APPENDIX E

ENVIRONMENTAL REGULATORY INFORMATION

Request for Review

Please note that Guidance on Submitting a Request for Review is available at the end of this form. All information must be provided or your application will be considered incomplete.

1. Contact information

Name of Business/Company:

City of Winnipeg

Name of Proponent:

Ryan Gama

Mailing address:

Water and Waste Department
110-1199 Pacific Avenue
Winnipeg, MB
R3E 3S8

Telephone No. :

204-986-2336

Email:

rgama@winnipeg.ca

Select additional contact:
Contractor/Agency/Consultant *(if applicable):*

Maja Crawley
KGS Group

Mailing address:

3rd Floor, 865 Waverley Street
Winnipeg, MB
R3T 5P4

Telephone No. :

204-330-3766

Email:

mcrawley@kgsgroup.com

Is the Proponent the main/primary contact? (•) Yes ( ) No

If no, please enter information for the primary contact or any additional contact.

2. Project Description

If your project has a title, please provide it.

2025 Outfall Program - Roland Outfall Rehabilitation

Is the project in response to an emergency situation*? ( ) Yes (•) No

Does your project involve work in water? (•) Yes ( ) No

If no, is the work below the ordinary high water mark*? (•) Yes ( ) No

**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*

What are you planning to do? Briefly describe all project components you are proposing in or near water.

As part of the City of Winnipeg 2025 Outfall Program, the City has identified that the Roland Outfall located at 16 Watt Street along the Red River requires repair. The Roland Outfall (City of Winnipeg Asset # S-MA40011011) is a 3700 mm diameter CMP storm relief water outfall pipe that discharges to the Red River. The outfall is an important and necessary asset of the City of Winnipeg Sewer Management System.

The in and near water works proposed include pipe replacement, and the installation of rockfill columns and a riprap blanket to protect the infrastructure and riverbank from further damage and erosion. All out-of-water work is proposed to be completed this Winter 2026 between January and March during low flow. If a Fisheries Act Authorization is determined to be required for the in-water riprap work below the ice scour, we will plan to complete the in-water riprap work in Winter 2027, otherwise it will be completed in Winter 2026 with the above ice work.

The work will be below the OHWM (El. 225.59 m), and in-water works are anticipated as the outfall invert (El. 221.112 m) is below the Average Winter River Level (AWRL, El. 222.55 m). The following in and near water works will be required to complete the outfall repairs (see Attachment 1):
- Installation of a temporary clay cofferdam to facilitate a safe, dry work environment for outfall repairs, if required. Please note that our Team has observed current water levels this Fall to be lower than average, and as such we are expecting the pipe invert to be above the ice scour elevation for this Winter 2026. We do not anticipate needing a temporary clay cofferdam to complete the pipe repair works. This will be verified by our Team prior to construction.
- Remove existing 55 m of 3700 mm diameter CMP (corrugated metal pipe) and replace with 55 m of 3700 mm diameter SPCSP (structural plate corrugated steel pipe).
- Installation of 2.10 m diameter rockfill columns embedded 1 m into the underlying till North and South of the existing outfall pipe alignment. These will be installed below the OHWM, vibro-compacted to promote rock consolidation prior to installation of new pipe, and covered with a 0.6 m clay cap.
- Regrade the riverbank slope between the AWRL and ASRL by excavation to a stable 6H:1V slope.
- Installation of a 1809 sq.m. riprap blanket extending from OHWM (El. 225.59 m) to 10 m beyond AWRL (El. 222.55 m). Riprap installed above AWRL (1209 sq.m.) will be sub-cut approximately 600 mm into the bank. There will be 600 sq.m. of riprap installed below the AWRL, with 505.1m2 of this area being below the Ice Scour (El. 221.95) - as shown in our "Substate Types Below Ice Scour Affected by the Project" table included on the attached Drawing.
- Erosion Control, Site Restoration and Re-vegetation (tree planting, seeding) as required.
- General site regrading as required.

How are you planning to do it? Briefly describe the construction materials, methods and equipment that you plan to use.

Construction Schedule
The Roland Outfall works are scheduled between January 1 and March 15, 2026 during low flow and water levels. Every reasonable effort will be made to minimize the duration of construction activity and disturbance to the bed and shore at the project location. Site restoration will be completed following the conclusion of the work in spring before June 30, 2026.

