

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
Order R5-2017-0000**

INFORMATION SHEET

**WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR CONFINED
BOVINE FEEDING OPERATIONS**

INTRODUCTION

This Information Sheet provides information to supplement, clarify, and elaborate upon the findings and requirements contained in the Waste Discharge Requirements General Order for Confined Bovine Feeding Operations, Order No. R5-2017-0000 (Bovine General Order). This Information Sheet is considered a part of the Bovine General Order.

The Bovine General Order will serve as general Waste Discharge Requirements for discharges of waste from Confined Bovine Feeding Operations. The Bovine General Order is not a National Pollutant Discharge Elimination System (NPDES) permit, and does not authorize discharges to surface waters that would otherwise require an NPDES permit.

BACKGROUND ON REGULATION OF CONFINED ANIMAL OPERATIONS

Pursuant to Water Code section 13260, any person discharging or proposing to discharge wastes that could affect the quality of the waters of the state is obliged to file a report of that discharge with the appropriate regional water board and receive waste discharge requirements from that board. The regional water boards have the authority to waive this requirement pursuant to Water Code section 13269. In 1982, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board or Board) adopted Resolution No. 82-036, which waived waste discharge requirements for most confined animal operations. This waiver remained in place until statutory changes to Water Code section 13269 resulted in the automatic expiration of all waivers on 1 January 2003.

To replace the expiring waiver, the Central Valley Water Board adopted Resolution R5-2002-0205 on 6 December 2002 that states all operations that discharge or propose to discharge waste would be expected to obtain regulatory coverage under either:

- Individual or general waste discharge requirements prescribed by the Board pursuant to Water Code section 13263;
- A conditional waiver that the Board would adopt pursuant to Water Code section 13269; or
- Individual or general National Pollutant Discharge Elimination System (NPDES) permits, which would be issued by the Board pursuant to Federal law.

The Central Valley Water Board rescinded Resolution R5-2002-0205 on 13 March 2003, because neither general waste discharge requirements nor a general NPDES

permit were available as options for facilities to consider before the deadlines in the Resolution expired.

Since the waiver expired, the Regional Board has been developing and implementing General Orders for various groups of dischargers, including confined animal operations. The Bovine General Order is aimed at protecting surface and groundwater quality in the Central Valley from waste produced by Confined Bovine Feeding Operations.

RATIONALE FOR ISSUING A GENERAL ORDER

The Board regulates most discharges by prescribing waste discharge requirements or by issuing conditional waivers. All Confined Bovine Feeding Operations (as defined in Cal. Code Regs., tit. 27, § 20164) are subject to the Board's regulatory authority.

Water Code section 13263(i) describes the criteria that the Board uses to determine whether a group of operations should be regulated under a general order (as opposed to individual orders). These criteria include:

- The discharges are produced by the same or similar types of operations,
- The discharges involve the same or similar types of wastes,
- The discharges require the same or similar treatment standards, and
- The discharges are more appropriately regulated under general WDRs rather than individual WDRs.

Confined Bovine Feeding Operations are appropriately regulated by a General Order because they: (a) involve similar types of operations, where animals are confined and where their wastes are managed by onsite storage, land application, or removal offsite; (b) the discharges from these operations, which are primarily composed of animal waste, are similar; (c) the operations are subject to regulations that impose the same or similar treatment standards; (d) discharges of bovine wastes have the same potential to impact waters of the state; and, (e) given the large number of operations and their similarities, the operations are more appropriately regulated under a General Order.

BOVINE OPERATIONS IN THE CENTRAL VALLEY

Confined Bovine Feeding Operations for the purposes of this General Order, are defined to include all types of commercial operations, except dairies, that house bovine animals and meet the feeding, duration, and population criteria in the General Order (see Attachment E, Definitions, and Finding 2 on page 1 of the Bovine General Order). The bovine animals can be a variety of ages, from calf to adult, housed in a variety of ways, including calf hutches, corrals, and barns.

No single state agency or private entity maintains a comprehensive list of all bovine operations within the Central Valley. Of the four main classes of operations (calf, heifer, beef feedlots, and auction yards), a comprehensive list is only available for auction yards.

There are 25 auction yards within the Central Valley Region, with the largest number in Stanislaus and Tulare Counties. In most cases, animals are only housed at the facilities on the days that sales are taking place, and are rarely housed overnight. Because animals are not continuously housed at most auction yards, the volume of manure generated is less than that a facility where animals are housed continuously, and there are more times when pens are emptied so that manure removal can be done. Auction yards without continuous animal housing are expected to qualify for the Limited Time Operations tier.

To develop an estimate of the number of calf, heifer, and beef feedlots that house 100 or more Animal Units (AUs), and would therefore qualify as Full General Order Coverage Operations, staff reviewed air photos and in-house records. Staff also reviewed dairy sites closed out of the Dairy General Order that were planned for conversion to non-dairy bovine operations. Staff from the California Department of Food and Agriculture assisted in the air photo review and provided some additional information on active bovine operations. The review was conducted for 17 of the 36 counties that are entirely or partially within the boundaries of the Central Valley Region. The counties reviewed were those anticipated to have the largest number of bovine operations.

The 17 counties surveyed were estimated to have approximately 350 bovine operations. There were roughly 50 calf operations and 50 beef feedlots, with the remaining operations presumed to be either raising dairy support stock (heifer operations) or operations raising both heifers and calves.

The operations were not divided by the number of AUs housed on site. Operations vary widely in size, with the largest beef feedlot housing in excess of 100,000 animals (Harris Ranch Feeding Company).

Because of the lack of any centralized database on smaller bovine operations housing between 6 and 99 AUs that would be classified as Limited Population Operations, the number of such facilities has not been estimated. Most of these types of facilities do not require local land use permits or any other special types of approvals. It is anticipated that operations within this population range may be many times the number of operations housing 100 or more AUs.

POTENTIAL IMPACTS OF BOVINE WASTE ON WATER QUALITY

For the purposes of this General Order, bovine waste includes, but is not limited to, manure, leachate, process wastewater and any water, precipitation or rainfall runoff that came into contact with raw materials, products, or byproducts such as manure, compost piles, feed, silage, or bedding.

Waste generated at bovine operations is stored in solid form in piles or in liquid form in waste retention ponds. The wastes are then applied to cropland or transported off-site for utilization on cropland as a nutrient source. These nutrient-laden materials are

applied to soils of varying character and drainage characteristics, varying proximity to surface drainages and waterways, and different character of geology and depth to groundwater. Because of the site variability, this General Order requires bovine operations that apply waste to cropland under their control to develop a Nutrient Management Plan that is field specific to ensure that optimum nutrient utilization takes place. Although the waste materials provide nutrients to crops, they can create nuisance conditions if improperly managed or cause pollution of surface water and/or groundwater if site conditions are not taken into account in preparing a nutrient utilization and management strategy. This General Order regulates the management of bovine wastes onsite and requires nutrient monitoring, discharge monitoring, groundwater monitoring (individual or representative) and tracking of materials being taken off-site for utilization.

Manure from bovine operations contains high concentrations of salts (total dissolved solids, including constituents such as sodium and chloride) derived primarily from the feed and water sources used in the raising of bovine animals. Manure from bovine operations contains nutrients (including nitrogen, ammonia, phosphorus and potassium compounds) that can be used in crop production. Manure generation per animal for the categories subject to the Bovine General Order (calves, heifers, and feedlot beef cattle) is less than lactating (milk) cows but can be substantial at large operations:

Animal Type	Animal Weight (pounds)	Manure excreted Per Day (pounds)	Nitrogen Excreted Per Day (pounds)
Lactating Cow ¹	1,400	150	1.0
Calf ¹	330	19	0.14
Heifer ¹	970	49	0.26
Beef Finishing Cattle ²	1,000	66	0.4

This manure must be managed to minimize impacts to water quality.

The application of bovine waste to cropland provides some challenges due to the complexity of nitrogen in the soil-crop system. Soil nitrogen occurs primarily in three different forms - organic nitrogen, ammonium, and nitrate. Sources of organic nitrogen in soil include crop residue, the soil organic matter pool, and bovine waste applications. Organic nitrogen will mineralize to ammonium over time (one to seven years according to the University of California Committee of Experts [UCCE] review). Thus, organic nitrogen provides a steady, relatively slow release of plant available and leachable nitrogen.

Applying manure with high organic nitrogen content may not meet a crop's nitrogen need during the most rapid growth stage, while exceeding the crop nitrogen uptake

¹ Lactating cow, calf and heifer data from ASAE D384.2, March 2005, Table 1.b.

² Beef finishing cattle derived from "Managing Manure from Beef Feedlots for crop Production"; Cattle Feeders Conference; June 10-11, 2009.

during the remainder of the crop's growing season, when the nitrogen may be subject to leaching.

Ammonium nitrogen is immediately available to the plant, but also sorbs to soil particles. Ammonium nitrogen that is unused by the plant remains in the soil and is converted to nitrate typically within days to weeks under oxidizing conditions which are present in much of the Central Valley. Nitrate is also immediately available to the plant, but unlike organic nitrogen and ammonium nitrogen, it does not adsorb to soil particles. Instead, it is in a dissolved form and moves readily with soil water.

