

APPENDIX A – DEPARTMENT OF FISHERIES AND OCEANS

Amy, Kevin

Subject: FW: Sturgeon Road Bridge Replacement (DFO file WI-11-1776)

From: Schwartz, Todd [<mailto:Todd.Schwartz@dfo-mpo.gc.ca>]
Sent: Tuesday, December 06, 2011 05:03 PM
To: Amy, Kevin
Cc: bebenspanger@winnipeg.ca <bebenspanger@winnipeg.ca>; RodneyPenner@winnipeg.ca <RodneyPenner@winnipeg.ca>; BillEbenspanger@winnipeg.ca <BillEbenspanger@winnipeg.ca>; Hunnie, Kelly <Kelly.Hunnie@tc.gc.ca>; Long, Jeff (MWS) <Jeff.Long@gov.mb.ca>; Janusz, Richard <Richard.Janusz@dfo-mpo.gc.ca>
Subject: RE: Sturgeon Road Bridge Replacement (DFO file WI-11-1776)

Hi Kevin,

Re: Sturgeon Road Bridge Replacement (DFO file Wi-11-1776)

Based on the plans provided by courier dated August 23, 2011 and the plans and information provided by email on November 10, 2011, Fisheries and Oceans Canada feels that your project is likely to be low risk to fish and fish habitat. Provided that your plans are implemented as described and appropriate mitigation measures in the City of Winnipeg's "Best Management Practices Handbook for Activities in and Around the City's Waterways and Watercourses" are followed, DFO has concluded that your proposal is not likely to result in impacts to fish and fish habitat.

You will not need to obtain a formal approval from DFO in order to proceed with your proposal.

Please notify this office at least 10 days before starting the work. A copy of this letter should be kept on site while the work is in progress.

If the plans have changed or if the description of your proposal is incomplete you should contact this office to determine if the advice in this letter still applies.

Please be advised that any impacts to fish and fish habitat which result from a failure to implement this proposal as described could lead to corrective action such as enforcement.

This Letter of Advice does not release you from the responsibility for obtaining any other approvals that may be required under federal, provincial or municipal legislation.

If you have any questions please contact Todd Schwartz at our Winnipeg office at (204) 983-4231, by fax at (204) 984-2402, or by email at Todd.Schwartz@dfo-mpo.gc.ca.

Todd Schwartz

Telephone/ Téléphone: 204 983-4231
Facsimile / Télécopieur: 204 984-2402
Email / Courriel: Todd.Schwartz@dfo-mpo.gc.ca

Fish Habitat Biologist.
Manitoba District.

Biologiste, Habitat du poisson
District du Manitoba

Winnipeg Office.
Central and Arctic Region.
Fisheries and Oceans Canada.
501 University Crescent.
Winnipeg, MB R3T 2N6.
Government of Canada.

Bureau de Winnipeg
Région du Centre et de l'Arctique
Pêches et Océans Canada
501 University Crescent
Winnipeg (Manitoba) R3T 2N6
Gouvernement du Canada

**For more information on Fish and Fish Habitat and DFO Reviews Visit our Website
Oceans and Fish Habitat** http://www.dfo-mpo.gc.ca/oceans-habitat/index_e.asp

From: Amy, Kevin [<mailto:kevin.amy@stantec.com>]
Sent: 2011–November-10 12:48 PM
To: Schwartz, Todd
Cc: Wood, Brian; Boissonneault, Mike
Subject: RE: Sturgeon Road Bridge Replacement (DFO file WI-11-1776)

Todd,

See our response to your inquiries in blue below.

Kevin Amy, M.Sc., P.Eng.
Project Manager
Stantec
100 - 1355 Taylor Avenue
Winnipeg MB R3M 3Y9
Ph: (204) 488-5743
Fx: (204) 284-4795
Cell: (204) 981-3481
kevin.amy@stantec.com
stantec.com

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 Please consider the environment before printing this email.

