



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

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Secretary

Martin Stueberg  
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July 29, 2015

Mr. Jonathan Murray  
Hampden Country Club, LLC  
128 Wilbraham Road  
Hampden, MA 01036

Re: Hampden - WMA  
Hampden Country Club  
PWS ID #1268000  
WMA Permit #9P2-1-06-120.01  
Order to Complete - Permit Amendment  
Transmittal #: X263986

Mr. Murray:

The public comment period for the above permit amendment application by Hampden Country Club, LLC has been completed. The Massachusetts Department of Environmental Protection (MassDEP) is commencing its internal review of the amendment application under the Water Management Act (WMA), M.G.L. c. 21G and the regulations at 310 CMR 36.00, including consideration of public comments. The regulations at 310 CMR 36.25 state that an application shall not be deemed complete until the applicant responds to public comments and provide additional information as requested. This Order to Complete will list in detail the information that Hampden Country Club, LLC must provide to complete its permit application.

MassDEP has conducted an initial compliance review of the permit application, the actual withdrawal volumes, and any public comment received during the public comment period. Based upon this review, MassDEP has determined that there was significant public comment submitted during the public comment period and further information is necessary to complete the permit amendment. The information needed is explained in the enclosed Order to Complete.

Feel free to contact Jim Bumgardner (413-755-2270 or James.Bumgardner@state.ma.us) if you have any questions regarding the permit amendment process or the conditions of this Order to Complete.

Respectfully,

*Brian D. Hoaranson  
for*

Deirdre Doherty  
Drinking Water/Municipal Services Chief  
Bureau of Water Resources

cc: Duane LeVangie, MassDEP-Boston, Jim Bumgardner, MassDEP WERO, Tim St. Germain, Fuss & O'Neill, 78 Interstate Drive, West Springfield, MA

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Electronic File Location: Y:\DWP Archive\WERO\Hampden-WMA-9P2-1-06-120-01-2015-07-29

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## ORDER TO COMPLETE

MASSACHUSETTS WATER MANAGEMENT ACT (M.G.L. C. 21G)  
WATER WITHDRAWAL PERMIT AMENDMENT  
CONNECTICUT RIVER BASIN  
Hampden Country Club  
WMA Permit #9P2-1-06-120.01

The Massachusetts Department of Environmental Protection (MassDEP or Department) is commencing its review of the Hampden Country Club, LLC's (HCC or Applicant) Water Management Act (WMA) permit application, #9P2-1-06-120.01. In accordance with 310 CMR 36.25, MassDEP allows HCC until **August 31, 2015** to submit the additional information detailed in this Order. According to the regulations at 310 CMR 36.25 (1) (c), a WMA permit application "shall not be deemed complete" until public comment is addressed as requested by the Department. Until such time as public comment has been sufficiently addressed, the application is **Administratively Deficient** for purposes of assessing timely action in the MassDEP Permit and Fees regulations at 310 CMR 4.00. Failure to submit the information required within the required timeframe could result in regulatory enforcement or permit termination. **If HCC demonstrates in writing it is unable to provide the required information or otherwise respond adequately to this Order to Complete before August 31, 2015, MassDEP may extend the deadline to submit this information in accordance with the Regulations at 310 CMR 36.25. HCC must submit a written request for a deadline extension prior to the August 31, 2015 that explains the reasons for its inability to respond.**

### Background Information

In 2000, previous owners of the Hampden Country Club applied for a Water Management Act permit for its irrigation water withdrawal that included the "Clubhouse Well" and the "Irrigation Ponds" sources. Although 331,000 gallons per day was requested in the original permit application, MassDEP granted the permit with conditions that included limiting the maximum daily withdrawal from the Clubhouse Well source to 36,144 gallons per day. The source limitation was imposed because the well was also used as a public water system (PWS) source of drinking water. The lack of ownership and control of a Zone I necessary for adequate wellhead protection prompted MassDEP to limit the approved daily maximum withdrawal rate at 36,144 gallons per day. Subsequently, HCC has obtained a New Source Approval for an alternative PWS drinking water source and has disconnected the Clubhouse Well from its drinking water system, thereby eliminating the need for the wellhead protection area which was the basis for the 36,144 gallons per day. MassDEP approved the "abandonment" of the Clubhouse Well as a public water system source on June 11, 2015.

