Government of Alberta

Agency Report
2022

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1 Water-Related Legislation / Policy / Regulations / Planning

1.1 Regulatory Transformation

Background

Alberta Environment and Protected Areas (EPA) is modernizing its regulatory system to make reviewing approvals more transparent and efficient—all while maintaining high environmental standards.

Status

- The new regulatory assurance process seeks to achieve higher levels of regulatory efficiency by:
    - implementing an enhanced regulatory assurance system
    - addressing application backlog by assessing risk and current practices
    - reducing red tape by eliminating regulatory redundancies
    - supporting and stimulating the economy by reducing regulatory burdens
    - increasing regulatory efficiency and leveraging technology
- A digital platform is being built for the management, conservation and preservation of Alberta's natural resources through the administration of the *Water Act*, the *Environmental Protection and Enhancement Act* and the *Public Lands Act*.
- This platform (the Digital Regulatory Assurance System or DRAS) will allow applications to be submitted, reviewed and managed digitally, significantly improving approval timelines and transparency.
- DRAS takes into consideration the whole project lifecycle of an application, from its initial submission, monitoring considerations, compliance requirements, to closure and remediation needs.
- This digital system will be user-friendly and will lead to consistent and transparent reviews, without compromising environmental outcomes. This will result in timely decisions.
- For applicants, DRAS will provide:
    - The ability to apply for one project with multiple activities via an integrated application, which the system will walk the user through.
    - Clear, up front application standards and requirements.
    - A clear decision-making process.
    - The ability to track the status of their applications in real time.
    - Clear compliance expectations and ownership of compliance infractions.
    - Increased province-wide consistency in application processes.

Further Information

- The first information technology (IT) release of DRAS was on June 21, 2021. It included the functionality to accept, review and track Water Act approvals, and codes of practice notices.
- The second release was on November 15, 2021, and included new surface water and groundwater applications, amendments, amalgamations, transfers and renewals for *Water Act* licences.
- DRAS started managing *Water Act* temporary diversion licences as of April 4, 2022.
- Additional activities will be added regularly until 2024.

Contact

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1.2 Incident Reporting—Alberta Energy Regulator (AER)

Background

AER's response to industry incidents and emergencies continues to be based on information collected by the Government of Alberta's energy and environmental emergency 24-Hour Response Line (Energy and Environmental Response Line | Alberta.ca).

Status

There have been no major changes to the AER's standard operating procedures in the incident reporting space. When an incident is reported by industry via a phone call to the Energy and Environmental Emergency 24-Hour Response Line, the phone call is received by the AER, it is triaged, and an appropriate response activated.

Members of the general public are encouraged to call the Energy and Environmental Emergency 24-Hour Response Line if they see an energy or environmental incident or emergency, or if they wish to file a complaint about an operation (such as odour or noise).

The AER's Emergency Management (EM) Team is on standby to help companies manage all types of hazards and incidents. When an incident happens, our role is to protect the health, safety, and welfare of people and wildlife and limit damage to property and the environment.
AER's trained staff coordinate with the company responsible for the incident. The AER will mobilize to ensure industry responses meet the regulatory requirements and expectations, which ensures that the response is efficient and effective.

The AER coordinates its response with other municipal, provincial, and federal agencies, and the AER follows the Energy Resources Industry Emergency Support Plan (ERIESP) during emergencies of large consequence or that require joint response from multiple government agencies.

To keep Albertans informed, the AER publishes details about incidents as they happen on the AER's Compliance Dashboard. After the emergency is over, the AER will continue to monitor the company's clean-up activities to ensure that the AER's requirements are met.

Further Information

On average, the AER will receive between 350 to 450 incidents reported via phone call to the Energy and Environmental Emergency 24-Hour Response Line per calendar month.

Contact

Contact the AER at Inquiries@aer.ca.

1.3 Incident Reporting – Alberta Environment and Protected Areas (EPA)

Background

EPA's response to incidents and emergencies is also based on information collected by the Government of Alberta's toll free, 24-hour energy and environmental emergency and complaint line (Energy and Environmental Response Line | Alberta.ca) that allows Albertans and industry to report concerns about possible environmental infractions, potential environmental emergencies or industry self-reporting pursuant to an authorization. The toll free line is operated by regulatory compliance officers in Alberta EDGE (Environmental and Dangerous Goods Emergencies). The Alberta Energy Regulator (AER) shares this reporting service with EPA and calls are directed to the appropriate organization according to regulation.

Alberta's *Environmental Protection and Enhancement Act* requires a responsible party to report the release of a substance that may cause, is causing or has caused an adverse effect on the environment or is a contravention of a term or condition of an approval or registration. The EPA Support and Emergency Response Team (ASERT) responds to emergencies 24/7/365, and works with industry, municipalities, first responders, other government departments, agencies and the public to ensure appropriate outcomes are achieved during emergency incidents. If an incident occurs that may affect a neighbouring jurisdiction, ASERT will notify the appropriate emergency contact in that jurisdiction as per transboundary agreements.

ASERT provides oversight to ensure the responsible party is following its approved emergency response plan and that containment and clean-up is occurring efficiently and effectively. The department oversees all aspects of an environmental incident – from the initial emergency response, clean-up and containment phase, to long-term monitoring and remediation activities. The responsible party is responsible for all associated clean-up costs. The department is able to take control of a situation and bring in the required response if the responsible party is not capable or unwilling to act. There is no specific legislation for cost recovery in Alberta, however court ordered reparation is possible. The department works jointly with other response agencies during emergencies, including the Alberta Energy Regulator (AER) during releases from the oil and gas industry.

Contact
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1.4 Regional Planning and Environmental Management Frameworks

Background

The Government of Alberta's Land-use Framework (LUF) sets an approach to managing the province's land and natural resources to achieve Alberta's long-term integrated economic, environmental and social goals. The LUF includes establishing regional plans for seven land-use regions, which are given legislative authority through the *Alberta Land Stewardship Act (ALSA)*. ALSA includes provision for advancing regional, sub-regional and issue specific integrated land-use plans as well as stewardship tools.

Environmental management frameworks (EMFs) are a strategy to achieve the environmental outcomes established in a regional plan.

Status
The Government of Alberta remains focused on commitments and priorities of implementing the LUF, *ALSA*, and its various elements such as integrated land-use plans and land stewardship tools.

The Lower Athabasca Regional Plan (LARP) was released in 2012 and its associated EMFs for air quality, surface water quality, surface water quantity and tailings continue to be implemented. Characterization of the groundwater regime and regional groundwater monitoring has been continued under the Oil Sands Monitoring Program. The Government of Alberta remains committed to implementation of the plan by working together with stakeholders and Indigenous peoples. Government launched the LARP 10-year review on August 26, 2022, to assess the ongoing relevancy and effectiveness of the plan in supporting the long-term vision for economic, social and environmental needs in the region.

The South Saskatchewan Regional Plan (SSRP) was released in 2014 and its associated EMFs for air and surface water quality continue to be implemented. A 10-year review of the SSRP is required to be initiated in 2024. The SSRP recognizes the Approved Water Management Plan for the South Saskatchewan River Basin continues to provide important guidance for water management in the region.

The development of the North Saskatchewan Regional Plan (NSRP) was initiated in 2014, though the plan has not been completed. The timing of the NSRP and sequencing of the remaining regional plans in the province has not been determined.

Two new surface water quality management frameworks for the North Saskatchewan and Upper Athabasca regions will come into effect in 2022. These frameworks will put in place a system of indicators, management thresholds, evaluation, reporting, and management responses for the main stem upper Athabasca, North Saskatchewan and Battle rivers. Alberta Environment and Protected Areas is also looking to advance similar surface water quality management frameworks for the Peace and Red Deer regions.