Site Access
Site access and works near the river edge will be conducted during low flow (winter) and during frozen ground and ice conditions. Access by fording is to be restricted to one crossing location, and traffic is to be limited. Minor regrading of the riverbank area may be required for equipment access; it will be performed by excavation only. Under no circumstances will any fill be allowed on the riverbank for equipment access. In general, any excavation required shall proceed from the top of bank area down to the bottom so as not to jeopardize riverbank stability. All material excavated shall be disposed of off-site immediately upon excavation. The stockpiling of excavated material at the site will not be allowed. Upon completion of the works, the bank shall be restored to match existing riverbank contours and geometry.

Sediment and Erosion Control
Silt fences and erosion control blankets will be used to prevent the release of sediment laden runoff into the river during excavation or other construction activities. These protection measures will be maintained until re-vegetation has been re-established. Any sediment, sand, or debris introduced to the ice surface shall be removed upon project completion and prior to spring thaw. Effective long term erosion and sediment control measures (e.g. erosion control blankets, sediment barriers, straw mulch, silt fences) will be used to prevent any construction activities from contributing sediment to the water bodies. This includes stabilizing and seeding disturbed areas after construction and ensuring they are reclaimed to vegetation within one growing season. In addition to the above, all work will be performed in accordance with an Environmental Protection Plan approved by the Contract Administrator.

Decanting Existing Water from Pipe (as required)

All existing river water from inside the pipe and cofferdam shall be pumped back into the river. The Contractor shall ensure that the pumped water does not have elevated levels of sediment and is directed to an appropriately sized energy dissipating outlet device to prevent bed or bank erosion at the point of discharge into the natural water body. The decanting activities shall be monitored continuously to address the turbidity of the water. Contractor will continuously monitor the pump pressure. Contractor shall cease pumping operation prior to taking in sediment. All sediment material shall then be pumped into a storage tank and is to be disposed of off site. The water withdrawal rates shall not exceed 10% of the instantaneous stream flow at the time. Vacuum unit and pumping systems size, screens, and capacity will be sized according to the Department of Fisheries and Oceans' Freshwater Intake End-of-Pipe Fish Screening Guidelines to prevent debris blockage and fish mortality. As stated above, we have observed water levels to be lower than average and as such, we do not expect a temporary clay cofferdam to be required to complete the necessary pipe repairs this Winter 2026.

Repairs
To facilitate a safe, dry working environment within the pipe, a temporary clay cofferdam will be installed, if required, depending on the ice thickness at the outfall. It will be located as close to the outfall outlet as possible to minimize the footprint below the ice scour level (estimated to be 221.95 m). Every effort will be made to limit the duration of in-water work. Estimated time to complete the cofferdam and complete the pipe works is 15-20 days. Once pipe repairs and riprap installation in front of the pipe is complete, the cofferdam material will be completely removed and hauled away off site. As stated above, we have observed water levels to be lower than average and as such, we do not expect a temporary clay cofferdam to be required to complete the necessary pipe repairs this Winter 2026.

Riverbank Regrading
Native riverbank grass seed installation, silt fencing, and erosion control blanket shall be used at the mid and lower bank as erosion mitigation. Back-filled excavations and areas disturbed by construction activities shall be regraded to match the existing river bank contours. The materials will consist of clean clay fill, compacted in 150 mm lifts. All deleterious materials shall be removed off-site during the regrading operations. Restorations will be completed by June 30, 2026.

Construction Equipment Required:
A loader, excavator/backhoe, and skid steer will be required to complete the repair works. Other smaller equipment that may be required includes appropriately sized pumps, small hand tools, and generators.

Plans, Maps, and Affected Area:
See attached documents (Attachment 1).

Include a site plan (figure/drawing) showing all project components in and near water. Provide file name or location where this can be found in the Request for Review information package for map(s) site plan, or diagrams as required.

Are details attached? (•) Yes ( ) No

Identify which work categories apply to your project.

- [ ] Aquaculture Operations
- [ ] Aquatic Vegetation Removal
- [ ] Beaches
- [ ] Berms
- [ ] Blasting / Explosives
- [ ] Boat Houses
- [ ] Boat Launches / Ramps
- [ ] Breakwaters
- [ ] Bridges
- [ ] Cable Crossings
- [ ] Causeways
- [ ] Culverts
- [ ] Dams
- [ ] Dewatering / Pumping
- [ ] Docks

