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CanWhite Sands Corp.

Vivian Sand Facility Project

Environmental Act Proposal

Prepared by:
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Prepared for:
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Date: July 2, 2020
Project Number: 60625356

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Feisal Somji
President and Chief Executive Officer
CanWhite Sands Corp.
Suite 2650, 645 7th Ave. S.W.
Calgary, AB T2P 4G8

July 2, 2020

Project #
60625356

Dear Mr. Somji:

Regarding: Vivian Sand Facility Project Environment Act Proposal

AECOM Canada Ltd. (AECOM) is pleased submit our report regarding the above-referenced project. If you have any questions, please do not hesitate to contact Marlene Gifford directly at 204-928-9210.

Sincerely,
AECOM Canada Ltd.

Marlene Gifford, M.Sc., P.Biol., R.P.Bio.
Biologist, Environmental Assessor
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Clifton Samoiloff, B.Sc., EP(CEA)
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MG:rz
Encl:

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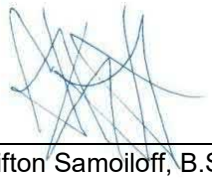
AECOM: 2015-04-13

Quality Information

Report Prepared By:

Marlene Gifford, M.Sc., P.Biol., R.P.Bio.
Biologist, Environmental Assessor

Report Reviewed By:



Clifton Samoiloff, B.Sc., EP(CEA)
Mining Market Sector Lead, Canada
Senior Environmental Scientist

Executive Summary

This report has been prepared in support of an Environment Act Licence application submitted by CanWhite Sands Corp. ('CanWhite') for consideration by Manitoba Conservation and Climate (MBCC) Environmental Approvals Branch for a "manufacturing and industrial plant" which is a Class 2 development in section 3 of the Classes of Development Regulation made under *The Environment Act*. This Environment Act Proposal report contains the information described in the Manitoba Sustainable Development "Information Bulletin – Environment Act Proposal Report Guidelines" (Manitoba Sustainable Development 2018).

CanWhite is proposing to construct and operate a silica sand processing facility south of the hamlet of Vivian, Manitoba and approximately 35 km east of the City of Winnipeg on rural private land that is primarily forested but has also been previously disturbed by aggregate quarry and exploration activities such as trails and mineral exploration sites. This proposed sand processing facility and associated infrastructure, i.e., the Vivian Sand Facility Project (the 'Project') is being developed for the purpose of supplying high-quality silica sand for use in a variety of markets. At full operation, the Project will have an estimated annual production rate of approximately 1,360,000 tonnes of silica sand that will be processed on-site (washed and dried) and stored in enclosed silos prior to being directly loaded into railcars for shipping via the existing adjacent Canadian National Railway (CN) rail line to markets in Canada, the United States and internationally. The anticipated life of the Project will be 24 years.

Key components of the Project will include a sand wet plant, dry plant, approximately 1 km long permanent gravel access road and a 3.5 km long rail loop track with a rail load out for direct sand product loading to enclosed railcars. For temporary access while the permanent access road is constructed, an existing gravel access road within a Manitoba Hydro easement will be used with the permission of Manitoba Hydro. The permanent access road will be gated at the CanWhite property line to control access to the Project site.

Domestic water for the processing facility (sinks, showers and toilets) will be sourced from an on-site well. The water required for the wet sand processing is continuously recycled back into the sand wash system, requiring no water draw from the on-site well at the processing facility. A second well on the processing facility property will be dedicated to emergency fire suppression (on demand short-term use). Power to the processing facility will be supplied by a new 66 kV or from a nearby existing 12.47 kV power line according to the most recent communications from Manitoba Hydro. The power line is currently proposed to run along the proposed permanent access road from PR 302 east into the Project site. Propane will be used temporarily for heating and operation of the processing facility dryer until a planned permanent natural gas line has been installed by Manitoba Hydro approximately one to two years after the start of Project operations.

Following provincial and municipal regulatory approval of the proposed Project, construction of the Project is anticipated to begin during the fall of 2020. Project commissioning and operation are expected to begin in Q1[1] 2021 with sand processing occurring 24 hours per day, 7 days per week throughout each year of operation.

[1] *Note: QX = year quarter (e.g. Q1 = January through April timeframe)*

The results of the environmental and socioeconomic effects assessment are summarized as follows:

Geology/Topography

Impacts on topography have been assessed as being minor.

While measurable disturbances will be imposed on topographic features during Project construction and operation, disturbances will be limited to the Project site. Effects on topography will be minimized by using existing roads, trails and other previously disturbed areas to the extent feasible to minimize disturbance to the natural topography. Levelling and grading will occur upon Project decommissioning to return the landscape to elevations typical to the surrounding area.

Soils

The potential for soil erosion and associated adverse impacts to the surrounding environment are anticipated to be minor and restricted to the Project site.

Areas disturbed during the construction phase that are not required for the Project operation phase will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion. An Erosion and Sediment Control Plan will be implemented for the construction and decommissioning phases of the Project.

Groundwater

The potential risks to groundwater are assessed to be adequately mitigated, and therefore the impacts on groundwater are assessed to be negligible.

Utilization of groundwater at the Project site is expected to be at rates that will not exceed the ability of the aquifer to recharge and are therefore sustainable. The local water usage in the area is 52.8 US Gallons/day/person (200 L/day/person) (Friesen Drillers, 2019). Therefore, a household of four would use approximately 211 US gallons/day (800 L/day). The processing facility is proposed to use 200 – 300 US gallons/day (757 – 1,136 L/day), which is the approximate daily usage of a household of four to six people.

Results of testing indicate that drawdown effects will be localized, occurring only at the Project site, with limited to no effects within 31 m (100 ft) of the pumping well to the monitoring well. During testing, little to no decline in water levels was observed in the wells at the Project site. Further, no impact was observed on water levels in any of the nearby domestic wells.

Air Quality

Air dispersion modeling was performed to estimate air quality at sensitive receptors under the worst-case scenario conditions that could occur for this Project. The results of the modeling predict no exceedances of air quality guidelines at the nearest residences for any of the parameters that were modeled (e.g. dust, including silica dust).

The sand dry plant, including all dry sand conveyors and transfer points, will be enclosed with all transfer points under negative pressure to mitigate dust. The dryer is equipped with a baghouse to capture dust generated from the drying process. The dry sand product will be stored in enclosed silos prior to being

directly loaded into covered grain hopper-type railcars using a retractable sand transfer spout which is a method designed to control fugitive dust.

The two sand stockpiles are not anticipated to generate dust because they will be wet, and most fines will have been removed during the slurry transport and dewatering process prior to stockpiling. Fines that may be generated will remain in the water and will be contained through the wet process. The fines will move through the processing system ending with a belt press where they will be pressed into wet 'mud cake' style bundles for handling. Dust generation from the overs/fines reject sand piles will be controlled by keeping the reject piles damp by misting with additional water to mitigate the potential for fugitive dust generation, as needed (e.g. during hot, dry and windy weather).

Water will be applied to the permanent access road for the processing facility to minimize dust generation as needed. The access road will also have natural vegetation buffers which will limit the potential for dust dispersion to the local area.

CanWhite will develop and implement a Dust Management Plan that will be in place during all phases of the Project. This Plan will provide procedures for the implementation of measures to control dust at the processing facility and will include provisions for monitoring and cleanup of the localized migration of fugitive dust from stockpiles should this occur. The Plan will also include a dust monitoring program that will include sampling and testing for silica dust (total quartz and respirable crystalline) to ensure that the potential for silica dust exposure is being effectively controlled and mitigated.

Climate/Greenhouse Gases (GHGs)

The impact of the Project on GHG contributions to the atmosphere is assessed as negligible.

Overall, the Project is estimated to generate approximately 34,324 tonnes of CO_2e annually during dryer operations with natural gas which is 0.00016% of the reported emissions in 2018 which were 21.8 Mt CO_2e from Manitoba, and 0.000005% of the reported 729 Mt CO_2e from Canada in 2018.

Noise

Based on the results of a Noise Impact Assessment, Project activities during the construction and operation phases are predicted to not exceed the Manitoba Guidelines for Sound Pollution limits at the eight residences nearest to the Project, which range in distance from 720 m west of the processing facility to 2.5 km southeast of the processing facility.

The surrounding Project site consisting primarily of forest is anticipated to attenuate (reduce) noise generated by the processing facility at the nearest points of reception (residences). The dry plant will be an enclosed building which will minimize dry sand processing noise. The shape of the rail loop will allow the locomotive to pull the train right through the rail load out without the need to regularly decouple or couple individual cars which would be a source of noise. A smaller railcar mover will be used if a railcar needs to be removed or added to the train (e.g. for maintenance).

Noise monitoring will be conducted during Project commissioning to determine if any noise mitigation (e.g. berms) will be needed.

Surface Water Quality

The impacts on surface water are assessed as negligible.

The Project site contains no surface water apart from roadside ditches. The local area has some wetlands, artificial ponds and ephemeral drainage areas primarily associated with aggregate quarries and other developments in the area, but these surface waters are not directly connected with permanent natural waterways.

Construction of ditching within the Project site, as required, will assist in directing runoff flow and maintaining natural drainage pathways through low areas and will contain water runoff from disturbed areas. The wet process will not discharge water to the land surface. A non-toxic biodegradable flocculant will be used for fines settling in a contained system.

Construction of the permanent access road to the processing facility will include the installation of culverts to equalize surface water flow and maintain natural drainage pathways as required.

An Erosion and Sediment Control Plan will be implemented for the construction and decommissioning phases of the Project. Wastewater from staff washrooms, shower facilities and staff kitchen will be directed to a septic system that will be regularly maintained and monitored for correct functioning.

Fish and Fish Habitat

Project related impacts on fish and fish habitat are not anticipated due to the lack of fish habitat within the Project site and local area, and application of an Erosion and Sediment Control Plan.

Protected and other Vegetation

The overall Project impacts to vegetation are assessed as minor within the Project site and negligible within the local area.

