

3.4.5 Application Case

The Application Case includes the Base Case (which is also considered to be the Pre-Development Scenario for this particular project) plus the groundwater resource impacts predicted to result from the proposed Pierre River Mine Project. The data, on which the impact assessment was based, is a combination of actual measurements, professional judgment and modeling results.

Direct Loss of Groundwater Resources

For the Pierre River Mine Project, the disturbance footprint is 10,403 ha (Shell 2007). The Community will lose access to any groundwater-dependent activities on Traditional Lands that occur in the proposed active mining area, including the ETDA. Some of these lands might be accessible after mine closure and reclamation, but might not be usable by Community members due to ongoing groundwater quantity or quality effects. Due to the complete loss of the potential for groundwater-dependent activities, Fort McKay assesses this as a significant adverse impact. Fort McKay's assessment is that some form of offset might be the only possible mitigation to address this loss of access to groundwater resources.

Groundwater Quality and Quantity at Cabin Sites

There are two cabin sites within the Pierre River Mine Project hydrogeology LSA as shown on Figure 3-3.

Both cabin sites are located beyond the area where 0.1 m of groundwater drawdown is predicted by modeling; therefore, based on Fort McKay's assessment criteria, these cabins are not expected to be adversely affected by the Pierre River Mine Project operations. Groundwater quality degradation is unlikely at the cabin sites as a result of seepage of process-affected water from the tailings ponds during and following mining and reclamation.

Drawdown of Groundwater-Dependant Traditional Use Areas

Mining activities will result in declines of the water table elevation in the surficial deposits as far as 5 km away from the proposed Pierre River mine (see Figure 3-5, which is the same as Figure 7.5-2 from Shell's EIA (Volume 5, Section 7.5.2.2., Shell 2007)).

The more extensive groundwater level drawdown will occur northeast and southwest of the mine and will be less extensive to the west. The Athabasca River valley limits drawdown to the east. Drawdown of the shallow groundwater level in the surficial aquifers has the potential to affect wetland areas, particularly fens, as they might be dependent on groundwater flow. Specific groundwater-dependant traditional use sites such as specific groundwater dependant plant-gathering sites, springs and muskeg used for drinking-water have not been identified within the predicted drawdown areas since they were not asked about specifically within