

**New Hampshire Department of Environmental Services
WATER QUALITY CERTIFICATION
In Fulfillment of
NH RSA 485-A:12, IV**

Certification Number	WQC 2022-485A12IV-001
Activity Name	Owl's Nest Resort Water Withdrawal from the Pemigewasset River
Activity Location	Thornton, New Hampshire Grafton County
Potentially Affected Surface Waters Near the Activity	Pemigewasset River: NHRIV700010206-10
Owner/Applicant	LCJ Management, LLC (doing business as Owl's Nest Resort & Golf Club) PO Box 1684 Campton, NH 03223
Agent Filing Application on Behalf of Owner/Applicant	Chad Stocker, Development Manager Owls Nest Resort
Applicable State Permit or Registration	New Hampshire Department of Environmental Services Water Use Registration and Reporting
Decision (subject to Conditions below)	July 26, 2022
Date of Issuance	July 26, 2022

A. INTRODUCTION

On January 3, 2022, the New Hampshire Department of Environmental Services (NHDES) received an Application for Water Quality Certification (Application) from LCJ Management, LLC doing business as Owl's Nest Resort & Golf Club (Applicant), for the Owl's Nest Resort Irrigation Water Withdrawal from the Pemigewasset River located in Thornton, New Hampshire (Activity). In the Application, the Applicant requested a water quality certification (Certification or WQC), as required by NH RSA 485-A:12, IV, for the Activity from NHDES to withdraw up to 500 gallons per minute (gpm) of water from the Pemigewasset River, with a maximum withdrawal of 482,400 gallons per 24-hour period, from April 1 to October 30. The withdrawn water would be used to refill, and circulate water in, a newly constructed lined, 38-million-gallon, manmade storage pond (Storage Pond) that would be used for fire suppression, aquatic recreation, and to irrigate landscaping, lawn, and a 9-hole golf course located at Owl's Nest Resort & Golf Club located in Thornton and Campton, New Hampshire. A more complete description of the Activity is provided in Finding D-1 of this Certification.

The purpose of the Certification is to provide reasonable assurance that proposed withdrawal will comply with New Hampshire surface water quality standards specified under NH RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700 (Surface Water Quality Standards).

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B. DECISION

Based on the facts, laws, findings, and conditions included herein, NHDES has determined that there is reasonable assurance that construction and operation of the proposed Activity will be conducted in a manner that will comply with New Hampshire Surface Water Quality Standards. NHDES hereby issues this Certification in accordance with NH RSA 485-A:12, IV, subject to the conditions in Section E of this Certification.

C. FACTS AND LAWS

I. State Certification Law

- C-1. NH RSA 485-A:12, IV, states: "No activity that involves surface water withdrawal or diversion of surface water that requires registration under RSA 488:3, that does not otherwise require the certification required under paragraph III, and which was not in active operation as of the effective date of this paragraph, may commence unless the department certifies that the surface water withdrawal or diversion of surface water complies with state surface water quality standards applicable to the classification for the surface water body. The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22."
- C-2. NH RSA 488:3, states: "I. No person shall withdraw or discharge a cumulative amount of more than 20,000 gallons of water per day, averaged over any 7-day period, or more than 600,000 gallons of water over any 30-day period, at a single real property or place of business without registering the withdrawal or discharge with the department. Transfers of such volume of water shall also be registered. Registration shall be in addition to any required permits. II. No registration shall be transferred to another person without written notification to the commissioner."

II. State Surface Water Quality Standards¹

- C-3. NH RSA 485-A:8 and Env-Wq 1700 together fulfill the requirement of Section 303 of the federal Clean Water Act that the State of New Hampshire adopt Surface Water Quality Standards consistent with the provisions of the Act.
- C-4. Env-Wq 1702.50 defines "water quality standards" as "the combination of designated uses of surface waters, and the water quality criteria for such surface waters based upon such uses."
- C-5. Env-Wq 1701.01, titled "Purpose", states the following: "The purpose of these rules is to establish water quality standards for the state's surface water uses as set forth in RSA 485-A:8, I, II, III and V. These standards are intended to protect public health and welfare, enhance the quality of water, and serve the purposes of the federal Clean Water Act, 33 U.S.C. 1251 et seq., and RSA 485-A. These standards provide for the protection and propagation of fish, shellfish, and wildlife, and provide for such uses as recreational activities in and on the surface waters, public water supplies, agricultural and industrial uses, and navigation in accord with RSA 485-A:8, I and II."
- C-6. Env-Wq 1701.02, titled "Applicability," states the following: "These rules [Env-Wq 1700] shall apply to:
(a) All surface waters; and
(b) Any person who:
(1) Causes any point or nonpoint source discharge of any pollutant to surface waters;
(2) Undertakes hydrologic modifications, such as dam construction or water withdrawals; or
(3) Undertakes any other activity that affects the beneficial uses or the water quality of surface waters."

¹ All New Hampshire Surface Water Quality Standards apply to the Activity. The standards specifically called out in the Certification should not be interpreted as the only standards that may apply.

- C-7. Env-Wq 1702.44 defines "surface waters" as "'surface waters of the state' as defined in NH RSA 485-A:2, XIV and waters of the United States as defined in 40 CFR 122.2."

NH RSA 485-A:2, XIV defines "surface waters of the state" as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial."

40 CFR 122.2 defines "waters of the United States."

- C-8. Env-Wq 1702.51 defines "wetland" as "'wetland' as defined in RSA 482-A:2, X, as reprinted in Appendix C. Wetlands include, but are not limited to, swamps, marshes, bogs and similar areas as delineated in accordance with Env-Wt 100 et seq." NH RSA 482-A:2, X. defines "wetlands" as "an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

- C-9. Env-Wq 1702.05 defines "benthic community" as "the community of plants and animals that live on, over, or in the substrate of the surface water."

- C-10. Env-Wq 1702.06 defines "benthic deposit" as "any sludge, sediment, or other organic or inorganic accumulations on the bottom of the surface water."

- C-11. Env-Wq 1702.07 defines "best management practices" as "those practices that are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level compatible with water quality goals."

- C-12. Env-Wq 1702.08 defines "biological integrity" as "the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region."

- C-13. Env-Wq 1702.17 defines "designated uses" as "those uses specified in water quality standards for each water body or segment whether or not such uses are presently occurring. The term includes the following:

- (a) Swimming and other recreation in and on the water, meaning the surface water is suitable for swimming, wading, boating of all types, fishing, surfing, and similar activities;
- (b) Fish consumption, meaning the surface water can support a population of fish free from toxicants and pathogens that could pose a human health risk to consumers;
- (c) Shellfish consumption, meaning the tidal surface water can support a population of shellfish free from toxicants and pathogens that could pose a human health risk to consumers;
- (d) Aquatic life integrity, meaning the surface water can support aquatic life, including a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of the region;
- (e) Wildlife, meaning the surface water can provide habitat capable of supporting any life stage or activity of undomesticated fauna on a regular or periodic basis; and
- (f) Potential drinking water supply, meaning the surface water could be suitable for human intake and meet state and federal drinking water requirements after adequate treatment."

- C-14. Env-Wq 1702.18 defines "discharge" as
 "(a) The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently or otherwise; or
 (b) The placing of a pollutant in a location where the pollutant is likely to enter surface waters."
- C-15. Env-Wq 1702.23 defines "high quality waters" as "any surface water whose water quality is better than required by any aquatic life and/or human health water quality criteria contained in these rules or other criteria assigned to the surface water, or whose qualities and characteristics make the surface water critical to the propagation or survival of important living natural resources."
- C-16. Env-Wq 1702.22 defines "existing uses" as "those uses, other than assimilation waste transport, that actually occurred in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards."
- C-17. Env-Wq 1702.31 defines "nonpoint source" as "any source other than a point source."
- C-18. Env-Wq 1702.33 defines "nuisance species" as "any species of flora or fauna living in or near the water whose noxious characteristics or presence in sufficient number or mass prevent or interfere with a designated use of those surface waters."
- C-19. Env-Wq 1702.35 defines "outstanding resource water (ORW)" as "surface waters of exceptional recreational or ecological significance."
- C-20. Env-Wq 1702.37 defines "point source" as "a discernible, confined, and discrete conveyance from which pollutants are or might be discharged, excluding return flows from irrigated agriculture or agricultural stormwater runoff. The term includes, but is not limited to, a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft."
- C-21. Env-Wq 1702.38 defines "pollutant" as "'pollutant' as defined in 40 CFR 122.2." According to 40 CFR 122.2, "pollutant" means "dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water."
- C-22. Env-Wq 1703.01, titled "Water Use Classifications; Designated Uses", states the following:
 "(a) All surface waters shall be classified as provided in RSA 485-A:8, based on the standards established therein for class A and class B waters. Each classification shall identify the most sensitive use it is intended to protect.
 (b) All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters.
 (c) All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters.
 (d) Unless high or low flows are caused by naturally-occurring conditions, surface water

quantity shall be maintained at levels that protect existing uses and designated uses.”

- C-23. The Pemigewasset River in the vicinity of the Activity is Class B (NH Chapter Law 1967, 311:2, VI).
- C-24. Env-Wq 1703.03(c), titled “General Water Quality”, states, in part, the following:
“Unless otherwise specifically allowed by a statute, rule, order, or permit, the following physical, chemical, and biological criteria shall apply to all surface waters: (1) All surface waters shall be free from substances in kind or quantity that:
a. Settle to form harmful benthic deposits;
b. Float as foam, debris, scum or other visible substances;
c. Produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses;
d. Result in the dominance of nuisance species; or
e. Interfere with recreational activities. [..]”
- C-25. Env-Wq 1703.08, titled “Benthic Deposits”, states the following:
“(a) Class A waters shall contain no benthic deposits, unless naturally occurring.
(b) Class B waters shall contain no benthic deposits that have a detrimental impact on the benthic community, unless naturally occurring.”
- C-26. Env-Wq, 1703.09, 1703.10 and 1703.12 include Surface Water Quality Standards for oil and grease; color; and slicks, odors, and surface floating solids, respectively.
- C-27. NH RSA 146-A:2, III defines “oil” as “petroleum products and their by-products of any kind, and in any form including, but not limited to, petroleum, fuel, sludge, crude, oil refuse or oil mixed with wastes and all other liquid hydrocarbons regardless of specific gravity and which are used as motor fuel, lubricating oil, or any oil used for heating or processing. The term ‘oil’ shall not include natural gas, liquified petroleum gas or synthetic natural gas regardless of derivation or source.”
- C-28. NH RSA 146-A:3 specifies, among other things, that “[t]he discharge or spillage of oil into the surface water or groundwater of this state, or in a land area where the oil will ultimately seep into surface water or groundwater is prohibited.”
- C-29. Env-Wq 1703.11, titled “Turbidity”, states the following:
“(a) Class A waters shall contain no turbidity, unless naturally occurring.
(b) Class B waters shall not exceed naturally occurring conditions by more than 10 NTUs.
(c) Turbidity in waters identified in RSA 485-A:8, III shall comply with the applicable long-term combined sewer overflow plan prepared in accordance with Env-Wq 1703.05(c).
(d) For purposes of state enforcement actions, if a discharge causes or contributes to an increase in turbidity of 10 NTUs or more above the turbidity of the receiving water upstream of the discharge or otherwise outside of the visible discharge, a violation of the turbidity standard shall be deemed to have occurred.”
- C-30. Env-Wq 1703.13, titled “Temperature”, states the following:
“(a) There shall be no change in temperature in class A waters, unless naturally occurring.
(b) Temperature in class B waters shall be in accordance with RSA 485-A:8, II, and VIII.”

NH RSA-A:8, II states the following for Class B waters “[A]ny stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be

such as to appreciably interfere with the uses assigned to this class.”

NH RSA-A:8, VIII states the following: “In prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire fish and game department, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control.”

C-31. Env-Wq 1703.14, titled “Nutrients”, states the following:

“(a) Class A waters shall contain no phosphorous or nitrogen unless naturally occurring.

(b) Class B waters shall contain no phosphorous or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.

(c) Existing discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.

(d) There shall be no new or increased discharge of phosphorous into lakes or ponds.

