From: De Koninck, Robert <Rob.DeKoninck@stantec.com>
Sent: October 3, 2022 8:45 AM
To: Assefa, Bereket
Cc: lpoulin@boissevain.ca; ernie.epp waytogoconsultinginc.ca; Ransom, Brett
Subject: RE: File 6133.00 - Boissevain Aerated Lagoon EAP - Additional Information Request
Attachments: mem_boissevain_wetlands_20220930_signed.pdf; 20220923-17470-fig6.4-lagoon-site.pdf

Hello Bereket,

Please find attached the wetlands assessment report for the Boissevain Aerated Lagoon EAP along with a revised site plan demonstrating the proposed works will avoid the Class 4 wetlands areas on the site. The proposed works affect approximately 1.5 acres of Class 3 wetlands which will be compensated for by the Project.

Thanks,
Rob De Koninck, P.Eng.
Associate
Practice Lead - Water
Phone: 204-928-8690
Cell: 204-471-1793
Rob.dekoninck@stantec.com

Stantec

Memo

To:	Brett Ransom Winnipeg	From:	Carlie Pauls & Nicole Kearns Winnipeg & Saskatoon
Project/File:	111217470	Date:	September 30, 2022

Reference: Proposed Boissevain Lagoon Project - Wetland Assessment Report

INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by the Manitoba Water Services Board to complete a wetland assessment within the SE-11-04-20 W1M in support of a proposed aerated lagoon with post lagoon nitrification wastewater treatment system to service the Rural Municipality of Boissevain-Morton (the Project). The purpose of the wetland assessment was to address a comment received from Drainage and Water Rights Licensing Branch, a member of the technical advisory committee (TAC), regarding the Environment Act Proposal for the Project. Additional information was requested in order to determine if any wetlands are located within the Project as wetlands are protected under the *Water Rights Act*. The wetland assessment was completed to determine the class of each wetland present in the Project in accordance with the *Manitoba Prairie Wetland Classification Guide* (Ducks Unlimited Canada 2020) which is the standard used for wetland classification by the Drainage and Water Control Branch of the Province of Manitoba.

The Project is located approximately 5 kilometers north of the Town of Boissevain. The Project is bordered by municipal road 115W to the east (Appendix A Photo 1), annual cropland to the north and west (Appendix A Photo 2), and a landfill to the south(Appendix A Photo 3). The Project supports multiple wetlands and is currently fenced and used as a cattle pasture (Appendix A Photo 4).

METHODS

Wetlands were desktop mapped based on aerial imagery from Google Earth, BING and World Imagery and delineated in ArcGIS at a scale of 1:1,500 and a minimum polygon size of 0.04 ha prior to the field assessment. Land cover data from Agriculture and Agri-Food Canada (AAFC) Annual Crop Inventory (AAFC 2021) was used to assist in the wetland determination. The wetland zones are defined in *the Classification of Natural Ponds and Lakes in the Glaciated Prairie Region* (Stewart and Kantrud 1971)(Table 1). Imagery from wet and dry years to account for seasonal variability in wetland size was used to make a conservative estimate of the wetland boundary. Wetland boundaries/zones were determined based on the vegetation cover, presence of standing water, areas lacking standing water but with evidence of past standing water (i.e., bare ground, presence of salt or carbonates, patchy vegetation), and changes in pattern or texture that may indicate a change in vegetation that could be due to wetland conditions (e.g., taller or darker vegetation, drainage patterns).

Wetland classification followed the *Manitoba Prairie Wetland Classification Guide* (Ducks Unlimited Canada 2020), which is based on the *Classification of Natural Ponds and Lakes in the Glaciated Prairie Region*

(Stewart and Kantrud 1971). Where the *Manitoba Prairie Wetland Classification Guide* could not be used as is the case with swamps, the *Canadian Wetland Classification System* (National Wetlands Working Group 1997) was used to determine the appropriate classification. Wetland classes are defined in Table 1.

