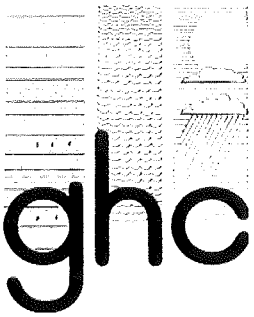
Brem_107_11.14.2014



November 14, 2014

GeoHydroCycle, Inc.

Hazardous Waste
Water Supply

Assessment
Remediation
Analyses
Permitting
Modeling
Software

Mr. Steven Ventresca, P.E.
Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

re: Recommendations for
Lifetime Green Homes
100 Long Ridge Road
Carlisle, MA
GHC #14015

Dear Mr. Ventresca,

GeoHydroCycle, Inc. (GHC) provides the following recommendations for the proposed Lifetime Green Homes project (the Site). Our recommendations are based on our review of available project documents, and a site visit and meeting on November 5, 2014 with the applicant, Jeffrey Brem, and the applicant's hydrogeologist, Joel Frisch.

GHC's recommendations are also based on standard practices used in environmental permitting, and include:

1. Testing,
2. Analyses,
3. Monitoring, and
4. Establishing an escrow fund.

The following paragraphs present details of these practices.

Testing

We recommend field testing to determine site specific properties of groundwater that will be used by the proposed development. For Lifetime Green Homes that includes the overburden sands, which will be used for wastewater discharge, and bedrock, which will be used to supply drinking water.

Our recommendation for field testing in the overburden includes conducting the necessary field work to determine hydraulic properties and groundwater flow and direction in the overburden sands and bedrock. The applicant has agreed to: soil permeameter tests, grain size analyses, percolation tests, the use of surveyed stream and wetland elevations, mottling elevations, installed hand-driven piezometers, and loading

151B California Street
Newton, Massachusetts
02458

(617) 527-8074 (v)
(617) 527-8668 (f)

GeoHydroCycle, Inc.

tests in the overburden sands. For bedrock, the applicant has agreed to conduct those tests outlined in Northeast Geosciences letter dated September 15, 2014 for abutter wells within 500 feet of the proposed wastewater discharge areas, and the existing Site well at Mr. Brem's house. The abutter well testing will include determining the static groundwater level in the well, pump-testing the well, and sampling water from the well.

Analyses

We recommend analyses be conducted to predict what changes in groundwater could occur as a result of the proposed development. All the analyses is based on site specific data as determined during the field testing.

Our recommendations for analyses include calculating nitrate plumes for each of the wastewater discharge areas, determining the reductions in groundwater levels due to the pumping of the proposed Site wells using a 90-day pumping period, and determining the increase in groundwater levels due to the proposed wastewater discharge.

Plume results should be compared with state drinking water standards at any wells within the plume. Well yield reductions should be compared to baseline testing results and Carlisle well requirements.

The applicant has agreed to conduct these analyses.

Monitoring

We recommend monitoring of groundwater to determine if the proposed groundwater changes have had an adverse impact on abutters wells. Our recommendation for monitoring includes sampling abutter wells within 500 feet of the wastewater discharge areas quarterly for two years, followed by annual sampling for another three years. The analyses would include the chemical constituents sampled for during the initial abutter well sampling. Water quality results should be compared with state drinking water standards, and the baseline data for the well being sampled.

The applicant has agreed to conduct groundwater monitoring of those wells that had been baseline tested for a two year time period.

Establishing an Escrow Fund

We recommendation an escrow fund to provide new wells where impacts have occurred. The fund amount is for $15,000.00 to cover the costs of a well replacement, including well drilling, pump replacement, hydro-fracking, water quality sampling and analysis, well disinfection, and costs related to connecting the new well to the home. The fund should be replenished after being used, and should be maintained for the full 5-year monitoring period. The applicant has agreed to establishing an escrow fund.

Other Work

In accordance with Carlisle regulations, the applicant will be conducting 24-hour pump tests of the water supply wells that are to be installed in phases. Wells will be tested by pumping the wells simultaneously in groups of 2 or 3 for each phase. Abutter wells, that have been baseline tested, will be monitored during the pump test.

151B California Street
Newton, Massachusetts
02458

(617) 527-8074 (v)
(617) 527-8668 (f)

GeoHydroCycle, Inc.

If you have any questions, please call me.

Sincerely,
GeoHydroCycle, Inc.

Stephen W. Smith, P.E., P.HGW., L.S.P.

GHC Recomm Ltr.lwp

151B California Street
Newton, Massachusetts
02458

(617) 527-8074 (v)
(617) 527-8668 (f)