

October 7, 2019

Jack Glavan, Manager
Pikes Peak - America's Mountain
P.O. Box 1575
Cascade, CO 80809

Subject: Process Design Report (PDR) Approval and Streamlined-Design Request Letter Acceptance
Pikes Peak Summit Visitors' Center, Localized Reclaimed Water Treatment System
Colorado Discharge Permit System (CDPS) No.: None, facility expects to produce 100% reclaim
water with unused treated effluent, off-specification, partially treated wastewater, and facility
overflows sent to the Las Vegas Street Water Resource Recovery Facility (CO0026735).
Site Location Approval No. ES.18.SA.04510; El Paso County
ES Project No. ES.18.CWPDR.04511

Dear Mr. Glavan:

The Water Quality Control Division (Division), Engineering Section has received and reviewed the Process Design Report (PDR) including preliminary plans, PDR Checklist, and a letter of intent to self-certify the Final Design-Plans and Specifications for the Pikes Peak - America's Mountain (PPAM) Localized Reclaimed Water Treatment System. The Pikes Peak Summit Visitors' Center Localized Reclaimed Water Treatment Facility will be used to treat water to standards defined in Regulation 84 for indoor toilet flushing use. The Division accepts the self-certification request for a streamlined design review. Please refer to items 2 and 4 of the *Conditions of Approval* section of this letter for specific requirements associated with the acceptance. The PDR submittal, as reviewed, meets the requirements of the *State of Colorado Design Criteria for Domestic Wastewater Treatment Works, WPC-DR-1* (Design Criteria) and is approved as listed below. **The approved maximum month hydraulic and organic design capacities are 0.008 MGD and 80 lbs of BOD per day, respectively.**

This PDR approval addresses the following:

- All calculations and associated information included in the PDR.
- Log Removal Target Treatment Credits:

Pathogen	Virus	Protozoa	Bacteria
Category 3 Regulation 84 Requirements	8.5	7.0	6.0
UV Disinfection Credit	6.0	7.0	6.0
Chlorine Disinfection Credit	2.5	0.0	0.0

Compliance Monitoring:

- Influent Compliance Point
 1. Flow measurement for permit compliance summing flow measured by the magnetic flow meters on the permeate tank effluent line from the membrane biological reactor (MBR). Continuous flow recording and totalizing is provided to monitor flow rates.
 2. Influent sampling monitored via grab sample from settling tank.
- Effluent Compliance Point
 1. Effluent sampling is monitored from sample port downstream of the chlorine contact piping.

Continuous Verification Monitoring:

- UV Disinfection Verification Point
 1. UV transmittance sampling for confirming UV disinfection log inactivation credits using transmittance monitor.



2. Flow measurement for confirming UV disinfection log inactivation credits using magnetic flow meter located upstream of pressurized tablet chlorinator.
- Chlorine Disinfection Verification Point
 1. Chlorine residual sampling for confirming chlorine disinfection log inactivation credits using online chlorine meter for continuous monitoring downstream of the chlorine contact piping.
 2. Flow measurement for confirming chlorine disinfection log inactivation credits using magnetic flow meter located upstream of pressurized tablet chlorinator.

Liquid Treatment:

