



MADBURY CONSERVATION COMMISSION

13 TOWN HALL ROAD
MADBURY, NEW HAMPSHIRE 03823

April 9, 2017

Christine Bowman
NHDES Drinking Water & Groundwater Bureau
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095

Re: Preliminary Large Groundwater Withdrawal Permit for the City of Portsmouth's Madbury Well Field, Production Well #5.

Dear Ms Bowman,

At a public hearing requested by the Town of Madbury, the City of Portsmouth (Portsmouth) presented a preliminary application for a large groundwater withdrawal permit using a new well (#5) at their well field in Madbury off Freshet Rd. in the vicinity of Johnson Creek and the Dover-Madbury town line. Please accept these written comments from the Madbury Conservation Commission (MCC) regarding the presentation and preliminary application. We hope Portsmouth and NH DES will address our comments and concerns as this proposal moves forward.

1. If Well #5 is to increase Portsmouth's total system water withdrawal capacity, it should not be done at the expense of the natural water resources in the Johnson Creek area.
 - a. The application links the need for a new production well to the loss of the Haven Well at Pease due to contamination. We understand that a carbon filter system was installed in September 2016 to treat the Smith and Harrison wells and that a final design of the system to treat all three wells will occur in 2017, with construction anticipated to begin in late 2017. Should the treatment system prove successful, the need for increased capacity from Well #5 seems goes away.
 - b. We understand that Portsmouth is considering another new groundwater well (#13 of 2017 facilities projects described on their website, location not given). Increases in Portsmouth's total capacity should include an impact comparison to all the natural water resources. Consideration should also be given to the future land use restrictions and economic impacts placed on areas outside Portsmouth.
2. There should be a full understanding of the relationship between all the wells, their proposed management, and impacts to Johnson Creek and surrounding wetlands. A USGS document entitled, "Memorandum on the Hydrology of the Johnson Creek Area, Dover-Madbury, New Hampshire." by Edward Bradley from March 1957¹, makes clear connections between wells in the well field and Johnson Creek. The report speaks to reversing the flow in the water-table gradient due to withdrawal. Antidotal evidence from an abutting landowner would indicate there was a permanent lowering of the flow in Johnson Creek during the initial installation and beginning use of the well field. While Well #5 may be isolated or less connected to Johnson Creek than the older wells, a full understanding on how these wells impact the aquifer and on Johnson Creek is necessary. To the extent that Well #5 could assist the overall management of the Madbury well field by minimizing impacts to natural water resources in the area from the other wells, we could see Well #5 as a positive management tool. That management should be documented and monitored.
3. The contributions of Johnson Creek to the Great Bay should be considered. Johnson Creek is a relatively undeveloped watershed in the increasingly urbanized seacoast area. Its contribution of a "clean" water resource to the Great Bay should taken into consideration. If the management of the well field with the

addition of Well #5 does not improve or mitigate impacts to Johnson Creek, the withdrawal should not be allowed.

4. DES should exercise their jurisdictional powers to regulate the annual maximum yield of the well. It would seem that Portsmouth is requesting to pump, from Well #5, the maximum per year volume that they have pumped from their three other during a high withdrawal year. If all wells were pumped, they could pump more from this well field than they have pumped in the past. We understand that DES cannot regulate the previously sited wells, but does have some control of the annual maximum of the well. If there is the possibility of impacts to surrounding water resources, DES should regulate the withdrawal to the fullest extent possible.
5. There should be a full understanding of drawing contaminates from other nearby water resources. While there appears to be some evidence that the Pudding Hill Aquifer is not connected to the well field aquifer, this needs to be established to a level equal with the risk of drawing contaminates into a larger community of private wells and the well field aquifer. The water quality section of the report indicates that PFOA was found in the proposed well. The report includes potential contamination threats in very close proximity to a new replacement well drilled by Dover, which we understand has not been brought on line due to PFOA contamination.
6. Portsmouth's intent to not withdrawal more than their historic levels should be a documented regulatory limit.
 - a. During the presentation it was offered that Portsmouth takes very seriously the impacts of their withdrawals on natural resources, such as stream flow, stream habitat and wetland environments. Portsmouth owns and operates the Bellamy Reservoir, also in Madbury, and there are historical documents that seem to require a minimum flow through the Reservoir for downstream human use.ⁱⁱ In more recent times the State has recognized the need to include natural and aquatic resource in determining instream flows, for both natural and economic reasons. It is not clear whether Portsmouth has lived up to any requirements for minimum flow.
 - b. Originally Well #5 was drilled as a "spec" well during the drilling of a replacement for well #4. Then there was a request to put #5 in use as an emergency source due to the drought conditions in 2016. In late fall of 2016 Portsmouth instituted a ban on outdoor water use, when the likely hood of outdoor use was diminishing and where their overall water use for irrigation is only 0.8 percent. We note that Portsmouth Water Conservation Plan of September 2016 shows a water balance of 14.6 percent where it maybe that DES has rules that may require a water balance loss of no greater than 15 percent when siting new water sources. There should not be impacts to Johnson Creek and its natural environs when Portsmouth could reduce losses.
7. Finally, a few minor suggestions/notations. Unless there was a previous naming of the aquifer, the Freshet Road Aquifer, we would suggest it be named the Johnson Creek Aquifer. It seems to have much more connection with the geology of and proximity to Johnson Creek than a road. The access road into the water treatment plant is not Sarah Paul Hill (Fig 2.). Figure 15 appears to show that Meserve Rd in Dover is serviced by public water and/or sewer. We do not believe that to be the case on this abutting property.

Respectfully,



Eric Fiengenbaum
Madbury Conservation Commission, Chair

ⁱ Attachment 1, copy of the USGS memorandum from 1957.

ⁱⁱ Attachment 2, documents requested by Colprit and received from Portsmouth regarding the requirement of certain quantities of water flow through the dam for downstream users.