The application of manure or wastewater to a land application area results in the discharge of salts and nitrogen compounds. Oxidation of nitrogen compounds by nitrifying bacteria (i.e., ammonia and organic nitrogen compounds) to nitrites and nitrates has the potential to degrade the quality of surface water and groundwater in the Central Valley Region, if not properly managed. Runoff from manured land application areas poses a threat to surface water quality. A similar threat to groundwater exists if the wastes are applied to the land application area at rates that exceed crop needs. The UCCE review of dairy waste states that based on field experiments and computer models, the appropriate nitrogen loading rate that minimizes nitrogen leaching and maximizes nitrogen harvest is between 140 to 165% of the nitrogen harvested. This is a slightly higher loading rate than what is allowed under New Mexico regulations, which require "...the total nitrogen in effluent that is applied to a crop that is harvested shall not exceed by more than 25 percent the maximum amount of nitrogen reasonably expected to be taken up by the crop..." (20.6.2.3109 NMAC). New Mexico does not allow adjustment of the nitrogen content to account for volatilization or mineralization processes. This Order uses a target of 140% of the nitrogen harvested (1.4 times crop uptake) to minimize overapplication of nitrogen. However, it is understood that the 1.4 target cannot be consistently achieved under all conditions. The Representative Monitoring Program will research alternative standards for the Executive Officer to consider for approval.

Surface water can also be degraded and polluted by both the type and high concentrations of pollutants in bovine manure and manure wastewater. Ammonia in the waste is highly toxic to aquatic life and can suppress dissolved oxygen concentrations. In addition, nitrogen and phosphorus compounds in the waste can cause excessive algal growth in surface waters, resulting in lower oxygen levels and which in turn causes fish and other organisms to die. The presence of pathogens in the waste can create a public health threat through human contact with affected waters.

In contrast to most dairy operations, where animals are kept in freestall barns and manure is flushed with water into wastewater ponds, most bovine operations housing animals older than young calves use corrals. This results in an operation that generates much less wastewater than a conventional dairy. However, corral runoff can contain significant quantities of pollutants, including salts and ammonia. Central Valley Water Board staff has investigated some cases where cases were corral runoff has resulted in impacts to surface water quality. The Bovine General Order includes prohibitions,

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specifications, and provisions for the production area (including corrals and existing and new ponds) and land application areas that are designed to protect water quality. Consistent with Title 27, this General Order prohibits the direct or indirect discharge of waste from the production area to surface water. This General Order also prohibits discharges of: (1) wastewater to surface waters from cropland, and (2) waste to surface waters that causes pollution or nuisance, or that causes or contributes to exceedances of any water quality objective in the Basin Plans or water quality criteria set forth in the California Toxics Rule and the National Toxics Rule.

Storm water may contain pollutants from bovine wastes if the storm water is allowed to contact manured areas or commingle with wastewater. This General Order prohibits discharges of storm water from the production area to surface water and any discharge of storm water to surface water from the land application areas being used for nutrient utilization unless that discharge is from land that has been managed consistent with a certified Nutrient Management Plan.

WASTE MANAGEMENT PROVISIONS IN THE BOVINE GENERAL ORDER

The Bovine General Order contains prohibitions, general specifications, and specific requirements for wastewater ponds, the production area where animals are housed, the land application area where crops are grown and monitoring requirements. The goal of the Order is to ensure that Bovine Operations implement water quality management practices that protect surface and groundwater. Practices can be physical, like the construction of new wastewater ponds in ways that protect water quality, or can be management-related, like the scraping of excess manure from corrals prior to the wet season and the maintenance of ponds to ensure adequate storage capacity.

Excluded Operations: The Order does not regulate Confined Bovine Feeding Operations having fewer than 6 animal units onsite. An animal unit is 1000 pounds of live weight, and is roughly 1 heifer or 3 calves. Therefore, operations having fewer than 6 heifers or 18 calves, for example, are not required to obtain coverage under this Order. Such operations are almost exclusively non-commercial and present a minimal risk to water quality.

Three Tiered Regulatory System: Central Valley Board staff is proposing a three-tiered regulatory system.

Limited Time Operation tier - Because many of the operational characteristics of auction yards (i.e. animals are not continually housed onsite, therefore corrals can be regularly maintained while animals are absent) such operations that do not house animals continuously can be placed in a Limited Time Operation tier with reduced waste management requirements.

Limited Population Operation tier - Because of the generally drier nature of bovine feedlot operations versus dairies, and because of the generally lower threat posed by them, operations that house between 6 and 99 AUs of bovine animals can be placed in

a Limited Population Operation tier with reduced waste management and minimal reporting requirements.

Full General Order Coverage tier – Confined Bovine Feeding Operations that house 100 or more AUs and do not meet the Limited Time Operation criteria are Full General Order Coverage Operations.

Confined Bovine Feeding Operations considered to be Limited Time operations are required to:

- Submit a Notice of Intent within 12 months of the adoption of the Order;
- Maintain records and submit annual reports;
- Develop, submit, and implement an Operation and Maintenance Plan describing how the facility will be operated to protect water quality; and
- Either document the destinations of exported manure using manifests or enroll irrigated cropland associated with the facility that receives only solid manure in the Irrigated Lands Regulatory Program.

Confined Bovine Feeding Operations considered to be Limited Population operations are required to:

- Submit a Notice of Intent within 12 months of the adoption of the Order; and
- Develop and implement an Operation and Maintenance Plan describing how the facility will be operated to protect water quality.

Confined Bovine Feeding Operations considered to be Full Coverage operations are required to:

- Submit a Notice of Intent within 12 months of the adoption of the Order,
- Where applicable, monitor wastewater, soil, crops, manure, surface water discharges, and storm water discharges;
- Where applicable, monitor surface water and groundwater in accordance with a monitoring and reporting program (regulated operations have the option to join a Representative Groundwater Monitoring Program (RMP) in lieu of individual monitoring of first encountered groundwater);
- Prepare, submit, and implement a Waste Management Plan (WMP) for the production area (including an Operation and Maintenance Plan);
- Where applicable, prepare and implement a Nutrient Management Plan (NMP) for land application areas, or document the destinations of exported manure using manifests;
- Maintain records and submit annual reports; and

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- Improve or replace management practices that are found not to be protective of water quality.

Terms Used to Describe Areas at Confined Bovine Feeding Operations: In the Bovine General Order, the land associated with a bovine operation is divided into a “production area” and a “land application area”. The Order uses the term “production area” to refer to the area of the operation where animals are housed, feed and manure are stored, and wastewater is managed. The Order uses the term “land application area” to refer to cropland where wastes and wastewater generated at the facility are applied to grow crops.

Water Quality Concerns for Land Application Areas (cropland): When used as a fertilizer on cropland, bovine waste is applied to soils of varying character and drainage characteristics, varying proximity to surface drainages and waterways, and different depths to groundwater. Because of the site variability, this General Order requires Confined Bovine Feeding Operations that apply bovine wastewater to their own cropland, or that have cropland that receives nutrients other than wastewater and that is not enrolled under the Irrigated Lands Regulatory Program, to develop a Nutrient Management Plan that is field specific to ensure that optimum nutrient utilization takes place. Although the waste materials provide nutrients to crops, they can create nuisance conditions if improperly managed or cause pollution of surface water and/or groundwater if site conditions are not taken into account in preparing a nutrient utilization and management strategy. This General Order regulates the management of bovine wastes onsite and requires nutrient monitoring, discharge monitoring, groundwater monitoring (individual or representative), and manifesting of bovine waste exported from the operation.

Surface water can also be degraded by both the type and high concentrations of pollutants in bovine manure and wastewater. Ammonia in the waste is highly toxic to aquatic life and can suppress dissolved oxygen concentrations. In addition, nitrogen and phosphorus compounds in the waste can cause excessive algal growth in surface waters, resulting in lower oxygen levels and which in turn causes fish and other organisms to die. The presence of pathogens in the waste can create a public health threat through human contact with affected waters. The Bovine General Order prohibits the discharge of waste and water that has contacted waste from the production area, the discharge of waste and wastewater from cropland, and requires the monitoring of the discharge of storm water and tailwater to surface water from cropland.

Groundwater Monitoring for Full General Order Coverage Operations: In order to assess the impacts to groundwater associated with various waste management practices employed at the Full General Order Coverage Confined Bovine Feeding Operations, the Order contains two parallel approaches to monitoring: 1) individual monitoring, where Confined Bovine Feeding Operations can elect to conduct their own monitoring, submitting a Monitoring Well Installation Plan to the Board for approval and collecting and analyzing their own groundwater samples; and 2) a Representative Monitoring Program (RMP) for Confined Bovine Feeding Operations that would prefer to

pool their resources.

Under the RMP approach, individual Confined Bovine Feeding Operations regulated under the Full General Order have the option of joining together to collectively monitor different waste management practices in a variety of geologic settings in lieu of developing individual monitoring programs. Bovine Operations utilizing management practices that are found not to be protective of groundwater quality will be required to make improvements in those management practices.

CEQA COMPLIANCE FOR OPERATIONS REGULATED BY THE BOVINE GENERAL ORDER

Bovine facilities which are operational at the date of the issuance of the Tentative Order (10 February 2017) will be considered to be existing facilities for the purposes of the California Environment Quality Act (CEQA), and will not require additional environmental assessment prior to receiving coverage under the General Order. Further information on the applicability of CEQA categorical exemptions to the Bovine General Order is discussed on Page IS – 31.

Operations which commence after 10 February 2017, and operations which “expand” after 10 February 2017, will need to comply with the provisions of CEQA before they can be covered by the Bovine General Order.

“Expand” is defined in two ways in the Bovine General Order. If a Confined Bovine Feeding Operation completed and received approval of a CEQA document in the past, it is considered to have expanded if it increases its herd size beyond the herd size described in the CEQA document. If a bovine operation did not complete and receive approval of a CEQA document in the past, it is considered to have expanded if it increases its herd size beyond its “existing herd size”, which is the maximum number of bovine animals, measured in Animal Units, housed at the facility in a single month period that occurred in the three years immediately prior to 10 February 2017. The establishment of “existing herd size” is based on this time span because herd sizes typically fluctuate.

