

**VERMONT AGENCY OF NATURAL RESOURCES**

**Water Quality Certification**

**(33 U.S.C. § 1341)**

In the matter of: Sugarbush Mountain Resort Inc.  
1840 Sugarbush Access Rd.  
Warren, Vermont 05674

**APPLICATION FOR REPLACEMENT OF THE WATER WITHDRAWAL WEIR FOR THE SNOWMAKING SYSTEM**

Section 401 of the federal Clean Water Act requires that any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates that any such discharge will comply with other substantive provisions of the Clean Water Act. 33 U.S.C. § 1341(a)(1). The certifying state may set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a federal license will comply with the Clean Water Act and with any other appropriate requirement of state law. 33 U.S.C. § 1341(d). The Secretary of Natural Resources has delegated the authority to make certification determinations to the Department of Environmental Conservation.

The Vermont Department of Environmental Conservation (the Department) has reviewed a water quality certification application dated August 10, 2021, filed by Sugarbush Mountain Resort Inc. (the Applicant). The application for certification is in connection with a permit application filed with the Army Corps of Engineers (USACE) pursuant to Section 404 of the Federal Clean Water Act (NAE-2016-01268). The USACE has deemed the date of a request for certification to be August 13, 2021, and the reasonable period of time to act on the certification request to be 60 days. The supporting documentation for the application includes a stream alteration permit application dated March 9, 2020; a final snowmaking needs and alternatives analysis dated July 2, 2021 and prepared by Vanasse Hangen Brustlin, Inc. (VHB) on behalf of the Applicant; a pending land use permit application (10 V.S.A. Chapter 151; permit no. 5W111-4), and other documents related to the project filed through September 1, 2021 were available to the Department for consideration in this matter. Collectively, these materials are referred to as the “application.” The alternatives analysis was the subject of an informal public conference noticed on June 20, 2021, and held in Warren on August 6, 2021, pursuant to the Water Withdrawals for Snowmaking (Environmental Protection Rules, Chapter (16)), effective February 15, 1996.

The current application is subject to review under the Vermont Water Quality Standards promulgated by the Agency of Natural Resources and effective beginning January 15, 2017 (Standards). (Standards, § 29A1-01(a) Applicability).

The Department held a public hearing on October 5, 2021, at the Lincoln Peak School House building at Sugarbush Resort, located at 84 Forest Drive, Warren Vermont and received oral comments. The Department accepted written comments through October 6, 2021.

The Department, based on the application and record before it, makes the following findings and conclusions:

## **I. Applicable Statutes and Regulations**

### **A. Applicable provisions of the Vermont Water Quality Standards**

1. The applicable 2017 Vermont Water Quality Standards (Standards) were adopted by the Secretary of the Agency of Natural Resources pursuant to 10 V.S.A., Chapter 47, Water Pollution Control. Section 1252 of this chapter provides for the classification of designated uses as either Class A(1), A(2), B(1) or B(2) and authorizes the adoption of standards of water quality to achieve the purpose of classification.
2. All waters of the State shall be managed to support their designated and existing uses. (Standards, § 29A-104(b)).
3. The designated uses are: aquatic biota and wildlife that may utilize or are present in the waters; aquatic habitat to support aquatic biota, wildlife, or plant life; the use of waters for swimming and other primary contact recreation; the use of waters for boating and related recreational uses; the use of waters for fishing and related recreational uses; the use of waters for the enjoyment of aesthetic conditions; the use of the water for public water source; and the use of water for irrigation of crops and other agricultural uses. (Standards, § 29A-104(d)).
4. The proposed project affects waters classified as Class B(2) for all uses, the Mad River.
5. The management objectives for waters classified as Class B(2) for aquatic biota and wildlife are “to achieve and maintain good biological integrity”. (Standards, § 29A-306(a)(3)(A)). The associated biological criteria with this use classification are “change from the natural condition for aquatic macroinvertebrate and fish assemblages not exceeding moderate changes in the relative proportions of taxonomic, functional, tolerant, and intolerant aquatic organisms.” (Standards, § 29A-306(a)(3)(B)). The associated nutrient criteria with this use classification are total phosphorous concentrations not exceeding 12 µg/L in small, high-gradient rivers and streams and not exceeding 15 µg/L in medium, high-gradient rivers and streams, with a pH limit of 8.5 standard units applicable to both size classes. (Standards, § 29A-306(a)(3)(C)).
6. The management objectives for waters classified as Class B(2) for aquatic habitat are “to achieve and maintain high quality aquatic habitat. The physical habitat structure, stream processes, and flow characteristics of rivers and streams and physical character and water level of lakes and ponds necessary to fully support all life-cycle functions of aquatic biota and wildlife, including overwintering and reproductive requirements, are maintained and protected.” (Standards, § 29A-306(b)(3)(A)). The associated criteria with this use classification for rivers and streams are “changes to flow characteristics, physical habitat structure, and stream processes limited to moderate differences from the natural condition and consistent with the full support of high quality aquatic habitat.” (Standards, § 29A-306(b)(3)(B)(i)). Additionally, “waters shall comply with the Hydrology Criteria in § 29A-304” of the Standards. (Standards, § 29A-306(b)(3)(B)(iii)).
7. The management objectives for waters classified as Class B(2) for aesthetics are “to achieve and maintain good aesthetic quality.” (Standards, § 29A-306(c)(3)(A)). The associated criteria for this use classification in rivers and streams are “water character, flows, water level, bed, and channel characteristics, and flowing and falling waters of good aesthetic value.” (Standards, § 29A-306(c)(3)(B)(i)).

8. The management objectives for waters classified as Class B(2) for boating and related recreational uses are “to achieve and maintain a level of water quality compatible with good quality boating.” (Standards, § 29A-306(d)(3)(A)). The associated criteria with this use classification are “waters shall comply with the Hydrology Criteria in § 29A-304 of these rules.” (Standards, § 29A-306(d)(3)(B)).
9. The management objectives for waters classified as Class B(2) for fishing and related recreational uses are “to achieve and maintain a level of water quality compatible with good quality fishing.” (Standards, § 29A-306(e)(3)(A)). The associated criteria with this use classification are “measures of wild salmonid densities, biomass, and age composition indicative of good population levels.” (Standards, § 29A-306(e)(3)(B)(i). An additional criterion is compliance with the temperature criteria in § 29A-302(B) of the Standards. (Standards, § 29A-306(e)(3)(B)(ii)).
10. The management objectives for waters classified as Class B(2) for swimming and related recreational uses are “to achieve and maintain a level of water quality compatible with good quality swimming and other primary contact recreation with very little risk of illness or injury from conditions that are a result of human activities.” (Standards, § 29A-306(f)(3)(A)). The associated criteria with this use classification are *Escherichia coli* levels not exceeding “a geometric mean of 126 organisms/100ml obtained over a representative period of 60 days, and no more than 10% of samples above 235 organisms/100ml. In waters receiving combined sewer overflows, the representative period shall be 30 days.” (Standards, § 29A-306(f)(3)(B)).
11. The management objectives for waters classified as Class B(2) for public water source use are “to achieve and maintain a level of quality that is suitable for use as a public water source with filtration and disinfection or other required treatment. (Standards, § 29A-306(g)(2)(A)). The associated criterion with this use classification is compliance “with the *Escherichia coli* criteria in subsection (f)(2)(B)” of the Standards. (Standards, § 29A-306(g)(2)(B)).
12. The management objectives or waters classified as Class B(2) for irrigation of crops and other agricultural uses are “to achieve and maintain a level of quality that is suitable, without treatment, for irrigation of crops used for human consumption without cooking and suitable for other agricultural uses. (Standards, § 29A-306(h)).
13. The Anti-Degradation Policy in the Standards requires that “all waters shall be managed in accordance with [Standards] to protect, maintain, and improve water quality.” (Standards, § 29A-105).
14. Waters affected by the proposed project are designated as cold water fish habitat. (Standards, § 29A-308).
15. The general temperature standard for waters is “change or rate of change in temperature, either upward or downward, shall be controlled to ensure full support of aquatic biota, wildlife, and aquatic habitat uses.” (Standards, § 29A-302(1)(A)).
16. In waters designated as cold water fish habitat and classified as B(2) for the fishing use, the total increase from ambient temperature due to all discharges and activities shall not exceed 1.0° F. (Standards, § 29A-302(1)(B)(iii)).