(e) There shall be no new or increased discharge(s) containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds.”

C-32. Env-Wq 1703.18, titled “pH”, states the following:

“(a) The pH of Class A waters shall be as naturally occurs.

(b) As specified in RSA 485-A:8, II, the pH of Class B waters shall be 6.5 to 8.0, unless due to natural causes.

(c) As specified in RSA 485-A:8, III, the pH of waters in temporary partial use areas shall be 6.0 to 9.0 unless due to natural causes.”

C-33. Env-Wq 1703.19, titled “Biological and Aquatic Community Integrity”, states the following:

“(a) All surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.

(b) Differences from naturally-occurring conditions shall be limited to non-detrimental differences in community structure and function.”

C-34. Env-Wq 1703.21, titled “Water Quality Criteria for Toxic Substances”, states the following:

“(a) Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that:

(1) Injure or are inimical to plants, animals, humans or aquatic life; or

(2) Persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in:

a. Edible portions of fish, shellfish, or other aquatic life; or

b. Wildlife that might consume aquatic life.”

C-35. Env-Wq 1705.01, titled “Assimilative Capacity”, under Part Env-Wq 1705, titled “Flow Standards”, states the following:

“(a) Subject to (b), below, the department shall hold not less than 10 percent of the assimilative capacity of each surface water in reserve to provide for future needs.

(b) For purposes of combined sewer overflows, the department shall determine compliance based on 99 percent of the assimilative capacity of the receiving surface water.”

- C-36. Antidegradation provisions are included in Env-Wq 1702 and Env-Wq 1708.
- a. Env-Wq 1702.03 defines "antidegradation" as "a provision of the water quality standards that maintains and protects existing water quality and uses."
 - b. Env-Wq 1708.02 states the following: "Antidegradation shall apply to: (a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or adversely affect the existing or designated uses; (b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities; (c) Any increase in flow alteration over an existing alteration; and (d) Any hydrologic modifications, such as dam construction and water withdrawals."
 - c. Antidegradation applies to all parameters as evidenced by Env-Wq 1708.08(a) under "Assessing Waterbodies", which states the following: "The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in question."
 - d. Env-Wq 1708.03(a) states the following: "A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses."
 - e. Env-Wq 1702.04 defines "assimilative capacity" as "the amount of a pollutant or combination of pollutants that can safely be released to a waterbody without causing violations of applicable water quality criteria or negatively impacting uses."
 - f. Env-Wq 1708.08 describes the process for assessing waterbodies to determine if there is remaining assimilative capacity for each parameter in question, including the requirement under Env-Wq 1708.08(h) for the department to reserve no less than 10% of a surface water's assimilative capacity as specified under Env-Wq 1705.01 (see Fact C-35).
 - g. Env-Wq 1708.09, titled "Significant or Insignificant Determination", states, in part, the following: "(a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. (b) The department shall not approve a discharge or activity that will cause a significant lowering of water quality unless the applicant demonstrates, in accordance with Env-Wq 1708.10, that the proposed lowering of water quality is necessary to achieve important economic or social development in the area where the waterbody is located. (c) [...] any applicant proposing an activity that will cause an insignificant lowering of water quality shall not be required to demonstrate that the activity is necessary to provide important economic or social development, provided the applicant implements best management practices to minimize degradation."
 - h. Env-Wq 1708.01(b)(1), in general, states that for significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions and the analysis required by Env-Wq 1708.10, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water quality, the department shall ensure water quality adequate to fully protect existing uses. Further, the department shall ensure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented.
 - i. Env-Wq 1708.01(b)(2) states the following: "The department shall not approve any proposed discharge or activity that might cause degradation or lower water quality, without such conditions as are necessary to ensure that: a. Water quality will be adequate to protect existing uses; b. The highest statutory and regulatory requirements will be achieved for all

new and existing point sources; and c. All cost effective and reasonable best management practices for nonpoint source control will be implemented.”

C-37. Env-Wq 1708.04, titled “Protection of Water Quality in ORW”, states the following:

“(a) Surface waters of national forests and surface waters designated as natural under RSA 483:7-a, I, shall be considered outstanding resource waters (ORW).

(b) Subject to (c), below, water quality shall be maintained and protected in surface waters that constitute ORW.

(c) The department shall allow a limited point or nonpoint source discharge to an ORW only if:

(1) The discharge will result in no more than temporary and short-term changes in water quality, wherein “temporary and short-term” means that degradation is limited to the shortest possible time;

(2) The discharge will not permanently degrade water quality or result at any time in water quality lower than that necessary to protect the existing and designated uses in the ORW; and

(3) All practical means of minimizing water quality degradation are implemented.”

C-38. Env-Wq 1708.06, titled “Protection of Water Quality in High Quality Waters”, states the following:

“(a) Subject to (b) through (d) below, high quality waters shall be maintained and protected.

(b) The department shall evaluate and authorize insignificant changes in water quality as specified in Env-Wq 1708.09.

(c) The department shall allow degradation of significant increments of water quality, as determined in accordance with Env-Wq 1708.09, in high quality waters only if the applicant can demonstrate to the department, in accordance with Env-Wq 1708.10, that allowing the water quality degradation is necessary to accommodate important economic or social development in the area in which the receiving water is located.

(d) If the waterbody is Class A Water, the requirements of Env-Wq 1708.05 shall also apply.”

C-39. Env-Wq 1708.12, titled “Transfer of Water”, states, in part, the following:

“(a) In this section, “transfer” means the intentional conveyance of water from one surface water to another surface water for the purpose of increasing the volume of water available for withdrawal from the receiving surface water. The term does not include the transfer of stormwater, for the purpose of managing stormwater during construction, between basins created or otherwise lawfully used for stormwater detention or treatment, or both, and does not include the discharge of stormwater from a detention or treatment basin to a surface water.”

III. Requirements for Impaired Waters and Applicable Total Maximum Daily Load

C-40. Section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)) and the regulations promulgated thereunder (40 CFR. 130) require states to identify and list surface waters that are violating state water quality standards (i.e., Section 303(d) List) that do not have an approved Total Maximum Daily Load (TMDL) for the pollutants causing impairment. For these water quality-impaired waters, states must establish TMDLs for the pollutants causing the impairments and submit the list of impaired surface waters and TMDLs to the U.S. Environmental Protection Agency (EPA) for approval. TMDLs include source identification, determination of the allowable load and pollutant reductions (by source) necessary to meet the allowable load. Once a TMDL is established, the pollutant/surface water is transferred to the list of impaired waters with approved TMDLs (known as Category 4A waters). The Section 303(d) List is, therefore, a subset of all impaired waters. The most recent Section 303(d) list of impaired waters

approved by EPA is the [2020/2022 Section 303\(d\) List](#). A list of all impaired waters is available through the [NHDES website](#).

- C-41. On December 20, 2007, EPA approved the [Northeast Regional Mercury TMDL](#) which addressed mercury impairments in all of New Hampshire's fresh surface waters, including the Pemigewasset River.
- C-42. When a surface water does not meet Surface Water Quality Standards (i.e., when a surface water is impaired), the addition of pollutants causing or contributing to impairment should be avoided as indicated in the following rule and statute:

Env-Wq 1703.03(a) states the following: "The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination."

NH RSA 485-A:12, I, under "Enforcement of Classification", states, in part, the following: "After adoption of a given classification for a stream, lake, pond, tidal water, or section of such water, the department shall enforce such classification by appropriate action in the courts of the state, and it shall be unlawful for any person or persons to dispose of any sewage, industrial, or other wastes, either alone or in conjunction with any other person or persons, in such a manner as will lower the quality of the waters of the stream, lake, pond, tidal water, or section of such water below the minimum requirements of the adopted classification."

IV. Requirements for Water Conservation and Water Use Registration and Reporting

- C-43. NH RSA 485:61 regarding Rules for Water Conservation, states the following:
- I. The department shall adopt rules, pursuant to RSA 541-A, for water conservation practices for water users. These rules shall strike a reasonable balance between environmental, energy, and economic impacts and be consistent with current industry standards and practices for different types of water users.
 - II. The water conservation rules in paragraph I of this section shall apply to all new permit applicants and applications for water withdrawals subject to the provisions of RSA 485:3, RSA 485:48, RSA 485-C:21 and section 401 of the Clean Water Act.
 - III. Water conservation rules shall be consistent with applicable state or federal rules and regulations. Water Conservation Rules were adopted May 14, 2005 codified as Env-Wq 2101."
- C-44. Env-Wq 2101.24 titled, "Water Conservation Plan Required", states, in part, the following:
- "(a) The applicants for approval of a source that would be a conservation source shall submit a water conservation plan that demonstrates compliance with the applicable provisions of Env-Wq 2101.05 through Env-Wq 2101.22 in accordance with the following: [...]
- (5) For a new withdrawal from a surface water associated with a project requiring a 401 Water Quality Certification, the water conservation plan shall be submitted prior to or in conjunction with the application for a 401 Water Quality Certification pursuant to Section 401 of the federal Clean Water Act;
 - (6) For a new withdrawal from a surface water that requires water quality certification pursuant to RSA 485-A:12, IV, the water conservation plan shall be submitted prior to or in conjunction with the certification request."
- C-45. On May 7, 2021, NHDES received a Water Conservation Plan for the Community Water System and non-irrigation industrial, commercial, and institutional water uses for the Owl's Nest Golf Club and Condos,

which is in the vicinity of the Activity.

- C-46. Env-Wq 2102 includes requirements for Water Use Registration and Reporting and applies to any person required to register a water use under NH RSA 488:3, I, namely any person whose cumulative incoming water or cumulative outgoing water exceeds an average of 20,000 gallons of water per day in any 7-day period, or exceeds a total volume of 600,000 gallons in any 30-day period (see Fact C-2). Env-Wq 2102.08 requires a person whose water use is not agricultural, limited, or intermittent to provide certain information to NHDES within 30 days of first commencing the water use. Env-Wq 2102.07 requires each water user that is not an agriculture water user, a limited water user, or the owner of a mobile facility that qualifies for an intermittent registration under Env-Wq 2102.32(a)(1) to report water use in accordance with Env-Wq 2102.07.

V. State Rivers Management and Protection Program

- C-47. NH RSA 483 established the New Hampshire Rivers Management and Protection Program to, among other things, conserve and protect outstanding characteristics of designated rivers or river segments including recreational, fisheries, wildlife, environmental, hydropower, cultural, historical, archaeological, scientific, ecological, aesthetic, community significance, agricultural, and public water supply. NH RSA 483 states the following in relevant sections:

NH RSA 483:4, VIII defines "designated river" as "that portion of a perennial river which has been specifically designated by the general court pursuant to RSA 483:15."

NH RSA 483:4, XI defines "Instream public uses" as "those uses which comprise the state's interests in surface waters including, but not limited to: navigation; recreation; fishing; storage; conservation; maintenance and enhancement of aquatic and fish life; fish and wildlife habitat; wildlife; the protection of water quality and public health; pollution abatement; aesthetic beauty; and hydroelectric energy production."

RSA 483:4, XVI defines "protected instream flow" as "a stream flow pattern which is established to maintain water for present and future instream public uses."

NH RSA 483:4, XII defines "interbasin transfer" as "any transfer of water for use from one river drainage basin to another."

NH RSA 483:7-a River Classification Criteria; Management. –

I. Those rivers or segments designated for inclusion in the program shall be classified as one or more of the following:

(c) Rural-community rivers are those rivers or segments which flow through developed or populated areas of the state and which possess existing or potential community resource values such as those defined in official municipal plans or land use controls. Such rivers have mixed land uses in the corridor reflecting some combination of open space, agricultural, residential, commercial and industrial land uses. Such rivers are readily accessible by road or railroad and may include impoundments or diversions. The following criteria and management objectives shall apply to rural-community rivers:

(1) The minimum length of any segment shall be 3 miles.

(2) Existing water quality shall be at least Class B level pursuant to the water quality standards established under RSA 485-A:8, or have the potential for restoration to that level.

