

**Environmental Risks and Plan Response for the North Saskatchewan Regional Plan**

**DRAFT (prepared by the Environmental Law Centre)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risk Category | Nature of environmental risks | Short to medium terms risks | Risk characterization(long term) | Risk mitigation  | Regional Plan options |
| Water quality | Loading of contaminants/nutrients (land, air, internal)* Regulated vs. unregulated inputs
* Land use- water connectivity
* Surface-groundwater connectivity

Quantity (climate) | Acute risks of effluent streams reliant of dilution effect (ammonia/pH)Bacterial risks for potable consumptionSediment (storm/runoff water)P/N risks (short and long term) on ecological outcomesDecreased assimilative capacity (with increased diversions or reduced supply due to climate variability) | Accelerated Eutrophication (with related risks)Chronic and cumulative impacts on ecosystems (all pollutants) | Loading management/regulationLoad assessmentsEffluent approvals/renewals conditions Preservation of flows to maintain dilutive capacityReduce runoff | Outcome: Maintain or restore water qualityGuiding Principle: Pollution prevention New activities to be load neutralProgramming to address nutrient exports (in unregulated or “under-regulated” areas)Monitoring efficacy for discerning acute, chronic and cumulative effects (background, forecasting, backcasting)Wetland restoration for water quality purposes |
| Water quantity | Supply (climate)Regulated flows for IFNGroundwater-surface water interactions | Diversions may result in ecological impacts Diminished flows resulting in decreased dilutive capacity | Degraded ecological systemsDegraded water quality  | Demand managementConservation initiatives (regulatory/voluntary/market) | Outcome: maintain or restore environmental flows Crown licencing of Water Conservation Objective (with timeframe)Demand management principlesConservation mechanism for environmental flows |
| Infrastructure related contamination of land, air and water | Point source contamination & emissions (and acute impacts on land, air and water) | Infrastructure failuresRemediation failure Abandonment failures <http://www.albertasurfacerights.com/upload/files/SBachuTWatson%20%20Potential%20Wellbore%20Leakage.pdf> Pipeline infrastructure and repair (particularly at or near water crossings) | Long term risks associated with abandoned wells | Long term security/fund to deal with future abandonment and reclamation/remediation failuresAbandonment audit Standardizing stringent abandonment criteria  | Assessment of enforcement effectiveness Mechanisms to increase stringency/due diligence near waterways (technical review and standards for monitoring and maintenance)Regional remediation, reclamation and abandonment assessment & audit |
| Biodiversity | Species at RiskHabitat/footprint management (conversion, degradation, fragmentation)Species introduction Climate change Overexploitation/direct human caused mortality  | Change in biotic and abiotic factors that support biodiversity  | Decreased biodiversity (richness and relative abundance)Extinction and extirpationDecrease in genetic diversity | Species at risk planning and mitigation.Habitat protection and restoration of SAR.Biodiversity management frameworkProgressive reclamation (regulatory) | Formalize species assessment and decision making criteria for AB Energy/AER and AESRD tenure allocations in areas of important habitat.Precautionary principle to be applied by decision makersProtected/conservation area |
| Air quality | Health and ecological impacts related to air qualitySubstances of primary concern:* NO2
* SO2
* Particulate matter
* Ozone

Volatile Organic Compounds and other potential air quality contaminants may also be a significant concern. | Particulate matter is a particular concern in the region due to past exceedances. Risks associated with primary and secondary PM (+NO2) | Regional acidifying emissionsChronic environmental and health effects | Air quality frameworkResponse to un-regulated or minimally regulated contributors (non-point, vehicles, fugitive emissions)Response to regulated (point and approved) contributions  | Outcome: maintain and restore regional air qualityGuiding Principle: Pollution preventionNO2 and PM regulatory and policy plan (w/timelines) - regulatory revision of approvals Investigate cap and trade systems |
|  |  |  |  |  |  |