



December 2015

ENVIRONMENT ACT PROPOSAL

Armtec Winnipeg Precast Plant

Submitted to:
Kevin Rogers
2500 Ferrier Street
Winnipeg, MB R2V 4P6

REPORT

Report Number: 1537623





Table of Contents

1.0 EXECUTIVE SUMMARY 1

2.0 INTRODUCTION AND BACKGROUND..... 1

3.0 DESCRIPTION OF DEVELOPMENT.....2

 3.1 Location 2

 3.2 Operations 2

4.0 EXISTING ENVIRONMENT 6

 4.1 Wildlife, Vegetation and their Habitats 6

 4.2 Surface Waterbodies and Aquatic Environment 6

 4.3 Surface Geology and Groundwater 6

 4.4 Climate and Air Emissions 7

 4.5 Heritage Resources and Aboriginal Communities 7

5.0 ENVIRONMENTAL EFFECTS AND MITIGATION 7

 5.1 Greenhouse Gas Emissions 9

 5.2 Decommissioning 10

6.0 HUMAN HEALTH EFFECTS 10

7.0 RESIDUAL ENVIRONMENTAL EFFECTS 10

8.0 FOLLOW UP PLANS AND MONITORING..... 10

9.0 CONCLUSIONS..... 10

10.0 CLOSURE..... 11

11.0 REFERENCES..... 12

TABLES

Table 1: Site Operations, Environmental Effects and Mitigation Measures 8

Table 2: Greenhouse Gas Emissions 9

FIGURES

Figure 1: General Location 3

Figure 2: Site Location 4

Figure 3: Site Plan 5



1.0 EXECUTIVE SUMMARY

Golder Associates Ltd. (Golder) was retained by Armtec to complete an Environment Act Proposal (EAP) for Armtec's Pre-cast Concrete Plant at 2500 Ferrier Street, Winnipeg, Manitoba (the Site). The Plant manufactures pre-cast concrete products for a variety of clients across Canada. This document is a submission to the Manitoba Environmental Approvals Branch as part of the requirements of *The Environment Act*.

Under the *Act* and Classes of Development Regulation (MR 164/88), pre-cast concrete plants are considered a class 1 development. A complete EAP for a Class 1 development consists of a cover letter, the Environment Act Proposal Form, a report and an application fee. This document serves as the report to support the EAP.

The Site is currently owned by Armtec. The Site is currently developed with one industrial building and a storage yard which accounts for approximately two-thirds of the Site. The Site is an existing precast concrete plant specializing in the manufacturing, installation and project management of structural and custom architectural precast/prestressed products. The Site has been used for concrete casting since 1949. Production varies significantly and is based on specific project requirements.

The Site is located within the West Kildonan Industrial Park located within the city of Winnipeg. Due to the zoning and the proximity to developed areas, there is a low likelihood of listed species being affected by plant operations. The Site is adjacent to two wetlands that are temporary in nature and typically only have open water for a few weeks after snowmelt or several days after heavy storm events. Both of the wetlands would not support fish or aquatic life and are located within the existing industrially zoned area. The Red River is located approximately 1.5 kilometres (km) to the east of the Site. There are no conflicts with any historical resources or any known Aboriginal resource use or cultural or traditional activities.

A number of aspects related to air quality and surface water have been identified, primarily fugitive dust emissions and storm and wash water runoff. Sources of dust could include road dust, material handling, and sandblasting. Mitigation strategies and best management practices have been identified and no detectable residual effects to the environment relative to baseline conditions are anticipated.

2.0 INTRODUCTION AND BACKGROUND

Armtec is a Canadian manufacturer of engineered precast concrete products and total precast solutions, including soundwalls, retaining walls, pipes and culverts. Armtec has an existing precast concrete plant (Site) in Winnipeg, MB that specializes in the manufacturing, installation and project management of structural and custom architectural precast/prestressed products throughout Manitoba and Northern Ontario. The Site has been used industrially since approximately 1949.