17. In all waters, total phosphorous loadings and nitrates shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of uses. (Standards, § 29A-302(2)(A) & § 29A-302(3)(A)).
18. In waters designated as cold water fish habitat, the dissolved oxygen (D.O.) standard is not less than 7mg/L and 75 percent saturation at all times, nor less than 95 percent saturation during late egg maturation and larval development of salmonids in areas that the Secretary determines are salmonid spawning or nursery areas important to the establishment or maintenance of the fishery resource. In all other waters designated as a cold water fish habitat, the standard is not less than 6 mg/L and 70 percent saturation. (Standards, § 29A-302(5)(A)).
19. The Hydrology Policy in the Standards requires “the proper management of water resources now and for the future requires careful consideration of the interruption of the natural flow regime and the fluctuation of water levels resulting from the construction of new, and the operation of existing, dams, diversions, and other control structures.” (Standards, § 29A-103(f)(1)).
20. To effectively implement the hydrology policy, hydrology criteria shall be achieved and maintained, where applicable (Standards, § 29A-304(a)). The hydrology criteria include high flow regime criteria, streamflow protection criteria, and water level fluctuation criteria that differ by use classification.
21. The water level fluctuation criteria for lakes, ponds, reservoirs, riverine impoundments, and any other waters classified as B(2) for aquatic habitat or boating establish that “waters may exhibit artificial variations in water level when subject to water level management, but only to the extent that such variations ensure full support of uses.” (Standards, § 29A-304(d)(2)).
22. The high flow regime criteria for waters classified as B(2) for aquatic habitat or boating require “no change from the natural flow regime that would result in runoff causing an increase in the frequency, magnitude, or duration of peak flows adversely affecting channel integrity or prevent the full support of uses.” (Standards, § 29A-304(e)(2)).
23. The streamflow protection criteria for waters classified as B(2) for aquatic habitat or boating require that “any change from the natural flow regime shall provide for maintenance of flow characteristics that ensure the full support of uses and comply with the applicable water quality criteria.” Further, the Standards establish “the preferred method for ensuring compliance with this subsection is a site-flow study. In the absence of a site-specific study, the Secretary may establish hydrologic standards and impose additional hydrologic constraints, consistent with any applicable Agency of Natural Resources rule or procedure, to ensure compliance with the requirements of this subsection.” (Standards, § 29A-304(b)(3)).
24. Elements of the Applicant’s proposal warrant review under two Agency of Natural Resources rules or procedures: the Agency Procedure for Determining Minimum Stream Flows (July 14, 1993) and Water Withdrawals for Snowmaking (Environmental Protection Rules, Chapter 16), effective February 15, 1996. The requirements of this procedure and rule are discussed in detail in the following subsections.

## **B. Agency Procedure for Determining Acceptable Minimum Flows**

25. Elements of the Applicant's proposal are subject to review under the Agency Procedure for Determining Acceptable Minimum Streamflows (July 14, 1993). Conservation flows below the diversion on the Mad River outside of the period October 1 through March 31 are subject to review under this procedure.
26. The Agency Procedure for Determining Minimum Streamflows sets forth four methods to determine acceptable conservation flows: regional or site-specific seasonal median flows, stream hydrologic analysis, the Instream Flow Incremental Method, and other methods.

## **C. Environmental Protection Rules, Chapter 16: Water Withdrawals for Snowmaking**

27. Elements of the Applicant's proposal are subject to review under Water Withdrawals for Snowmaking (Environmental Protection Rules, Chapter 16), effective February 15, 1996 (Rule or Snowmaking Rule). Specifically, conservation flows below the diversions on the Mad River for the period October 1 through March 31 are subject to review under this Rule.
28. Section 16-05 of the Rule provides for the completion of an alternatives analysis that demonstrates an Applicant's need for water and identifies any feasible and reasonable alternative for supporting that need while protecting the environment.
29. Section 16-03 of the Rule establishes the February Median Flow (FMF) as the general flow standard for fall/winter withdrawals for snowmaking. Where a stream-specific value is unavailable, the statewide average value of 0.80 cubic feet per second per square mile (csm) is used.
30. Section 16-04 of the Rule requires new and expanded systems to measure water use and stream flow.
31. Section 16-06 of the Rule defines the water use limitation for new systems. The limitation is 50 percent of the portion of the water between 0.80 csm (or the site-specific FMF) and 1.4 csm from October 1 to November 30 and 50 percent of the portion of the water between 0.80 csm (or the site-specific FMF) and 1.1 csm from December 1 to March 31, plus any portion of the river flow in excess of the 1.4 csm or 1.1 csm. After ten years of collecting hydrologic data at the withdrawal point, the site-specific FMF is to be calculated and instituted as the conservation flow requirement to assure that "the applicant shall not withdraw any water that would cause the stream to be below the site specific FMF at the point of the outtake."
32. Section 16-07 of the Rule defines expanded existing systems and sets forth the goal of increasing existing permitted flow limits for withdrawal systems that are less than FMF to FMF. To attain this goal, a schedule shall be included as a condition of approving the expansion that shall provide; (a) for existing systems that have permitted flow limits of 0.5 csm and above, compliance with the FMF, but no sooner than is determined to be reasonable and feasible based on the results of the alternatives analysis. (b) for existing systems that have permitted flow limits below 0.5 csm, the incremental implementation of alternatives and restoration of higher conservation flows to a minimum of 0.5 csm within five years after permit approval and to the FMF within a reasonable period of time, but to neither flow level any sooner than is determined

to be reasonable and feasible based on the results of the alternatives analysis. (c) Projects approved under (a) or (b) based on schedules that do not attain the FMF will be reviewed at five year intervals to determine whether it would be reasonable and feasible to increase conservation flows towards attainment of the FMF.

33. Section 16-03(4) and 16-04 of the Rule provides for periodic review of alternatives analyses, after the initial permit is issued, in order to determine if an opportunity exists to improve the conservation flow requirements. Such reviews benefit from having better records available as to stream flow data, and actual water use characteristics for the system that was permitted, allowing refinement of the water demand model.
34. Section 16-09 of the Rule provides for an informal public conference to be held when the Agency must make a conservation flow determination. Such a meeting was held in Warren on August 6, 2021, for the proposed snowmaking expansion.

