Manitoba Environment Act Proposal RM of Franklin

December 2013

Dee Genaille, M. Sc., P. Eng.
The Manitoba Water Services Board

Environment Act Proposal Form

Name of the development: RM of Franklin Water Supply System Expansion	
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88): Transportation and Transmission - Class 2	
Legal name of the proponent of the development: RM of Franklin	Mailing address: Box 66 Dominion City, MB R0A 0H0
Location (street address, city, town, municipality, legal description) of the development: Booster station to be located near St. Jean Baptiste (exact location to be determined during final design). Water supply pipelines will service RMs of Franklin, Montcalm and De Salaberry and be located in municipal and provincial right-of-ways and in the Community of Arnaud.	
Name of proponent contact person for purposes of the environmental assessment: Dee Genaille, P. Eng.	
Phone: (204) 726-6080 Fax: (204) 726-7196	Mailing address: The Manitoba Water Services Board P.O. Box 22080 Brandon, MB R7A 6Y9
Email address: dee.genaille@gov.mb.ca	
Webpage address:	
Date: December 3, 2013	Signature of proponent, or corporate principal of corporate proponent: Printed name: Dee Genaille, M.Sc., P.Eng.

A complete **Environment Act Proposal (EAP)** consists of the following components:

- **Cover letter**
- **Environment Act Proposal Form**
- **Reports/plans supporting the EAP** (see "Information Bulletin - Environment Act Proposal Report Guidelines" for required information and number of copies)
- **Application fee** (Cheque, payable to Minister of Finance, for the appropriate fee)

Per Environment Act Fees Regulation (Manitoba Regulation 168/96):

Class 1 Developments	$500
Class 2 Developments	$5,000
Class 3 Developments:	
Transportation and Transmission Lines	$5,000
Water Developments	$50,000
Energy and Mining	$100,000

Submit the complete EAP to:

Director
Environmental Assessment and Licensing Branch
Manitoba Conservation
Suite 160, 123 Main Street
Winnipeg, Manitoba R3C 1A5

For more information:
Phone: (204) 945-7100
Fax: (204) 945-5229
Toll Free: 1-800-282-8069, ext. 7100
http://www.gov.mb.ca/conservation/eal

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Executive Summary

The RM of Franklin requested The Manitoba Water Services Board (MWSB) to prepare an Environment Act Proposal (EAP) for a Class 2 Development License under the Manitoba Environment Act for an expansion of a rural water supply.

The proposed development is an expansion of the Pembina Valley Water Cooperative Inc. (PVWC) distribution system that involves the installation of approximately 75 km of pipeline, construction of a booster station near the Hamlet of St. Jean Baptiste and 51 service connections. Of these 51 connections 44 are in the Rural Municipality (RM) of Franklin that will service the Community of Arnaud, rural residences, a hog barn and a Hutterite Colony. The remaining connections will service five rural residences in the RM of Montcalm and two in the RM of De Salaberry. The RMs of Franklin and Montcalm are both members of the PVWC. A preliminary pipeline route is included in Appendix A.

The RM of Franklin is located in south-eastern Manitoba and has a population of approximately 1768 people. The Morris Regional water treatment plant (WTP), which is part of the PVWC, is approximately 15 km northwest of the RM of Franklin and will supply treated water to the pipeline expansion. Raw water diverted from the Red River is stored in a 1234 dam^3 holding pond prior to entering the Morris WTP. In 2010 the plant was upgraded with the installation of a microfiltration and nanomembrane treatment process. The combined peak day demand for the existing connections and proposed pipeline expansion is 70.7 L/s which exceeds the current Morris WTP operating capacity of 67 L/s. The pipeline expansion will be installed in phases to allow the WTP the opportunity to increase treatment capacity. The Morris WTP is capable of further expanding to 100 L/s.

The PVWC will be responsible for maintaining the booster station and rural water pipelines. An operator is required to periodically inspect flushouts, air releases, water meters, pressure reducing stations, etc. to ensure system performance is maintained. In addition, the operator will be required to submit bi-weekly water samples for bacteriological testing in accordance with the Manitoba *Drinking Water Quality Standards Regulation*. An operator will also be required to read water meters on a quarterly basis and respond to maintenance issues related to the system.

There are two waterway crossings involved with the proposed pipeline installation at the Marsh River and the Roseau River.

List of Acronyms

AO	Aesthetic Objective
DBP	Disinfection By-Product
DWSA	Drinking Water Safety Act
EAP	Environment Act Proposal
GCDWQ	Guidelines for Canadian Drinking Water Quality
GUDI	Groundwater Under Direct Influence of Surface Water
MWSB	Manitoba Water Services Board
ODW	Office of Drinking Water
PVWC	Pembina Valley Water Cooperative Inc.
RM	Rural Municipality
TDS	Total Dissolved Solids
THM	Trihalomethane
TOC	Total Organic Carbon
UV	Ultraviolet
WTP	Water Treatment Plant

1.0 Introduction

The rural municipality (RM) of Franklin requested The Manitoba Water Services Board (MWSB) to prepare an Environment Act Proposal (EAP) for a Class 2 Development License under the Manitoba Environment Act for the construction of a booster station and rural water distribution pipeline greater than 10 km in length that will traverse the RMs of Franklin, Montcalm and De Salaberry. This document provides the compiled information required on Manitoba Conservation's Environment Act Proposal Report Guidelines and Supplementary Guidelines for Municipal Water Supply Systems. This EAP includes components for a rural water distribution pipeline.

1.1 Background Information

The RM of Franklin is located in south-eastern Manitoba approximately 80 kilometers from Winnipeg. Within the RM, the Community of Arnaud is situated close to the northern boundary. Currently Arnaud receives water from a dugout-based supply system that is chlorinated prior to distribution. In 2012 Arnaud was issued a boil water advisory by Manitoba Health (T. French, personal communication, April 26, 2013). The RM is proposing to connect Arnaud to the Pembina Valley Water Cooperative Inc. (PVWC) regional system in order to provide the Community with a safe potable water supply. In addition rural connections will be serviced by the distribution system in the RM of Franklin, Montcalm and De Salaberry.

Franklin and Montcalm are two of 16 municipalities that are members of the PVWC which was incorporated in 1989 to develop a potable water supply for a region that lacked good water resources. The Morris Regional WTP, which is part of the PVWC, will supply treated water to the proposed pipeline expansion. The WTP is located approximately 15 km northwest of the RM of Franklin and services the Town of Morris, the RMs of Morris, Montcalm, Roland, Thompson and Dufferin and partially supplies the City of Winkler and RM of Stanley.