Alberta Environment and Protected Areas continues to advance the development of biodiversity indicators. Data layers showing the evaluation of the Stream Connectivity and Interior Habitat indicators across the province is available on Open.Alberta and GeoDiscover, along with supporting methodology. Data and information for additional indicators are anticipated to be published in the coming months.

A guidance document for the development of groundwater management frameworks is also being advanced to support the assessment and management of cumulative impacts to groundwater quality and quantity across the province.

Further Information

Information about the ongoing implementation of the LAR and SSR air and surface water management frameworks, including annual reporting on ambient condition and status of management response, can be found at:

- LUS LARP and SSRP progress reports: https://landuse.alberta.ca/ResultsResources/ResultsReporting/Pages/default.aspx
- LUS LARP 10-year review: https://landuse.alberta.ca/RegionalPlans/LowerAthabascaRegion/10YearReview/Pages/default.aspx
- EPA LARP EMF implementation: https://www.alberta.ca/lower-athabasca-regional-planning.aspx
- EPA SSRP EMF implementation: https://www.alberta.ca/south-saskatchewan-regional-planning.aspx
- EPA Biodiversity indicator: https://geodiscover.alberta.ca/geoportal/rest/metadata/item/7025fe90840a4680b4011b7100c21644/html

Data layers and supporting methodology for biodiversity indicators can be found at:

- Stream connectivity indicator for Alberta - Open Government
- Interior Habitat Indicator for Alberta - Open Government

Contacts

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1.5 Tailings Management Framework—Alberta Energy Regulator

Background
The Alberta Energy Regulator (AER) works to ensure that the oil sands are developed within government policy and in an environmentally responsible way. We are committed to protecting what matters to Albertans—public safety and the environment—ensuring the rules are followed at every stage of energy development.

Under the Government of Alberta's Tailings Management Framework (TMF), operators must progressively treat and reclaim their tailings so that they are ready to reclaim within 10 years after mining has stopped.

Under the TMF and the AER's *Directive 085: Fluid Tailings Management for Oil Sands Mining Projects*, operators are required to submit tailings management plans to the AER. These plans list the actions that operators will take over the next several decades to ensure their tailings are progressively reclaimed when the life of the mine ends.

To ensure an operator's tailings management activities remain on track, the AER has set thresholds for fluid tailings volumes that operators must maintain (i.e., limits and triggers). These thresholds will remain in place for the approved life of a mine.

The TMF and Directive 085 do not address waterfowl protection, dam safety, or emissions from tailings ponds. These issues are addressed through other AER regulatory requirements.

The AER continues to work with all stakeholders, including industry, environmental groups, and indigenous groups to ensure all tailings management and operational plans meet Government of Alberta policy and AER requirements.

Status
The AER has approved tailings management plans for all eight of Alberta's oil sands mines. Decision reports are posted to the Tailings Notices and Decisions page on aer.ca.

Each year, the AER publishes a State of Fluid Tailings Management for Mineable Oil Sands. The 2020 report shows that the volume of fluid tailings increased by approximately seven per cent in 2020 compared to 2019, while bitumen production declined by approximately five per cent during the same period, which occurred during the COVID-19 pandemic and related drop in global oil demand.

From 2015 to 2020, the reported total volume of fluid tailings in the Athabasca oil sands region was below the aggregate of approved tailings profiles, for all operators combined. Each company's tailings

management plan has one or more profiles that track the volume of tailings that must be treated and reclaimed over the lifecycle of the mine.

Based on the volumes reported in 2021 annual reports submitted to the AER, all oil sands mine operators remained in compliance with Directive 085. The 2021 Public Report is being compiled and reviewed, and is due to be released October 30th, 2022.

Further Information
Additional information about the AER's approach to tailings management is available at aer.ca

Contact
Contact the AER at inquiries@aer.ca

1.6 Tailings Management Framework – Alberta Environment and Protected Areas

Background
The Tailings Management Framework for the Mineable Athabasca Oil Sands (TMF) was released in March 2015 as a commitment under the Lower Athabasca Regional Plan. This framework provides direction to manage fluid tailings volumes during and after mine operations to manage and decrease liability and environmental risk resulting from the accumulation of fluid tailings. A major goal of the framework is to have all tailings ready to reclaim within 10 years of the end of mine life.

Status
Work is underway to determine if and how treated oil sands mine water could be safely released.

The Oil Sands Reclamation Interest Group (OSRIG) provides strategic policy advice and discusses perspectives on a broad range of reclamation topics, while the Oil Sands Mine Water Science Team provides technical expertise to fill key knowledge gaps that can be used to inform the development of regulatory guidance documents. The Science Team has published its work plans and will complete work to fill the technical information gaps in 2023.

The Oil Sands Reclamation Interest Group (OSRIG) is established to provide strategic policy advice and discuss perspectives on a broad range of reclamation topics.

Further Information
- TMF: https://open.alberta.ca/dataset/962bc8f4-3924-46ce-baf8-d6b7a26467ae/resource/7c49eb63-751b-49fd-b746-87d5edee3131/download/2015-larp-tailingsmgtathabascaoilsands.pdf
- AER Directive 085: Fluid Tailings Management for Oil Sands Mining Projects. https://www.aer.ca/documents/directives/Directive085.pdf
- Science Team work plans: https://open.alberta.ca/publications/9781460152843

Contact
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1.7 Water Conservation Policy for Upstream Oil and Gas Operations

Background

The Water Conservation Policy for Upstream Oil and Gas Operations (WCP) was released in December 2020. It provides policy direction to minimize fresh water use in major upstream oil and gas operations by encouraging the use of alternative sources such as wastewater, saline groundwater and non-water technologies.

Status

The Alberta Energy Regulator (AER) implements the WCP and is developing guidance documents for oil sands thermal in situ operations, enhanced oil recovery, cold bitumen enhanced recovery operations and multistage hydraulic fracturing in horizontal wells.

To support the implementation of the WCP, a regulatory framework for the conveyance, storage and reuse of fluids for hydraulic fracturing is being developed.

Further Information

Water conservation policy for upstream oil and gas operations - Open Government (alberta.ca)

Contact

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1.8 Selenium Management Review

Background

EPA undertook a provincial selenium management review in 2021, with the support of the AER. The review examined regulatory requirements for coal projects and assessed the regulations and policies of comparable jurisdictions.

Status

The selenium management review is complete. Alberta will continue to strengthen its oversight of selenium management and continues to engage with Environment and Climate Change Canada on emergent federal coal mining effluent regulations. Any updates to provincial policies regarding the management of selenium will be in place following the release of new federal coal mining effluent regulations, which are expected near the end of 2023.

Further Information

The selenium management review covered the full regulatory lifecycle of a coal project from application, construction and operation, to decommissioning and reclamation. The scope of the selenium management review included:

- *Environmental Protection and Enhancement Act* approval conditions relating to selenium.
- Selenium management plans developed by mining operations.
- Best management practices in Alberta and comparable jurisdictions.
- Compliance or enforcement procedures for the construction, operation and reclamation of mines.

Contact

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1.9 Potable Water Regulation

Background
EPA updated the Potable Water Regulation in June 2022. The regulation provides rules, provisions, prohibitions and stipulations related to water treatment requirements, water quality, water system design, certification of operations, conservation and responsible use, and sampling and reporting. The updates to the Potable Water Regulation included administrative amendments, the creation of a water treatment standard for very small (micro) waterworks systems, and a change to the guideline for naturally occurring fluoride in groundwater to align with Health Canada's guidelines.

Status
The amended Potable Water Regulation was published in June 2022. Work is underway to implement the requirements for micro waterworks systems.

Further Information
Potable Water Regulation - Open Government (alberta.ca)

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1.10 Stormwater Use

Background
In Alberta, a *Water Act* licence is required to use stormwater regardless of volume or purpose for using it. Sustainable stormwater use can augment and increase the resilience of the water supply, and can offset water use from other sources. Some stormwater can be used without negatively impacting the environment or downstream users. EPA is looking to reduce red tape around stormwater use by exempting a certain volume of stormwater from *Water Act* licensing requirements.

