

Potential Impacts to City of Edmonton Headwaters

Recommendation

That Utility Committee recommend to City Council:

1. That the City Manager, in coordination with EPCOR, provide input into the Coal Policy Committee through the request for submissions of technical documents based upon information in the August 27, 2021, Urban Planning and Economy UPE00424 report relevant to Alberta's coal policy.
2. That Administration, in consultation with EPCOR, undertake a review of existing water management initiatives and provide to Utility Committee in Second Quarter 2022 a recommendation on the need for a formal watershed management plan that could include headwaters protection and integrated land use, climate change planning, and water management within Edmonton boundaries.

Previous Council/Committee Action

At the February 22, 2021, City Council meeting, the following motion was passed:

That Administration, in consultation with EPCOR, return to Utility Committee with a report on the following:

- a. the potential impacts to City of Edmonton headwaters that may result from the four currently approved coal mining projects, and for future mining projects should the Government of Alberta choose to rescind the 1976 coal mining policy
- b. an outline of tools the municipality has to protect these headwaters, including but not limited to mitigation for potential impacts of high rates of selenium in our water supply and the possibility of the municipality working in regional partnership to seek intervener status with the provincial government
- c. recommendations on the feasibility of developing a headwater protection strategy for the City of Edmonton.

Executive Summary

Activity that happens in the headwaters of the North Saskatchewan River is a matter of vital interest to the City of Edmonton and every Edmontonian. The North Saskatchewan River is currently Edmonton's sole source of drinking water and provides Edmontonians with recreational opportunities including fishing, swimming and boating in addition to being an important ecological system for wildlife.

A basin wide, comprehensive risk assessment and integrated land use and water management plan do not currently exist, though a variety of watershed management efforts are currently underway. Review of available information and scientific literature related to coal mine development identifies that despite the current framework that regulates coal mine construction and operations, coal mining can have both long term and short term environmental impacts.

The regulatory framework for coal mine development is currently undergoing changes, and has potential to change coal mine development rules for specific land areas. The expansion of activities could pose potential risks for the North Saskatchewan River, and ultimately municipalities downstream, including Edmonton. There are some municipal tools for upstream protection that could be added to existing work underway by EPCOR and City of Edmonton, and could be part of an overall municipal watershed management strategy. There is a changing policy landscape, including the work of the provincial Coal Policy Committee, that will need to be monitored to understand the need for a City of Edmonton watershed and headwaters management plan.

Report

ConnectEdmonton sets the direction for the city's future and outlines where we need to change today in order to realize our vision for Edmonton in 2050.

ConnectEdmonton's goal of Climate Resilience includes a city with clean water. The City Plan's Big City Move of Greener as We Grow puts Edmontonians at the forefront of two important trends for our region—continuing to develop a healthy city while also paying attention to what will be one of the great challenges of our future: protecting and enhancing our land, air, water and biodiversity. Climate Resilient Edmonton: Adaptation Strategy and Action Plan includes a Goal that Edmonton's water supply is secure and safe for current and future Edmontonians, which requires long term source water security and protection planning for water quantity and quality. As well, the Act to Strengthen the Municipal Government, which amended the *Municipal Government Act*, added fostering the wellbeing of the environment as one of the purposes of a municipality, and this includes watershed health.

Background

The North Saskatchewan River is currently Edmonton's sole source of drinking water. Impacts that occur in Edmonton's headwaters (i.e. the river's source) could potentially

impact downstream communities, including Edmonton. The headwaters of the North Saskatchewan River are not located within Edmonton's boundaries. They begin in the Columbia Icefield in Banff National Park, flowing from the mountains through the foothills and various forested, agriculture and urban areas before reaching Edmonton. There is approximately 28,000 square kilometers (km²) of land upstream of Edmonton that drains into the North Saskatchewan River watershed.

