

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**  
**CHERRY CREEK RESERVOIR DESTRATIFICATION SYSTEM**  
**OPERATIONS POLICY**

July 19, 2021 (TAC reviewed September 2, 2021; Board reviewed  
January 20, 2022)

**Recommended Operating Season and Start-up Criteria:**

In 2020, the Cherry Creek Basin Water Quality Authority (CCBWQA) replaced the compressor to improve the operation of the Reservoir Destratification System (RDS) and to allow for operation from March 1 through November 30. In July 2020; the compressor was replaced, and operation was tested through November 16, 2020.<sup>1</sup> With the new compressor, it appears that the RDS has the capability of operating from ice off through ice on the reservoir.

In 2021, CCBWQA wanted to optimize the water quality benefits of the RDS. CCBWQA reviewed the water quality data from the water quality sampling and thermistor set in the reservoir to evaluate the optimal operating season. For the period of 2016 – 2020<sup>2</sup>:

- the earliest start of thermal stratification was April 20, 2020 (without RDS Operating); and,
- the latest finish of thermal stratification was October 17, 2020 (RDS was operating) or September 27, 2018 (without RDS Operating).

Considering this information, CCBWQA's Technical Advisory Committee at their September 2, 2021 accepted the update the RDS Operations Policy and the RDS should be operated:

- from about mid-April through at least the end of September; and
- before startup, CCBWQA's System Operator will need to visually verify that ice should be off the reservoir<sup>3</sup> and the temperature in the building 38 degrees Fahrenheit; and,
- CCBWQA's System Operator shall then log the detail of the start-up and shut-down procedure in the Cherry Creek Reservoir Destratification Facilities Operation and Maintenance Annual Report.

**Start-up Procedure:**

CCBWQA's System Operator should perform a leak check after ice off and ahead of Operating Season start date. CCBWQA's System Operator will perform test by:

1. Notifying Cherry Creek State Park Staff (manager and operations manager), Marina Operator, and Ingersoll Rand's client manager for CCBWQA of leak test and season start date.
2. At distribution manholes, check that valves are configured to send air to all zones.
3. Set Pressure Reducing Valve to 40 psi.
4. Review Compressor discharge pressure is set to a range between 100-110 psi.
5. Start compressor following instructions in compressor manual.
6. Monitor gages on Pressure Reducing Valve and Compressor. Compressor delivers 100-110 psi and Pressure Reducing Valve regulates it to 40 psi going to distribution system.
7. Shutdown compressor if compressor delivers more than 110 psi or output on Pressure Reduction Valve exceeds 40 psi.
8. Check pressure gages at distribution manholes.
9. Visually look for leaks by driving dam road and using binoculars from dam and shoreline or by boat.
10. After test, shut-down RDS and report any leaks.
11. Record leak test date and time.

For season start-up, CCBWQA's System Operator:

1. Follow instructions 2-8 from leak test.

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<sup>1</sup> Cherry Creek Reservoir Destratification System – 2020 Operation and Maintenance Annual Report, R2R Engineers.

<sup>2</sup> E-mails from Solitude Lake Management on March 25, 2021 and April 14, 2021.

<sup>3</sup> Destratification System - Operation Policy Regarding Ice; adopted by the CCBWQA Board on February 20, 2014

2. Step up of pressure in 2 phases (50 and 55 psi) at least 4 hours apart,
  - a. Check Pressure Reducing Valve output doesn't exceed phase pressure.
  - b. Check pressure gages at distribution manholes.
3. Record start-up date and time.

**Shut-down Procedure:**

1. Notifying Cherry Creek State Park Staff (manager and operations manager), Marina Operator, and Ingersoll Rand's client manager for CCBWQA of season end date.
2. Turn off Compressor.
3. Monitor gages on Pressure Reducing Valve and Compressor. Pressures should drop.
4. Record shut-down date and time.