From: Boissonneault, Mike
Sent: Thursday, October 27, 2011 2:49 PM
To: Amy, Kevin
Cc: Wood, Brian
Subject: FW: Sturgeon Road Bridge Replacement (DFO file WI-11-1776)

FYI

From: Schwartz, Todd [<mailto:Todd.Schwartz@dfo-mpo.gc.ca>]
Sent: Tuesday, August 23, 2011 6:16 PM
To: Boissonneault, Mike
Subject: Sturgeon Road Bridge Replacement (DFO file WI-11-1776)

Hi Mike,

Re: Sturgeon Road Bridge Replacement over Sturgeon Creek.

Can you please confirm or provide the following:

1) Can you confirm that the new alignment is something like what I've drawn in pink in the attached Google Earth Image.

<<GoogleEarth_Image.jpg>>

The existing site plan and the proposed site plan (with the existing bridge shown on it) are attached.

2) How will the existing bridge and piers be demolished to keep debris out of Sturgeon Creek (all I gather is winter removal and scraping debris off the ice)? Are the existing piles being excavated, pulled out, or broken off at or below streambed? Are the demolition works being isolated from the stream?

The demolition of the northbound structure is anticipated to be completed in July 2012 and the southbound structure in November 2012. The superstructure is anticipated to be cut into manageable pieces and removed by a crane. Floating silt fence will be placed below the areas being cut to gather any debris that may fall into the river. Once the superstructure is removed the piers and abutment would be removed next. To remove the piers a rock berm would be required to allow access to the piers. The berm would be sized such that the majority of debris from the demolition of the piers would fall onto the berm and thus be able to be taken away. The berms would be surrounded by floating silt fences. The piles would then be removed to 600mm below the river bottom. Once the piles are removed the berm would be removed via machines and subsequently the silt fence taken out of the water. The berms would be required at both abutments for the northbound structure in July 2012 and at both abutments for the southbound structure in 2013. The existing concrete slope paving near the abutments would be removed as the berm is removed. The abutment would be demolished in the dry but will be surround by silt fence to contain the materials on land.

The final project schedule has altered our demolition plan from the original submission. Upon review please contact me so can discuss the demolition and mitigation measure requirements.

3) Are you proposing any isolation methods (beyond the steel casing) for installation of the new caissons or is that not necessary?

We are not proposing any further isolation methods beyond the use of a steel casing, seated into the ground to contain the caisson works within.

4) Are there any temporary stream crossings proposed?

At this time we are not proposing any temporary stream crossings.

5) The City of Winnipeg project manager is Bill Ebenspanger.

Please let me know so I can complete my review of this project.

Todd Schwartz

Telephone/ Téléphone: 204 983-4231

Facsimile / Télécopieur: 204 984-2402

Email / Courriel: Todd.Schwartz@dfo-mpo.gc.ca

Fish Habitat Biologist.
Manitoba District.
Winnipeg Office.
Central and Arctic Region.
Fisheries and Oceans Canada.
501 University Crescent.
Winnipeg, MB R3T 2N6.
Government of Canada.

Biologiste, Habitat du poisson
District du Manitoba
Bureau de Winnipeg
Région du Centre et de l'Arctique
Pêches et Océans Canada
501 University Crescent
Winnipeg (Manitoba) R3T 2N6
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Stantec

Stantec Consulting Ltd.
100 – 1355 Taylor Avenue
Winnipeg, MB, R3M 3Y9
Tel: (204) 928-8840
Fax: (204) 284-4795

August 23 2011
File: 113731590

Department of Fisheries and Oceans
Central and Arctic Region
501 University Crescent
Winnipeg, MB R3T 2N6

Attention: Todd Schwartz, Fish Habitat Biologist

Dear Mr. Schwartz,

Reference: Sturgeon Bridge Replacement, Winnipeg, Manitoba

DETAILS OF WORK:

The City of Winnipeg proposes to replace the existing Sturgeon Road bridge over Sturgeon Creek. The existing bridge is a three (3) span, four lane, concrete bridge founded on precast concrete piles.

The replacement bridge is proposed to be twin structures, three spans, approximately 58 m long, with concrete abutments founded on steel driven piles and concrete pier caps supported by rock socketed caissons. A drawing showing a general arrangement of the proposed replacement bridge is attached.

We are seeking approval for this project under the Fisheries Act. Removal of the existing abutments and pier may cause some minimal disturbance to the Sturgeon Creek but this disturbance is extremely temporary and short term. The construction of the proposed bridge should not disturb Sturgeon Creek and aquatic life within. The proposed construction schedule is set for March 2012 through October 2013.

