

September 19, 2013

013402

A. Rollin Development
880 Smith Road
Navan, Ontario
K4B 1N9

Attention: Mr. A. Rollin

RE: HYDROGEOLOGICAL REVIEW
IMPACT ASSESSMENT STUDY AND DEVELOPMENT PLAN
VILLAGE OF VARS EXPANSION AREA
5574 ROCKDALE ROAD, VARS
CITY OF OTTAWA, ONTARIO

Dear Sirs:

This letter summarizes the results of a hydrogeological review of the Impact Assessment Study and Development Plan for the Village of Vars Expansion Area in view of the proposed residential development at 5574 Rockdale Road in the Village of Vars, Ontario. The purpose of the review was to check that the Impact Assessment Study in question meets the current requirements of the Ministry of the Environment with regards to the presently proposed residential development, and that the proposed development is in general accordance with the Impact Assessment Study and the associated Village of Vars Development Plan.

BACKGROUND

The site in question consists of about a 1.8 hectare (4.4 acres) parcel of land located on the west side of Rockdale Road about one kilometre north of Devine Road within the north central portion of the Village of Vars, in the City of Ottawa, Ontario (see Key Plan, Figure 1). The proposed development of the site consists of the construction of a 12 unit residential building serviced by a private septic system and municipal water supply.

The Impact Assessment Study reviewed consists of the Jacques Whitford Environment Limited Report for Project No. 30332, dated July 22, 1994 and entitled "Township of Cumberland, Impact Assessment Study, Village of Vars Expansion Area". Based on the results of that report the former Township of Cumberland prepared a planning report entitled "The Village of Vars Development Plan" approved in December 1995. In brief, the above mentioned Impact Assessment Study and the Village of Vars Development Plan Report approved the development of some 300 additional lots/dwelling units within the expanded village area.

The Village of Vars is serviced by municipal water supply and private septic sewage disposal systems.



REPORTS OVERVIEW

Impact Assessment Study

For the impact assessment study in question, Jacques Whitford Environment Limited (JWEL) carried out extensive detailed field work providing widespread coverage of both the existing and proposed expanded village area. The field work consisted of test pit excavating, borehole drilling, monitoring well installation, ground surface elevation surveying, groundwater sampling and hydraulic testing. The field work was augmented by laboratory testing of soil, groundwater and surface water samples.

The results of the field and laboratory work were used to characterize the natural environmental conditions (surface water features/surface water chemistry/terrestrial habitat), geology (overburden/bedrock) and hydrogeology (aquifers and aquitards/groundwater flow/groundwater chemistry and nitrate dilution).

Based on all the information obtained a groundwater impact assessment was carried out. The impact assessment was addressed as two parts: an evaluation of the existing development using actual measured nitrate impact on the groundwater, and nitrate dilution calculations carried out in accordance with 1992 MOE development guidelines.

The 1992 MOE guidelines required it be demonstrated that a proposed development using subsurface sewage disposal systems would not result in or cause degradation of groundwater resources in exceedance of an acceptable nitrate limit of 10 milligrams per litre. This was to be demonstrated based on septic system isolation of the supply aquifer or contaminant attenuation considerations.

The nitrate testing of the groundwater within the existing and proposed village expansion area gave results significantly below the Ontario Drinking Water Standard for nitrate of 10 milligrams per litre, with 90 percent of the results below the method detection limit of 0.10 milligrams per litre. The highest nitrate concentration measured was 2.83 milligrams per litre.

Two of the specific objectives and tasks were: to “estimate the minimum lot size and maximum number of lots in each of the six areas (A to F) that would be allowed based on the current MOEE guidelines which allow a maximum concentration of nitrates (as nitrogen – N) of 10 mg/L at the property boundary”; and to “determine and recommend typical leaching bed design characteristics in terms of type and size and general arrangement for the six development areas (A to F) and the infill areas. From this, estimate the minimum lot size and check against the minimum lot size determined through impact assessment.” It should be noted that, “the scope of the study was expanded to investigate the hydrogeology and soil conditions in eight other potential development areas (G to N) bordering the original six areas. Therefore, the study area for this report [Impact Assessment Study report] included development areas A to N.”