Table 1. Wetland Classification

Wetland Class	Central Zone	Description
Class I (class 1) – ephemeral ponds	low prairie zone	Ephemeral ponds occur in small swales and contain species such as Kentucky bluegrass (*Poa pratensis*).
Class II (class 2) – temporary ponds	wet meadow zone	In freshwater temporary ponds, the wet meadow is the central most zone of the wetland area and is usually dominated by species such as western wheatgrass (*Pascopyrum smithii*) and fox-tail barley (*Hordeum jubatum*).
Class III (class 3) – seasonal ponds	shallow marsh zone	Seasonal ponds are wetlands with a shallow marsh zone dominating the central zone. These ponds are frequently surrounded by a ring of willows with a wet center containing species such as sedges (*Carex* spp.).
Class IV (class 4) – semi-permanent ponds	deep marsh zone	In semi-permanent ponds and lakes, the deep marsh dominates the central most zone of the wetland. Broadleaf cattail (*Typha latifolia*) and bulrushes (*Scirpus* spp.) are typical emergent species.
Class V (class 5) – permanent ponds	permanent open water zone	Permanent open water dominates the central most of the wetland and is devoid of emergent vegetation.
Class VI (class 6) – alkali ponds	intermittent-alkali zone	Intermittent-alkali ponds may be devoid of emergent vegetation, have evidence of high salinity, and be dominated by species such as beaked ditch grass (*Ruppia maritima*).
Treed Swamp[1]	Swamp	Treed swamps are influenced by minerotrophic groundwater on either mineral or organic soils and generally contain over 30% woody vegetation.
NOTES: Source: Stewart and Kantrud (1971) [1] Treed swamp wetland classification is based on the *Canadian Wetland Classification System* (National Wetlands Working Group 1997).		

Desktop mapped wetland boundaries and classes were field verified on foot. Data was collected using the FieldMaps for ArcGIS (© 2018-2021 Esri Inc version 21.1.1) application on an Apple device. Representative photos were taken along the boundary of the wetlands including ground cover and the surrounding

landscape. The wetland zones were verified based on the dominant plant species present in those zones. Plants were identified to species level where possible. Plant species nomenclature follows the Manitoba Conservation Data Center (MBCDC) Vascular and Non-Vascular Plant List (MBCDC 2021). The data collected were used to update the desktop wetland mapping.

RESULTS

A Stantec environmental scientist conducted a field assessment in the Project by foot on July 25 to 26, 2022. Desktop mapped wetland boundaries were verified or modified to reflect current conditions where necessary. At the time of the survey, the Project was flooded due to high amounts of rainfall.

The Project is predominantly wetland, ranging from class 1 to 4 wetlands and treed swamp (Table 2; Figure 1). There were no class 5 wetlands identified within the Project. Areas within the Project that do not consist of wetland include a crop land along the west boundary, forested upland in the northwest corner, and a ridge of grassland running north-south through the centre of the Project (Appendix A Photo 5).

Four class 4 semi-permanent wetlands with an open water phase were identified throughout the Project (Appendix A Photo 6; Figure 1, Table 2, Wetlands 7, 10, 12 and 13). The deep marsh zones of the wetlands were dominated by broadleaf cattail and star duckweed (*Lemna trisulca*) (Appendix A Photo 7). Due to the flooded conditions and associated safety concerns at the time of the field visit, it was not feasible to walk to the open water phase of each of the class 4 wetlands.

Eight class 3 seasonal wetlands/zones were identified throughout the Project (Appendix A Photo 8; Figure 1, Table 2, Wetlands 1, 2, 5, 7, 10, 12, 13, and 14). Shallow marsh zones were dominated by reed canary grass (*Phalaris arundinacea*), narrowleaf cattail (*Typha angustifolia*), lesser duckweed (*Lemna minor*), water parsnip (*Sium suave*), variable leaved pondweed (*Potamogeton gramineus*) and water smartweed (*Persicaria amphibila* var. *emersa*)

Eight class 2 temporary wet meadows (Appendix A Photo 9; Figure 1, Table 2, Wetlands 2, 3, 7, 9, 11, 12, 13, and 14) and class 1 low prairie zones (Appendix A Photo 10) were prevalent throughout the majority of the Project. Wet meadows were predominantly comprised of western dock (*Rumex occidentalis*), prairie cord grass (*Spartina pectinata*), fox-tail barley, swamp thistle (*Cirsium mulicum*), marsh hedge nettle (*Stachys palustris*), and fowl meadow grass (*Poa palustris*). Low prairie zones were dominated by western snowberry (*Symphoricarpos occidentalis*), wolf willow (*Elaeagnus commutata*), Canada anemone (*Anemone canadensis*), goldenrod (*Solidago* spp.), and slender wheatgrass (*Elymus trachycaulus*).