The installation of the proposed steel H-piles at the abutments should not affect the fish habitat or aquatic environment provided care is taken during installation. The installation of the piles requires use of a pile driving crane, either diesel or gravity drop hammer. The piles are placed into their surveyed location and driven into the ground until they reach the specified elevation, as determined by the criteria developed during the geotechnical investigation. The proposed abutment piles are located outside of Sturgeon Creek.

Construction of the rock socketed caissons shall consist of a steel sleeve with a concrete shaft installed down to bedrock. At bedrock, a rock socket core will be drilled into the bedrock for reinforced concrete placement. The pier caissons are located within the creek and therefore will only be construction outside of the in stream work restriction period. To construct the caissons, a steel sleeve is placed into the water at the proposed location and the shaft is drilled through the

Reference: Sturgeon Bridge Replacement, Winnipeg, Manitoba

steel sleeve. The earth material is removed with an auger bit, placed on the adjacent embankment. This material is later removed offsite. Until that time, the material will be covered with poly overnight.

Once the piles and rock socketed caissons have been installed the abutments and pier caps can be constructed. Construction of the caps will comprise of standard concrete construction practice. Untreated wood forms will be used to support the wet concrete until it hardens. The proposed abutments are located outside of the existing waterway and therefore construction of the abutments will not adversely affect the environment. The pier caps are within the footprint of the creek, however are well above the 100 year flood level and therefore construction of the pier caps will not adversely affect Sturgeon Creek.

A crane or launching system will be used to place the box girders from Sturgeon Road and as such will not have an effect on Sturgeon Creek.

Stantec is very familiar with current environmental regulations and have completed numerous bridge replacement projects involving environmental and navigation approvals. A hard copy of Stantec's letter requesting approval and the Letters of Advice received will form an integral part of the legal contract with the contractor and shall be on site through the duration of construction.

As part of our sediment and erosion control mitigation measures, Stantec will request the following task be implemented throughout the course of construction:

- Installation of silt fences isolating our abutment construction areas
- No in-water construction to be undertaken between April 1 through June 30.
- Non-reusable demolition or construction materials will be disposed of in an authorized waste disposal facility.
- Demolition materials will not be allowed to enter Sturgeon Creek.
- Construction will be halted during periods of heavy rainfall
- Stock piled backfill material will be covered with poly during heavy rainfall events and if to remain on site for an extended period of time
- Riprap to be placed to the waters edge and not within the river.
- The riprap will be clean fieldstone or quarried rock free of fines.
- Construction machinery may not be refueled or serviced within 100m adjacent to Sturgeon Creek or any body of water.
- All construction work shall be performed in a workmanship like manner and shall be in accordance with "Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat".
- At no time shall the arm of a back-ho or any other machinery extensions enter the waterway where exposed hydraulic cylinders, engines or other devices containing grease, oil, gas and other toxins could enter and contaminate the waterway and environment.

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Department of Fisheries and Oceans
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Reference: Sturgeon Bridge Replacement, Winnipeg, Manitoba

- The contractor shall have on site at all times, oil absorbent pads in the event of an oil spill or accidental submergence of toxin covered machinery occurs.
- The excavated material for abutment construction shall be placed where it is not likely to erode or be washed into the waterway.

Please review the proposed work, Environmental Assessment Report, photographs, and the attached General Arrangement drawing and provide feedback.

Please contact the undersigned if you require further information or clarification.

Sincerely,



Mike Boissonneault, P.Eng
Associate, Project Manager
Tel: (204) 488-5742
Fax: (204) 284-4795
Cell: (204) 799-7474
mike.boissonneault@stantec.com

Attachment: Environmental Assessment
Site Photographs
Registered General Arrangement Drawing

A Contact Information

Proponent:

City of Winnipeg, Public Works Department
1155 Pacific Avenue
Winnipeg, MB R3E 3P1
(204) 783-1135
www.city.winnipeg.mb.ca

Consultant:

Stantec Consultants Ltd.
603-386 Broadway Avenue
Winnipeg, MB R3C 3R6
(204) 942-2505
(204) 942-2548
brian.wood@stantec.com

B Location of Proposed development

Name of Nearest Community: Winnipeg

Municipality, District, Township, County, Province: City of Winnipeg, Manitoba

Name of Watercourse(s) or Water body(ies) likely to be impacted: Sturgeon Creek

Coordinates of the Proposed Development: 14U 623630(easting), 5526764(northing)

C Description of the aquatic environment

C.1 TYPE OF WATERCOURSE

Sturgeon Creek is a freshwater stream and tributary to the Assiniboine River.