Approximately 17 hectares (ha) of naturally vegetated area is expected to be cleared within the Project site for Project construction which is 15 times smaller than a section of farmland which is 260 ha. Approximately 14% of the Project site has been previously cleared/disturbed. The types of naturally vegetated land cover that will be cleared (i.e., forest, meadow and willow/alder) are common within the regional area. No land cover considered rare for the regional area was observed in the Project site during terrestrial reconnaissance of the Project site. Vegetation species at risk are not expected to occur within the Project site.

Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required. Areas disturbed during Project construction and not required for Project operations will be allowed to revegetate naturally and will be augmented using an approved native seed mixture and native plantings if required.

A Revegetation Monitoring Program will be implemented after Project construction to determine the success of the revegetation program and determine if follow-up reseeding or replanting is required. Site reclamation and revegetation procedures will occur during Project decommissioning to return the landscape to pre-construction conditions to the extent feasible.

Protected and other Wildlife

Project impacts on the regional wildlife populations are assessed as negligible. The types of naturally vegetated land cover (wildlife habitat) that will be cleared (i.e., forest, meadow and willow/alder) are

common within the regional area. The Project is also not anticipated to have a measurable effect on wildlife populations within the Interlake Plain Ecoregion.

Minimizing vegetation clearing to the extent feasible will limit adverse effects to wildlife habitat and will assist in mitigating noise from Project activities. Noise will also be minimized by the measures described above for the noise topic. Wildlife species present in the vicinity of the Project are anticipated to be accustomed (habituated) to some level of noise due to the presence of existing developments (e.g. aggregate quarries; CN rail line; Provincial Roads).

Vegetation clearing will take place outside of the spring and summer months to the maximum extent feasible to avoid disturbance to breeding birds and other spring breeding wildlife species. Vegetation clearing will not take place during the peak breeding bird season (April 25 – August 15).

The minor increase in vehicle traffic in the regional area as a result of Project construction and operation activities is anticipated to result in a minor increase in the risk of vehicle collisions with wildlife given the relatively small spatial scale of the Project site and overall minor increase in regional area traffic.

Labour Force and Employment

Employment opportunities associated with the Project will be a positive, long-term and continuous benefit for the regional area within a reasonable commute time to the processing facility.

Approximately 20 to 30 people will be employed under contract for site clearing and Project construction. The need for local suppliers and other business to support the construction phase is likely to provide indirect employment for up to 60 additional people. Once construction is complete, there will be approximately 40 to 50 people employed for the processing facility operations.

Infrastructure and Services

The Project is expected to have minor impacts on regional emergency services because an on-site groundwater well will be dedicated to emergency fire suppression, and an Emergency Response Plan will be available on-site during Project construction and operation that will clearly outline appropriate emergency response protocol. Standard mitigation measures to avoid accidents and malfunctions will also be applied.

Community Services

Municipal water and wastewater treatment services will not be impacted by the Project because water requirements for the processing facility will be sustainably sourced from two wells on the processing facility property, and wastewater from staff washrooms, shower facilities and staff kitchen will be directed to an on-site septic system. The RM of Springfield community services (e.g. municipality water system upgrades) could potentially benefit from the additional tax revenue realized from the Project being located within the RM of Springfield.

Solid waste will be transported by a licensed local contractor to be disposed of at a local licenced landfill.

CanWhite will require natural gas services to be installed to the Project site which could provide opportunities for others to utilize this natural gas line that will be brought into the local area. The Project will likely require upgraded communications services that may require an additional cell tower in the local

area capable of accommodating improved internet services or installation of fibre optics cables along a natural gas line for the Project. This improve internet services in the area.

Land and Resource Use

The Project site is currently designated for industrial use and will continue to be used for industrial purposes. The Project site access road will be gated at the CanWhite property line to control access to the Project site. Other existing trails will be blocked (e.g. with pre-cast concrete blocks) and appropriately signed to control access to the CanWhite property and processing facility as a public safety measure.

CanWhite will be using the Manitoba Hydro power line easement during construction and the initial stage of operation (expected to last four months to a year). There will be a temporary increase in vehicle traffic along that segment of road which is also used by Manitoba Hydro, snowmobilers and other recreational off-road vehicles. The potential for disruption to recreational users will cease on completion of the permanent processing facility access road.

Property values in the local area are not expected to be adversely affected by the Project. An extensive previous study of property values in the vicinity of silica sand extraction and processing facility locations in the United States indicated no documented circumstances of industrial sand mining causing a community-wide reduction of property values. CanWhite will be bringing in a new natural gas line and will likely be requiring improved cellular service to the local area which is expected to benefit local properties in the vicinity of these services.

Human Health

The measures that will be applied to minimize adverse effects on air quality (e.g. dust) and noise (as summarized above) are expected to adequately mitigate adverse effects on human health both on and off the Project site. The results of air dispersion modeling predict no exceedances of air quality guidelines at the nearest residences for any of the parameters that were modeled (e.g. dust, including silica dust).

All CanWhite employees will abide by the standards, procedures and training required under *The Workplace Safety and Health Act* as well as with CanWhite's internal Health and Safety Program and Emergency Response Plan. Employee Orientation and Safety training will be mandated for all new hires in addition to required yearly safety reviews for existing staff. All required personal protective equipment (PPE) will be provided to employees. Special training in relation to the handling of silica will be administered to all employees. Where required, visitor orientation and PPE will be provided when visitors enter employee only areas. Therefore, the risk of adverse impacts on human health is determined to be negligible.

Indigenous and Treaty Rights

The Project is not expected to adversely impact the exercise of Indigenous or Treaty rights because:

- No fish or fish habitat will be affected by the Project;
- The Project site is private land, accessible only for the purposes of the Project;
- The residual environmental impact of the Project on vegetation beyond the Project site is assessed to be negligible; and
- The residual environmental impact of the Project on regional wildlife populations is assessed to be negligible.

Heritage Resources

Results of an on-site archaeological investigation indicated that there is a low potential for undiscovered heritage resources to be disturbed as a result of Project activities. As recommended in the Heritage Resources Impact Assessment report, CanWhite will have a Heritage Resources Protection Plan in place prior to the initiation of Project construction activities which will provide guidance to construction contractors to protect heritage resources.

Traffic

The increase in local and regional area traffic will be not substantial because the sand will not be transported by haul truck. Facility staff will be limited to approximately 20 to 30 personnel during the construction phase and approximately 40 to 50 personnel during the operation phase of the Project with staff arrivals and departures being staggered daily to accommodate the 24 hours, seven days/week operation schedule. Most traffic will travel along a processing facility access road less than 1 km in length, then will travel two km on PR 302 north to PTH 15. Therefore, the use of local roads beyond the short section of PR 302 will be minor.

Follow-up Plans and Overall Assessment

The follow-up plans and monitoring programs that will be implemented include, but are not limited to, the following: Erosion and Sediment Control Plan; Heritage Resources Protection Plan; Dust Management Plan including Dust Monitoring; Noise Monitoring; Emergency Response Plan; and Revegetation Monitoring Program.

It is recommended that mitigation measures, follow-up plans and monitoring programs described in this report be implemented to avoid or minimize potential environmental effects and/or identify any unanticipated adverse effects early so that appropriate adaptive management action can be undertaken.

In summary, based on the proposed Project description and with the application of the proposed mitigation measures and follow-up plans outlined in this Environment Act Proposal, adverse residual environmental impacts resulting from the Project are expected to be sufficiently mitigated. The success of the Project is anticipated to be a substantial benefit to the local and regional area communities in terms of training, employment, and potential business opportunities related to the services that will be required for the Project and the tax revenue that will be realized with the proposed Project being located in the RM of Springfield.

List of Abbreviations

CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	'Carbon Dioxide equivalent' – amount of CO_2 that would have equivalent global warming impact as the effect of different greenhouse gases
COSEWIC	Committee on the Status of Endangered Wildlife in Canada.
EAB	Environmental Assessment Branch
EAP	Environment Act Proposal
EC	Environmental Component
ELC	Ecological Land Classification
EPM	East of the Prime Meridian
GHG	Greenhouse Gas(es)
gpm	U.S. gallons per minute (metric l/min units also provided throughout)
ha	Hectares
HRB	Historic Resources Branch
HRIA	Heritage Resources Impact Assessment.
km	Kilometre
kVA	Kilo-volt-ampere; tells you how much power the overall system is using
kW	Kilowatt
kWh	Kilowatt-hour; which is commonly used as a billing unit for energy delivered to consumers by electric utilities
L	Litre
l/min	Litres per minute
m	Metre
m^3	Cubic metres
MAAQC	Manitoba Ambient Air Quality Criteria
masl	Metres above sea level
MBCC	Manitoba Conservation and Climate
MBESEA	*The Endangered Species and Ecosystems Act of Manitoba*
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
PM	Particulate matter
PR	Provincial Road
PTH	Provincial Trunk Highway
RCMP	Royal Canadian Mounted Police
RM	Rural Municipality
RoW	Right-of-Way
SARA	*Species at Risk Act*
SC	Social Component

Terms / Glossary

Aesthetics	Subjective principles concerned with the perception of beauty, such as the visual appeal of the natural landscape.
Clarifier	Large circular water tank with moving paddles, used for water treatment. A **flocculant** is added to water in the clarifier, to help fines settle quickly.
Cyclone	Also known as a hydrocyclone, is a centrifugal device with no moving parts designed to separate the fine particles from the sand particles using water.
Baghouse	Also known as a baghouse filter, bag filter, or fabric filter is dust collector that removes particulates out of the air from the sand drying processes.
Dry Plant	The portion of the sand processing facility that dries the sand after the sand is washed in the Wet Plant. The Dry Plant is an enclosed building that will contain the dryer, baghouse, screeners and accompanying conveyance to move the sand through the drying process. The Dry Plant will also include a maintenance area, warehouse and employee locker rooms/washrooms.
Filter Cake	By-product generated when water containing solid fines is compressed in a belt press to remove the water component, leaving behind the solid compacted fines.
Flocculant	A substance which promotes the clumping of particles. For the Project, a food-grade biodegradable polymer will act as the flocculant to facilitate fines settling during the sand wash process.
Office	Includes washrooms, administration, Human Resources staff, and staff kitchen. The office will be attached to the Dry Plant or will be a stand-alone building next to the Dry Plant.
Outdoor Sand Reject Piles	During the sand processing process, material that is separated out as being too large/small after the dewatering process and sand that is too small for product sale that is screened out during the final processing stage before storage, will be stockpiled outdoors for sale to other specialty markets. The outdoor sand reject piles will be kept wet to control dust.
Rail Load Out	Includes all components related to moving the dry sand from the Dry Plant to railcars for sand product transportation to markets. Rail Load Out components include the conveyance of the dry sand from silo storage to the loading area over railcars, the railcars, railcar mover and circular rail loop.
Silo Storage	Enclosed storage for dry processed sand that is ready for Rail Load Out shipment.
Viewscape	The visible landscape.
Wet Plant	The portion of the sand processing facility that washes the sand before the sand is dried in the Dry Plant. The Wet Plant includes cyclones, dewatering screens, conveyors and a clarifier.