The Morris WTP diverts raw water from the Red River and stores it in a 1234 dam^3 holding pond. The treatment process in the plant was upgraded in 2010 replacing a lime softening clarification system with an integrated membrane process (Fehr, Jake). Microfiltration provides a pathogen barrier and nanofiltration removes hardness and organics. Chlorine and fluoride are added prior to storage and distribution. The capacity of the plant was increased from 32 L/s to 67 L/s with the ability to further expand to 100 L/s.

1.1.1 Previous Studies

The PVWC retained Cochrane Engineering Ltd. to design a regional water system expansion in 1996. The report specifically looked at the expansion of the Red River Regional WTP at Letellier, construction of a new WTP at Morris and the expansion of the rural pipeline to convey water to Winkler, Morden, Rosenort and Lowe Farm.

In 2003 Cochrane Engineering Ltd. completed a study for the PVWC to assess the current capacity and future requirements of their regional water system. The report included a

review of population and water demand projections, an analysis of the water distribution network, economics and the condition and capacities of current facilities. A recommended strategy and implementation program were made for upgrade alternatives.

1.1.2 Population

Based on 2011 Census data, the RM of Franklin has an estimated population of 1768 (Figure 1.1). Although there has been a slight decline in population over the last decade, allowance for future growth is designed in the system.

The RM has estimated the development will add 51 service connections to the water distribution system. The Community of Arnaud with a population of 70 accounts for 20 of these service connections. Assuming three people per household the population of the 30 rural connections is 87. The connection for the Hutterite Colony will service a population of 250. Applying an annual population growth rate factor of 0.5% per year over 20 years results in a future total population of 446 being added to the PVWC public water system.

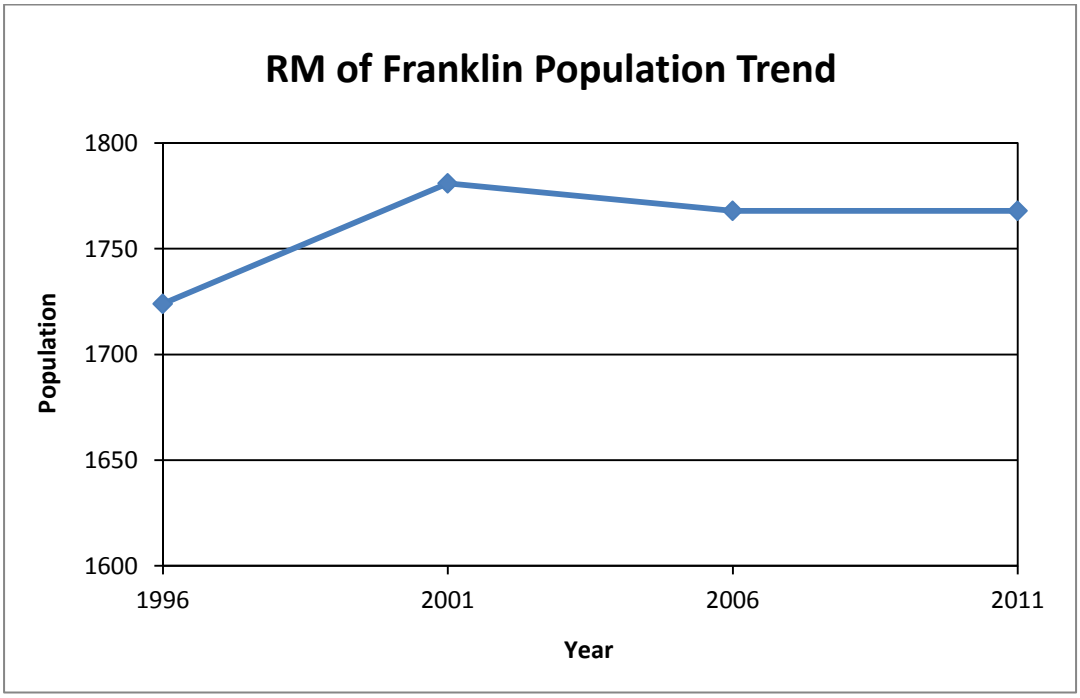


FIGURE 1.1 – RM OF FRANKLIN POPULATION TRENDS

1.1.3 Current and Projected Water Use

A WTP is designed based on peak-day demand. When calculating water consumption, the typical daily average water use ranges from 250 to 300 L/person/day and the peak day use is typically 1.5 to 2.0 times greater. Consumptions of 300 L/person/day and a peak day factor of 2.0 were used for this study resulting in a peak day demand of 3.7 L/s. The pipeline expansion will service livestock operations including a hog barn. Daily water consumption based on cattle, hog and poultry requirements results in a demand of 7.0 L/s. The total peak water demand for the expansion is 10.7 L/s (see Table 1.1).

The current average flow rate for the Morris WTP is 30 L/s (G. Martel, personal communication, April 29, 2013). Assuming a peak factor of 2, the maximum flow from the Morris WTP is 60 L/s. The combined peak day demand of the Morris WTP and the proposed expansion is 70.7 L/s, which exceeds the current 67 L/s operating capacity of the plant. The pipeline distribution system will be installed in phases to allow time for the Morris WTP to increase treatment capacity. The Morris WTP is capable of expanding to 100 L/s.

TABLE 1.1 – FUTURE 20 YEAR RURAL DISTRIBUTION WATER DEMAND

	Unit	Projected Water Demands
Arnaud		77
Equivalent Rural Population		
RM of Franklin		352
RM of Montcalm		17
RM of De Salaberry		7
20 Year Future Population (@0.5%)		446
Consumption Rate	L/c/d	300
Average Day Demand	L/day	133,800
Average Day Flow	L/s	1.86
Peak Day Factor		2.00
Peak Day Demand	L/day	267,600
Livestock Demand	L/day	504,000
Treatment Capacity	L/s	10.7

1.1.4 Raw Water Source

The raw water source for the Morris Regional WTP is the Red River which originates in North Dakota and Minnesota. The river flows north for 877 km and empties into Lake Winnipeg. The drainage area is 104,118 km^2 (Red River of the North). Water from the Red River is pumped to a large 1234 dam^3 holding pond located on River Lots 336,338 and 340 in the Parish of Ste. Agathe.

1.1.5 Water Rights Act

Water Rights Act Licence 2012-054 issued to the PVWC for the Morris WTP specifies that the rate water is diverted from the Red River to the holding pond shall not exceed 0.1 m^3/s. The annual allocation of water is 3157.72 dam^3 (Appendix C).

It is estimated that the Morris WTP currently uses approximately 788 dam^3/year and pumps at a rate of 0.06 m^3/s on a peak day. The additional water required for the pipeline expansion project would increase the annual use to 1021 dam^3/year with a peak daily rate of 0.07 m^3/s. Both the projected annual volume and daily rate are below the allocations issued in the *Water Rights Act* Licence. No amendment to the current licence for the Morris WTP water supply will be required as a result of the additional water demand of the project.

