

Ashuelot Pond Dam Village District  
P.O. Box 105  
Washington, NH

In re: Ashuelot Pond Dam  
Washington, NH  
Dam # 245.05

**NOTICE OF DECISION ON  
DETERMINATION OF LAKE LEVEL**

**Summary of Decision**

Based on a review of the Spring 2008 Report of the Drawdown Study of Ashuelot Pond, Washington, New Hampshire, prepared by the Department of Environmental Services (DES), as well as a review of the testimony from interested parties submitted in response to this report, I have concluded that the Notice of Decision, Determination of Lake Level issued in September 1991 (the 1991 Order), with the modifications specified in this Notice of Decision, strikes a proper balance between competing public interests to achieve the maximum public benefit. Accordingly, the owners of the dam at the outlet of Ashuelot Pond shall operate the dam in accordance with the 1991 Order, modified as follows:

Paragraph E.4 is modified by striking the existing paragraph and replacing it, in its entirety, with the following: "Drawdowns below 3.5 feet may be conducted once every five years for the purpose of Dam inspection, Dam repairs, and maintenance of shorefront improvements. These deep drawdowns may begin prior to Columbus Day provided that the Dam Owner gives notification by certified mail, receipt requested, to the Department of Environmental Services and the Town of Washington, and posts the notification in a place for public viewing no less than 30 days in advance.

Paragraph E.7 is modified by adding the following sentences to the end of the existing paragraph: "Emergency means that a potentially hazardous situation has developed or is likely to develop that, if not addressed, could affect the structural integrity or safe operation of the dam; could cause flooding either upstream or downstream of the dam; or could otherwise endanger public health, safety, or the environment. Weed control shall not be considered an emergency."

**Background**

Ashuelot Pond ("the Pond") is a natural waterbody of approximately 390 acres located in Washington. The lake level in the Pond is controlled by the dam at the outlet, which is now owned and operated by the Ashuelot Pond Dam Village District (APDVD).

There are two associations affiliated with the Pond, the Lake Ashuelot Estates, Inc. (LAE) and the Ashuelot Pond Association (APA). There are several property owners who are not affiliated with either

organization. The LAE members reside primarily on the northeast side of the Pond and the APA members primarily on the southwest side.

RSA 482:79, Investigation of Levels of Inland Waters, states in part that "the department may.... upon complaint of not less than 10 owners of property on any inland public water in the state, make a preliminary investigation of conditions affecting the use and enjoyment of any such public water whenever it shall be of the opinion that such investigation would be in the public interest.....If, as a result of such further investigation after public hearing, the department shall be of the opinion that such management and control is lawful, but that changes in the manner of the exercise of the right of management and control would be of benefit to others, without undue injury to the owner of the outlet, it shall direct such changes as in its opinion would be of benefit to the public and private interests concerned." DES has been involved in the management of the level of Ashuelot Pond, under the authority of RSA 482:79, since 1990, as described below:

- On October 16, 1990, 107 petitioners, principally individuals with property interests on the southwest side of the Pond, petitioned DES, requesting that the department hold a lake level hearing in accordance with RSA 482:79, regarding the drawdown of the Pond. At that time, the owner of the dam on Ashuelot Pond was the LAE. In their petition, the petitioners claimed that the Pond was being drawn down in September and refilled late the following spring. They claimed that this practice resulted in the loss of fire protection to the property owners on that side of the Pond, eliminated access to (at the time) 25-cabins and homes that did not have road access and needed to be accessed by water, and may have negatively impacted the quality of the water in the Pond as well as the aquatic species that inhabit the Pond. The petitioners also claimed that the previous owners of the dam never lowered the level of the Pond more than three feet; and the petitioners requested that this drawdown limit be reestablished.
- In July 1991, DES conducted a hearing in accordance with RSA 482:79 and issued the Order. (*Attachment A*). In the Order, DES granted the dam owner an annual drawdown of the Pond to a depth of 3.5 feet to begin no earlier than Columbus Day, with a drawdown below 3.5 feet every fifth year to conduct aquatic weed control, to conduct shorefront improvements, and to inspect and repair the dam. In accordance with Paragraph E.4 of the Order, these deep drawdowns below 3.5 feet may begin prior to Columbus Day provided that notification is given by certified mail, return receipt requested, to DES and the Town of Washington, and is posted in a place for public viewing no less than 30 days in advance.
- On June 14, 1999, members of the LAE submitted a petition to DES under RSA 482:79 for a lake level investigation of the Pond and a request for the rescission or modification of the Order. LAE claimed that the use and enjoyment of Ashuelot Pond had been adversely impacted by the Order and that LAE and property owners who use the Pond had been injured and harmed as a result. LAE maintained that the Order unduly restricts it by limiting the frequency, depth, and timing of a deep drawdown. Of primary concern to LAE was the extent to which, in their opinion, aquatic weeds have grown in the pond, and the limitations, under the 1991 Order, to control the growth by drawing down the pond in the winter to dry and freeze the weeds.
- DES agreed to conduct another lake level investigation, and held a public hearing in July of 2000. Based on the updated information and testimony collected during the investigation including numerous follow-up meetings and communications with the interested parties, DES concluded that there was not sufficient clear, convincing, scientific and objective evidence regarding the ecological impacts and effectiveness of deep drawdowns to control vegetation. To collect this information, DES volunteered the time and expertise of its staff to develop and implement a study of the Ashuelot Pond system. The purpose of this study was to document and measure any changes in the ecology or quality of Ashuelot

Pond as a result of a drawdown cycle (three years of no deep drawdown, and one year immediately following a deep drawdown), including documenting changes to the plant community in the system and how it was affected by deep drawdown. DES then issued a Notice of Decision on Determination of Lake Level at Ashuelot Pond on June 6, 2001 ("the 2001 Decision") denying the request of LAE to rescind the 1991 Order. However, the 2001 Decision provided that DES, in cooperation with LAE, APA and other interested parties, would conduct a detailed study of the weed growth and the overall ecology of the pond over a four-year period. In so doing, the Decision modified the 1991 Order by allowing additional deep drawdowns with prior approval from DES as necessary for the implementation of the DES study as described in the *Project Proposal for the Evaluation of Drawdown on the Aquatic Flora and Fauna of Ashuelot Pond ("the Pond")*, Washington dated March 28, 2001.

- Since the 2001 Order did not rescind the 1991 Order, LAE appealed the 2001 Decision to the New Hampshire Water Council ("the Water Council") on July 3, 2001, pursuant to RSA 541:31, V and Env-WC 203.10. The Water Council issued a denial of the Appeal on May 6, 2003.

### Findings

In accordance with the 2001 Decision, DES performed a detailed study of the water quality, plants, insects, amphibians and fish in Ashuelot Pond, from the summer of 2000 through the summer of 2005, to document and measure any changes in the ecology or quality of Ashuelot Pond as a result of a drawdown cycle (three years of no deep drawdown, and one year immediately following a deep drawdown). In addition, with input from LAE and APA, DES developed a survey of the users of Ashuelot Pond to determine if deep drawdowns impacted the landowner's or the visitor's use or perception of the Pond. The work was performed in accordance with the *Project Proposal for the Evaluation of Drawdown on the Aquatic Flora and Fauna of Ashuelot Pond ("the Pond")*, Washington dated March 28, 2001.

The results of this study were documented by DES in the Draft Final Report, Ashuelot Pond Washington, New Hampshire Drawdown Study, dated Spring 2008. The report was provided to LAE and other interested parties for review and comment. In addition, to ensure that all interested parties were informed of the availability of the report, DES held a public meeting on August 24, 2008, in the town of Washington. At this meeting the results of the study were presented, and an opportunity for public comment was provided. DES has also extended the deadline for public comments to January 2009, to ensure that all those interested in providing comment have the opportunity to do so. In addition, DES submitted the report for review to two independent scientists who are nationally recognized and highly regarded in the field of limnology.