(3) Management of rural-community rivers and segments shall maintain and enhance the

natural, scenic, recreational and community values of the river and shall consider, protect, and ensure the rights of riparian owners to use the river for such uses as agricultural, forest management, public water supply, residential, recreational, commercial, industrial, flood control, and other community uses which are compatible with the instream public uses of the river and the management and protection of the resources for which the river or segment is designated.

NH RSA 483:9-aa Rural-Community Rivers Protection. –

III. No interbasin transfers of water from a designated rural-community river or segment shall be permitted.

IV. No new channel alteration activities shall be permitted which interfere with or alter the natural flow characteristics of the river or segment or which adversely affect the resources for which the river or segment is designated. However, the commissioner may approve such channel alterations as may be necessary for the construction, repair, or maintenance of a project including public water supply intake facilities in the river or river corridor. The department shall encourage the use of native vegetation to stabilize streambanks of designated rural-community rivers.

V. A protected instream flow shall be established by the commissioner for each designated rural-community river or segment and any upstream impoundment or diversion facility which may affect the natural flow characteristics of such river or segment pursuant to RSA 483:9-c.

VI. Water quality shall be restored or maintained at least at the Class B level. Significant adverse impacts on water quality or other instream public uses shall not be permitted. The department shall review and consider adopted local river corridor management plans prior to issuing any permit under RSA 485-A:13, RSA 485-A:17 or RSA 482-A.

NH RSA 483:9-c Establishment of Protected Instream Flows. –

I. The commissioner, in consultation with the advisory committee, shall adopt rules under RSA 541-A specifying the standards, criteria, and procedures by which protected instream flows shall be established and enforced for each designated river or segment.

VI. Water management plans implementing instream flow protections shall be effective and enforceable upon adoption.

NH RSA 483:10-b. Withholding of Section 401 Certification. – The general court finds that the development of any dam or channel alteration activities within a natural river or segment or the development of any new dam within a rural or community river or segment, except as provided in RSA 483:9-a, II and RSA 483:9-b, II, will alter the physical and chemical characteristics of that river and will constitute violation of the water quality standards established under RSA 485-A:8. The commissioner shall deny certification of any federally licensed or permitted activity on such designated rivers or segments under section 401 of the Federal Water Pollution Control Act, P.L. 92-500, as amended.

NH RSA 483:12-a State Action; Notification of Rivers Coordinator; Petition for Review. –

I. Any state agency considering any action affecting any river or segment designated under this chapter shall notify the rivers coordinator and the local river management advisory committee prior to taking any such action. Such agency shall forward to the rivers coordinator and the local river management advisory committee for review and comment copies of all notices of public hearings, or, where a public hearing is not required, a copy of the application for issuance of a permit, certificate, or license within the designated river or corridor under RSA 485-C, RSA 485-A, RSA 483-B, RSA 12-E, RSA 270:12, RSA 482, RSA 482-A, except notifications for minimum impact activities under RSA 482-A:3, V and XII and for routine roadway maintenance under RSA 482-A:3, XVI on land used for agricultural purposes, RSA 149-M, RSA 430, or RSA 147-A. If an agency is notified by the

rivers coordinator that a proposed activity would violate a protection measure under RSA 483:9, 483:9-a, 483:9-aa, or 483:9-b, such agency shall deny the application.

NH RSA 483:15, VI.(c) designates the Pemigewasset River from the northernmost Thornton town line to the I-93 bridge in Plymouth as a rural-community river.

C-48. Chapter Env-Wq 1900, titled "Rules for the Protection of Instream Flow on Designated Rivers", include, but are not limited to, the following provisions:

Env-Wq 1901.01, titled "Purpose", states the following: "The purpose of these rules is to specify standards, criteria, and procedures by which protected instream flows shall be established and enforced for each designated river segment in order to maintain water for instream public uses and to protect the resources for which the river or river segment is designated. The department shall establish protected instream flows for the designated rivers described in RSA 483:15 and adopt water management plans for the water management planning areas (WMPAs) of the designated rivers."

Env-Wq 1901.02 titled "Applicability" states the following: "The requirements set forth in Env-Wq 1900 shall apply to:

- (a) Designated rivers or river segments and their tributary drainage areas;
- (b) Affected water users; and
- (c) Affected dam owners and the associated water body impounded by the dam."

Env-Wq 1902.03 defines "affected water user" as "a water user required to be registered under RSA 488:3 and having a withdrawal or discharge at any location within the WMPA of a designated river."

Env-Wq 1902.13 defines "water management planning area (WMPA)" as "the tributary drainage area to a designated river for which a water management plan is required."

Env-Wq 1905.03, titled "Water Conservation Plans", states, in part, the following:

- "(a) Each affected water user in a WMPA required to have a water management plan under Env-Wq 1905.01 shall have an individual water conservation plan that is prepared by the affected water user and approved by the department in accordance with this section.
- (b) Each individual water conservation plan shall be incorporated into the water management plan for the WMPA."

Env-Wq 1905.04, titled "Water Use Plans", states, in part, the following:

- "(a) Each affected water user in a WMPA subject to a water management plan under Env-Wq 1905.01 shall:
 - (1) Have an individual water use plan that is prepared by the department in consultation with the affected water user."

Env-Wq 1905.06, titled "Water Management Plan Document", states, in part, the following:

- "(a) The department shall prepare a proposed water management plan document specifying the conservation and operational measures required for each affected water user and affected dam owner in the WMPA to meet the protected instream flows."

Env-Wq 1906.03 "Compliance" states the following:

“(a) Affected water users and affected dam owners shall comply with the adopted water management plan and its implementation schedule.

(b) Each affected water user and affected dam owner shall maintain records of the actions taken to comply with a water management plan.

(c) Each affected water user and affected dam owner shall allow the department to review the records specified in (b) above upon request.

(d) Any affected water user or affected dam owner that complies with the adopted water management plan shall be deemed to be in compliance with the water quality standards relative to stream flow established in RSA 485-A and Env-Wq 1700.”

VI. State Alteration of Terrain Program

- C-49. NH RSA 485-A:17, I requires, among other things, any person proposing to dredge, excavate, place fill, mine, transport forest products or undertake construction in or on the border of the surface waters of the state, and any person proposing to significantly alter the characteristics of the terrain, in such a manner as to impede the natural runoff or create an unnatural runoff, to be directly responsible to submit to NHDES detailed plans concerning such proposal and any additional relevant information requested by NHDES, at least 30 days prior to undertaking any such activity. The applicant must receive a permit from NHDES prior to undertaking those operations. NHDES adopted Alteration of Terrain rules under Env-Wq 1500 to protect drinking water supplies, surface waters, and groundwater by specifying the procedures and criteria for obtaining permits required by NH RSA 485-A:17.
- C-50. On June 22, 2018, NHDES issued Alteration of Terrain Permit No. AoT-1445 to LCJ Holdings, LLC for the Owl's Nest Phase One Development Plan, which included, among other things, approval to construct the Storage Pond (See Introduction A and Finding D-1).
- C-51. On November 30, 2020, NHDES issued Alteration of Terrain Permit No. Aot-1885 to LCJ Holdings, LLC for the Owl's Nest Golf Course Addition, which would be irrigated by the Storage Pond (See Introduction A and Finding D-1).

VII. State Wetlands and Shoreland Programs

- C-52. NH RSA 482-A:3, I(a) prohibits any person from excavating, removing, filling, dredging, or constructing any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state without a permit from NHDES. NHDES adopted Env-Wt 100 through Env-Wt 900 to implement NHDES' wetlands permitting program.
- C-53. Env-Wt 307.03, titled “Protection of Water Quality Required”, states, in part, the following:
“(a) No activity shall be conducted in such a way as to cause or contribute to a violation of:
(1) The surface water quality standards specified in NH RSA 485-A:8 or Env-Wq 1700.”
- C-54. On June 8, 2021 NHDES informed the Applicant that certain disturbances within the surface waters of the state may require a wetlands permit from NHDES.
- C-55. The Shoreland Water Quality Protection Act (SWQPA) is authorized by NH RSA 483-B. The SWQPA establishes, among other things, minimum standards use and development of shorelands adjacent to the state's public water bodies and includes limits on impervious surfaces, a provision for a waterfront buffer in which vegetation removal is limited, shoreland protection along rivers designated under NH RSA 483 (see Fact C-47), and the establishment of a permit requirement for certain construction, excavation, and filling activities within the protected shoreland. NH RSA 483-B:4, XV defines “protected

shoreland" as "for natural, fresh water bodies without artificial impoundments, for artificially impounded fresh water bodies, except private garden water features and ponds of less than 10 acres, and for coastal waters and rivers, all land located within 250 feet of the reference line of public waters. For river segments of third order or lower designated as protected under NH RSA 483:15 which are either designated after or for which specific exemptions are repealed after December 31, 2015, "protected shoreland" means all land located within 50 feet of the reference line of public water." NHDES adopted Env-Wq 1400 to implement NHDES' shoreland permitting program.

- C-56. Env-Wq 1406.20, titled "Conditions Applicable to All Projects in the Protected Shoreland", states, in part, the following: "The following conditions shall apply to all projects in the protected shoreland [..] and regardless of whether a permit is obtained: [..]"
- (c) No person undertaking any activity in the protected shoreland shall cause or contribute to, or allow the activity to cause or contribute to, any violations of the surface water quality standards established in Env-Ws 1700 or successor rules in Env-Wq 1700."
- C-57. On June 8, 2021 NHDES informed the Applicant that certain disturbances within the protected shoreland, such as excavation, fill, or construction, may require a shoreland permit from NHDES.

VIII. State Certification Application and Other Documents and Records

- C-58. On March 24, 2021 staff from the New Hampshire Fish and Game Department (NHFGD) advised NHDES that the Pemigewasset River in the vicinity of the Activity is a cold-water fishery.
- C-59. On March 30, 2021 NHDES received an Application for a Water Quality Certification from the Applicant to temporarily withdraw up to 2.2 cubic feet per second (cfs) of water from the Pemigewasset River in Thornton, New Hampshire to fill the Storage Pond during the period from April to August.
- C-60. On April 8, 2021 NHDES issued Water Quality Certification No. 2021-48512IV-001 (WQC No. 2021-48512IV-001) to the Applicant for a temporary withdrawal of water from the Pemigewasset River in Thornton, New Hampshire to fill the Storage Pond. On July 12, 2021, August 4, 2021, and December 6, 2021, NHDES received requests from the Applicant to amend WQC No. 2021-48512IV-001. After NHDES reviewed those requests, NHDES issued amendments of WQC No. 2021-48512IV-001 to the Applicant on August 5, 2021 and December 8, 2021. NHDES included conditions in WQC No. 2021-48512IV-001 and its amendments to provide reasonable assurance that the temporary withdrawal complied with applicable Surface Water Quality Standards. WQC No. 2021-48512IV-001, as amended, expired on April 15, 2022.
- C-61. *Water Quality Certification Application:* On January 3, 2022, NHDES received the Application for the Activity from the Applicant. The record for this Certification decision includes the information provided in the Application and the references in this Certification.
- C-62. *Certification Public Comment Period* NHDES issued a draft Water Quality Certification for public comment from June 13, 2022 to 4 pm on July 13, 2022.