1.1.6 Water Quality

The Office of Drinking Water (ODW) currently conducts audits of all public water systems. Surface water supply systems are audited once per year. Table 1.2 outlines raw water quality parameters of concern including hardness, manganese, total dissolved solids (TDS), total organic carbon (TOC), turbidity and pH. Complete results of the samples are attached in Appendix E.

The existing treatment system reduces all parameters below maximum acceptable concentrations and aesthetic objectives with the exception of turbidity which can be above the required limit.

Controlling turbidity in public drinking water supplies is important for both health and aesthetic reasons. Turbidity can interfere with the disinfection process and can be associated with unacceptable taste and odours. Turbidity, particularly those associated with organic matters can serve as a food source for bacteria, viruses and protozoa and can cause serious health problems. Turbidity standards for surface water indicate that where possible, filtration systems reduce turbidity levels as low as possible, with a target of less than 0.1 NTU at all times. Treated water turbidity levels from individual filters:

1. For **membrane filtration**, shall be less than or equal to **0.1 NTU** in at least 99% of the measurements made, or at least 99% of the time each calendar month, and shall

not exceed 0.3 NTU at any time. If membrane filtration is the sole treatment technology employed, some form of virus inactivation should follow the filtration process.

Table 1.2 Water Quality Results (2011-2012 ODW Sampling)

Parameter	Unit	Raw Water	Treated Water	GCDWQ
Hardness (Total) as CaCO3	mg/L	**342**	90.5	≤ 200/500 [a]
Iron	mg/L	0.286	<0.10	≤ 0.3
Manganese	mg/L	**0.133**	0.0190	≤ 0.05
Total Dissolved Solids (TDS)	mg/L	**410**	132	≤ 500
Trihalomethanes (THMs)	mg/L		0.0550	≤ 0.1[b]
Total Organic Carbon (TOC)	mg/L	**8.4**	2.3	
True Colour	CU	8.5	<5.0	≤ 15
Turbidity	NTU	**7.32**	**0.12**	≤ 0.3 / 0.1[c]
pH		**8.53**	7.64	6.5 – 8.5

[a] Hardness levels greater than 200 are considered poor but tolerable. Hardness levels greater than 500 are generally considered unacceptable

[b] THM based on average of quarterly samples

[c] Turbidity limits as follows: 1.0 NTU for slow sand or diatomaceous earth filtration, 0.3 NTU for chemically assisted filtration, and 0.1 NTU for membrane filtration

1.1.7 Compliance Plan

In February 2012 a Statement of Compliance was submitted to the Office of Drinking Water (ODW) in lieu of a Compliance Plan. The Morris WTP is currently meeting all treatment and water quality standards (G. Martel, personal communication, April 29, 2013).

2.0 Description of Proposed Development

2.1 Project Description

The proposed development involves the expansion of the PVWC distribution system with the construction of a booster station near the Hamlet of St. Jean Baptiste and the installation of approximately 75 km of pipeline and 51 service connections. Of these 51 connections 44 are in the RM of Franklin that will service the Community of Arnaud, rural residences, a hog barn and a Hutterite Colony. The remaining connections will service five rural residences in the RM of Montcalm and two in the RM of De Salaberry.

The Morris Regional WTP shown in Figure 2.1 is part of the PVWC and will supply water to the rural pipeline expansion. The exact location of the booster station will be determined during final design. The new rural water pipeline will be installed in provincial and municipal road right-

of-ways as well as private easements if required. The preliminary pipeline route is included in Appendix A.

FIGURE 2.1- LOCATION OF MORRIS REGIONAL WTP AND HOLDING POND

2.1.1 Operation and Maintenance

The PVWC will be responsible for the operation and maintenance of the Morris WTP and distribution lines. An operator is required to periodically inspect flushouts, air releases, water meters, pressure reducing stations, etc. to ensure system performance is maintained. In addition, an operator will submit bi-weekly water samples for bacteriological testing in accordance with the Manitoba *Drinking Water Quality Standards Regulation*. An operator will also be required to read water meters on a quarterly basis and respond to maintenance issues related to the system.

2.2 Certificate of Title

It is proposed that the location of the rural water pipeline will be within municipal and provincial road right of ways. If necessary, private easements will be obtained to accommodate the pipeline installation.

2.3 Existing and Adjacent Land Use

The proposed land for the development will be on municipal and provincially owned land in road right of ways. Adjacent land is used mainly for agriculture. Existing and adjacent land use will not change as a result of this development.

2.4 Land Use Designation and Zoning

Zoning designation for the pipelines on municipal owned land is not applicable.

2.5 Project Schedule

The project is scheduled to commence in the 2014/2015 construction year depending on funding and the receipt of all approvals.

2.6 Project Funding

The RM of Franklin may seek cost sharing with the MWSB for the appropriate portion of the project subject to all approvals and availability of funding.

2.7 Regulatory Approvals

The following branches/departments will be provided with copies of plans and specifications for information purposes and for the purposes of approvals and agreements:

Manitoba Conservation and Water Stewardship
Manitoba Infrastructure and Transportation
Office of Drinking Water

The contractor will be required to contact MTS, Hydro and gas utilities for utility locations and approvals.

2.8 Public Consultation

A public consultation will be held in the near future to discuss the proposed rural water distribution system with the citizens of the RM of Franklin. It is not expected that there will be major concerns forwarded to the municipality regarding the proposed expansion.

2.9 Storage of Petroleum Products and Other Chemicals

Fuel will not be stored on-site at any time or location along the proposed construction route or near any well. Fuel will be supplied by fuelling trucks which are regulated under The Storage and Handling of Petroleum Products and Allied Products Regulation. Records of fuel volumes and an emergency response plan which includes spill prevention, notification and response will be implemented. No fuelling activities will be permitted within 100 m of watercourses during

construction. During construction, the contractors will be required to ensure that all equipment is properly maintained to prevent leaks of fuel and motor fluids.

3.0 Physical Environment

3.1 Physiographic Setting and Climate

The RM of Franklin is located in south-eastern Manitoba near the Canada/US border. The topography of the area increases from an elevation of 229 m above sea level at the western edge of the RM along the Red River to 267 m at the eastern edge.

Environment Canada climatic data was not available for a location within the RM of Franklin, however, data for the Town of Emerson, which is located approximately 40 km south of Arnaud, was used to represent climate conditions. The mean annual temperature for the area is 3.4 degrees Celsius with below zero average daily temperatures from November through March. The mean annual precipitation is approximately 563 mm (Environment Canada).