**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*

- [x] Dredging / Excavation
- [ ] Dykes
- [ ] Fishways / Ladders
- [ ] Flow Modification (hydro)
- [ ] Groundwater Extraction
- [ ] Groynes
- [ ] Habitat Restoration
- [ ] Ice Bridges
- [ ] Log Handling / Dumps
- [ ] Log Removal
- [ ] Moorings
- [ ] Open Water Disposal
- [ ] Piers
- [ ] Pipelines
- [x] Riparian Vegetation Removal
- [ ] Seismic Work
- [x] Shoreline Protection
- [ ] Stormwater Management Facilities
- [ ] Surface Water Taking
- [ ] Tailings Impoundment Areas
- [x] Temporary Structures
- [ ] Turbines
- [ ] Water Control Structures
- [ ] Water Intakes / Fish Screens
- [x] Water Outfalls
- [ ] Watercourse Realignment
- [ ] Weirs
- [ ] Wharves
- [ ] Wind Power Structures
- [ ] Other (Please specify)

Was your project submitted for review to another federal or provincial department or agency? (•) Yes ( ) No

If yes, indicate to whom and associated file number(s).

Transport Canada - Navigation Protection Program - Registry Number TBD.

3. Project Location

Coordinates of the proposed project Latitude 49°54'11.74"N N Longitude 97° 6'25.93"W W

OR UTM zone ; Easting Northing

Include a map clearly indicating the location of the project as well as surrounding features.

Name of Nearest Community (City, Town, Village): Winnipeg

Municipality, District, Township, County, Province: Manitoba

Name of watershed (if applicable): Red River Watershed

Name of watercourse(s) or waterbody(ies) near the proposed project: Red River

Provide detailed directions to access the project site:

The project site is located in Winnipeg, Manitoba. Travel north along Main St (Route 52) less than a km, taking the right two lanes onto Disraeli Fwy (Route 42). In roughly 1.5 kms, take a slight right onto Talbot Ave (Route 37). Keep straight on Talbot Ave for approximately 1 km. At Watt Street (Route 30), take a right hand turn (head south). Take the following right hand turn after Desalaberry Ave. The outfall location is at the bend in this road.
See the location plan provided in the attached Habitat Assessment Report.

4. Description of the Aquatic Environment

**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*

Identify the predominant type of aquatic habitat where the project will take place.

- ○ Estuary (Estuarine)
- ○ Lake (Lacustrine)
- ◉ On the bank/shore at the interface between land and water (Riparian)
- ○ River or stream (Riverine)
- ○ Salt water (Marine)
- ○ Wetlands (Palustrine)

Provide a detailed description of biological and physical characteristics of the proposed project site.

The Roland Outfall is located along the east shoreline of the Red River in Winnipeg, MB as shown in the site location plan provided in the attached Habitat Assessment Report. The majority of the shoreline above the water level at the time of the assessment is low gradient, predominately boulders with trace amounts of clay, gravel, and cobble scattered throughout, as shown in the photographs provided in the assessment report. The Riparian vegetation consists primarily of willows, sedge, and dogbane within the first 10 metres by grasses and some trees. At the deepest area of the study reach the riverbed consisted of gravel/sand over compact clay, at nearshore the substrate consisted of soft compact clay and silt. This transitioned to a sand/silt/clay/gravel substrate, with the nearshore substrate consisting of soft compact clay and silt as shown in the substrate map in the Habitat Assessment Report.

The Red River and its tributaries provide year-round habitat for a variety of fish species such as Walleye (Sander vitreus), Sauger (Sander canadensis), Channel Catfish (Icatlurus punctatus), and Northern Pike (Esox lucius). Fish habitat within the survey area consisted mostly of low to moderate velocity run habitat over a mix of substrates consisting of various degrees of gravel, sand, soft to hard compact clay, silt, and patches of gravel, cobble, and boulder. Instream cover was limited to boulders and some large woody debris. The survey area is suitable for foraging throughout the open water season and would provide adequate overwintering habitat for fish. The survey area may also provide spawning habitat for a variety of species that spawn during the spring or early summer.

The Saskatchewan-Nelson River population of Lake Sturgeon which includes the Red River was recommended to be listed as "Endangered" by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) in 2017 but have not been added to the list of species protected under SARA. Bigmouth buffalo (Ictiobus cyprinellus) in the Red River is listed as "Special Concern" under Schedule 1 of the SARA, and is not afforded any additional protections. Neither species are listed under the Manitoba Natural Resources and Indigenous Futures Endangered Species and Ecosystems Act (ESEA).