Treed swamps (swamps) were identified along the north and east perimeter within the Project. Swamps were flooded at the time of the assessment with pools ranging from approximately 15 cm to 90 cm in depth. Swamps were dominated by red-osier dogwood (*Cornus stolonifera*), willow (*Salix* spp.), trembling aspen (*Populus tremuloides*), Canada anemone (*Anemone canadensis*) and also included several of the class 1 to 4 wetland species previously listed (Appendix A Photo 11; Figure 1, Wetland 1, 3, 4, 5, 6 and 8).

Additional anthropogenic water features were also identified at the site including a dugout (Appendix A Photo 12) and several man-made drainages (Appendix A Photo 13). Drainages flowed northward connecting a wetland on the landfill property to the dugout within the Project.

Evidence of previous beaver (*Castor canadensis*) activity was observed including felled trees in the upland area along the west Project boundary (Appendix A Photo 14). Evidence of beaver activity did not appear to be recent. Other wildlife observed during the wetland assessment include yellow-headed blackbird (*Xanthocephauls xanthocephalus*), red-winged blackbird (*Agelaius phoeniceus*), American robin (*Turdus migratorius*), warbling vireo (*Vireo gilvus*), ruffed grouse (*Bonasa umbellus*), eastern kingbird (*Tyrannus tyrannus*), Wilson's snipe (*Gallinago gallinago*), sora (*Porzana carolina*), clay-colored sparrow (*Spizella pallida*), American coot (*Fulica americana*), marsh wren (*Cistothorus palustris*), garter snake (*Thamnophis* sp.), two-striped grasshopper (*Melanoplus bivittatus*), and gilled snail (*Prosobranchia* sp.).

Table 2 Mapped Wetlands within the Project

Wetland Number	Wetland Class	Wetland Zone	Dominant Species	Area (m^2)
1	Treed Swamp	n/a	red-osier dogwood (*Cornus stolonifera*) trembling aspen (*Populus tremuloides*) western dock (*Rumex occidentalis*) willow (*Salix* spp.)	3,053.5
1	3 - Seasonal	Shallow marsh	narrowleaf cattail (*Typha angustifolia*) lesser duckweed (*Lemna minor*) water smartweed (*Persicaria amphibia* var. *emersa*) variable leaved pondweed (*Potamogeton gramineus*)	1,020.3
2	2 - Temporary	Wet meadow	western dock (*Rumex occidentalis*) prairie cord grass (*Spartina pectinata*) fox-tail barley (*Hordeum jubatum*) swamp thistle (*Cirsium muticum*)	2,375.4
2	3 - Seasonal	Shallow marsh	broadleaf cattail narrowleaf cattail lesser duckweed water smartweed variable leaved pondweed	1,168.1
3	Treed Swamp	n/a	red-osier dogwood trembling aspen western dock willow	1,493.0
3	2 - Temporary	Wet Meadow	western dock prairie cord grass fox-tail barley swamp thistle	2,249.6
4	Treed swamp	n/a	red-osier dogwood	12,096.4

Reference: Wetland Assessment Report

Wetland Number	Wetland Class	Wetland Zone	Dominant Species	Area (m^2)
			western dock willow	
5	Treed swamp	n/a	red-osier dogwood trembling aspen western dock willow	2,371.7
5	3 - Seasonal	Shallow marsh	broadleaf cattail narrowleaf cattail lesser duckweed water smartweed variable leaved pondweed	487.6
6	Treed swamp	n/a	red-osier dogwood trembling aspen western dock willow	1,460.1
7	2 - Temporary	Wet meadow	western dock prairie cord grass fox-tail barley swamp thistle fowl meadow grass (*Poa palustris*) wild mint (*Mentha arvensis*) marsh hedge nettle (*Stachys palustris*)	21,359.2
7	3 - Seasonal	Shallow marsh	reed canary grass (*Phalaris arundinacea*) lesser duckweed water parsnip (*Sium suave*) variable leaved pondweed water smartweed soft rush (*Juncus effusus*) scouring rush (*Equisetum hyemale*)	5,718.7
7	4 – Semi-permanent	Deep marsh	marsh spike rush (*Eleocharis smallii*) narrowleaf cattail broadleaf cattail star duckweed	1,274.7
8	Treed swamp	n/a	red-osier dogwood trembling aspen western dock willow	2,216.8