## **II. Factual Findings**

### **A. Background and General Setting**

35. Sugarbush Resort is located in the Green Mountains of central Vermont and located within the Mad River drainage. The resort includes two separate ski mountain areas, Lincoln Peak and Mt. Ellen. Mt. Ellen has a separate self-contained snowmaking and is not part of the expanded proposal.
36. The Lincoln Peak system has a single source of water, the Mad River. The Mad River watershed is approximately 144 square miles, and the mainstem is roughly 26 miles long.
37. Sugarbush Resort, Lincoln Peak, consists of 269 acres of trails served by ten lifts. The trails covered by snowmaking currently consist of 16.2 acres of novice trails, 149.3 acres of intermediate trails and 20.5 acres of expert trails, for a total of 186 acres of snowmaking coverage, or 69% of the trail area.
38. With the construction of the Mad River intake, the current snowmaking system was completed in 1995. After the intake was complete, other smaller water withdrawals were discontinued. Dam Order #93-4 was issued in 1994 and authorized the construction of the snowmaking pond and the intake in the Mad River, in addition to setting a conservation flow below the intake of 0.79 cubic feet per second per square mile (csm). The dam order which was set to expire after 10 years was extended to include a new conservation flow based on site-specific measures in addition to noting that the dam did not breach or fail following either the June 1998 storm or Tropical Storm Irene.
39. The Act 250 Land Use Permit #5W1111 was issued in 1991. This authorized the construction and operation of the expanded snowmaking system. This included the current 9-acre snowmaking pond and associated water withdrawals, pumphouse, and underground waterline. Other conditions related to construction and operation were included in addition to streamflow gaging and a reviewed conservation flow after satisfactory data was collected. Amendments have been added to the Act 250 permit through the years including extending the date to complete the Mad River Pond, authorizing use of the water for golf course irrigation, and modifying the pond volume.

40. Army Corps Permit #1990-10579 was issued in 1995. This permit authorized the Mad River Pond in addition to infrastructure required within the Mad River (intake structures, weir, Parshall Flume). A conservation flow with step-down withdrawal limits in addition to habitat enhancements were also required as part of this permit. The permit supported a build out of 350 acres which included snowmaking on 268 acres of trails. Subsequent amendments authorized the use of water for irrigation, phased out the Clay Brook withdrawal, and extended the time limit to complete projects.
41. The Water Quality Certification issued in 1991 required conservation flows including the step-down component in addition to monitoring. It authorized the construction and operation of the Mad River Pond and intake, in addition to other infrastructure. The certification also required that Sugarbush have the stanchions and stoplogs in place only between November 1 and March 15. Amendments to the certification authorized use of water for golf irrigation, revised the final volume of the Mad River Pond, required use of Clay Brook intake for golf irrigation to be discontinued, and lastly extended the season for golf course irrigation from April 1 to October 31.
42. Additional permits were required from the Towns of Warren and Waitsfield. The US Forest Service also required Sugarbush to prove that there was sufficient water to operate under a Special Use Permit, in addition to providing authorization to conduct activities associated with the Sugarbush's operating plan.

#### *Existing Snowmaking System*

43. The existing Lincoln Peak snowmaking system provides coverage on approximately 186 acres of the 296 acres of trails. The withdrawal on the Mad River is a gravity fed system. The water is moved to an adjacent 25 million gallons (Mgal) off stream pond, with 18 Mgal of useable storage.
44. The Mad River Pond is approximately 7 feet deep. The pond was originally permitted to be 18 feet deep with 63 Mgal of storage. However, due to unsuitable soil conditions, the size of the pond was decreased during construction. Water is pumped from the Mad River Pond to either the snowmaking system during the winter, or to the Sugarbush Golf Course during the summer. The system additionally provides a source of fire protection in certain areas.
45. The single withdrawal for the snowmaking system has a watershed area of approximately 46 square miles on the Mad River. The gravity driven system has automated valves to restrict water withdrawals.
46. The weir system is constructed across the river which creates a small on-stream impoundment. The downstream flow, or conservation flow, is directed through a calibrated Parshall Flume. The current permitted conservation flow is 0.91 csm or 41.9 cubic feet per second (cfs). The weir contains removeable stanchions and stoplogs. The stanchions and stoplogs are only in place during the snowmaking season.
47. One challenge with the current weir system is the stoplogs remaining in place during high flow events during the snowmaking season. Additionally, maintenance is required semiannually to reinstall and remove the stanchions and stoplogs each year. Under extreme high flow events, the stoplogs can fail, making water withdrawals impossible until they can be reinstalled.

48. The snowmaking system also consists of booster pumps, air compressors, and a network of distribution pipe which carries water to individual trails.
49. In the summer, the Applicant is permitted to use up to 15.1 Mgal of storage for golf course irrigation. The permit allows for the Mad River Pond to be drawn down 4 feet. Withdrawal from the Mad River is not permitted during the summer except when river flows are naturally high. However, a high flow water withdrawal has not occurred for several years, because the Mad River Pond normally refills passively through groundwater seepage.

**B. Project Proposed by the Applicant**

50. The Applicant proposes to replace the current stanchions and stoplog weir with an inflatable rubber dam. This would improve resiliency of the snowmaking system and provide flexibility including deflation of the rubber bladder under high flow events.
51. The Applicant will replace the two existing intakes structures with one intake structure upstream of the weir.
52. The Applicant is proposing to increase the conservation flow below the intake to 1.3 csm (or 60 cfs) from November 1 through March 15. Additionally, the Applicant proposes to extend the withdrawal period to April 15<sup>th</sup>. The Applicant would provide a conservation flow of 1.3 csm from March 16 to March 31, and a conservation flow of 4 csm (184 cfs) below the intake from April 1 to April 15.
53. To help compensate for the loss of snowmaking capacity that would be caused by the increased conservation flow, the Applicant proposes to maximize the usable storage of the Mad River Pond by lowering the pump house intake. Lastly, they propose in the near term to build another 23 Mgal off-stream storage pond, Pavilion Pond. The Applicant proposes to apply for all appropriate permits for the near term build out of additional storage.
54. The Applicant is proposing to increase the conservation flow in 5 years after the approval of the Needs and Alternatives Analysis (NAA) or after maximizing useable storage of the Mad River Pond and completion of the Pavilion Pond.
55. These improvements are classified as an expanded existing system pursuant to section 16-07 of the Snowmaking Rule. Off stream reservoirs are not subject to Vermont Water Quality Standards. (Standards, § 29A-101 (d)(1)). All reservoirs are off stream for the Sugarbush Resort system.
56. Full build-out consists of expanding to 370 acres of existing and planned new terrain, in addition to increasing off stream storage.
57. The table below summarizes the Applicants proposal for both near term and full build out (Table 1).



Table 1. Sugarbush Snowmaking System Proposal Summary

Phase	Existing Conditions	Project as Proposed	Full Build-Out
Snowmaking Coverage (acres)	186	186	370
Demand (Mgal/Season)	190.3	190.3	378.7
Application Rate (Mgal/acre)	1.02	1.02	1.02
Source	Mad River Intake	Mad River Intake	Mad River Intake
Conservation flow (csm)	0.91	1.3 or 4	Unknown
Storage	Mad River Pond	Maximize Mad River Pond and Pavilion Pond	Expanded Mad River Pond, Pavilion Pond, Bundy/Additional

58. The Applicant also proposed to continue its existing used of water from Mad River for golf course irrigation outside of the snowmaking season. Currently, the Applicant is authorized to withdraw up to 4 feet of water storage from the Mad River Pond for irrigation. Water withdrawal from the Mad River is not permitted during the irrigation season except during naturally high events, where flows are high enough to flow into the intake without influence from the weir. Water withdrawals during this time period have been infrequent.