HOW WILL THIS ORDER BE ENFORCED?

- The State Water Board’s Water Quality Enforcement Policy (Enforcement Policy) establishes a process for using progressive levels of enforcement, as necessary, to achieve compliance. It is the goal of the Central Valley Water Board to enforce this order in a fair, firm, and consistent manner. Violations of this Order will be evaluated on a case-by-case basis with appropriate enforcement actions taken based on the severity of the infraction and may include issuance of administrative civil liabilities. Progressive enforcement is an escalating series of actions that allows for the efficient and effective use of enforcement resources to: 1) assist cooperative dischargers in achieving compliance; 2) compel compliance for repeat violations and recalcitrant violators; and 3) provide a disincentive for

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noncompliance. Progressive enforcement actions may begin with informal enforcement actions such as a verbal, written, or electronic communication between the Central Valley Water Board and a Discharger. The purpose of an informal enforcement action is to quickly bring the violation to the Discharger's attention and to give the Discharger an opportunity to return to compliance as soon as possible. The highest level of informal enforcement is a Notice of Violation. The Enforcement Policy recommends formal enforcement actions for the highest priority violations, chronic violations, and/or threatened violations. Violations of the Bovine General Order that will be considered as high priority violations include, but are not limited to:

- Any discharge of waste and/or storm water from the manure storage areas (including ponds) to surface waters.
- The application of waste to lands not owned, leased, or controlled by the Discharger without written permission from the landowner.
- The discharge of wastewater to surface water from cropland.
- Failure to submit notification of a discharge to surface water.
- Falsifying information or intentionally withholding information required by applicable laws, regulations or an enforcement order.
- Failure to submit a Design Report for any new or enlarged wastewater pond prior to construction and/or a Post Construction Report for such construction.
- Failure to pay annual fee, penalties, or liabilities.
- Failure to monitor as required.
- Failure to submit required reports on time.

ECONOMIC ANALYSIS OF THE IMPACT OF THIS ORDER

Based on currently available information on the operational practices at Confined Bovine Feeding Operations, staff has estimated the cost of compliance for facilities in the Limited Time, Limited Population, and Full General Order Coverage tiers. For each type of facility, the number of animals and the number of features at the operation (cropland, wastewater ponds, and composting operations, for example) that would require monitoring and report preparation were estimated. The results of that analysis are summarized in Table 1.

Type of Operation	Cost Based on Complexity of Operation First year cost/facility // Annual cost/facility			First year cost/facility	Annual cost/facility
	Simple	Medium	Complex		
Limited Time				\$15,000	\$7,500
Limited Population				\$1,000	N/A
Full General Order Coverage – Small (250 animals)	First year =\$10,100 Annual =\$6,600	Not evaluated	First year =\$41,600 Annual =\$22,700		
Full General Order Coverage – Medium (2,000 animals)	First year =\$13,400 Annual = \$9,100	First year =\$30,100 Annual =\$15,700	First year =\$46,600 Annual =\$27,200		
Full General Order Coverage – Large (100,000 animals)	First year =\$21,500 Annual =\$17,800	First year =\$47,900 Annual =\$29,000	First year =\$60,700 Annual =\$39,500		

Table 1. Cost of Implementation of Bovine General Order

Confined Bovine Feeding Operations in the “Simple” category have no cropland associated with the facility, and therefore do not need to develop a Nutrient Management Plan or collect the associated wastewater, plant tissue, and soil samples, or maintain records of nutrient applications or harvested quantities of crops. They do not have composting operations or wastewater ponds. As a result, their compliance costs are smaller relative to operations that have such features.

Operations in the “Medium” category have cropland associated with the facility and have wastewater ponds on site. However, they do not have composting operations and are not at risk to discharge to surface water, which reduces inspection and monitoring costs.

Operations in the “Complex” category have the most elements that require monitoring and reporting. They have cropland, wastewater ponds, and composting operations associated with the facility. They also have discharges of storm water and/or tailwater to surface water that will require monitoring.

For Limited Time tier operations, the cost of compliance is assumed to consist of preparation of a Notice of Intent, inspections of the production area, testing of corral runoff retained in storage ponds, preparation and submittal of annual reports, and the development of an Operation and Maintenance Plan for the production area features, such as corrals, at the facility.

For Limited Population tier operations, the cost of compliance is assumed to consist of preparation of a Notice of Intent, and the development of an Operation and

Maintenance Plan for the production area features, such as corrals, at the facility. Annual reports are not required for Limited Population tier operations.

The cost of implementing the Operation and Maintenance (O & M) Plan is not included in Table 1 for any of the types of facilities. The O & M Plan outlines good housekeeping procedures customized to the specific bovine operations that are designed to ensure that impacts to ground and surface water are minimized. In most cases, the O & M Plan will memorialize practices already in place at the bovine operation, such as the regular cleaning and grading of corrals and the maintenance of gutters and water troughs.

Costs for the construction of wastewater ponds are site-specific. General information on the cost of several types of wastewater ponds are included on Pages IS-26 and 27, and in Attachments A and B to this Information Sheet. Improvements to the facility to provide flood protection and the construction of a facility-specific groundwater monitoring network have not been included in Table 1 as the need for these tasks and the associated costs are dependent on site-specific conditions. Estimated additional costs for participation in a representative groundwater monitoring program as an alternative to the construction of an individual groundwater monitoring network have not been provided in Table 1, as these programs have not yet been developed.

APPLICABLE REGULATIONS, PLANS, AND POLICIES

Water Quality Control Plans

The Central Valley Water Board has adopted Water Quality Control Plans (Basin Plans) for the Sacramento River and San Joaquin River Basins (4th ed.) and for the Tulare Lake Basin (2nd ed.). These two Basin Plans designate the beneficial uses of groundwater and surface waters of the Central Valley Region, specify water quality objectives to protect those uses, and include implementation programs for achieving water quality objectives. The Basin Plans also incorporate, by reference, plans and policies of the State Water Board, including the *State Anti-Degradation Policy* and State Water Board Resolution 88-63 (*Sources of Drinking Water Policy*). The Bovine General Order contains requirements necessary to bring the discharges of waste from the Operations into compliance with the Basin Plans, including requirements to meet the water quality objectives and protect beneficial uses specified in the Basin Plans, and other applicable plans and policies.

Beneficial Uses of Surface Water and Groundwater

The State Water Board adopted statewide standard definitions for beneficial uses of surface and ground waters. These standard definitions were used to identify the existing and potential future beneficial uses contained in the Basin Plans. Consideration also was given to the practicability of restoring uses which may have been lost because of water quality.

Surface Waters: Pursuant to Chapter II of the Basin Plans, the beneficial uses of surface water may include: municipal and domestic supply; agricultural supply; industrial process supply; industrial service supply; hydro-power generation; water contact

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recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning reproduction and/or early development; wildlife habitat; navigation; rare, threatened, or endangered species; groundwater recharge; freshwater replenishment; aquaculture; and preservation of biological habitats of special significance. The Sacramento River and San Joaquin River Basins Plan includes four additional beneficial use designations not specified in the Tulare Lake Basin Plan (agricultural stock watering, commercial and sport fishing, estuarine habitat, and shellfish harvesting). Both Basin Plans contain a Table that lists the surface water bodies and the beneficial uses. Where water bodies are not specifically listed, the Basin Plans designate beneficial uses based on the waters to which they are tributary.

The beneficial uses are protected in the Bovine General Order by, among other requirements, a prohibition on the direct or indirect discharge of waste and/or storm water from the production area to surface waters, a prohibition on the discharge of wastewater to surface waters from cropland, a prohibition on any discharge of storm water to surface water from the land application areas unless the land application area has been managed consistent with a certified Nutrient Management Plan, and a prohibition on the discharge of waste from Confined Bovine Feeding Operations to surface waters that causes or contributes to an exceedance of any applicable water quality objective or any applicable state or federal water quality criterion.

Groundwater: Chapter II of the Sacramento River and San Joaquin River Basin Plan states:

“Unless otherwise designated by the Regional Water Board, all groundwaters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.”

Chapter II of the Tulare Lake Basin Plan designates the beneficial uses of groundwater to include municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, water contact recreation, and wildlife habitat. The Tulare Lake Basin Plan includes a table that lists the designated beneficial uses of groundwater within the Basin.

These beneficial uses are protected in this Order by, among other requirements, the specification that the discharge of waste at Confined Bovine Feeding Operations shall not cause a violation of water quality objectives or cause pollution or nuisance. Degradation of groundwater is allowed provided it is in accordance with this Bovine General Order.

Water Quality Objectives

Pursuant to Water Code section 13263(a), Waste Discharge Requirements (WDRs) must implement the Basin Plans, and the Board must consider the beneficial uses of water, the water quality objectives reasonably required to protect those beneficial uses,

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other waste discharges, and the need to prevent nuisance conditions. Water quality objectives are the limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area. (Wat. Code, § 13050(h).) Water quality objectives apply to all waters within a surface water or groundwater resource for which beneficial uses have been designated. Water quality objectives are listed separately for surface water and groundwater in Chapter III of the Basin Plans and are either numeric or narrative. The water quality objectives are implemented in WDRs consistent with the Basin Plans' *Policy for Application of Water Quality Objectives*, which specifies that the Central Valley Water Board "will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives." To derive numeric limits from narrative water quality objectives, the Board considers relevant numerical criteria and guidelines developed and/or published by other agencies and organizations.

The primary waste constituents of concern (COCs) due to discharges of waste from Confined Bovine Feeding Operations with respect to surface waters are: nitrogen in its various forms (ammonia and un-ionized ammonia, nitrate, nitrite, and total Kjeldahl nitrogen), phosphorus, potassium, salts (as measured by total dissolved solids and electrical conductivity), total suspended solids, and pathogens.