The permit amendment application proposes to evaluate the Clubhouse Well safe yield as an irrigation source so that the permit condition limiting maximum daily withdrawal can reflect source safe yield without drinking water wellhead protection limits. To evaluate the source safe yield, the Applicant proposed that a pumping test be conducted according to Water Management Act policies and MassDEP New Source Approval guidelines.

The historic withdrawal volumes by Hampden Country Club are presented in the following table:

Electronic File Location: Y:\DWP Archive\WERO\Hampden-WMA-9P2-1-06-120-01-2015-07-29

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TTY# MassRelay Service 1-800-439-2370  
MassDEP Website: [www.mass.gov/dep](http://www.mass.gov/dep)

Year	Average Daily Withdrawal (mgd)	Total Annual Withdrawal (mgy)
2014	0.043	10.6
2013	0.06	14.6
2012	0.07	17.2
2011	<sup>1</sup>	<sup>2</sup>
2010	0.05	12.8
2008	0.03	7.9
2007	0.02	<sup>3</sup>
2006	0.02	<sup>4</sup>
2005	0.035	8.69
2004	0.0	0.0
2003	0.0	0.0

Table 1: Hampden Country Club Historic water withdrawal volumes

**Compliance Review**

**Special Condition 1, Maximum Authorized Withdrawal Volumes**

HCC is in compliance with Special Condition 1, a maximum authorized withdrawal volume of 0.1353 mgd averaged over its 244 day operating season, based on Annual Statistical Reports submitted by HCC and the previous owners. No increase above the average daily withdrawal limit is requested by this permit amendment application. However, the previous owners failed to submit a 2011 Annual Statistical Report that should contain metered withdrawal volumes for that year. **MassDEP requires that HCC attempt to acquire the records of water withdrawal from 2011 and report the findings. If HCC is unable to locate the withdrawal records, it must explain in writing the reasons for failure to locate the meter readings (see permit approval conditions).**

Hampden Country Club used greater than 9.0 million gallons in three consecutive months in the years 2012 and 2013, which is above the WMA threshold, and demonstrates that Hampden Country Club requires a WMA permit to continue its current practice of irrigation. The withdrawal volume for Hampden Country Club, averaged across its operating season of 244 days is below the WMA threshold of 100,000 gallons per day (see Table 1 above).

**Special Condition 2, Maximum Daily Withdrawal Volumes**

Special Condition 2 of the HCC WMA permit limits the maximum daily withdrawal volume allowable from the Clubhouse Well to 36,144 gallons per day. That limit is based on the wellhead protection radius in effect when the Clubhouse Well was a public water system source. Typically, Special Condition 2 relies on the safe yield of each WMA source as an upper limit when establishing the maximum daily withdrawal limit. Due to the June 11, 2015 “abandonment” of the Clubhouse Well as a PWS source, the Clubhouse Well is no longer classified as a public water system source.

<sup>1</sup> No report submitted

<sup>2</sup> No report submitted

<sup>3</sup> Report missing – DEP recorded value electronically

<sup>4</sup> Report missing – DEP recorded value electronically

### Permit Application

The Applicant proposes to test the safe yield of the Clubhouse Well with a ten (10) day extended duration pumping test according to MassDEP guidelines for determining WMA source safe yields. HCC has proposed to conduct a pumping test to assess not only the safe yield of the well, but to evaluate the withdrawal impacts to nearby public and private water supplies.

Applicant's consultant, Fuss & O'Neill, conducted a step drawdown test to determine a feasible pumping rate for the extended duration pumping test. That test revealed that the well should be able to sustain pumping of 360 gallons per minute, which was the capacity of the pumping equipment available at the time. Based on the result of this test, HCC selected a rate of 360 gallons per minute for its extended duration pumping test.