3.2 Hydrogeology

The geological framework of the north-western area of the RM of Franklin including the Community of Arnaud consists of overburden material which is primarily lacustrine clay overlying glacial till with lenses of sand and gravel. The underlying bedrock deposits consist of gypsum/anhydrite, shale and limestone/dolomite, carbonate (limestone/dolomite) rocks, shale, sandstone and sand of the Ordovician Winnipeg Formation and Precambrian rocks. The Winnipeg Formation sandstone aquifer provides groundwater that is brackish to saline and is usually not a suitable source of groundwater (Frost, Laurie).

3.3 Hydrology

The hydrology for the project area is shown in Figure 3.1. The Red River runs along the western boundary of the RM of Franklin while the Roseau River flows through the RM. The Marsh River is located in the north-western corner of the RM. There are two waterway crossings involved with the proposed pipeline expansion at the Marsh River and the Roseau River.

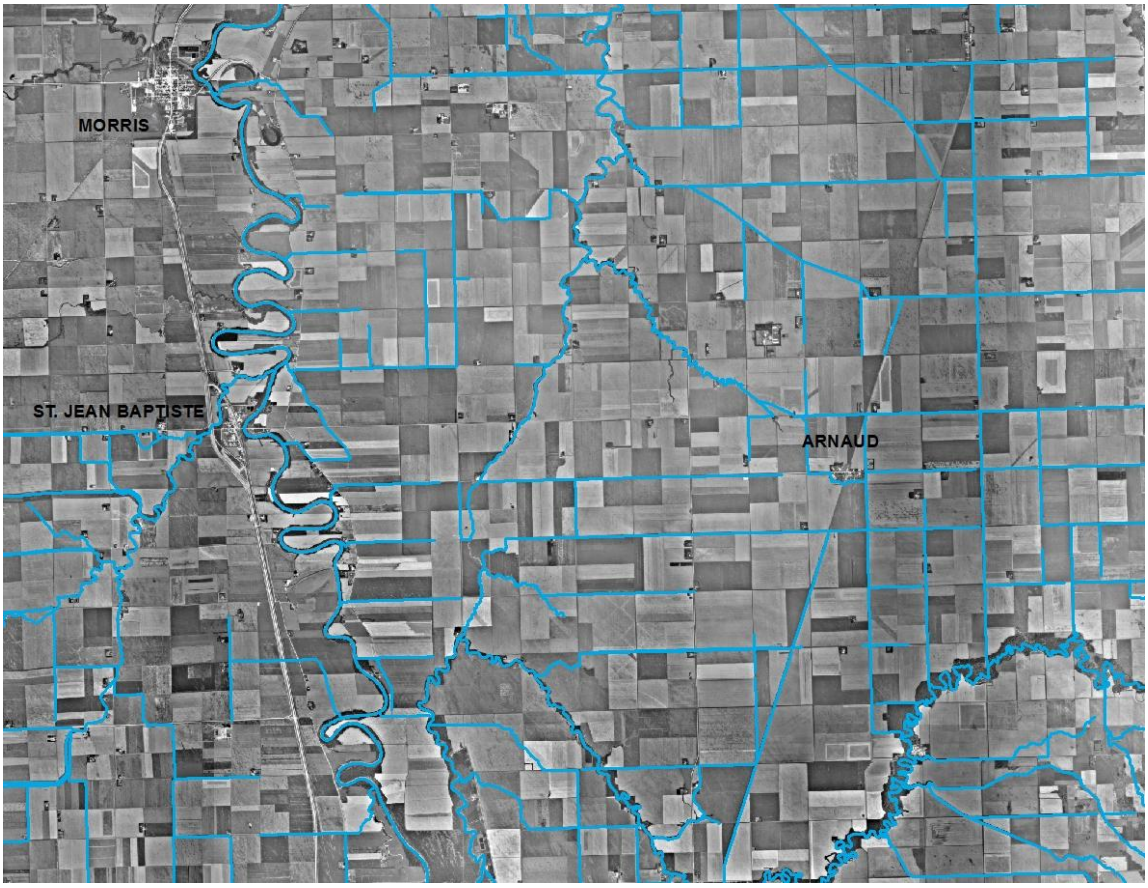


FIGURE 3.1- HYDROLOGY FOR PROJECT AREA IN THE RM OF FRANKLIN

3.4 Fish and Fish Habitat

Potential fish habitat in the project area includes the Marsh River, Roseau River and Red River. A list of fish species available for the Roseau River has been included in Appendix B.

3.5 Wildlife Habitat and Vegetation

The RM of Franklin is divided by two Ecozones. The western half of the RM is located within the Lake Manitoba Plain Ecoregion of the Prairies Ecozone (Agriculture and Agri-Food Canada). It experiences a continental climate, subhumid to semiarid with short hot summers and long cold winters and low levels of precipitation. This ecoregion is associated with trembling aspen, balsam poplar, intermittent grasslands and Black Chernozemic soils. Willow and sedge grow in poorly drained areas. Natural grassland vegetation is dominated by spear, wheat and blue grama grass with an abundance of Sagebrush. The length of the growing season, available heat and precipitation permit the production of corn, wheat and other cereal grains (Agriculture and Agri-Food Canada). Characteristic mammals include mule deer, white-tailed deer, elk and coyote along with smaller animals such as badger, white-tailed jack rabbit, Richardson's ground squirrel and northern pocket gopher. Bird species include ferruginous hawk, Swainson's hawk, American

avocet and burrowing owl. Other birds include great blue heron, black-billed magpie, northern oriole, veery and brown thrasher (National Ecological Framework Report).

The eastern half of the RM is located in the Interlake Plain Ecoregion of the Boreal Plains (Agriculture and Agri-Food Canada). The ecoregion experiences warm summers and cold winters. Native vegetation consists of trembling aspen, balsam poplar, shrubs and ground cover of mixed herbs. Open stands of jack pine occur in dry sites while water filled areas are covered with sedges, willow, black spruce and tamarack. Approximately 40% of the ecoregion is farmland. Mammals that inhabit the ecoregion include white-tailed deer, black bear, moose, beaver, coyote, snowshoe hare and eastern cottontail as well as waterfowl like cormorant, gull, tern, heron, American white pelican and grebe (National Ecological Framework Report).

CLI classification for the area is 4 and 5 which indicates there is a moderate to moderately severe limitation on the production of waterfowl throughout the RM (Agriculture and Agri-Food Canada).

3.6 Socioeconomic

The project area is located primarily within the RM of Franklin. The RM has an area of approximately 953 km^2 and a population of 1768 (Statistics Canada). The largest centre in the municipality is Dominion City with other significant communities including Arnaud, Ridgeville and Tolstoi. The Roseau River Reserve is located on the western boundary of the Municipality along the Red River. The population of the reserve was 588 in 2011 (Statistics Canada).