The COCs due to discharges of waste from Confined Bovine Feeding Operations with respect to groundwater are: nitrogen in its various forms (ammonia and un-ionized ammonia, nitrate, nitrite, and total Kjeldahl nitrogen), salts, and general minerals (calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, and chloride). The discharge of waste from Confined Bovine Feeding Operations must not cause surface water or groundwater to exceed the applicable water quality objectives for those constituents. If compliance cannot be immediately achieved, the Board may set a compliance time schedule for the discharger to achieve compliance with the water quality objectives. Under the Basin Plans, this time schedule must be "as short as practicable."

*Water Quality Objectives and Federal Criteria for Surface Water*¹

Water quality objectives that apply to surface water include, but are not limited to, (1) numeric objectives, including the bacteria objective, the chemical constituents objective (includes listed chemicals and state drinking water standards, i.e., maximum contaminant levels (MCLs) promulgated in Cal. Code Regs., tit. 22, §§ 64431 and 64444 and are applicable through the Basin Plans to waters designated as municipal and domestic supply), dissolved oxygen objectives, pH objectives, and the salinity objectives; and (2) narrative objectives, including the biostimulatory substances objective, the chemical constituents objective, and the toxicity objective. The Basin

¹ The Bovine General Order prohibits the direct or indirect discharge of waste and/or storm water from the production area to surface waters, the discharge of wastewater to surface waters from cropland, and the discharge of storm water to surface water from the land application areas where manure or process wastewater has been applied unless the land application area has been managed consistent with a certified Nutrient Management Plan.

Plans also contain numeric water quality objectives that apply to specifically identified water bodies, including for example, electrical conductivity objectives for the Delta. Federal water quality criteria that apply to surface water are contained in federal regulations referred to as the California Toxics Rule and the National Toxics Rule. (See 40 C.F.R. §§ 131.36 and 131.38.)

Water Quality Objectives for Groundwater

Water quality objectives that apply to groundwater include, but are not limited to, (1) numeric objectives, including the bacteria objective and the chemical constituents objective (includes state MCLs promulgated in Cal. Code Regs., tit. 22, §§ 64431 and 64444 and are applicable through the Basin Plans to municipal and domestic supply), and (2) narrative objectives including the chemical constituents, taste and odor, and toxicity objectives. The Tulare Lake Basin Plan also includes numeric salinity limits for groundwater.

State Water Board Resolution 88-63 (The Sources of Drinking Water Policy)

The *Sources of Drinking Water Policy* states that all surface waters and groundwaters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply, except where the groundwater meets one or more of the criteria specified in the Basin Plan, including:

1. The TDS exceeds 3,000 milligrams per liter (mg/L) (5,000 micromhos per centimeter ($\mu\text{mhos/cm}$) electrical conductivity) and the aquifer cannot reasonably be expected by the Regional Board to supply a public water system;
2. There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices;
3. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day; or
4. The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 CFR, Section 146.4. for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR, Section 261.3.

Both Basin Plans include criteria for granting exceptions to municipal and domestic supply designations based on the *Sources of Drinking Water Policy*. The Tulare Lake Basin Plan also includes criteria for granting exceptions to the designation of beneficial uses for agricultural supply and industrial supply. The Tulare Lake Basin Plan specifies exceptions to the designated beneficial uses for some groundwater within the Tulare Lake Basin. Exceptions to the *Sources of Drinking Water Policy* are not self-implementing, but must be established in an amendment to the Basin Plan.

Title 27 of the California Code of Regulations

Title 27 of the California Code of Regulations prescribes minimum standards for animal waste at confined animal operations. For surface water protection, Title 27 includes requirements for the design of containment facilities for both storm water and process wastewater and for adequate flood protection. For groundwater protection, the minimum standards in Title 27 require Confined Bovine Feeding Operations to minimize percolation of wastewater to groundwater in fields, apply manure and wastewater to fields at reasonable agronomic rates, and minimize infiltration of water into underlying soils in manured areas. Furthermore, retention ponds must be located in, or lined with, soils of at least 10 percent clay and no more than 10 percent gravel. (Cal. Code. Regs., tit. 27, § 22562(d).)

However, it is Central Valley Water Board staff's understanding that the retention pond standard was developed based on the assumption that manure solids contained within the wastewater would effectively reduce the permeability of the soils lining the wastewater ponds. This reduced permeability would result in a lowering of the pond leaching rate to a level thought to be protective of groundwater quality. An October 2003 report (the "Task 2 Report") by Brown, Vence, and Associates (BVA) confirmed that the "...current Title 27 requirements are insufficient to prevent groundwater contamination from Confined Bovine Feeding Operations, particularly in vulnerable geologic environments." Adverse impacts have been detected in areas where groundwater is as deep as 120 feet below ground surface, and in some areas underlain by fine-grained sediments. Factors that appear to affect a clay-lined pond's ability to be protective of groundwater quality vary significantly from site to site due to native soil conditions, pond construction, pond age, manure properties, climate, pond operation, pond maintenance and depth to groundwater. Potential controlling factors appear to include: the inherent structure of the underlying soil, the moisture content of the unsaturated portion of the aquifer (vadose zone), the presence or absence of macropores or preferential pathways within the vadose zone (examples are desiccation cracking, earthworm channels, and development of root holes), and the oxidation reduction conditions present within the vadose zone and within the aquifer itself.

Resolution 68-16 (State Anti-Degradation Policy)

The *State Anti-Degradation Policy*, adopted by the State Water Board in October 1968, limits the Board's discretion to authorize the degradation of high-quality waters. This policy has been incorporated into the Board's Basin Plans. High-quality waters are those waters where water quality is more than sufficient to support beneficial uses designated in the Board's Basin Plan. Whether or not water is high-quality water is established on a constituent-by-constituent basis, which means that an aquifer can be considered high-quality water with respect to one constituent, but not for others. (State Water Board Order WQ 91-10.)

The following provisions of the *State Anti-Degradation Policy* are directly applicable to the discharges regulated by the Bovine General Order:

- Whenever the quality of water is better than the quality established in policies as of the date on which such policies become effective, such high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies.
- Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Generally speaking, these provisions require that the Board adopt standards and requirements to ensure the Discharger controls the discharge by employing “best practicable treatment or control” methodologies to limit the extent of the degradation, and that the Board carefully consider whether the permitted degradation inheres to the maximum benefit to the people of the State when the Board prescribes waste discharge requirements that will result in the degradation of high-quality waters. The *State Anti-Degradation Policy* also requires that the Board prohibit waste discharges from resulting in water pollution or nuisance, though this is a requirement that also exists outside the context of the *State Anti-Degradation Policy*. (see Wat. Code, § 13263.)

The State Water Board has provided only limited guidance regarding the *State Anti-Degradation Policy*. The State Water Board’s Administrative Procedures Update 90-004 provides guidance for implementing *State Anti-Degradation Policy* and the Clean Water Act’s anti-degradation provisions (40 C.F.R. § 131.12.) in the context of NPDES permitting. Although APU 90-004 is not directly applicable to the Bovine General Order because nonpoint discharges from agriculture are exempt from NPDES permitting requirements, the Appellate Court found this document informative in interpreting the *State Anti-Degradation Policy*.

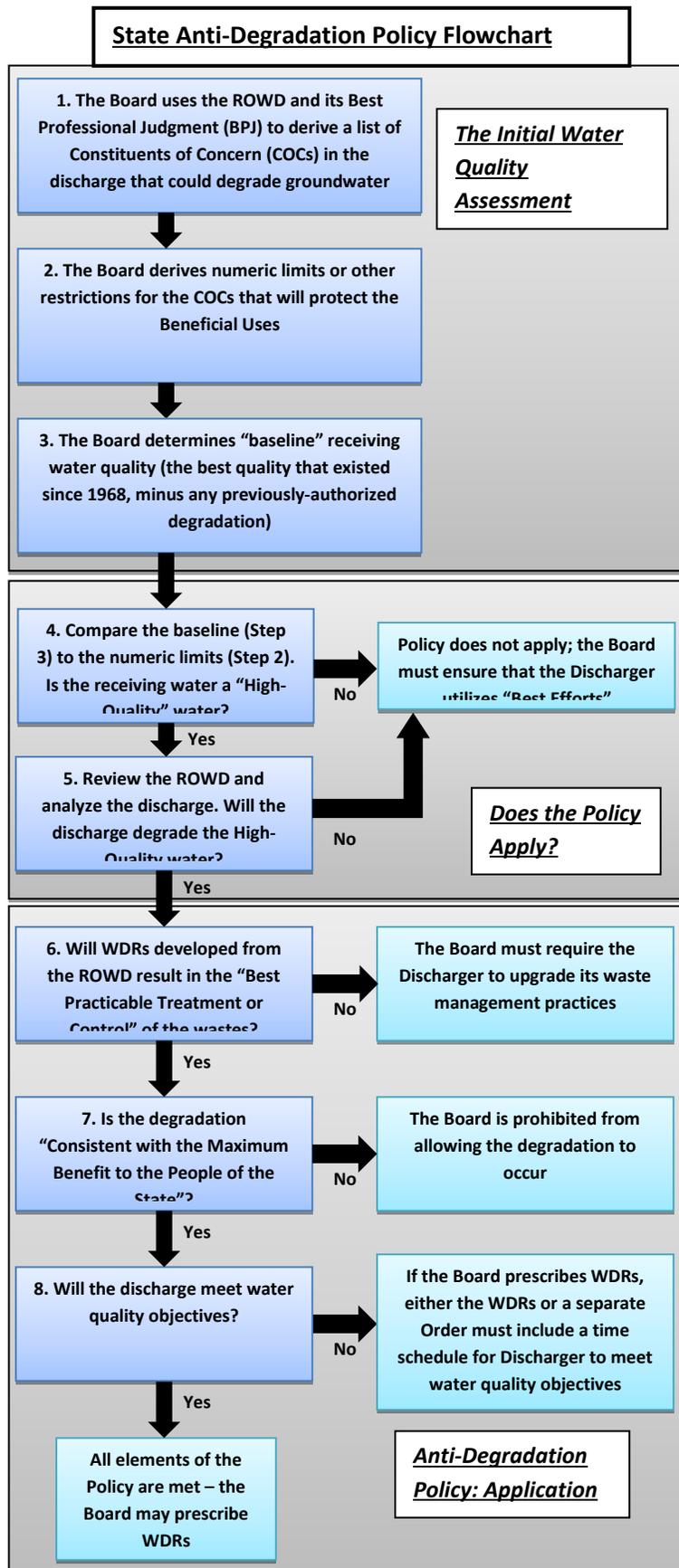
The flow chart on the following page describes the process that the Board generally uses to apply the *State Anti-Degradation Policy*, and the following discussion elaborates on how these requirements are applied in the context of the Bovine General Order.