Protection of water resources for drinking and recreational purposes, as well as aquatic health, requires integrated land and water management planning, locally, regionally, provincially and nationally. The development of an effective management plan should include a comprehensive assessment that includes risks such as climate change and land use to long term water security. The Government of Alberta has a mechanism to advance integrated land use and water planning under the Land Use Framework and Alberta Land Stewardship Act (ALSA) that identifies the need for regional plans at the watershed scale. The Government of Alberta began early work in 2014 to develop a North Saskatchewan Regional Plan for managing land and natural resources (including water), however this plan has not yet been released or approved.

Collaborative watershed management is occurring through a variety of mechanisms under Water for Life and the designated Watershed Planning and Advisory Council for the basin, the North Saskatchewan Watershed Alliance. There is also a Water Management Framework for the Industrial Heartland and Capital Region, which aims to improve water quality parameters of concern through management action. In addition, EPCOR has a Source Water Protection Plan for Edmonton's water supply that sets a framework to advance watershed management through monitoring, modelling and research. However, these important ongoing pieces of work are largely voluntary, and would benefit from being integrated together under a statutory plan such as the North Saskatchewan Regional Plan.

In June 2020, the Government of Alberta rescinded the 1976 Coal Policy that limited coal exploration and development on Category 2 and 3 lands in Alberta. Category 2 lands include areas within Edmonton's headwaters. There are 1,510 km² (just over 5 percent of the land in the watershed) of coal agreements in place within Category 2 lands in Edmonton's source waters that no longer have surface mining restrictions. In December 2020, seven new coal leases with exploration permits (approximately 320 km² in area) were issued in the North Saskatchewan watershed.

In February 2021 the Coal Policy was reinstated by the Government of Alberta, however all coal mining leases issued since June 1, 2020, remained, including 1,510 km² in Edmonton's headwaters. This reinstatement noted that six of the seven exploration permits that were granted in Category 2 lands will be allowed to continue coal exploration and drilling. On April 23, 2021 the Government of Alberta announced a pause in coal exploration activity on Category 2 lands, until the completion of public consultation that is currently underway.

Furthermore, the Coal Policy Committee has been established by the province to develop and lead a widespread engagement process to inform the Coal Policy, and provide a report with recommendations to the Minister of Energy by November 15, 2021. As the mandate of the Committee is focused on the management of coal resources, its work may not directly address land and water concerns. The Committee is expected to conduct engagement from March 29 - September 15, 2021. As part of this province wide engagement, an initial survey took place in March to April 2021 to receive initial feedback from Albertans on coal mining in Alberta. Initial results have been publicly released, and indicate that Albertans have a strong desire to be engaged on this topic. The majority of survey respondents indicated concerns with coal development, including concerns related to the environmental impacts, liability for clean-up and contamination and regulations to ensure coal exploration is safe, efficient, orderly and environmentally responsible.

As directed by Council, Mayor Iveson sent a letter to the Minister of Energy on March 11, 2021, requesting that the City be engaged as a major stakeholder in the coal policy review, and a reply was received on May 12, 2021. In early July 2021, the Coal Policy Committee requested and scheduled a meeting with the City of Edmonton for July 20, 2021. In addition, the Coal Policy Committee recently announced a process for submission of technical or fact-based documents relevant to Alberta's coal policy. A submission by the City of Edmonton and EPCOR could be made, which would include an Executive Summary highlighting the concerns related to potential risks identified in this report and sharing EPCOR's technical report in Attachment 1.

Potential Impacts to City of Edmonton Headwaters

A watershed scale comprehensive risk assessment on the impacts of the development of potential coal mines has not been completed. Before a coal mine could be developed, an environmental impact assessment is required under the Environmental Protection and Enhancement Act, which allows the Alberta Energy Regulator to examine the effects the proposed project would have on the environment and determine if the project is in the public interest. This is done on a project by project basis and is not equivalent to a watershed level plan that would include a cumulative effects assessment to determine aggregated impacts of multiple projects on water quality, aquatic health, and other environmental factors.