C.2 PHYSICAL AND BIOLOGICAL CHARACTERISTICS OF THE SITE

C.2.1 PHYSICAL CHARACTERISTICS

Channel Width: Channel width at the current Sturgeon Bridge site is 51 meters.

Flow: The water flow is south/southeast in direction, confined to the channel and perennial in nature.

Water Depth: Water depth at the Sturgeon Creek Bridge is 1.5 meters. At this depth, it is unlikely that overwintering habitat is available for fish at the proposed development site.

Substrate type and density: The predominant substrate types in the bed of the watercourse are clay and sand, with densities of approximately 80% clay and 20% sand. Soft substrates to a depth of 6-12 inches in the stream bed may support benthic invertebrates, which may in turn provide forage for species such as white suckers, shorthead redhorse, and channel catfish.

Aquatic Vegetation type and density: Although in-stream vegetation is not present immediately beneath the Sturgeon Creek Bridge, within 10-15 meters of the bridge, cattails beds are present up- and downstream, in approximately 5-10% of the wetted width of the watercourse (Photos 1-6). In addition, the presence of grasses and sedges in the creek channel may provide spawning habitat for northern pike during spring flood conditions.

C.2.2 BIOLOGICAL CHARACTERISTICS

C.2.2.1 Presence of Fish Species

The list of fish species present in Sturgeon Creek presented in Table C-1 is compiled from Scott and Crossman (1973), Stewart and Watkinson (2004) and Manitoba Conservation, Fisheries Branch (1998). Other species may exist within the area, but their presence has not been confirmed.

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STURGEON ROAD BRIDGE REPLACEMENT AND ROADWORKS

Table C-1: Fish Species Inhabiting the Assiniboine River System¹			
Systematic Name	Common Name	Systematic Name	Common Name
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	<i>Ictiobus cyprinellus</i>	Bigmouth Buffalo
<i>Acipenser fulvescens</i>	Lake Sturgeon	<i>Moxostoma anisurum</i>	Silver Redhorse
<i>Hiodon alosoides</i>	Goldeye	<i>Moxostoma erythrurum</i>	Golden Redhorse
<i>Hiodon tergisus</i>	Mooneye	<i>Moxostoma macrolepidotum</i>	Shorthead Redhorse
<i>Cyprinus spilopetra</i>	Spotfin Shiner	<i>Ameiurus melas</i>	Black Bullhead
<i>Luxilus cornutus</i>	Common Shiner	<i>Ameiurus nebulosus</i>	Brown Bullhead
<i>Macrhybopsis storeriana</i>	Silver Chub	<i>Ictalurus punctatus</i>	Channel Catfish
<i>Macrhybopsis margarita</i>	Pearl Dace	<i>Noturus flavus</i>	Stonecat
<i>Notemigonus crysoleucas</i>	Golden Shiner	<i>Noturus gyrinus</i>	Tadpole Madtom
<i>Notropis atherinoides</i>	Emerald Shiner	<i>Esox lucius</i>	Northern Pike
<i>Notropis blennioides</i>	River Shiner	<i>Umbra limi</i>	Central Mudminnow
<i>Notropis dorsalis</i>	Bigmouth Shiner	<i>Coregonus artedii</i>	Lake Whitefish
<i>Notropis heterodon</i>	Blackchin Shiner	<i>Percopsis omiscomaycus</i>	Trout-perch
<i>Notropis heterolepis</i>	Blacknose Shiner	<i>Lota lota</i>	Burbot
<i>Notropis hudsonius</i>	Spottail Shiner	<i>Culaea inconstans</i>	Brook Stickleback
<i>Notropis stramineus</i>	Sand Shiner	<i>Pungitius pungitius</i>	Ninespine Stickleback
<i>Notropis texanus</i>	Weed Shiner	<i>Cottus cognatus</i>	Slimy Sculpin
<i>Phoxinus eos</i>	Northern Redbelly Dace	<i>Ambloplites rupestris</i>	Rock Bass
<i>Phoxinus neogaeus</i>	Finescale Dace	<i>Pomoxis nigromaculatus</i>	Black Crappie
<i>Pimephales notatus</i>	Bluntnose Minnow	<i>Etheostoma exile</i>	Iowa Darter
<i>Pimephales promelas</i>	Fathead Minnow	<i>Etheostoma nigrum</i>	Johnny Darter
<i>Platygobio gracilis</i>	Flathead Chub	<i>Perca flavescens</i>	Yellow Perch
<i>Rhinichthys cataractae</i>	Longnose Dace	<i>Percina caprodes</i>	Logperch
<i>Rhinichthys obtusus</i>	Western Blacknose Dace	<i>Percina maculata</i>	Blackside Darter
<i>Rhinichthys atratulus</i>	Blacknose Dace	<i>Percina shumardi</i>	River Darter
<i>Semotilus atromaculatus</i>	Creek Chub	<i>Stizostedion canadense</i>	Sauger
<i>Carpionodes cyprinus</i>	Quillback	<i>Stizostedion vitreum</i>	Walleye
<i>Catostomus commersoni</i>	White Sucker	<i>Aplodinotus grunniens</i>	Freshwater Drum