Status
EPA is working to increase the ability for Albertans to use stormwater by exempting a certain volume of water from the *Water Act* licensing requirement.

Contact
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1.11 Surface Water Allocation Directive – Alberta Energy Regulator

Background
Alberta released the Surface Water Allocation Directive (SWAD) in 2019 (https://open.alberta.ca/publications/9781460143339) to provide consistent water allocation decision guidance for rivers, lakes and wetlands where planning processes have not established water management objectives. The Directive uses a sustainable watershed approach to balance ecological needs and economic considerations.

Status
The AER and EPA continue to implement the SWAD by issuing new *Water Act* licences with diversion schedules that set operational diversion limits based on real-time flow conditions at Water Survey of Canada hydrometric stations. The limits are set based on the ecological thresholds identified in the SWAD and the level of water demand required by senior priority water licence holders. The diversion schedules include conditions requiring a user to stop diverting when all the remaining flow is required to meet ecological and senior priority needs.

Contact
Contact the AER at inquiries@aer.ca

1.12 Water Infrastructure and Operations

Background
Water Infrastructure and Operations Branch (WIOB) is responsible for the operation, maintenance and surveillance of approximately $10B worth of provincially owned water management infrastructure. A significant portion of that infrastructure is managed to provide assured water supply for irrigation, municipal, industrial, recreation and other uses that benefit Albertans, and to also support meeting inter-provincial water apportionment requirements.

To meet Dam Safety Regulatory requirements, WIOB undertakes regular inspection and surveillance of this infrastructure in order to track performance and to document changes and deficiencies that may impact the operability and long-term sustainability of the infrastructure.

WIOB also undertakes technical assessments and evaluations performed by independent qualified professionals. These assessments and evaluations ensure infrastructure is performing as intended, and to identify changes or improvements required considering changing climate conditions.

Utilizing the information collected, WIOB delivers a maintenance program, which resolves smaller issues directly related to the operational readiness of the infrastructure. WIOB also identifies and initiates capital rehabilitation projects that are delivered by Alberta Transportation. Capital rehabilitation projects include major repairs to and replacement of infrastructure components, which are beyond their design life or are no longer able to meet the infrastructure design requirements.

Status
The capital program is $30 Million annually, with an additional $2.5 million for maintenance actives. The following is a list of capital rehabilitation projects currently being delivered as part of WIOB's capital rehabilitation program:

- Jensen Dam Emergency Spillway Seepage Monitoring
- Control systems upgrades - Waterton Dam Irrigation Outlet, Western Headworks, Carseland Bow Headworks, St. Mary Waterton Headworks
- Waterton Reservoir Aquifer Relief System Rehabilitation
- Kleskun Hills Flood Control Rehabilitation
- Lethbridge Northern Headworks Liner Replacement
- Dickson Dam Spillway Upgrades

Further Information
WIOB works constantly with both internal and external stakeholders to manage the infrastructure to meet the competing needs of the full spectrum of water users and the environment. WIOB also works

extensively with downstream stakeholders to ensure they have information that will assist them with developing and testing their own emergency response plans related to flood events that could occur as part of the operation of this infrastructure. This includes working with the Saskatchewan Water Security Agency on operational and dam safety issues.

Contact:

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2 Science, Monitoring and Information

2.1 Water Shortage Response Updates

Background

The Alberta Environment and Protected Areas (EPA) provincial Flood and Water Shortage Management Team (FWSMT) was activated in March 2022, to commence tracking and preparedness activities with respect to flood and water shortage conditions in the province. The FWSMT replaces the former EPA Water Shortage Management Committee structure, and integrates all of the EPA flood and water shortage preparedness, response and recovery coordination. The FWSMT is co-led by EPA's Regulatory Assurance division's North and South regions and Environmental Emergency Management branch. FWSMT membership includes representation from all key EPA business units required to effectively manage flood or water shortage events, which includes the EPA Transboundary Waters unit. The FWSMT also has a cross-ministry membership, which includes Alberta Agriculture, Forestry and Rural Economic Development and the Alberta Energy Regulator.

In early spring 2022, the FWSMT tracked precipitation and soil moisture deficits in many areas of the province, with particularly dry conditions being noted in areas south of Red Deer to the United States border. On May 17, 2022, the FWSMT moved from a 'preparedness' to 'response' posture due to water shortage conditions on the Belly River and Willow Creek sub-basins of the South Saskatchewan River Basin. Water shortage response plans were activated and a dedicated Water Shortage Response Team was stood-up to manage the shortage. EPA was required to administer 'priority' water use in the Willow Creek basin due to three priority calls from senior licensees.

In mid-June much of the province received significant rainfall ending a majority of the drought conditions carried over from 2021. Regardless of increased precipitation received in 2022, the FWSMT remained activated in a response posture throughout the summer months, tracking and taking management actions in those remaining areas of the province with sustained water shortage conditions (e.g. the Willow Creek Basin, some mountain tributaries and the extreme SE portion of the Province).

Status

- Significant rainfall events in June 2022, abruptly improved drought and water shortage conditions in Alberta that were carried over from the 2021 season.
- Currently, many watercourses in the province are experiencing low flows due to increased recession rates which are typical for this time of year (fall). Advisories on some of these watercourses may remain active through spring 2023, due to seasonal conditions.
- The EPA Water Infrastructure Operations branch (WIOB) is drawing down reservoirs to meet fall and winter targets to ensure reservoirs can refill to meet demand next spring. It is anticipated that EPA canals will cease operation in early October 2022.
- Despite increased precipitation, animal feed and water sources remain a concern in some areas of the province.
- The EPA FWSMT will soon be moving back to a 'preparedness' posture. EPA anticipates the FWSMT preparedness work will continue throughout the 2022-23 winter season, with a focus on updating response plans and improving EPA's overall water shortage response system based on the events of 2021 and 2022.

Further Information

- https://rivers.alberta.ca/
- https://www.alberta.ca/drought.aspx
- https://www.alberta.ca/farming-in-dry-conditions.aspx

Contact

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2.2 Alberta River Forecast Centre

River Conditions (South and Central Alberta)

Spring conditions in south and central Alberta were characterized by a below average plains snowpack and an above average mountain snowpack. Cool temperatures delayed the onset of the spring melt, causing low water levels in many headwater streams through May and early June.

Between June 12 and 15, 2022, central and southern Alberta received 30-50 mm of widespread precipitation. In the foothills from west of Calgary down to Pincher Creek, 80-100 mm was observed, with locally higher amounts of up to 160 mm. The rainfall event was widely covered by local media, provided welcome relief to dry soil conditions and helped reservoirs recover to normal supply levels.

River levels have generally been receding since July. As of early October, river levels for this time of year are normal to below normal in the North Saskatchewan, Battle, Red Deer, Bow, Oldman, South Saskatchewan and Milk River basins.

River Conditions (Northern Alberta)

An average to above average snowpack in April and well above average precipitation in May caused flooding in northwest Alberta, including the Peace River and Hay River basins. Due to saturated soil conditions and high lake levels, flows in most of the rivers remained above average for much of the summer.

Flows in the Athabasca River basin were generally in the normal range through the spring and receded to near the lower quartile through the summer.

As of early October, flows in the Hay River, Peace River and Athabasca River basins are generally within the normal range for this time of the year.

Preliminary water levels, flow information, precipitation maps and automated station camera photos for rivers in Alberta can be found at https://rivers.alberta.ca/.

Water Supply Outlook (South and Central Alberta)

The River Forecast Centre (RFC) published the most recent Water Supply Outlook in August 2022. For the March to July period, the recorded natural volumes have been:

- Milk River basin – much below average to average
- Oldman River basin – average
- Bow River basin – average to above average
- Red Deer River basin – below average to average

- North Saskatchewan River basin – below average to above average

A review of this year's Water Supply Outlooks will be posted in November 2022.