The main economic base is agriculture. The Roseau River which winds through Franklin provides year round recreational activities.

3.7 Heritage Resources

Most project activities will occur in previously disturbed municipal and provincial right of ways. The proponent will work with Heritage Resources Branch to mitigate any concerns as required.

4.0 Potential Environmental Effects

An environmental effect includes any change that the project may cause to the environment. Environmental effects were identified from interactions between proposed project activities and environmental components. Mitigation measures and follow-up activities were identified for environmental effects determined to be adverse.

4.1 Air Quality

During construction, dust, gaseous and particulate emissions will be created by construction equipment. Dust suppression will be employed by the application of water to alleviate potential

dust problems. Emissions of gases and particulate matter will be minimized by maintaining machinery in good working order. Any effects would be localized, temporary and insignificant. During operation of the development there will be no releases of pollutants to the air.

4.2 Soils

During construction, there is a risk of fuel or lubricant spills from heavy equipment and vehicle operation. The storage of fuel or lubricants on the construction site will not be allowed. Potential spills will be small and will follow standard construction spill clean-up procedures, including the removal of impacted soil.

During operation, activities are limited to regular monitoring and maintenance which have a negligible effect on soil disturbance and compaction. Regular monitoring and maintenance activities have a negligible effect on soil contamination since fuel trucks and other hazardous substances will not be required on-site. The potential adverse effect on soil quality is assessed to be minor.

4.3 Surface Water, Fish and Fish Habitat

Minor and short term impacts on surface water may occur as a result of construction activity in road allowance ditches during runoff events. The impact on surface water would include sediment that may be eroded from excavation activities, minor engine leaks and potential fuel spills should runoff events occur during construction. Horizontal directional drilling will be conducted to install the pipeline at the drain and river outlets. This will eliminate excavation within the riparian zone and minimize impacts. There is potential for some loss of drilling mud to surface water. Impacts to fisheries and fish habitat are considered minor.

4.4 Groundwater Quality

Groundwater quality can be impacted by surface activities and surface water quality. Mitigation measures are necessary to protect groundwater quality during construction activities. The proposed activities are unlikely to result in adverse changes to water quality.

4.5 Groundwater Levels

There are no changes to ground water withdrawal and no anticipated impact to groundwater levels as a result of this project.

4.6 Vegetation

Construction will occur primarily within municipal right-of-ways or easements that are previously disturbed, regularly managed and comprised primarily of grasses. During operation, monitoring and maintenance activities will be restricted to designated and previously disturbed areas. Potential effects to vegetation are considered to be negligible.

4.7 Wildlife Habitat and Vegetation

The construction and operation activities associated with this project will be limited to areas already developed for roadways or urban or agricultural uses. The potential adverse effects of wildlife habitat loss were assessed to be negligible to minor.

4.8 Species at Risk

Based only on existing data known to the Manitoba Conservation Data Centre, no occurrences of rare plant or animal species existed in the project area at the time the request for information for this EAP was made (Friesen, Chris. 2013. Personal communication. April 26).

4.9 Noise and Vibration

During the construction phase of the project, there will be several sources of sound emissions including equipment used for construction. The types of noises heard due to construction are dominated by equipment engines. However, miscellaneous short term impact noises (ie: dump truck gates, back hoe buckets) are often heard. The noise will be in addition to regular community and highway activities, and the effects are considered minor.

Scheduling of various site activities can minimize the impact of noise. This would include scheduling construction for day-time hours to avoid sleep disturbance and the disruption of evening domestic activities. All equipment used on site will be fitted with appropriate mufflers and will be maintained in good working order to minimize noise levels.

4.10 Employment/Economy

Socio-economic implications are not expected as a result of environmental impacts as impacts are considered minor and short-term. Economic implications may exist for the Municipality due to the costs of developing the water system. However, the Municipality will gain a sustainable potable water supply to meet future demands. There may be some local economic benefit during construction. The potential effects of the project on employment and the economy were assessed to be positive.

4.11 Human Health and Well Being

The potential adverse effects of the project on human health are assessed to be negligible to minor. Short term temporary increases in noise and dust emissions considered to be minor effects will occur during construction. During operation, there will be a minor increase in vehicular traffic associated with monitoring and maintenance activities. The potential effects are considered minor.

The project will result in the distribution of treated water to meet current water quality standards. The effects of this on human health and well being are considered positive.

4.12 Climate Change

There are no anticipated impacts to climate as a result of the project activities.

5.0 Environmental Management Measures

Environmental management practices proposed to prevent or mitigate environmental effects that were determined to be adverse are identified and described below.

5.1 Air Quality

Emissions resulting from construction and transportation equipment may be mitigated by the utilization of well maintained and operating vehicles while reducing unnecessary vehicle idling.

The impact of dust may be mitigated by the use of an approved dust suppressant such as water, limiting construction during high wind periods and re-establishment of vegetation as soon as possible.

5.2 Soils

Mitigation of potential impacts to soil by contamination from petroleum products include preparation of an emergency response plan for potential spills, use of spill clean-up equipment and materials, using properly maintained equipment and using appropriate fuelling equipment.

Re-establishment of vegetation as soon as possible after disturbance will limit loss of soil due to wind or water erosion. Backfilling with soil stockpiles as soon as possible and minimizing the amount of soil disturbance can be implemented.

5.3 Surface Water

Mitigation of surface water issues may be achieved by limiting open cut trenching to within 30 m ahead or behind the pipe laying, redirecting surface water runoff, pumping accumulated water to adjacent ditches and providing erosion control practices as required.

Petroleum leaks or spills will be mitigated by use of properly maintained equipment, use of spill clean-up equipment and materials and use of appropriate fuelling equipment. A prepared emergency response plan can be implemented in the event of a significant spill. In the event of a reportable spill, Manitoba Conservation and Water Stewardship will be notified through the emergency response line and appropriate measures will be taken according to Manitoba Conservation and Water Stewardship requirements.

A 100 m setback to watercourses will be maintained for fuelling activities. Horizontal directional drilling will be implemented at watercourse crossings. Vehicles will avoid entering the riparian zones. Re-establishment of vegetation will occur as soon as possible on areas of disturbed soil.

Chlorinated water used to disinfect pipelines will be de-chlorinated and not released to surface waters.

5.4 Groundwater

Mitigation of potential groundwater impacts from petroleum products can be mitigated as described in Section 5.3.

5.5 Vegetation and Wildlife

Re-establishment of vegetation will occur as soon as possible on disturbed areas. Impacts to wildlife habitat can be limited by minimizing the area of construction, soil disturbance and vegetation disturbance. Other impacts resulting from dust or smoke will be minimized as previously indicated. Noise disturbance will be limited by use of muffling vehicles and equipment, limiting idling and limiting the construction area.

