

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2020-0035
AMENDING WASTE DISCHARGE REQUIREMENTS ORDER R5-2016-0099

UNIVERSITY OF CALIFORNIA, DAVIS
USDA AQUATIC WEED CONTROL LABORATORY,
J. AMOROCHO HYDRAULICS LABORATORY, &
CENTER FOR AQUATIC BIOLOGY AND AQUACULTURE AQUATIC CENTER
YOLO COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

WASTE DISCHARGE REQUIREMENTS ORDER R5-2016-0099

1. On 6 December 2016, the Central Valley Water Board adopted Waste Discharge Requirements (WDRs) Order R5-2016-0099, prescribing requirements for the discharges from USDA Aquatic Weed Control Laboratory (Aquatic Weed Lab), J. Amorocho Hydraulics Laboratory (Hydraulics Lab), and Center for Aquatic Biology and Aquaculture (CABA) Aquatic Center in Yolo County. The University of California, Davis (UCD, hereafter "Discharger") owns and operates the three facilities and is responsible for compliance with the Waste Discharge Requirements (WDRs).
2. Finding 33 of WDRs Order R5-2016-0099 states that the South Basin annual flow limit of 1.7 million gallons (MG) was based on conservative assumptions of no percolation or evaporation during a 100-year, 365-day precipitation event, and maintaining 4 feet of freeboard to the spillover point to Putah Creek.
3. Flow Limitation B.1 of WDRs Order R5-2016-0099 contains the annual flow limitation to the South Basin not to exceed 1.7 MG.

PROPOSED WDRS AMENDMENT

4. On 23 May 2019, UCD submitted a request and supporting information to amend WDRs Order R5-2016-0099. The request was intended to include the following:
 - a. Increase the flow limitation to the South Basin from 1.7 MG to 400 MG.
 - b. Use of Lake Berryessa water (provided by the Solano County Water Agency) as an additional water source at the CABA Aquatic Center and potentially at the other two facilities. Current source water is groundwater.
 - c. Update permitted Drug and Chemical list for the Center for Aquatic Biology and Aquaculture Aquatic Center;
 - d. Install an ultraviolet (UV) light disinfection system to supplement the existing chlorine disinfection system at the CABA facility.
 - e. Use of an open channel flow meter in lieu of the existing flow meter at the Hydraulics Lab.

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5. The Discharger submitted a revised water balance of the South Basin using parameters that were from a September 2015 geotechnical study of the North Basin. The North Basin is located north of the South Basin. Based on the United States Department of Agriculture – Natural Resources Conservation Service (USDA) mapping, the Discharger concluded that soils at the South Basin are the same soils mapped at the North Basin, predominantly the Reiff series, fine to very fine sandy loam on alluvial fans. The 2015 geotechnical study consisted of a soil profile evaluation and field infiltration tests. Exploratory trenches at a depth of approximately 5 feet encountered alluvium that consisted of poorly graded sand with gravel, silt and/or clay; sand with silt and/or clay; silt with varying amounts of gravel, sand, and/or clay; and clay with varying amounts of gravel, sand and/or silt. Infiltration rates from this study were used to demonstrate the South Basin's discharge capacity for a 100-year, 365-day precipitation event. Using an infiltration rate of 9.2 ft/day (with a safety factor of 2), the water balance showed that 1,290 MG of wastewater could be discharged annually while maintaining a 4 feet of freeboard to the spillover point to Putah Creek. The Discharger requested that the annual flow limit be increased from 1.7 MG to 400 MG. However, additional information is needed to demonstrate the storage capacity of the shallow aquifer. Therefore, a flow rate of 60 MG, which is 5 percent of the annual disposal capacity as calculated in the revised water balance and based on a conservative infiltration rate of 0.4 ft/day, will be allowed until such an evaluation has been made.

6. In accordance with Finding 12 of WDRs R5-2016-0099,

“On an as-needed basis, various drugs and chemicals are used to clean fish tanks; treat fish for parasites, fungal growths, and bacterial infections; and to anesthetize fish prior to spawning or “tagging” processes. Based on information provided in Order R5-2012-0053 (NPDES Permit CA0083348), the periodic use and resulting concentrations of these chemicals are not expected to pose a threat to groundwater.”