Armtec is submitting this Environment Act Proposal (EAP) to the Manitoba Environmental Approvals Branch to fulfill the requirements of *The Environment Act* to ensure that its development is regulated in a manner that protects the environment and public health, and sustains a high quality of life for present and future Manitobans (website Nov 19, 2015). The Site is listed as a Class 1 development under the *Act*.



3.0 DESCRIPTION OF DEVELOPMENT

3.1 Location

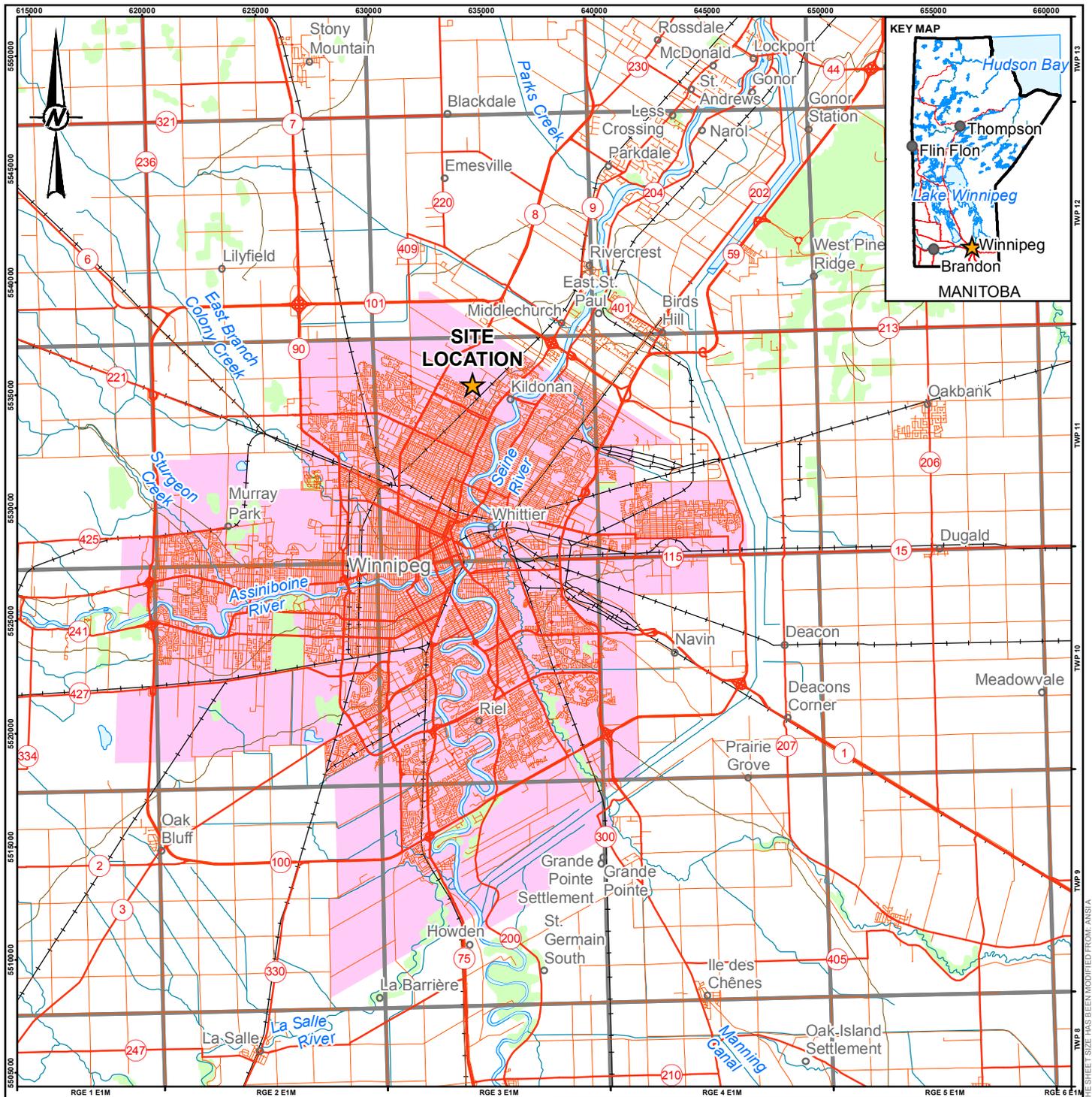
The Site is currently owned by Armtec and is located within the West Kildonan Industrial Park located within the City of Winnipeg (2500 Ferrier Street, Figure 1). It is currently being used as a precast concrete production facility specializing in pre-stressed girders, hollow core wall panels, parkades and piles. The Site is located on 14.2 hectares, with the main plant building sized at 5,400 square metres (m²) (Figure 2). The main plant houses a number of casting tables, cranes, a concrete mix plant and associated services such as a heating /production power boiler and electrical distribution. Approximately two-thirds of the Site is used for storage on gravel substrate. In addition to storage space for manufactured materials, a concrete rubble pile is located along the northern portion of the yard, sand and aggregates are stored within a semi-permanent structure along the southeast boundary and a fenced concrete pad used for fuel storage is located north of the industrial building. There is also a Craneway that is 240 metres (m) long to allow finished goods to be loaded and transported to the yard or to clients (Figure 3).