5.6 Fisheries

Fisheries impacts will be minimized by implementing practices to reduce soil and contaminate runoff as previously mentioned in Sections 5.3 and 5.5. In addition, horizontal directional drilling will occur under all watercourses containing water. The required excavation needed to introduce the drilling equipment will be maintained outside watercourse riparian zones.

5.7 Noise and Vibration

Limiting any noise-creating activities, including regular maintenance and monitoring activities to normal working hours and limiting unnecessary long-term idling can mitigate any potential increased noise and vibration effects.

5.8 Water Conservation

Water conservation measures include metering and pricing of water. Water conservation information in water bill mailings can be implemented. Leak detection will consist of reconciling on a quarterly basis the volume of water pumped and charged to ratepayers. Since these services are metered, abnormalities can be identified and rectified.

5.9 Socio-Economic Implications

There are no known negative environmental socio-economic impacts that need mitigation. Since the proposed development would provide a reliable healthy drinking water supply, it would be expected to enhance quality of life and economic viability for the Municipality. The proposed project may provide positive economic benefits to the area for local businesses, employment opportunities during the construction phase and increased economic interest because of the secure water source.

6.0 References

Agriculture and Agri-Food Canada. A National Ecological Framework for Canada 16 May 2013 <http://sis.agr.gc.ca/cansis/nsdb/ecostrat/index.html>

Agriculture and Agri-Food Canada. Canada Land Inventory. Land Capability for Wildlife-Waterfowl 16 May 2013 < http://sis.agr.gc.ca/cansis/publications/maps/index.html>

Ecological Framework For Canada. National Ecological Framework Report. 1995. <http://sis.agr.gc.ca/cansis/publications/ecostrat/intro.html>

Cochrane Engineering Ltd. *Background Study PVWC Regional Water System Master Plan Final Report*. 2003.

Environment Canada. Historical Weather, Climate Normals and Averages, Emerson Manitoba. < http://climate.weatheroffice.gc.ca/climate_normals/index_e.html>

Fehr, J. *Pembina Valley Water Cooperative Inc. Annual Report*. 2012.

Frost, L. *Rat Marsh River Watershed Groundwater Resource Information*. 2012.

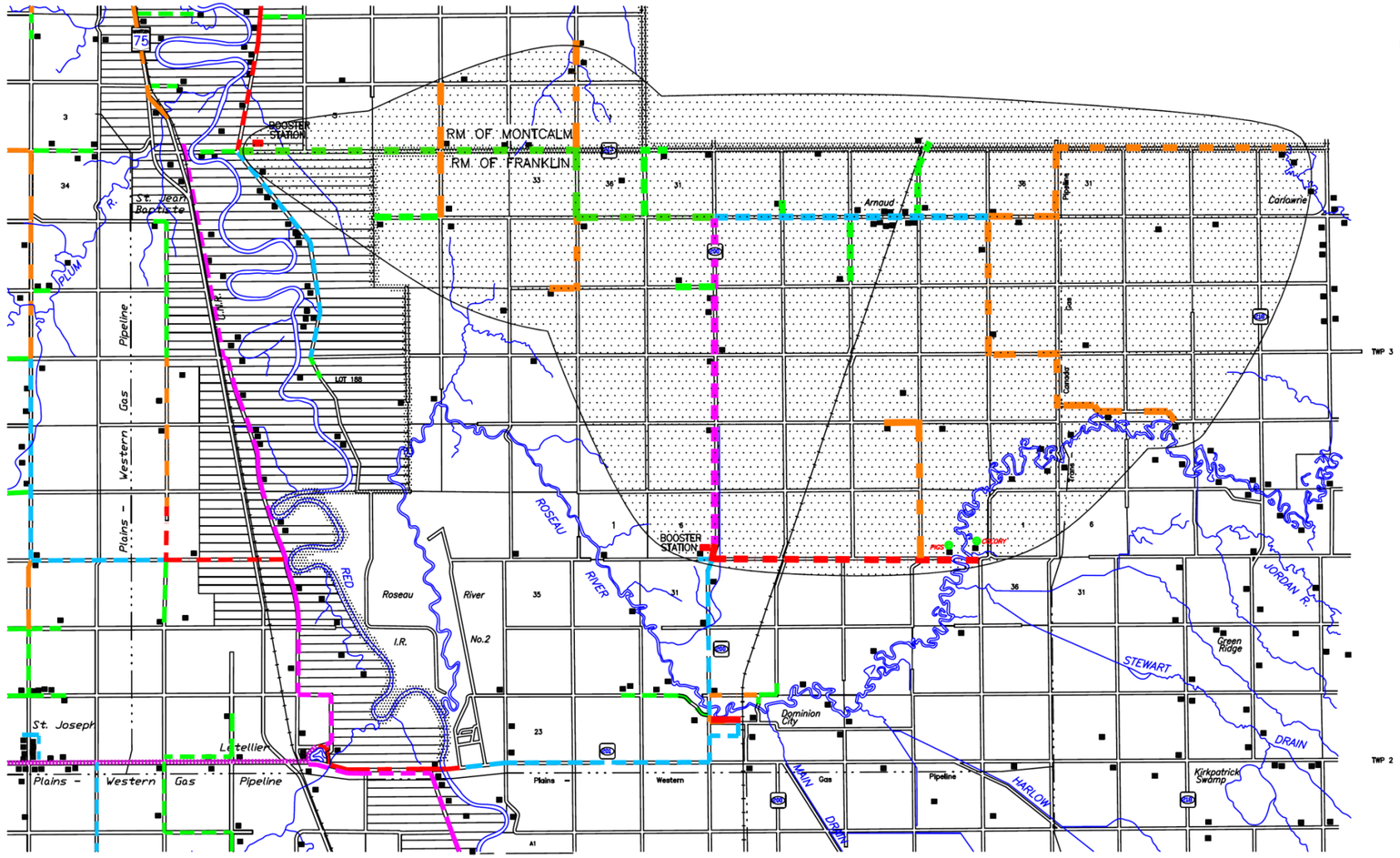
"Red River of the North." ***Encyclopaedia Britannica. Encyclopaedia Britannica Online***. Encyclopædia Britannica Inc., 2013. Web. 16 May 2013. <http://www.britannica.com/EBchecked/topic/494434/Red-River-of-the-North>

Statistics Canada, 2011 Census Profiles, Rural Municipality of Franklin. 22 April 2013 < http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>

Statistics Canada, 2011 Census Profiles, Roseau River 2, IRI. 16 May 2013 < http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>