D. FINDINGS

I. Applicant's Proposal

- D-1. The proposed Activity is described in the text and plans provided in the Application (see Introduction A

and Fact C-61). The Activity addressed in this Certification is the proposed withdrawal of water from the Pemigewasset River in Thornton, New Hampshire. The purpose of the withdrawal is to refill, and circulate water in, a lined, 38 million-gallon, manmade storage pond (Storage Pond) that was recently constructed in uplands.² Water in the Storage Pond would be used to irrigate landscaping, lawn, and a 9-hole golf course located at Owl's Nest Resort & Golf Club located in Thornton and Campton, New Hampshire, as well as for other purposes, such as fire suppression and aquatic recreation, including swimming and boating. The Activity includes withdrawing up to 500 gpm, which is equivalent to approximately 1.1 cfs, of water from the Pemigewasset River from April 1 to October 30. The withdrawal would not exceed the following: 1.1 cfs when upstream river flow is greater than or equal to 120 cfs as measured by a USGS Gage No. 01075000 for the Pemigewasset River at Woodstock, New Hampshire (USGS Gage 01075000); 1 percent of upstream river flow when upstream river flow is less than 120 cfs and greater than or equal to 60 cfs; and a maximum daily withdrawal of 482,400 gallons (i.e., an average of 0.75 cfs over a 24-hour period). The Activity would not withdraw any water from the Pemigewasset River when upstream river flow is less than 60 cfs, or prior to, during, or immediately after a 2-year or greater rain event.⁴ The withdrawal would also be automatically shut-off when there is less than or equal to 0.67 feet of freeboard in the Storage Pond. During each day when a withdrawal would occur, the Applicant would record, among other things, the date, flow rate, total daily withdrawal, upstream river flow at USGS Gage 01075000, and 1 percent of upstream river flow at USGS Gage 01075000. The withdrawal would be operated by a 50 horsepower, electric, self-priming suction lift centrifugal pump that would attach to a rigid, high-density polyethylene (HDPE) hose that would be placed into the Pemigewasset River. Two 12" x 22" screens (or equivalent), which would form a "T" configuration at the end of the intake hose, would prevent impingement of fish and other aquatic organisms. The intake would be marked with a safety flag and solar-powered light so that the intake could be easily recognized. A barrel-type plastic float may be added to the end of the intake line to support the screens if additional buoyancy is needed, and the float would be tethered to the top of bank of the Pemigewasset River. The intake hose and screens would be removed by hand when the Activity is not withdrawing water. According to Certification application there will be no direct discharges to the Pemigewasset River. In addition, the Water Conservation Plan (WCP) that is currently in place for the Owl's Nest Resort will be updated to include the new irrigation system at the resort.

II. Water Quality Certification Required

- D-2. The Applicant is Responsible for the Activity.
- D-3. Surface Water Quality Standards are summarized in Facts C-3 through C-39 and apply to all New Hampshire surface waters as defined in Fact C-7.
- D-4. The Pemigewasset River where the Activity would be located is a surface water (see Fact C-7) and is therefore subject to New Hampshire's Surface Water Quality Standards (see Fact C-3).
- D-5. The proposed Activity involves the withdrawal of surface water that will require registration under RSA 488:3 (See Fact C-2).
- D-6. Because the proposed Activity involves a withdrawal from a surface water that will require registration under RSA 488:3, NHDES must issue a Certification in accordance with RSA 485-A:12, IV before the proposed withdrawal can commence (see Fact C-1 and Finding D-1).

² According to an email that NHDES received from Horizons Engineering, Inc. on July 16, 2020, the Storage Pond was not constructed in wetlands.

D-7. The Applicant has submitted an application for Certification (see Fact C-61).

III. State Authority for Certification Conditions, Modifications and Monitoring

D-8. NH RSA 485-A:12, IV (see Fact C-1) states the following: “The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22.” Monitoring includes, but is not limited to, the following:

- Monitoring to determine compliance with conditions in this certification;
- On-site inspections;
- Development, submission, and implementation of monitoring plans;
- Analysis, preparation and submittal of reports summarizing monitoring results; and
- Notifying appropriate authorities in a timely manner when excursions from conditions in this certification occur.

IV. Potentially Affected Surface Waters

D-9. NHDES has assigned Assessment Unit (AU) identification numbers to many, but not all surface waters. The surface waters that could be potentially affected by the Activity and its associated AU numbers include, but are not limited to, the following:

Assessment Unit ID	Description
NHRIV700010206-10	Pemigewasset River

D-10. The surface waters potentially affected by the Activity (Finding D-9) are classified as Class B (see Facts C-22 and C-23).

D-11. A goal of Class B surface waters is to support the designated uses defined in Env-Wq 1702.17, which include swimming and other recreation in and on the water, fish consumption, shellfish consumption (for tidal waters), aquatic life integrity, wildlife, and after adequate treatment as a water supply. Designated uses apply “...whether or not such uses are presently occurring” (see Fact C-13).

D-12. The surface water in the vicinity of the Activity is not an outstanding resource water (see Facts C-19 and C-37) but is a high quality waters for flow, among other Surface Water Quality Standards (see Facts C-15 and C-38).

D-13. The Activity does not involve a “transfer” or “interbasin transfer” of water (see Facts C-39 and C-47).

D-14. The Pemigewasset River in the vicinity of the Activity is a designated river and is classified as a rural-community river. As such, the Activity is within the jurisdiction of the New Hampshire Rivers Management and Protection Program. In accordance with NH RSA 483:9-c and Env-Wq 1900, NHDES must establish protected instream flows (PIFs) and adopt water management plans (WMPs) for each designated river that include details on how to implement the PIFs. To comply with PIFs and Surface Water Quality Standards associated with instream flow, affected water users must comply with the adopted WMPs. NHDES has not yet established PIFs or a WMP for the Pemigewasset River. If and when NHDES adopts a WMP that establishes PIFs, and if NHDES specifies withdrawal limits for the Activity in a WMP that are more stringent than the withdrawal conditions specified Condition E-11 of this certification, then Condition E-11 would need to be modified in accordance with Condition E-3 of this

certification (See Facts C-47 and C-48).

- D-15. The Pemigewasset River in the vicinity of the Activity is a cold-water fishery (see Fact C-58).
- D-16. According to the 2020/2022 305(b)/303(d) lists of impaired waters (see Fact C-40), the following surface water in the vicinity of the proposed Activity is listed as impaired:

Assessment Unit (AU)	Waterbody Name	Cause of Impairment (Designated Use Impaired)
NHRIV700010206-10	Pemigewasset River (from the confluence with Mill Brook in Thornton to the confluence with the Mad River in Campton)	Mercury (FC)
Notes: AL = Aquatic Life, PCR = Primary Recreation, SCR = Secondary Recreation, FC = Fish Consumption, SFC = Shellfish Consumption. Impairments highlighted in bold have approved TMDLs. All other impairments are on the Section 303(d) List. All fresh surface waters are impaired mercury due to elevated levels of mercury in fish tissue which has resulted in statewide fish consumption advisory.		

When a surface water does not meet Surface Water Quality Standards (i.e., when the surface water is impaired), the addition of pollutants causing or contributing to impairment should be avoided (see Fact C-42). As noted above, all fresh surface waters in New Hampshire are impaired for mercury due to concentrations found in fish tissue, which have resulted in a statewide fish consumption advisory. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL which addressed mercury impairments in all New Hampshire fresh surface waters (see Fact C-41). The primary source of mercury is atmospheric deposition from in-state and out-of-state emissions. The proposed Activity is not expected to have an impact on mercury levels in fish tissue.

- D-17. United States Geological Survey Gage 01075000 is located upstream on the Pemigewasset River in Woodstock, New Hampshire. The drainage area to USGS Gage 01075000 is approximately 193 square miles (sm). Historical and real-time measurements of flow and river depth at USGS Gage 01075000 are available on-line on the [USGS website](#). The drainage area at the location of the proposed withdrawal is approximately 266.8 sm. Flows at the location of the withdrawal can be approximated by using a drainage area ratio method, which involves calculating the ratio of the withdrawal drainage area to the USGS Gage 01075000 drainage area (i.e., 266.8 sm/193 sm ≈ 1.38) and multiplying the flow at USGS Gage 0107500 by that ratio (i.e., flow at USGS Gage 01075000 x 1.38 ≈ flow at withdrawal location).
- D-18. The 7Q10³ low flow at the USGS Gage 01075000 is approximately 58 cfs, which, based on drainage area ratio method (see Finding D-17), is approximately equal to 80 cfs at the location of the withdrawal (i.e., 58 cfs x 1.38 ≈ 80 cfs). The Applicant proposes to stop withdrawing water when flow at USGS Gage 01075000 is 60 cfs, which is 2 cfs higher than the 7Q10 low flow USGS Gage 01075000 and would be approximately equivalent to 83 cfs at the location of the withdrawal (i.e., 60 cfs x 1.38 ≈ 83 cfs).
- D-19. The NHDES Water Use Database includes data submitted by those who must register and report withdrawals and discharges with the NHDES Water Use Registration and Reporting Program (WURRP)

³ The 7Q10 is the average 7-day low flow that occurs, on average, once every 10 years. Based on DFLOW program, the 7Q10 low flow at USGS gage 01075000 for the period 2001 – 2020 is approximately 58 cfs.

(see Fact C-46). According to the database, the sum of all withdrawals from USGS Gage 01075000 downstream to the proposed withdrawal is very small (only approximately 0.1% of the 7Q10 low flow) and is probably lower because a portion of the existing withdrawals is returned as base flow to the river via septic system discharges to the groundwater. This information is the WQC No. 2021-48512IV-001 issued by NHDES on April 8, 2021 for the temporary withdrawal of water from the Pemigewasset River to initially fill the Storage Pond at the Owls Nest Resort (see Fact C-60).

V. Potential Impacts of Withdrawals on Surface Water Quality Standards

- D-20. As stated in Finding D-11, all designated uses apply whether or not the uses are presently occurring. If not properly controlled, withdrawals from rivers and streams can result in impairment of designated uses including, but not limited to, aquatic life. Examples of how aquatic life can be adversely impacted by withdrawals include, but are not limited to, reductions in wetted habitat and river velocity due to less water, which can cause higher water temperatures and lower dissolved oxygen levels and be harmful to aquatic life. Reductions in water level caused by withdrawals can also expose amphibians and reptiles (e.g., turtles and frogs) that hibernate underwater in the winter to freezing temperatures and possible death. These potential impacts can contribute to violations of the Biological and Aquatic Community Integrity (see Fact C-33) Surface Water Quality Standards.
- D-21. NHDES expects the withdrawal restrictions discussed in Finding D-28 and required in Condition E-11, as well as the requirement to equip the end of the water intake pipe with a screen in Condition E-10.b, will be protective of aquatic organisms and will help ensure the proposed withdrawal will comply with Surface Water Quality Standards.

VI. Other NHDES Permits and Approvals

- D-22. Although an NHDES Alteration of Terrain Permit was obtained for the Storage Pond and other aspects of the Owls Nest Resort (Resort) (See Facts C-49 and C-51), an Alteration of Terrain permit is not needed for the Activity proposed for this Certification. However, compliance with the existing Alteration of Terrain Permits will help ensure that stormwater or other discharges associated with other permitted aspects of the Resort do not result in violations of Surface Water Quality Standards. Condition E-7 addresses this Finding.
- D-23. The Applicant may need to obtain a wetlands permit from NHDES prior to commencing this Activity if the Activity involves excavating, removing, filling, dredging, or constructing any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state. Conditions E-7 and E-10.a address this Finding. (see Facts C-52 through C-54).
- D-24. The shoreland of the Pemigewasset River is protected under the SWQPA in accordance with NH RSA 483-B. Because the Activity includes work within the protected shoreland of the Pemigewasset River (e.g., installation and removal of the intake pipe and pump), the Applicant may need to obtain a shoreland permit from NHDES prior to commencing the Activity. The SWQPA includes limitations on impervious surfaces, vegetation maintenance requirements and the establishment of a permit requirement for many, but not all, construction, excavation, and filling activities within the protected shoreland (see Facts C-55 through C-57). Conditions E-7 and E-10.a address this Finding.
- D-25. Because the proposed withdrawal exceeds the withdrawal thresholds in RSA 488:3, the Applicant must register the Activity with, and report the Activity to, the NHDES WURRP (see Facts C-2 and C-46). Registering and reporting the withdrawal with WURRP allows NHDES to track the cumulative volume of withdrawals in the watershed, which is important for determining conditions to ensure current and

future withdrawals comply with Surface Water Quality Standards. Condition E-8 addresses this Finding.

- D-26. The Applicant has a NHDES approved Water Conservation Plan (WCP) for the Community Water System and non-irrigation industrial, commercial, and institutional water uses for the Owl's Nest Golf Club and Condos (see Facts C-43 through C-45). As stated in the Certification application, the WCP must be updated to include all irrigation uses associated with the Activity (see Finding D-1). Condition E-9 addresses this Finding.
- D-27. To prevent the proposed intake structure from entraining and impinging aquatic life when the pump is operating, it is necessary to have a screen installed on the end of the intake structure that is acceptable to the NHEGD and can be periodically cleaned in a manner that will not cause a violation of Surface Water Quality Standards, for parameters including, but not limited to, turbidity (see Fact C-29) and visible plumes (see Facts C-24 and C-26). Conditions E-10.b and E-10.e address this Finding.