The following sections describe the step-by-step approach for applying the Anti-Degradation Policy, followed by the direct application of this policy to the Bovine General Order.

The Initial Water Quality Assessment

Step 1: Due to the constituent-by-constituent nature of an anti-degradation analysis, the

Board must first compile a list the waste constituents present in the discharge that could degrade groundwater. These constituents are referred to as “constituents of concern,” or COCs. The Board uses its best professional judgment to determine this suite of COCs, which is usually extrapolated from the ROWD that was submitted by the discharger.



Step 2: Once the Board has compiled the list of COCs, it then references numeric limits or other restrictions that would protect the beneficial uses associated with the receiving water. Some constituents, such as those constituents that have Maximum Contaminant Levels established in Title 22 of the California Code of Regulations, have numeric water quality objectives associated with them, while others have only narrative water quality objectives associated with them. For constituents that have only narrative water quality objectives associated with them, the Board derives numeric limits by considering relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. (e.g., State Water Board, California Department of Health Services, California Office of Environmental Health Hazard Assessment, California Department of Toxic Substances Control, University of California Cooperative Extension, California Department of Fish and

Wildlife, U. S. EPA, U. S. Food and Drug Administration, National Academy of Sciences, U. S. Fish and Wildlife Service, Food and Agricultural Organization of the United Nations).

Step 3: The Board then makes a good-faith effort to determine best water quality that has existed since 1968, the year in which the anti-degradation policy was promulgated (often data from 1968 or earlier are unavailable). The Board then determines whether any subsequent lowering of water quality was due to a regulatory action taken by the Board. The best quality that has existed since 1968, minus any authorized degradation, becomes the “baseline” water quality¹.

Determining Whether the Anti-Degradation Policy is Triggered

Step 4: The Board compares the numeric limits derived in Step 2 with the baseline water quality derived in Step 3. For each constituent, if the baseline water quality is better than the derived limits (i.e., the quality needed to support all of the beneficial uses), then the water is considered a “high-quality water.” If the receiving water is not a high-quality water for all of the COCs, then the State Anti-Degradation Policy does not apply.

Step 5: The Board determines whether the discharge will degrade the receiving water. The Board makes this determination by comparing the information contained in the discharger’s ROWD or other applicable information with the baseline water quality. If the discharge will not degrade the receiving water, then the State Anti-Degradation Policy does not apply.

Application of the State Anti-Degradation Policy’s Requirements

Step 6: If the discharge will degrade a high-quality water, then the State Anti-Degradation Policy requires the Board to prescribe requirements that will result in the best practicable treatment or control (BPTC) of the wastes in the discharge. BPTC is an evolving concept that takes into account changes in the technological feasibility of deploying new or improved treatment or control methodologies, new scientific insights regarding the effect of pollutants, and the economic realities that regulated industries face. Because this concept evolves over time, standard industry practices that are considered BPTC today may not be considered BPTC in the future. And though “practicality” limits the extent to which a discharger must implement expensive treatment or control measures, the Board must ultimately ensure that discharges do not cause pollution or nuisance, thereby protecting those who rely on the quality of groundwater and surface waters.

¹ Water quality control policies adopted subsequent to 1968 may alter the calculation of this baseline.

Neither the Water Code nor the State Anti-Degradation Policy defines the term “best practicable treatment or control.” However, the State Water Board has stated that “one factor to be considered in determining BPTC would be the water quality achieved by other similarly situated dischargers, and the methods used to achieve that water quality.” (See Order WQ 2000-07, at pp. 10-11). Furthermore, in a “Questions and Answers” document for Resolution 68-16 (the Questions and Answers Document), BPTC is interpreted to include:

“[A] comparison of the proposed method to existing proven technology; evaluation of performance data (through treatability studies); comparison of alternative methods of treatment or control, and consideration of methods currently used by the discharger or similarly situated dischargers.”

Though the Board is prohibited from specifying the design, location, type of construction, or particular manner in which a discharger may comply with a requirement, order, or decree (Wat. Code § 13360.), the Board can still compare the treatment or control practices that a discharger has described in its ROWD to the treatment or control practices employed by similarly-situated dischargers in order to make a BPTC determination. (State Water Board Order WQ 2000-7.) Furthermore, “practicability” dictates that the Board consider the costs associated with the treatment or control measures that are proposed in the ROWD.

Step 7: The *State Anti-Degradation Policy* also requires that the Board consider whether the degradation authorized in a permit is “consistent with the maximum benefit to people of the state.” For discharges subject to the federal Clean Water Act, it is only after “intergovernmental coordination and public participation” and a determination that “allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located” that the Board can allow for degradation. (40 C.F.R. § 131.12.)

As described in the Question and Answers Document mentioned above, some of the factors that the Board considers in determining whether degradation is consistent with the maximum benefit to people of the State include: economic and social costs, tangible and intangible, of the proposed discharge, as well as the environmental aspects of the proposed discharge, including benefits to be achieved by enhanced pollution controls. USEPA guidance clarifies that the federal anti-degradation provision,

“... is not a ‘no growth’ rule and was never designed or intended to be such. It is a policy that allows public decisions to be made on important environmental actions. Where the state intends to provide for development, it may decide under this section, after satisfying the requirements for intergovernmental coordination and public participation, that some lowering of water quality in “high quality waters” is necessary to accommodate important economic or social

development” (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Chapter 4).

It is, however, important to keep the “maximum benefit to people of the state” requirement in context. Neither the *State Anti-Degradation Policy* nor the Water Code allows unreasonable effects to beneficial uses. Therefore, such unreasonable effects (such as the unmitigated pollution of a drinking water source) are not the focus of the Board’s inquiry, because they are legally prohibited. Instead, the *State Anti-Degradation Policy* requires the Board to consider the costs that may be imposed on other dischargers as a result of the degradation that the Board is allowing to occur. For example, if the Board allows a discharger to operate a sub-standard facility that degrades a high-quality groundwater, dischargers situated downstream (for surface waters) or downgradient (for groundwaters) from that discharge would be discharging to a receiving water that lacks any capacity to assimilate additional waste loads. This may impose higher treatment costs on the downstream/downgradient discharger.

Ultimately, the Board may allow degradation to occur following a demonstration that the degradation is consistent with the maximum benefit to the people of the state; the *State Anti-Degradation Policy* is not a no-growth or no-degradation policy. However, the Board must justify why this degradation is beneficial not only to the discharger, but to others reliant on the water quality of the receiving water body.

Step 8: The Board must ensure that discharges will not unreasonably affect present and anticipated beneficial uses, will not result in water quality less than that prescribed in relevant policies, and will not cause pollution or nuisance. The Water Code defines “pollution” to mean an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either the waters for beneficial uses or the facilities which serve these beneficial uses, i.e., violation of water quality objectives. (Wat. Code, § 13050(1).) The term nuisance is defined as anything that is, (1) injurious to health, indecent or offensive to the senses, or an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life or property; (2) affects an entire community or considerable number of persons; and (3) occurs during, or as a result of, the treatment or disposal of wastes. (Wat. Code, § 13050(m).) To constitute a nuisance, all three factors must be met.

The Board ensures that this component of the *State Anti-Degradation Policy* is met by requiring a discharger to comply with water quality objectives designed to protect all designated beneficial uses, thereby protecting those who rely on the quality of groundwater and surface waters.

The State Anti-Degradation Policy as Applied to the Bovine General Order

Steps 1-5 (Applied): Although background water quality varies significantly in those areas covered by the Bovine General Order, most receiving waters are considered high-quality waters for one or more constituents of concern, and wastes from bovine facilities will degrade these waters, thereby triggering the *State Anti-Degradation Policy*.

Step 6 (Applied): Given that the *State Anti-Degradation Policy* applies, the Board must ensure that the Bovine General Order requires regulated facilities to implement BPTC measures to minimize the amount of degradation that will occur.

Although facilities vary, generally speaking, the waste management practices employed by Confined Bovine Feeding operations can be broken down into three distinct areas: production areas (including feed storage areas and corral areas), wastewater ponds, and land application areas. The following is a discussion of what the Board considers to be BPTC for each of these three components of the regulated bovine operations.

