



Conservation and Water Stewardship

Climate Change and Environmental Protection Division
Environmental Approvals Branch
123 Main Street, Suite 160, Winnipeg Manitoba R3C 1A5
T 204 945-8321 F 204-945-5229
www.gov.mb.ca/conservation/eal

File: 914.20

June 4, 2013

Mr. Ian Parkinson, P.Eng.
Associate
Dillon Consulting Limited
1558 Willson Place
Winnipeg, Manitoba
R3T 0Y4

Dear Mr. Parkinson:

Re: Village of Dunnottar Wastewater Treatment Lagoon – Passive Filter Project - Environment Act Proposal

The initial review of the Environment Act Proposal (EAP) regarding the Village of Dunnottar Wastewater Treatment Lagoon – Passive Filter Project has been completed.

The review has generated comments/requests for additional information. Please respond to the comments and requests from the Technical Advisory Committee (TAC) presented in the attached item being:

1. Memorandum from Water Quality Management Section, Water Science and Management Branch, Manitoba Conservation and Water Stewardship, dated April 26, 2013; and
2. E-mail from Fisheries Science and Fish Culture Section, Fisheries Branch, Manitoba Conservation and Water Stewardship, dated May 5, 2013.

In addition, please address and provide detailed responses to the comments, concerns, questions and requests for additional information from the public presented in the attached item being:

3. Letter from Robert Haip, President, Dunnottar Ratepayers Association, dated May 15, 2013.

Please address and respond to the comments and requests for additional information. The EAP review process will continue upon receipt of your response.

If you have any questions please contact me at (204) 945-2614 or by e-mail at Rafiqul.Chowdhury@gov.mb.ca.

Yours truly,

Original Signed By

Rafiqul Chowdhury, M.Eng., P.Eng.
Environmental Engineer

Attachments

- c. Don Labossiere, Director, Environmental Compliance and Enforcement
Public Registries



Memorandum

DATE: April 26, 2013

TO: Rafiqul Chowdry
Environmental Approvals Branch
160-123 Main Street, Winnipeg,
MB
R3C 1A5

FROM: Joy Kennedy
Water Quality Management Section
Water Science and Management Branch
160-123 Main Street, Winnipeg, MB
R3C 1A5

Cc: Nicole Armstrong
David Hay

TELEPHONE: 945-7908
FACSIMILE: 948-2357
EMAIL: joy.kennedy@gov.mb.ca

SUBJECT: ***ENVIRONMENT ACT PROPOSAL FILE: 914.20 VILLAGE OF DUNNOTTAR WASTEWATER TREATMENT PASSIVE FILTER PROJECT***

- The following effluent standards should be in place for the Village of Dunnottar as per the *Manitoba Water Quality Standards, Objectives and Guidelines Regulation (196/2011)*.
 - BOD5 25 mg/L
 - Total suspended solids 25 mg/L
 - Fecal Coliforms or *Escherichia coli* 200 MPN / 100mL
 - TP <1mg/L
- The Village of Dunnottar must implement weekly monitoring at the outlet of the UV disinfection system, for *Escherichia coli*.
- The Water Quality Management Section recommends monthly monitoring at the outlet of the UV disinfection system, for BOD, TSS, and TP.
- The Water Quality Management Section is concerned with any discharges that have the potential to impact the aquatic environment and/or restrict present and future uses of the water. Therefore it is recommended that the license require the proponent to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director.

Joy Kennedy

From: Janusz, Lauren R (CWS)
Sent: May-05-13 12:35 PM
To: Chowdhury, Rafiqul (CWS)
Cc: Klein, Geoff (CWS); Long, Jeff (CWS)
Subject: EAP 914.20 Village of Dunnottar due May 17, 2013