VII. Antidegradation

- D-28. Antidegradation provisions of the Surface Water Quality Standards apply to the Activity (see Fact C-36). In April of 2021, NHDES issued of WQC No. 2021-48512IV-001 to the Applicant for the temporary withdrawal of water from the Pemigewasset River to initially fill the Storage Pond at the Owls Nest Resort. In August 2021 and December 2021, NHDES issued to the Applicant Water Quality Certification 2021-485A12IV-001.1 and Water Quality Certification 2021-485A12IV-001.2, respectively, which are amendments to WQC No. 2021-485A12IV-001. WQC No. 2021-485A12IV-001 and the August 2021 amendment included an appendix (Appendix A) that described, in detail, how NHDES determined that the proposed withdrawal satisfied the antidegradation provisions of Env-Wq 1708. A copy of Appendix A from WQC 2021-485A12IV-001.1 is included at the end of this Certification.

As described in Appendix A, the temporary withdrawal approved in WQC No. 2021-485A12IV-001 was for a maximum withdrawal of 2.2 cfs and allowed up to 1.6 percent of the water flow of the Pemigewasset River to be withdrawn from the location of the withdrawal. Compared to the withdrawal approved in WQC No. 2021-485A12IV-001, the withdrawal restrictions specified in Condition E-11 for this Certification will result in less water being withdrawn on a daily basis for the following reasons:

- 1) The maximum allowable withdrawal is for 1.1 cfs, which is 1.1 cfs less than the rate NHDES approved for the temporary withdrawal;
- 2) The withdrawal will not exceed 1 percent of the river flow measured at the upstream USGS Gage 01075000 in Woodstock, which equates to less than 1 percent of the river flow at the location of the withdrawal due to the additional flow that will be added from the approximate 73.8 square miles of drainage area between the USGS Gage 01075000 and the withdrawal location (see Finding D-17): and
- 3) The proposed withdrawal will be shut off when certain conditions apply, such as when flow at the USGS Gage 01075000 is less than 60 cfs, which, based on the drainage area ratio method is approximately equal to 83 cfs at the location of the withdrawal (Finding D-17).

Because the proposed withdrawal conditions of this Certification are more restrictive than those approved in WQC No. 2021-485A12IV-001 for the temporary withdrawal, and because the temporary withdrawal satisfied the antidegradation provisions in Env-Wq 1708 (as shown in the attached Appendix A), it can be concluded that the withdrawal proposed for this Certification will also comply with the antidegradation provisions in Env-Wq 1708.

VIII. Best Management Practices (BMPs)

D-29. Facts C-36.h and C-36.i of this Certification include references to the antidegradation provisions of Env-Wq 1708 and state that “the department shall ensure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented” and NHDES “shall not approve any proposed discharge or activity that might cause degradation or lower water quality, without such conditions as are necessary to ensure that: a. Water quality will be adequate to protect existing uses; b. The highest statutory and regulatory requirements will be achieved for all new and existing point sources; and c. All cost effective and reasonable best management practices for nonpoint source control will be implemented.” As stated in Fact C-11 of this Certification, “Best Management Practices” (BMPs) are defined in Env-Wq 1702.07 as “those practices which are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level compatible with water quality goals.”

NHDES has determined that compliance with the conditions in this Certification will satisfy the above BMP requirements and serve to minimize degradation of the Pemigewasset River caused by the Activity. Examples include the following:

- 1) The withdrawal restrictions required in Condition E-11 will help to minimize the amount of water that may be withdrawn;
- 2) The water intake requirements in Condition E-10, which includes installation of a screen on the end of the pump intake pipe to prevent impingement and entrainment of aquatic organisms when the pump is operating;
- 3) The requirements in Condition E-8 to register and report the withdrawal with the NHDES Water Use Registration and Reporting program so that the cumulative effects of all major withdrawals and discharges can be tracked; and
- 4) The requirement in Condition E-9 to develop a water conservation plan for the proposed irrigation system to help increase the efficiency of the irrigation system which will help minimize the volume of withdrawn water needed for irrigation.

E. CERTIFICATION CONDITIONS

Unless otherwise authorized or directed by NHDES, the following conditions shall apply:

E-1. **Effective Date and Compliance with Certification Conditions:** This Certification shall become effective on the date of issuance and shall remain effective during the duration of the Activity. The Applicant shall construct and operate the Activity to comply with this Certification.

For an explanation and authority for this condition, see Finding D-8.

E-2. **Compliance with Water Quality Standards:** The Activity shall not cause or contribute to a violation of Surface Water Quality Standards.

For an explanation and authority for this condition, see Findings D-3 and D-8.

E-3. **Modification of Certification:** NHDES may amend and add additional terms and conditions as necessary to ensure compliance with Surface Water Quality Standards, when authorized by law, and,

if necessary, after notice and opportunity for hearing.

For an explanation and authority for this condition, see Findings D-8 and D-14.

- E-4. **Proposed Modifications to the Activity:** The Applicant shall consult with and receive prior written approval from NHDES regarding any proposed modifications to the Activity that could have a significant or material effect on the conditions of this Certification including any changes to Activity operation or approved plans required by this Certification. If necessary, NHDES may modify the Certification in accordance with condition E-3 of this Certification.

For an explanation and authority for this condition, see Finding D-8.

- E-5. **Compliance Inspections:** In accordance with applicable laws, the Applicant shall allow NHDES to inspect the Activity and affected surface waters to monitor compliance with the conditions of this Certification.

For an explanation and authority for this condition, see Finding D-8.

- E-6. **Transfer of Certification:** Should this Certification be transferred to a new owner, contact information for the new owner (including name, address, phone number and email) shall be provided to NHDES within 30 days of the transfer.

For an explanation and authority for this condition, see Finding D-8.

- E-7. **Compliance with Other Permits and Permitting Requirements:** The Applicant shall comply with all applicable permits and permitting requirements associated with the Activity, and any amendments or reissuances including, but not limited to, the following:

- NHDES Alteration of Terrain Permits and permitting requirements (see Facts C-49 through C-51 and Finding D-22);
- NHDES Wetlands permitting requirements (see Facts C-52 through C-54, Finding D-23 and Condition E-10.a); and
- NHDES Shoreland permitting requirements (see Facts C-55 through C-57, Finding D-24 and Condition E-10.a).

The conditions of any permits that NHDES issues to authorize activities related to the Activity shall become conditions of this Certification upon issuance of this Certification. Should there be any discrepancies between permit requirements, the more stringent requirement as it relates to compliance with Surface Water Quality Standards shall apply.

For an explanation and authority for this condition, see Finding D-8 as well as the citations referenced in this condition.

- E-8. **Water Use Registration and Reporting:** Within 30 days of commencing the Activity, the Applicant shall register the withdrawal from the Pemigewasset River with the NHDES Water Use Registration and Reporting Program and comply with all WURRP requirements.

For an explanation and authority for this condition, see Fact C-46 and Findings D-8 and D-25.

- E-9. **Water Conservation Plan:** Prior to operation of the Activity, the Applicant shall submit, and receive

NHDES approval of, a Water Conservation Plan (WCP) that complies with Env-Wq 2101 (see Facts C-43 through C-45) and includes all irrigation uses associated with the Activity. The Applicant shall then implement the approved WCP.

For an explanation and authority for this condition, see Findings D-8 and D-26 as well as the citations referenced in this condition.

E-10. Water Intake Structure:

- a. Prior to installation of the intake pipe in the Pemigewasset River, the Applicant shall provide NHDES with a description and sketch showing how the pipe will be installed in the river. The Applicant shall not proceed with installation of the pipe in the river until NHDES has approved the design and determined if a Shoreland Impact Permit or Wetlands Permit from NHDES is needed. If a Shoreland Impact Permit or Wetlands Permit from NHDES is needed, the Applicant shall obtain the necessary permit(s) from the NHDES Wetlands Bureau prior to proceeding with installation of the intake pipe (see Facts C-52 through C-57, Findings D-23 and D-24 and Condition E-7). Prior to withdrawing water from the Pemigewasset River, the Applicant shall provide the Water Quality Certification Supervisor of the NHDES Watershed Management Bureau with written evidence from the NHDES Wetlands Bureau that the above permits have been approved by NHDES or the permits are not needed.
- b. The end of the water intake pipe shall be equipped with a screen to reduce velocities around the intake to prevent impingement of aquatic organisms (see Finding D-1). The screen shall be designed per guidance provided by the NHFGD (see Finding D-27). The Applicant shall provide NHDES with a photo of the installed screen and written evidence that the screen is acceptable to NHFGD prior to withdrawing water.
- c. The intake pipe shall be kept as close as practicable to the bank of the Pemigewasset River, be suspended mid-depth, and shall not interfere or cause unsafe conditions associated with boating and other recreational uses of the river.
- d. The intake pipe shall be installed and removed by hand.
- e. Maintaining and cleaning the screens on the end of the intake pipe shall be conducted in a manner that will not cause a violation of Surface Water Quality Standards, for parameters including, but not limited to, turbidity (see Fact C-29) and visible plumes (see Facts C-24 and C-26).

For an explanation and authority for this condition, see Finding D-8 the citations referenced in this condition.

E-11. Withdrawal Conditions: Unless otherwise approved by NHDES in writing, the withdrawal from the Pemigewasset River shall comply with the following:

- a. Be at the location shown in the Application (see Introduction A and Fact C-61);
- b. Only occur from April 1 to October 30;
- c. Not occur for at least one calendar day prior and during a precipitation event in the vicinity of the Activity that is predicted to equal or exceed 2.6 inches over a 24-hour period⁴;
- d. Not occur for at least one calendar day following a precipitation event in the vicinity of the

⁴ The Applicant proposed not withdrawing water before, during and after storms with an average return frequency of once every 2 years (i.e., a 2-year storm) or less (i.e., a 5-year storm, 10-year storm, etc.). NHDES used the Northeast Regional Climate Center data (<http://precip.eas.cornell.edu/>) to determine the rainfall for 2-year storm with a duration of 24 hours in Thornton at the location of the withdrawal. This is the same reference used by the NHDES Alteration of Terrain (AoT) Bureau for AoT permits.

- Activity that results in 2.6 inches or more of precipitation over a 24-hour period;
- e. Not exceed 482,400 gallons per any 24-hour period;
 - f. Not exceed 1.11 cfs or 500 gpm when upstream river flow is greater than or equal to 111 cfs as measured by USGS Gage 01075000;
 - g. Not exceed a flow rate of 1 percent of upstream river flow when upstream river flow is less than 111 cfs and greater than or equal to 60 cfs as measured by USGS Gage 01075000;
 - h. Not occur when upstream river flow is less than 60 cfs as measured at USGS gage 01075000;
 - i. Be based on daily checks of instantaneous river flow at USGS Gage 01075000; and
 - j. Be automatically shut off when there is 0.67 feet or less of freeboard in the Storage Pond.
 - k. Only occur while the Storage Pond has an impervious liner to prevent loss of water via infiltration, which will help to minimize the volume of withdrawn water needed to keep it filled.

For an explanation and authority, see Findings D-1, D-8, D-21, D-28 and D-29 as well as the citations referenced in this condition.

- E-12. **Precipitation Monitoring Plan:** Prior to operation of the Activity, the Applicant shall submit, and receive NHDES approval of, a plan that describes how the predicted and actual precipitation amounts (in inches) will be determined to comply with Conditions E-11.c and E-11.d. The Applicant shall then implement the approved plan.

For an explanation and authority for this condition, see Findings D-1 and D-8.

- E-13. **No Direct Discharge to Pemigewasset River:** Withdrawn water shall not be discharged directly to the Pemigewasset River (e.g., via overland, piped, or channelized flow).

For an explanation and authority for this condition, see Findings D-1 and D-8.

- E-14. **Limitations on Use of Withdrawn Water:** This certification does not authorize withdrawing water from the Pemigewasset River to the Storage Pond for any reason other than the following reasons (see Introduction A and Finding D-1):
- a. To irrigate landscaping, lawn, and a 9-hole golf course located at Owl's Nest Resort & Golf Club;
 - b. Aquatic recreation;
 - c. Fire suppression; and
 - d. Other reasons if authorized by NHDES in writing.