59. The Applicant uses between 2 and 14 Mgal with an average of 7 Mgal for irrigation. There are no proposed changes to irrigation use and were therefore not considered in the NAA.

**C. Hydrology and Flow Regulations**

60. The Mad River begins in Granville North in the Green Mountain National Forest and flows through several towns before reaching the confluence with the Winooski River in Moretown.

61. The majority of the watershed is primarily within Granville, Warren, Fayston, Duxbury, Waitsfield and Moretown. A small portion of the watershed lies within the towns of Huntington, Bules Gore, Lincoln, Roxbury, and Northfield.

62. The Mad River flows through a deep valley with a portion of the Green Mountains to the west and the Northfield Mountains to the east.

63. The overall land use in the watershed is approximately 90% forested, 8.5% agriculture, 1% developed, and 0.5% wetland.

64. There are five water withdrawals within the Mad River watershed. They include Mountain Water Company for drinking water, Sugarbush Resort for Lincoln Peak snowmaking, Sugarbush Resort for Mt. Ellen snowmaking, Mad River Glen for snowmaking, and Ward Clapboard Mill, which is considered a *de minimis* withdrawal. There is also a hydroelectric facility located downstream which operates as a run-of-river facility.

65. There is one USGS gage located on the Mad River (USGS 04288000) This gage has been in operation since 1928. The watershed area at the gage is 139 square miles. The hydrologic statistics are calculated below (Table 2).

*Table 2. Hydrologic statistics for the Mad River at the Sugarbush Intake based on the Mad River gage (USGS 04288000) from 1928-2020 unless otherwise noted.*

Hydrologic Statistic	Discharge Cubic feet per second (cfs)	Discharge Cubic feet per second per square mile (csm)
10 % Exceedance Flow	202	4.39
50 % Exceedance Flow	48.6	1.06
90 % Exceedance Flow	13.4	0.29
7Q10*	5.78	0.13

\* Calculated using the most recent 30 years of data due to Mann-Kendall test detection of a significant trend ( $p < 0.01$ ) for annual statistic over period of record.

#### *Alternatives Analysis*

66. The Applicant submitted a Needs and Alternatives Analysis (NAA) to identify the preferred alternative for changes sought to the Sugarbush Resort Lincoln Peak snowmaking system. The final analysis was filed with the Department on July 15, 2021. In addition to the NAA, memos were filed including the calculation of FMF.
67. For the Mad River intake, a site-specific FMF was determined using measured flows above the intake for the years January 2000 through February 2018. Site-specific flow measurements were required by Condition B of the 1994 water quality certification.
68. The analysis first removed years with incomplete February flow records (2011 and 2014) as well as additional flow data that was deemed inaccurate (2003, 2007, and 2009). The Department concurred with the elimination of the data.
69. The Applicant then calculated the site-specific FMF at the withdrawal for the 14 years of February streamflow data. The result was an FMF of 60.0 cfs or 1.30 csm.
70. The Department reviewed these calculations and recommended that the Applicant use a conservation flow value of 1.30 csm in the development of the NAA<sup>1</sup>.
71. Additionally, the Applicant is proposing to withdrawal water beyond March 31, the winter defined period. The Applicant is proposing to provide the default 4.0 csm conservation flow below the withdrawal from April 1 to April 15.
72. The NAA was created to support increased conservation flows on the Mad River while increasing the reliability of the snowmaking system. As part of the NAA, the Applicant completed a Mass-Balance Hydrograph analysis that included the updated FMF for the intake to determine available water for different scenarios in relation to the anticipated water needs for Sugarbush.

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<sup>1</sup> Sugarbush Resort Snowmaking – Mad River Withdrawal Site Calculation of February Median Flow. January 17, 2020. VTDEC letter.

73. Alternative storage sites were also examined within the NAA. Part of the consideration for new sources included whether the land was already owned, developed, and likelihood of permitting.
74. Historic water use from 1995 to 2020 on average produced 129.3 Mgal or the equivalent of 0.7 Mgal/acre. Industry standard is approximately 1.0 Mgal/acre. The maximum the snowmaking system produced was 188.5 Mgal or 1.02 Mgal/acre. The minimum produced was 62.4 Mgal or 0.34 Mgal/acre.
75. In the mass-balance hydrograph (MBH) analysis, the Applicant used the near-term goal of improving resiliency of the snowmaking system to a changing climate and severe flood events that may pose a risk to both the intake and the existing storage. This includes the addition of storage to mitigate the increase in FMF conservation flow.
76. The analysis includes the water needs for existing coverage and build out acreage based on the industry standard for each trail ability. The historic water demand was not used in the MBH analysis.
77. For the current trail acreage, it is estimated that a total of 190.3 Mgal would be needed per season, or roughly 1.02 Mgal/acre. The following assumptions were used in the analysis; (1) 180,000 gallons of water per acre-foot of manmade snow (2) 1.5 feet of depth needed for novice trails (3) 2.0 feet of depth needed for intermediate trails (4) 3.0 feet depth needed for expert trails (5) 2.75 applications of snow for each season on trails.
78. The analysis used a daily time step to evaluate the distribution of demand which included the goals of one full coverage by mid-December, and included occasions of reduced snowmaking, warm temperatures, for example during a 'January thaw.' This equates to the total water needed through time during a season.
79. Alternate water sources and storage were evaluated. Water sources including wells were considered. The Applicant searched for options that would have the largest possible watershed with no documented natural resource and environmental constraints, which would limit the opportunity to obtain a permit.
80. Alternate storage ponds were evaluated based on topography and geology in addition to the natural resource and environmental constraints. Land ownership was also considered in looking for additional storage locations.
81. Each alternative was considered within the context of the design goal of meeting 80 percent of the demand for snowmaking in the 80th percentile of the year. VHB analyzed 8 scenarios over 30 years to capture a wide variety of climate conditions. Available streamflow was calculated from the USGS Mad River gage (04288000) near Moretown and prorated to the intake site.
82. Previous analysis identified 26 potential sites for additional storage, of those, three were deemed feasible. Many of the other locations were ruled out in the previous 1995 study. The three feasible options include, increasing the useable capacity of the existing pond (modifying pump house), development of a new pond at the Pavilion Site, and development of a new pond at the Bundy Site.

83. The Pavilion Site is the preferred site for the near-term buildout. This would require that the current infrastructure in its place be moved to another location on the property. An initial analysis by the Applicant indicates that this is feasible but would require permitting. It is anticipated that the completion of the Pavilion Pond would take roughly 5 years.
84. The Applicant is not proposing any change from the current authorized use of water outside of the snowmaking season for golf course irrigation.

**D. Current Status**

85. The Department concurrently issued a six-part list, List of Priority Surface Waters in 2020. There were no waters in the vicinity of the Mad River intake identified on the 2020 State of Vermont priority waters lists.
86. The Department issued a Stressed Waters List in 2020. The Stressed Waters List includes waters where a stressor prohibits the waters from attaining a higher level of water quality. There were no waters within the vicinity of the project are identified on the 2020 State of Vermont Stressed Waters List.
87. However, upstream of the facility from Warren Dam up to Route 100 is listed as stressed due to sediment.

**E. Water Chemistry**

88. Water chemistry metrics have been collected on the Mad River by the Department. These measurements have occurred sporadically and in different locations. The closest sampling location occurred just downstream of the intake from the years 2006 to 2017. The metrics collected includes total nitrogen, phosphorus, and turbidity. A summary of the metrics is provided in the table below (Table 3).