Hi Rafiqul,

Fisheries Branch has reviewed this proposal to construct and operate a *full-scale passive filter system in conjunction with existing Village of Dunnottar wastewater treatment lagoon located in the northwest quarter of section 8-17-4 EPM in the Rural Municipality of St. Andrews, to reduce total phosphorus annual loading to Lake Winnipeg. The passive filter will consist of two 25 metre x 50 metre cells, an ultraviolet (UV) disinfection component and influent and effluent manholes and pumps. Treated effluent (discharge flows up to 500 m³/d) from the passive filter and UV will be discharged between June 16th and September 15th of any year directly to the existing lagoon drainage channel, which eventually flows to Lake Winnipeg. The existing drainage is through the local ditch system along Highway 225 for approximately 2.4 km, then 1.2 km north along PTH 9. At this point it flows east, under PTH 9, into Tegula Creek. It then flows approximately 1.5 km to Lake Winnipeg. No change is proposed for batch discharge from the lagoon: the secondary cells would continue to be emptied directly into the drainage route (after successful compliance testing) between September 16 and October 31.*

The proponents have proposed a number of erosion and sediment control measures to be implemented as required along with monitoring and maintenance of measures and environmental monitoring of turbidity during construction if required.

It would appear from the information provided that there will be an increased improvement in reducing the limits of a number of effluent parameters. Given the effluent will be discharged continuously and does eventually enter fish bearing waters ammonia should be included as a discharge parameter. However we defer to the expertise of our colleagues in Water Science Management regarding parameters and monitoring requirements.

Laureen Janusz
Fisheries Science and Fish Culture Section
Fisheries Branch,
Manitoba Conservation and Water Stewardship
Box 20, 200 Saulteaux Crescent
Winnipeg, MB R3J 3W3

Phone: 204.945.7789

Cell: 204.793.1154

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Email: Laureen.Janusz@gov.mb.ca



May 15, 2013



Mr. Rafiqul Chowdhury, Environmental Engineer
Environmental Approvals Branch
123 Main Street, Suite 160
Winnipeg, MB R3C 1A5

Re: Village of Dunnottar Wastewater Treatment Lagoon – Passive Filter Project File: 914.20

Dear Mr. Chowdhury:


Having reviewed the recent Environment Act Proposal - Final Report (Dillon Consulting, February 2013), the Dunnottar Ratepayers Association has numerous concerns with construction of a full-scale passive filtration system. Considering the potential risk to public health and safety for the recreational users of Lake Winnipeg, (as identified by Dillon Consulting Limited) the Dunnottar Ratepayers Association requests review and reply to our list of concerns.

Sincerely,

Robert Haip, President
Dunnottar Ratepayers Association
157 Dunrobin Ave, Winnipeg, MB
R2K 0T3

Enclosures (4):

- i. Dunnottar Ratepayer Association Passive Filtration Concerns
- ii. Stantec Winnipeg Beach Provincial Park Wastewater Holding Tank System Environment Act Proposal
- iii. Tugela Creek Effluent Outlet - Whytewold Pier and Park
- iv. Village of Dunnottar Wastewater Passive Filter Project - Environment Act Proposal, Table 1, pg. 14



Dunnottar Ratepayers Association

www.dunnottarratepayers.ca

Re: Village of Dunnottar Wastewater Treatment Lagoon – Passive Filter Project File: 914.20

May 13, 2013 - Concerns of the Dunnottar Ratepayers Association

I. Public Health and Safety:

Previously the yearly dumping schedule of Dunnottar lagoon cells through Tugela Creek took place in late September and October well after the Whytefold swimming pier was removed for the season. The proposed Passive Filtration dumping schedule will now occur daily during prime swimming and water use season:

- What assurance can Manitoba Conservation provide that an EXPERIMENTAL project like the Dunnottar passive filtration system will provide adequate safeguards as to water quality at the Tugela Creek Lake Winnipeg Outlet?
- What safeguards will be in place in the event of an adverse event involving failure of the passive filtration system considering outlet dumping will occur meters from a swimming beach and park area?
- Tugela creek has traditionally attracted the children of Dunnottar as a place to catch tadpoles, frogs and minnows. What measures will be implemented to prevent children from playing in the creek and coming into contact with effluent during the summer months? *Previously this was not a concern as lagoon dumping occurred in late September and October well after the start of the new school year.*
(See attachment: Tugela Creek Effluent Outlet – Whytefold Pier and Park)
- Considering Tugela Creek runs through the heart of Dunnottar, has the option of flowing the effluent further north of residences, cottages and beaches been explored? It would appear effluent could be flowed further north along highway 9, east along Thomas Rd and Division Rd. This route would result in effluent entering Lake Winnipeg north of Dunnottar beaches and swimming areas.
- If one of the many adverse events identified by Dillon Consulting occurs involving the Passive Filtration System, what assurance can be given that authorities will act expeditiously to inform the public?
(See attachment: Village of Dunnottar Wastewater Passive Filter Project - Environment Act Proposal, pg. 14)