¹List compiled from Scott and Crossman (1973), Stewart and Watkinson (2004) and MB Conservation, Fisheries Branch (1998). Additional species may exist within the study area, but their presence has not been confirmed.

C.3 DRAWINGS OR PHOTOGRAPHS OF AQUATIC ENVIRONMENT

Immediately beneath the Sturgeon Bridge, and within 20 meters of the development site, there is minimal in-stream vegetation. Sedges and grasses line the edge of the wetted channel and may provide a slight degree of cover for fish. No large woody debris is present at the proposed development site. No shrubs or trees create overhanging riparian vegetation within 20 meters of the (Photos 1-5).

A relatively large cattail patch lies approximately 25 meters upstream of the Sturgeon Bridge development site. This cattail patch extends 53 meters into the stream channel and spans approximately 100 meters, at river right within the bankfull channel (Photo 6).

Although the riparian zone is designated as a Grassland Naturalization Area by the City of Winnipeg Park and Open Space Division, for the most part, this zone consists of a narrow (+/- 20 m) strip of grasses and cattails, with very little shrub or treed cover. Shrubs and small trees become more common in the riparian zone closer to Portage Avenue and Grant's Old Mill (Photo 7).

A seasonally operating grain mill and water wheel lie approximately 350 meters downstream of Sturgeon Bridge (Photo 8). The construction of a water diverting dam associated with this mill would obstruct fish passage except for the operation of a fish ladder (Photo 9-10). The fish ladder is maintained on a seasonal basis by the Naturalist Services Branch of the Winnipeg Public Works Department. Fish species using the ladder are periodically enumerated through the use of a fish trap and gill nets (Tuchscherer pers. comm.).

Portage Avenue crosses Sturgeon Creek approximately 375 meters downstream of the development site. Downstream of the Portage Bridge, the riparian zone associated with Woodhaven Park includes many more mature trees, with vegetation overhanging the wetted width of Sturgeon Creek. Downstream of the Portage Avenue Bridge, five riffles occur within Woodhaven Park (Photos 11-14) breaking the otherwise consistent run of Sturgeon Creek to the Assiniboine River. These riffles are composed of rocks and boulders ranging from 10-60 cm in diameter. In each riffle, 10-80% of the under-water surfaces of cobble, rocks and boulders were covered with green-brown filamentous algae (Photo 15).

D Description of the Proposed Construction Works

D.1 PROPOSED BRIDGE REPLACEMENT AND ROADWORKS

The existing concrete bridge on Sturgeon Road over Sturgeon Creek will be removed and replaced in 2012 through 2013. The new bridge is proposed to be constructed approximately 3 metres higher than the existing structure to facilitate an Active Transportation Trail under the new bridge. Sturgeon Road will need to be reconstructed due to the increase in bridge elevation.