Appendix A

Preliminary Pipeline Route



250mm WATER PIPELINE
200mm WATER PIPELINE
150mm WATER PIPELINE
100mm WATER PIPELINE
75mm WATER PIPELINE
50mm WATER PIPELINE

NO.	DESCRIPTION	BY	DATE

SURVEYED | BOOK NUMBER
DRAWN: ABC
DESIGNED: L. CIAPALA
CHECKED: L. CIAPALA
REVIEWED

PROVINCE OF MANITOBA
THE MANITOBA WATER SERVICES BOARD
MANITOBA INFRASTRUCTURE & TRANSPORTATION

SUBMITTED — CHIEF ENGINEER — DATE
APPROVED — GENERAL MANAGER — DATE

R.M. OF FRANKLIN
RURAL WATER PIPELINES

PROPOSED PIPELINES

2013 COST ESTIMATE
OPTION 3 – ST JEAN SOURCE

SCALE	DATE	PROJECT NUMBER	REVISION	SHEET
AS SHOWN	13-04-15			1 OF 1

Appendix B

Fish Species in the Roseau River

Waterbody: Roseau River

Provincial Waterbody Id #	Watershed	Region	District	Map Sheet	Latitude:	49 8 38
2588.00	5ODA	Central	Morris	62H03	Longitude:	97 15 16

BIOLOGY

BIGMOUTH SHINER *Notropis dorsalis*	Rare
BLACK BULLHEAD *Ictalurus melas*	Unknown
BLACK CRAPPIE *Pomoxis nigromaculatus*	Common
BLACKNOSE DACE *Rhinichthys atratulus*	Common
BLACKSIDED DARTER *Percina maculata*	Common
BROOK STICKLEBACK *Culaea inconstans*	Unknown
BROWN TROUT *Salmo trutta*	Unknown
BURBOT *Lota lota*	Rare
CARP *Cyprinus carpio*	Common
CENTRAL MUDMINNOW *Umbra limi*	Common
CHANNEL CATFISH *Ictalurus punctatus*	Common
CHESTNUT LAMPREY *Ichthyomyzon castaneus*	Rare
COMMON SHINER *Notropis cornutus*	Abundant
CREEK CHUB *Semotilus atromaculatus*	Unknown
EMERALD SHINER *Notropis atherinoides*	Unknown
FATHEAD MINNOW *Pimephales promelas*	Common
FINESCALE DACE *Phoxinus neogaeus*	Unknown
FLATHEAD CHUB *Platygobio gracilis*	Unknown
FRESHWATER DRUM *Aplodinotus grunniens*	Abundant
GOLDEYE *Hiodon alosoides*	Unknown
JOHNNY DARTER *Etheostoma nigrum*	Common
LONGNOSE DACE *Rhinichthys cataractae*	Rare
MOONEYE *Hiodon tergisus*	Unknown
NORTHERN PIKE *Esox lucius*	Common
NORTHERN REDBELLY DACE *Chrosomus eos*	Unknown
QUILLBACK *Carpiodes cyprinus*	Unknown
RAINBOW TROUT *Salmo gairneri*	Unknown
RIVER DARTER *Percina shumardi*	Unknown

Creel

Year	Species	Catch/Unit Effort*

*Catch/Unit Effort = Catch/Hour

13-05-22

Page 1 of 1

Manitoba

Waterbody: Roseau River

Provincial Waterbody Id #	Watershed	Region	District	Map Sheet		
2588.00	5ODA	Central	Morris	62H03	**Latitude:**	49 8 38
					Longitude:	97 15 16

RIVER SHINER *Notropis blennius*	Abundant
ROCK BASS *Amblopites rupestris*	Abundant
SAND SHINER *Notropis stramineus*	Common
SAUGER *Stizostedion canadense*	Unknown
SHORTHEAD REDHORSE *Moxostoma*	Common
SILVER CHUB *Hybopsis storeriana*	Common
SILVER LAMPREY *Ichthyomyzon unicuspis*	Unknown
SPOTFIN SHINER *Cyprinella spiloptera*	Common
STONECAT *Noturus flavus*	Rare
TADPOLE MADTOM *Noturus gyrinus*	Unknown
TROUT PERCH *Percopsis omiscomaycus*	Unknown
WALLEYE *Stizostedion vitreum*	Common
WHITE BASS *Morone chrysops*	Unknown
WHITE SUCKER *Catostomus commersoni*	Abundant

Appendix C

Water Rights Licence

MG-14853 (English)

Licence to Use Water for Municipal Purposes

Manitoba
Conservation and Water Stewardship
200 Saulteaux Cresc.
Winnipeg, Manitoba
R3J 3W3

Project: Morris

Issued in accordance with the provisions of
The Water Rights Act and regulations made thereunder.

Licence No.: **2012-054**
(Original Lic. No.: 2003-047)
U.T.M.: Zone 14 619899 E
5467997 N

Know all men by these presents that in consideration of and subject to the provisos, conditions and restrictions hereinafter contained, the Minister of Conservation and Water Stewardship for the Province of Manitoba does by these presents give full right and liberty, leave and licence to **Pembina Valley Water Cooperative Inc.** of the **Rural Municipality of Morris** in the Province of Manitoba (hereinafter called "the LICENSEE") to:

(a) divert water from the **Red River** by means of a pumping installation, pipeline, and wet well located on:

River Lot 336, in the Parish of Ste. Agathe

(b) impound water by means of an off-channel reservoir located on:

River Lots 336, 338, and 340 in the Parish of Ste. Agathe

and

(c) use for **municipal** purposes the impounded water from the off-channel reservoir by means of a pumping installation and pipeline, the water to be used, and the pumping installation and pipeline to be placed, on the following described lands:

The Pembina Valley Water Cooperative Inc. Service Area.

The above pumping installation, pipelines, and off-channel reservoir are hereinafter called "the WORKS" and are more particularly shown on a plan filed in the office of Manitoba Conservation and Water Stewardship a copy of which plan is hereto attached and marked Exhibit "A".