II. Environment:

The **Environment Act Proposal - Final Report** prepared by Dillon Consulting Limited indicates the Passive Filtration System will be capable of discharging effluent at a rate of up to 500 m³/d. If 'm' equates to 'meters' and 'd' equates to 'one day', this suggests the system is capable of flowing an effluent volume equivalent to that of an Olympic size swimming pool every five (5) days:

- What impact will 500 m³/day have on the ecological integrity of the lake and coastal beaches?
- What amount of effluent from the Passive Filtration system can Dunnottar swimming, beaches and fishing areas tolerate before being deemed unsafe?
- Will the total amount of effluent released on a weekly / monthly basis be subject to limits?
- In 2010 Stantec Engineering estimated the Winnipeg Beach RV Park would generate up to 2,592 m³/day of sewage/effluent. The Environment Act Proposal – Final Report fails to recognize that Dunnottar has been receiving sewage/effluent trucked from the Winnipeg Beach RV Park since 2011. What assurance will residents have that the amount of sewage and effluent accepted from other municipalities will not increase?
(See attachment: *Stantec Winnipeg Beach Provincial Park Wastewater Holding Tank System Environment Act Proposal*)

III. Operations:

Passive filtration studies have up to now only been conducted in warm, year round climates such as Mexico and Florida for twelve consecutive months of operation:

- Will the proposed June to September passive filter usage be adequate as compared to preferred year-round operation as tested in warm climate jurisdictions?
- What is the expected life span of the current filter medium; and what are the projected long-term maintenance costs?
- What evidence exists to indicate the positive results achieved through the small-scale seasonal experimental pilot passive filtration project, will scale effectively when constructed to full-size as proposed?

**WINNIPEG BEACH PROVINCIAL PARK
WASTEWATER HOLDING TANK SYSTEM
ENVIRONMENT ACT PROPOSAL
Description of Proposed Development
February 18, 2010**

2.1.3 Dunnottar Lagoon – Hydraulic Loading and Capacity

The Dunnottar Lagoon, which was expanded in 2006 under Environment Act Licence No. 2704, has a hydraulic storage capacity of approximately 70,000 cubic metres (Dillon Consulting 2002 design memorandum). The Licence allows a single annual discharge and the Village of Dunnottar has measured the following discharge volumes by field surveys

Table 2.1 - Annual Lagoon Discharge Volumes

Discharge Date	Estimated Discharge Volume [cubic metres]
September 15, 2003	15,400
September 15, 2004	16,600
September 15, 2005	31,700
September 18, 2006	17,800
September 17, 2007	10,600
October 15, 2008	22,200
October 15, 2009	40,600

2.1.4 Hydraulic Loading from RV Park

The RV park is expected to be in operation between approximately May 15 and September 15 of each year or roughly 120 days. The total annual volume of wastewater expected to be generated on average is calculated as follows.

120 days x 21,600 litres per day / 1000 litres per cubic metres = 2,592 cubic metres (round to 2,600 cubic metres)

This equates to less than four (4) percent of the total storage volume available in the existing lagoon and would be well within the available 70,000 cubic metre capacity.

2.1.5 Dunnottar Lagoon – Organic Loading and Capacity

The lagoon is licensed for a maximum daily organic load of 56 kilograms of BOD₅ per hectare of surface area in the primary cells. The required surface area of the primary cells for the design population of the lagoon is 4.82 hectares and the available surface area is 5.4 hectares (Dillon Consulting 2002 design memorandum) which leaves approximately 0.58 hectares of surface area for loading from the Winnipeg Beach RV park.

Test results of treated effluent prior to discharge as provided by the Village of Dunnottar for recent years are shown below.

Tugela Creek Effluent Outlet—Whytewold Pier and Park



Proposed flow of effluent from Dunnottar Passive Filtration system. To Lake Winnipeg.