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Appendices

1. General Project Information

1.1 Project Overview

CanWhite Sands Corp. ('CanWhite') is proposing to construct and operate a silica sand processing facility south of the hamlet of Vivian, Manitoba and approximately 35 km east of the City of Winnipeg. This proposed sand processing facility and associated infrastructure*, i.e.,* the Vivian Sand Facility Project (the 'Project') is being developed for the purpose of supplying high-quality silica sand for use in a variety of markets such as the renewable energy industry (e.g. solar panel production), electronics (e.g. cellphones, computer chips), oil and gas operations, telecommunications (e.g. fibre optics), sports field applications (e.g. golf courses) and the glass and ceramics production industry. At full operation, the Project will have an estimated annual production rate of approximately 1,360,000 tonnes of silica sand processed on-site (washed and dried) and transported by rail to markets in Canada, the United States and internationally. The anticipated life of the Project will be 24 years.

A separate *Environment Act* licence application will be submitted later this summer for the silica sand extraction activities that will supply the Processing Facility with sand ('Extraction'). Extraction will involve temporary water well drill holes that are located on small sites for relatively brief periods of time. Water and sand exist naturally together in the formation and, assisted only by injection of air, they will flow to the surface as slurry. The slurry will be transported to the Processing Facility using a moveable slurry line, which will be re-located from site to site as the water well drilling rigs relocate.

The slurry line will be included in the project description for extraction. CanWhite's permanent buildings, facilities and infrastructure are part of this sand Processing Facility Project and are included in this application.

Key components of the Project are:

- A sand wash and dry facility that will include a 'Wet Plant', a 'Dry Plant' and the following associated components;
  - Two outdoor stockpiles of wet sand ready to be processed;
  - One overs/fines sand reject pile (outdoor) associated with the Wet Plant
  - One overs/fines sand reject pile (outdoor) associated with the Dry Plant;
  - Four dry sand product fully enclosed storage silos;
  - Ancillary structures, including permanent office, staff kitchen, washrooms, operator control centre, maintenance building and storage buildings;
- Rail loop track (approximately 3.5 km length) connecting with a Rail Load Out for direct sand product loading to enclosed railcars, and for railcar storage; and
- A 5 m wide single-lane gravel access road approximately 1 km in length to the Project site, with 1 m wide shoulders on either side for passing.

The above-listed components, excluding an existing access road that will used for Project construction and early operation purposes and the above-listed proposed permanent access road, are collectively referred to as the Processing Facility.

Discussions are in progress with Canadian National Railway (CN) for CN to develop two rail spurs (approximately 190 m in length each on the CN Rail RoW) that will connect the existing CN rail line infrastructure to the proposed rail loop track to allow for the direct loading of silica sand product from the

Dry Plant for transportation to markets by railway. The CN Rail RoW activities and structures will be under the care and control of CN Rail; therefore, the proposed rail spurs are not within the scope of this Environment Act Proposal.

A conceptual image of the Processing Facility during early summer (looking west from inside the rail loop area) is shown in **Figure 1-1**.

Figure 1-1: Conceptual Image of the Processing Facility

Details regarding Project components are provided in the Project Description (Section 2).

1.2 Proponent Contact Information

Table 1-1: Proponent Contact Information

Name of Proponent	CanWhite Sands Corp.
Address of Proponent	Suite 2650, 645 7th Ave. S.W. Calgary, AB T2P 4G8
Principal Contact Person for the Environment Act Proposal (EAP)	**Feisal Somji** President and Chief Executive Officer Email: info@viviansandproject.com Phone: 1-888-436-5238

1.3 Company Profile

CanWhite Sands Corp. (CanWhite) is a private Alberta company registered to carry on business in Manitoba. CanWhite's wholly owned subsidiary, HD Minerals Ltd., is the legal owner of mineral claims in and around the RM of Springfield. The mineral deposits covered by these claims contain a silica sand resource (SiO_2 [Silica Dioxide]) which is unique to Manitoba and North America. The purity of the sand

resource, averaging 99.85%, is within international standards for high purity silica use. This positions southeastern Manitoba as a viable supplier of high purity silica sand utilized in green and renewable energy businesses as well as electronics, specialty/medical glass, and other industries supplied by high purity silica.

CanWhite aims to be the lowest cost supplier of high purity silica sand using environmentally sustainable methods while providing benefits to the local community. CanWhite proposes to develop this Manitoba-based Project using local resources and services to deliver the sand product by rail to markets in Canada, the United States and internationally. CanWhite's target markets and industries include specialty high purity silica products such as solar panels and electrical components, glass production, water filtration, source material in the energy sector, and sports and recreation uses.

- Corporation ID: 2019935051
- Business Number: 75100 0324 RC0001
- Incorporation Date: 09/15/2016

1.4 Project Location and Land Tenure

The Project will be located within the Rural Municipality (RM) of Springfield on private land as illustrated in **Figure 1-2**, and within the following land parcels:

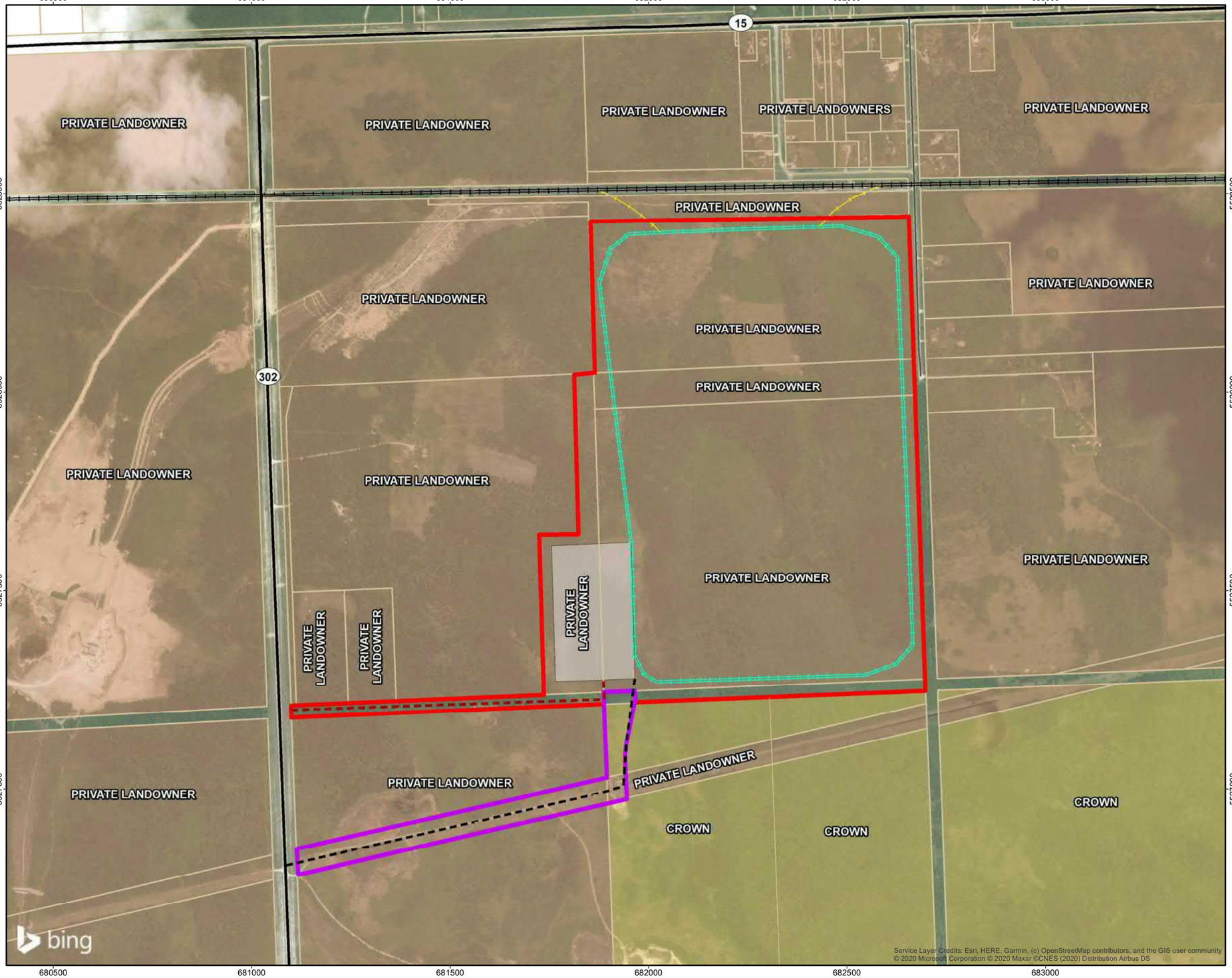
- NE-32-10-8E1
- SE-32-10-8E1
- SW-32-10-8E1
- NW-29-10-8E1
- NE-29-10-8E1

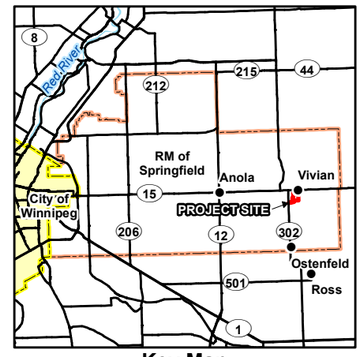
CanWhite has entered into agreements which will entitle CanWhite to purchase all privately-owned land within the Project site.