For an explanation and authority for this condition, see Finding D-8 as well as the citations referenced in this condition.

- E-15. **Recordkeeping:** During periods of withdrawals from the Pemigewasset River, the Applicant shall maintain daily electronic records demonstrating compliance with this Certification. To the maximum extent practicable, records shall be automatically generated and recorded, and operation of the systems shall be automated. Daily records shall include the following:
- a. Date;
 - b. River flow at USGS Gage 01075000 (Pemigewasset River at Woodstock, NH) and the time the river flow at the gage was recorded;
 - c. Time that withdrawals start and stop;
 - d. Pumping rate (in cfs and gpm);
 - e. Withdrawal / river flow (in percent);

- f. Volume pumped (in gallons);
- g. Storage Pond freeboard (in feet);
- h. Source of predicted rainfall amounts (in inches);
- i. Predicted rainfall amounts for that day and the next day;
- j. Actual daily rainfall amounts (in inches) as measured by a rain gage located at the Owls Nest Resort; and
- k. Time that screens on the intake pipe were cleaned.

For an explanation and authority for this condition, see Finding D-8.

- E-16. **Notification of Non-compliance:** The Applicant shall notify NHDES via email⁵ within 48 hours of any discovery of non-compliance with this Certification. Such notification shall include the date(s) of non-compliance, reasons for non-compliance, corrective actions taken to prevent such non-compliance from reoccurring, and date(s) the Applicant achieved compliance.

For an explanation and authority for this condition, see Finding D-8.

- E-17. **Reporting:** The Applicant shall submit the following reports to NHDES via email⁵:
- a. Electronic records required under Condition E-15 of this Certification shall be maintained by the Applicant and submitted to NHDES within 7 days of receiving a written request by NHDES.
 - b. By January 31st of each year beginning the year after this Certification is issued, or within 14 days of receiving a written request from NHDES, the Applicant shall prepare and submit a report to NHDES demonstrating compliance (via text, tables, plots and supporting data) with Conditions E-10, E-11, E-15, and E-16. Supporting data shall include a working Excel workbook showing all calculations. Should there be any non-compliance with this Certification (see Condition E-16), the Applicant shall provide a summary of the non-compliances, including the reasons for the non-compliance and corrective actions taken to prevent such non-compliances from reoccurring.

For an explanation and authority for this condition, see Finding D-8.

- E-18. **Operations, Maintenance, and Reporting Plan (OMRP):** Prior to withdrawing water from the Pemigewasset River under this Certification, the Applicant shall prepare and obtain NHDES approval of an Operations, Maintenance, and Reporting Plan (OMRP) that describes, in detail, how the withdrawal will be operated, recorded, and reported so that the Applicant complies with Conditions E-10, E-11, E-15, E-16, and E-17 of this Certification. Upon approval by NHDES, the Applicant shall then implement the OMRP. If, at any time, revisions to the conditions in this Certification that affect the OMRP are directed by or approved by NHDES, the Applicant shall update the OMRP as necessary within 60 days (or other time period acceptable to NHDES) of being notified by NHDES, submit the revised OMRP to NHDES for approval, and then implement the most recently approved OMRP.

For an explanation and authority for this condition, see Finding D-8.

F. ENFORCEMENT

Certification conditions are subject to enforcement mechanisms available to the state of New Hampshire.

⁵ Email records to the NHDES Water Quality Certification Supervisor at wqc@des.nh.gov.

G. APPEAL PROCEDURE

Any person aggrieved by this decision may appeal to the N.H. Water Council ("Council"). An Environmental Fact Sheet with information on appealing a decision of the N.H. Department of Environmental Services can be found at the following link: [CO-7 \(nh.gov\)](https://www.nh.gov/DES/CO-7). A link to the Council's rules, is available on the [New Hampshire Environmental Council website](https://www.nh.gov/DES/Environmental-Council-website) (or more directly at the [Water Council page](https://www.nh.gov/DES/Water-Council-page)). Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

If you have questions regarding this certification, please contact James Tilley at (603) 271-0699 or james.tilley@des.nh.gov.

H. SIGNATURE & DATE



Rene J. Pelletier, P.G., Director
NHDES Water Division

7/26/22
Date

- ec: Chad Stocker, Applicant
- Debra Shepard, Town Administrator, Town of Thornton
- Corey Davenport, Town Administrator, Town of Campton
- Judy Faran, Chair, Pemigewasset River Local Advisory Committee
- John Magee (NHFGD)
- Tracie Sales (NHDES)
- Stacey Herbold (NHDES)
- Kelsey Vaughn (NHDES)
- Christina Rambo (NHDES)
- Ted Diers (NHDES)

I. APPENDIX A

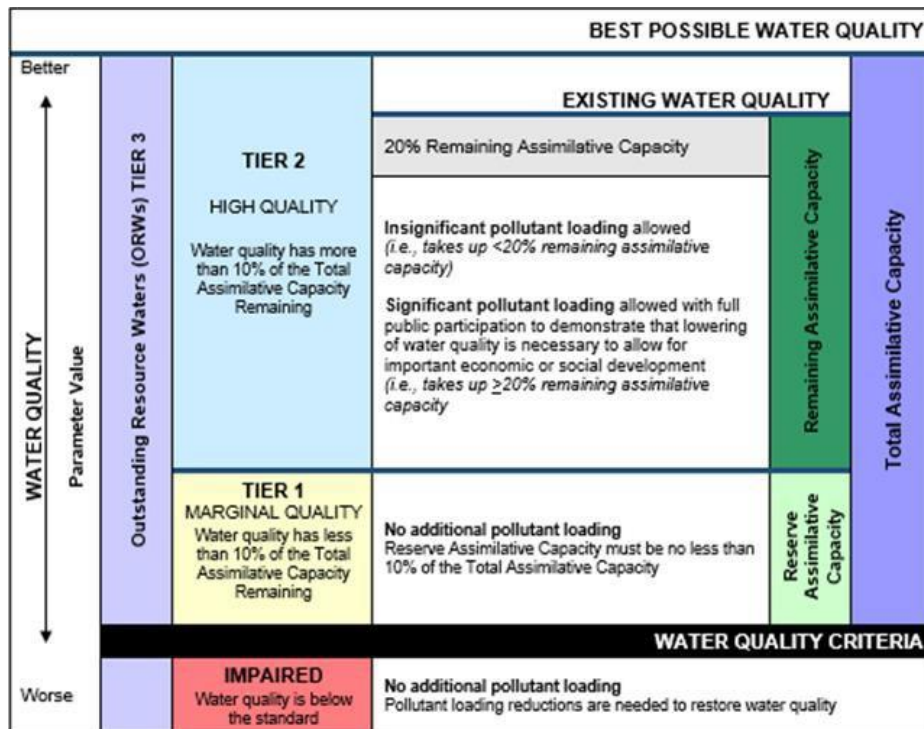
Appendix A is from the first amendment of the water quality certification issued on August 5, 2021 (2021-485A12IV-001.1) for the temporary withdrawal of water from the Pemigewasset River to initially fill the Storage Pond at the Owls Nest Resort. It is included to show how it was determined that the withdrawal satisfied the applicable water quality standard for water flow in Env-Wq 1705.01(a) and the antidegradation provisions in Env-Wq 1708.

APPENDIX A

METHODOLOGY FOR DETERMINING ALLOWABLE TEMPORARY WITHDRAWAL FROM THE PEMIGEWASSETT RIVER TO FILL MAN-MADE LINED POND

Antidegradation provisions of the NH surface water quality standards are included in Env-Wq 1708 and apply to water withdrawals [Env-Wq 1708.02(d)].¹ According to Env-Wq 1702.03 ““Antidegradation” means a provision of the water quality standards that maintains and protects existing water quality and uses.” Figure A-1 shows how the various antidegradation terms (i.e., total assimilative capacity, water quality criteria, reserve and remaining assimilative capacity, etc.) relate to one another. The following describes how antidegradation was applied to determine flows that would be protective of the aquatic life designated use and allowable withdrawals from Pemigewasset River that would be considered “insignificant” as defined in the antidegradation regulations.

Figure A-1: Antidegradation Schematic



¹ Env-Wq 1708.02: Antidegradation shall apply to: (a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or adversely affect the existing or designated uses; (b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities; (c) Any increase in flow alteration over an existing alteration; and (d) Any hydrologic modifications, such as dam construction and water withdrawals.”

a. Equations for Determining Total, 10% Reserve (Tier 1) and Remaining Assimilative Capacity.

Rules for assessing surface waters to determine the total, 10% reserve and remaining assimilative capacity are included in Env-Wq 1708.08, Assessing Waterbodies. Applicable regulations are provided below.

Env-Wq 1708.08 (a) "The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in question."

Env-Wq 1708.08 (c) "Where flows will or might be altered, existing conditions shall be established based on the existing maximum allowed water withdrawals or impoundment, diversion, or fluctuation of streamflow, as applicable."

Env-Wq 1708 (d) "Remaining assimilative capacity shall be evaluated by comparing existing water quality, as specified in (b) and (c) above, to the state's water quality criteria."

Env-Wq 1708.08 (f): "Subject to (h) below, if the department determines, based on the information submitted, that there is no remaining assimilative capacity for a specific parameter, no further degradation with regard to that parameter shall be allowed."

Env-Wq 1708.08(g): "Subject to (h) below, if the department determines that there is some remaining assimilative capacity, then the department shall proceed in accord with Env-Wq 1708.09."

Env-Wq 1708.08 (h): "Determinations made pursuant to (f) or (g), above, shall account for Env-Wq 1705.01, which requires the department to reserve no less than 10% of the surface water's assimilative capacity."

(Env-Wq 1705.01(a): "Subject to (b) below, the department shall hold not less than 10 percent of the assimilative capacity of each surface water in reserve to provide for future needs.")

Env-Wq 1703.01 entitled "Water Use Classifications; Designated Uses" includes the following regarding flow quantity:

(d) Unless high or low flows are caused by naturally-occurring conditions, surface water quantity shall be maintained at levels that protect existing uses and designated uses.

As shown in Figure A-1 and the following equation, the Total Assimilative Capacity (TAC) is equal to the "Best Possible Water Quality" (or in this case the Best Possible Flow or Q best) minus the Water Quality Criteria flow or Q wqc.

$$\text{Equation 1: } TAC = Q_{\text{best}} - Q_{\text{wqc}}$$

Referring once again to Figure A-1, the flow corresponding to 10% reserve assimilative capacity (10%RESAC, Tier 1) can be determined by the following equation:

$$\text{Equation 2: } Q \text{ (10\%RESAC or tier 1)} = Q \text{ wqc} + (0.10 \times \text{TAC})$$

According to Figure A-1 and the following equation, the remaining assimilative capacity (REMAC), is equal to the Existing Water Quality (or in this case the Existing Flow or Q_{exist}) minus the $Q_{\text{tier 1}}$.

$$\text{Equation 3: } \text{REMAC} = Q_{\text{exist}} - Q_{\text{tier 1}}$$

According to Env-Wq 1708 (d), the Remaining Assimilative Capacity (REMAC) is evaluated "... by comparing existing water quality, as specified in (b) and (c) above, to the state's water quality criteria." Env-Wq 1708 (c) states that "Where flows will or might be altered, existing conditions shall be established based on the existing maximum allowed water withdrawals or impoundment, diversion, or fluctuation of streamflow, as applicable." As discussed later, existing flows for this Activity will be based on near-continuous, real-time instream flow measurements made by the Applicant so that existing flows will always be representative of what is actually occurring upstream, both now and in the future. Whenever upstream river flows fall below specified thresholds, withdrawals will need to be reduced to *de minimis* levels (with the possible exception of temporary, relatively infrequent and short-term excursions associated with situations beyond the control of the Applicant that may adversely impact human health).

b. Equation for Withdrawal to be "Insignificant"

Conditions that will allow the withdrawal to be considered "insignificant" are described below.

According to Env-Wq 1708.09 "Significant or Insignificant Determination":

"(a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality."