3.2 Operations

The existing Site has been used for concrete casting since 1949. Production varies significantly and is based on specific project requirements. As a result, the delivery of product varies in frequency and size. On average, deliveries leave four to five days a week but can vary from one to two, to ten to twelve truckloads per day. The hours of operation for the plant are 8:00 a.m. to 4:30 p.m., Monday to Friday.

The concrete component materials are typically aggregate, cement and admixtures, and water. Aggregate is stored in silos, bins, quonset huts and outdoor storage piles. Other materials and admixtures on-site include curing agents, release aids, retarder, silica fume, ash, steel materials (connectors, inserts, rebar, strand), wood and glues. All materials are stored in a manner to prevent loss from wind and water erosion, and from infiltration into subsoils or water sources. Fuel for mobile equipment is stored on site in federally registered aboveground storage tanks.

Water for operations and potable use is provided by the City of Winnipeg municipality and approximately 40 to 50 m³ is used per day. Although the main use for water is for the concrete production, other uses include washouts of equipment and trucks and for on-site dust suppression of roads and aggregate piles. When required, a contractor is brought in to apply a calcium chloride solution to the roadways for dust suppression. Used water from the on-site sewer system and from the blowdown of the boilers, is directed into the City of Winnipeg sanitary sewer system. Water from washing machinery and wet curing, runs off site and discharges to a ditch the runs along the southern edge of the Site. The water then flows through various ditches within the City of Winnipeg's sewer system and eventually discharges into the Red River approximately 1.5 km to the east of the Site. All boilers are licensed with Manitoba Labour.



CLIENT
ARMTEC

PROJECT
ARMTEC WINNIPEG PRECAST PLANT
WINNIPEG, MANITOBA

TITLE
GENERAL LOCATION

CONSULTANT

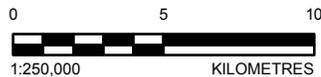


YYYY-MM-DD	2015-12-21
DESIGNED	KH
PREPARED	ANK
REVIEWED	KH
APPROVED	KH

PROJECT NO.
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FIGURE
1



REFERENCE(S)
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NAD 83 UTM ZONE 14



