landmarks on the edge of the field or use a global positioning system (GPS) to locate the area. By using this method to collect soil and plant tissue samples, you will be able to compare areas of the field with different crop production levels, develop appropriate management responses, and track changes over the years.

The best time to sample soil is soon after an irrigation or rainfall, so the probe easily penetrates the moist soil. Before taking a soil sample, remove debris or residual plant material from the soil surface. The sample can be taken with a shovel, but an Oakfield or similar sampling probe (3/4 – 1" in diameter) is preferred. Sample the top 6 to 8 inches of soil. Take 15 to 20 cores at random from each benchmark area and mix them thoroughly in a plastic bucket to produce a single 1 – 2 pint composite sample for each benchmark area. Place each sample in a separate double-thick paper bag and dry the soil at room temperature before mailing to the laboratory. To get a complete profile of the nutrition status of a field, perform the following analyses: pH, organic matter for nitrogen, bicarbonate-P for phosphorus, exchangeable K for potassium, DTPA-Zn for zinc and EC or electrical conductivity to assess potential salt accumulation. A more complete salt analysis would include calcium (Ca), magnesium (Mg), sodium (Na) and sodium absorption ratio (SAR). Other analyses may be helpful in some

Table 1. Interpretation of soil test results for assessing plant growth responses.

		Soil test value, ppm[1]			
Nutrient	Extract	Deficient	Critical	Adequate	High
Phosphorus	Sodium Bicarbonate	< 5	5 - 10	> 10	> 40
Potassium	Ammonium Acetate	< 40	40 - 80	80 - 125	> 200
Zinc	DTPA	< 0.5	0.5 – 1.0	> 1.0	> 5.0

[1]An economic yield response to fertilizer application is very likely for values below the deficient level, somewhat likely for values in the critical range, and unlikely over the adequate level.

Situations. A list of laboratories is found in University of California Special Publication 3024, *California Commercial Laboratories Providing Agricultural Testing*.

Taking soil samples every other or every third or fourth year may be adequate once historical trends have been established. If poor crop growth is observed in other parts of the field, take samples from both good and poor growth areas so the fertility and salt level of the two areas can be compared. Table 1 lists guidelines for interpreting soil tests. Values are given for deficient, marginal, adequate, and high levels. An economic yield response to fertilizer application is very likely for values below the deficient level, somewhat likely for values in the marginal level, and unlikely for values over the adequate level.

SOIL TESTING TO ASSESS EXCESSIVE NITROGEN APPLICATIONS AND ENVIRONMENTAL CONCERNS

To assess the potential excessive application of nitrogen, soil samples from the two or three benchmark areas in the field should be sampled in one-foot increments to the 4-foot depth. It may be desirable to sample the surface foot as two samples—0 – 6" and 6 – 12" so that the surface sample can be analyzed as discussed above. The 6 – 12" and the deeper depth samples require only 6 to 8 cores for a composite sample. These samples should be analyzed for ammonium-N and nitrate-N concentrations. Ammonium-N and nitrate-N concentrations in the surface 1 or 2 foot increments could be considered to be available for the following crop provided excessive leaching does not move this nitrogen below the rooting zone. Excessive nitrate concentrations in the lower depths (3 to 5 foot depths) would indicate excessive applications of nitrogen and water that were not utilized by the crop and have little opportunity to be available for the next crop.

Table 2. Interpretation of soil test results for assessing excessive nitrate-N concentrations in the deeper portion (third, fourth and fifth foot depths) of the soil profile. Nitrate-N concentrations are expressed on a dry soil basis.

		Soil test value, ppm		
Nutrient	Extract	Desirable	High	Excessive
Nitrate	Potassium Chloride (1 M)	< 5	5-10	> 10

PLANT TISSUE SAMPLING AND TESTING

Leaf sampling followed by chemical analysis of corn, wheat, oats, barley and rye is an effective way of determining the nutrient status of the crop. Such tests are the best reflection of what nutrients the plant has taken up and are far more accurate than trying to predict what may occur with the use of soil tests. Unfortunately the early growth stage samples may not predict

very effectively what nutrient additions are needed during the later growth stages to achieve high yields or crop quality. Samples taken at later growth stages may be more highly correlated with yield or quality but do not provide for nutrient applications to be made in time to correct deficiencies that will influence crop yield or quality. Sampling the small grains wheat, barley and oats at tillering (Feekes growth stage 3) should include the entire aboveground portion of 20 – 30 plants from each of the benchmark areas. Taking samples at tillering may allow time for correction of nutrient deficiencies on the current crop. Collect 12 to 16 leaves from as many corn plants when 75% of the plants are tasselling and take the ear leaf or the leaf opposite and below the ear from each of the benchmark areas. Samples should be analyzed for total nitrogen (N), phosphorus (P), potassium (K), zinc (Zn) and other nutrients as desired.