Tugela Creek runs through the heart of Dunnottar

Beaches and Swimming Piers of Whytewold and Ponemah

Tugela Creek and outflow

Whytewold Pier and Park

Beaches and Swimming Piers of Matlock



Lake Winnipeg

Tugela Creek and outflow to Lake Winnipeg

Whytewold swimming pier, children's park and play structures

Note: Green space, public walking, and cycling paths run the length of Tugela Creek



Some examples of incidents that could occur are detailed in Table 1 below.

Table 1: Contingency Plan Communications

Condition/ Incident	Action	Incident Report to MB Conservation	Year End Report to MB Conservation
1. Heavy rains saturated filters	<ul style="list-style-type: none"> • Turn down or shut off feed pump, until system stabilizes. • Determine cause and resolve. 	No	Yes
2. Filter field clogging	<ul style="list-style-type: none"> • Turn down or shut off feed pump, until system stabilizes; excavate part of field to examine nature of clogging/blockage. 	No	Yes
3. Pump failure	<ul style="list-style-type: none"> • System feed pump is interlocked to effluent pump operation. • Inspect to ensure lock out is working, and repair failed feed pump. 	No	Yes
4. Effluent quality/ discharge quality	<ul style="list-style-type: none"> • Shut down feed pump to filter if deviation from 'normal' results is significant. • Shut down filter and examine cause. • Direct all filter effluent back to lagoon and cease discharge off site. 	No	Yes
5. Vandalism	<ul style="list-style-type: none"> • Inspect condition and repair. 	Yes	Yes
6. On-site safety issue, illegal entry	<ul style="list-style-type: none"> • Inspect condition and repair. 	Yes	Yes
7. Raw Influent release off-site	<ul style="list-style-type: none"> • Determine extent and cause of release. • Rectify issue and restart operation. 	Yes	Yes

3.4 Maintenance

No changes to the lagoon maintenance are proposed. Passive filter vegetation will be harvested on an as-needed basis and tested for operational improvement purposes, including mass and phosphorus uptake estimates. The harvested vegetation will then be composted at the adjacent Dunnottar landfill, and the compost will be made available to residents. It is expected that the natural media will not require replacement for at least 25 years. The UV disinfection unit will be cleaned and bulbs replaced as needed. Pumps and manholes will be inspected and serviced annually.

3.5 Decommissioning

No decommissioning of the Dunnottar pilot-scale filter or its lagoon system is currently planned. If decommissioning should be required at some future time, site decommissioning would be undertaken in a manner consistent with up-to-date environmental standards and legislation, as well as a consideration of the intended future use(s) at the site.

P.O.Box 285,
Winnipeg Beach, MB R0C 3G0

May 13, 2103

Mr. Rafiqul Chowdhury, Environmental Engineer,
Environmental Approvals Branch,
123 Main Street, Suite 160
Winnipeg, MB R3C 1A5

Re: Village of Dunnottar Waste Water Treatment Lagoon – Passive Filter Project File: 914.20

Dear Mr. Chowdhury,

My wife Sandra and I live in the village as permanent residents and this project is of great interest to us.

The test filter system has been in use for the past four years and independent testing as conducted by Dillon Consulting Ltd., Green Manitoba, the National Research Council of Canada and ALS Environmental, has shown the system to work in reducing the outlet effluent loading when compared to that same effluent not passed through the test passive filter system.

The reduction of Nitrogen and Phosphorous alone make the addition of the filter system a worthy investment. With the additional reduction in release of suspended solids and BOD is an added bonus and the UV disinfectant component, this is a cost effective method of meeting our environmental obligations.

The present licence calls for effluent release to occur between the periods of September 16 to October 31. This is a batch release and the sudden large volume flow may result in erosion of the natural channel. With the lower, more controlled continuous release throughout the season, there will be a reduced tendency for erosion of the channel. The continuous reduced flow rate will enable the passive filter system to perform a more thorough job of removing harmful effluent materials.

We believe that the Village should be granted a licence to proceed with the installation and operation of a fully functioning passive filtration system. The environmental advantage is the improvement of the water quality of the released water with the reduction of harmful chemicals (N and P), the reduction of heavy metals, the reduction of suspended solids and the reduction of biological and bacterial matter.