Reference: Wetland Assessment Report

Wetland Number	Wetland Class	Wetland Zone	Dominant Species	Area (m^2)
9	2 - Temporary	Wet meadow	western dock prairie cord grass fox-tail barley swamp thistle wild mint	4,819.8
10	3 - Seasonal	Shallow marsh	reed canary grass lesser duckweed water parsnip variable leaved pondweed water smartweed soft rush scouring rush water plantain (*Alisma plantago aquatica*)	4,793.8
10	4 – Semi-permanent	Deep marsh	marsh spike rush narrowleaf cattail broadleaf cattail star duckweed	877.0
11	2 - Temporary	Wet meadow	western dock prairie cord grass fox-tail barley swamp thistle	867.5
12	2 - Temporary	Wet meadow	western dock prairie cord grass fox-tail barley swamp thistle	2,819.4
12	3 - Seasonal	Shallow marsh	reed canary grass lesser duckweed water parsnip variable leaved pondweed water smartweed	1,722.8
12	4 – Semi-permanent	Deep marsh	broadleaf cattail	375.6
13	2 - Temporary	Wet meadow	western dock prairie cord grass fox-tail barley swamp thistle wild mint	3,294.4

Wetland Number	Wetland Class	Wetland Zone	Dominant Species	Area (m^2)
			marsh hedge nettle	
13	3 - Seasonal	Shallow marsh	reed canary grass lesser duckweed water parsnip variable leaved pondweed water smartweed water plantain	2,366.6
13	4 – Semi-permanent	Deep marsh	marsh spike rush narrowleaf cattail broadleaf cattail star duckweed	1,228.1
14	2 - Temporary	Wet meadow	western dock prairie cord grass fox-tail barley swamp thistle wild mint marsh hedge nettle	5,716.1
14	3 - Seasonal	Shallow marsh	reed canary grass lesser duckweed water parsnip variable leaved pondweed water smartweed water plantain	3,702.1

RECOMMENDATIONS

The following standard practices for construction around wetlands are recommended:

- Wetlands should be avoided, where possible. Under *The Water Rights Act* and the Water Rights Regulation, class 3 wetlands are eligible for drainage through authorization by licence. Any proposed loss of class 3 wetlands must be offset by compensation for lost acres of wetlands as required by Schedule D of the *Act*. Under normal circumstances, a water rights licence will not be issued for the drainage of class 4 wetlands as they are protected under the *Act*.

- All activities should occur during dry or frozen ground conditions. During wet conditions, work should be stopped for any activity that could potentially cause rutting of the ground surface (other than permanent roadways). If frozen ground conditions do not exist, alternate approved methods should be used to prohibit rutting of the ground surface (e.g., timber matting, planks, low-ground weight equipment, rig mats).

- All equipment should be well maintained and clean and free from fluid leaks and other sources of contamination.
- Emergency spill kits should be readily available on site.
- Spill prevention measures should be implemented.
- Designated areas should be established for fuel storage, motor lubricants, materials handling, and storage, equipment cleaning, refueling, and servicing. Any designated area should be located at least 100 m away from any wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access, routine inspection, and leak detection. All fuels, oils, lubricants, and other petroleum-based products should be stored on or in secondary containment that must be capable of holding at least 110% of the products volume.
- Clearly mark wetland boundaries using flagging and limit vehicle traffic and heavy equipment within the wetland.
- Debris should not be deposited in any wetland or on the ice of any frozen wetland. Any debris accidentally deposited should be removed immediately.
- Erosion and sediment control measures (e.g., silt fences, sediment booms) should be used as needed to prevent a reduction in water quality to the undisturbed portion of the wetland. Erosion and sediment control measures should be regularly inspected, and necessary repairs made as required.

LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this memo, including no assurance that this work has uncovered all potential liabilities associated with the identified properties.

This letter provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this memo consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. This letter should not be construed as legal advice.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this memo.