"(b) The department shall not approve a discharge or activity that will cause a significant lowering of water quality unless the applicant demonstrates, in accordance with Env-Wq 1708.10, that the proposed lowering of water quality is necessary to achieve important economic or social development in the area where the waterbody is located."

Therefore, in terms of flow, withdrawals can be considered "insignificant" for antidegradation purposes, if the withdrawals use no more than 20% of the remaining assimilative capacity (REMAC). This can be accomplished by installing an upstream river gage and a pumping system that can automatically vary the rate of withdrawal based on the upstream river flow. The rate of withdrawal at any time would be calculated in accordance with the following equation:

$$\text{Equation 4: } \text{WD}_{\text{insig}} = 0.20 \times [Q_{\text{exist}} - Q_{\text{tier 1}}]$$

Where:

WD_{insig} = the maximum that can be withdrawn to be considered "insignificant" [i.e.,

without exceeding 20% of the remaining assimilative capacity (REMAC)],

$Q_{\text{exist}} = Q_{\text{up}}$ = the river flow measured at a gage upstream of the withdrawal or the river flow measured just downstream of the withdrawal plus the current rate of withdrawal.

$Q_{\text{tier 1}} = \text{Tier 1}$ (see Equation 2)

This certification is focused on withdrawals that are considered “insignificant” in terms of the antidegradation regulations. By doing so, the Applicant is not required to go through a full antidegradation review as described in the next section.

c. Additional Antidegradation Requirements If Withdrawal is “Significant”

If the Applicant wants to withdraw more than 20% of the remaining assimilative capacity in river, the withdrawal would be considered “significant” and the Applicant would need to demonstrate, in accordance with Env-Wq 1708.10, that

- the proposed additional withdrawal is necessary to accommodate the Activity;
- the Activity will provide net economic or social development in the area in which the waterbody is located; and
- that net social and economic benefits outweigh the environmental impact.

To determine if the above criteria are met, the Applicant would need to submit an Alternative Analysis as described in Env-Wq 1708.10(d), (e), and (f). If, after reviewing the information provided by the Applicant, NHDES makes a preliminary determination to approve the request, NHDES must provide opportunity for public comment (including a public hearing if requested) in accordance with Env-Wq 1708.11. Following the public participation process, NHDES would then make a final decision to allow or deny the request. Note that in this case, NHDES may also require a site specific study to determine flows necessary to protect select fish/macroinvertebrate species and life stages (such as a study based on the Instream Flow Incremental Method or IFIM).

d. Methodology for Determining “Insignificant” Withdrawals

As previously discussed, the allowable withdrawal is dependent on the existing upstream flow (Q_{exist}) and $Q_{\text{tier 1}}$ (see Equation 4). $Q_{\text{tier 1}}$ is dependent on the TAC which is dependent on knowing Q_{wqc} and Q_{best} (see Equation 1 and Equation 2 above).

Ideally, a Water Management Plan (WMP), such as the [Lamprey River WMP](#) would be prepared to determine the magnitude, frequency, duration and timing of flows necessary to support designated uses such as aquatic life in the river (i.e., Q_{wqc}). The WMPs include biological studies and models to determine protective instream flows (PISFs) for various species and life stages of fish, macroinvertebrates and other species of aquatic life. Such studies, however, are very expensive and typically take several years to complete. In lieu of a WMP or biological

study, for this certification NHDES relied on a hydrologic approach to determine protective instream flows (PISFs) (i.e., Q wqc). Hydrologic analyses have been developed and used by others such as the U.S. Fish and Wildlife Service's New England Aquatic Base Flow Policy² to estimate protective flows for aquatic life.

Development of protective instream flows in the WMPs reference the Natural Flow Paradigm (NFP) and are based on the river in its "natural" condition (i.e., flows without human modification). The NFP recognizes that the description of protective flows requires the use of the following stream flow components: flow magnitude, frequency, duration, timing, and rate of change. NHDES believes it is important to be as consistent as possible with the Natural Flow Paradigm (NFP).

The protective instream flows (PISFs) for the Lamprey River WMP were based on a long-term hydrograph that was adjusted to reflect natural conditions (i.e., without human influence). The following describes the process used to develop a "natural" hydrograph and flow statistics for the Pemigewasset River and how this information was used to determine PISFs (i.e., Q wqc) and withdrawals that would be considered "insignificant" (i.e., withdrawals that will use no more than 20 percent of the remaining assimilative capacity of the river in terms of flow).

Flows at USGS gage 01075000 on the Pemigewasset River at Woodstock, New Hampshire (a relatively rural watershed) was used as the base for developing "natural" flow statistics. This gage is located approximately eight miles upstream of the proposed withdrawal location. The drainage area to the USGS gage is 193 square miles which is approximately 72 percent of the drainage area at the proposed withdrawal location which has a drainage area of approximately 266.8 square miles. Statistics were then run on the "natural" hydrograph for the period covering 2001-2020³ to determine flow percentiles for each month (i.e., the percent of time flows were less than a given flow in each month, which is the same as the percent of time a flow is not exceeded). Monthly statistics were selected because flows can change significantly by month, different aquatic species and life stages are more dependent on flows during various months, and it is important to retain as much natural variability as possible according to the concept of the Natural Flow Paradigm. The monthly flow percentiles at the gage were then multiplied by the ratio of the drainage areas (266.8/193) to determine the monthly flow percentiles at the proposed withdrawal location. Transposition of the gage flows by drainage area were considered sufficient since a review of the NHDES Water Use database revealed that the sum of the existing withdrawals from the USGS gage downstream to the proposed withdrawal is only approximately 0.1 percent of the 7Q10 low flow⁵ and that a portion of the existing withdrawals is returned as base flow to the river via septic system discharges to the groundwater.

Percentile flows are often noted as Q20, Q30, etc. For instance, Q25 represents the 25th percentile of all flows in the month and is the flow that is not exceeded 25 percent of the time in that month [or, conversely, the flow that is exceeded 75% of the time (i.e., 100-25)]. This would be considered a relatively low flow. Likewise, Q75, represents the 75th percentile of all flows and is the flow that is not exceeded 75 percent of the time (or is exceeded 25 percent of the time). This would be representative of a relatively high flow. Q50 is the middle flow meaning it is the flow that is both exceeded and not exceeded 50 percent of the time (i.e. the median flow). Estimated monthly and seasonal statistics for the Pemigewasset River at the proposed withdrawal location are

² [U.S. Fish and Wildlife Service's New England Aquatic Base Flow Policy](#)

³ The USGS gage was offline from 9/30/1977 to 9/30/2001.

shown in Table A-1.

Table A-1: Monthly Flow Statistics at the Proposed Withdrawal Location on the Pemigewasset River

Month	Q10	Q20	Q25	Q30	Q40	Q50	Q60	Q70	Q75	Q80	Q90
1	228	277	298	317	346	373	415	484	537	604	885
2	159	194	207	216	242	268	304	358	391	441	553
3	152	195	222	260	325	382	464	591	693	801	1,294
4	489	705	824	911	1,115	1,320	1,604	2,032	2,326	2,749	4,132
5	653	812	886	944	1,118	1,318	1,535	1,825	2,012	2,157	2,862
6	277	357	388	415	496	570	646	771	847	945	1,366
7	177	225	246	265	308	368	430	531	610	705	1,055
8	130	165	176	191	220	261	314	388	458	541	861
9	98	122	139	151	178	209	259	335	382	450	706
10	147	217	237	266	332	447	575	742	834	985	1,712
11	304	367	398	432	510	589	694	840	949	1,119	1,713
12	315	370	393	419	477	565	645	765	865	1,001	1,583
Annual	173	239	277	308	375	465	586	774	899	1,087	1,797
All flows are in cubic feet per second (cfs)											

For the proposed Activity, Q75 was selected as Q best and Q25 was initially selected as Q wqc for each month (from Table A-1). With regards to frequency of occurrence, these flows equally bracket the Q50 flow (i.e., the median or middle flow). NHDES believes that if the Q wqc is set below the median, Q best should be set above the median to minimize the impact of the withdrawals on the “natural” median value for each month.

Before proceeding, it is important to note that whatever flow is selected for Q wqc for each month, NHDES is not implying that it is appropriate to withdraw water down this flow for the entire month. Rather, selection of Q wqc and Q best allows one to calculate Q tier 1 which sets the threshold for antidegradation purposes, above which some limited withdrawals may be allowed as long as there are no violations of surface water quality standards and the withdrawals do not appreciably affect the natural variability of flows by “flatlining”⁴ the hydrograph.

Upon further analysis, it was realized that setting Q wqc equal to Q25 for all months may unnecessarily limit the amount of water that could be withdrawn during months of high flow (such as during the spring). If withdrawals are necessary, it’s generally best to allow them when river flows are relatively high. It was therefore decided to lower the Q wqc depending on the maximum percentage of water that the proposed Activity could withdraw. This is based on the following theory:

⁴ Flatlining the hydrograph means the downstream river flow remains constant or at a near-constant level for a substantial amount of time (hours) due to the withdrawal.

As the maximum percent of river flow withdrawn increases, the frequency that it is allowed to occur should decrease to minimize the impact on the resource and the monthly median flow.

Based on the above theory, the following criteria were selected to guide the selection of Q wqc for the proposed withdrawal. As indicated in Table A-2 below, during the temporary withdrawal period of April through August, these criteria allow a maximum of approximately 1.3 percent of the water to be withdrawn (which occurs in August), which is considered reasonable. For other projects involving withdrawals or diversions, different criteria may apply.

Monthly Q wqc = Monthly Q10 if the maximum percent of upstream river flow withdrawn is no more than 5%.

Monthly Q wqc = Monthly Q20 if maximum percent of upstream river flow withdrawn is greater than 5% and no more than 10%.

Monthly Q wqc = Monthly Q25 if maximum percent of upstream river flow withdrawn is greater than 10% and no more than 15%.

Knowing Q wqc and Q best for each month, Equation 1, Equation 2, Equation 3 and Equation 4 (see sections a. and b. above) were then used to determine the monthly TAC, Q tier 1, REMAC and withdrawal that would not exceed 20% of the REMAC, respectively. The maximum percent of river that could be withdrawn each month was determined by setting Equation 4 equal to the maximum proposed withdrawal of 2.2 cfs (987 gpm), solving for Q up, and then dividing 2.2 cfs by Q up.

Final monthly values of Q wqc, Q best, and Q tier 1 that will result in withdrawals that are considered “insignificant” (i.e., will use no more than 20 percent of the remaining assimilative capacity), for the requested withdrawal months (shaded) are shown in Table A-2. The maximum percent of river withdrawn each month by the proposed Activity is also presented.