When there is worldwide recognition of the effects of poor environmental practices, we feel that it would be irresponsible to prevent any endeavour that reduces our negative impact on the environment at large. We fully support the Village of Dunnottar's effort to show Environmental leadership in the extended treatment of sewage effluent.

Yours sincerely,

David and Sandra Lobban

Notice of Environment Act Proposal

Village of Dunnottar Wastewater Treatment Lagoon – Passive Filter Project File 914.20

To: Environmental Approval Branch

Dear Sir:

This is in response to your publically advertised invitation to make representation re above subject. I wish to make clear that I am solidly in support of the passive filter program for the following reasons, The Dunnottar Passive Filter Project **DOES**:

1. Treats sewage lagoon effluent in a much more efficient manner at a fraction of the cost of a mechanical sewage treatment plant. This applies not only to the day to day operational requirements but also to the potential capital cost outlays required.
2. The Passive Filter system makes it possible to treat and discharge effluent from the lagoon for a much extended period (now June to Sept. three months) vs a two weeks, once per year lagoon discharge as in previous years. This greatly enhances lagoon storage capacity.
3. Achieved a tremendous improvement in quality of effluent discharge to Lake Winnipeg compared to previously approved procedures:
 - a) Phosphorous discharge (responsible for algae growth in the lake) has been reduced by 77% (basically no removal by previous program).
 - b) Nitrates discharge has been reduced by 60 to 65% (basically not treated by previous procedures).
 - c) Bacteria counts have been dramatically reduced and are well within regulatory standards. Records show that coliform counts have been reduced by an average of 90%.
4. Passive filters operate continuously at low energy input during summer months with no significant mechanical involvement. More complex mechanical sewage treatment plants operate at relatively high energy consumption and we often hear of mechanical failures and resultant discharge of raw sewage to our waterways.
5. Operational and staff training requirements are minimized with this technology compared to those required in mechanical treatment plants.
6. The Dunnottar Passive Filter Project has been an unqualified success during its trial operations. Further development provides the opportunity to assess and further develop its potential not only for the village of Dunnottar but also for hundreds of other small and medium size communities. Smaller communities could reap tremendous benefits from this technology, including reduced lagoon capacity, improved treatment results, reduced costs, etc.

The mayor and council of the village of Dunnottar working in concert with Dillon Consulting are to be congratulated for developing this wastewater treatment concept that could have such widespread application in our province and beyond.

George A. Thompson
Dunnottar



Infrastructure and Transportation

Highway Planning and Design Branch
Environmental Services Section
1420 - 215 Garry St., Winnipeg, MB R3C 3P3
T (204) 819-4359 F (204) 945-0883

May 6, 2013

**Tracey Braun, M. Sc.
Director, Environmental Approvals Branch
Manitoba Conservation and Water Stewardship
123 Main St., Suite 160
Winnipeg, MB R3C 1A5**

**RE: Village of Dunnottar – WWTL Passive Filter
Client File No. 914.20**

Dear Ms. Braun:

MIT has reviewed proposal noted above and we do not have concerns with the development as proposed.

Thank you very much for providing us the opportunity to review the proposal.

Sincerely,

**Ryan Coulter, M. Sc., P. Eng.
Manager of Environmental Services**

From: Wiens, Jonathan (CON)
Sent: April-18-13 3:42 PM
To: Chowdhury, Rafiqul (CON)
Subject: FW: Request for review & comments - R.M of Woodlands 3388.10 AND Village of Dunnottar 914.20 - Closing date: May 17, 2013

Wildlife Branch has no wildlife related concerns.

Jonathan Wiens, MSc
Habitat Specialist
Manitoba Conservation
Box 24 - 200 Saulteaux Crescent
Winnipeg, Manitoba, R3J 3W3
Phone: (204) 945-7764
Mobile: (204) 918-3420
Fax: (204) 945-3077
Email: jonathan.wiens@gov.mb.ca

From: Matthews, Rob (MWS)
Sent: April-18-13 2:53 PM
To: Chowdhury, Rafiqul (CON)
Subject: RE: Request for review & comments - R.M of Woodlands 3388.10 AND Village of Dunnottar 914.20 - Closing date: May 17, 2013

No comments.