Detailed information from the August 2022 Water Supply Outlook as well as preliminary water levels, flow information and precipitation maps are on https://rivers.alberta.ca/.

Water Supply Model Update

The RFC publishes monthly Water Supply Outlooks between February and August for use across the Government of Alberta, transboundary partners, infrastructure operators, irrigation districts, municipalities, and industry users. The Water Supply Outlook contains March to September natural flow volume forecasts at twenty locations in the Milk, Oldman, Bow, Red Deer and North Saskatchewan River basins. This information is used for decision-making related to efficient water management, reservoir operation, spring seeding, water allocation, and providing early drought and flood warnings.

A survey of Water Supply Outlook stakeholders found strong support for the outlook outputs in their current form and a desire for the RFC to investigate new models that will result in more accurate water supply forecasts. Based on this information, the RFC committed to stakeholders to explore improving the water supply forecast procedures and updating the existing models with new historical data.

To facilitate updating the existing Principal Component Analysis (PCA) based water supply models, the RFC is implementing PyForecast. PyForecast is a statistical modelling tool developed by the US Bureau of Reclamation Great Plains Region to train, build and run seasonal streamflow forecast models.

The RFC has also partnered with the University of Alberta to use machine learning (ML) techniques, a subset of Artificial Intelligence, to test new models that could improve the water supply forecast accuracy. The project will test a combination of artificial neural networks (ANN), support-vector machines (SVM), extreme learning machines (ELM), and radial basis functions (RBF) and compare the results with the PCA-based water supply models to find the most accurate models and meet stakeholder needs.

River Forecast Centre Status

The Alberta River Forecast System (ARFS-FEWS), a customized version of the Deltares Delft-FEWS (Flood Early Warning System), was used heavily used this year, including:

- Ingesting and visualizing hydrometric and metrological data
- Running hydrological flood forecasting models
- Retrieving, processing and visualizing RADARSAT Constellation Mission, Sentinel satellite imagery for river ice monitoring and forecasting.

The efficiency and value of using a common FEWS platform across multiple forecasting agencies are being realized now as configuration code, tools and lessons learned are being shared between river forecasting agencies across Canada.

Enhancements to https://rivers.alberta.ca/ were released in March 2022 and tested during this spring's flood events. The enhancements garnered strong positive feedback and included adding smaller river basins and the ability to break down larger rivers into colour-coded segments to identify areas with active flood advisories more precisely.

Work is continuing within the forecasting program to update the existing Water Supply Outlook models, investigate new modelling technologies to support the Water Supply Outlook and the ongoing review and

implement new hydrological flood forecasting models. Summaries of the model test results and an implementation plan are expected in 2023.

Further Information

Further information can be provided by Peter Bezeau.

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3 Major Initiatives

3.1 Irrigation Infrastructure Investment and Feasibility Study

Background

Alberta Irrigation Modernization:

In 2020-2021, the Government of Alberta, the Canada Infrastructure Bank and a consortium of nine irrigation districts announced their combined investment of $932.7 million to modernize irrigation district infrastructure and increase water storage capacity in southern Alberta. This investment will support the construction or enlargement of up to four off-stream irrigation storage reservoirs and support over 90 infrastructure rehabilitation projects, including converting open canals to underground pipeline systems that eliminate evaporation, seepage and spill. Projects will be delivered by the irrigation districts and the increased water-conveyance efficiency will allow more acres to be irrigated within the same water allocation.

Irrigation Feasibility study in east-central Alberta:

In early 2021, Agriculture, Forestry and Rural Economic Development, the Canada Infrastructure Bank, the Special Areas Board and the Municipal District of Acadia reached a memorandum of understanding to assess the technical and financial feasibility of developing irrigation in east-central Alberta.

Status

- Construction of the infrastructure modernization projects has started with an anticipated completion date of 2025. Off-stream reservoir projects are scheduled to be completed by spring 2028, and are subject to receiving the appropriate regulatory approvals.
- The east-central Alberta feasibility study was completed in summer 2022. It included:
    - an assessment of previously cultivated land suitable for irrigation;
    - availability of water;
    - potential financial, economic, social and environmental benefits;
    - capital and operational costs; and
    - environmental and permitting risks.
- The report indicated 108,000 acres of previously cultivated land in the Municipal District of Acadia and Special Areas region could be developed for an irrigation project. It recommended the next phase of work move forward, including completion of preliminary engineering to support project optimization and identification of ways to reduce costs.

Further Information:

Further information for specific projects being completed by the participating irrigation districts can be found at the following external link: https://www.albertawater.com/topics/irrigation

A summary of findings report on the technical and financial feasibility assessment for developing irrigation in east-central Alberta is available online MD of Acadia and Special Areas Joint Irrigation Project.

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3.2 Denitrifying Bioreactors for Management of Agricultural Drainage Water in Alberta

Background:

In Alberta, sub-surface drainage is used as a water-management practice to remove excess water from the rooting zone of agricultural fields. This can improve field access, enhance soil warming and reduce soil compaction. Improved air-filled soil porosity can improve crop yields, allow for a greater choice of crop types and can reduce local surface runoff and water erosion.

However, sub-surface drainage systems can act as direct conduits for transporting contaminants from fields into receiving waterbodies, resulting in water quality impairments. Denitrifying bioreactors are a passive treatment approach where sub-surface drainage water is routed through solid carbon substrates to remove dissolved nutrients through physicochemical and biological processes. Although this technology has been used successfully elsewhere in North America, it has not been tested or optimized for the Canadian Prairies.

Status:

- Agriculture, Forestry and Rural Economic Development and the Taber Irrigation District partnered to conduct a three-year project (2019-2021) to evaluate the feasibility and optimize the design criteria of denitrifying bioreactors as an edge-of-field beneficial management practice for mitigating the environmental effects of sub-surface agricultural drainage in Alberta.
- This project was funded by Alberta Innovates and Canadian Agricultural Partnership grants. Final reports were submitted to meet obligations to the Alberta Innovates Clean Resources Division and the Canadian Agricultural Partnership Risk Mitigation Program.
- Two manuscripts for peer review are currently in production.
- A report and factsheet for publication on Open Alberta have been approved and will be available online soon. They are titled:
    - Using denitrifying bioreactors as a beneficial management practice for agricultural drainage waters in Alberta (report)
    - Using denitrifying bioreactors for management of agricultural drainage water in Alberta (factsheet)
- Project results provide important information on the optimal conditions, and therefore feasibility, under which denitrifying bioreactors may be applied to Alberta's agricultural landscape as a beneficial management practice option. Additional work is recommended to address knowledge gaps.

Further Information:

The report and fact sheet will be posted on Open Alberta (https://open.alberta.ca/publications).

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3.3 Alberta's Water Research and Innovation Strategy (AWRIS)

Background

"Alberta's Water Research and Innovation Strategy 2014: A Renewal" (AWRIS) was released in 2014. AWRIS directly guides the six-year, $28.3 million provincial investment in Alberta Innovates Water Innovation Program (WIP). AWRIS also guides Alberta's post-secondary institutions (PSIs) and other research organizations in response to the challenges faced by the province's water resource system, and supports the knowledge needs of Water for Life (WFL): Alberta's Strategy for Sustainability.