*Table 3. A summary of water chemistry data collection in the vicinity of the Mad River Intake.*

Characteristic	Description	Maximum Recorded	Mean	Minimum Recorded
Nitrogen (mg/L)	Nutrient that may fuel algae blooms	0.5	0.3	0.2
Phosphorus (ug/L)	Nutrient that may fuel algae blooms	510.0	29.9	5.9
Turbidity (NTU)	Measurement of suspended sediment.	260.0	10.1	0.6

89. Additional measurements including *Escherichia coli* (*E. Coli*) have been collected upstream of the Mad River Intake. Those measurements are provided in the table below (Table 4).

Table 4. Summary of water chemistry data collection upstream of the Mad River Intake.

Characteristic	Description	Location	Maximum Recorded	Mean	Minimum Recorded
Nitrogen (mg/L)	Nutrient that may fuel algae blooms	Route 100 Crossing at Access Rd.	0.7	0.4	0.3
Phosphorus (ug/L)	Nutrient that may fuel algae blooms	Route 100 Crossing at Access Rd.	305.0	21.1	5.0
Turbidity (NTU)	Measurement of suspended sediment.	Route 100 Crossing at Access Rd.	116.0	7.9	0.3
<i>E. Coli</i> Bacteria	Indicator of pathogens	Route 100 Crossing at Access Rd.	24.0	14.3	7.0
<i>E. Coli</i> Bacteria	Indicator of pathogens	Above Clay Brook Confluence	6.3	6.3	6.3

#### F. Aquatic Biota

90. “Aquatic biota” means all organisms that, as part of their natural life cycle, live in or on waters. (Standards, § 29A-102(5)). For example, fish, aquatic insects, amphibians, and some reptiles, such as turtles.
91. The Vermont Fish and Wildlife Department stocks the Mad River with rainbow trout. In 2021, rainbow trout were stocked at Route 100B bridge below Moretown Wards Access, the Waitsfield covered bridge to Route 100B bridge below Moretown, and the abandoned gas station below Warren Village to the Waitsfield covered bridge. Naturally occurring brown and brook trout can also be found in the Mad River. Additional species occurrences are those expected for a mid-sized stream in Vermont.
92. Near the location of the project, there are no macroinvertebrate data on the Mad River. Within the Mad River, there have been 9 sites where macroinvertebrate data has been collected by the Vermont Department of Environmental Conservation. None of these 9 sites are near the Mad River Intake. All macroinvertebrate data has been collected sporadically between 1987 and 2015.
93. The macroinvertebrate community assessment is based primarily on eight metrics of the macroinvertebrate community. These include abundance, species richness and indexes of sensitive to tolerant species ratios. All samples collected in the Mad River from 1987 to 2015 were identified as good to excellent.
94. Many fish species, and specifically rainbow trout, begin to change movement patterns in the spring for spawning opportunities. Longnose sucker, white sucker and slimy sculpin also begin spawning in early spring. As the temperatures warm and flows change in the spring other species move to carry out other life cycle functions such as seeking forage opportunities. The weir in the Mad River is a barrier to fish passage, as velocities in the flume can often be too high for fish to successfully pass. However, specific velocities through the flume have yet to be determined. The additional time from March 15<sup>th</sup> to April 15<sup>th</sup> when the weir would be inflated can pose challenges for fish movement and spawning opportunities.

95. Additionally, fish movement is anticipated during the winter months when water withdrawal for snowmaking takes place. Although this movement can be more limited it does occur. When the rubber bladder is inflated it becomes barrier to this movement.
96. The Applicant provided limited information on biota during the construction of the replacement weir. Trout spawning and egg incubation occurs starting in mid to late September through May. Limiting sediment disturbance during this time reduces the risk of incubating eggs not surviving<sup>2</sup>.

#### **G. Aquatic Habitat**

97. “Aquatic habitat” means the physical, chemical, and biological components of the water environment. (Standards § 29A-102(6)). For example, aquatic plants, woody debris, and an adequate flow or water level fluctuation regime.
98. The Mad River intake has an acceptable flow record for calculating site-specific FMFs. Pursuant to Section 16-03 of the Snowmaking Rule, conservation flows equal to site-specific FMF would be needed to attain the general standard established by the rule (finding 67-71).

#### *Stream Processes and physical structure*

99. Stream processes are defined as the hydrologic, bed-load sediment, and large woody debris regimes of a particular stream reach and is a term used to describe stream channel hydraulics, or the erosion, deposition, sorting, and distribution of instream materials by the power of flowing water. Stream processes work toward an equilibrium condition, are governed by flow characteristics, stream morphology, channel roughness, and floodplain connectivity and, in part, determine physical habitat structure and aquatic habitat quality (Standards § 29A-102 (43)).
100. Physical habitat structure is defined as the diverse combination and complexity of instream forms created within substrate and woody debris on and within the bed and banks of the channel by stream processes and flow characteristics. Physical habitat structure, in part, determines aquatic habitat quality at the stream reach and stream network scales by providing for all life cycle functions, which include the full set of forms necessary for the provision of and access to cover, overwintering, and temperature refuge and the substrates necessary for feeding and reproduction of aquatic biota and wildlife (Standards, § 29A-102 (34)).
101. In addition to stream processes and flow characteristics, physical habitat structure is influenced by the riparian area, which is the zone of interaction and influence between aquatic and terrestrial ecosystems. These areas play important physical, hydrologic, and ecological functions including water temperature moderation; sediment and nutrient filtration and retention; large wood and organic material recruitment and retention; streambank, shoreland, and floodplain stability; and the provision of habitat and corridors for a wide variety of species.
102. The replacement rubber dam will lay flat on the streambed bottom when it is not in use. This will allow any instream materials to move downstream unobstructed. The new infrastructure will

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<sup>2</sup> Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont. March 2009. Vermont Fish and Wildlife. Appendix E. <https://dec.vermont.gov/sites/dec/files/wsm/rivers/docs/Guidelines-for-the-Design-of-Stream-Road-Crossings-for-Passage-of-Aquatic-Organisms-in-Vermont.pdf>

not cause additional disturbance to the riparian areas except for potential disturbances during construction.

103. The replacement rubber dam has been designed to lay lower than the flume. This will ensure that summer low flows will pass over the deflated structure and will not pass only through the flume, to avoid leaving the remaining streambed dewatered.

#### **H. Wildlife**

104. The riparian zone adjacent to the Mad River provides habitat and cover for various species of wildlife. It is anticipated that limited disturbance will take place with the installation of the new rubber dam.

105. Additional disturbance anticipated from the construction of new storage ponds should be considered at the time of permit evaluation.

#### **I. Rare, Threatened and Endangered Species**

106. According to the Natural Heritage Program of Vermont Fish and Wildlife Department, there are no recorded sightings of rare, threatened, and endangered species in the vicinity of the Mad River Intake. However, additional construction of the Pavilion Pond and building move will require additional permitting. Rare, threatened and endangered species should be considered at that time.

#### **J. Wetlands**

107. The Vermont Water Quality Standards require the Secretary of the Agency of Natural Resources to identify and protect existing uses of state waters, which include surficial wetlands. Existing uses include habitat (Standards § 29A-105(B)(2)). Wetland habitat is not present at the site of the Mad River Intake.

