

August 8, 2018

EASB File #: 2017-015
Transaction #: 10025323

Paul Neufeld
Project Manager
Gensource Potash Corporation
Suite 1100 - 201 1st Avenue South
SASKATOON SK S7K 1J5

Dear Mr. Neufeld:

Re: Gensource Vanguard One Potash Project

The Saskatchewan Ministry of Environment (the ministry), Environmental Assessment and Stewardship Branch (EASB), received your Application for Ministerial Determination and has completed a screening of Gensource Potash Corp.'s (Gensource, the proponent) proposed project, entitled *Vanguard One Potash Project* (the Project). The proposed Project is described in the following documents collectively termed "the Application":

- Technical Proposal for the Vanguard One Project, dated June 2017;
- Supplemental field report, dated September 2017;
- Power point presentations from the September 21, 2017 technical meeting;
- A memorandum from Gensource dated October 6, 2017 in response to a request for additional information;
- GIS and DEM shape files of the proposed Project's well field and predicted subsidence and post-subsidence topography;
- Email correspondence from Gensource to Aimann Sadik on October 19, 2017 in response to an information request regarding the project's water source;
- Response to the containment and spill/leaks prevention information request dated April 13, 2018; and
- Response to groundwater resources information request dated May 28, 2018.

Based on the information presented in the Application, it is our determination that the project does not meet the criteria of section 2(d) of *The Environmental Assessment Act* (the Act) and, therefore, is **not** a "development" that is required to undergo an

Environmental Impact Assessment (EIA). This determination is provided under the authority of section 7.3 the Act and grants the proponent authorization to proceed with the subsequent regulatory approvals for this project.

The project is deemed **not** to be a development as per the attached Reasons for Determination. In addition to advising of our determination, this letter also includes the following terms and conditions.

The decision to not require an EIA pursuant to the Act is contingent on compliance with the following terms and conditions:

1. The project must be undertaken and environmental protection measures implemented in the manner described in the Application, except where alterations are required for compliance with other regulatory requirements.
2. EASB must be advised if you plan to alter the project significantly from that described in the Application.
3. EASB must be advised if work is not commenced within two years of the date of this letter. The Application's environmental acceptability would be re-examined in light of the circumstances of the day.
4. You must comply with all other federal, provincial and municipal regulatory requirements including those from the ministry.
5. You must comply with all reasonable follow up Ministerial requests to monitor compliance with these conditions.

Please also be advised that:

1. This letter is NOT an approval to proceed with construction activities, it is simply provided by EASB to inform you that you may proceed to obtain other permits and approvals that may be required. Additional approvals from the ministry and other agencies may be required.
2. As noted above, EASB has made a determination that the proposed undertaking is not a development. The purpose of providing a determination is to provide some

certainty that the ministry will not initiate any action to require an EIA pursuant to the Act.

3. The province recognizes its constitutional obligation to consult with potentially affected First Nations and Métis communities when making decisions that may adversely impact the exercise of Treaty and Aboriginal rights. If the project may have an impact on Treaty or Aboriginal rights, decisions by other government agencies during permitting may trigger the Crown's duty to consult.

Should you have any questions regarding the content of this letter, please contact Aimann Sadik, Senior Environmental Assessment Administrator at (306) 787-7706.

Sincerely,

[original signed]

Wes Kotyk
Assistant Deputy Minister
Acting for and on behalf of the Minister of Environment

Enclosures: Reasons for Determination

cc: Brady Pollock, Environmental Assessment and Stewardship, Ministry of Environment
Brienne England, Environmental Assessment and Stewardship, Ministry of Environment
Ash Olesen, Environmental Protection, Ministry of Environment
Brant Kirychuk, Fish, Wildlife and Lands, Ministry of Environment
Katherine Mehl, Fish, Wildlife and Lands, Ministry of Environment
Lynn Kelley, Cumulative Impacts and Science, Ministry of Environment
Jing Zhou, Ministry of Energy and Resources
Aaron Schweitzer, Water Security Agency
Shauna Lehmann, Ministry of Highways and Infrastructure
EA Records