D.2 CONSTRUCTION METHOD, MATERIALS AND EQUIPMENT

The replacement structure is proposed to be constructed in phases, Northbound structure first in 2012, followed by the construction of the southbound structure in 2013.

The proposed bridge is a precast concrete box girder bridge founded on rock socketed caissons at the piers and driven steel piles at the abutments. Construction of the rock socketed caissons shall consist of a steel sleeve with a concrete shaft installed down to bedrock. At bedrock, a rock socket core will be drilled into the bedrock for reinforced concrete placement. The pier caissons are located within the creek and therefore will only be construction outside of the in stream work restriction period. To construct the caissons, a steel sleeve is placed into the water at the proposed location and the shaft is drilled through the steel sleeve. The earth material is removed with an auger bit, placed on the adjacent embankment. This material is later removed offsite. Until that time, the material will be covered with poly overnight.

The abutment piles will be driven with a diesel hydraulic hammer pile driving crane. The crane will be positioned such that exhaust and or diesel spray will not enter the waterway. The crane shall be refueled over 100 metres away from Sturgeon Creek.

The bridge abutments and pier caps are proposed to be cast in place concrete, constructed by conventional methods.

The bridge superstructure is proposed to be precast concrete box girders which are prefabricated. The prefabricated box girders will be installed with a crane positioned on Sturgeon Road.

D.3 AFFECTED AREA

The only area affected by the construction of the proposed replacement structure would be around the caissons. However, the steel sleeves for the caissons create a barrier, protecting the waterway and aquatic life within during installation of the rock socketed caissons.

D.4 DRAWINGS

Attached is our Navigable Waters application drawing which has been registered in the Winnipeg land titles office. This general arrangement drawing illustrates the proposed structure, exiting structure and hydraulic design water elevations.

D.5 FISH AND FISH HABITAT PROTECTION MEASURES

Details for Preventative Measures in demolition and construction activity were adapted from Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (Manitoba Natural Resources and Department of Fisheries and Oceans 1996) and the Habitat Conservation and Protection Guidelines Developed from the Policy for the Management of Fish and Fish Habitat (Department of Fisheries and Oceans 1986).

- Removing the debris from the ice.
- Installation of silt fences isolating our abutment construction areas if the creek thaws (this is not anticipated to be an issue as construction should be completed during the winter months).
- No in-water construction to be undertaken from April 1 through June 30 (i.e. spring through summer spawning windows).
- Non-reusable demolition or construction materials will be disposed of in an authorized waste disposal facility.
- Demolition materials will not be allowed to enter Boyne River.
- Construction will be halted during periods of heavy rainfall (this is not anticipated to be an issue as construction should be completed during the winter months).
- Stock piled backfill material will be covered with poly during heavy rainfall events and if to remain on site for an extended period of time (this is not anticipated to be an issue as construction should be completed during the winter months).
- Riprap to be placed to the water's edge and not within the river.
 - The riprap will be clean fieldstone or quarried rock free of fines.
- Construction machinery may not be refueled or serviced within 100m adjacent to Bunn's Creek or any body of water.
- All construction work shall be performed in a workmanship like manner and shall be in accordance with "Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat".
- At no time shall the arm of a back-ho or any other machinery extensions enter the waterway where exposed hydraulic cylinders, engines or other devices containing grease, oil, gas and other toxins could enter and contaminate the waterway and environment.
- The contractor shall have on site at all times, oil absorbent pads in the event of an oil spill or accidental submergence of toxin covered machinery occurs.
- The excavated construction materials shall be placed where they are not likely to erode or be washed into the waterway.

D.6 IMPLEMENTATION SCHEDULE

The presence of spring and summer spawning fish species constrains development to activities between early July and late March.

REFERENCES

Penner, Rodney. 2007. Fish Sampling Report 2007. City of Winnipeg Naturalist Services Branch. Accessed online at http://www.winnipeg.ca/publicworks/naturalist/ns/ff/animal_lists.asp, 25 October, 2010.

Penner, Rodney. 2006. Fish Sampling Report 2007. City of Winnipeg Naturalist Services Branch. Accessed online at http://www.winnipeg.ca/publicworks/naturalist/ns/ff/animal_lists.asp, 25 October, 2010.