Best Practicable Treatment or Control Measures for the Production Area

The Bovine General Order considers the term “Production Area” to mean feed and non-liquid manure storage areas, wastewater ponds, and corrals (i.e., animal confinement areas). Pond requirements are discussed separately below. For the remaining areas, the most effective way to reduce or eliminate water quality impacts is to restrict the infiltration of waste in these areas. The Bovine General Order requires that all corrals, pens, or hutch areas, composting operations, and manure and feed storage areas be graded and maintained to promote drainage and convey all drainage to the wastewater management system. All production area structures must be constructed or otherwise designed so that clean rainwater is diverted away from manured areas, feed storage areas, and waste containment facilities, unless drainage is fully contained in the wastewater management system. Areas beneath and surrounding water troughs and permanent feed racks are to be paved. Operators must design and maintain the animal confinement area (including corrals), and manure and feed storage areas in a manner that limits infiltration so that wastes, nutrients, and contaminants generated are directed to the wastewater pond(s). The Bovine General Order requires that standing water in these areas as of 72 hours after the last rainfall and infiltration of water into the underlying soils be minimized (see Production Area Specification D-4 of the Bovine General Order).

Best Practicable Treatment or Control Measures for Land Application Areas

Normal commercial farming practices, including the application of bovine wastes to cropland as fertilizer, can contribute salts, nutrients, pesticides, trace elements, sediments, and other by-products that can affect the quality of surface water and groundwater. Evaporation and crop transpiration remove water from soils, which can result in an accumulation of salts in the root zone. Additional amounts of water are often applied to leach the salts below the root zones. These leached salts can cause impacts to groundwater or surface waters. Even using the most efficient irrigation systems and appropriate fertilizer application rates and timing to correspond to crop needs, irrigation of cropland may degrade high-quality groundwater. In addition, in land application areas where groundwater is shallow, some Dischargers have installed subsurface (tile) drainage systems to maintain the groundwater level below the crop’s root zone. Drainage from these systems, which may include constituents originating from the

Confined Bovine Feeding Operations, may be discharged directly to surface water bodies or to drainage ditches that discharge to surface water bodies. Some of these systems discharge to evaporation basins that are subject to waste discharge requirements.

With respect to salts and nutrients, the key to limiting degradation and ensuring compliance with water quality objectives at the bovine operations' land application areas is an effective Nutrient Management Plan, which specifies the volume and composition of the wastewater that can be applied to land application areas without causing adverse groundwater impacts. The Board considers an effective Nutrient Management Plan to be BPTC for the land application areas. Many operations subject to the Bovine General Order have been operating for many years without a Nutrient Management Plan. In response, the Bovine General order requires each operator to develop and implement a Nutrient Management Plan. Cropland that only receives solid manure has the option, under the Bovine General order, of being placed under the Irrigated Lands Regulatory Program (ILRP) and complying instead with the nutrient management provisions of that program because solid manure is already used as a nutrient source on other cropland that is not a part of a bovine operation and is regulated under the ILRP.

Unlike most other groundwater-related components of a bovine operation's waste management strategy, Nutrient Management Plans have received a significant amount of attention from the USEPA. This is because precipitation-related discharges from land application areas are considered agricultural storm water discharges, and are therefore not subject to the federal Clean Water Act's CAFO regulations. However, this exemption applies only when the "...manure, litter, or process wastewater [at the land application area] has been applied in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater..." (40 C.F.R. §122.23.) Therefore, the USEPA has taken a close interest in the "site specific nutrient management practices" for application of waste from large concentrated animal feeding operations to land application areas. The Bovine General Order mandates that Confined Bovine Feeding Operations employ the management practices required by Title 40 Code of Federal Regulations Section 122.42(e)(1)(vi)-(ix).

Because the Bovine General Order requires compliance with the federal CAFO regulatory requirements, precipitation-related discharges from land application areas at facilities operating in compliance with this Order are considered agricultural storm water discharges. And since they are consistent with USEPA's "best practicable control technology," the technical standards for nutrient management represent BPTC for the purposes of compliance with the *State Anti-Degradation Policy*. In addition, the Bovine General Order requires operations that utilize tile drain systems to identify their location and discharge point(s) and to monitor discharges from these systems. The Bovine General Order also specifies well and surface water setbacks and requires certification of backflow prevention for all irrigation wells (General Specification B4 and Attachment B, Section G [*Waste Management Plan for the Production Area for Confined Bovine Feeding Operations*]). Additionally, the Bovine General Order's Land Application Area

Specifications contains additional requirements regarding waste infiltration and soil moisture capacity limits for waste application.

Pond Requirements: Generally

The Bovine General Order includes requirements that all ponds must be verified by an engineer to have adequate capacity and structural integrity to hold wastewater and precipitation. All ponds must be managed and maintained to prevent breeding of mosquitoes and other vectors. Ponds shall not have small coves and irregularities around the perimeter of the water surface. Weeds shall be minimized in all ponds through control of water depth, harvesting, or other appropriate method, and dead algae, vegetation, and debris shall not be allowed to accumulate on the water surface. These measures are required elements of a BPTC program for all ponds, whether they are already existing ponds or new or expanded ponds.

In addition, the Bovine General Order includes a requirement that the invert (lowest point) in all ponds (whether existing, new, or expanded) must be above the highest anticipated elevation of underlying groundwater. In the Tulare Lake Basin, the invert must be a minimum of five feet above the highest anticipated elevation of groundwater, as required in the Basin Plan for the Tulare Lake Basin. This requirement is designed to preclude a direct connection between ponds and groundwater. If there is reason to believe that the invert of an existing pond does not meet these criteria, the Bovine General Order requires the Discharger to conduct an investigation within six months of issuance of a Notice of Applicability to the bovine operation, to determine if the invert of the pond intersects groundwater. If the investigation indicates that the pond does not meet the separation requirement, the Discharger shall propose modifications, with a time schedule that is as short as practicable, that will ensure that the pond design is protective of water quality. This provision will ensure that ponds that pose the greatest threat to groundwater quality are promptly identified and modified to be protective.

Best Practicable Treatment or Control Measures for New or Expanded Ponds

Three counties in the Central Valley Region, many other states, and the Natural Resources Conservation Service have pond design requirements that are more stringent than what is required by Title 27 (see Table 1 at the end of this Information Sheet). For new or expanded ponds, the Board considers these more stringent design standards to be BPTC.

Kings County and Merced County require new or modified ponds to have pond liners with a maximum seepage rate of 1×10^{-6} centimeters per second (cm/sec). Solano County requires new and enlarged ponds at animal operations having 1000 or more cattle or veal calves to be lined with a 60 mil high density polyethylene (HDPE) geomembrane over two feet of compacted clay.

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The ten highest milk producing states and the top five states for cattle in feedlots (feedlots with a capacity of more than 1000 head) were surveyed. All but California's Title 27 requirements include a maximum seepage rate for new waste ponds. Seepage rates range from 1×10^{-5} cm/sec (Pennsylvania) to 1×10^{-7} cm/sec (New Mexico, Wisconsin). Most state requirements include a synthetic liner option. Some state requirements are based solely on the Federal Concentrated Animal Feeding Operation (CAFO) requirements (Michigan), but most include requirements for operations that are not required to be regulated under the federal CAFO definition.

The federal Natural Resources Conservation Service (NRCS) has issued state-specific waste storage guidelines (Conservation Practice Standard [CPS] 313). In California, CPS 313 requires pond liners designed by NRCS to have a maximum target seepage rate of 1×10^{-6} cm/sec, except where aquifer vulnerability or risk is high, in which case a synthetic liner or other alternative liner is required (see Table 1 of this Information Sheet).

While these pond design requirements provide more groundwater protection than the Title 27 requirements, there are no known studies that fully evaluate the ability of any of these county, state, or NRCS pond liner requirements to protect groundwater quality. It would be difficult to determine if any proposed pond design would be protective of groundwater quality without an evaluation of site-specific information on depth to groundwater, existing groundwater quality beneath the facility, nature of the geologic material between the bottom of the retention pond and the first encountered groundwater, nature of the leachate from the retention pond, and proximity to existing supply wells. Proposed pond designs that do not include such an evaluation should be very conservative to assure protection of groundwater under any likely conditions. The most conservative pond design would include a double lined pond with a leachate collection and removal system between two geosynthetic liners. Such pond designs are currently being approved by the Central Valley Water Board at classified waste management units regulated under Title 27 of the California Code of Regulations (i.e., landfills and Class II surface impoundments) and a limited number of wastewater retention ponds at dairies.

The Bovine General Order provides a two-tiered approach that will allow the Discharger two options for retention pond design. Tier 1 includes a retention pond designed to consist of a double liner constructed with 60-mil high density polyethylene or material of equivalent durability with a leachate collection and removal system (constructed in accordance with Cal. Code Regs., tit. 27, § 20340) between the two liners. Review for retention ponds designed to this standard will be conducted in less than 30 days of receipt of a complete design plan package submitted to the Board. Tier 2 includes two pond options. A Tier 2 pond is a pond lined to as to be protective of water quality, as demonstrated by calculations of seepage amounts and the effect of that estimated seepage on underlying groundwater. A Tier 2 pond design must include a pan lysimeter monitoring device under the lowest point of the pond, or an engineered alternative that provides equivalent assurance of the earliest possible detection or prevention of a release from the pond.

A second option within the Tier 2 category is a “Preapproved Tier 2” design. In this case an entity, such as a Representative Monitoring Program, can develop and propose a pond design that is demonstrated by calculations to be protective of water quality under certain specified site or operational conditions. Following approval of the design by the Executive Officer, use of this design would not require additional leakage calculations or individual groundwater monitoring.