Reasons for Determination

Date: August 8, 2018

File: EASB # 2017-015

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Project Title: Gensource Vanguard One Potash Project

Proponent: Gensource Potash Corporation (Gensource)

Proposal: Gensource is proposing to develop a greenfield, selective solution potash mine approximately 18 km northwest of the village of Brownlee and 13 km southeast of Eyebrow Lake, Saskatchewan. The project includes a target production rate of 250,000 tonnes per year of potash. The proposed mining technique would result in no salt tailings being produced and no requirement for brine ponds. Process water for the facility would be sourced from groundwater formations in the project area.

The project would involve the following components:

- One disposal well and a minimum of four groundwater wells connecting to an underground pipeline leading to the processing plant;
- Four mine wellfield pads and development of six underground horizontal mining caverns;
- Construction of an access road; and,
- Construction and operation of the plant site, processing plant and associated infrastructure.

The information provided in the Application has led to the determination that the described project **does not** trigger criteria of section 2(d) of *The Environmental Assessment Act* (the Act) and therefore **is not** considered a “development” that is required to undergo an Environmental Impact Assessment (EIA).

The above determination is based on an evaluation of the project against the criteria of section 2(d) of the Act as described below.

a) have an affect [sic] on any unique, rare or endangered feature of the environment.

- The proposed project area and an additional 1 km buffer comprises the 6,543 ha baseline study area (BSA). The project footprint (plant site and mine well field) covers an area of 72.25 ha which consists of 74.08% cultivated land, 5.09% native grassland, 16.5% modified grassland, 1.45% wetlands, 1.58% trees and shrubs and 1.05% of existing disturbances.
- Vegetation surveys within the BSA, the regional study area (RSA), and a 10km radius around the project footprint were completed on June 30 and August 28, 2017, and no federally or provincially listed plant species were identified. Wildlife surveys completed in June and July, 2017 detected several listed species including: barn swallow (*Hirundo rustica*); Sprague’s pipit (*Anthus spragueii*); short-eared owl (*Asio flammeus*); bobolink (*Dolichonyx oryzivorous*); and Baird’s sparrow (*Ammodramus bairdii*). However, most

were located outside of the project footprint. No nests of these species were observed but potential nesting habitat (i.e. permanent grasslands and old buildings) intersects the project footprint. Gensource has committed to siting the majority of project components on cultivated land and adhering to species-specific setback distances and appropriate timing restrictions wherever possible during construction to minimize and/or avoid impacts to sensitive wildlife species.

- There are 112 wetlands located within the BSA. The proponent has committed to avoiding wetlands, native grassland and other sensitive area, where possible. Gensource also proposes to develop and implement an environmental protection plan and will obtain an Aquatic Habitat Protection Permit when required.
- Heritage review by the Ministry of Parks, Culture and Sports determined the Project was in conflict with two known heritage sites and requested a Heritage Resource Impact Assessment (HRIA) be completed. Gensource has committed to conducting a HRIA for the project prior to construction and where required, implementing appropriate mitigation to avoid impacts to any identified heritage resources.
- Based on the disturbed nature of the majority of the project area and the commitments by Gensource, impacts to rare or endangered features of the environment from the project are not anticipated.

This criterion has not been met.

b) substantially utilize any provincial resource and in so doing pre-empt the use, or potential use, of that resource for any other purpose.

- The project anticipates withdrawal of approximately 2,000 cubic meters per day (m^3/d) of water from the Ardkenneth Member aquifer of the Bearpaw formation using a minimum of four groundwater wells for mining and processing.
- The proponent conducted a hydrogeological study of the Ardkenneth aquifer at the project location including a 14-day groundwater pumping test to assess potential long-term water availability for the project's maximum water requirements. A groundwater flow model based on the results of the study forecast drawdown values of 5 m within the well field decreasing to 1 m at distances ranging from 3 to 6 km from the well field. Based on this information, the predicted effects of the project's water demand and the associated long-term drawdown are not expected to impact groundwater availability to other users.
- The project's water wells will be regulated by Water Security Agency to ensure sustainable water availability to other users throughout the life of the project. Additionally, Gensource has committed to long-term monitoring for the life of the project to confirm effects of water withdrawal and will implement mitigative measures to address any unexpected effects to other groundwater users.
- Based on detailed review of the information provided by the proponent, there will be no substantial use of a provincial resource that will pre-empt other uses as part of this project.