The findings of the report, pertaining to each of the areas studied, are summarized below:

#### *Water Chemistry*

There do not appear to be any marked changes in water quality as a result of deep drawdowns in Ashuelot Pond.

#### *Macrophytes (Plants)*

On a lakewide basis, the overall percent of plant cover within Ashuelot Pond did not show a statistically significant change as a result of the deep drawdown in fall 2004. Data collected during the 2005 summer season were analyzed for statistically significant differences from the data set of non-deep drawdown years (2002-2004). On a plant-by-plant basis, most of the genera represented

in the pond showed no change, while only a few showed weakly significant changes (decreases or increases) as a result of deep drawdown, and only one showed a definitive statistical decrease (pondweed) in the pond. In the river, there was a small but overall statistically significant increase in plant cover in 2005 as compared with data sets from 2002-2004. The data indicate that plant percent cover increased overall, with arrowhead showing strong statistical increases in the river. Subtle increases in other species were also likely to account for this change.

#### *Macroinvertebrates (Insects)*

There were no statistically significant differences in the overall number of organisms found between the non deep drawdown years, and the deep drawdown year. While deep drawdown did not appear to affect the total number of organisms, it did have an impact on the diversity of the macroinvertebrates. In years before the deep drawdown, Dipterans were the dominant organisms; after the deep drawdown in 2005, Dipterans declined to only 18% of the organisms present, and Amphipods showed a statistically significant increase to 72% of the overall population.

#### *Amphibians (Frogs)*

It is not evident that frog populations were negatively impacted by deep drawdowns in Ashuelot Pond. Based on the data presented, frog populations are fairly stable in Ashuelot Pond, and frogs are reproducing as adult frogs are present, and egg masses are observed throughout the system each year.

#### *Fish*

Data from the fishery analysis in Ashuelot Pond suggest that there is instability in the sportfishery (bass) population in the lake. Mean relative abundance values for largemouth bass in Ashuelot Pond from all years sampled were at least 32% lower than statewide values calculated for 1997-2005. No significant differences in relative abundance estimates of non-bass species among years were found, although pumpkinseed showed decreases in years (2001 and 2005) following deep drawdowns.

#### *Perception Survey*

The user perception survey included questions on a number of categories relative to Ashuelot Pond. Most of the questions were asked to gauge the overall perception of the pond in the eyes of the nearshore residents. In general, more than half of the survey respondents indicated that Ashuelot Pond was in good condition (53%). Of the problems they did perceive, 'aquatic plants' was a common reply, with 57% of the respondents citing this as the primary problem. Many residents indicated that they noted that plants wash upon the shoreline on a daily basis (55%), and most noted that the most problematic area was in the river segment of the study area. Forty-eight percent of the respondents indicated that plants pose an impact to their recreational use of the pond. Changes to the fishery or wildlife over time do not appear to be a problem to the majority of survey respondents, as most respondents indicated that there was no change in the number of fish caught in the pond (75%).

Deep drawdowns have been occurring at Ashuelot Pond for decades. Thus, it is not possible to establish a baseline of the ecological condition of Ashuelot Pond had drawdowns never occurred; but, based on the findings in the report, deep drawdowns on a cycle of once every five years do not cause major impacts to the ecology of the Pond. However, the results of the study indicate that deep drawdowns have no significant effect on plant cover in the Pond. There were no dramatic declines in plant abundance in

any of the plant genera represented in the Pond to suggest that drawdown is a successful tool in reducing overall plant cover in the Pond. Though anecdotal information suggests certain plant genera decline as a result of deep drawdown, this scientific and objective study of the Pond, followed by a statistical analysis of the data, does not support that claim.

