RURAL MUNICIPALITY OF
BEAVER RIVER
No. 622

Policy Type:	600 Planning and Development
Policy Title:	02 Environmental, Geotechnical & Hydrological Assessments
Authority:	
Basic Planning Statement: Schedule "A" Bylaw 58	
Zoning Bylaw 57	
A Bylaw Respecting Buildings: 06-09	
The Planning and Development Act, 2007	
Motion 242-10	

The intent of this policy is to outline general procedures to be followed when application is made for the issuance of development and/or building permits on land that is potentially sensitive from the perspective of slope stability, drainage, and other environmental concerns, as identified by RM Council.

The RM of Beaver River #622's Basic Planning Statement (schedule "A"), Zoning Bylaw #57 and Building Bylaw #06-09 require that developers who propose to undertake improvements on land that, in Council's opinion, is potentially hazardous or poses an environmental risk, **shall undertake a geotechnical, hydrological, and/or environmental impact study** for presentation to Council prior to the issuance of a development permit. Following are examples of the references to the required studies:

1) Bylaw #58: Basic Planning Statement, Schedule "A", Part VII: Environment and Resource Conservation:
7.2 Environment and Resource Conservation Policy: (e): "Council may require a geotechnical or hydrological inspection in considering approval of development on hazard land."

2) Bylaw #57: Zoning Bylaw: Part III – General Regulations:
2. Areas Prohibited for Development: "Prior to issuing a development permit for an application on land deemed by Council to be environmentally sensitive or hazardous, Council shall require that the developer/proponent submit a certified environmental, geotechnical and/or hydrological assessment, prepared by a qualified professional consultant. Such assessment shall address, at Council's discretion, any or all of the following:
-Identification of all on-site and relevant off-site environmental constraints on and hazard to development and servicing;
-Identification of all on-site and relevant off-site environmentally sensitive lands;
-Assessment of the impact of the proposed development on the environment (both on-site and off-site);
-Assessment of the impact of on-site and/or off-site environmental conditions on the proposed development; and
-Identification of actions required to prevent, change, mitigate or remedy the adverse effects of the proposed development on the environment and/or the adverse effects of the environment on the proposed development.
Identified actions for prevention, change, mitigation or remedy shall be incorporated as conditions to issuance of a development permit."

RURAL MUNICIPALITY OF
BEAVER RIVER
No. 622

3) Bylaw #06-09: A Bylaw Respecting Buildings:
Section 9: Special Conditions: 1): "Notwithstanding the requirements of the Regulations, an architect or professional engineer registered in the Province of Saskatchewan shall be engaged by the owner for assessment of design and inspection of construction or certification of a building or part of a building where required by the local authority or its authorized representative."

Whereas the extent of the studies required may vary with the extent of the project and the nature of the potential environmental impacts, Council may, in consultation with its professional consultant, propose to undertake a **pre-assessment** of the development proposal. The purpose of the pre-assessment would be to describe the extent of the required studies and establish the costs to carry them out. Such a pre-assessment would be subject to agreement by the developer/proponent, with costs thereof to be the sole responsibility of the developer/proponent.

The guidelines for pre-assessment will be as follows:

a) The base document for all proposed multi-lot subdivisions shall be : Geotechnical Reports Contents (source: Community Planning Branch, Municipal Affairs), a copy of which is attached to this policy and Part III General Regulations noted in Zoning Bylaw 57.

b) In the case of less intense proposals, including single detached dwellings, outbuildings, or additions to existing residences and/or outbuildings, Council may, in consultation with its professional consultant, define the extent of the geotechnical, hydrological and/or environmental studies required.

All costs associated with assessment as well as the costs for the required studies shall be the responsibility of the developer/proponent.

In specific circumstances, a professional architectural consultant or consulting engineer may provide a recommendation to Council that development proceed within the framework of specified conditions. Where Council provides approval for a conditional permit, the developer/proponent will be advised of the specified conditions in writing, along with advice that an interest describing the conditional nature of the permit will be registered on the title to the affected lands. All costs associated with such registration will be the sole responsibility of the developer/proponent.

General Procedures for Registering an Interest on the Title of Affected Lands:
The Planning and Development Act, 2007

General powers of council for purpose of carrying out Act, etc.

235(1) For the purpose of carrying out the provisions of this Act and any regulation or bylaw made pursuant to this Act, every council:

RURAL MUNICIPALITY OF
BEAVER RIVER
No. 622

(a) has and may exercise all the powers conferred on it by the appropriate municipal Act; and

(b) may enter into any agreements, not inconsistent with this Act or any regulation or bylaw made pursuant to this Act, that the council considers necessary with any person.

(2) An agreement entered into pursuant to clause (1)(b) binds the land mentioned in the agreement and may be protected by registering an interest based on the agreement against the title in the land registry.