- AWRIS has three key outcomes:
    - **Innovation Focus**: Investments in water research and innovation generate relevant, credible, and reliable knowledge that supports the strategic needs of Alberta's water resource system.
    - **Innovation Platforms**: Technological and organizational environments are conducive to discovery and application, fueling innovation in Alberta's water resource system.
    - **Innovation Capacity**: Water knowledge is effectively mobilized to create innovative solutions to Alberta's water resource system.
- The provincial investment in WIP has been a key implementation tool to achieve AWRIS outcomes and provide guidance to make knowledge-based decisions for water-related challenges.
    - WIP is managed by Alberta Innovates to achieve the outcomes of AWRIS and the knowledge needs for the goals of the WFL Strategy:
        1. safe, secure drinking water;
        2. healthy aquatic ecosystems; and,
        3. reliable, quality water supplies for a sustainable economy.
    - WIP projects are leveraged with other funding sources, including municipal and federal governments, PSIs, industry, and other national and international partners.

Status

- The WIP grant offered funding through continuous intake and competitive, time-limited calls to support the creation and application of relevant scientific knowledge and innovative technology solutions needed to address the goals of WFL/AWRIS strategies.
    - WIP is fully allocated, with its current phase ending in 2024.
    - WIP recipients include PSIs, government organizations, private sector companies, and not-for-profit organizations.

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3.4 Alberta Innovates Water Innovation Program (WIP)

Background

Alberta Innovates is a provincially funded corporation that invests in research, innovation, and entrepreneurship to drive provincial economic growth and diversity. Alberta Innovates provides technical expertise, entrepreneurial advice, and support, opportunities for partnerships and funding to advance the best ideas. Programming supports a broad range of research and innovation activity – from discovery to

use. Collaboration is at the heart of what Alberta Innovates does, bringing together bright minds and great ideas.

The Alberta Innovates Water Innovation Program (WIP) is designed to help the Government of Alberta (GoA) achieve the outcomes of the Alberta Water Research and Innovation Strategy (2014): A Renewal (AWRIS) and the goals of the Water for Life (WFL) Strategy: (1) safe, secure drinking water; (2) healthy aquatic ecosystems; and (3) reliable, quality water supplies for a sustainable economy. The priority is to make certain Alberta has the quality and quantity of water, when and where it is needed into the future.

The program builds on a history of world-class research and innovation, and helps create and apply relevant, reliable, and credible knowledge and information that will lead to a high-performing, innovative, and responsive water system for the province of Alberta, as called for in AWRIS. The WIP research portfolio supports investments that advance knowledge and innovation in four key themes:

(1) future water supply and watershed management,
(2) healthy aquatic ecosystems;
(3) water use conservation, efficiency, and productivity; and
(4) water quality protection.

The WIP grant offers funding through continuous intake and competitive, time-limited calls to support the creation and application of relevant scientific knowledge and innovative technology solutions needed to address the goals of WFL/AWRIS strategies. Recipients include post-secondary institutions, government organizations, private sector companies, and not-for-profit organizations.

High-level results from 2021/22 WIP grant activity include:

- 37 ongoing projects and 46 completed projects.
- 444 highly qualified personnel (HQP) supported by projects to date with 179 jobs created and 171 collaborations.
- Program leverage of 2.6:1 with other funding sources.
- Update of investment priorities based on stakeholder engagement.
- Development of new communications tools, including a water magazine to be released in Fall 2022.

Status

The WIP grant is currently in effect with the current phase ending in 2024 (extended from 2022).

- To date, Alberta Innovates has held three WIP calls: one in October 2015, a joint Water Technologies call in partnership with Sustainable Development Technologies Canada (SDTC) in 2016, and a third call in August 2018.
- A fourth call is in progress with final funding decisions to be made in February 2023.
- Brief summaries for funded projects are available online at: https://albertainnovates.ca/focus-areas/clean-resources/project-library/.

The annual WIP Forum, normally held in May each year, was cancelled in 2020, 2021, and 2022 due to the COVID-19 pandemic. Water Innovation webinars were established to continue efforts to share outcomes of projects funded through WIP and maintain a network of water stakeholders in the province. Recordings of the sessions can be found at: https://gateway.on24.com/wcc/eh/2370610/inventures-unbound-event-portal?partnerref=unboundportaldomain.

Four ongoing or recently completed projects are highlighted below:

3.4.1 *Alberta Wetland Classification System Field Guide (Ducks Unlimited)*

- Approximately 20% of Alberta is covered by wetlands, which play a critical role in maintaining healthy watersheds by providing water storage and infiltration, filtering sediments and contaminants, and providing habitat for a variety of species. Under the Alberta Wetland Policy, all proponents must follow the Alberta Wetland Classification System (AWCS) to meet related legislative requirements and guidelines.
- A simple plain language guide that can be easily used by practitioners who are working in the field is an important tool for identifying wetlands in the province, but was lacking.
- Ducks Unlimited Canada (DUC) worked with partners and consulted end-users to develop a wetland identification field guide that follows the AWCS.
- This project resulted in publicly available online (https://boreal.ducks.ca/alberta-wetland-classification-system-field-guide/) and hardcopy field guides.
- To raise awareness of the project deliverables and promote uptake of the guide, DUC offered information webinars and field demonstrations to educate potential users.

3.4.2 *Evaluating the sustainable use of groundwater in Alberta: The Milk River aquifer (University of Calgary)*

- Providing sufficient amounts of high-quality water is of key importance for Alberta's economic future development. In regions of Alberta where surface water is fully allocated, groundwater can be used to supplement water availability, though groundwater source-water sustainability is often unknown.
- This project is using a combination of novel and established groundwater age-dating tools to develop an accurate model of groundwater flow for a major aquifer in southern Alberta, the Milk River Aquifer (MRA).
- The project will increase: (1) our understanding of sustainable groundwater yield for the MRA in southern Alberta; and (2) knowledge of how groundwater quality in the MRA evolves with groundwater age.

3.4.3 *Development of an Adaptive Monitoring and Management Framework for Environmental Substances of Concern in Wastewater (University of Calgary)*

- The City of Calgary makes regular investments in wastewater treatment and infrastructure to manage effluent quality, meet regulatory requirements and to protect the Bow River.
- This project is designed to characterize environmental responses to environmental substances of concern (ESOCs) introduced via the City's wastewater in the Bow River Watershed, to better understand potential impacts.
- Research in a semi-controlled setting at the Advancing Canadian Wastewater Assets (ACWA) facility at Pine Creek Wastewater Treatment Plant will be conducted in parallel to the Bow River, to produce data which will allow development of models to guide the city in operating and managing infrastructure in a cost-optimized manner.
- The City of Calgary will make use of results to modify monitoring programs, optimize treatment systems and plan for infrastructure upgrades. The monitoring and investigative tools developed will be used for evaluating the effectiveness of future capacity and/or technological upgrades.
- Key staff from partner organizations will be engaged throughout the project to ensure study designs are relevant and resulting data are useful.

3.4.4 *Sustainable Sunlight Treatment for Accelerated Oil Sands Process-Affected Water Remediation (H2nanO)*

- Oil sands process-affected water (OSPW)—produced by surface mining activities in the Canadian oil sands—requires treatment of environmentally persistent organic compounds before return to the watershed.

- Conventional chemical and mechanical treatments have not been suitable to treat the significant quantities of stored OSPW.
- Industry members in Canada's Oil Sands Innovation Alliance (COSIA) have identified passive treatment of organics in OSPW as a key challenge to address water management in operations and closure.
- H2nanO Inc. (a Canadian start-up company specialized in advanced materials and wastewater treatment) has created an effective and passive technology that treats organics in the OSPW.
- Activated under natural sunlight, the unique treatment can be deployed in an off-grid process, without the need for electricity energy input.
- H2nanO's prototype systems have shown high potential through proof-of-concept case studies with COSIA members in off-site tests.
- This project aims to advance the readiness of the treatment systems for demonstration in on-site test environments.
- The project includes increased scale of demonstration in Northern Alberta; development of monitoring and operation systems; and new knowledge in organics photocatalysis towards return of OSPW to the watershed.