Monitoring and Reporting Program (MRP) R5-2016-0099 requires the use of all aquaculture chemicals and drugs to be recorded at the time of use and submitted in the quarterly monitoring reports. Information to be submitted includes the following:
 - a. Product trade name(s) and list of active ingredient(s),
 - b. Date(s) of application,
 - c. Purpose and duration of the application,
 - d. Whether the application was static or flow-through,
 - e. Working concentration of each active ingredient,
 - f. Volume of wastewater containing the working concentration of active ingredient(s), and

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- g. Estimated concentration of active ingredient(s) at the point of discharge after dilution.
7. Based on water quality data included in the Discharger's 23 May 2019 submittal, water from Lake Berryessa is similar in comparison to the current groundwater source, with respect to fixed dissolved solids (FDS), electrical conductivity (EC), and most general minerals and metals. Water from Lake Berryessa has lower nitrate concentrations in comparison with the current groundwater source. Iron and manganese concentrations in Lake Berryessa water are higher in comparison with the current groundwater source, but concentrations do not exceed potential water quality objectives for protection of municipal beneficial uses. Water quality analyses from Lake Berryessa are summarized in the table below. Surface water may contain copper sulfate to control algae in the irrigation canal during the warmer months. During these treatments, delivery of copper treated water to the UCD facilities will be minimized.

Constituent	Units	Lake Berryessa Water Quality
FDS	mg/L	200
Electrical Conductivity	µmhos/cm	412
Total Kjeldahl Nitrogen	mg/L	0.51
Ammonia Nitrogen as N	mg/L	< 0.11
Nitrate as N	mg/L	1.9
Iron	µg/L	290
Manganese	µg/L	43

8. UV light disinfection produces no disinfection by-products or chlorine residual. The disinfection process adds nothing to the water but UV light; therefore no impact on chemical composition of the water is anticipated. However, this additional treatment system will require authorization by the Executive Officer prior to installation and amendment of the WDRs prior to use of the UV light disinfection system.
9. The type of flow measuring device is not specified in Order R5-2016-0099. In accordance with MRP R5-2016-0099, flow is measured by meter reading or calculation.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

10. The action of prescribing these WDRs, which impose regulatory requirements on the existing discharge in order to ensure the protection of groundwater resources, is exempt from the provisions of the California Environmental Quality Act (Pub. Resources Code, section 21000 et seq.) in accordance with California Code of Regulations, title 14, section 15301, which exempts the "operation, repair,

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maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features” from environmental review.

CV SALTS REOPENER

11. The Central Valley Water Board adopted Basin Plan amendments incorporating new programs for addressing ongoing salt and nitrate accumulation in the Central Valley at its 31 May 2018 Board Meeting. The Basin Plan amendments were conditionally approved by the State Water Board on 16 October 2019 (Resolution 2019-0057) and by the Office of Administrative Law on 15 January 2020 (OAL Matter No. 2019-1203-03).
 - a. For nitrate, dischargers that are unable to comply with stringent nitrate requirements will be required to take on alternate compliance approaches that involve providing replacement drinking water to persons whose drinking water is affected by nitrates. Dischargers could comply with the new nitrate program either individually or collectively with other dischargers. For the Nitrate Control Program, the Facility falls within a Priority 2 Basin. Notices to Comply for Priority 2 Basins will be issued within two to four years after the effective date of the Nitrate Control Program (17 January 2020).
 - b. For salinity, dischargers that are unable to comply with stringent salinity requirements will instead need to meet performance-based requirements and participate in a basin-wide effort to develop a long-term salinity strategy for the Central Valley. Dischargers will receive a Notice to Comply with instructions and obligations for the Salt Control Program within one year of the effective date of the amendments (17 January 2020). Upon receipt of the Notice to Comply, the Discharger will have no more than six months to inform the Central Valley Water Board of their choice between Option 1 (Conservative Option for Salt Permitting) or Option 2 (Alternative Option for Salt Permitting).

As these strategies are implemented, the Central Valley Water Board may find it necessary to modify the requirements of these WDRs to ensure the goals of the Salt and Nitrate Control Programs are met.

12. The WDRs may be amended or modified to incorporate any newly applicable requirements.

PUBLIC NOTICE

13. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board’s intent to amend waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

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14. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13263 and 13267, Waste Discharge Requirements Order R5-2016-0099 is amended to address the use of UV light disinfection, increase the flow limitation to the South Basin, and allow incremental flow increases up to 400 MG to the South Basin upon submittal of a *Hydrogeological Capacity Evaluation Report*. The University of California, Davis, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with amended Order R5-2016-0099-01 as follows:

1. Finding 17 shall be amended as follows:

“Effluent from the aquatic animal disease laboratory is chlorine disinfected, as required by the Department of Fish and Wildlife, and routed to a hydraulically isolated evaporation/percolation pond, called the Isolation Pond, for disposal. An ultraviolet (UV) light disinfection system may supplement the existing chlorine disinfection system at a later date, as a means to reduce chlorine concentrations during the disinfection process...”