LEGEND

 SITE LOCATION

CLIENT
ARMTEC

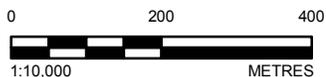
PROJECT
ARMTEC WINNIPEG PRECAST PLANT
WINNIPEG, MANITOBA

TITLE
SITE LOCATION

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APPROVED	KH



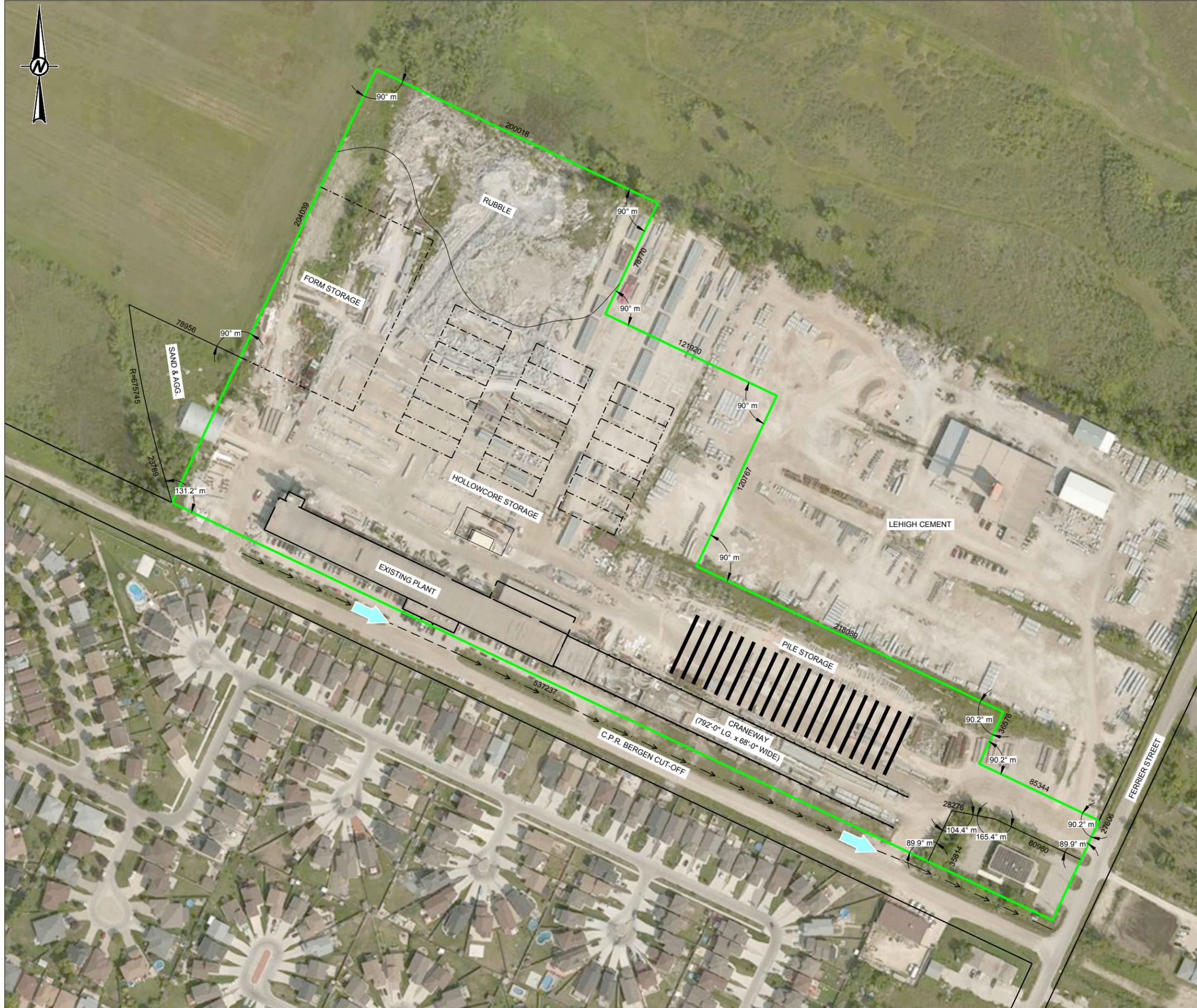
REFERENCE(S)

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FIGURE
2



LEGEND

- SITE LOCATION
- SURFACE WATER DRAINAGE DITCH
- - - - - CULVERT LOCATION
- ➔ FLOW DIRECTION

REFERENCE

1. BING IMAGERY: © 2010 DIGITAL GLOBE IMAGE COURTESY OF USGS © 2010 GEOEYE EARTHSTAR GEOGRAPHICS SIO © 2015 MICROSOFT CORPORATION.
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PROJECT
ARMTEC WINNIPEG PRECAST PLANT
WINNIPEG, MANITOBA

