ARTICLE III. DESIGN AND CONSTRUCTION STANDARDS

Sec. 27-300. Construction

(a) When used as part of the wastewater management system, settling basins and retention ponds at Large Confined Animal Facilities shall comply with the standards in section 27-310.

(b) Feed storage facilities shall be designed, constructed and managed in such a manner as to minimize air emissions and restrict entry, harborage, or breeding of rodents and/or vectors.

(c) Silage storage areas shall be constructed of impervious materials to prevent groundwater degradation. Leachate drainage shall be conveyed to the wastewater collection system. Silage storage areas shall be protected from storm water run-on.

(d) All grading operations on the property shall result in no storm drainage or wastewater being allowed to flow or seep onto adjacent properties, public roads or into any waterway.

(e) New facilities shall be protected from 100-year peak stream flows as well as the 100-year flood as determined by the Federal Emergency Management Agency, Flood Insurance Rate Map.

(f) New and existing structures shall have gutters to prevent rainwater from entering corrals or areas of manure storage unless adequate storage capacity for the additional rainwater is provided in the retention pond.

(g) The Large Confined Animal Facility and access roads shall meet the requirements of the Air Quality Management District having jurisdiction.

(h) Large Confined Animal Facilities shall comply with all requirements of the Solano County Public Works Division applicable to Confined Animal Facilities.

(i) The Large Confined Animal Facility shall meet the requirements of the Solano County Mosquito Abatement District.

(j) The storage of silage or composting materials shall be located at least 300 ft. from any pre-existing off-site residence.

(k) Where the commingling of water containing manure can take place with irrigation wells and irrigation and/or drainage district facilities, these facilities must be protected from pollution by a backflow device or method that is approved by the Environmental Health Services Division and for the appropriate irrigation/drainage district. It is the obligation of the property owner to install and maintain or cause to be installed and maintained the backflow device or method. This also applies to off property parcels receiving water containing manure under agreement. Salt and other mineral feed

supplements shall be limited to that required to maintain animal health and optimum production according to the National Research Council.

(l) Vegetative barriers may be required by the Environmental Health Services Division to filter suspended air particles from Confined Animal Facilities.

(m) New or expanding Confined Animal Facilities shall provide and maintain one or more of the following dust control measures on unpaved roads within the facility area:

(1) A uniform layer of washed gravel; or

(2) Chemical/organic dust suppressants; or

(3) Vegetative materials; or

(4) Paving; or

(5) Any other method that effectively limits visible dust emissions.

(n) When corrals are utilized for large animals (horses, cows, sheep, etc.) they shall have a slope of at least 3% where the available space for each animal is 400 sq. ft. or less. The slope in areas more than 400 sq. ft. per animal may be reduced proportionately to not less than 1 1/2% at 800 sq. ft. or more per animal and drain to the waste management system.

(o) Tailwater and tilewater from cropland irrigated with liquid manure shall be returned to the animal confinement facility liquid manure management system, except for off site uses allowed in an approved CNMP.

(p) New dairy Large Confined Animal Facilities shall be constructed utilizing concrete or other impermeable flooring material approved by the Environmental Health Services Division in free stall barns and drainage ways. The free stall barns shall incorporate a self flushing mechanism that automatically and routinely self flushes the manure to the wastewater pond/basin or sump that then pumps it into the pond/basin. Methods that utilize scraping or vacuuming of manure on a routine basis that achieve the same result as a self flushing mechanism may also be utilized.

Sec. 27-310. Retention ponds and settling basins

New or enlarged retention ponds and settling basins shall conform to the following construction requirements:

(a) The total capacity of retention pond(s) and settling basin(s) shall be designed and constructed for at least 180 days of storage capacity for liquid manure generated at the facility and a 100-year, 24-hour storm. The retention pond/settling basin capacity shall also be adequate to store tail or tile drainage water (if returned to the retention pond/settling basin) and liquid manure and wastewater, while maintaining at least 2 feet

of freeboard, to assure that the timing of the land application is appropriate for the nitrogen needs of the crop.

(b) The retention pond(s) and setting basin(s) shall be surrounded by a road at least 12 feet wide and suitable for safe passage of vector control vehicles and equipment. The road should be accessible at all times to provide for the use of vehicle-mounted mosquito control equipment.

(c) The inside banks of all pits, sumps, retention ponds and settling basins shall be maintained so as to prevent a breeding habitat for mosquitoes or other vectors.

(d) Retention ponds and settling basins shall be constructed according to the United States Department of Agriculture (USDA), Natural Resource Conservation Service guidelines, specifically, USDA National Engineering Handbook, Part 651 - Agricultural Waste Management Field Handbook, Appendix I0D - Geotechnical, Design, and Construction Guidelines effective at the time of construction and shall comply with the additional design criteria contained in this chapter.

(e) The bottom of the retention pond and settling basin, including liner, shall be at least five (5) feet above the highest anticipated groundwater table or seasonal perched groundwater.

(f) A retention pond or settling basin must maintain the minimum setbacks in Solano County Zoning Code section 28-53(i)(3.5.3).

(g) The property owner shall apply for and obtain a permit from the Environmental Health Services Division prior to the construction of a new or expanded retention pond or settling basin. An inspection and approval of the retention pond and/or settling basin by the Environmental Health Services Division is required prior to discharging into the retention pond or settling basin.

