

Proposed BMP's for Seismic Operations in the Battle Lake Watershed

Recommendations:

It is recommended that all seismic companies proposing to operate in the Battle Lake Watershed review the following:

- Battle Lake Watershed Synergy Group BMP's
- Battle Lake Watershed Development Planning Pilot Project
- ERCB Directive 56 regarding the Battle Lake Watershed

It is recommended that residents of the Battle Lake Watershed obtain and employ the Warburg/Pembina Surface Rights Group Geophysical Special Conditions Addendum when approached by a seismic company.

Industry Recommended Practices:

- There shall be no seismic operations on Tier 1 Lands.
- There shall be a setback of at least 100 Meters of Tier 1 Lands for source lines if seismic operations take place.
- Receiver lines in Tier 1 closer than 100 Meters shall be only hand distributed with zero disturbances if seismic operations take place.
- The minimization of disturbance of residents, livestock and wildlife shall be an objective at all times.
- Prior to entering the watershed the operator shall ensure that all equipment is clean and/or disinfected to the County standard to prevent spread of weed seeds, soil borne diseases, and other contaminants at land owners request.
- The operator, in discussion with landowner, shall identify and record, using GPS co-ordinates, water sources within the area of the seismic operation including springs, domestic water wells, stock water wells, fish ponds and dugouts. The operator shall conduct reasonable tests for quality, quantity, flow rates, pre-static levels, draw-down levels, recovery times to pre-static levels and migrating contaminants, which will be made available to the landowner and interpreted.

Proposed BMP's for Seismic Operations in the Battle Lake Watershed

- The operator shall use minimum disturbance techniques and equipment when conducting seismic operations in the Battle Lake Watershed.
- Vibroseis is preferred in the Battle Lake Watershed.
- Where drilling and blasting are unavoidable, all shot holes will be filled from bottom to top with bentonite or similar material designed to protect from comingling and contamination of aquifers quantity of filler material must equal the volume of shot holes.
- All shot holes should be visually inspected within 15 days of completion of blasting. Any blown out material or slump age must be replaced within 30 days of inspection. Any related damage noticed after this period must be remedied within 30 day of being reported.
- The operator shall do a complete and thorough cleanup of all stakes, seismic materials, wires, cut trees, debris and trash immediately after completion of operations in the Battle Lake Watershed.

**Prepared for: Battle Lake Synergy Group
02/07/2013**