Table 3. Interpretation of plant tissue test results for assessing plant growth responses.

			Plant tissue test value[1]			
Crop	Plant growth stage[2]	Nutrient	Deficient	Critical	Adequate	High
Barley, oats wheat, rye and triticale	Tillering (GS3)	Nitrogen Phosphorus Potassium Zinc (ppm)	< 3.0 < 0.2 < 2.0 < 15	3.0-4.0 0.2-0.3 2.0-3.2 15-20	4.0-5.0 0.4-0.7 3.2-4.0 20-70	> 5.0 > 0.7 > 4.0 > 70
Barley, oats wheat, rye and triticale	Heading (GS10.3)	Nitrogen Phosphorus Potassium Zinc (ppm)	< 2.0 < 0.15 < 1.5 < 15	2.0-2.5 0.15-0.2 1.5-2.0 15-20	2.5-3.5 0.2-0.4 2.0-3.0 20-70	> 3.5 > 0.4 > 3.0 > 70
Corn	75% Tassel	Nitrogen Phosphorus Potassium Zinc (ppm)	< 2.25 < 0.23 < 1.5 < 15	2.25-2.5 0.23-0.26 1.5-2.0 15-20	2.5-3.0 0.26-0.3 2.0-3.0 20-50	> 3.5 > 0.3 > 3.0 > 50

[1] An economic yield response to fertilizer application is very likely for values below the deficient level, somewhat likely for values in the critical range, and unlikely over the adequate level.

[2] Approximate Feekes scale growth stage.

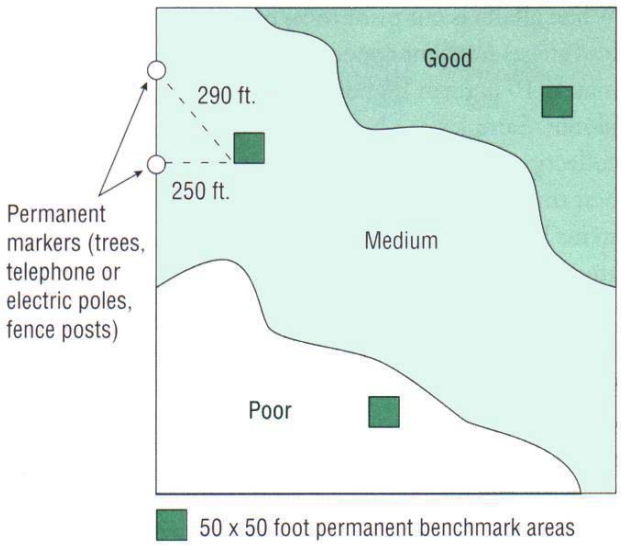
ESTIMATING CROP NUTRIENT REMOVAL

Whole plant tissue tests are useful in determining total nutrient uptake and removal by the crop as well as determining feed value for the animals. Sampling whole plants to achieve accurate nutrient concentrations is difficult because of the wide differences in concentration between various plant parts. Leaf concentrations of nitrogen for example may be 2.0-2.5% whereas the midrib of a corn leaf or the stalk might be only 1/3 to ¼ of that concentration. Even the range of nitrogen concentration in the grain of corn or one of the cereal grains may differ by a factor of 1½ - 2 or more. One method for taking a sample would be to use a hay-sampling probe to take 15 to 20 cores that are composited in the same bag from the silage pit as it is being filled. These cores should be taken to represent the forage coming from specific fields so that

yields and crop removal can be calculated from each field. The core samples should be mixed thoroughly and an approximate 2-3 pound representative subsample taken that can be submitted to the laboratory and used for chemical analysis. Another good way of sampling is to collect 10-15 whole plants, dry and then chop or grind to pass through about a 4 mesh screen (4-6 mm openings) or ¼ to ½ inch in length. Mix thoroughly and take an approximate 2-3 pound representative subsample that can be taken to the laboratory and used for chemical analysis. Samples should be analyzed for total nitrogen (N), phosphorus (P), potassium (K), and perhaps zinc (Zn) and other nutrients as desired.

FIGURES

Figure 1. Sound soil and plant tissue sampling procedures involve establishing permanent benchmark sampling locations (50 x 50 feet in size) within areas of the field that support good, medium and poor crop growth. Define these benchmark areas in relation to measured distances to specific landmarks on the edge of the field or use global positioning systems.



See file: intermtnalfmgmt.jpg for above diagram

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