TITLE
SITE PLAN

CONSULTANT



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PREPARED	MKH
DESIGN	KH
REVIEW	KH
APPROVED	KH

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FIGURE
3



4.0 EXISTING ENVIRONMENT

The existing Site is located within the West Kildonan Industrial Park located within the city of Winnipeg on poorly drained Osborne Clays developed on Glacial Lake Agassiz Clay parent material (Agriculture and Agri-Food Canada accessed Nov 20, 2015 <http://sis.agr.gc.ca/cansis/publications/surveys/mb/mb5/index.html>). The Site is bordered to the north by the Lehigh Cement plant, and east and west by a mixture of cultivated land and native shrub land with tree patches (Figure 2); however, this is zoned as industrial land. The residential community of Templeton – Sinclair is located immediately south of the Site, and there is a cemetery approximately 430 m to the west.

4.1 Wildlife, Vegetation and their Habitats

The Manitoba Conservation Data Centre was contacted on November 19, 2015 (Friesen, Chris (CWS) [<mailto:Chris.Friesen@gov.mb.ca>]) to inquire if any listed species have been identified on site. No listed species have been previously recorded on site, however, three species were identified within a 2 km radius from the Site. These included Whorled Milkweed (*Asclepias verticillata*, S3), Burrowing Owl (*Athene cunicularia*, S1B, ESEA: Endangered, SARA: Endangered, COSEWIC: Endangered), and Yellow Rail (*Coturnicops noveboracensis*, S3B, SARA: Special Concern, COSEWIC: Special Concern). Whorled milkweed is typically associated with dry prairie, open woodland, rocky hillsides and hedgerows (Reaume. 2009). Burrowing owls are typically associated with flat, treeless and well grazed native or modified grassland. Burrowing owls utilize abandoned burrows excavated by other mammals such as American badger (*Taxidea taxus*) or ground squirrels (COSEWIC. 2006). Yellow rails are typically associated with wetland areas that are dominated with sedges or rushes and have little or no standing water. Such areas include some seasonal wetlands, damp meadows and floodplains of rivers or streams (COSEWIC. 2009). Additional communication with the Manitoba Conservation Data Centre indicates that “*these occurrences are historic and unlikely to still exist, and/or the specific locations are uncertain ... they don’t pose any constraints (for the Site)*” (email: Chris Friesen Dec 8, 2015).

4.2 Surface Waterbodies and Aquatic Environment

Based on satellite imagery (Google Earth, 2015) the existing Site is adjacent to two Class II wetlands based on Steward and Kantrud (1971). One is located immediately north of the Site, and the other is located immediately west of the Site. Class II wetlands are temporary in nature and typically only have open water for a few weeks after snowmelt or several days after heavy storm events (Steward and Kantrud, 1971). Both of the wetlands would not support fish or aquatic life and are located within the existing industrially zoned area. The Red River is located approximately 1.5 km to the east of the Site.

4.3 Surface Geology and Groundwater

The following summary of the Site’s surface geology and groundwater setting is based on a review of the following maps:

- Matile, G.L.D. and Keller, G.R. 2004: Surficial Geology of the Winnipeg map sheet (NTS 62H), Manitoba; Manitoba Industry, Economic Development and Mines, Manitoba Geological Survey, Surficial Geology Compilation Map Series, SG-62H, scale 1:250,000.
- Manitoba Energy and Mines, 1990, Bedrock Geology Compilation Map Series, Winnipeg, NTS 62H, 1:250 000.



The local topography at the Site is generally level and the inferred direction of ground water flow is southeast. The surficial geology in the vicinity of the Site is expected to consist predominantly of offshore Glaciolacustrine Sediments: deposits of clay, silt, minor sand, 0 to 20 m thick, with very low relief massive and laminated deposits, deposited from suspension in offshore, deep water of glacial Lake Agassiz (Matile, G.L.D and Keller, G.R. 2004). Bedrock in the vicinity of the Site consists of dolomite, with limestone beds of variable thickness near the base and at top of subunit, of the Fort Garry Member (Red River Formation) from the Ordovician Period.