Best Practicable Treatment or Control (BPTC) Measures for Ponds at Existing Bovine Operations

Waste management features at bovine feedlot operations, and specifically wastewater retention systems, are more variable as compared to wastewater management systems at milk cow dairies. This variability poses a challenge in determining the appropriate BPTC measures for each individual existing pond at bovine operations. For example, bovine operations may be located at former dairies, which often had wastewater ponds built to contain and store large quantities of manure and recycled water used for flushing freestall barns and cleaning milking parlors and equipment. However, wastewater retention features at facilities that were designed and operated solely as bovine feedlot operations, or which were converted from former dry scrape (non-flushing) dairies, may have relatively small ponds used to capture corral runoff. Feedlot operations with small numbers of animals and a limited number of corrals would require considerably less wastewater retention capacity as compared to larger operations with more acreage devoted to livestock corrals. Feedlot operations located in areas with much more seasonal precipitation, such as Glenn County, must manage a larger amount of corral runoff as compared to feedlot operations in relatively arid areas, such as Fresno and Tulare counties, which have considerably less runoff from the livestock corrals. Variability in the permeability of soils and depth to first encountered groundwater throughout the region also poses a challenge in determining the appropriate BPTC measures for each individual existing pond at bovine operations.

In addition to the variability in the size, design, and siting of existing ponds at bovine operations, the economics of bovine operations also pose a challenge in implementing BPTC for existing ponds. The economic analysis that starts on Page IS-10 estimates the costs for implementing the monitoring and reporting requirements of the Bovine General Order at three sizes of facilities (250, 2,000, and 100,000 animals) and three levels of complexity (simple, medium, and complex). These cost estimates do not include the cost of capital improvements, such as the upgrading of existing wastewater ponds. In addition, the estimates assume that there are no wastewater ponds at “simple” operations; it is likely that a pond to collect corral runoff will need to be installed at such facilities. Staff’s estimate of the cost of construction of a 1.2 million gallon capacity wastewater pond that meets the Tier 1 (double liner) requirements is \$250,000, based on a memorandum from John Schaap and Steve Bommelje, Provost & Pritchard, to Theresa A. Dunham, Somach Simmons & Dunn (August 5, 2013), *Costs to Retrofit Existing Dairies That Do Not Have Tier 1 or Tier 2 Lagoons*.

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Information developed by a Colorado-based consulting firm estimated a capital cost of \$29,000 to construct a 140,000 gallon capacity pond with a single synthetic liner (without a pan lysimeter) at a 300 head feedlot, or \$97/head. For a 2,500 head feedlot, a similarly constructed pond with 1.2 million gallons of capacity was estimated to cost \$89,000, or \$36/head. Feedlot properties are typically valued from a low of \$100/head to a high of \$150/head. For a 300 head feedlot, the cost of a single lined pond (\$29,000) approaches the value of the property itself (\$30,000 to \$45,000). (AGPROfessionals, *Comments Regarding Capital Investment and Costs associated with draft Waste Discharge Requirements General Order for Confined Bovine Feeding Operations*, September 2016). If a double lined pond were installed, the cost of the pond would likely substantially exceed the value of the property. Because of the high cost of retrofitting existing ponds relative to the value of the property, many bovine operations, especially small ones, would likely go out of business in lieu of performing retrofitting.

Considering the wide-spread economic impacts that would occur with respect to requiring application of Tier 1 or Tier 2 requirements to existing ponds, the Central Valley Water Board finds that BPTC for existing ponds constitutes an iterative process of evaluation that includes groundwater monitoring individually or through a Representative Monitoring Program (RMP), assessment of data collected, evaluation of existing pond conditions and their impact on groundwater quality, and case studies that evaluate potential changes in management practices and/or activities that may be necessary to further protect groundwater quality from pollutant infiltration from existing ponds.

The Bovine General Order allows for the formation of an RMP to monitor a representative number of bovine operations. The Board will use the Summary Representative Monitoring Report (for bovine operations represented in an RMP) or individual Summary Monitoring Reports (for bovine operations that conduct individual monitoring), to determine whether upgrades to existing ponds will be required. Facilities where data demonstrate that an existing pond is resulting in degradation beyond what is authorized under this Order will be required to upgrade facilities on a time schedule that is as short as practicable. Substituting alternative management practices for the existing ponds (such as reducing the water level in the ponds or other methods) would also be acceptable, provided those management practices are found to be protective of groundwater quality for the conditions present where they would be implemented. Regulated bovine operations that are found not to be protective of underlying groundwater must upgrade their management practices on a time schedule that is as short as practicable, supported with appropriate technical or economic justification, but in no case may time schedules extend beyond 10 years from the date that the Summary Monitoring Report or Summary Representative Monitoring Report is approved by the Executive Officer.

The Order also includes a provision that, should other representative monitoring programs for other industries, such as the Central Valley Dairy Representative Monitoring Program, identify management practices that are not protective of water quality, bovine operations that use those management practices may be required by the

Executive Officer to modify their practices by a date earlier than the dates specified in the Bovine General Order.

Step 7 (Applied): In the case of the Confined Bovine Feeding Operations regulated by the Bovine General Order, allowing the maximum extent of degradation allowed by law (i.e., degradation up to the water quality objectives that are protective of the designated beneficial uses) would allow the Board to focus its efforts on ensuring that the discharges do not impact sensitive populations that rely on the quality of the receiving waters. In other words, while the focus of the *State Anti-Degradation Policy* is on justifying degradation that will ultimately result in water quality somewhere between the “best water quality that has existed since 1968” and a numeric limit that is protective of all beneficial uses, the Board and the bovine industry acknowledge that their primary task lies in preventing pollution and protecting sensitive uses.

The Board acknowledges that significant degradation has occurred throughout the Central Valley Region due to historic agricultural practices, including the operation of bovine facilities. In issuing the Bovine General Order, the Board will allow the maximum extent of degradation allowed by law to occur. The Bovine General Order is structured in such a way as to compel the bovine industry to focus their available resources on meeting water quality objectives, thereby protecting communities that are dependent on groundwater. As the bovine industry develops more effective management practices in the coming years, the Board may re-evaluate this goal, and may impose more stringent requirements that reflect the availability of better practicable management practices.

Step 8 (Applied): Although bovine waste materials provide nutrients to crops, they can create pollution or nuisance conditions if improperly managed or cause pollution of surface water and/or groundwater if site conditions are not taken into account in preparing a nutrient utilization and management strategy.

While the Board recognizes that it may be impracticable for the bovine industry to make dramatic changes to its waste management practices overnight, or even in a few years, those bovine operations whose practices are found to not be protective of the underlying groundwater through required individual or representative monitoring must upgrade their operations to ensure compliance with water quality objectives on a time schedule that is as short as practicable.

Allowing regulated Confined Bovine Feeding Operations (beef feedlots, calf ranches, and heifer operations) to degrade high quality waters is consistent with the maximum benefit to people of the State as long as that degradation does not result in detrimental impacts to beneficial uses over the long term. Cattle and calves represent the fourth largest agricultural commodity in California with a gross annual income of \$3.4 billion. Four of the five leading counties in California for the production of cattle and calves are located in the Central Valley (Tulare, Fresno, Merced, and Kern counties); a total of approximately 3.5 million beef cattle and dairy support stock are raised in the Central Valley. Beef feedlots in California market roughly 500,000 head of cattle annually with at least 1/3 of that total marketed by feedlots in the Central Valley. Feedlots in the Central

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Valley support the two largest beef packing plants left in California, both of which exist in Fresno County, that together provide thousands of good paying jobs. California ranchers depend on beef feedlots in the Central Valley to purchase their cattle to finish and harvest. The loss of beef feedlots in the Central Valley would have a rippling affect across the industry and result in lower prices for ranchers throughout California because cattle would need to be shipped to buyers in the Midwest. Feedlots also directly employ hundreds of employees in the Central Valley working to raise cattle and mill feed along with providing thousands of indirect jobs that include but are not limited to truck drivers, farmers and farm workers that grow feed for livestock and employees at beef packing plants that depend on a local supply of beef cattle ready for harvest.

Calf ranches in California raise male dairy calves specifically to be marketed to feedlots as beef cattle and depend on a sustainable supply of male dairy calves from local dairies in the Central Valley. There are numerous calf ranches in the Central Valley that together raise 300,000 - 400,000 beef calves. Based on standard industry practices of the number of calves assigned to each employee, Central Valley calf ranches employ approximately 1,600 people. These jobs are typically well paid to promote retention and keep employees that have experience working with livestock. An industry survey suggests that calf ranch employees on average are paid in excess of \$14.00 per hour, far more than the current minimum wage of \$10.50 per hour.

In 2016, California dairies produced over 40 billion pounds of milk, with a value in excess of \$6 billion, and representing about a fifth of the nation's milk supply. According to a study conducted by the University of California Agriculture Issues Center on behalf of the California Milk Advisory Board, California's dairy industry generated \$65 billion in economic impact and supported 189,000 jobs in 2015. In 2015, the eight leading counties in California for total milk production were located in the Central Valley (Tulare, Merced, Kings, Stanislaus, Kern, Fresno, San Joaquin and Madera counties); these 8 counties accounted for 89.9% of California's total milk production. Of the 1,438 dairies statewide as of 2015, 1,180 dairies or 82% were in the Central Valley region. The availability of replacement stock (young milk cows) is important to maintain the productivity of dairies. The cost of raising replacement stock (calves and heifers) to maintain milk production represented 12% of the cost of producing milk in 2015. During 2015, heifer ranches raising replacement stock for dairies generated approximately \$953 million in sales.

Considering the economic significance of the Central Valley feedlot, calf, and heifer industries as well as the important role Central Valley bovine operations play in providing replacement animals to dairies, thus helping ensure adequate milk and beef supplies to the nation, the Central Valley Water Board finds that maintaining the Central Valley bovine industry is to the benefit of the people of the state.