Figure 1-3 displays the conceptual location for the Processing Facility within the Project site.

CanWhite will, with the approval of the RM of Springfield, construct a permanent access road on the municipal road allowance directly south of the Processing Facility (**Figure 1-2**).

CanWhite has obtained permission from Manitoba Hydro to use the existing power line access road easement in NW-29-10-8E1 and NE-29-10-8E1 (**Figure 1-2**) to access the Project site area on a temporary basis during Project construction, and possibly early Project operations, while the permanent road is being completed (expected to last no longer than four months to one year).





Key Map

Legend

- Project Site
- Project Site – Temporary Use

Project Components

- Wet Plant and Dry Plant Location
- Rail Loop
- Train Spurs
- Permanent Access Road
- Temporary Access Road

Land Ownership

- Crown Land
- Private Land

General Features

- Highway
- Road
- Canadian National Railway
- Land Parcels

N
W E
S

1:10,000
NAD 1983 UTM Zone 14N

100 50 0 100 200
m

Basemap: Canvec; CanWhite Sands Corp., 2019

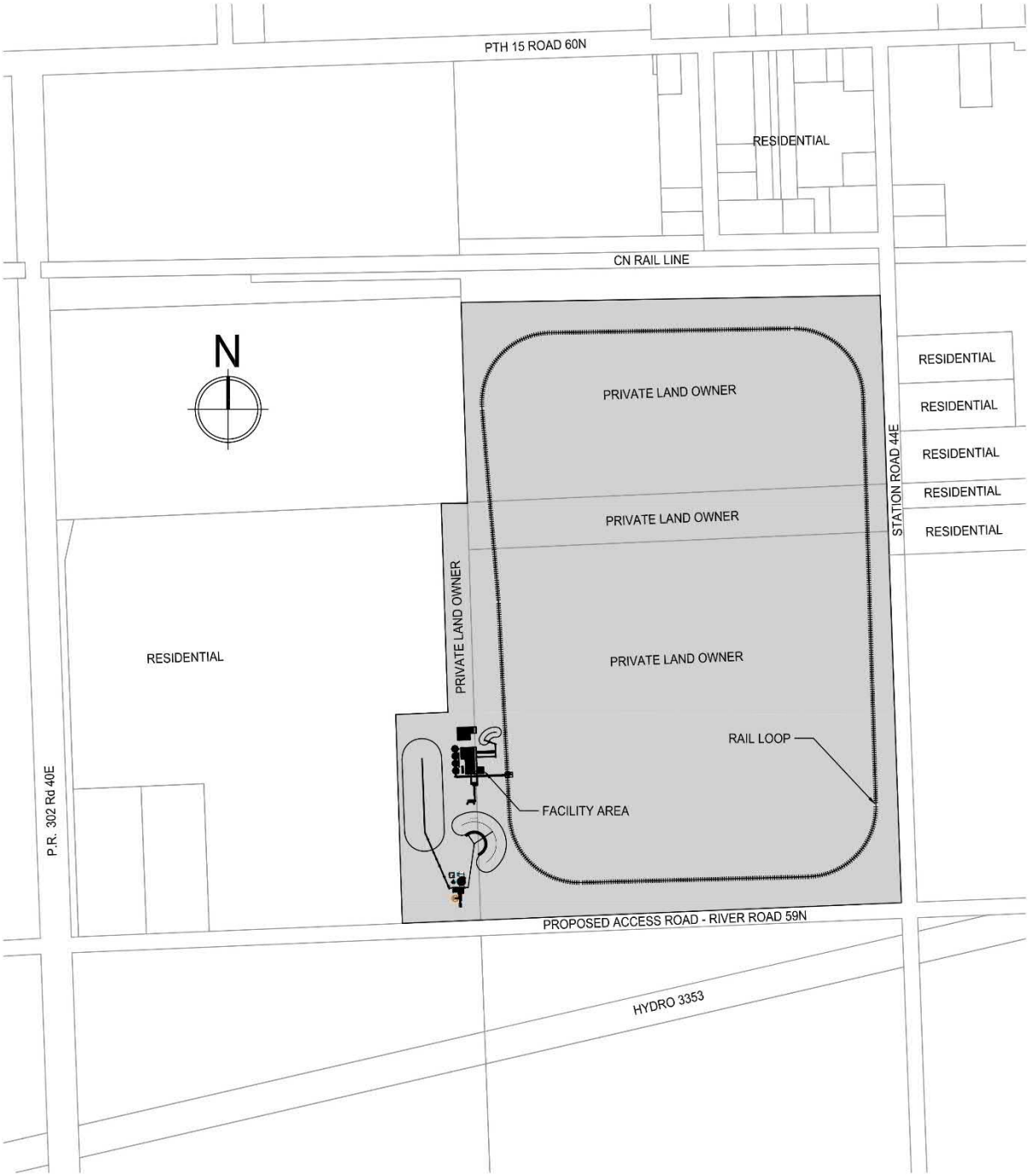
AECOM

Figure: 1-2

Vivian Sand Facility Project
Project Site Location and Land Ownership
CanWhite Sands Corp.

ANSI B 279.4mm x 431.8mm
Approved:
Checked:
Designer:
Project Management Initials:
Last Plotted: Tue Jun 30, 2020
Last saved by: PAIGE.CROSSMAN (2020-06-30)
Filename: L:\ENVIRONMENT\GIS\STEPHANIE CLARKE\WINNIPEG\VIVIAN_60625656\02_MXDS\VIVIAN SAND FACILITY PROJECT\TH001-2_60625356_FACILITY_SITELOCATIONLANDOWNERSHIP.MXD

Figure 1-3: Conceptual Location of Processing Facility



The Manitoba Hydro easement connects to the Processing Facility area via an existing trail on Crown land used by the public for recreational use. CanWhite will use the existing trail temporarily during Project construction. CanWhite will apply for any land use permits that may be necessary.

Vivian is geographically situated to efficiently access CanWhite's mineral holdings within Manitoba.

CanWhite selected the location for the Project to minimize the cost and impacts associated with transportation of the sand product to markets. Because the selected location is adjacent to the CN rail line, CanWhite will be able to directly load the product from the Processing Facility to railcar for transportation to markets (see **Figure 1-2**). This will eliminate the environmental and socio-economic impacts and costs that would have been associated with transportation of the sand product by highway via transport trucks.

The selected Project site is also close to other existing infrastructure such as roads and available electrical power line options to support Project operations, thus minimizing the need for additional construction or traffic. The Project site is conditionally zoned for industrial use which contemplates the proposed Project components and activities. Currently, there are agriculture and historic and active open-pit aggregate/quarry operations in the local area.

All these factors make the chosen location within the RM of Springfield ideal for the Project.

1.5 Project Planning Phases

CanWhite is planning to initiate clearing and construction activities during the fall of 2020 and begin Project commissioning and operations by Q1 2021 following the issuance of regulatory permits and approvals required for Project construction and operation. Planned Project components and activities are provided in the Project Description (Section 2).

Project phases include the following:

- Planning and Permitting phase
  - Current phase of the proposed Project
- Construction phase
  - Includes clearing for and construction of:
    - The Wet Plant and Dry Plant;
    - Areas for two unprocessed wet sand stockpiles;
    - Area for a sand reject storage pile associated with the Wet Plant;
    - Area for a sand reject storage pile associated with the Dry Plant;
    - Four dry sand product fully enclosed storage silos;
    - Ancillary structures, including permanent office, staff kitchen, washrooms, operator control centre, maintenance building and storage buildings;
    - Rail loop track (approximately 3.5 km length) running through the Dry Plant Rail Load Out for direct sand product loading to enclosed railcars, and for railcar storage; and
    - A 5 m wide single-lane gravel access road approximately 1 km in length to the Project site, with 1 m wide shoulders on either side for passing.
- Operation phase
  - Operation of the Processing Facility including direct loading of silica sand product to rail for distribution.

A schedule for the above Project phases is provided in the Project Schedule (Section 1.8).

Project operation activities will occur 24 hours per day, 7 days per week for the life of the Project (24 years) except for any shut-down time required for maintenance.

1.6 Regulatory Framework

1.6.1 Environment Act

This Project will be reviewed by MBCC under *The Environment Act* as a “manufacturing and industrial plant” which is a Class 2 development in section 3 of the Classes of Development Regulation under group 4 “*Manufacturing*”.

CanWhite’s intention is to use the Processing Facility to process sand resources which its subsidiary company has discovered in the local area of Manitoba. Extraction of the sand resource will constitute “mining” which must be licensed under *The Environment Act* as a Class 2 development and which is subject to the closure planning and financial assurance provisions of *The Mines and Minerals Act* and to the specific regulation applicable to drilling and closing boreholes. CanWhite’s intention is to propose an extraction project for licensing later this year while construction of the Processing Facility is underway.

Neither the Processing Facility nor extraction can be operated until both have been licensed and construction of the Processing Facility has been completed. CanWhite is proposing the Processing Facility separately and in advance of extraction because:

- The Processing Facility consists of a permanent building and related infrastructure similar to other manufacturing operations located in urban or semi-urban settings;
- By contrast, CanWhite anticipates that special license conditions will have to be contemplated for extraction which will involve changing of extraction sites on a relatively frequent basis, which is not typical for Environment Act Licenses and which will not be relevant to the Processing Facility;
- In the future, the Processing Facility could be operated on a commercial basis to process and transfer sand that is not mined by the same owner provided that the sand is of the same nature and quality as the resource to which CanWhite’s subsidiary has rights; and
- Construction of the Processing Facility will take time to achieve, whereas extraction involves portable drills which will move frequently and for which no construction season is required.