Regional groundwater flow in the underlying carbonate aquifers is typically east-northeast in the vicinity of the Site. The inferred direction of local groundwater flow is southeast towards the Red River. Buried utilities and underground structures can also affect local groundwater flow conditions. Inferred groundwater flow directions are subject to confirmation.

The closest domestic water well is located approximately 190 m east of the Site at River Lot 0024 in the parish of Kildonan (EcoLog Environmental Risk Information Services Ltd. 2015).

4.4 Climate and Air Emissions

The Site is located within the limits of the City of Winnipeg. Winnipeg is located within the Prairie Ecozone of Canada. This area has a semi arid climate with average rainfall of slightly less than 700 millimetres (mm). Temperatures range from mean temperatures of -18.3 degrees Celsius (°C) in the coldest months and 19.7°C in the warmest months (Ecological Framework of Canada, <http://www.ecozones.ca/english/zone/Prairies/land.html>). There are two climate metering stations within the City of Winnipeg. One is located at the International Airport approximately 8.5 km southwest of the Site, and one at the Forks approximately 7 km south of the Site (Government of Canada, http://climate.weather.gc.ca/index_e.html).

A number of aspects related to air quality have been identified, primarily fugitive dust emissions. Sources of dust could include road dust, material handling, and sandblasting.

4.5 Heritage Resources and Aboriginal Communities

Heritage resources include all of Manitoba's Historic and Precontact archaeological sites, palaeontological resources, and cultural, natural, scientific or aesthetic features. Heritage resources are property of the Provincial Crown and are protected under *The Heritage Resources Act (1985)*. The Manitoba Historic Resources Branch database of previously recorded heritage sites was queried to identify any known heritage sites in proximity to the plant site. The results indicate there are no known sites within the site boundaries. The nearest heritage sites are located over 1 km to the southeast along the Red River. The Na-Sha-Ke-Penais Indian Reserve is approximately 7 km to the east. The Site does not interfere with any known Aboriginal resource use or cultural or traditional activities.

5.0 ENVIRONMENTAL EFFECTS AND MITIGATION

This section identifies and assesses the Site effects (Site operations) on the environment. Table 1 provides a list of Site operations and their environmental effects and corresponding mitigation used to reduce residual effects. The mitigation measures are based on environmental best practices and management policies and procedures outlined in the Best Environmental Management Practices for Redi-Mix Concrete Plants prepared by the Manitoba Heavy Construction Association and the Canadian Ready Mixed Concrete Association Environmental Management Practices for Ready Mixed Concrete Operations in Canada.