Further Information
Water Innovation Program (WIP): https://albertainnovates.ca/programs/water-innovation/

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3.5 Major Projects

Background
For this update, major projects are characterized as projects where an environmental impact assessment (EIA) report is required under the Environmental Protection and Enhancement Act (EPEA).

3.5.1 Benga Mining Limited Grassy Mountain Coal Project

Regulator:	Alberta Energy Regulator
Activity Type:	Coal Proposal to construct and operate an open-pit metallurgical coal mine with production capacity of a maximum of four million tonnes of clean coal per year, over a mine-life of about 25 years.
Location:	Approximately 7 km north of Blairmore, Townships 8 & 9, Ranges 3 & 4, W5M, Ranchland, Crowsnest Pass.
Project Stage:	• The EIA report and applications were originally submitted in November 2015. • The AER completed a preliminary review of the environmental assessment report and determined on January 25, 2016, that Benga needed to address a number of major deficiencies before the review could continue. • On October 25, 2017, Benga Mining Limited submitted updated applications and the EIA report. An addendum was also submitted on November 9, 2017.

- Requests for supplemental information were sent by the AER on December 20, 2017, and August 10, 2018.
- A Joint Review Panel was established on August 16, 2018. Requests for further supplemental information were sent by the Joint Review Panel between March 2019, and May 2020. A total of 12 addenda were submitted by Benga.
- On June 25, 2020, the Joint Review Panel (the JRP) notified the company that the EIA report is complete pursuant to section 53 of EPEA.
- On June 17, 2021, the JRP issued Decision 2021 ABAER010 and denied Benga's applications 1844520 and 1902073 under the *Coal Conservation Act* and denied related applications under the *Environmental Protection and Enhancement Act*, the *Water Act*, and the *Public Lands Act.*
- For the reasons provided in the JRP Decision 2021 ABAER010, the AER closed the following applications on 29 June 2021:
    - Applications No. 1844520 and 1902073 under the CCA;
    - Application No. 001-00403427 under the EPEA;
    - Applications No. 001-00403428, 001-00403429, 001-00403430, and 001-00403431 under the WA; and
    - Applications No. MSL160757, MSL160758, LOC160841, and LOC160842 under the PLA.
- The following parties filed applications with the Alberta's Court of Appeal for permission to appeal the panel's decision:
    - Benga Mining Ltd.
    - Piikani Nation
    - Stoney Nakoda Nation
- The permission to appeal applications were heard by the Alberta Court of Appeal on December 8, 2021; the applications were denied on January 28, 2022.

3.5.2 Canadian Natural Resources Limited Horizon North Pit Extension

Regulator: Alberta Energy Regulator

Activity Type: Mine

Proposal to develop a northeast mine pit extension (NPE Project) to sustain production rates of the approved North Mine Pit at the Horizon Oil Sands Processing Plant and Mine. The project is expected to include the following changes to the Horizon Mine: extension of the approved north mine pit to include the NPE Project area (1,015 ha); additional overburden storage areas (2,396 ha); and updated closure and reclamation plans.

Location: 70 kilometres north of Fort McMurray and approximately 20.5 kilometres north of Fort McKay, Townships 96 & 97, Ranges 11 & 12, W4M, Wood Buffalo.

Project Stage:

- The EIA report was submitted on April 30, 2018.
- Requests for supplemental information were sent on August 30, December 18, 2018, and February 3, 2020. The company submitted supplemental information on October 20, 2018, January 31, July 4, November 29, 2019, and March 3, 2020.
- On April 7, 2020, the designated Director of Environmental Assessment notified the company that the EIA report is complete pursuant to section 53 of EPEA.
- CNRL submitted a project update on January 21, 2022, due to the amalgamation of Horizon and Horizon South projects
- AER requested further supplemental information on April 6th, 2022
- CNRL submitted supplemental information on May 25th, 2022

- AER requested further supplemental information on August 8th, 2022

3.5.3 Canadian Natural Resources Limited Pike 2 Project

Regulator: Alberta Energy Regulator

Activity Type: In-Situ

Canadian Natural Resources Limited (CNRL) is proposing a new in situ oil sands project in the Southern Athabasca Oil Sands region. To recover bitumen resources from the McMurray formation, steam assisted gravity drainage (SAGD) technology and diluent co-injection and cogeneration will be employed. The project will include a central processing facility (CPF), well pads, source water and disposal well sites, pipelines, roads and power lines. The Project is expected to produce up to 70,000 barrels per day (bpd) of bitumen.

Location: Approximately 40 km southeast of Conklin, Townships 73 & 74, Ranges 4-6, W4M, Lac La Biche County.

Project Stage:

- The EIA report was submitted by Devon Canada Corporation on December 19, 2018.
- On June 27, 2019, CNRL acquired the assets of Devon Canada Corporation.
- Requests for further information were sent to the company on March 22, July 10, August 26, and December 6, 2019. CNRL submitted supplemental information in May 6, July 30 and August 29, 2019, and on January 24, 2020.
- On March 5, 2020, the designated Director of Environmental Assessment notified the company that the EIA report is complete pursuant to section 53 of EPEA.
- On November 30, 2021 CNRL requested the regulatory review process be placed on indefinite hold.

3.5.4 Coalspur Mines (Operations) Ltd. Vista Coal Mine Phase II Project

Regulator: Alberta Energy Regulator

Activity Type: Coal

Coalspur is proposing an expansion of their approved Vista Coal Mine and would operate the mine as one complex with the potential to increase the average annual production by approximately 4.2 million tonnes. The Vista Coal Mine – Phase II would be a westward continuation of the existing open pit surface coal mine to recover the same Val d'Or, McLeod and McPherson seams, using the same methods and infrastructure.

Location: 3.5 km east of Hinton, Township 51, Ranges 23 and 24, W5M, Yellowhead County.

Project Stage:

- Final terms of reference were issued for this project on June 18, 2019.
- Awaiting submission of the EIA/Application.

3.5.5 Montem Resources Alberta Operations Ltd. Tent Mountain Project

Regulator: Alberta Energy Regulator

Activity Type: Coal

Montem Resources Alberta Operations Ltd. (Montem), a wholly-owned subsidiary of Montem Resources Corp., is proposing to develop the Tent Mountain Project (the project). The project would include a surface coal mine, a coal preparation plant and associated infrastructure including a coal conveyor system and a rail load-out facility. The

total project area would be confined to the existing Mine Permit area of 750 hectares and the mine production would average 1.2 million tonnes of metallurgical coal per year.

Location: Approximately 16 km west of Coleman, Crowsnest Pass.

Project Stage:
- Final terms of reference were issued for this project on May 26, 2021.
- Awaiting submission of the EIA/Application.

3.5.6 Pembina Gas Services Ltd. Two Lakes Sour Gas Processing Facility

Regulator: Alberta Energy Regulator

Activity Type: Sour Gas Processing Facility

The project is a sour gas processing facility capable of processing up to 200 million cubic feet per day of raw sour inlet gas containing up to 8% H_2S. The proposal is to take in sour gas from the surrounding area and produce sales gas (methane), natural gas liquids (NGLs – used to make ethane, propane and butane), and condensate. The project includes a raw gas, hydrocarbon liquids inlet; produced water separation and handling processing unit; an amine sweetening unit; a gas processing and NGL recovery unit; a sulphur recovery unit to create liquid sulphur from recovered H_2S; a condensate stabilization processing unit; and natural gas compression for sweet sales gas.

Location: Approximately 45 km southwest of Grande Prairie, Township 68, Range 9, W6M, Municipality: Municipal District of Greenview No. 16.

Project Stage:
- The EIA report and applications were submitted on October 2018.
- Requests for supplemental information were sent on January 28, and April 26, 2019. The company submitted supplemental information on February 15, March 15, and May 3, 2019.
- On June 7, 2019, the designated Director of Environmental Assessment notified the company that the EIA report is complete pursuant to section 53 of EPEA.