Penner, Rodney. 2005. Fish Sampling Report 2007. City of Winnipeg Naturalist Services Branch. Accessed online at http://www.winnipeg.ca/publicworks/naturalist/ns/ff/animal_lists.asp, 25 October, 2010.

Department of Fisheries and Oceans Canada. 1998. Habitat Conservation and Protection Guidelines Developed from the Policy for the Management of Fish and Fish Habitat (1986). Cat. No. Fs 23-352/199E

Manitoba Conservation, Fisheries Branch. 1998. City of Winnipeg - Fish Species Lists Fish species found in the Assiniboine River. Accessed online at <http://winnipeg.ca/publicworks/naturalist/ns/ff/FishReports/Assiniboine.html>, on 3 November, 2010.

PERSONAL COMMUNICATIONS

Tuchscherer, Kristin. 2010. Education Coordinator - Creeks and Streams, City of Winnipeg, Public Works Department, Parks and Open Space Division, Naturalist Services Branch, Winnipeg. Fish Sampling Species Summary from Sturgeon Creek 2010. Email to Shirley Bartz, Wildlife Biologist, Stantec Consulting Ltd., Broadway Office, Winnipeg, MB

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STURGEON ROAD BRIDGE REPLACEMENT AND ROADWORKS

PHOTOS



Photo #1: Sturgeon Creek, river right - looking upstream from Sturgeon Bridge, October 14, 2010.



Photo #2: Sturgeon Creek, river left - looking upstream from Sturgeon Bridge, October 14, 2010.

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PHOTOS
April 8, 2011



Photo #3: Sturgeon Creek, river right - looking downstream from Sturgeon Bridge, October 14, 2010.



Photo #4: Sturgeon Creek, river left - looking downstream from Sturgeon Bridge, October 14, 2010.

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PHOTOS
April 8, 2011



Photo #5: Sturgeon Creek, river right - looking downstream from Sturgeon Bridge, October 14, 2010.



Photo #6: Sturgeon Creek, large cattail patch upstream river right of Sturgeon Bridge, October 14, 2010.

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Photo #7: Sturgeon Bridge as seen from Grant's Old Mill, October 14, 2010.



Photo #8: Sturgeon Creek, Old Grant's Mill, looking upstream from Portage Bridge, October 14, 2010.

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STURGEON ROAD BRIDGE REPLACEMENT AND ROADWORKS

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April 8, 2011



Photo # 9: Sturgeon Creek, upstream entrance to fish ladder at Old Grant's Mill, October 14, 2010.



Photo # 10: Sturgeon Creek, downstream exit to fish ladder at Old Grant's Mill, October 14, 2010.

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Photo # 11: Sturgeon Creek, first riffle downstream of Portage Bridge, October 14, 2010.



Photo # 12: Sturgeon Creek, second riffle downstream of Portage Bridge, October 14, 2010.

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Photo # 13: Sturgeon Creek, third riffle downstream of Portage Bridge, October 14, 2010.



Photo # 14: Sturgeon Creek, fourth riffle downstream of Portage Bridge, October 14, 2010.

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Photo # 15: Sturgeon Creek, algae on riffle rocks, October 14, 2010.

Sturgeon Road



Looking north



Looking east



Looking east



Looking north



Looking south



Looking north across Sturgeon Road Bridge



Looking south towards Sturgeon Road Bridge and Portage Avenue



Southwest driveway access, looking west from Sturgeon Road



Southwest driveway access, looking east towards Sturgeon Road

Sturgeon Road



Northeast Grace Hospital Access, looking east from Sturgeon Road



Looking south towards Portage Avenue



Northeast LDS Outfall, looking west



Southwest Esso property, looking southeast



Sturgeon Creek Parkway signage



Paved parkway access at north end of bridge, looking east



Paved parkway access at north end of bridge, looking west across Sturgeon Road



Paved parkway access at north end of bridge, looking north along Sturgeon Road



Gravel parkway access at north end of bridge, looking north

Sturgeon Road



West sidewalk north of bridge,
looking north along Sturgeon Road



Paved/Gravel pathway along north
side of creek, looking west towards
Sturgeon Road Bridge