Reference: Wetland Assessment Report

Stantec Consulting Ltd.

Carlie Pauls BA Geog, EP
Environmental Scientist
Phone: (204) 928-7616
Mobile: (204) 228-0673
Carlie.Pauls@stantec.com

Nicole Kearns MSc, PAg
Environmental Planner and Biologist
Phone: (306) 667-2475
Mobile: (306) 220-8833
Nicole.Kearns@stantec.com

Attachment: Figure 1 Wetlands in the Project

Appendix A – Photographs

REFERENCES

AAFC (Agriculture and Agri-Food Canada). 2021. Annual Crop Inventory. https://open.canada.ca/data/en/dataset/199e4ab6-832b-4434-ac39-e4887d7cc4e5. Accessed

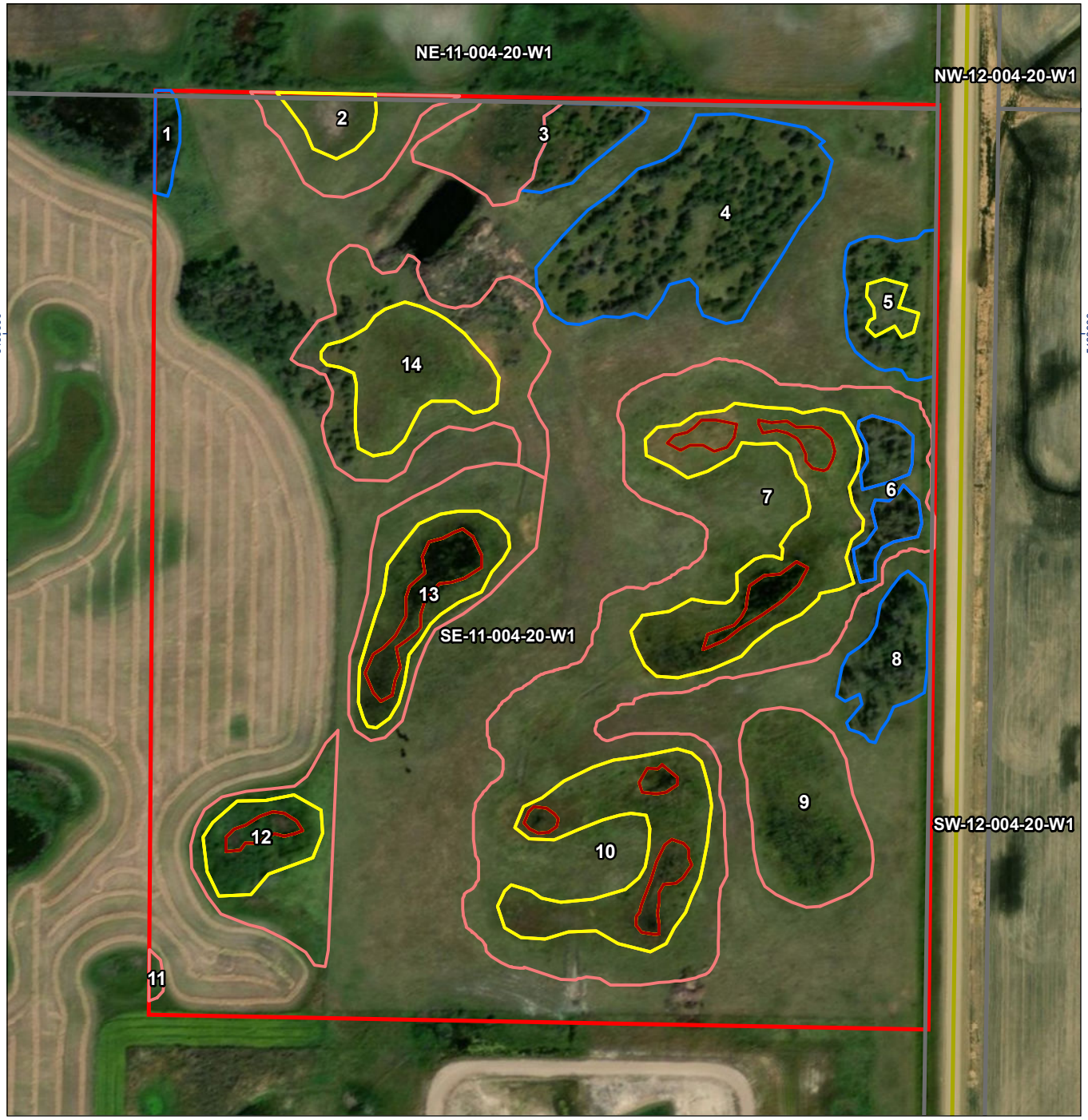
Ducks Unlimited Canada. 2020. The Manitoba Prairie Wetland Classification Guide. Native Plant Solutions. Winnipeg, Manitoba.

