




## EXTERNAL MEMORANDUM

**To:** Chatfield Watershed Authority Technical Advisory Committee

**From:** Alan J. Leak, P.E.   
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**Date:** January 31, 2024

**Subject:** Application for Amended Site Location Approval for the Jellystone Park at Larkspur Wastewater Treatment Facility

### PROJECT SUMMARY

An application for amendment of existing treatment plant site location approval for the Jellystone Park at Larkspur (Applicant) Wastewater Treatment Facility (WWTF) has been submitted to the Chatfield Watershed Authority (Authority) pursuant to the requirements of Section 22.7(2) of the Colorado Water Quality Control Commission (WQCC) Regulation 22. This section requires, among other things, submittal of the application to the local 208 management agency (the Authority) for review and comment on the application. The site location for the Jellystone Park at Larkspur WWTF was previously approved by the Colorado Water Quality Control Division (Division) on April 14, 2020, at a 0.044 mgd design capacity with a total phosphorus wasteload allocation of 72.6 lbs/yr and a total phosphorus concentration discharge limitation of 1.0 mg/l discharging to groundwater. The purpose of this application is to address the design and proposed construction of additional treatment processes to address and resolve failure of the current WWTF to meet permit discharge requirements. Specifically of concern to the Authority are the exceedances in total phosphorus loads and concentrations and non-compliance with the conditions of the original site location approval.

### APPLICABLE CHATFIELD WATERSHED AUTHORITY (CWA) REGULATIONS/DOCUMENTS

- / Water Quality Control Commission Regulation 73
- / CWA Water Quality Trading Guidelines (1/24/2022)
- / CWA Policy - Review Criteria for Site Location and Design Approvals (1/24/2022)

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## PURTANANT TIMELINE DOCUMENTATION

- / September 13, 2023 – Application for amended site location approval (and supporting documents) submitted to the Division.
- / December 28, 2023 – Division issued a request for information to the Applicant, a copy of which was provided to the Authority.
- / January 2, 2024 – Authority and RESPEC received from the Applicant a copy of the application for amended site location approval (and supporting documents) previously submitted to WQCD.
- / January 5, 2024 – Applicant submitted a response to the Division addressing the Division's December 28, 2023, request for information.
- / January 15, 2024 – RESPEC notified the Applicant of the Authority's process for review of the application.
- / January 15, 2024 - The Applicant completed and submitted the Authority's Request for Review Form to the Authority.
- / January 16, 2024 – The Authority notified the Applicant that the submittal was reviewed and found to be complete.
- / January 19, 2024 - The Authority received payment of the Authority's Cost of Review Fee and began the review process.
- / Additional information has been provided in a timely manner by the Applicant to RESPEC addressing questions from RESPEC on the application and supporting documents.

## HISTORY

Prior to commissioning a wastewater treatment facility, the Applicant depended on onsite wastewater treatment systems (OWTS) across the park. Around May 6, 2019, the Applicant submitted to the CDPHE a site location application to remove the OWTS's and replace them with the proposed Jellystone Park at Larkspur WWTF discharging to groundwater. Subsequently, the Applicant submitted to the Authority the application for site location approval and an application for a phosphorus trade.

The Authority reviewed these applications and, after coordination between the Authority's technical advisor (RESPEC) and Jellystone's WWTF design engineer (Atwell) and several iterations of the phosphorus load estimation, the Authority, on November 14, 2019, recommended to the Division approval of the phosphorus trade application and issuance of a phosphorus wasteload allocation. The phosphorus trade and wasteload allocation was premised on a non-point to point source trade per Regulation 73 (73.3(2)(e)) based on eliminating an estimated total phosphorus load of 145.2 pounds per year in previous OWTS loading in a trade for a wasteload allocation of 72.6 pounds per year of total phosphorus.

The recommendation from the Authority to the Division included six recommend conditions of approval:

1. Certification by the project engineer and owner that the existing septic systems will be removed and will no longer be functional within 60 days after the WWTF goes online.
2. Written verification from Tri-County Health Department that the existing septic systems have been properly decommissioned, and their permits revoked within 60 days after the WWTF begins discharging to the effluent pond.