- Primary Treatment
 1. Settling Tank: Primary treatment provided by one (1) settling tank. The capacity of the tank is 3,231 gallons for a hydraulic residence time (HRT) of 9.7 hours at maximum month flow (MMF) conditions. There are three outlets from the settling tank each fitted with a manually cleaned sanitee screen containing 3 millimeter openings. Screens are designed to pass the peak hydraulic flow of 60 gpm with one screen out of service. The primary treatment design assumes no 5-day biochemical oxygen demand (BOD₅) removal credit.
- Secondary Treatment and Flow Equalization
 1. Acceptance of the biological design calculations for reduction of BOD₅ and nitrification with a Bio-Microbics BioBarrier membrane biological reactor (MBR) treatment process. The secondary treatment process design is based on an influent BOD₅ concentration of 1,200 mg/L and an effluent BOD₅ concentration of less than 30 mg/L, based on a theoretical SRT of 73 days at a critical temperature of 15 degrees C.
 2. After screening, primary effluent flows by gravity into three aeration and equalization tanks. The biological treatment process will consist of three parallel trains of prefabricated MBRs with submerged membrane modules, process aeration, and filtrate pumping.
 - a. One MBR aeration/equalization zone for each membrane train with a minimum total volume of 11,310 gallons (3,770 gallons per train), and a usable volume of 3,204 gallons (1,070 gallons per train).
 - i. HRT of 9.6 hours
 - ii. The MBR will operate at MLSS between 2,000 and 10,000 mg/L
 - iii. The three MBR units can be isolated while the remaining units stay online
 - b. Membrane filtration
 - i. Each of the three MBR units will have four double stacked MBR modules (eight total per MBR unit)
 - ii. Membranes will be flat-sheet style membranes, constructed of polyvinylidene fluoride (PVDF) and polyethersulfone (PES)
 1. Surface area per double stacked module of 150.7 ft²
 2. Flux at MMAD flow of 4.4 gpd/sf
 3. Average pore size is <0.1 microns
 - iii. Membranes have built in coarse bubble diffusers for membrane scouring.
 - c. Filtrate pumps
 - i. Each of the three MBR units will be equipped with one filtrate pump to create a vacuum on the filtrate header, jet, 5.7 gpm, equipped with variable frequency drives
 - ii. A magnetic flow meter will be located downstream of each of the filtrate pumps
 - d. MBR effluent from the filtrate header will discharge into a 55-gallon permeate tank. One permeate pump will pump from the permeate tank to the disinfection system, centrifugal, 20 gpm, equipped with variable frequency drive.
 - e. Fine bubble diffusers
 - i. Each of the three MBR units will have an array of 40 fine bubble diffusers
 3. Process aeration
 - a. Membrane air scour:
 - i. One blower supplies air for scouring the membranes, regenerative type, 220 scfm, 15 HP, equipped with variable frequency drive. A shelf spare blower is also provided.

- Odor Control:
 1. Primary settling tank and all three aeration tanks will be equipped with vent pipe to pull air and gases from the headspace of the tanks via direct drive blower, 1000 cfm. Air and gases will flow through a 365 gallon drum containing activated carbon, wood-based carbon media and potassium permanganate before discharge to atmosphere.
 2. A second, redundant odor control system will feed ionized air into the primary settling tank, 500 m³ capacity, 960 cfm.
- Solids Handling:
 1. Settling tank and all three aeration and equalization tanks are connected to two (2), 50 gpm rotary lobe pumps for solids removal (one duty, one standby).
 - a. Solids removal from the primary settling tank is anticipated nine times per year, with solids hauled to the Las Vegas Street Water Resource Recovery Facility (LVSRRF).
 - b. Solids removal from the aeration and equalization tanks is anticipated five times per year, with solids hauled to the Woodland Park Wastewater Treatment Facility.

Ancillary Equipment and Facilities:

- Emergency Equipment and Structures
 1. Standby power: A 600 kilowatt (MW) diesel generator provided for emergency operations for the visitors' center, including all components of the wastewater treatment system. All processes continue operation with the backup generator, and return to normal operation once the primary source is restored.
- Instrumentation and Control Systems
 1. The control panel for all processes provide local monitoring of status and alarm conditions, as well as relay the conditions to the plant SCADA system. Remote monitoring, control, and alarm notification are provided through the SCADA system.