Verifying that the State Anti-Degradation Policy is Satisfied

Although not an explicit provision of the *State Anti-Degradation Policy*, the Appellate Court in *Asociación de Gente Unida por el Agua v. Central Valley Regional Water*

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Quality Control Bd. (2012) 210 Cal.App. 4th 1255, is precedential and instructive regarding compliance with the *State Anti-Degradation Policy*. In accordance with that decision, the Bovine General Order includes a monitoring program that is designed to determine whether discharges are in fact complying with the Order and with the *State Anti-Degradation Policy*.

The primary method used to determine if water quality objectives and the requirements of the *State Anti-Degradation Policy* are being met is surface water and groundwater quality monitoring. The Bovine General Order prohibits discharges of storm water from the production area to surface water and any discharge of storm water to surface water from the land application areas being used for nutrient utilization unless that discharge is from land that has been managed consistent with a certified Nutrient Management Plan, and unless a representative portion of such discharges have been tested to verify that ammonia and pesticides are within acceptable levels. Should discharges of manure, wastewater, or storm water occur from the production area, the Bovine General Order requires discharge monitoring and chemical analysis to determine if an exceedance of a water quality objective has occurred. The Bovine General Order also requires periodic monitoring of storm water discharges to surface waters from land application areas on a rotating basis (1/3 of the fields per year); and tailwater discharges to surface waters from the land application areas. Likewise, the Bovine General Order requires individual or representative groundwater monitoring of natural background water quality and the water quality downgradient of the waste management units (the production area, including corrals and wastewater ponds, and land application areas).

Monitoring and Reporting Program R5-2017-0000 (MRP) requires Confined Bovine Feeding Operations to sample domestic and irrigation supply wells on their property, and to either monitor first-encountered groundwater at their facility or participate in an approved representative groundwater monitoring program. The purpose of requiring monitoring of water supply wells includes identifying the quality and trends of water being used at the bovine operation and the amount of nutrients contained in irrigation water so it can be accounted for in the development of the required nutrient management plan. The purpose of requiring monitoring of first-encountered groundwater is to evaluate current management practices in order to determine whether such practices are protective of groundwater quality at the most vulnerable point. Groundwater monitoring at existing Confined Bovine Feeding Operations is necessary to: determine background groundwater quality; determine existing groundwater conditions near wastewater ponds, production areas, and land application areas; determine whether improved management practices need to be implemented; and confirm that any improved management practices will have the desired result on groundwater quality.

This Order requires the Discharger to report any noncompliance that endangers human health or the environment or any noncompliance with the Prohibitions contained in the Order within 24 hours of becoming aware of its occurrence. The Bovine General Order also requires the Discharger to submit annual monitoring reports which contain the

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analytical results of laboratory data, including all laboratory analyses (including Chain of Custody forms and laboratory QA/QC results) for surface and groundwater monitoring. Additionally, an annual assessment of groundwater monitoring is required. The assessment must include an evaluation of the groundwater monitoring program's adequacy to assess compliance with the Order, including whether the data provided are representative of conditions upgradient and downgradient of the production area and land application area of the bovine operation.

Similar to the individual groundwater monitoring program, the representative groundwater monitoring program is required to submit annual monitoring reports and an evaluation of data collected to date and an assessment of whether participating bovine operations are implementing management practices that minimize degradation of high quality groundwaters and are protective of beneficial uses.

The Central Valley Water Board recognizes that monitoring the effectiveness of the bovine operations' waste management practices and their effect on groundwater is needed to verify that water quality is adequately protected and the intent of the anti-degradation policy is met. Accordingly, the Bovine General Order, in conjunction with the MRP, requires additional groundwater monitoring that must be conducted on an individual facility basis or through Representative Monitoring Programs (RMPs). Under the terms of the Bovine General Order and MRP, all Confined Bovine Feeding Operations subject to the terms of the Bovine General Order must either conduct their own groundwater monitoring or actively participate in a RMP. It is envisioned that most bovine operations subject to this Order will choose to join a RMP.

Both the individual groundwater monitoring provisions and the RMP's monitoring requirements are designed to measure water quality data over time in first-encountered groundwater. An RMP would be further required to conduct such monitoring on a variety of Confined Bovine Feeding Operations that represent the overall range of conditions on bovine facilities within the Central Valley. This means for a RMP that a variety of physical site conditions must be monitored, such as varying soil types and depth to groundwater. Varying management conditions must also be measured, such as different types of crops, irrigation methods, waste storage structures and animal housing.

It is recognized that in many cases, a single set of groundwater monitoring data, or even monitoring data over a period of months or years, may not be sufficient to determine the effectiveness of existing management practices. Evaluating groundwater results over an extended period of time, in conjunction with gathering data regarding existing surface practices, is necessary to determine whether water quality is being protected or is being unreasonably impacted.

Waters that are Not High Quality: The "Best Efforts" Approach

When a receiving water body quality exceeds or just meets the applicable water quality objective due to naturally-occurring conditions or due to prior Board-authorized

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activities, it is not considered a high-quality water, and it is not subject to the requirements of the *State Anti-Degradation Policy*. However, where a groundwater constituent exceeds or just meets the applicable water quality objective, the Board must set limitations no higher than the objectives set forth in the Basin Plan. This rule may be relaxed if the Board can show that “a higher discharge limitation is appropriate due to system mixing or removal of the constituent through percolation through the ground to the aquifer.” (State Water Board Order No. WQ 81-5.) However, the Board should set limitations that are more stringent than applicable water quality objectives if the more stringent limitations can be met through the use of “best efforts.” (State Water Board Order No. WQ 81-5.) (*City of Lompoc*) The “best efforts” approach involves the establishment of requirements that require the implementation of reasonable control measures. Factors which are to be analyzed under the “best efforts” approach include the water quality achieved by other similarly situated dischargers, the good faith efforts of the Discharger to limit the discharge of the constituent, and the measures necessary to achieve compliance. (*City of Lompoc*, at p. 7.) The State Water Board has applied the “best efforts” factors in interpreting BPTC. (See State Water Board Order Nos. WQ 79-14 and WQ 2000-07.)

In summary, the Board may establish requirements more stringent than applicable water quality objectives even outside the context of the *State Anti-Degradation Policy*. The “best efforts” approach must be taken where a water body is not “high quality” and the antidegradation policies are accordingly not triggered.

California Environmental Quality Act

As applied to existing facilities, the adoption of the Bovine General Order is exempt from the requirements of the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.) based on the following three categorical exemptions:

- California Code of Regulations, title 14, section 15301 exempts the “operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features” from environmental review. Eligibility to enroll under the Bovine General Order as an “existing” facility is limited to bovine operations that were existing facilities as of 10 February 2017. Facilities that begin operations after this date, or increase their herd size beyond the maximum number reported in their Notice of Intent, must file proof of CEQA compliance in order to obtain regulatory coverage under this Order. Note that the restoration of, or improvements to, bovine waste management systems to ensure proper function in compliance with this Order will involve minor alterations of existing private facilities.
- California Code of Regulations, title 14, section 15302 exempts the “...replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced...” The Bovine General Order will likely require covered operations to replace or reconstruct waste management systems to ensure compliance with the Order’s requirements.

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- California Code of Regulations, title 14, section 15304 exempts "... minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes..." The Bovine General Order will require covered operations to make improvements to their waste management systems that will result in only minor alterations to land, water, and/or vegetation.

Confined Bovine Feeding Operations in the Central Valley currently are not regulated under a permit from the Central Valley Water Board. Confined Bovine Feeding Operations were included under a waiver program that was in effect from 1982 until its rescission in December 2002. This Bovine General Order imposes more stringent requirements compared to the previous waiver of WDRs.

The Bovine General Order reduces impacts to surface water by prohibiting discharges of: (1) waste and/or storm water to surface water from the production area, (2) wastewater to surface waters from cropland, and (3) storm water to surface water from the land application area where manure or wastewater has been applied, unless the land application area has been managed consistent with a certified Nutrient Management Plan and storm water has been tested in accordance with the Monitoring and Reporting Program.

This General Order reduces impacts to groundwater by requiring full General Order-coverage Dischargers to: (1) develop and implement Nutrient Management Plans that will control nutrient losses from land application areas; (2) implement remedial measures when groundwater monitoring demonstrates that an existing pond has adversely impacted groundwater quality; (3) design and construct new ponds and reconstructed existing ponds to comply with the groundwater limitations and specifications in the Bovine General Order; (4) document that no cross connections exist that would allow the backflow of wastewater into a water supply well; and (5) submit an Operation and Maintenance Plan to ensure that (a) procedures have been established for solids removal from retention ponds to prevent pond liner damage and (b) corrals and/or pens, animal housing areas, and manure and feed storage areas are maintained to collect and divert process wastewater and runoff to the retention pond and to minimize infiltration of wastewater and leachate from these areas to the underlying soils.

In the MRP, the Board is requiring the monitoring of discharges, surface water, groundwater, storm water, tile drainage water, and tailwater to determine compliance with the Bovine General Order.

Central Valley Salinity Alternatives for Long-Term Sustainability

The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative has the goal of developing sustainable solutions to the increasing salt and nitrate concentrations that threaten achievement of water quality objectives in Central Valley surface waters and groundwater. The Bovine General Order requires actions that will reduce nitrate discharges and should result in practices that reduce salt loading.

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The Central Valley Water Board intends to coordinate all such actions with the CV-SALTS initiative. CV-SALTS may identify additional actions that need to be taken by Confined Bovine Feeding Operations and others to address these constituents. The Bovine General Order can be amended in the future to implement any policies or requirements established by the Central Valley Water Board as a result of the CV-SALTS process.