3. 30 days prior to a final action by the Colorado Division of Public Health and Environment (CDPHE) on the proposed phosphorus trade, a report signed by a Colorado Professional Engineer shall be provided to the Authority for review and comment to CDPHE, that states that the site conditions at the proposed effluent pond will allow for the continuous disposal of treated effluent at a minimum rate of 0.044 mgd into the groundwater table for a period of at least five (5) years. The report shall also state what level of maintenance is necessary to meet this requirement. The report shall also include the engineer's opinion whether the engineer expects the infiltrated effluent will remain as groundwater before surfacing at East Plum Creek. This report shall include soil borings and analysis sufficient to support the engineer's conclusions. The Applicant shall agree to implement the maintenance requirements stated in this report.
4. The Applicant shall propose a monitoring plan for review and approval by the Authority that will provide proof over time that the operation of the effluent pond does not result in a surface water discharge of the pond effluent before such effluent reaches Plum Creek.
5. The Applicant shall state in writing that they understand and will abide by the requirements of "Section VIII(C) Adjustments and Revocations" of the Authority Trading Guidelines.
6. The Applicant shall monitor the phosphorus concentration of the WWTF influent and provide a yearly report to the Authority (by January 31 of each year) providing the monitoring results and calculating the average WWTF influent phosphorus concentration for that year and the total phosphorus influent load based upon the flow rates used for the original credit calculation. This information may be used to revise the phosphorus credits based upon the provisions of "Section VIII(C) Adjustments and Revocations" of the Guidelines.

The Division issued an approval of the phosphorus trade and site location application on April 14, 2020. In the Division's approval, the Division required that the Applicant meet all six of the Authority's proposed conditions of approval.

Subsequently, conditions 1-5 above were met in a reasonable time period. Condition 6 however, requiring monitoring of the influent total phosphorus load and concentration and submission of an annual report to the Authority, has not been met. In addition, the results of the monitoring data required in the submitted monitoring plan per condition 4 have not been submitted.

After approval of the original site location application and construction of the facility proposed in the original approved site location, the WWTF has failed to meet discharge requirements, specifically total phosphorus loads and concentrations, both in violation of the provisions of Regulation 73.

Regulation 73 requires wastewater treatment facilities in the Chatfield Watershed to meet certain effluent discharge and wasteload allocations. For the subject facility, the requirements limit the subject facility's discharge of total phosphorus to 1.0 mg/l with a wasteload allocation of 72.6 lbs/year. After initial operation of the WWTF in 2021, the reported total phosphorus discharged from the subject facility in 2021 was 105.2 lbs. This amount exceeded the allowable annual wasteload allocation of 72.6 lbs. The WWTF also exceeded the total phosphorus concentration limit of 1.0 mg/l in September, October, November, and December 2021.

The Authority provided a courtesy email to the Applicant on April 29, 2022, requesting the annual report and written explanation as to the cause of the total phosphorus exceedances and what efforts were being performed to bring the facility back into compliance. RESPEC received a telephone response to the email stating that a written response would be provided. However, no such written response was provided to the Authority.



The WWTF continued to exceed total phosphorus concentration and wasteload permit requirements in 2022 and 2023. CDPHE provided several permit violation notices to the Applicant which have prompted the current proposed addition of an additional treatment process and requiring approval the proposed improvements through submittal of the subject amended site location application.

## SITE LOCATION APPLICATION REVIEW

The Authority reviews site location applications based on the Authority's "Policy – Review Criteria for Site Location and Design Approvals". This review process ascertains whether the site location application fully addresses the following criteria:

- / Phosphorus Wasteload Allocation: The Applicant must demonstrate the annual phosphorus wasteload allocation is not in exceedance and/or provides a plan of how the Applicant will remain within the designated annual phosphorus wasteload allocation.
- / Phosphorus Concentration Limit: The Applicant must demonstrate that the WWTF will not exceed 1.0 mg/l total phosphorus as a 30-day average concentration.
- / Emergency Response Criteria (ERC): The Applicant must demonstrate that all Authority ERC are addressed.
- / Consolidation of Treatment Works: The Authority will consider whether the Applicant has met the requirements of Regulation 22 with respect to consolidation of treatment works.