(h) All settling basins and retention ponds shall be comprised of the following layers (listed from bottom to top) placed atop bedrock or foundation materials: a 2-foot thick compacted clay layer with a permeability less than or equal to 1×10^{-7} cm/sec, a 60 mil high-density polyethylene geomembrane with a permeability less than or equal to 1×10^{-13} cm/sec, a geomembrane filter fabric, and a 24-inch thick soil operations layer.

(i) Liners shall be protected from the erosive forces of waste liquid entering the pond or settling basin and damage due to cleaning operations and scour due to agitation equipment.

(j) Plans for retention ponds and settling basins shall be designed and signed by a California registered civil engineer or a California registered engineering geologist and shall have a maintenance plan, approved by the Environmental Health Services Division. As-built drawings, signed by a California registered civil engineer or a California registered engineering geologist certifying that the retention pond/settling

basin was constructed as designed are required to be submitted to the Environmental Health Services Division within 30 days of completion of the retention pond or basin. No pond/settling basin shall be placed into operation without certification from the design engineer or geologist that the pond/settling basin was constructed in conformance with the approved design.

(k) Settling basins shall not exceed 60 feet in width and retention ponds shall not exceed 100 ft. in width, unless reviewed by the Solano County Mosquito Abatement District (SCMAD) and approved by the Environmental Health Services Division. The top width of all embankments shall be a minimum of 12 feet and shall be adequately constructed to support vehicular traffic in the event that treatment by SCMAD staff becomes necessary. Large Confined Animal Facilities shall establish a routine maintenance schedule that involves the removal of accumulated dead algae and debris from the water surface of ponds and basins and a routine maintenance program around the perimeter of the ponds. Ponds shall be operated and maintained to prevent floating vegetative solids accumulation.

(l) Retention ponds and settling basins located near an irrigation or drainage district facility must maintain a minimum 100-foot separation between the outside toe of the retention pond or settling basin bank and the nearest irrigation district facility (either physical facility or right-of way), and maintain a containment system between the two facilities that will ensure that all water generated on the animal confinement facility is maintained on site.

(m) Retention ponds, settling basins and ditch conveyances that contain wastewater must maintain a minimum 50-foot separation from the ultimate public road right-of-way line. Conveyances that contain treated wastewater are exempt from this requirement.

(n) A minimum 500-foot separation must exist between the outside toe of the retention pond or settling basin bank and the facility property boundary.

(o) A retention pond must have a marker on the inside slope which clearly indicates the design volume and the minimum freeboard necessary to allow for the 100-year, 24-hour rainfall event. A minimum of two (2) feet of freeboard is required at all times for new and existing retention ponds.

(p) Retention ponds and settling basins shall be protected against 100-year stream flows and the 100-year flood.

(q) New and existing retention ponds and settling basins shall not create obnoxious odors, excessive vector breeding or create a condition of nuisance or pollution as defined by California Water Code section 13050.

(r) New facilities shall install a flow meter and associated plumbing on the effluent line from the retention pond.

(s) Retention ponds and settling basins shall be designed to minimize odor, to the greatest extent feasible, by using the best available proven technology at the time of application for a Large Confined Animal Facility. This includes, but is not limited to, pond covers, anaerobic digesters, aerobic and anaerobic systems or operational or management practices.

Sec. 27-320. Pumping systems and hydraulics

(a) All hydraulic and pumping systems shall be designed by a California registered civil engineer.

(b) All pumping systems shall be equipped with the appropriate level of independent redundancy to continue operation at system design flow rates in the case of a pump failure. Each independent system shall be capable of accommodating design flow rates, including any storm water from the 100-year 24-hour event.

(c) All pumping systems shall be designed so that routine maintenance and repair can be conducted without a discharge of wastewater. This includes control structures on each side of a pump to provide isolation from the pumping system.

(d) Pumps, sumps and pump vaults shall be equipped with the appropriate instrumentation, level indicators and alarm controls to provide real time operational status of the pumping system. Control panels shall be located in a high foot traffic area of the Large Confined Animal Facility and minimally provide the following information or features:

(1) An audio and visual high water alarm;

(2) The pump operational status;

(3) The level of water in the sump or pump vault;

(4) The total pump operational time.

(e) Pumping systems shall be equipped with a backup power supply capable of supplying sufficient power to operate the system at design flow rates, up to and including the volume of process wastewater and storm water runoff from a 100-year 24-hour storm, for at least 72 hours.

Sec. 27-330. Environmental Health operational inspections, construction inspections and approval

(a) The Environmental Health Services Division may inspect each Large Confined Animal Facility four times each year or more often if deemed necessary to assure protection of public health and/or the environment, with at least two inspection occurring during the wet weather period from October through April. Additional inspections by the Environmental Health Services Division may occur after significant rain event. The inspections required by this section may be unannounced.

(b) No portion of the Large Confined Animal Facility shall be placed into use until it has obtained a Large Confined Animal Facility operational permit and the Environmental Health Services Division has completed all required inspections and issued approval, unless the Division has specifically issued a written waiver from the need for such inspections.

(c) These standards are minimums. Stricter standards may be required if recommended pursuant to environmental review by other regulatory agencies.