(3) A council is entitled to enforce the provisions of an agreement entered into pursuant to clause (1)(b) as against the owner and any subsequent owners of that land.

RURAL MUNICIPALITY OF
BEAVER RIVER
No. 622

Geotechnical Reports Contents

A geotechnical report must ensure that the proposed development does not adversely affect slope stability in the area. A complete report should contain sufficient data and analysis to demonstrate that the integrity of the slope stability will be maintained. The scope of the report should be sufficient to predict the effect of the proposal on the potential for slumping or likelihood of land sliding, including the expected impacts on any adjacent land. Remedial measures should be technically detailed. The consequences of not following such recommendations should be explained in layperson's terminology to assist future landowners. Reports acceptable as part of an approval to subdivide land will form part of the approval and be registered in the Land Registry at the Information Services Corporation as an interest on the title to the land being subdivided. This will provide prospective buyers of the land of the need to comply with the report recommendations when building on the subject land.

The report should include, but may not be limited to the identification of the following:

Project details

- scale and scope of the proposal (e.g. residential, industrial, phasing required);
- design of the development (e.g. houses with walk-out basements, buildings on slab foundation, roads);
- proposed surface water drainage routes;
- are the roads located in the best places to minimize slope instability and accommodate surface drainage;
- where roads will parallel a slope, cross sections must show that the driving surfaces of the proposed roads will be at an elevation that will allow adjoining lot owners to build driveways without excessive slopes;
- road back slopes and embankments must be included within the vested road right-of-way.

Slope stability design analysis

- Cross-section showing the profile of the existing slope including soil stratigraphy and groundwater conditions (depth to water table) comprising the slope
- the name of the slope program and analysis method used (i.e. Limit Equilibrium, Bishop's Simplified, etc.) to conduct the stability analysis;
- soil's assumed shear strength properties (cohesion and coefficient of friction values) used to conduct the stability analysis;
- slope's minimum Factor of Safety (FoS) against sliding before development (existing slope as is) and after development (anticipated slope conditions following development);
- cross-section drawing showing shape and location of the most critical slip surface (minimum FoS);
- depending on the scale of the development, cross-section details regarding critical slip surfaces may be required in more than one area.

Feasibility

- amount of earthwork (depth of cuts and fills) that will have to be conducted for all developments;
- locate where earthworks will be moved and how construction and equipment will work around the escarpment;
- should development be set back from the valley ridge, if so, how far;
- is the earthwork expected to change the factor of safety;
- with consideration to the scope of work involved, to what degree will the proposed subdivision area and/or surrounding land uses be affected by slope instability;
- alternatively, how may adjacent development affect this proposal.

Recommendations

- does each site have a safe building area sufficient for the proposed use;
- will each site require specific building construction evaluation and standards, if so, identify and detail;
- are specific building types or developments not recommended and why;
- what landscaping and maintenance is or is not recommended and why;
- should development be monitored and/or assessed post-construction, and if so who is to cover costs.

RURAL MUNICIPALITY OF
BEAVER RIVER
No. 622

Hydrology Reports

A groundwater hydrology report should ensure that the added demand on the aquifer does not adversely affect adjacent wells in the area. A complete report should contain sufficient data and analysis to demonstrate that the integrity of the water supply will be maintained. The scope of the report should be sufficient to predict the effect of the proposal on the aquifer water supply and water quality, including the expected impacts on any other users. A monitoring strategy to track actual effects on the aquifer and overall safety should also be addressed.

This may include any or all of the following as necessary:

- Project details
  - scale and scope of the proposal
  - number of users
  - type of water supply infrastructure
  - individual and cumulative water use estimates
  - water treatment
  - type of effluent treatment and disposal

- Water supply assessment

  - aquifer details, which may include drilling logs, a description of the deposit, geological cross-sections and appropriate plans
  - an evaluation of the production capability of the aquifer and individual wells
  - project impact on water levels, zone of influence and impacts on other users
  - an inventory of all domestic wells which may be affected
  - monitoring plans
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- Water quality assessment (security of the water supply for new and existing users)
  - current water quality
  - project impacts on water quality and other users
  - potential contaminant sources and threat to users
  - monitoring plans

In addition to the above, the hydrology report should consider and identify the method of sewage disposal that is suitable for the soil conditions for holding to mound or field system in relation to water wells. Other options may be a municipal collection system to a lagoon or holding tank to be hauled by a liquid waste hauler. For example, is there potential for contamination of the well by a specific method

of sewage disposal. Are there other recommendations as to any development standards that should be implemented, ie: no basements due to high aquifer levels, slab construction only.

A copy of this information should be provided to the Municipality as they may want to include aspects of the report within their servicing agreement. As well, a copy should be provided to Community Planning Services in the event the report needs to be referred to other agencies for comments.