108. However, additional construction of the Pavilion Pond and building move will require additional permitting. Wetlands and any wetland associated impacts should be considered at that time.

#### **K. Recreation and Aesthetics**

109. The Mad River provides recreational and scenic resources and is heavily used for swimming, angling and boating. The proposed water withdrawals and weir placement will have little effect on summer recreating activities as the weir will be nearly flush with the bottom substrate when not in use. When highwater is available for boating, the inflatable weir will be deflated and will not be an obstacle for boaters or debris.

110. Additionally, it is not anticipated that the new weir will differ in terms of the relevant aesthetic criteria from the effects of the current snowmaking system.

#### **L. Construction, Erosion, and Debris**

111. For the construction of the inflatable dam, the Applicant is proposing to remove and replace the current concrete foundation. The current foundation has been undermined over the years, and subsequently temporarily fixed. The replacement concrete slab would be surrounded by steel sheet pile driven deep into the riverbed to reduce the probability of undermining.

112. The Applicant will install a concrete intake box just upstream of the inflatable dam. This would replace the two intake risers that feed to the Mad River Pond. The intake box and the pond would be connected with noncorrodible ductile iron piping.
113. To provide the downstream conservation flow the Applicant is proposing to construct the intake as a permanent structure without adjustment. Water would only begin to flow into the intake after the minimum flow depth in the flume has been reached. The elevation would be cast into the structure during construction. There would be no dependence on valves, pumps, or human interfaces to provide conservation flow.
114. The Applicant provided limited information on how water and downstream flows will be managed during construction activities. The Applicant will construct the new weir in the dry using concrete barriers to isolate the work area, and pumps to move water around the Project. After construction is complete, the Applicant will slowly inflate the rubber bladder to divert water through the flume for the purposes of filtering the water if necessary. Aquatic habitat and biota are designated uses (findings 5, 6) and shall be protected during construction activities. Additionally, there was limited information on erosion control measures, or debris disposal (finding 2) for construction materials.

### **III. Analysis and Determination**

115. A state's 401 certification shall assure "that a discharge from a Federally licensed or permitted activity will comply with water quality requirements" 40 C.F.R. § 121.3; Environmental Protection Chapter § 13.11(g). Accordingly, the Department may set forth limitations and other requirements necessary for it to find that there is reasonable assurance that the proposed discharge will not violate the Vermont Water Quality Standards. A goal of the Standards and the Clean Water Act is to restore the biological integrity of waters such that aquatic biota and wildlife are sustained by high quality habitat.
116. In addition to the specific items pertaining to the Application for review, if an activity was not presented in the Application and not consistent with the findings of this certification, the Department reserves the right to review said discharge to assure it will not cause a violation of the Vermont Water Quality Standards (e.g., change in operations). The analysis herein is limited to the use of these public waters solely for the purposes of snowmaking, irrigation, and fire suppression. If water is proposed to be withdrawn for any other purpose, prior approval will be required. In addition to specific operational conditions, other provisions like reporting, inspections, and flow monitoring will also be necessary to assure the discharge does not violate Vermont Water Quality Standards.
117. The potential for impacts associated with the proposed project can be grouped into two categories: (1) potential impacts associated with the Applicant's water withdrawals; (2) potential impacts associated with proposed construction activities. They are addressed for each category below (where applicable), in turn.

#### **A. Water Chemistry**

118. The proposed use of a portion of the flow from the Mad River would be limited to the late fall/winter, and early April period, current conservation flows would be increased, and



conservation flow standards will be met in full. The winter period characteristically is one of high-quality water conditions. As a result, the impact of reduced flows on the chemical/physical water quality of the rivers are not expected to be significant. The levels of the following parameters for which standards exist will not significantly change from background conditions as a result of the water diversion, if at all: dissolved oxygen; temperature; nitrates; phosphorous; alkalinity; pH; toxics; *Escherichia coli*; turbidity; color, taste and odor; oil, grease, and scum; settleable, floating or suspended solids.

## **B. Aquatic Biota**

119. It is not anticipated that the replacement weir will impact aquatic biota. Some disturbance may be caused by construction materials. Therefore, this certification is being conditioned to comply with instream working dates, debris disposal, downstream flow management, and erosion control measures.
120. The use of the weir impedes fish movement in the winter months (finding 95), and particularly in the early spring when trout begin to move for spawning purposes (finding 94). This certification is being conditioned to limit the time when the weir is inflated during spring spawning. The certification is also being conditioned to evaluate opportunities to lower the weir during the winter period to allow fish passage.

## **C. Aquatic Habitat**

121. As described in findings 67, 68, and 69, the Applicant is proposing to implement a site-specific FMF conservation flow at this withdrawal during the fall/winter period, which complies with the general standard set forth in the Snowmaking Rule promulgated by the Agency of Natural Resources. Pursuant to the Standards, hydrologic standards consistent with an Agency of Natural Resources rule may be used to ensure compliance with streamflow protection criteria. (§ 29A-304(3)). Accordingly, this certification will adopt the conservation flows proposed by the Applicant for the Mad River during the winter period.
122. As described in finding 71, the Applicant is proposing to implement spring median flows at the withdrawal outside of the winter period, which complies with the default method set forth in the Agency Procedure for Determining Acceptable Minimum Streamflows promulgated by the Agency of Natural Resources (July 14, 1993). Pursuant to the Standards, hydrologic standards consistent with an Agency of Natural Resources procedure may be used to ensure compliance with streamflow protection criteria. (§ 29A-304(3)). Accordingly, this certification will adopt the spring conservation flow as proposed by the Applicant.
123. As described in finding 54, the Applicant is proposing to provide the new FMF conservation flow 5 years after approval of the NAA or after the Pavilion Pond and Mad River Pond storage are complete. Aquatic habitat is a designated use pursuant the Vermont Water Quality standards and shall be protected (findings 6, 19, 23). The 80/80 design criteria is a goal utilized by the snowmaking industry. Any increase in storage provides additional opportunities for snowmaking with the new FMF under the MBH analysis. The Agency is conditioning this certification to provide the new FMF within 5 years after construction of the replacement weir, after the Mad River Pond storage has been maximized, or after the Pavilion Pond is complete, whichever comes first.

124. As described in findings 49, 58, 59, and 84 the Applicant is proposing no change to the current water withdrawal for golf course irrigation. The current practice of withdrawing water from an off-stream impoundment continues to meet Vermont Water Quality Standards.

**D. Rare, Threatened, and Endangered Species**

125. There are no species of concern in the area of the Project. The activities proposed for the Mad River Intake are not expected to affect any rare, threatened, or endangered species. Any additional disturbance anticipated from the construction of the proposed new storage pond should be considered at the time of permit application.

**E. Wetlands**

126. There are no wetlands in the area of the Mad River Intake Project. Any additional disturbances anticipated from the construction of the proposed new storage pond should be considered at the time of permit application.

**F. Recreation Use and Aesthetics**

127. The Mad River Intake is not anticipated to cause impacts to recreation or aesthetics.

**G. Construction, Erosion, and Debris**

128. During construction, there are concerns of downstream flows for aquatic habitat and biota, in addition to erosion and debris concerns (finding 114). This certification is being conditioned to use best management practices for erosion control and debris management (finding 2), conforming to state regulations and ensuring downstream flows are not interrupted.