ARMTEC WINNIPEG PRECAST PLANT

Table 1: Site Operations, Environmental Effects and Mitigation Measures

Site Operation	Environmental Effects	Mitigation Measures
Material loading (batch plant exhaust)	Dust emissions	<ul style="list-style-type: none"> ▪ Filtration equipment exists and is regularly maintained. ▪ Filter bags checked daily and replaced when needed. ▪ Staff use visual observations and awareness of dust emissions to address effects if they worsen.
Material loading (aggregate storage)	Dust emissions	<ul style="list-style-type: none"> ▪ Filtration is used on silos and conveyance infrastructure. ▪ Aggregate storage is watered down for dust suppression when required.
Vehicular traffic	Dust emissions	<ul style="list-style-type: none"> ▪ Dust suppression completed on an as needed basis using water. ▪ If water is not effective, apply calcium chloride solution to the roadways when required. ▪ Speed limit of 20 km/hr enforced within the Site.
Sandblasting	Dust emissions	<ul style="list-style-type: none"> ▪ To minimize silica emissions, all pieces and the area is wetted prior to and during sandblasting. Sub-contractors performing this service use methods with water which have reduced particulate matter. ▪ The location of the sandblasting area is in the north portion of the yard away from the residential neighbourhood. ▪ The sandblasting area is covered with gravel to filter out the silica sand, reduce velocity of the water flow, and allows for more evaporation.
Grinding	Dust emissions	<ul style="list-style-type: none"> ▪ Localized ventilation is used during grinding operations.
Boiler blowdown	Surface water contamination	<ul style="list-style-type: none"> ▪ Blowdown from the boiler water treatment uses approximately 1 to 500 mL/min. ▪ Water from the blowdown of boilers is discharged into the Winnipeg sanitary sewer system.
Storm water runoff	Surface water contamination	<ul style="list-style-type: none"> ▪ Surface water and storm runoff is directed to the ditch adjacent to the Site. ▪ Storm water runoff will be monitored to confirm compliance with Manitoba's Water Quality Standards, Objectives and Guidelines (2011). ▪ Armtec will obtain appropriate approvals from the Municipality to discharge surface water.
Runoff from cleaning equipment and concrete pieces	Surface water contamination	<ul style="list-style-type: none"> ▪ Water use for cleaning is approximately 1 to 3 L/min, up to three hours per day, seasonally June to September. ▪ General equipment washing is completed within a designated area. ▪ Surface water and storm runoff is directed to the ditch adjacent to the Site. ▪ Water runoff will be monitored to confirm compliance with Manitoba's Water Quality Standards, Objectives and Guidelines (2011). ▪ Armtec will obtain appropriate approvals from the Municipality to discharge surface water.
General operations and traffic	Noise pollution	<ul style="list-style-type: none"> ▪ Winnipeg by-law for noise is from 11:00 p.m. to 7:00 a.m. ▪ Doors and windows are closed during the day. ▪ High noise activities limited to within by-law timing. ▪ White noise back-up beepers installed on mobile equipment. ▪ Maintain equipment to reduce increased noise due to worn or faulty parts. ▪ Limit idling time of mobile equipment.



Table 1: Site Operations, Environmental Effects and Mitigation Measures

Site Operation	Environmental Effects	Mitigation Measures
Fuel and chemical storage	Soil and water contamination due to spills	<ul style="list-style-type: none"> ▪ Fuel stored on-site in federally registered above ground storage tanks. ▪ Chemicals stored in containers as outlined by manufacturer. ▪ Spill kits located in various locations at the Site. Training on spill response is given to staff (e.g., WHMIS). ▪ Immediate response and repair of leaks identified through regular inspections. ▪ Follow good housekeeping practices. ▪ Spill response includes following instructions on MSDS sheets, referencing Canutec and phoning Manitoba Conservation and Water Stewardship and the fire department for emergencies. ▪ Emergency plan in place for roadway accidents and spills.
Waste management	Soil and water contamination	<ul style="list-style-type: none"> ▪ Non-hazardous waste is picked up regularly by the City of Winnipeg. ▪ Scrap steel is moved off site and recycled. ▪ Hazardous chemicals are removed from site by Miller Environmental at regular intervals. ▪ Follow good housekeeping practices. ▪ The Site is registered as a MBG13026 and a MBG003985 Waste Generator
Sanitary waste system	Surface water contamination	<ul style="list-style-type: none"> ▪ Water from the sanitary system is discharged directly into the Winnipeg sanitary sewer system.

The Site is located entirely on land that is already owned and operated by Armtec. As no additional construction or operational changes will occur, the Site will not affect any water bodies, wetlands, listed wildlife or vegetation species or their habitats.

5.1 Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions were estimated following Environment Canada Guidelines for diesel and gasoline. Calculations were based on the consumption of 14,400 litres per year (L/yr) of diesel and 2,000 L/yr of gasoline. Table 2 presents the calculations for GHG in carbon equivalent. Emissions greater than 50,000,000 kilograms per year (kg/yr) must be reported to the federal GHG reporting program. A total of 16,854 kilograms (kg) of carbon equivalent per year will be generated by operations (Table 2).