From: Kelly, Jason (CON)
Sent: May-06-13 11:22 AM
To: Chowdhury, Rafiqul (CWS)
Subject: Request for review & comments - R.M of Woodlands 3388.10 AND Village of Dunnottar 914.20 - Closing date: May 17, 2013

Parks and Natural Areas Branch has reviewed the proposal filed pursuant to the Environment Act for the Request for review & comments - R.M of Woodlands 3388.10 AND Village of Dunnottar 914.20 - Closing date: May 17, 2013. The Branch has no comments to offer as this does not impact any parks or ecological reserves

Jason Kelly, M.N.R.M.
Ecological Reserves and Protected Areas Specialist
Parks and Natural Areas Branch
Conservation and Water Stewardship
Box 53, 200 Saulteaux Cres
Winnipeg, MB R3J 3W3

Phone: 204-945-4148

Cell:

Fax: 204-945-0012

Email: Jason.Kelly@gov.mb.ca

From: Stibbard, James (CWS)
Sent: May-15-13 11:11 AM
To: Chowdhury, Rafiqul (CWS)
Subject: Re: 914.20 Village of Dunnottar Passive Wastewater Effluent Filter EAP

Mr. Chowdhury,

I reviewed the above noted EAP. The EAP is for a tertiary treatment process for the effluent from facultative wastewater treatment lagoons. The EAP notes that effects on groundwater are expected to be minimal and that the treated effluent will be discharged into an intermittent creek which discharges into Lake Winnipeg. This creek and Lake Winnipeg in this area are not used as a raw water sources for any drinking water systems.

Based upon the information in the EAP, Office of Drinking Water has no concerns with the EAP or proposed development.

I trust this is satisfactory, but if you have any questions, please call.

Regards,

James Stibbard P. Eng.
Approvals Engineer
Office of Drinking Water
1007 Century Street
Winnipeg MB R3H 0W4
phone: (204) 945-5949
fax: (204) 945-1365
email: James.Stibbard@gov.mb.ca
website: www.manitoba.ca/drinkingwater

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DATE: May 14, 2013

TO: Rafiqul Chowdhury

Environmental Engineer

MB Conservation & Water Stewardship

Suite 160-123 Main St.

Winnipeg, MB R3C 1A5

FROM: Otilie Murray

Acting Regional Manager

Community & Regional Planning

103-235 Eaton Ave.

Selkirk, MB R1A 0W7

PHONE NO.: (204) 945-2614

PHONE NO.: (204) 785-5130

SUBJECT: **Village of Dunnottar Wastewater Treatment Passive Filter Project**

File 5059

RM of St. Andrews

NW 8-17-4 EPM

Community and Regional Planning has reviewed the above proposal by the Village of Dunnottar for a full-scale passive filtration and UV disinfection system additions to the Dunnottar sewage lagoon to be located adjacent to the existing sewage lagoon in the RM of St. Andrews, and has no concerns.

The proposed site is located approximately 4.5 km west of Dunnottar, in the NW 8-17-4 EPM. The property is designated "RA" Resource and Agriculture in the Selkirk and District Planning Area Development Plan By-law No. 190/08 and is zoned "A80" Agricultural General in the RM of St. Andrews Zoning By-law No. 4066. Waste disposal facilities, which may include a lagoon, are a conditional use in this zone.

Thank you for the opportunity to comment.

Sent via email

Otilie Murray

Acting Regional Manager

From: Kaita, Adara (CWS) on behalf of +WPG1212 - Conservation_Circulars (CWS)
Sent: May-23-13 10:49 AM
To: Chowdhury, Rafiqul (CWS)
Cc: Campbell, Lyle (CWS)
Subject: EA Proposal - R.M of Woodlands - 3388.10 & Village of Dunnottar - 914.20

Hi Rafiqul,

The Sustainable Resource and Policy Management Branch and the Lands Branch have no concerns with the EA proposals.

Adara Kaita
Crown Land Programs and Policy Manager
Conservation and Water Stewardship
Box 25, 200 Saulteaux Crescent
Winnipeg, MB R3J 3W3
Cell: (204) 945-6301
F: (204) 948-2197