**H. Anti-Degradation**

129. Pursuant to the Anti-Degradation Policy set forth in the Standards (§ 29A-105) and the Agency's 2010 Interim Anti-Degradation Implementation Procedure (Procedure), the Secretary must determine whether a proposed discharge or activities are consistent with the Policy by applying the Procedure during the review of applications for any permit for a new discharge if during the application review process compliance with the Standards is evaluated pursuant to applicable state or federal law. (Procedure, Section III(A)). This includes water quality certifications required by Section 401 of the federal Clean Water Act for a federal license or permit for flow modifying activities. (Procedure, Section III(B)(3)).

130. In making a determination that proposed activities are consistent with the Anti-Degradation Policy and Implementation Procedure, the Secretary is required to use all credible and relevant information and the best professional judgement of Agency staff. (Procedure, Section III(D)). Section VIII of the Procedure governs the Agency's review of Section 401 applications for flow modifying activities. (Procedure, Section VIII(A)(1)). The Secretary may have to review a single waterbody under multiple tiers of review depending on whether a waterbody is impaired or high quality for certain parameters.

131. Tier 3 review is required if the project will discharge to an Outstanding Resource Water. (Procedure, Section VIII(D)). This project does not affect any Outstanding Resource Waters and therefore does not trigger a Tier 3 review under Section VIII of the Procedure.
132. This project affects waters classified as B(2) waters for designated uses and criteria, which are high quality waters for certain parameters that trigger a Tier 2 review under Section VIII of the Procedure. (Procedure, Section VIII(E)(1)(c)). Under Tier 2, the Secretary must determine whether the proposed discharge will result in a limited reduction in water quality of a high quality water by utilizing all credible and relevant information and the best professional judgment of Agency staff. (Procedure, Section VIII(E)(2)(b)).
133. When conducting a Tier 2 review, the Secretary may consider, when appropriate, one or more of the following factors when determining if a proposed new discharge will result in a reduction in water quality: (i) the predicted change, if any, in ambient water quality criteria at the appropriate critical conditions; (ii) whether there is a change in total pollutant loadings; (iii) whether there is a reduction in available assimilative capacity; (iv) the nature, persistence and potential effects of the pollutant; (v) the ratio of stream flow to discharge flow (dilution ratio); (vi) the duration of discharge; (vii) whether there are impacts to aquatic biota or habitat that are capable of being detected in the applicable receiving water; (viii) the existing physical, chemical and biological data for the receiving water; (ix) degree of hydrologic or sediment regime modifications; and (x) any other flow modifications. (Procedure, Section VIII(E)(2)(d)).
134. The Secretary considered the foregoing factors during the review of the project to determine if the project will result in a reduction of water quality for the Mad River. The principal impacts of the project are the flows below the diversion intake. The changes in operations of the Sugarbush snowmaking system will not result in a discharge of additional pollutants or reduce other ambient water quality criteria. As a result, factors (i), (ii), (iii), (iv), (v), and (vi) are not at issue. The intake on the Mad River has been operating to pass the last updated winter conservation flow, and therefore has not adversely impacted aquatic biota or habitat. Further, Condition D requires the conservation flows below the intake to be increased to an updated site specific FMF.
135. This certification does not authorize any activities that would result in a lowering of water quality for those parameters that are exceeding water quality standards.
136. For those parameters for which project waters do not exceed water quality standards, the Secretary must conduct a Tier 1 review. (Procedure, Section VIII(F)).
137. Under Tier 1 review, the Secretary may identify existing uses and determine the maintenance necessary to protect these uses. (Procedure, Section VIII(F)). In determining the existing uses to be protected and maintained, the Secretary must consider the following factors: (a) aquatic biota and wildlife that utilize or are present in the waters; (b) habitat that supports existing aquatic biota, wildlife, or plant life; (c) the use of the waters for recreation and fishing; (d) the use of the water for water supply, or commercial activity that depends directly on the preservation of an existing high level of water quality; and (e) evidence of the uses' ecological significance in the functioning of the ecosystem or evidence of the uses' rarity. (Procedure, Section VIII(F)(2)).

138. The Secretary considered all of the factors listed in finding 137 above and, based on information supplied by the Applicant and Agency staff field investigations, identify the following existing uses at Mad River: aquatic biota and wildlife; aquatic habitat; aesthetics; and recreation.
139. Currently, the diversion is required to pass a site-specific winter conservation flow below the diversion when withdrawing water. This flow condition would protect and maintain the existing uses downstream of the diversion. This certification will require an increase of the conservation flow to an updated site-specific FMFs. This modification will result in improvements to water quality and will protect and maintain conditions that support existing uses. Additionally, when the Mad River intake operates outside the winter period, the conservation flow will be equal to the default hydrologic standards.
140. The Secretary finds that development and operation of the project as conditioned by this certification will comply with the Vermont Water Quality Standards and other applicable rules. Accordingly, the Secretary finds that the project, as conditioned, meets the requirements of the Policy and Procedure relating to the protection, maintenance, and improvement of water quality.

#### **IV. Decision and Certification**

The Department has examined the project application and other pertinent information deemed relevant by the Department in order to issue a decision on this certification application pursuant to the Department's responsibilities under Section 401 of the federal Clean Water Act. After examination of these materials, the Department certifies that there is reasonable assurance that construction of the Mad River intake and withdrawals from the Mad River, when done in accordance with the following conditions will not violate applicable water quality standards; will not have a significant impact on use of the affected waters by aquatic biota, fish or wildlife, including their growth, reproduction, and habitat; will not impair the viability of the existing populations; will not result in a significant degradation of any use of the waters for recreation, fishing, water supply or commercial enterprises that depend directly on the existing level of water quality; and will be in compliance with sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, 33 U.S.C. §1341, and other appropriate requirements of state law:

##### ***General Conditions***

- A. The Applicant shall construct, operate and maintain this project consistent with the findings and conditions of this certification, where those findings and conditions relate to protection of water quality and support of designated and existing uses under Vermont Water Quality Standards and other appropriate requirements of state law.

*See finding 2, 3 for statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-101.*

- B. Any changes to the project that would have a significant or material effect on the findings, conclusions, or conditions of this certification, including project operation, must first be submitted to the Department for prior review and written approval.

*See finding 2, 3 for statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-101.*

- C. Any future construction activities surrounding, but not limited to, increasing storage capacity at Sugarbush shall apply for any appropriate permits.

*See Finding 53 for a statement of necessity. 10 V.S.A § 1031 & Vt. Code R. 12 030 016 Section 16-07*

##### ***Conservation Flows***

- D. The Applicant shall implement the new February Median Flow conservation flow as described in Condition E below 5 years after the construction of the replacement weir, after maximizing the usable storage of the Mad River Pond, or after completion of the Pavilion Pond, whichever comes first.

*See Findings 32, 97, 123 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306(b) & 10 V.S.A. § 1031 Vt. Code R. 12 030 016 § 16-03(3)(a), § 16-07(3) and § 16-02(4)*

- E. Beginning when required per condition D above, the Applicant shall maintain a conservation flow of 1.3 csm or 60 cfs below the Mad River Intake when withdrawing water from the Mad River from November 1 through March 31. During the interim period, the Applicant shall maintain a conservation flow of 0.91 csm or 41.9 cfs below the Mad River Intake when withdrawing water from the Mad River from November 1 through March 31. Upon written request and approval from the Department, the Applicant may withdraw additional water from the Mad River from April 1 through April 15 while maintaining a default conservation flow of 4 csm or 184 cfs for the purposes of refilling any snowmaking pond storage.