Table 2: Greenhouse Gas Emissions

Fuel	Consumption, L/yr	Emission factors, g/L ^(a)			Global warming potential ^(b)			GHG Emissions, kg			GHG in CO ₂ equivalent/yr
		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O	CO ₂ eq, kg
Diesel	4,400	2,663	0.133	0.4	1	25	298	11,717.2	0.5852	1.76	12,256.31
Gasoline	2000	2,289	0.14	0.022	1	25	298	4,578	0.28	0.044	4,598.112

(a) Environment Canada, 2015. GHG Emissions Quantification Guidance. Available on line at: <https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=AC2B7641-1>

(b) Environment Canada, 2015. Global Warming Potentials. Available on line at: <https://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=CAD07259-1>;

Note: Assuming Gasoline was used by Tire2 Light-duty Gasoline trucks. L/yr = litres per year; g/L = grams per litre; kg = kilogram



5.2 Decommissioning

Prior to permanent closure of the Site, a formal decommissioning plan will be developed and submitted to Manitoba Conservation for approval.

6.0 HUMAN HEALTH EFFECTS

Site operations, after mitigation measures have been put in place, pose little threat to human health. The only operational activity that may be dangerous to human health is the exposure to respirable crystalline silica during sandblasting activities. A worker may develop any of three types of silicosis, depending on the airborne concentration of crystalline silica (<http://www.cdc.gov/niosh/docs/92-102/>):

- Chronic silicosis, which usually occurs after 10 or more years of exposure to crystalline silica at relatively low concentrations.
- Accelerated silicosis, which results from exposure to high concentrations of crystalline silica and develops 5 to 10 years after the initial exposure.
- Acute silicosis, which occurs where exposure concentrations are the highest and can cause symptoms to develop within a few weeks to 4 or 5 years after the initial exposure.

Mitigation measures such as using less toxic materials, adequate ventilation, and respiratory protection is used by sandblasting contractors at the Site to reduce adverse human health effects. Since sandblasting activities are restricted to within the Site, risk to public health is negligible.

7.0 RESIDUAL ENVIRONMENTAL EFFECTS

Any adverse residual environmental effects from Site operations are removed by the mitigation measures and best practices listed in Table 1. The operations will result in no detectable environmental changes, and therefore, no residual effects to the environment relative to baseline conditions.

8.0 FOLLOW UP PLANS AND MONITORING

Regular air and water monitoring will be completed to detect any potential impacts on the environment. Water from the boiler blowdown is monitored daily, and runoff water will be sampled for oxygen gas (O₂), and conductivity as per the guidelines for boiler safety. Water consumption is monitored quarterly during the review of the City of Winnipeg billing cycle. Air dispersion sampling will be completed in 2016 to measure particulate matter to 10 microns in size (PM₁₀) as per National Pollutant Release Inventory (NPRI) requirements. In addition, inspections of fuel and storage, equipment inspections and monthly Health, Safety and Environment meetings will be completed. The baghouse filters are monitored using differential pressure to determine if they need to be replaced. Results from water and air sampling and equipment maintenance records will be available for submission if required.

9.0 CONCLUSIONS

Environmental mitigation measures and monitoring will be implemented as outlined above. The operations of the Site will result in negligible environmental effects.



10.0 CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

GOLDER ASSOCIATES LTD.

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Senior Agrologist

Brad Novecosky, M.A.
Principal

KH/BN/jlb

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11.0 REFERENCES

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2006. COSEWIC Assessment and Status Report on the Burrowing Owl *Athene cunicularia* in Canada. Available at: http://registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=998

COSEWIC. 2009. COSEWIC Assessment and Status Report on the Yellow Rail *Coturnicops noveboracensis* in Canada. Available at: http://www.registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=2097

Reaume, Tom. 2009. 620 Wild Plants of North America. Canadian Plains Research Centre, University of Regina. *The Heritage Resources Act* 1985 CCSM c H39.1, <<http://canlii.ca/t/k9x2>> retrieved on 2015-11-11.

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