Table A-2: Monthly Values of Q wqc, Q best, and Q tier 1 to be “Insignificant” (all river flows are at the proposed withdrawal location)

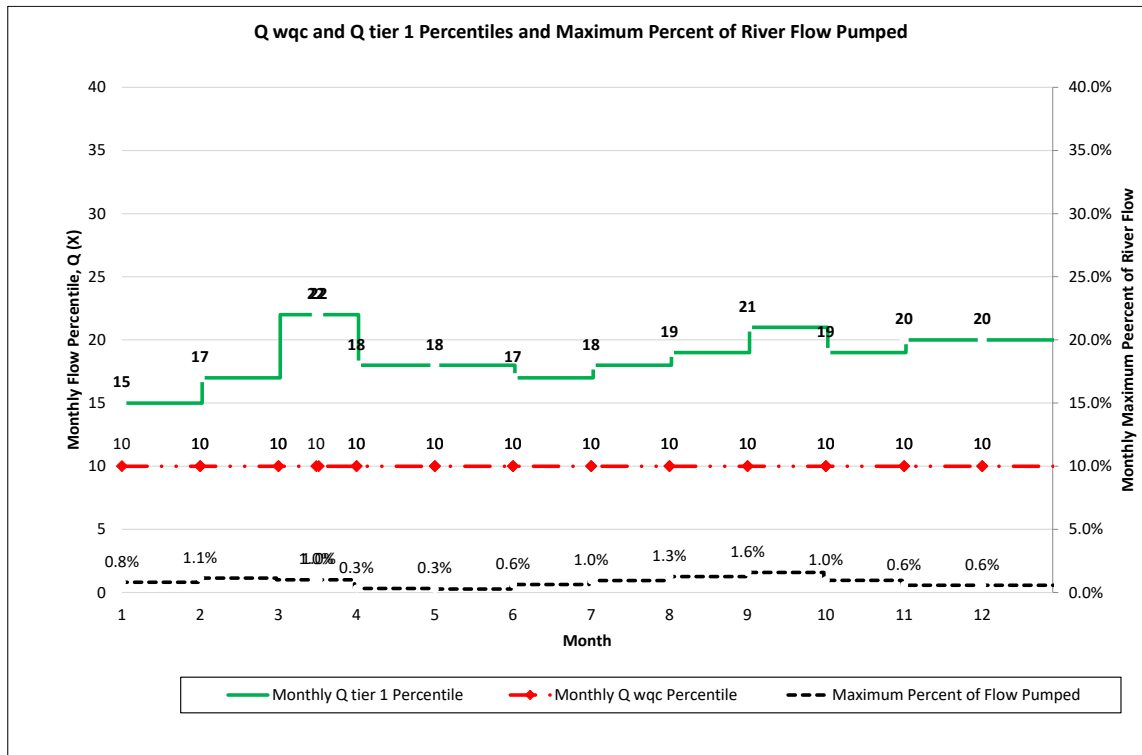
Month	Q wqc (cfs)	Approximate Percentile for the month of Q wqc	Q best = Q75 for month (cfs)	Maximum % used of Remaining Assimilative Capacity (REMAC)	Q tier 1	Max Pump Rate (cfs)	Min Qup to pump 2.2 cfs and be less than 20% REMAC (cfs)	Max Pump Rate / Min Qup (%)
1	228.1	Q10	537.1	20%	259.0	2.200	270.0	0.8%
2	159.0	Q10	391.3	20%	182.2	2.200	193.2	1.1%
3	152.1	Q10	692.7	20%	206.1	2.200	217.1	1.0%

Month	Q wqc (cfs)	Approximate Percentile for the month of Q wqc	Q best = Q75 for month (cfs)	Maximum % used of Remaining Assimilative Capacity (REMAC)	Q tier 1	Max Pump Rate (cfs)	Min Qup to pump 2.2 cfs and be less than 20% REMAC (cfs)	Max Pump Rate / Min Qup (%)
4	488.6	Q10	2326.1	20%	672.4	2.200	683.4	0.3%
5	652.6	Q10	2011.6	20%	788.5	2.200	799.5	0.3%
6	276.6	Q10	846.8	20%	333.7	2.200	344.7	0.6%
7	177.0	Q10	610.4	20%	220.3	2.200	231.3	1.0%
8	129.7	Q10	458.3	20%	162.5	2.200	173.5	1.3%
9	98.4	Q10	381.9	20%	126.8	2.200	137.8	1.6%
10	146.7	Q10	834.0	20%	215.4	2.200	226.4	1.0%
11	304.4	Q10	949.5	20%	368.9	2.200	379.9	0.6%
12	315.2	Q10	864.8	20%	370.2	2.200	381.2	0.6%

Shaded cells represent the months that the proposed temporary withdrawal may occur.

As shown in Table A-2 and in Figure A-2 the monthly percentile for the monthly Q wqc (as well as for the monthly Q tier 1 flows) increases as the maximum percent of the river flow pumped [Max Pump Rate/ Min Q up (%)] increases. This is in accordance with the previously presented theory and criteria for establishing Q wqc.

Figure A-2: Monthly Q wqc and Q tier 1 Percentiles and Maximum Percent of River Flow Pumped (all river flows are at the proposed withdrawal location)



e. De minimis Withdrawal

In studies such as the previously discussed Lamprey River WMP, a *de minimis* withdrawal equal to 5 percent of the 7Q10 flow⁵ is allocated to water users regardless of inflow. If new water users are added, the *de minimis* amounts are reapportioned as needed. For this Activity, NHDES has decided to set the *de minimis* withdrawal equal to 1% of Q up, provided they do not result in any surface water quality violations and provided there are no new water users that require a portion of this *de minimis* flow. Having a *de minimis* based on the percent of upstream flow allows less water to be withdrawn during low flow periods and more water to be withdrawn as flows increase. This is expected to be protective of aquatic life and allow at least some volume of water to be withdrawn in each of the requested months.

f. Summary of Allowable Withdrawals

⁵ The 7Q10 in the Pemigewasset River at the point of withdrawal is estimated to be approximately 80.2 cfs which is based on applying the DFLOW program to the Pemigewasset River gage for the years 2001-2020, and then transposing that value downstream to the Owls Nest withdrawal. Five percent of the 7Q10 is 4.01 cfs or 1,799 gpm.

The amount of withdrawal that can be withdrawn at any time to be considered “insignificant” in terms of antidegradation (WD insig) is equal to Equation 4 (see section b. above). Equation 4 indicates that when the upstream river flow (Q up) is at or below the monthly Q tier 1 flow, no withdrawals are allowed. To facilitate filling the pond, the Applicant will be allowed to temporarily withdraw 1 percent of the upstream river flow (which, for this Activity, NHDES considers to be *de minimis*) or WD insig, whichever is greater, up to a maximum of 2.2 cfs (987 gpm) for the months shown. This assumes the withdrawals do not cause or contribute to any surface water quality violations and that there are no new withdrawals that require a portion of the *de minimis* withdrawal.

In summary, the allowable withdrawal is equal to the greater of the following with a maximum of 2.2 cfs (987 gpm):

WD insig = 0.20 x (Q up – Monthly Q tier 1) where:

Q up is equal to the river flow measured at a gage upstream of the withdrawal or the river flow measured just downstream of the withdrawal plus the current rate of withdrawal,

and

Monthly Q tier 1 is from Table A-2 (varies monthly).

Or

WD demin = 1% of Q up.

Taking into account antidegradation and the de minimus flow allowance of 1 percent, and assuming upstream river flow (Qup) is measured just upstream of the proposed withdrawal, Table A-3 summarizes the allowable withdrawals for the months when the proosed withdrawal will occur:

Table A-3: Summary of Allowable Withdrawals assuming Qup is measured just upstream of the Proposed Withdrawal Location

Month	Qup = River Flow measured just upstream of the withdrawal (cfs)	Maximum Withdrawal when river flow is greater than or equal to Qup (cfs)	Maximum Withdrawal when river flow is less than Qup (cfs)
April	220	2.2 cfs	= 0.01 x Qup
May	220		
June	220		
July	220		
August	173		

Similarly, Table A-4 shows the allowable withdrawals assuming Qup is equal to the river flow measured at the upstream USGS gage (01075000) in Woodstock. The intent of Table A-4 is to result in the same withdrawals as Table A-3. The Qup values shown in Table A-4 are equal to the Qup values in Table A-3 multiplied by the area transposition factor of 0.72 which is equal to the drainage area at the USGS gage (193 square miles) divided by the drainage area at the proposed withdrawal location (266.8 square miles). The factor of 0.0138 for computing allowable withdrawals when river flow is less than Qup is equal to the reciprocal of the area transposition factor (1/0.72) so that the deminimis withdrawals based on Qup at the USGS gage are equal to one percent of the Qup measured just upstream of the proposed withdrawal location.

Table A-4: Summary of Allowable Withdrawals assuming Qup is measured at the upstream USGS Gage 01075000 at Woodstock, NH

Month	Qup = Flow at USGS gage 01075000 in Woodstock NH (cfs)	Maximum Withdrawal when river flow is greater than or equal to Qup (cfs)	Maximum Withdrawal when river flow is less than Qup (cfs)
April	159	2.2 cfs	= 0.0138 x Qup
May	159		
June	159		
July	159		
August	125		

g. Examples

Figure A-3 and Figure A-4 show the maximum withdrawal, Q tier 1 and Percent of River Withdrawn (shown as Max Pump Rate/Qup) as a function of the upstream river flow (Q up) (as measured at the location of the withdrawal) for a low flow month (August) and a high flow month (April).

Figure A-3: Maximum Withdrawal, Q tier 1 and Percent of River Withdrawn –August (all river flows are at the proposed withdrawal location)

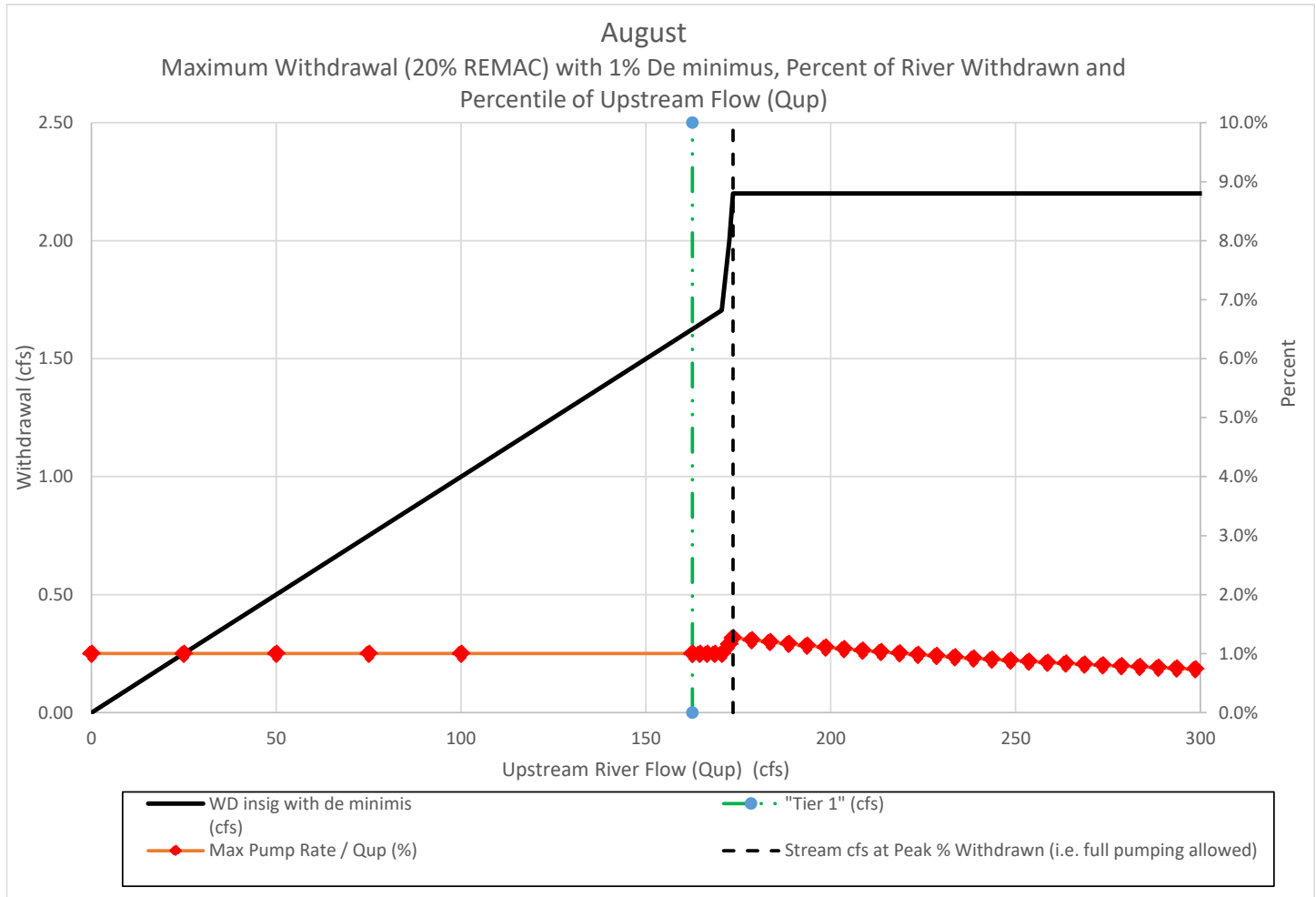


Figure A-4: Maximum Withdrawal, Q tier 1 and Percent of River Withdrawn – April (all river flows are at the proposed withdrawal location)