1.6.2 Other Project Regulatory Approvals

In addition to seeking licensing under *The Environment Act,* CanWhite will apply to Manitoba for:

- Burning permits to dispose of woody debris will be sought, as required, in accordance with Section 19(1) of *The Wildfires Act*; and
- Water rights license(s) for use of groundwater for the Processing Facility water uses that are described in Section 2.7.

CanWhite has applied to the RM of Springfield for approval of its Conditional Use application, as required under the Springfield Zoning By-law. CanWhite expects that the RM of Springfield will hold the public hearing in relation to this application, in accordance with *The Planning Act*, during the summer of 2020 and that the decision will be made shortly thereafter. The RM will likely require a Development Agreement for the construction of the permanent access road and any other off-site municipal infrastructure improvements related to service the Processing Facility. As well, the RM of Springfield will require the submission, review and approval of development and building permit(s) before construction can proceed on the Processing Facility.

CanWhite is currently in discussions with CN Rail to coordinate development of the railway spurs within the CN Rail RoW intersecting with the existing CN rail line and proposed rail loop at the Project site. CN Rail will have the responsibility for any permitting that may be associated with the rail spurs.

CanWhite is also in discussions with Manitoba Hydro to coordinate access to electrical power and natural gas services required for the Project.

CanWhite will coordinate with Manitoba Infrastructure regarding approvals for the development of Project access road intersections to PR 302.

No federal permit or approval is required for any aspect of the Project.

1.7 Project Funding

Development of the Project will be funded entirely by CanWhite and will be owned and operated by CanWhite.

1.8 Project Schedule

The proposed Project schedule is provided in **Table 1-2**.

Table 1-2: Proposed Project Schedule

Project Phases and Activity	Proposed Schedule (subject to the results of Regulatory review)
Construction	
Site preparation (clearing vegetation, grubbing, grading, leveling) and construction of the Processing Facility and associated infrastructure	Q4 2020 to Q1 2021
Operation	
Commissioning the Wet Plant and Dry Plant; sand product production	Q1 2021 Production: Year-round; 24 hours/day, 7 days/week
Decommissioning	
Processing Facility dismantling and site reclamation	At end of Project Life (24 years): **2045**

Note: QX = year quarter (e.g. Q4 = October through December timeframe)

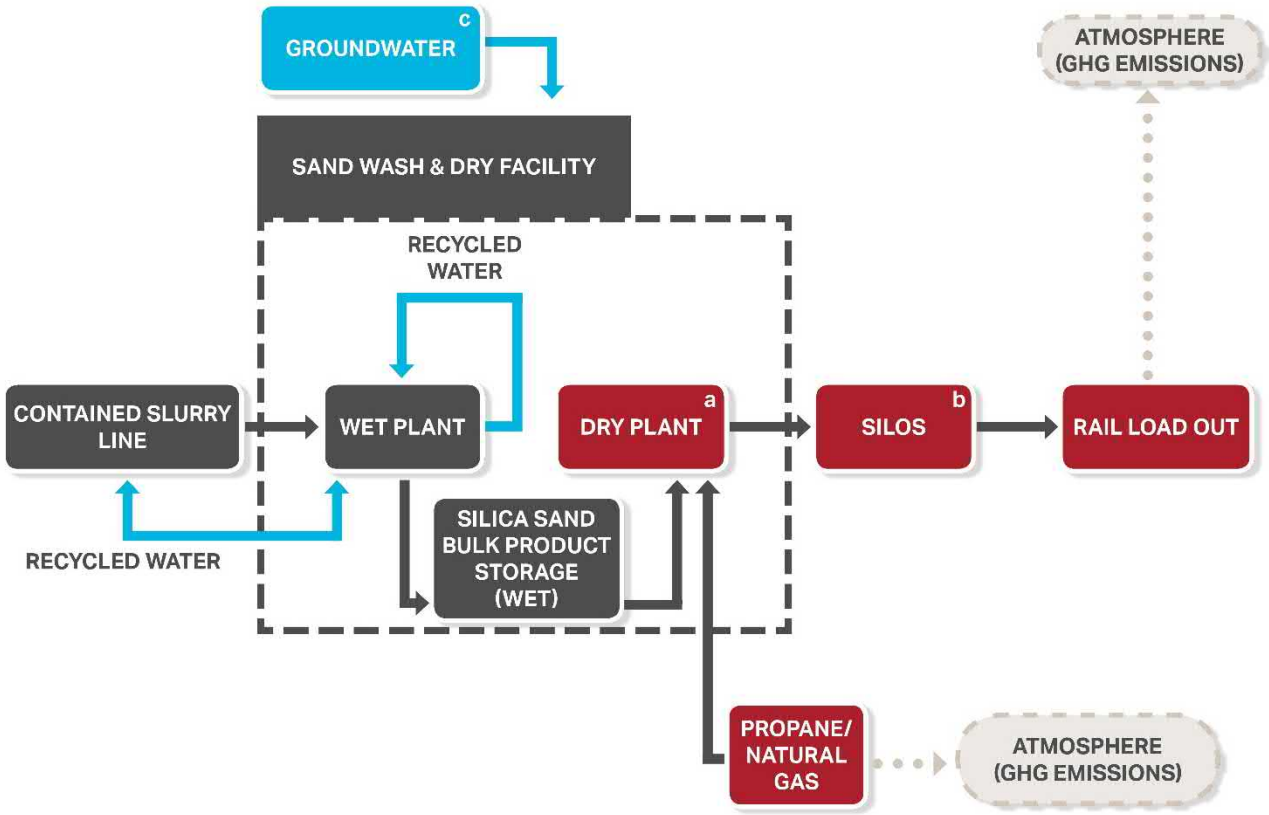
2. Project Description

CanWhite is proposing to develop a sand Processing Facility on private land within the RM of Springfield, Manitoba.

The Project will have a lifespan of 24 years with an estimated production of approximately 1,360,000 tonnes/year of silica sand product. The overall production process is illustrated in **Figure 2-1.**

Sections 2.1 to 2.10 provide additional information for each of the Project components and activities.

Figure 2-1: Silica Sand Process



a - Dust/ Fines contained within the enclosed Dry Plant dust capture system.

b - Dust/ Fines confined in silo/ dust capture system.

c - Groundwater used for Processing Facility domestic usage (sinks, toilets and showers) and for emergency fire suppression (on demand short-term use).

Note: Process water will be recycled in a loop system.

The Project will consist of the following key activities and components:

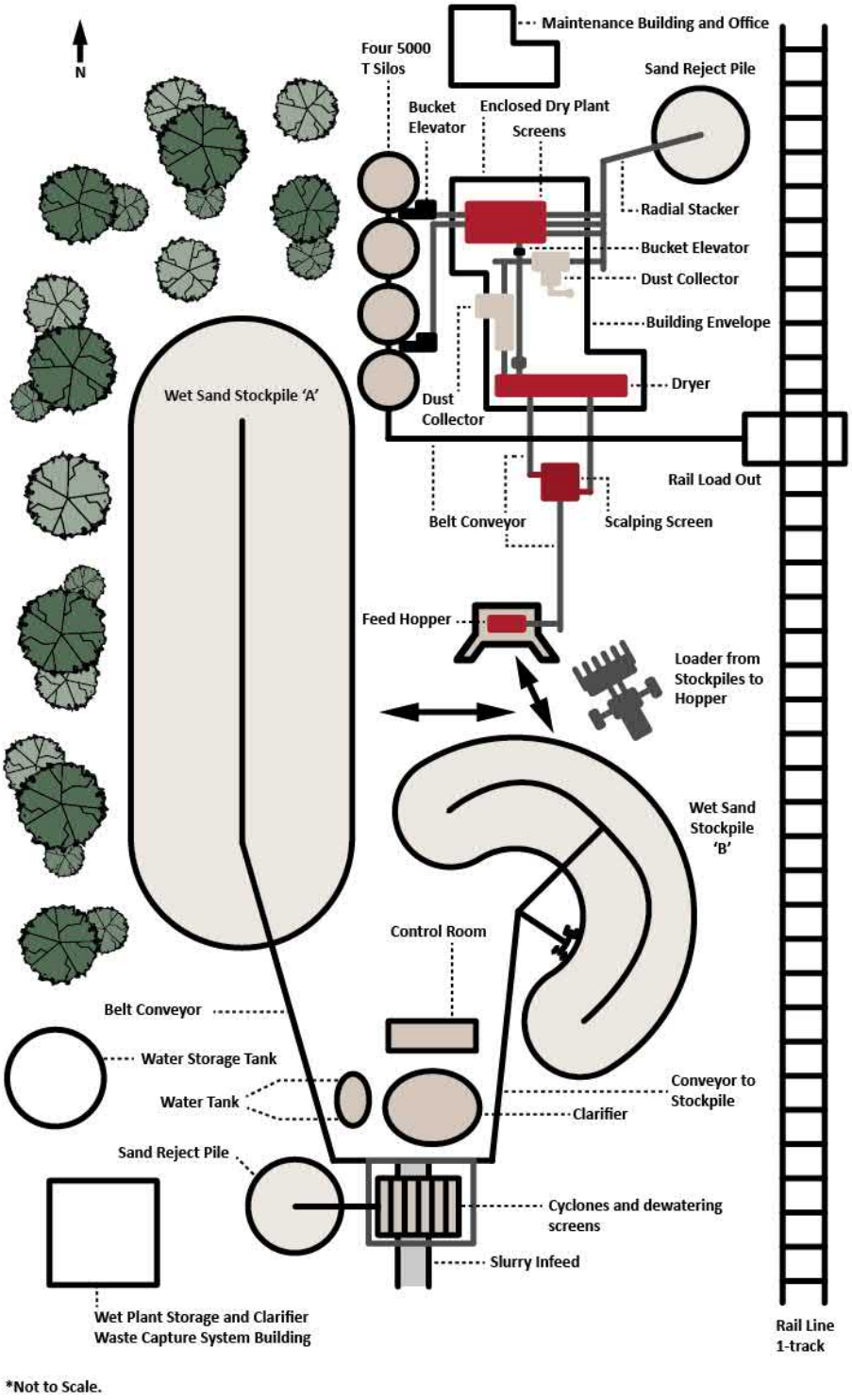
- An outdoor Wet Plant and fully enclosed Dry Plant;
- Two outdoor stockpiles of wet sand ready to be processed;
- One overs/fines sand reject pile (outdoor) associated with the Wet Plant;
- One overs/fines sand reject pile (outdoor) associated with the Dry Plant;
- Four dry sand product fully enclosed storage silos (42 m tall with 4,536 tonne capacity each);
- Ancillary facilities, including permanent office, staff kitchen, washrooms, operator control centre, maintenance building and storage buildings;
- Rail loop track (approximately 3.5 km length) running through the Dry Plant Rail Load Out for direct sand product loading to enclosed railcars, and for railcar storage; and
- A 5 m wide single-lane gravel access road approximately 1 km in length to the Project site, with 1 m wide shoulders on either side for passing.