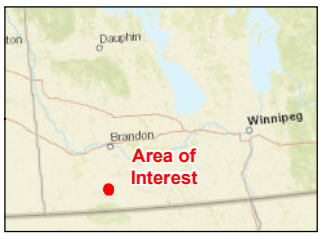
Manitoba Environment, Climate and Parks. 2019. Drainage & Water Control. https://www.gov.mb.ca/sd/water/water-rights/drainage-and-water-control/index.html. Accessed: August 24, 2022.

MBCDC (Manitoba Conservation Data Center). 2021. Vascular and Non-Vascular Plant List. November 2021. Wildlife Fisheries and Enforcement Branch. Winnipeg, Manitoba.

Stewart, R. E., and H. A. Kantrud. 1971. Classification of natural ponds and lakes in the glaciated prairie region. Resource Publication 92, Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Washington, D.C. Jamestown, North Dakota.

National Wetlands Working Group. 1997. The Canadian Wetland Classification System. 2nd ed. Warner, B.G., and C.D.A. Rubec Eds. University of Waterloo. Waterloo, Ontario.





Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Data Sources: Base features produced under license with the Government of Canada and Government of Saskatchewan.
3. Background: Orthoimagery © Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)

Legend

- Project Boundary
- Road
- Legal Land Description

Wetland Classes

- Deep Marsh Zone
- Shallow Marsh Zone
- Swamp
- Wet Meadow Zone

0 25 50 Meters

(At original document size of 8.5x11)
1:3,000

N

Stantec

Project Location
Boissevain, MB

Prepared by MH on 2022-09-16
TR by CP on 2022-09-16

Client/Project
Boissevain Wetland Classification

111217470-001 REVB

Figure No.
1

Title
Wetlands within the Project

G:_GIS_Project_Folder\111217470_Boissevain\figures\111217470-001_REVB_WetlandClass.mxd

Appendix A Photographs

PHOTO 1 Overview of Project from east municipal road facing west.

PHOTO 2 Fence line north of the Project boundary bordering annual cropland facing west.

PHOTO 3 Landfill – south of Project facing south.

PHOTO 4 Overview of Project from west boundary – cattle pasture facing east.

PHOTO 5 North-south ridge containing class 1 wetland and native grassland – centre of Project facing north.

PHOTO 6 Perimeter of class 4 wetland – broadleaf cattail (wetland 10) facing east.

PHOTO 7 Class 4 open water phase - star duckweed (dugout) facing north.

PHOTO 8 Class 3 – shallow marsh zone (wetland 14) facing west.

PHOTO 9 Class 2 – wet meadow zone (wetland 2) facing east.