For the extended pumping test, the Applicant proposes to pump the Clubhouse Well for 10 days at a rate of 360 gallons per minute and monitor the drawdown over time and at various distances and directions from the production well. This is consistent with the MassDEP new source approval guidelines for bedrock sources withdrawing greater than 100,000 gallons per day. HCC proposed to install a datalogger with a submersible pressure transducer in the production well and in the monitoring wells. Periodic supplemental manual measurements are intended to verify the electronic measurements.

The Applicant proposes water level monitoring in five (5) additional wells in the area prior to, during, and after the extended duration pumping test. The Applicant proposes to monitor an existing well known as 03G which was installed at a depth of 824 feet as a public drinking water well (not approved as a drinking water source) and to install four (4) other monitoring wells at various locations and depths to assess the impacts of pumping. The five proposed monitoring wells are as follows:

- Existing well "03G"
- Overburden well to be installed north of the Clubhouse Well
- Bedrock monitoring well to be installed on the northern course boundary
- Bedrock monitoring well to be installed in the western portion of the course
- Bedrock monitoring well 825 feet northeast of the Clubhouse Well

Five (5) days of antecedent water level monitoring will be conducted on a daily frequency basis. During the extended duration pumping test, water levels will be recorded once every 5 minutes for the first 2 hours, and once every 2 hours thereafter. Recovery period drawdown monitoring will occur at the same frequency as the pumping test with measurements every 5 minutes for the first 2 hours, and then once every 2 hours until recovery is achieved. Water level monitoring in the monitoring wells will occur at the same frequencies as the production well during each phase (antecedent, pumping, and recovery) of the test.

A flow meter capable of maintaining an accuracy of +/- 3% will be used and the pumping rate will be recorded every 2 hours. The pumping test discharge will be routed into the nearest existing irrigation pond where the eventual discharge will be located. MassDEP suggested this location because it is not likely that erosion controls will be necessary with the discharge routed into the pond. Precipitation and barometric pressure measurements will be conducted on-site. Precipitation will be measured with a precision of 0.01 inches.

The Applicant did not propose water quality analyses. Historic water quality records from the Clubhouse Well do not indicate influence of fertilizer application on Clubhouse Well water quality based on annual nitrate monitoring. Annual nitrate monitoring in the Clubhouse Well, conducted in the second or third quarter of each year since 1997 has been consistently below 2.0 mg/L. No monitoring for herbicides, fungicides, or pesticides was conducted while the Clubhouse Well operated as a public water system source.

### Public Comment Received

Significant relevant public comment was received from at least 39 concerned citizens and the Town of Hampden Board of Selectmen during the public comment period regarding the impact to nearby public and private wells that may draw from the same resource as the Clubhouse Well. Concerns with the sustainability of the resource, the

potential to lower the water table below public and private well depths, and the impacts to water quality from golf course activities were raised. **MassDEP expects that the results of the pumping test as modified in the conditions of this Order to Complete will allow investigation, to the greatest practical extent, the concerns held by the golf course abutters, other residents of Hampden and Town of Hampden Officials. The information obtained may then be considered by MassDEP in its decision on the permit amendment application.**

The Town of Hampden Board of Selectmen commissioned its own independent review of the permit amendment application and proposal to increase the allowable withdrawal from the Clubhouse Well irrigation source. Mr. John McClelland, P.E. and Mr. Thomas Couture, Vice President of Tighe and Bond Engineers reviewed the permit application at the request of the Board of Selectmen and provided comments to the Board and Town members at a meeting on June 29, 2015.

The Town of Hampden, with assistance from Tighe and Bond Engineers, recommended additional testing procedures, designed to assist in evaluating the impacts of the withdrawal.

- Redirect the pumping test discharge location downstream of the ponds into Wautchaug Brook to prevent groundwater recharge back into the overburden and skewing monitoring of impacts to Wautchaug Brook and the pond water levels.
- Install three (3) additional monitoring wells along the northern border of the course to monitor impacts to Raymond Drive residents, another additional bedrock well near the Senior Center on Allen Street, and two additional monitoring wells on Thornton Burgess Middle School property (one overburden, and one bedrock well).
- Surface water monitoring should be conducted in the irrigation ponds and Wautchaug Brook upstream of the pumping test discharge and monitored at two hour intervals.
- Water quality testing should be conducted in accordance with MassDEP Guidelines for Public Water systems Appendix A on samples collected from all of the additional monitoring wells or nearby residences.