As indicated in Section 1.1, discussions are in progress with CN for CN to develop two rail spurs (approximately 190 m in length each) on the CN Rail right-of-way (RoW) that will connect the existing CN rail line infrastructure to the proposed rail loop track to allow for the direct loading of silica sand product from the Dry Plant for transportation by railway to markets.

The Processing Facility components are illustrated in **Figure 2-2**.

Batched concrete for the construction of the Processing Facility will be transported to the Project site from Winnipeg. Therefore, there will be no concrete batch plant onsite.

Figure 2-2: Processing Facility Components



2.1 Silica Sand Production Process

As indicated in Section 1.5, the Processing Facility will operate 24 hours per day, 7 days per week for the life of the Project except for any shut-down time required for maintenance.

Sand will enter the Processing Facility via a sand and water slurry infeed pipe (**Figure 2-2**). As described above in Section 1.1, the moveable slurry pipe supplying the infeed will be a component of the extraction project that will be proposed for approval later this summer.

As described below in Section 2.1.1, sand and water arriving in the slurry line will be separated during the wet sand processing. Wet sand will then be stockpiled outdoors on the site for movement into the enclosed Dry Plant for drying and final screening into specified product sizes. The final dry sand product will be stored in enclosed silos for rail shipment to markets.

2.1.1 Sand Treatment: Wet Processing

The overall footprint of the Wet Plant components (**Figure 2-2**) will be smaller than traditional plants used for sand processing because the raw sand resource used in this Processing Facility contains a minimal amount of ultra fine content (average 0.46% clay/silt) that would otherwise need a more elaborate sand washing process, and therefore larger Wet Plant facility.

2.1.1.1 Processing Description

The following process will be used in the wet sand processing:

1. Sand enters the Wet Plant via the sand and water slurry line from the extraction site at 15% solids content.
2. Sand first passes through a cyclone to remove the majority of the fine particles with some water.
3. Sand that will be going to high purity sand markets will pass through a second cyclone and screen before moving to the next step.
4. The remaining sand and water are then separated using a dewatering screen which also removes all particles that are too large (termed ‘overs’) and particles less than 105 microns[2] (termed ‘fines’). Thus, most of the fine particles less than 105 microns are removed along with the water prior to stockpiling the remaining coarse sand.
5. The dewatered sand is then stockpiled outdoors at 15% moisture content for further processing later. This sand is still considered ‘wet’ sand due to the 15% moisture content.
6. The fines and water removed from sand move to the clarifier for treatment.
7. Once treated, the water is recycled into the Wet Plant.
8. Water not required for the Wet Plant is directed to a dedicated contained waterline which will return the water to the slurry line for reuse in the slurry line system. Any additional remaining water not used in the Wet Plant or slurry loop system, will be stored in an on-site surface tank, as shown in **Figure 2-2**.
9. This process repeats, continuously recycling the water within the system to drive the slurry line and Wet Plant as shown in **Figure 2-1**.

This wet process will result in dewatering the sand slurry from 15% solids to approximately 85% solids. Solids that are too large to be used as a final sand product are collected on a single conveyor and deposited using a radial stacker to an oversized sand reject pile (**Figure 2-2**) for use in alternate applications (Section 2.3.2 ‘Solid Waste and By-product’).

[2] *105 micron sand particles is equivalent to 140 mesh size.*

Decanted water and fines collected from the dewatering process will be sent to the clarifier for treatment prior to being reused in the Wet Plant or reused in the slurry system loop. Excess water not required for recycling back into the Wet Plant will be stored in an on-site surface tank as shown in **Figure 2-2**. Fines removed from the water treatment process will be pumped to a belt press which will compress the fines and remove the remaining water, forming 'mud cake' style bundles, also known as Filter Cakes, for handling of wet solid fines. The Filter Cakes will be stored in an enclosed structure on-site and periodically transported from the Processing Facility in appropriate containment for use in alternate markets.

Water treatment will involve an outdoor clarifier capable of handling a minimum of 6,450 gpm (24,416 l/min), using food grade biodegradable flocculant (anionic polyacrylamide) as an aid for fines settling. The levels of flocculant remaining in the water after leaving the clarifier will be virtually undetectable. The water treatment system closely resembles that of a typical water treatment facility.

The Wet Plant will be operated 24 hours per day, seven days per week, eight months per year (i.e., April through November) except for any down time required for maintenance.

During the winter months, the water in the clarifier and Wet Plant systems will be drained, treated as described above, and stored in an on-site surface water storage tank for the winter (**Figure 2-2**). In the spring, the water required to start up the clarifier and associated Wet Plant equipment will come from the winter surface water storage tank which will mitigate the need to take additional water from the aquifer.

2.1.1.2 Wet Sand Stockpiles

As indicated in the above Section 2.1.1.1, sand that goes through the dewatering process in the Wet Plant is stockpiled outdoors prior to further processing in the enclosed Dry Plant (Section 2.1.2).

As most of the fines are removed from the sand in the dewatering process (Section 2.1.1.1), the remaining sand particles going to the wet sand stockpiles are too large to be dispersed as a respirable dust outdoors (smallest particle size will be 105 microns). Additionally, stockpiles are created at 15% moisture content, which is too wet to create dust should any fines remain or result in off-site migration of sand. On hot, dry days, sand will be deposited continuously along the length of the stockpiles as needed to maintain 15% moisture content. During the winter months, the wet sand stockpiles will freeze a few inches on the outer layer, which will contain the sand further should there be any remaining dust particles in the stockpiles.

Wet sand will be stockpiled from April through November each year of operation at the Processing Facility site (locations illustrated in **Figure 2-2**). Stockpiles are formed by conveyors depositing wet sand in the same location continuously to form a pile, once the pile is formed to a defined height, the conveyance moves horizontally to a new surface on the ground to create another pile next to the existing pile. This wet sand stockpile creation method continues within an allocated total approximate maximum area of 20,020 m^2 for stockpile 'A' and 6,253 m^2 for stockpile 'B'.

Sand from the two wet sand stockpiles will be used continuously throughout the year. Therefore, stockpiles will be at their largest in the fall to sustain the Dry Plant operations over the winter, and will be depleted over the winter months, leaving either very small or no stockpiles in the spring. The approximate seasonal dimensions and capacity of the two wet sand stockpiles are described in **Table** 2-1**.**

Table 2-1: Wet Sand Stockpiles: Approximate Seasonal Dimensions

Season	Wet Sand Stockpiles	Approximate Maximum Area (m^2)	Approximate Maximum Height (above ground)
Fall	Stockpile 'A'	20,020	28.7 m (94 ft)
	Stockpile 'B'	6,253	14.9 m (49 ft)
Winter	Stockpile 'A'	15,970	25.6 m (84 ft)
	Stockpile 'B'	6,979	14.9 m (49 ft)
Spring	Stockpile 'A'	5,436	6.1 m (20 ft)
	Stockpile 'B'	6,979	14.9 m (49 ft)
Summer	Stockpile 'A'	17,541	20.4 m (67 ft)
	Stockpile 'B'	6,979	14.9 m (49 ft)

A conceptual image of the wet sand stockpile 'A' during fall when the stockpile will be highest is shown in **Figure 2-3.**

Figure 2-3: Conceptual Image of Wet Sand Stockpile Approximate Maximum Height

The wet sand stockpiles, regardless of season, are not expected to be visible from local residences or public roads (as explained in Section 6.8 'Aesthetics').

A Dust Management Plan will be implemented during all phases of the Project to confirm that mitigation measures that have been put in place are effective and to allow for the implementation of additional engineering and/or operational controls to further control dust and off-site migration of sand, if required (Section 6.3.1.2 and Section 8).

Stockpile safety and management practices will include, but not be limited to the following:

- Processing Facility workers will operate under the requirements of *The Workplace Safety and Health Act* which includes the Operation of Mines Regulation regarding stockpiles;

- Staff will be trained in safe work practices around stockpiles which will include CanWhite's internal Health and Safety Program and Emergency Response Plan and safe practices such as those outlined in Ontario's Infrastructure Health and Safety Association's (IHSA's) "Working around stockpiles" (Ontario IHSA, n.d.) and "Recommended Practices for Working Safely around Stockpiles" (Workplace Safety North, 2015) safety guidelines;
- Sand Stockpiles will be monitored through visual inspection to manage sand stockpiles in accordance with the Project description and internal management plans;
- Appropriate safety signage will be posted in the vicinity of sand stockpiles; and
- Only authorized personnel will be allowed on the Processing Facility property (Section 2.5 'Access').

Additional information on worker health and safety is provided in Section 6.9.1.

2.1.2 Sand Treatment: Dry Processing

A front-end loader will feed stockpiled wet sand that has been through the Wet Plant from the stockpile area to a hopper feeding onto a conveyor which will bring the wet sand into the Dry Plant, starting with the dryer. Once the sand leaves the dryer it moves to screening and quality control where it passes over screens to separate the sand into required product sizes. The different sizes of sand product will then be conveyed to outdoor fully contained (enclosed) storage silos.