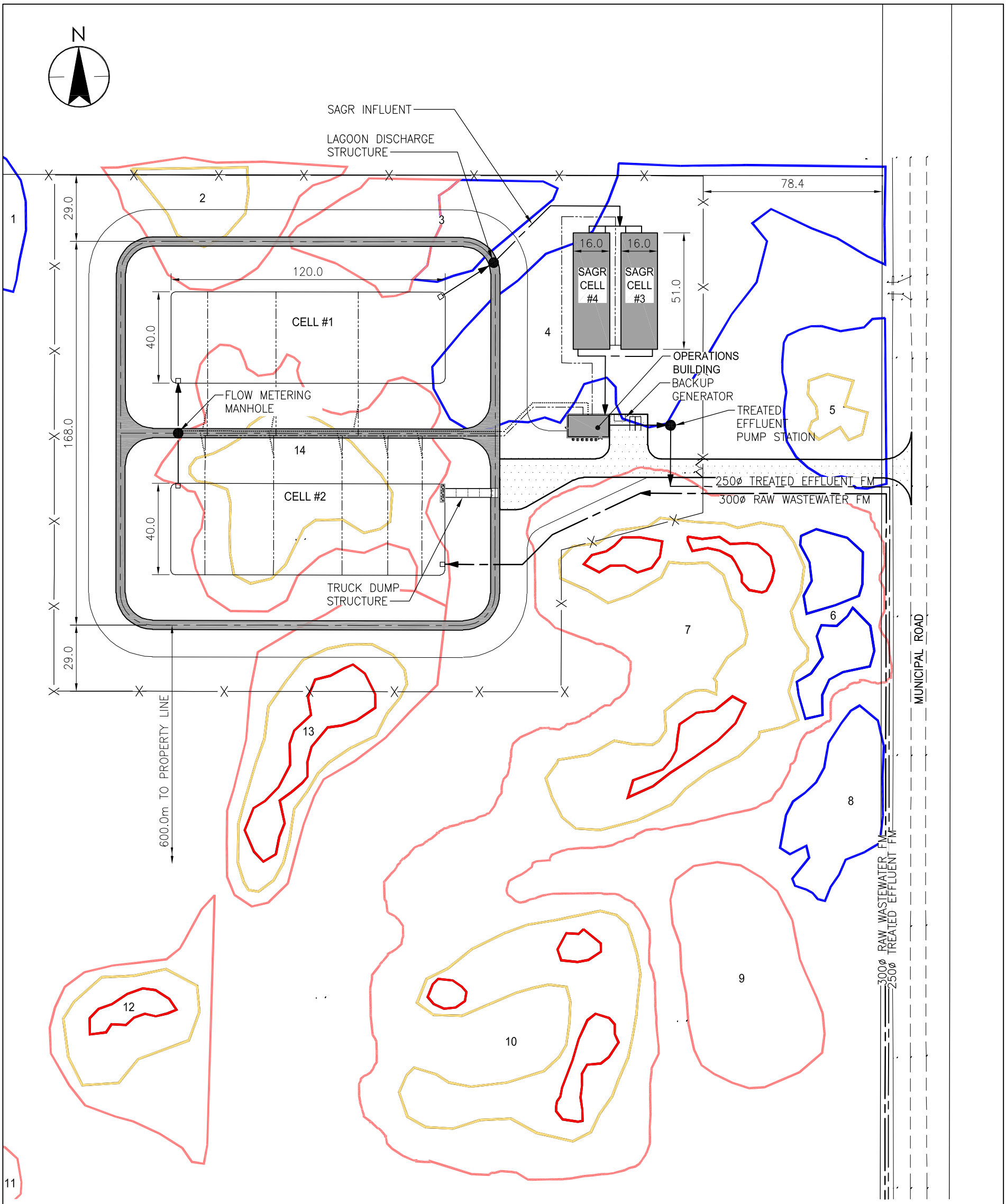
PHOTO 10 Class 1 –low prairie zone (wetland 2) facing west.

PHOTO 11 Treed swamp (wetland 1) with open water facing west.

PHOTO 12 Anthropogenic dugout facing north-east.

PHOTO 13 Anthropogenic drainage from landfill into the Project area wetlands facing north.

PHOTO 14 Felled tree from beaver activity west of wetland 14, in the upland area of the Project facing south.



Legend

- DEEP MARSH - CLASS 4 (SEMI PERMANENT)
- SHALLOW MARSH ZONE - CLASS 3 (SEASONAL)
- SWAMP - UNCLASSIFIED
- MEADOW ZONE - CLASS 2 (TEMPORARY)

2022-09-23
111217470

ORIGINAL SHEET - ISO 8.5x11 V - v17.05

V:\1112\active\111217470\0300_drawing\0301_sketches\17470-fig6.4.dwg FIG_6.4
2022/09/23 9:25 AM By: Cabanero, Sherwin

Stantec

Stantec Consulting Ltd.
Suite 500, 311 Portage Avenue
Winnipeg MB Canada R3B 2B9
Tel. 204.489.5900 Fax. 204.453.9012
www.stantec.com

Notes

Client/Project
MWSB AND RM OF BOISSEVAIN - MORTON
BOISSEVAIN WASTEWATER TREATMENT

Figure No.
6.4

Title
LAGOON SITE PLAN