2. Finding 33 shall be amended as follows:

“The Discharger’s water balance of the South Basin utilized conservative assumptions of no percolation or evaporation and determined that up to 1.7 MG of wastewater could be discharged annually without exceeding a water elevation of 60 feet AMSL (4.6 MG storage capacity) during a 100-year, 365-day precipitation event. The total annual storm water contribution was determined to be 2.9 MG.

A revised water balance dated 23 May 2019, utilizing similar infiltration rates from a 2015 geotechnical study performed at the North Basin, demonstrated that the South Basin has an annual disposal capacity of 1,290 MG. The water balance was based on an annual pond evaporation rate of approximately 68 inches per year and an infiltration rate of 9.2 feet per day. The site soil type was determined to be the Reiff series, fine to very fine sandy loam on alluvial fans, similar soils as mapped at the North Basin. The Discharger requested an annual flow increase from 1.7 MG to 400 MG. Additional information is needed to demonstrate that this increase will not cause groundwater mounding, affect local hydraulic gradients, decrease the available vadose zone which may decrease the removal of certain pollutants, or cause indirect discharge to Putah Creek. An annual flow of 60 MG will be allowed until such a time a hydrogeological evaluation of the site has been performed. An annual flow of 60 MG is 5 percent of the annual disposal capacity as calculated in the revised water balance and corresponds to an infiltration rate of 0.4 feet per day.”

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3. Flow Limitation B.1. shall be amended as follows:

*“**Effectively immediately**, wastewater discharge to the following discharge areas shall not exceed the specified flow limits shown below. The total annual flow limit is determined by the total flow for the calendar year.*

Discharge Area	Total Annual Flow Limit
South Basin	60 MG
North Basin	592 MG
Isolation Pond	33.5 MG

4. Flow Limitation B.3 shall be included as follows:

*“**Effective on the date of the Executive Officer’s approval** of a *Hydrogeological Capacity Evaluation Report* submitted pursuant to Provision F.1.e, the total annual flow to the South Basin greater than 60 MG will be allowed, with incremental increases, up to a maximum annual flow not to exceed 400 MG. Any incremental flow increases will be granted upon Executive Officer’s approval of the report.”*

5. Provision F.1.e shall be included as follows:

*“**At least 180 days** prior to any planned increase in influent flow to the South Basin, the Discharger shall submit a *Hydrogeological Capacity Evaluation Report* prepared by a licensed professional Geologist or Hydrogeologist. The report shall propose a flow limit not to exceed 400 MG and provide technical justification including a water balance and discussion of the hydrogeological capacity of the discharge area. At a minimum, the report shall include a discussion on the storage capacity of the shallow aquifer, efforts that will be taken to minimize mounding, any affects to local hydraulic gradients, potential for horizontal mobilization of constituents of concern away from the discharge area, available vadose zone reduction which may decrease the removal of certain pollutants, and efforts to prevent indirect discharge to Putah Creek. Any incremental flow increase will be granted upon Executive Officer’s approval of the report.”*

6. Provision F.1.f shall be included as follows:

*“**At least 180 days** prior to any planned UV light disinfection system installation, the Discharger shall submit a *UV Light Disinfection System Installation Workplan* for approval by the Executive Officer. The workplan shall provide a description of the proposed system, including design parameters (i.e. flow capacity and UV transmittance); an updated flow diagram if applicable; and a time schedule for the installation of the UV light disinfection system. If the Discharger proposes to decommission the existing disinfection system, the workplan shall include a time schedule for the decommissioning activities.*

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Upon 60 days following completion of these activities, the Discharger shall submit a UV Light Disinfection Installation Completion Report certifying the installation of the UV system is complete and fully operational. If the installation workplan proposed decommissioning the existing disinfection system, then the completion report shall certify that those activities were complete. Following receipt of this report, the WDRs will be amended, if necessary, to reflect the current disinfection technology performed at the three facilities.”

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board for administrative review in accordance with Water Code section 13320, and California Code of Regulations, title 23, section 2050 et seq. To be timely, the State Water Board must receive the petition by 5pm on the 30th day after the date of this Order, except that if the 30th day falls on a Saturday, Sunday or State Holiday, the petition must be received by the State Water Board by 5pm on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the internet at the [California State Water Resources Control Board's Public Notices Water Quality Petitions webpage](http://www.waterboards.ca.gov/public_notices/petitions/water_quality) (http://www.waterboards.ca.gov/public_notices/petitions/water_quality), or will be provided upon request.

I, PATRICK PULUPA, Executive Officer, do hereby certify the foregoing is a full and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 4 June 2020.

PATRICK PULUPA, Executive Officer