This criterion has not been met.

c) cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation.

- Gensource conducted an air quality assessment to determine the potential effects of the project on the atmospheric environment. The modelling results predict that air emissions will comply with the *Saskatchewan Ambient Air Quality Standards*.
- Total greenhouse gas emissions (GHG) emissions for the project during operation are predicted to be 142,000 tonnes of carbon dioxide equivalents annually; or an approximate 0.2 % increase in total provincial emissions and 0.002 % increase in total national emissions. Gensource will mitigate 4,200 tonnes of GHG emissions per year through the use of a heat recovery steam generator system.
- Produced waste water will be injected into the Deadwood Formation via a disposal well located within the plant site boundary, which would be regulated by the Ministry of Energy and Resources. Gensource will conduct monitoring and reporting for the disposal well in adherence with well licence requirements.
- Gensource assessed the risk of spills/leaks of brine on other groundwater users in the project area based on the natural containment of the subsurface geology of the proposed plant site and well field. The results showed a degree of natural containment to prevent and mitigate potential brine migration due to the presence of aquitard thickness of approximately 24 m below the plant site area and 8 m in the well field area.
- Gensource has proposed engineering controls, emergency responses and remediation actions as mitigation measures to avoid or reduce risk of groundwater contamination in the event of leaks/spills.
- The project will not cause emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation.

This criterion has not been met.

d) cause widespread public concern because of potential environmental changes.

- Gensource held public information sessions and engagement activities with surrounding rural municipalities (RM) and local landowners.
- Gensource held a public information meeting in the Village of Tugaske in February 2017 to present project details and address any concerns. There were 108 people representing 21 communities in attendance. Further, Gensource attended council meetings in the RMs of Huron No. 223 and Eyebrow No. 193 in September 2016 and February 2017 to discuss the project. Gensource held a separate Indigenous information session in Regina in April 2017 for First Nations and Métis communities near the project area.
- Questions and comments received during engagement activities included interest in economic opportunities and the potential for increased traffic associated with the project. Gensource responded to issues identified during engagement activities.
- No significant local or widespread public concern has been identified with this project.

This criterion has not been met.

e) involve a new technology that is concerned with resource utilization and that may induce significant environmental change.

- The potash would be mined by selective solution mining technology whereby no salt tailings are produced and brine ponds are not required.
- The methodology for mining consists of using water saturated with sodium chloride (NaCl) to selectively dissolve only potassium chloride (KCL) from the same sylvinite ore using horizontal caverns while leaving all NaCl in place.
- Selective mining is used as a component of the mining process at other facilities. The use of a wholly selective solution mining technology as proposed is relatively new to the potash mining industry but is not expected to induce significant environmental change.

This criterion has not been met.

f) have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment.

- Mine well field pipelines and utilities will be routed in a common corridor underground to allow continued use of land for agricultural and related purposes and Gensource has committed to reclaiming disturbed areas following construction of project infrastructure.
- The results of the hydrogeological study indicate the project's water demand is not expected to cause significant impact on surface water bodies within the project area.
- The absence of salt tailings and tailing management area reduces the potential for brine contamination of surface or groundwater water.
- Project components have been sited to avoid sensitive habitats where possible and mitigations proposed are expected to help minimize residual impacts of the project and avoid significant adverse effects.

This criterion has not been met.

Conclusion: Based on the above considerations, the ministry's review of the proposal concludes that the project **is not** a "development" that is required to undergo an EIA and require a Ministerial Approval as provided in Section 8 of the Act. The project is subject to all other regulatory requirements, the protection measures in the proposal, and the stipulations in the attached letter.