MassDEP finds that redirecting the pumping test discharge downstream of the ponds (a distance of 2,600 feet) will not result in an effective means of assessing surface water impacts for the following reasons:

1. Surface water impacts from bedrock wells are more closely related to annual average withdrawal, the maximum limit of which is not being considered in this permit, and is not changing as a result of this permit amendment application. Surface water impacts from pumping wells are delayed by infiltration processes and result from cumulative groundwater withdrawal activities, averaged across the operating season.
2. HCC proposed to install an overburden monitoring well between the irrigation ponds and the well that is intended to provide information on the connection between the Clubhouse Well and the surrounding overburden.
3. Currently, the irrigation ponds do not overflow during times when HCC is irrigating its course. However, it is not anticipated that HCC will be irrigating continuously during the pumping test. MassDEP is requiring that the overflow from the irrigation ponds and the overflow from the downstream property boundary be quantified and the difference be compared in an attempt to quantify the degree of induced infiltration by pumping. Using this quantity, along with information obtained through monitoring the overburden monitoring well between the ponds and the Clubhouse Well, MassDEP will be able to better assess infiltration into the aquifer resource, and the connection between the Clubhouse Well and the overburden. Because HCC withdraws from the irrigation ponds when irrigating its turf, MassDEP assumes that there is likely no overflow from those ponds during periods of irrigation and any contribution of the pond overflow into Wautchaug Brook will be interrupted at times when irrigation withdrawals are occurring. This is an impact established by a previous permitting decision by MassDEP. Ultimately, allowing an increase in pumping from the Clubhouse Well into the irrigation ponds will minimize irrigation pond drawdown and presumably increase the frequency of pond overflow into Wautchaug Brook, an overall positive impact to streamflow.

To complete the application for a WMA permit amendment, MassDEP requires that HCC address the public comment received and additional comment by MassDEP as follows:

1. **MassDEP requires HCC to address the following public comment submitted by the Town of Hampden:**
  - a. Is there any documentation of historic withdrawals to support the current annual withdrawal limit of 0.1353 mgd?
  - b. What is the basis for the "peak day demand" [maximum daily withdrawal limit] of 0.52 mgd?
  - c. The proposed increase in daily maximum withdraw to 0.52 mgd from the Clubhouse Well, when added to the currently allowable 0.3 mgd from the irrigation ponds equals 0.82 mgd which is significantly greater than the estimated 50% August median flow (0.15 cfs) and the 7Q10 flow (0.061 mgd) from the Hampden Country Club drainage area. The Applicant should assess the potential for impacting surface water resources.
  - d. The Applicant should document and explain the need for such a large increase in the withdrawal from the Clubhouse Well.
  
2. **MassDEP requires HCC to conduct an extended duration pumping test on the Clubhouse Well as proposed in the permit amendment application, with the following additions and modifications:**
  - a. MassDEP requires HCC to monitor water quality in the Clubhouse Well for the chemicals listed in Appendix A of the Guidelines for Public Water Systems at the beginning and at the end of the pumping period of the extended duration pumping test.
  - b. MassDEP requires that HCC monitor the following parameters in all of the monitoring wells at the frequencies specified:
    - i. Nitrate Nitrogen – beginning and end of test
    - ii. Total Kjeldahl Nitrogen – beginning and end of test
    - iii. Turbidity
  - c. MassDEP requires HCC to monitor the quantity of overflow from the irrigation ponds during the pumping test and the quantity of overflow from the pond downstream that is near the western boundary of the golf course. As part of this requirement, MassDEP requires that HCC report the quantity of irrigation volume it uses on a daily basis during all phases of the pumping test. The purpose of this requirement is to provide a comparison of how much water is lost to infiltration and irrigation over the course of the pumping test and the impacts to Watchaug Brook downstream of Hampden Country Club.
  - d. MassDEP requires HCC to monitoring the surface water levels using staff gages at two hour intervals during the 10-day pumping test and the recovery period.
  - e. MassDEP requires that HCC notify Jim Bumgardner or Kimberly Longridge of MassDEP at least 7 days prior to commencing the extended duration pumping test if its intent to begin the test. MassDEP may elect to perform an inspection of the instrumentation for the monitoring the test at that time.
  - f. MassDEP requires that HCC provide the well drilling logs of all monitoring wells to be monitored during the extended duration pumping test at least 7 days prior to commencing the extended duration pumping test.
  - g. MassDEP finds that alternatives to installing an additional three bedrock monitoring wells on the northern boundary and two others at Thornton Burgess Middle School as recommended by the Town of Hampden and its consultants exist which will provide sufficient information for the review of the permit amendment application. Monitoring existing wells that are in use will give a better idea of the impacts of pumping on the private wells and will minimize subsurface disturbance by drilling that could itself impact the water quality in nearby private and public wells. **MassDEP requires that HCC either install the monitoring wells recommended by the Town of Hampden, or as an alternative, offer residents with addresses on Raymond Drive or the Town of Hampden at Thornton Burgess Middle School the option to have**