3.5.7 Suncor Energy Inc. Base Mine Extension Project

Regulator: Alberta Energy Regulator

Activity Type: Mine

The Project consists of an oil sands mine and associated activities as an extension of the Base Plant operation near Fort McMurray, Alberta. The project includes an open pit mining operation supplying oil sands to new bitumen froth production facilities (primary extraction). Bitumen froth would be delivered by pipeline to the Base Plant for further processing, including secondary extraction and upgrading into various product blends for market. Further integration between the project and Base Plant includes utilities and water systems. There would be external and in-pit tailings areas on the project footprint. These facilities would be constructed with a combination of overburden and coarse tailings deposits. These areas, which provide off-stream storage of water that is recycled, would be the final location for coarse tailings deposits and treated fluid tailings deposits. The project is expected to produce up to 80 million barrels per year (nominally 225,000 barrels per day) of bitumen froth during its estimated 25-year operational life.

Location: Adjacent to Base Plant and north of the city of Fort McMurray, Townships 90-92, Ranges 9-11, W4M, Wood Buffalo.

Project Stage:
- Final terms of reference were issued for this project on June 7, 2021.
- Awaiting submission of the EIA/Application.

3.5.8 Suncor Energy Inc. Lewis Project

Regulator: Alberta Energy Regulator

Activity Type: In-Situ

Proposal for in situ extraction with an estimated total bitumen production of 160,000 bpd and an operational life of up to 40 years. The project would be developed in four phases, supported by cogeneration of electricity to be constructed within the first two phases. Project components include gas-fired steam generation including some cogeneration, water treatment and recycling, bitumen treatment, multi-well production pads, steam delivery pipelines, product recovery pipelines, local access roads, and borrow pits.

Location: Approximately 25 km northeast of Fort McMurray and 18 km southeast of Fort McKay, Townships 91-93, Ranges 5-8, W4M, Wood Buffalo.

Project Stage:

- The EIA report and applications were submitted on February 2018.
- Requests for supplemental information were sent on June 18, December 17, 2018 and March 21, 2019. The company submitted supplemental information on October 31, 2018, February 4, and May 24, 2019.
- On March 6, 2020, the designated Director of Environmental Assessment notified the company that the EIA report is complete pursuant to section 53 of EPEA.
- On March 15, 2021, Approval No. 13002 was issued under OSCA and Approval No. 392715-00-00 was issued under EPEA for the Lewis Project."

3.5.9 Value Chain Solutions Inc. VCS-Heartland Complex Expansion

Regulator: Alberta Energy Regulator

Activity Type: Upgrader

Value Chain Solutions Inc. ("VCS"), a wholly owned subsidiary of Value Creation Inc., is proposing an expansion to the previously approved Value Creation Inc.'s Heartland Oil Sands Processing Plant (Bitumen Upgrader and Refinery), named Value Chain Solutions-Heartland ("VCS-H") Complex, formally Heartland Upgrader Project. The expansion will increase the capacity of the approved VCS-H Complex in total of up to ~119,240 m^3/day (~750,000 bpd).

Location: Northeast of Edmonton in the Industrial Heartland, Townships 56, Range 21, W4M, Strathcona County.

Project Stage:

- Final terms of reference were issued for this project on March 10, 2020.
- Awaiting submission of the EIA/Application.

Further Information

- Alberta maintains a list of current projects that are in the environmental assessment process on the EPA website: https://www.alberta.ca/environmental-impact-assessments-current-projects.aspx
- To view current or historical environmental impact assessments (EIAs), please see the Environmental Impact Assessments webpage at ftp://ftp.gov.ab.ca/env/fs/EIA/ or contact the respective company directly.

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3.6 Springbank Off-Stream Reservoir

Background

In 2013, southern Alberta and the City of Calgary were impacted by flooding from the Elbow and Bow Rivers caused by rainfall. The floods caused more than $5 billion in damages and recovery costs. Five people died, 100,000 people had to be evacuated, 4,000 businesses were impacted, and 3,000 buildings were flooded.

Following the flood, Alberta began implementing a systems approach to provide flood mitigation for southern Alberta, including Calgary. This approach includes structures along both the Bow and Elbow Rivers. The Springbank Off-Stream Reservoir (SR1) is a critical component of Alberta's flood mitigation objectives along the Elbow River.

SR1 will be a dry reservoir that temporarily stores floodwater and, in conjunction with the capacity of the permanent Glenmore Reservoir in Calgary, would accommodate floodwaters equivalent to the 2013 flood. SR1 covers more than 3,600 acres and is located 15 kilometres west of Calgary (near Springbank Road, north of the Elbow River, and predominantly east of Highway 22). It will be completely filled during a 1:200-year flood event, and will release the water back into the river in a controlled manner once the flood subsides. As an off-stream reservoir, it is non-obtrusive to the Elbow River. No water will be held in the reservoir on a permanent basis. Although it is not possible to predict future floods, historical flood events indicate SR1 could be expected to operate approximately once every eight to 10 years.

Without flood mitigation every spring, Calgary is at risk of another flood on the Elbow River similar to the one experienced in 2013. In September 2014, after reviewing various flood mitigation options, SR1 was announced as the project that government would advance through the regulatory process as the preferred flood mitigation infrastructure along the Elbow River. In order to proceed, regulatory approval was required through both federal and provincial governments. SR1 was reviewed by the Impact Assessment Agency of Canada (IAAC) under the Canadian Environmental Assessment Act, 2012.

On July 8, 2021, IAAC released its decision that the project is not likely to cause significant adverse environmental effects, and the project was approved by the federal Minister of Environment and Climate Change Canada (ECCC). SR1 was also reviewed provincially by Alberta Environment and Protected Areas and the Natural Resources Conservation Board (NRCB). Alberta Environment and Protected Areas deemed the SR1 Environmental Impact Assessment (EIA) complete on February 3, 2021. The NRCB conducted a hearing from March 22, 2021, to April 7, 2021, to determine if the SR1 project was in the public's interest. On June 22, 2021, the NRCB concluded that the SR1 project is in the public's interest and approval by the NRCB was provided on October 19, 2021.

In addition to design and regulatory review, Alberta Transportation has secured project land through voluntary acquisition in alignment with Expropriation Act principles. Alberta Transportation has engaged with stakeholders and Indigenous groups throughout the project thus far to understand and address any concerns, provide project information, and respond to questions. This work is ongoing throughout the life of the project.

Status
In February 2022 the construction contract for SR1 was awarded to Vinci Infrastructure Canada. Site clearing commenced in February 2022 and project activities began in April 2022. Key construction activities for 2022 include bridge and highway construction, utility and pipeline relocations, construction of the low level outlet and auxiliary spillway structures, and earthwork operations. Environmental monitoring programs are in place along with Indigenous monitors to monitor construction activities and identify items of cultural significance. The project will take two more construction seasons to complete. Through Alberta Transportation's consultation and engagement efforts, the project has been able to address or respond to concerns or questions raised by Indigenous groups and stakeholders. Alberta Transportation has concluded consultation on the SR1 project; however, engagement on the project is ongoing and will continue for the life of the project.

Further Information
Alberta Transportation provides regular updates on SR1 through the project website and regular email updates to stakeholders who have registered for the email distribution list. For more information, interested stakeholders can contact the project team through the SR1 project inbox springbank-project@gov.ab.ca or visit the government project website Springbank Off-stream Reservoir | Alberta.ca.

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3.7 Source Water Protection Risk Assessment & Web-Based Platform Project

Background
In 2020, the Alberta Water Council, in partnership with Alberta Environment and Protected Areas, established a multi-stakeholder working group to develop a web-based platform and risk assessment tools to assist small municipalities and utility operator. The purpose of this work is to develop increasing access to a web platform and educational tools and resources to assist drinking water providers and local decision makers in Alberta to understand and assess risks to their drinking water sources.