This Approval includes the following site specific deviation from the Design Criteria:

1. Design Criteria number 4 of the Acceptance of Bio-Microbics BioBarrier Membrane Reactor Technology as a New Technology for Use in Domestic Wastewater Treatment Works in Colorado letter dated February 17, 2012 requires that a primary settling compartment or tank with less than or equal to 1/16 inch Bio-Microbics SaniTEE fine screen effluent filter must precede the treatment unit compartment or tank to remove oil, grease, scum, grit, and floating debris. The screens included in the primary settling tank include 1/8 inch openings. The submittal includes documentation from Bio-Microbics that the 1/8 inch orifice opening is adequate for screening debris that would interfere with the membrane filtration process. Based on information provided to support the deviation request, the Division has accepted this site specific deviation.
2. Design Criteria number 4 of the Acceptance of Bio-Microbics BioBarrier Membrane Reactor Technology as a New Technology for Use in Domestic Wastewater Treatment Works in Colorado letter dated February 17, 2012 also requires that the primary settling tank have a hydraulic residence time (HRT) of at least 12-hours at the maximum monthly average flow capacity. The primary settling tank provides an HRT of 9.7 hours. The submittal states that the reduced detention time may impact the frequency of pumping of solids; however, the transfer of fine solids to the aeration tank is not expected to impact the biological treatment performance or effluent quality. Based on information provided to support the deviation request, the Division has accepted this site specific deviation.

Conditions of Approval:

1. PPAM intends to store treated effluent in two 8,000 gallon reclaimed water holding tanks for authorized reclaimed water uses. *Reclaimed Water Control Regulation, 5 CCR 1002-84* (Regulation 84) establishes the approved uses of reclaimed water, and requires that the applicant provide a field verification and commissioning report and obtain a Notice of Authorization (NOA) from the Division prior to initiating any approved use. The NOA includes the final conditions, uses, and limitations that are specific to the facility. For information about the application process for obtaining a notice of authorization, please refer to the Division's Permit Section web page, or contact Liz Lemonds at liz.lemonds@state.co.us or 303-692-3515.

2. If the UV or chlorine contactor systems fail to meet the corresponding treatment target, the system may not utilize the treated effluent for indoor toilet and urinal flushing and the water must be disposed in an alternative manner, such as hauling to a wastewater treatment facility.
3. Water used for indoor toilet and urinal flushing must maintain a minimum 0.2 mg/L free chlorine residual at the chlorine contact chamber outlet compliance monitoring location and within the visitors' center plumbing. The disinfection residual within the premise plumbing must be measured at a location at a distance of no greater than 50 feet from the location at the distal end or a location that represents the oldest water age within the reclaimed water premise plumbing system.
4. The plumbing within the visitors' center must include a backup potable water connection capable of supplying potable water to fixtures for flushing via an air gap in case the localized reclaimed water treatment system fail or the reclaimed water is found to be non-compliant or insufficient in volume.
5. In accordance with Section 22.11 (1, par. 3) of Regulation 22, upon completion of final design (plans and specifications) documents, including all addenda, and prior to commencement of construction, each Colorado registered professional engineer(s) in responsible charge of the final design documents (plans & specifications) shall complete and submit a Certification Form to the Division.
6. In accordance with Section 22.11 (1, par. 4) of Regulation 22, if the Division discovers discrepancies between the facilities as described in the PDR and those finally constructed, the applicant will either agree to make modifications to resolve the inconsistency to the Division's satisfaction or the approval of the design will be null and void.
7. Upon completion of construction and prior to commencement of operation, a written certification must be submitted to the Division stating that the project facilities were built in accordance with the approved plans, specifications, and change orders. The certification must be signed by the applicant's registered engineer.
8. Any change orders or addenda that change facility capacity, water quality, or processes, must be submitted to this office for review and approval.
9. When construction is estimated to be within 14 days of completion, please notify this office. A representative of this department may schedule a site visit to conduct a final construction inspection before the facility commences operations.
10. Please note that during construction and operation activities, the provisions specified in Sections 2.2.0, 2.3.17 and 2.3.18 of the Design Criteria, must be implemented and followed. This review does not relieve the owner from compliance with all Federal, State, and local regulations and requirements prior to construction nor from responsibility for proper engineering, construction, and operation of the facility.
11. No point source discharges of water and/or contaminants from this facility to the waters of the state are authorized during construction unless a permit for such discharges has been issued by the Division. If you have any questions regarding permit issues or requirements, please contact the Permits Section at 303-692-3510.
12. In accordance with Section 2.4.0 of the Design Criteria, all wastewater treatment facilities shall develop suitable operations and maintenance manuals.
13. In accordance with Chapter 11 of the Design Criteria, all wastewater treatment facilities shall develop management and operating plans for ultimate use or disposal of biosolids. Biosolids management plans shall conform to Federal Requirements in 40 CFR 503. All disposal options shall also conform with Federal Requirements 40 CFR 257 and 40 CFR 503, Colorado Biosolids Regulation 64, and the requirements of the Colorado Regulations Pertaining to Solid Waste Disposal Sites and Facilities, as applicable.