To control dust, the entire Dry Plant will be enclosed. The dryer is equipped with a baghouse to capture dust generated from the drying process. The fabric dust filters will be changed regularly as per manufacturer specifications, with the used filters properly contained and disposed of in accordance with applicable regulations. All conveyors after the dryer are enclosed (587 m of conveyance), with all transfer points under negative pressure to control dust along the conveyance system.

The Dry Plant will be operated year-round, 24 hours per day, seven days per week except during any down time required for maintenance.

2.1.3 Bulk Product Storage

Dry sand will be stored in one of four 42 m (138 ft) tall storage silos with diameters of 11.6 m (38 ft each) adjacent to the Dry Plant until the sand product is transferred to railcars for shipment. The silos will have a sand storage capacity of 4,536 tonne each. All transfer points are equipped with a negative pressure dust collection system and conveyors are covered for dust control. Rail loading will take place in a covered space, equipped with a negative pressure dust collection system for all transfer points as with the Dry Plant.

2.1.4 Reagents

Fines removed from the slurry system as waste are pumped to a clarifier tank where a food grade biodegradable flocculant (anionic polyacrylamide) is added as an aid for fines settling. The levels of flocculant remaining in the water after leaving the clarifier are virtually undetectable.

2.2 Product Transportation

The final product (silica sand) will be loaded from the storage silos directly into 102 tonne capacity enclosed grain hopper-type railcars on a loop track off the existing main CN rail line. Two rail spurs will be constructed on the CN rail line RoW that will connect the Project rail loop to the existing CN rail line (**Figure 1-2**). Once railcars are loaded, the sand product will be shipped by railway to markets within Canada, the United States and internationally.

2.2.1 Rail Loop

A single rail loop track approximately 3.5 km in length leading off the existing main CN rail line will be used for train car storage while loading sand, which will keep trains off the main CN rail line and will allow for efficient sand product loading of railcars at the Rail Load Out area. The concept rail loop track is shown in (**Figure 1-2**). The loop track will have sidings in the loop corners for railcar storage. Railcars will be brought in by locomotive and pulled through the rail loop while the sand product is loaded into each railcar at the Rail Load Out. The shape of the rail loop will allow the locomotive to pull the train through the Rail Load Out without the need to regularly decouple or couple individual railcars. A diesel railcar mover, which is much smaller than a locomotive, will be on site if a railcar needs to be removed from the train (e.g. for maintenance). The railcar mover will not be regularly needed to load the railcars.

Each train will consist of approximately 90 to 120 railcars and will be approximately 1.3 km long. Locomotives for long distance train transport will couple with the trains staged in the Project rail loop from the existing CN rail line.

2.2.2 Rail Load Out

The dry sand product will be transported on enclosed conveyors from the sand storage silos described in Section 2.1.3 to a Rail Load Out area (**Figure 2-2**). The sand will then be loaded into covered grain hopper-type railcars using a retractable sand transfer spout; a method designed to control fugitive dust. Railcar hatches will then be closed to fully contain the dry sand product for rail transportation to markets.

Loading will take place as trains arrive anytime within a 24-hour, 7 day a week period, with one to four trains leaving per week (annual average of approximately 3 trains per week). A locomotive will bring each train into the rail loop and will leave with each train once loaded with the sand product. The loading process will take approximately 12 to 24 hours per train.

2.3 Process Waste

2.3.1 Wastewater

There will be no discharge of wastewater during processing because process water will be treated to remove fines as explained in Section 2.1.1. Water will be recycled for reuse in the slurry system loop and the Wet Plant. This process repeats continuously. Periodically there may be excess water not required for recycling back into the Wet Plant, which will be stored in an on-site surface tank as shown in **Figure** 2-2.

Wastewater from staff washrooms, shower facilities and staff kitchen (approximately 760 to 1,135 litres per day) will be directed to a septic system that will include a septic tank and drain field/leach field. The septic system will be installed, and regularly maintained and monitored for correct functioning, in accordance with the Onsite Wastewater Management Systems Regulation made under *The Environment Act*.

2.3.2 Solid Waste and By-product

The processing activities described above result in approximately 38,600 tonnes/year of ‘overs’ and ‘fines’ that are either too large or too small, respectively, for the target sand buyer markets and will be directed to alternate markets for use. Four aspects of the processing activities produce these overs/fines for use in alternate markets:

1. The dewatering process removes particles that are too large for processing into an outdoor stockpile.

2. The belt press process in the Wet Plant will produce wet fines which will be stored in an enclosed structure on-site and periodically transported from the Processing Facility in appropriate containment.
3. In the final stage before storage, sand will pass through a quality control screen to remove any over/fines remaining which will be stockpiled outdoors.
4. Fines collected in the baghouse will be removed regularly by trained individuals with proper personal protective equipment, stored safely in appropriate containment and disposed of in accordance with applicable regulations.

The outdoor sand reject piles referred to in points 1 and 3 above will not exceed an average height above ground of 8.5 m (28 ft) or maximum capacity of 368 m^3. To control dust, the overs/fines sand reject piles will be kept damp by misting with water during non-winter months. During the winter months, the sand reject piles will be covered with a mesh system that will allow snow and ice to accumulate on the fines stockpile to act as a natural containment to control dust.

Domestic and commercial waste will be removed from the Project site by a licensed local contractor and disposed of at a licensed landfill. Recyclable materials will be collected in designated recycling containers and transported to a recycling facility.

Limited volumes of hazardous materials will be stored on-site and will consist of those commonly found in maintenance shops (e.g. engine oil; lubricants) and associated with routine building and equipment maintenance (e.g. loaders; pumps). Hazardous materials will be stored in a designated location on site and handled, transported and disposed of in accordance with applicable legislation and associated regulations and guidelines, including *The Dangerous Goods Handling and Transportation Act* of Manitoba and applicable regulations.

2.4 Ancillary Facilities

2.4.1 Maintenance Shop

The maintenance shop will be sized to accommodate the mobile fleet of equipment for site operations. It will also include service bays, a repair area and a warehouse for spare parts storage. The building will be constructed on a concrete pad as a pre-engineered building.

2.4.2 Operations and Administration Building

The operations and administration building will be a single-storey quadraplex office building that will include space for Processing Facility monitoring, administration, engineering, geology, general services, environmental services, health and safety, human resources, training and other support personnel. Staff washrooms, shower facilities and staff kitchen be in this building.

2.4.3 Propane Tank Storage and Handling

Temporary propane storage will exist on-site for heating and operation of the Processing Facility dryer until a planned permanent natural gas line has been installed by Manitoba Hydro approximately one to two years after the start of Project operations. Propane will be stored in a 30,000 U.S. gallon (113,562 L) tank. Propane handling, transportation, storage and use will be conducted in accordance with applicable legislation and associated regulations and guidelines, including *The Dangerous Goods Handling and Transportation Act* of Manitoba and applicable regulations.

2.4.4 Other Hazardous Substances Storage and Handling

Diesel fuel will be required to fuel the mobile equipment such as loaders, grader, and rail car mover. Additionally, diesel generators will be on-site as backup power. The diesel fuel will be stored in a double walled 18,927 L (5,000 U.S. liquid gallon) fuel tank with secondary containment on a concreate pad.

Diesel fuel and other hazardous substances required for Project operation, such as lubricants and oils, will be handled, transported, stored and used in accordance with applicable legislation and associated regulations and guidelines, including *The Dangerous Goods Handling and Transportation Act* of Manitoba and applicable regulations.

2.5 Access

CanWhite will construct a permanent 5 m wide single-lane gravel access road (approximately 1 km in length) with 1 m wide shoulders for the Project operation phase (**Figure 1-2**). The permanent access road will be gated at the CanWhite property line to control access to the Project site. Other existing trails will be blocked (e.g. with pre-cast concrete blocks) and appropriately signed to control access to the CanWhite property and Processing Facility as a public safety measure. Project site access will be controlled by CanWhite.

The access road will be designed in accordance with Manitoba Infrastructure design standards for rural roadways based on sub-surface geotechnical information and will have a posted speed limit of 30 km/hr. Culverts will be installed as required along the access road to equalize surface water flow in low wet/marshy areas.

The permanent access road will be used only by operation staff and contractors because sand will arrive at the Processing Facility by slurry line and the sand product will leave for transportation to market by rail.

For temporary access while the permanent road is constructed, an existing gravel access road/Snoman[3] trail within a Manitoba Hydro easement will be used with permission from Manitoba Hydro (**Figure 1-2**). CanWhite will improve and maintain an approximate 1 km length of the existing access road as required to accommodate traffic during Project construction, and possibly early Project operations, while the permanent road is being completed (expected to last no longer than four months to one year).

2.6 Employees

There will be no worker camp on-site due to the proximity of the Project site to various communities and the City of Winnipeg. Information regarding the estimated number of employees and positions required for Project construction and operation phases is provided in Sections 2.6.1 and 2.6.2.

2.6.1 Construction

During the Project construction phase, approximately 20 to 30 people will be employed under contract for site clearing and Project construction. The need for local suppliers and other business to support the construction phase is likely to provide indirect employment for up to 60 additional people.

[3] *Snoman Inc. (Snowmobilers of Manitoba), which was established in 1975 as a not-for-profit organization, is responsible for approximately 12,000 kilometres of snowmobile trails and 152 warm-up shelters on the trail systems throughout Manitoba.*

2.6.2 Operation

The operation phase of the Project will employ approximately 40 to 50 people in the following key occupations:

- General Manager, Foremen, Clerk, Shift Supervisors and Operational Leads;
- Control Room / Operators;
- Electrical and Instrumentation Technicians;
- Millwrights;
- Lab Technician;
- Welder;
- Labourer;
- Equipment Operators;
- Environment, Safety and Health Professionals;
- Maintenance; and
- Quality Control Technicians.

2.7 Water Use

During operation of the Processing Facility, water will be needed for domestic uses such as sinks, showers, toilets and the employee kitchen. This water will be sourced from a groundwater well on the Processing Facility property. The total domestic daily water requirement for the Processing Facility will be 200 to 300 US gallons (757 to 1,136 litres).