The required lot sizes for four types of leaching beds (R.1 to R.4) and their associated sewage envelope areas were determined for development planning purposes. The leaching beds were designed for a four bedroom dwelling. The report indicates areas with leaching bed types R.1 to R.4 as shown on Figure No. 30332-3. The report also indicates that areas having percolation rates in excess of a “T” time of 50 minutes per centimetre require larger lots.

Figure No. 30332-3 within the text of the report indicates that the site of the proposed development is located in an area requiring leaching bed type R.3. The figure also indicates that the site of the proposed residential development is contained within a portion of development area IF-1 (infill). The test pits indicated in the report for this area identify the surficial material as consisting of sand with an estimated percolation rate “T” of 5 to 10 minutes per centimetre.



The report makes the following recommendation: "Results of the impact assessment indicate that approximately 183 hectares should be set aside to accommodate 303 new lots. Of this area, 128 hectares can be subdivided into the 303 lots, if the remaining 55 hectares is set aside as a peripheral zone for nitrate attenuation."

Village of Vars Development Plan

The above mentioned Village of Vars Development Plan sets out policies for land uses in both the existing built up sections of the village and the village growth areas identified in the plan. The plan indicates appropriate lot size and estimates of the appropriate number of dwelling units for various expansion areas for the village. The significant guidelines/recommendations provided by the plan with regards to the present development are outlined in Section 5.1 and Section 10 which describe the average lot size for new development, the estimated number of units for specific areas of the village expansion, the total number of new units and the rules for allocation of the new dwelling units available.

The number of estimated dwelling units allotted for vacant lots and infilling (proposed residential development) is indicated as 10. The total number of new units allotted for the Village of Vars expansion area plus vacant and infilling is approximately 311. The Plan acknowledges that for actual subdivisions minor variations in the number of lots will be permitted provided the overall intent of the Plan is maintained.

DISCUSSION

Based on our review of the Impact Assessment Study it is considered that the study was an in depth evaluation of the hydrogeology of the existing village and proposed village expansion area. Although the actual septic system groundwater impact assessment was carried out in view of the MOE guidelines available at the time, it is considered that the impact criteria and parameters used for the assessment are in accordance with current methodology and MOE guidelines for private services studies.

The horizon soils identified in the test pits by JWEL within development Area IF-1 are similar to those identified at the test pit locations put down at the site for the purpose of Morey Associates Ltd. report No. 013300, entitled "Geotechnical Investigation, Proposed Residential Building, 5574 Rockdale Road, Vars, Ottawa, Ontario". The JWEL report states a suggested minimum lot area per dwelling unit of 0.24 hectares for the areas requiring leaching bed type R.3.

As indicated above the number of dwelling units allowed for area IF-1 plus existing vacant lots is 10. In order to equate the existing proposed building to an equivalent number of lots it is pointed out that for the JWEL study a lot was assumed to be developed for a four bedroom dwelling unit. It is understood that the proposed building for the present site has a total of 17 bedrooms, which is equivalent to approximately 4 JWEL lots/dwelling units. Based on the results of a site visit it is considered that 4 existing dwelling units have been constructed within area 1F-1, leaving a total of 2 lots/dwelling units for future development of area 1F-1 and/or for existing vacant lots.

A reconnaissance of the village and proposed expansion area indicates that development within the expanded village area has been essentially, up to the present time, within three of the Development Plan Areas, Area G, Area I and Area K. Based on discussion with T. L. Mak Engineering Consultants Ltd., engineering consultants for the existing/approved developments within Areas G, I and K, it is understood that the total number of dwelling units approved/existing for Area G is 31, Area I is 65 and for Area K is 83. Including the four dwelling units which presently exist within Area IF-1 and the presently proposed equivalent 4 dwelling units for Area IF-1 the total number of dwelling units existing and approved is 187 out of an acceptable number of dwelling units of 311 indicated by the Village of Vars Development Plan.



Based on the results of our review as outlined above, it is considered that the risk of the impact on the groundwater at the down gradient boundaries of the expanded village peripheral zone, due to septic systems at the proposed site, is within currently acceptable limits, taking into account the total number of new units developed to date. No revision to the study is considered warranted at this time.

We trust that this letter is sufficient for your present requirements. If you have any questions concerning this letter, please do not hesitate to contact our office.

Yours truly,
Morey Associates Ltd.

C.R. Morey, M.Sc. (Eng.), P. Eng.



Attachment: Figure 1

File: 013402

KEY PLAN

FIGURE 1



NOT TO SCALE