14. All biosolids and/or similar waste material removed from the project during this project must be properly disposed at an approved site.

Facility Classification under Regulation 100:

In accordance with the current Operators Certification Board Regulations, this reclaim water treatment plant is a Class B Domestic Wastewater Treatment Facility and a Class D Water treatment Facility. The reclaim water distribution system does not require a distribution system operator since the distribution system is contained within the property of the treater.

Documents reviewed:

- Process design report dated May 2, 2019 titled *Process Design Report for the Pikes Peak Visitor Center Localized Reclaimed Water Treatment System*. Prepared by JVA, Inc. for Pikes Peak - America's Mountain.
- Response letter dated August 13, 2019 titled "Pikes Peak America's Mountain Localized Reclaimed Water Treatment System - Modified Disinfection Design." Prepared by JVA, Inc. for Pikes Peak - America's Mountain.
- Response letter dated September 10, 2019 titled "Request for Information Pikes Peak America's Mountain Localized Reclaimed Water Treatment System." Prepared by JVA, Inc. for Pikes Peak - America's Mountain.
- Design drawings and technical specifications dated August 2019 titled *Pikes Peak America's Mountain Localized Reclaimed Water Treatment System*. Prepared by JVA, Inc. for Pikes Peak - America's Mountain.
- Site location approval letter dated June 27 titled "Site Location Approval No. ES.18.SA.04510." Prepared by the Division for Pikes Peak - America's Mountain.
- Miscellaneous correspondence.

The Engineering Section is interested in gaining feedback about your experience during the engineering review process. We would appreciate your time to complete a Quality-of-Service Survey regarding your experience during the engineering review process leading up to issuance of this decision letter. The Engineering Section will use your responses and comments to identify strengths, target areas for improvement, and evaluate process improvements to better serve your needs. Please take a moment to fill out our survey at the following website: <http://fs8.formsite.com/cohealth/form627710151/index.html>.

Thank you for your time and cooperation in this matter. Please contact me by telephone at 303-692-3566 or by electronic mail at emily.wong@state.co.us if you have any questions.

Sincerely,

Emily Wong, P.E.
Senior Review Engineer
Engineering Section | Water Quality Control Division
Colorado Department of Public Health and Environment

cc: Kevin Tone, JVA, Inc.
Simon Farrell, JVA, Inc.
James Cochran, JVA, Inc.
Tara Kelley, Colorado Springs Utilities
Mark Gebhart, El Paso County
Aaron Doussett, El Paso County Public Health
Samantha Bailey, Pikes Peak Area Council of Governments
Jeffrey Hovermale, US Forest Service
Amy Zimmerman, WQCD ES Engineering Review Unit, Unit Manager
Liz Lemonds, WQCD Reclaimed Water Permits
Meg Parish, WQCD Permit Section
Brandi Honeycutt, WQCD Permits Section
Site Application File | Associated Discharge Permit File (CO0026735)
Discharge Permit File (New System)