**their wells monitored during the pumping test. The offer by HCC to monitor private and public wells during the pumping test shall include supervision of the work by an independent Certified Drinking Water Operator<sup>5</sup>, paid for by HCC and approved by the well owner.**

- h. If HCC elects to offer to monitor private and or public wells during the pumping test, HCC must notify MassDEP of its intention to do so, the name and contact information of the Certified Operator, and the names and addresses of the residents selected to provide their wells for monitoring at least 15 days prior to commencing the pumping test. The independent Certified Operator shall oversee any work on the wellheads, including installation of water elevation monitoring equipment, operation and removal of said equipment, disinfection of the wellheads being monitored, and water quality testing of to validate the effectiveness of disinfection at the end of the test, and one week after the end of the test. No more than three private wells are required to be monitored to satisfy this condition. Any resident or the Town who desires water elevation and water quality monitoring to assess impact to the wells they own, must agree in writing to allow the independent Certified Operator and the HCC consultant conducting the pumping test access to their wells within 30 days of the issuance of this Order to Complete. MassDEP requires that HCC either report in writing a detailed description of its efforts to convince the residents and the Town to agree to allow water level monitoring of their wells as supervised by an independent Certified Water Operator or report that it has chosen to install the monitoring wells requested by the Town of Hampden at least 15 days prior to commencing the extended pumping test.
  - i. MassDEP requires that well drawdown be monitored at the same frequencies as the Clubhouse Well in all monitoring wells, including those wells that are privately and publicly owned.
  - j. MassDEP requires that HCC contact Jim Bumgardner, Kimberly Longridge, or Deirdre Doherty of MassDEP, Western Region to arrange for verification of pumping test stability prior to terminating the pumping section of the test.
3. As part of the permit amendment process MassDEP will require an Integrated Pest Management Plan (IPM Plan) to minimize chemical and irrigation water use. A Water Conservation Plan may be included in the IPM Plan. MassDEP requires that HCC provide an IPM plan that lists procedures it will use to minimize chemical and water use and includes a list of all chemical fertilizers, herbicides, and pesticides that it has used in 2015 and that it intends to use in 2015 and 2016.
  4. MassDEP requires that HCC attempt to acquire the records of water withdrawal from 2011 and report the findings. If HCC is unable to locate the withdrawal records, it must explain in writing the reasons for failure to locate the meter readings.
  5. MassDEP requires that HCC provide a detailed report of the results of the pumping test within 90 days of completion.
  6. MassDEP requires that HCC provide details of its irrigation system including the maximum pumping capacity and total acreage under irrigation, broken down by number of acres of fairway, greens, tees, practice areas and other areas under irrigation.
  7. In response to a comment by Theresa and Paul Bechard, MassDEP requires that HCC verify that will only install and monitor wells on its own property unless it has written consent of the property owners.
  8. MassDEP requires that HCC document in writing that the water meter it uses to monitor the pumping test withdrawal rate has been calibrated within a time period consistent with the meter manufacturer's specifications within 15 days of the start of the pumping test.

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<sup>5</sup> An independent Certified Operator would be a person or company not currently contracted with HCC to provide services of any kind.

**Distribution List**

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