Once approved, future coal mining construction, operations, and reclamation will be required to follow regulatory frameworks meant to protect environmental health. In general, coal mines are known to have environmental impacts including decreased water quantity and quality and contribute to climate change both from a landscape disturbance perspective as well as from direct emissions of greenhouse gases.

Open pit coal mining is also known to leach parameters such as selenium into water systems over decades, and this impact is difficult to remediate. EPCOR's risk

assessment (Attachment 1) identifies that streams and rivers with coal mines in their watersheds have exhibited elevated selenium, sodium, nitrate, nitrite, aluminum, sulfate, cadmium, arsenic, other trace metals, conductivity, and chlorine levels. EPCOR's risk assessment identified that concentrations of cadmium and dissolved aluminum have occasionally exceeded protection of aquatic life guidelines at Devon, and these have been identified by Alberta Environment and Parks as parameters of concern for the North Saskatchewan River. Coal mines may contribute to higher concentrations of these parameters in the North Saskatchewan River, there is a risk of losing the ability to absorb those parameters without negative environmental impacts.

In addition to EPCOR's Risk Assessment, and for the purpose of this report, Administration reviewed additional available information on impacts of coal mining that identified examples of water quality exceedances of selenium and other parameters resulting from open pit mines in British Columbia, that are expected to persist for up to 300 years.

Specific to the effects on the North Saskatchewan River within Edmonton's boundaries, EPCOR conducted a risk assessment of upstream coal mining in the North Saskatchewan River Watershed (Attachment 1). The broad assessment focused on North Saskatchewan River health, and did not consider other ecosystem health impacts. As well, the risk assessment focused on effects within the City of Edmonton boundaries, and not the headwaters, where the effects could be significant locally. Lastly, the risk assessment assumes that future coal mining operations will follow current regulatory requirements for responsible operation and end of life reclamation.

This risk assessment suggests that risks to drinking water and assimilative capacity of the North Saskatchewan River under normal operating conditions is low, and risks to water quality for aquatic ecosystem health within Edmonton is medium-low. However, EPCOR's report indicates that in the event of a rare catastrophic mine failure (such as a tailings dam failure), there would be an extreme impact on downstream water quality. EPCOR's report recommends that scientifically rigorous cumulative effects modelling assessments be completed on both the North Saskatchewan River mainstem as well as the tributaries before any mining activity is permitted. In addition, EPCOR's report makes further recommendations for Alberta Environment and Parks and mining proponents related to watershed management and water quality monitoring, modelling and assessment.

The extent of effects coal mining has on local and regional scales is difficult to quantify, but one of the most clearly identified issues is bioaccumulation of selenium, a trace metal, and the impact on aquatic species. Research has demonstrated that the critical factors in determining the extent of selenium contamination and effects are the amount of selenium-rich waste rock exposed and the area of watershed mines.

Five percent of the North Saskatchewan watershed upstream of the City of Edmonton is currently held by coal leases, and this does pose a risk to source water, aquatic ecosystem health, and industrial and agricultural users if development occurs. The science around selenium effects is continually developing, but guidelines for water quality and tissue loads for fish and invertebrates, public health fish consumption, drinking water, and irrigation have been developed by the federal and provincial governments (depending on the guideline). EPCOR's assessment recommends that a precautionary approach be taken when assessing the potential impact and risk coal mining poses. Despite advances in treatment technologies, exposing rock rich in selenium and other metals has been shown to affect water quality for decades in downstream water bodies. Mitigation and remediation is cost prohibitive and difficult.

Municipal Tools

The North Saskatchewan River falls under both provincial and federal jurisdiction. In Alberta, the provincial government owns the bed and shores of most naturally occurring water bodies, including rivers. The provincial government has jurisdiction over water resources in Alberta through the Water Act, the Environmental Protection and Enhancement Act, and the Water for Life Strategy (a policy tool to manage water quantity and quality). Water for Life recognizes source water protection is critical, but there is not currently a regulatory framework to enforce the goals of Water for Life. The federal government's jurisdiction includes water bodies located on federal land such as National Parks, and in the areas of fisheries and navigable waters.