## FINDINGS

Upon RESPEC's review of the application for amended site location approval (and supporting documents) and additional information provided by the Applicant during RESPEC's review, we find the following in respect to the Authority's "Policy – Review Criteria for Site Location and Design Approvals":

- / Phosphorus Wasteload Allocation:

The Applicant's failure to regularly monitor the influent total phosphorus loads has limited the Authority's ability to determine whether the phosphorus trade and wasteload allocation assigned in 2019 was appropriate. However, limited influent phosphorus concentration data that was collected in 2021, along with wastewater effluent flow data, would appear to indicate that the actual influent total phosphorus loads and concentrations at that time well exceeded the assumed total phosphorus loads and concentrations that were being discharged to the original OWTs. Thus, the total phosphorus trade and wasteload allocation for the Jellystone WWTF appears to have met the minimum 2:1 trade requirement which was the basis for approval of the total phosphorus trade. Even though the total phosphorous loads to the WWTF are much higher now than the assumptions used in the original WWTF design and phosphorus trade, the lack of historic influent data after initial commissioning and operation of the WWTF does not allow for a change in the current 72.6 pounds per year wasteload allocation based on the approved total phosphorus trade.
- / Phosphorus Concentration Limit:

The site location application proposes to meet the 1.0 mg/l total phosphorus concentration as required by Regulation 73. The submitted "Basis of Design Report" provides calculations that would support this assertion. RESPEC did not review in detail the "Basis of Design Report".
- / Emergency Response Criteria (ERC):

The emergency response criteria are not affected by the changes to the WWTF and were found in the original review to meet the Authority's ERC.



/ Consolidation of Treatment Works:

When the facility was constructed, the Authority found that consolidation of treatment works was not feasible at that time. Based on the as-constructed facility and the proposed process addition, consolidation still does not appear to be viable at this time

## CONCLUSIONS

The Applicant's failure to adequately monitor and report total phosphorus influent concentrations is of significant concern to the Authority since this data was planned to be used to confirm the adequacy of the approved phosphorus trade. In addition, the Applicant's failure to monitor the groundwater conditions between the infiltration basin (used to discharge the WWTF effluent to ground water) and East Plum Creek does not allow a verification that effluent generated groundwater is not surfacing before it reaches East Plum Creek. The assumption used in the total phosphorus trade was that WWTF effluent discharged to groundwater would remain underground until reaching East Plum Creek. If this assumption is disproved, loading of total phosphorus to East Plum Creek would be larger than assumed in the total phosphorus trade. Most importantly to the Authority is obtaining resolution of the exceedances in total phosphorus concentrations and loadings from the WWTF as these exceedances have a direct impact on the total phosphorus concentrations and loadings to Chatfield Reservoir, potentially leading to violations of the total phosphorus concentration and Chlorophyll a standards in Chatfield Reservoir.

## RECOMMENDATIONS

Based on the submitted application and supporting information provided by the Applicant and RESPEC's review, we recommend that the Authority Technical Advisory Committee (CWATAC) recommend the Division approve the amended site location application with the following condition:

- a. The approval and subsequent revision of the WWTF NDPES permit include a condition that the Applicant fully comply with the recommendations for groundwater monitoring as specified in the monitoring report submitted in compliance with condition 2 of the original site location application approval (Authority condition 4). Evidence of the surfacing of groundwater between the WWTF infiltration basin and East Plum Creek will require reevaluation of the approved total phosphorus trade and may result in a reduction in the approved total phosphorus wasteload allocation to this WWTF.

In addition, the exceedances of the WWTF total phosphorus loads and concentrations permit limits have resulted in increased total phosphorus loads to East Plum Creek and Chatfield Reservoir. The Authority should request of the Division that, to the extent these violations result in a fine or a supplemental environmental project (SEP), that the Division consider using such fine or SEP for project work within the Chatfield Watershed that proposes to reduce total phosphorus loadings to Chatfield Reservoir.