Water for the Wet Plant is comprised of 100% recycled water originating when the slurry sand and water arrives at the Wet Plant. The sand is removed, water is treated (as explained in Section 2.3.1), and the water is returned to the to the slurry line system at the extraction site, creating a loop system (illustrated in **Figure 2-1)** for bringing slurry to the facility for processing. This obviates the need for additional water from the on-site well for operation of the Wet Plant. The domestic water will be sourced from a well on the Processing Facility property.

A second well on the Processing Facility property will be dedicated to emergency fire suppression (on demand short-term use).

2.8 Power Use

Operation of the Project will require approximately 1,833 kW of power, with 1,316 kW of that power needed to operate the Dry Plant motors. Manitoba Hydro is reviewing power needs to ensure adequate power supply to the local area with the addition of the Project. Manitoba Hydro will determine whether power to the Processing Facility will be supplied by a new 66 kV line or from a nearby existing 12.47 kV power line. The power line is expected to run along the proposed permanent access road from PR 302 running east into the Project site.

Power during the Project construction phase and early Project operation phase will be provided by two diesel generators at the Project site that will also be used as back-up power during the operation phase in the event of a main power loss. Generator power will be needed during the early operation phase until the power line is installed to the Project site by Manitoba Hydro.

2.9 Equipment Use

Table 2-2 presents the heavy equipment use expected during Project construction and operation phases.

Table 2-2: Project Heavy Equipment Use

Equipment	Units*
CONSTRUCTION PHASE	
Track dozer (D6)	1
Feller buncher	1
Grader (14-G)	1
4 x 4 pick-up trucks	4
Crane	1
Man-lift	2
Excavator	1
Dump Truck	1
OPERATION PHASE	
Railcar mover (diesel)	1
Grader (14-G)	1
Caterpillar 980H FEL Loader	1
Backhoe Loader (CAT 415F)	1
4 x 4 pick-up trucks (six F-150 and four F-350)	10
Track Dozer (D6)	1
Skid Steer – CAT 246D3	1
DECOMMISSIONING	
Track Dozer (D6)	2
Articulated dump trucks	2
Crane	1
Grader (14-G)	1
4 x 4 pick-up trucks	4

* Not all operating simultaneously during any given phase.

2.10 Traffic

During the construction phase of the Project, temporary increases in local traffic volumes will be associated with the 20 to 30 contractors and employees that will travel to the site daily. Once Project operations begin, the sand slurry will enter the Processing Facility via slurry line and the sand product will be transported to markets from the Processing Facility directly by rail and not by road. Therefore, traffic related to Project operations will only be associated with 20 to 25 employees arriving twice per day for their shift and weekly fuel, or parts deliveries employees, suppliers and contractors, such as waste disposal or fuel supply. Traffic impact will be minimal with 20-25 employees arriving twice per day for their shift in addition to weekly fuel and parts deliveries. Once at work, up to 10 field crews may travel in and out of the Processing Facility site using company supplied vehicles for sand extraction or maintenance work. Most associated facility traffic will travel on PTH 15 and then south on PR 302 to access the Processing Facility site.

3. Scope of the Assessment

To assess the potential environmental impact of the proposed Project, spatial and temporal boundaries were defined as follows:

3.1 Temporal Boundaries

The temporal boundaries of the assessment are divided as follows:

- **Construction Phase**: Includes clearing for, and construction of, infrastructure required for Project operations including the Processing Facility and permanent access road.
  - Q4 2020 – Q1 2021
- **Operation Phase** – Includes commissioning of the Processing Facility; sand product production and loading of sand on-site to railcars for transportation to markets.
  - Q1 2021 - 2045
- **Decommissioning Phase:**
  - After the expected life of the Project (24 years), the Processing Facility will be removed, and previously disturbed areas leveled and rehabilitated. After the life of the Project, future use of access road, natural gas and power lines to the Project site will be discussed with the RM of Springfield and Manitoba Hydro to determine if there is potential to repurpose and for others to assume long-term maintenance of these components. Otherwise, all Project components including the access road, natural gas and power lines will be decommissioned and disturbed areas will be rehabilitated as will be other disturbed areas associated with Project components.

3.2 Spatial Boundaries

Spatial boundaries used for the assessment are described below and shown in **Figure 3-1**. However, where specifically noted, the boundaries may be adjusted to suit the Environmental Component (EC) or Social Component (SC) affected.

- **Project Site** – includes the footprint of the Project, which is the area that will encompass the land on which project components are located and immediate surrounding area that will be directly affected by the Project.
- **Local Project Area** – is comprised of an area 2 km beyond the Project Site, which is intended to take into account the majority of direct and indirect effects of the Project on ECs (such as wildlife habitat loss related to vegetation clearing and noise). The extent of the Local Project Area for Project effects on SCs includes the RM of Springfield.
- **Regional Project Area** – is comprised of an area up to 10 km beyond the Project Site, which is intended to account for the maximum spatial extent of potential effects of the Project unless otherwise indicated.

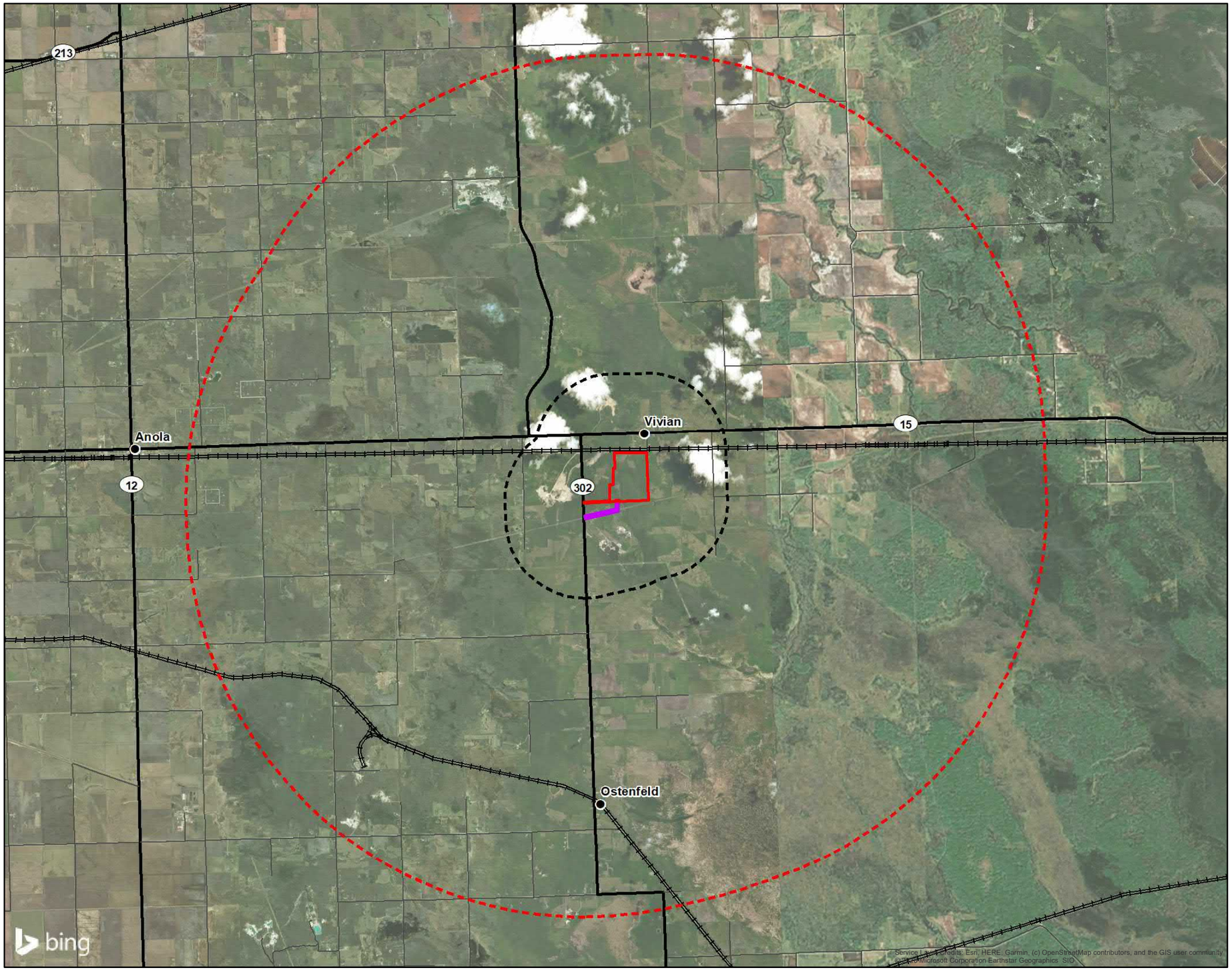
3.3 Biophysical and Socioeconomic Components

In accordance with the Manitoba Sustainable Development “Information Bulletin – Environment Act Proposal Report Guidelines” (Manitoba Sustainable Development 2018), the scope of the environmental assessment includes potential Project effects on the:

- Biophysical environment
  - Including wildlife, fisheries, surface water, groundwater and forestry resources.

- Impact of such effects on the socioeconomic environment
  - Including human health and safety.
  - Potential impacts on Indigenous communities such as resource use and cultural or traditional activities.

Environmental assessment methods, including a specific list of the environmental components included within this assessment due to the potential for interactions with the Project, are described in Section 6.1.



Legend

- Project Site
- Project Site – Temporary Use
- Local Project Area
- Regional Project Area

General Features

- Highway
- Road
- Canadian National Railway

NOTE:
- The spatial boundaries may be adjusted to suit the Environmental Component (EC) or Social Component (SC) affected.
- See Figure 4-8 and Figure 4-9 for information on Local Project Area land use and RM of Springfield Development Plan Designations, respectively.

N
W E
S

1:100,000
NAD 1983 UTM Zone 14N

1 0.5 0 1 2
km

Basemap: Canvec

AECOM

Figure: 3-1

Vivian Sand Facility Project
Spatial Boundaries for the Environmental Impact Assessment
CanWhite Sands Corp.