Much of the North Saskatchewan watershed is located on provincial or federal crown land, with other portions located within municipalities upstream of Edmonton or on privately owned land often used for agriculture. While the Province retains jurisdiction over the actual waterbody and beds and shores located on municipal or private land, the activities occurring on that land (that can impact the waterbody) are controlled by the landowner. Municipalities within the watershed regulate the land use and development within their respective jurisdictions to varying degrees.

The *Municipal Government Act* identifies one of the purposes of municipalities is to foster the well-being of the environment. The *Edmonton City Charter Regulation* states Edmonton can create bylaws for the creation, implementation and management of programs for environmental matters such as climate change adaptation, environmental conservation and stewardship and the protection of biodiversity and habitat. These bylaws would only apply within Edmonton city boundaries. There is existing work underway by EPCOR and City of Edmonton related to watershed management (Attachments 2 and 3).

The tools downstream municipalities have to influence upstream water protection and watershed management are limited, but include partnering and working collaboratively with other landowners and users of the watershed, and continued advocacy for

protection of Edmonton’s source water and integrated land and water management (Attachment 4).

The City of Edmonton has more tools that can be used within its boundaries for effective watershed management, including tools related to land use planning that can help prevent further degradation of the river. While this does not relate specifically to headwaters protection, these tools are necessary for effective watershed management at the municipal level, within our boundaries and downstream. Edmonton is responsible for land use planning and EPCOR is responsible for drinking water treatment and quantifying stormwater runoff. Within Edmonton boundaries EPCOR is currently completing an Integrated Watershed Management Strategy to manage total loads from the stormwater and combined systems, Goldbar, and water treatment plant residuals. This work, as well as drinking water protection and integrated land use planning are needed in order to have an effective municipal watershed management plan.

Headwaters Protection Strategy Feasibility

The national, provincial and local policy context that impacts water is currently in flux. Administration will continue to monitor policy changes and developments, including the work of the Coal Policy Committee, and will bring forward a report to Utility Committee in Q2 2022. Based on the changing context, this report will identify potential gaps and recommendations on the need for a formal watershed management plan that could include headwaters protection and integrated land use, climate change planning, and water management within Edmonton boundaries.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is an environmentally sustainable and resilient city			
Outcome(s)	Measure(s)	Result(s)	Target(s)
Ongoing monitoring and reporting of EPCOR utility services regulated by Council	Annual and periodic reporting of utility operations	TBD	Annual Progress Report - Water, Wastewater, Drainage (June) Annual Operational Plan (Q1) Mid Year Update Report (August)

Risk Assessment

Risk Element	Risk Description	Likelihood	Impact	Risk Score (with current mitigations)	Current Mitigations	Potential Future Mitigations
Reputational Risk	Edmonton may be viewed as an unattractive place to live or invest in, if there is a uncertainty around safe and secure water sources for the community.	2 - unlikely	2 - moderate	4 - low	-EPCORs work on Source Water Protection and Watershed Planning -COE involvement in collaborative water related organizations	-Headwaters strategy (that includes long term water security, and actions upstream, in Edmonton boundaries, and downstream) -Continued water management collaborative activities
Political Influences	Provincial government legislation or policy changes can influence Edmonton's ability to influence headwaters protection.	3 - possible	2 - moderate	6 - low	-Requested to be included in the Coal Policy Committee's engagement process	-Continue requesting to be included in engagement opportunities

Attachments

1. EPCOR Risk Assessment of Upstream Coal Mining in the North Saskatchewan River Watershed on North Saskatchewan Water Quality and Ecosystem Health
2. EPCOR 2020 Source Water Protection Plan for Edmonton's Drinking Water System
3. EPCOR and City of Edmonton Supported Watershed Management Initiatives in the North Saskatchewan River Watershed
4. Municipal Tools for Upstream Watershed Protection

Others Reviewing this Report

- C. Owen, Deputy City Manager, Communications and Engagement
- K. Fallis-Howell, Acting City Solicitor