Whorled bladderwort has been cited by LAE as the most problematic plant in the Pond. Bladderwort is a free-floating aquatic plant that can achieve stem lengths of one to eight feet. The general habit of bladderwort is to start out the growing season as a turion in the lake sediments. The vegetative material elongates from the turion and floats in the water column with wind and wave activity. Generally, bladderwort forms inter-tangled mats of growth that float to the pond surface. These growths are most often observed drifting in the shallows of Ashuelot Pond, and floating onto the shoreline of waterfront properties. At its level of abundance, bladderwort is not posing any ecological harm to Ashuelot Pond, but shorefront property owners may be aggrieved by the abundance of those plants. However, as documented in the Drawdown Study, there is no statistically significant benefit from the deep drawdown, in terms of overall plant reduction, or even reduction in the target bladderwort species.

While not necessary for weed control, periodic deep drawdowns are important for inspecting the upstream face of the dam and monitoring the safety of the dam. DES records indicate the Dam is more than 135 years old, and active seepage is occurring through the dam as evidenced by seeps exiting the downstream face of the dam. Periodic inspection of the upstream face of the dam is needed to determine if voids are forming in the upstream face of the dam, which could threaten the safety of the dam. The Dam Owner has had the dam inspected by divers in the past, but voids in the upstream face of the dam cannot be reliably determined during dive inspections because of limited visibility. The 5-year schedule of deep drawdowns provided in the 1991 Order provides an opportunity for a detailed inspection of the upstream face of the dam.

The 1991 Order specifies that annual drawdowns begin no earlier than Columbus Day. However, in accordance with paragraph E.4 of the 1991 Order, the deep drawdowns, which can occur once every 5 years, can begin earlier. Ashuelot Pond has a drainage area of more than 25 square miles. Based on flow records from stream gages operated by the U.S. Geological Survey (USGS) in the Ashuelot River watershed, the average flows into Ashuelot Pond from this drainage area are nearly three times greater in October and November than they are in September. In addition, within this drainage area are four other lakes controlled by dams: Long Pond in Lempster, Sand Pond in Marlow, and May Pond and Millen Lake in Washington. The owners of three of these dams conduct drawdowns at these dams during the fall. Drawdowns are not performed at Long Pond, and May Pond is drawdown in late November. However, Sand Pond and Millen Lake are drawdown at or around Columbus Day, which adds more inflow, above the typically higher October river flows, into Ashuelot Pond. These higher inflows can equal or exceed the capacity of the discharge gates in the Ashuelot Pond Dam. To ensure that attempts at a deep drawdown are limited to only once every five years, the 1991 Order allows for the deep drawdowns to begin before Columbus Day. DES has determined that this provision remains appropriate.

### Decision

The 1991 Order, with the modifications specified below, strikes a proper balance between competing public interests to achieve the maximum public benefit. Accordingly, the owners of the dam at the outlet of Ashuelot Pond shall operate the dam in accordance with the 1991 Order, modified as follows:

Paragraph E.4 is modified by striking the existing paragraph and replacing it, in its entirety, with the following: "Drawdowns below 3.5 feet may be conducted once every five years for the purpose of Dam inspection, Dam repairs, and maintenance of shorefront improvements. These deep drawdowns may begin prior to Columbus Day provided that the Dam Owner gives

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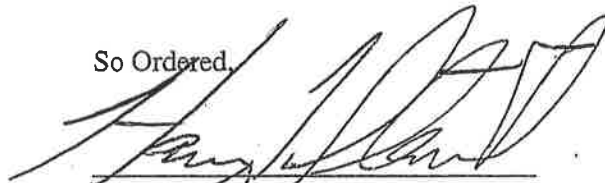
### Appeals

This Decision may be appealed to the New Hampshire Water Council ("Water Council") by filing an appeal to the Water Council that meets the requirements specified in the Procedural Rules of the Water Council, Env-WC 200, within 30 days of the date of this Decision. Copies of the rules are available from the DES Public Information Center at (603) 271-2975 or at <http://www.state.nh.us/desadmin.htm>.

Date:

August 28, 2009

So Ordered.



Harry T. Stewart, P.E.  
Director, Water Division  
Department of Environmental Services

### Attachments

- A. September 1991 Notice of Decision, Determination of Lake Level