This licence is issued upon the express condition that it shall be subject to the provisions of The Water Rights Act and Regulations and all amendments thereto and, without limiting the generality of the aforesaid, to the following terms and conditions, namely:

1. The water shall be used solely for **municipal** purposes.
2. The WORKS shall be operated in accordance with the terms herein contained.
3. a) The maximum rate at which water may be diverted pursuant hereto shall not exceed **0.1 cubic metres per second (3.5 cubic feet per second)** .

   b) The total quantity of water diverted in any one year shall not exceed **3157.72 cubic decametres (2560.00 acre feet)** .
4. Upon notification to the LICENSEE by the Minister or the Minister's agents, the LICENSEE shall not divert water from the **Red River** during any period when the flow downstream of the pumping WORKS, is at or below a specified flow rate.
5. The LICENSEE does hereby remise, release and forever discharge Her Majesty the Queen in Right of the Province of Manitoba, of and from all manner of action, causes of action, claims and demands whatsoever which against Her Majesty the LICENSEE ever had, now has or may hereafter have, resulting from the use of water for **municipal** purposes.
6. In the event that the rights of others are infringed upon and/or damage to the property of others is sustained as a result of the operation or maintenance of the WORKS and the rights herein granted, the LICENSEE shall be solely responsible and shall save harmless and fully indemnify Her Majesty the Queen in Right of the Province of Manitoba, from and against any liability to which Her Majesty may become liable by virtue of the issue of this Licence and anything done pursuant hereto.
7. This Licence is not assignable or transferable by the LICENSEE and when no longer required by the LICENSEE this Licence shall be returned to Manitoba Conservation and Water Stewardship, for cancellation on behalf of the Minister.
8. Upon the execution of this Licence the LICENSEE hereby grants the Minister or the Minister's agents the right of ingress and egress to and from the lands on which the WORKS are located for the purpose of inspection of the WORKS and the LICENSEE shall at all times comply with such directions and/or orders that may be given by the Minister or the Minister's agents in writing from time to time with regard to the operation and maintenance of the WORKS.
9. This Licence may be amended, suspended or cancelled by the Minister in accordance with The Water Rights Act by letter addressed to the LICENSEE at **Box 1180, Altona, MB, R0G 0B0, Canada** and thereafter this Licence shall be determined to be at an end.
10. Notwithstanding anything preceding in this Licence, the LICENSEE must have legal control, by ownership or by rental, lease, or other agreement, of the lands on which the WORKS shall be placed and the water shall be used.

11. The term of this Licence shall be September 1, 2023 and this Licence shall become effective only on the date of execution hereof by a person so authorized in Manitoba Conservation and Water Stewardship. The LICENSEE may apply for renewal of this Licence not more than 365 days and not less than 90 days prior to the expiry date.

12. This Licence expires automatically upon the loss of the legal control of any of the lands on which the WORKS are located or on which water is used, unless the Licence is transferred or amended by the Minister upon application for Licence transfer or amendment.

13. The LICENSEE shall keep records of daily and annual water use and shall provide a copy of such records to Manitoba Conservation and Water Stewardship not later than February 1st of the following year.

14. The LICENSEE shall install and maintain, on the pumping WORKS, a water measuring device acceptable to Manitoba Conservation and Water Stewardship, that will accurately measure the instantaneous water flow and the accumulated annual volume of water diverted from the water source.

15. The LICENSEE shall hold and maintain all other regulatory approvals that may be required and shall comply with all other regulatory requirements for the construction, operation, or maintenance of the WORKS or to divert or use water as provided by this Licence.

In witness whereof I the undersigned hereby agree to accept the aforesaid Licence on the terms and conditions set forth therein and hereby set my hand and seal this 11 day of May A.D. 20 12.

SIGNED, SEALED AND DELIVERED
in the presence of

Witness } Licensee (Seal)

Canada, PROVINCE OF MANITOBA To Wit:

I, Michael Rempel of the Town
of Plum Coulee in the Province of Manitoba, MAKE OATH AND SAY:

1. That I was personally present and did see Gordon Martel, the within named party, execute the within Instrument.
2. That I know the said Gordon Martel and am satisfied that he/she is of the full age of eighteen years.
3. That the said Instrument was executed at the Town of Altona aforesaid and that I am subscribing witness thereto.

SWORN BEFORE me at the Town of Altona
in the Province of Manitoba this 11 day of May A.D. 20 12.

A COMMISSIONER FOR OATHS } Witness
in and for the Province of Manitoba

My Commission expires CAO - R.M. of Rhineland

Issued at the City of Winnipeg, in the Province of Manitoba, this 16th day of May A.D. 20 12.

The Honourable the Minister of Conservation and Water Stewardship

Licence No.2012-054 Page 2 of 2

Appendix D

MWSB Guidelines for Watercourse Crossings

WATERCOURSE CROSSINGS

Mitigation Measure

1. All watercourse crossings will be directionally drilled.
2. A minimum undisturbed buffer zone of 15 metre will be maintained between directional drill entry/exit areas and banks of watercourse.
3. Heavy equipment (caterpillars, tractors) shall not be allowed within the buffer zone.
4. Enforce measures regarding fuelling or servicing equipment within 100 metre of watercourse.
5. Waste drill mud and cuttings will be prevented from entering surface water.
6. Should erosion control measures be implemented, post construction monitoring shall be conducted to ensure effectiveness.
7. Further erosion control measures will be implemented as necessary.

Reclamation

1. Restore all disturbed areas to original contours.
2. Install erosion control measures, if warranted, and maintain until vegetation becomes established.

Pressure Loss/Fluid Loss Response

To avoid or minimize the potential for drilling fluids and drill cuttings from entering watercourses because of a frac-out, the following monitoring and response plan will be followed:

1. A record of drilling progress will be maintained to always know the location of the drill head relative to the point of entry.
2. A record of drilling component usage (type and quantity) will be maintained throughout each drilling operation.
3. A record of drilling fluid volume used and returned will be maintained to detect any significant fluid losses. Drilling fluid pump pressure will be continuously monitored. Abnormal loss of returned fluids or loss of fluid pressure that may be indicative of a frac-out will be reported immediately to MWSB/PFRA construction field supervisor.
4. At watercourse crossings where water clarity permits, a view of the stream bottom, an observer will continuously check for signs of mud escapement to the watercourse.

Loss of Fluid and Frac-out Response Plan

1. If an abnormal loss of fluid, drop in pressure or visible plume is observed indicating a frac-out or possible frac-out, drilling is to stop immediately.
2. The contractor will notify the MWSB/PFRA construction field supervisor of the frac-out condition or potential condition and decide on the appropriate action as follows:
   a) Assign a person to visually monitor for the presence of muddy plume.

b) Make adjustments to the mud mixture; add lost circulation material (LCM) to the drilling fluid in an attempt to prevent further loss of fluid to the ground formation and/or watercourse.

c) Where conditions warrant and permit (i.e., shallow depth, clear water, low water velocity, potentially sensitive habitat) and where a frac-out has been visually detected, attempt to isolate the fluid release using a large diameter short piece of culvert.

d) Under circumstances where a frac-out has occurred, and where conditions do not permit containment and the prevention of drilling fluids release to the watercourse, attempts to plug the fracture by pumping LCM are not to continue for more than 10 minutes of pumping time.

e) If the frac-out is not contained within this time, MWSB/PFRA construction supervisor will halt any further attempts until a course of action (either abandon directional drilling or further consultation with MWSB engineers) is decided upon.