Status
- Project terms of reference was approved by Alberta Water Council in February 2021
- Funding was also approved by the Council
- Due date for this project is September 2022.

Further Information
The Alberta Water Council's website provides additional information about this project:
www.awchome.ca/projects/protecting-sources-drinking-water-alberta-2/

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4 Other

4.1 Watershed Partnerships

Background

Water for Life, Alberta's Strategy for Sustainability, embraces a philosophy of shared responsibilities, partnership and collaboration with other governments, stakeholders, Indigenous people and local volunteer groups to manage watersheds. While Alberta Environment and Protected Areas remains accountable and will continue to oversee water and watershed management in the province, the Water for Life Strategy identifies three levels of partnerships that are integral to achieving stewardship of water resource management.

Alberta Water Council (AWC) – established to oversee the implementation of the Water for Life Strategy. The council also provides policy advice to government, investigates and reports existing and emerging water issues, sets priorities for water research and consults with Albertans on water issues.

Watershed Planning and Advisory councils (WPACs) – are independent, non-profit organizations established since 2003 under the Water for Life Strategy. There are 11 WPACs across major river basins working in partnership with all levels of government, industry, non-governmental environmental organizations, Indigenous communities and many volunteers. The key mandates of WPACs include developing state of the watershed reports, integrated watershed planning and management, education and outreach and promoting best management practices. WPACs foster collaboration with the Alberta government and others by creating a platform for all stakeholders to come together and share resources, knowledge and consensus-based solutions.

Watershed Stewardship Groups (WSG) – are community-based watershed stewardship groups comprised of volunteer citizens. WSGs are often supported by Alberta Environment and Protected Areas, municipal government and local business and industry. They proactively develop community-based solutions to protect local lakes, creeks or streams.

Status

- In collaboration with Alberta Environment and Protected Areas, AWC is leading a Water for Life Action Plan that provides a clear set of short (1-3 years), medium (4-7 years) and long-term (7-10 years) actions advancing the implementation of the Water for Life goals and key directions. The action plan is expected to be completed in November 2022.
- Alberta Environment and Protected Areas, in collaboration with Alberta WPACs, developed a Mandate and Roles Document (MRD) to reflect a clear and common understanding of the respective roles and responsibilities. Shared responsibility and stewardship are central to achieving sustainable resource and environmental management outcomes. The MRD identifies four key roles for WPACs:
    - State of the Watershed Assessment and Reporting
    - Develop an integrated watershed management plan and then lead, promote and coordinate its implementation
    - Inform, educate and involve stakeholders on water issues and watershed stewardship
    - Serve as a convenor and collaborator across watershed stakeholders to advance overall watershed stewardship and management

Key products:

- Athabasca Integrated Watershed Management Plan (2021)

- Implementation Strategy for Peace River Integrated Watershed Management Plan (2022)
- Beaver River Integrated Watershed Management Plan (2022)
- Heart River Watershed Management Plan – led by the County of Sunrise – in progress
- Moose Lake Watershed Management – led by MD of Bonnyville – in progress
- Wapiti Watershed Source Water Protection Plan (2021)
- Riparian intactness assessments and municipal engagement in the Red Deer River Watershed, which is laying the groundwork for phase two of their Integrated Watershed Management Plan.
- Characterization of the Drinking Water Source Area for the City of Medicine Hat and the Town of Redcliff, AB (2022)

Further Information
http://www.lswc.ca/
http://www.awc-wpac.ca/
http://www.battleriverwatershed.ca/
http://www.brbc.ab.ca/
https://lica.ca/watershed/
http://www.mightypeacewatershedalliance.org/
http://www.mrwcc.ca/
http://www.nswa.ab.ca/
http://oldmanwatershed.ca/
http://www.rdrwa.ca/
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4.2 Watershed Planning and Advisory Councils

Background
Watershed Planning and Advisory Councils (WPAC) are non-government, multi-stakeholder organizations designated by the province under Water for Life - Alberta's Strategy for Sustainability (2003), renewed in 2008. Their precise membership varies, but they generally include regional industries, environmental non-government organizations, provincial government departments, municipal and federal government representatives, First Nations, and Métis. Their roles include watershed assessment and state of the watershed reporting, integrated watershed management planning and implementation and education and outreach. They bring interested parties together to address watershed issues and encourage collaboration.

There are eleven WPACs in Alberta with one designated for each of Alberta's major river basins (north to south).
- Mighty Peace Watershed Alliance (MPWA), Mackenzie River basin
- Athabasca Watershed Council (AWC), Mackenzie River basin

- Lesser Slave Watershed Council (LSWC), Mackenzie River basin
  - This is the only lake-based WPAC. Lesser Slave Lake is in the Athabasca River basin.
- Lakeland Industry and Community Association (LICA) (Beaver River Watershed), Cold Lake-Beaver River basin
- North Saskatchewan Watershed Alliance (NSWA)
- Battle River Watershed Alliance (BRWA)
- Red Deer River Watershed Alliance (RDRWA)
- Bow River Basin Council (BRBC)
- Oldman Watershed Council (OWC)
- South East Alberta Watershed Alliance (SEAWA)
- Milk River Watershed Council Canada (MRWCC), Boundary Waters Treaty

The Alberta Government provides funding for the 11 Councils' core operations ($2.7 million in 2022 -23) and has representatives on their boards of directors. The government also provides funding, staff resources and information to support specific WPAC projects. There is considerable collaboration between the government and its WPAC partners and there is ongoing communication to encourage alignment with current government objectives.

Status

The following provides some highlights from the past year for the WPACs, as reported by the WPACs; which includes such general activities as monitoring and reporting, policy advising and planning, education and outreach, and convening and collaborating. WPACs remained active throughout the time period when pandemic related restrictions were in place.

- WPAC representatives participate on the Alberta Water Council which in turn provided policy advice on wetland policy implementation, future water management issues, source water protection and drought planning.
- Eastern Slopes Aquatic Monitoring Collaborative - WPACs with headwaters in the Eastern Slopes, including the AWC, NSWA, BRBC and OWC are working with Living Lakes Canada to launch a three-year aquatic monitoring program across the Eastern Slopes. The program will assess local community needs and share expertise and resources in order to develop a community-based water monitoring program for the Eastern Slopes.
- Water quality of the Seven Persons Creek - SEAWA undertook Water Quality sampling at Two Riparian Restoration Sites on Seven Persons Creek. They also undertook applied research on cultural control of invasive plants in riparian areas including leafy spurge, Russian olive, climbing nightshade, and reed canary grass.
- Evergreen Wetland Centre - The MPWA is collaborating with the oil and forestry sectors, municipalities, post-secondary institutions and ENGOs to develop a wetland centre to trial, hone and promote Beneficial Management Practices for work around wetlands. Ducks Unlimited is leading and MPWA is contributing through monitoring, steering committee work, education and outreach.
- BRBC, partner for State of Basin for Elbow River - The BRBC is working with the Elbow River Watershed Partnership to complete a state of the basin study that has developed a report as well as an online GIS platform tool to convey key messages about the Elbow River. The existing template will be used to develop a state of the watershed report for the Bow basin.
- Lower Pembina Watershed Riparian Area Assessment report – The AWC's report focuses on riparian intactness, which measures riparian condition at a broad scale, using satellite data. The data can be used to compare the condition of water bodies or watersheds across a region, to prioritize restoration and conservation efforts and to guide voluntary stewardship efforts by municipalities, community groups, and landowners.

- WPACs provided advice directly to the GOA by engaging on regional land use plans, wetland policy, stormwater management practices, Industrial Heartland Water Management Framework, etc.

Further Information

For further information about Watershed Planning and Advisory Councils, see https://www.alberta.ca/watershed-planning-and-advisory-councils.aspx?utm_source=redirector

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