*See Findings 97, 98 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-304 & § 29A-306(b) & 10 V.S.A. § 1031 Vt. Code R. 12 030 016 and § 16-03(3)(a)*

- F. The Applicant shall deflate the rubber bladder after completion of the snowmaking season, and after completing refill of the snowmaking pond(s) but no earlier than March 1<sup>st</sup> of every year.

*See Findings 94, 120 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306 (a)(3) & § 29A-306(b)(3)*

- G. The flume through the weir shall be checked and cleared of ice and debris on a regular basis not to exceed 3 days or as necessary to assure collection of accurate streamflow records, and maintain conservation flow. Additional monitoring and maintenance shall be conducted as needed to maintain the flow diversions free of obstructions. If the system has been dormant for more than 24 hours, the diversion shall be checked for obstructions before activating the withdrawal. A log shall be maintained noting work that is performed to keep the systems functioning as designed. Chronic problems shall be brought to the attention of the Department, and alternatives to correct the problems shall be proposed for approval and implementation.

*See Findings 6, 27, 30 for a statement of necessity. 10 V.S.A. § 1031 & Vt. Code R. 12 030 016 § 16-04(1)*

- H. The Applicant shall within one year following the completion of the weir construction an operations plan. The operations plan shall consist of an assessment of the frequency and duration of bladder deflation due to high flows, under what flows would trigger the bladder to deflate and how reporting requirements will be met. Additional information will include an assessment of additional periods of deflation that would provide fish passage and connectivity over a range of flow conditions. The plan shall be developed in consultation with the Department and shall be subject to Department review and approval.

*See Findings 95, 120 for a statement of necessity. 10 V.S.A. § 1258, 10 V.S.A. § 4607(a) & Vt. Code R. 12 030 026 § 29A-306(a)(3) & § 29A-306(b)(3)*

- I. The Applicant shall record weekly the volume of water used for golf course irrigation and daily the elevation of the Mad River Pond from April 1 to October 31. The data shall be reported to the Department by January 1 following the use season.

*See Findings 59, 84, 116 for a statement of necessity. 10 V.S.A. § 1251a(b) & Vt. Code R. 12 030 026 § 29A-103(c)*

### ***Reporting Requirements***

- J. For the Mad River intake, gaging and metering systems adequate to meet the following compliance record keeping requirements shall be designed and installed. For each day that the diversion of water occurs, the hourly rate of diversion, daily maximum diversion rate, and total daily volume with daily average rate; minimum instantaneous below-diversion flows and corresponding natural stream flows; hourly reservoir levels; and hourly and daily average natural flows shall be recorded. For days when no diversion occurs, only daily average flow data must be recorded.

*See Findings 30, 67, 68, 69, 121 for a statement of necessity. 10 V.S.A. § 1031 & Vt. Code R. 12 030 016 § 16-04(1).*

- K. Streamflow and reservoir level data shall be provided to the Department in whatever digital format the Department requires. For each month water is withdrawn from the Mad River, within 21 days of the end of the month, a report shall be filed with the Department including the data specified above and in Condition J. A narrative description of flow and water use conditions throughout the month, as well as any operational problems encountered or corrective actions taken, shall also be included.

*See Findings 6, 121 for a statement of necessity. 10 V.S.A. § 1031 & Vt. Code R. 12 030 016 § 16-04(1).*

- L. A report shall be filed annually with the Department which includes the daily pumping rates and volumes; seasonal water use volume; reservoir refill completion date, trail coverage; compliance with existing conservation flow requirements; available data on streamflow, temperature, and precipitation (rainfall and snowfall); known expansion plans; and projections for future water use. The report shall be filed by the July 1 following the end of the snowmaking season.

*See Findings 6, 27 for a statement of necessity. 10 V.S.A. § 1031 & Vt. Code R. 12 030 016 § 16-04 (1) & (2).*

- M. After the tenth year following construction of the replacement weir and of flow recording at the Mad River intake, a site-specific February Median Flow shall be recalculated, subject to Department approval, and that value shall become the minimum conservation

flow for the source. The snowmaking alternatives analysis shall be updated, and the updated analysis filed with the Department at intervals of 10 years or less. The first updated analysis will be due July 1, 2031.

*See Findings 27, 31, 33 for a statement of necessity. 10 V.S.A. § 1031 Vt. Code R. 12 030 016 § 16-03 (4).*

***Construction Conditions***

- N. All instream work shall be undertaken and completed between June 1 and October 1, unless the work area is isolated, or an extension is granted by the Department following a written request.

*See finding 96, 115 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-306(b)(3)(A) & § 29A-306(b)(3)(B)(i).*

- O. All instream work shall follow accepted and established erosion and sediment control procedures to ensure construction activities will not violate standards.

*See findings 114, 115, and 128 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-302 (4)(B) & § 29A-306(b)(3)(B)(i).*

- P. Debris associated with the construction and operation shall be disposed of in accordance with state laws and regulations.

*See Findings 114, 115, and 128 for a statement of necessity. 10 V.S.A. § 1258 & Vt. Code R. 12 030 026 § 29A-303(1).*



### **Effective Date and Expiration of Certification**

This certification shall become effective on the date of issuance, and the condition of any certification shall become conditions of the federal permit (33 U.S.C. § 1341(d)). If the federal authority denies a permit, the certification becomes null and void. Otherwise, the certification runs for the terms of the federal license or permit.

### **Enforcement**

Upon receipt of information that water quality standards are being violated as a consequence of the project's construction or operation or that one or more certification conditions has not been complied with, the Secretary, after consultation with the Applicant and notification of the appropriate federal permitting agency, may, after notice and opportunity for a public hearing, modify the Certification and provide a copy of such modification to the Applicant and the federal permitting agency.

Certification conditions are subject to enforcement mechanisms available to the federal agency issuing the license and to the state of Vermont. Other mechanisms under Vermont state law may also be used to correct or prevent adverse water quality impacts from construction or operation of activities for which certification has been issued.

### **Appeals**

Pursuant to 10 V.S.A. Chapter 220, any appeal of this decision must be filed with the clerk of the Environmental Division of the Superior Court within 30 days of the date of the decision. An aggrieved person shall not appeal this decision unless the person submitted to the Secretary a written comment during the applicable public comment period or an oral comment at the public meeting conducted by the Secretary. Absent a determination to the contrary, an aggrieved person may only appeal issues related to the person's comments to the Secretary as prescribed by 10 V.S.A. § 8504(d)(2). The Notice of Appeal must specify the parties taking the appeal and the statutory provision under which each party claims party status; must designate the act or decision appealed from; must name the Environmental Division; and must be signed by the appellant or their attorney. In addition, the appeal must give the address or location and description of the property, project, or facility with which the appeal is concerned and the name of the Applicant or any permit involved in the appeal. The appellant must also serve a copy of the Notice of Appeal in accordance with Rule 5(b)(4)(B) of the Vermont Rules for Environmental Court Proceedings. For further information, see the Vermont Rules for Environmental Court Proceedings, available online at [www.vermontjudiciary.org](http://www.vermontjudiciary.org). The address for the Environmental Division is 32 Cherry Street, 2nd Floor, Suite 303; Burlington, VT 05401 (Tel. 802.951.1740).

Dated at Montpelier, Vermont this  
7th day of October 2021

Peter Walke, Commissioner  
Department of Environmental Conservation

By

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Peter LaFlamme, Director  
Watershed Management Division  
Department of Environmental Conservation