Mapleleaf mussel (Quadrula quadrula) are native to the Red River. At time of the survey no live mussels or shells were observed. Mapleleaf are typically found in medium to large rivers, in substrates of firmly packed, coarse gravel and sand, and to a lesser extent firmly packed clay/mud. A large portion of the area surveyed at the Roland outfall site is overlaid by clay of both soft and hard compaction, with varying degrees of gravel and sand. No mussels were observed in the survey area but the firmer substrates with sand, gravel and/or cobble mixed with the firm clay would be considered suitable for Mapleleaf. Mapleleaf are listed as "Endangered" under the provincial ESEA and "Threatened" under the SARA and are protected under the provisions of both Acts.

This description should include information on aquatic species at risk*, their residence* and critical habitat* if found on the site. An overview of the distribution of aquatic species at risk* and the presence of their critical habitat* within Canadian waters can be found here.

Include representative photos of affected area (including upstream and downstream area) and clearly identify the location of the project.

5. Potential Effects of the Proposed Project

Have you reviewed the Pathways of Effects (PoE) diagrams that describe the type of cause-effect relationships that apply to your project?

◉ Yes ○ No

If yes, select the PoEs that apply to your project.

- ☒ Use of machinery on land / Alteration of riparian vegetation
- ☒ Use of machinery in water
- ☒ Placement of materials in water
- ☐ Removal of materials and aquatic vegetation from water
- ☐ Water level / Flow Modification
- ☐ Water Diversion
- ☐ Dewatering
- ☐ Detonation in or near water
- ☐ Introduction of underwater noise

*All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review

Will there be temporary or permanent changes to fish habitat*? (•) Yes ( ) No ( ) Unknown

If yes, provide a description.

Approximately 1681.3 sq.m. of fish habitat will be permanently altered below the OHWM associated with installation of the rockfill columns and riprap blanket. The riprap blanket will extend to approximately 10 m horizontally beyond the AWRL altering approximately 8.6 sq.m. of cobble/boulder/gravel, 0 sq.m. of gravel/sand over compact clay, 332.1 sq.m. of sand/silt/clay/gravel and 164.4 sq.m. of silt/clay substrates. While the riprap placed will be a permanent alteration of fish habitat, the natural conditions within the Red River typically fill in the interstitial areas between riprap materials and often cover the rock that is deposited at the toe of the banks. Studies conducted in the Red and Assiniboine Rivers have shown that overall fish abundance at riprap sites were significantly higher than at natural, unmodified bank sites (Watkinson, et al. 2004).

Is there likely to be a harmful alteration, disruption or destruction* of habitat used by fish? ( ) Yes (•) No ( ) Unknown

If yes, provide a description.

N/A

What is the footprint (area in square metres) of your project (include area within the riparian zone* and area below the ordinary high water mark*) both temporary (e.g., equipment access) and permanent (e.g., persist after completion) project components including all activities, structures, area of operations, etc. ?

Approximately 1681.3 sq.m. of riprap will extend from the OHWM, of which, 505.1 sq.m. will extend below the ice scour.

Is your project likely to change water flows or water levels? ( ) Yes (•) No ( ) Unknown

If yes, provide the flow rate of the source water body.

N/A

If your project includes withdrawing water, provide volume or flow rate of source water body, maximum daily intake rate, and duration of operation.

N/A

If your project includes permanent or temporary water control structures, provide the % of flow reduction.

N/A

If your project includes discharge of water, provide source, volume and rate.

The outfall is the release point of overflow storm and sewer water collected by the City of Winnipeg combined sewer system, the volume and rate is variable depending on rain storm events and spring melt, typically with no flows in winter.

Will your project cause death of fish? ( ) Yes (•) No ( ) Unknown

If yes, how many fish will be killed (for multi-year project, provide average)? What species and lifestages?

N/A

What is the time frame of your project?

The construction will start on 01/01/2026 and end by 03/15/2026

Work in water and the riparian zone will start on MM/DD/YYYY and end by MM/DD/YYYY

All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review

If applicable, the operation will start on MM/DD/YYYY and end by MM/DD/YYYY

If applicable, provide schedule for the maintenance.

No predetermined maintenance schedule.

If applicable, provide schedule for decommissioning.

No plans to decommission.

Are there additional changes to fish and fish habitat* that will happen outside of the time periods identified above? ○ Yes ◉ No

If yes, provide details.

N/A

Can you follow appropriate Timing Windows for all your project activities below the ordinary high water mark*? ◉ Yes ○ No

If yes, please provide the timing window you expect to follow below. If no, please include rationale as to why and any specific avoidance or mitigation measures you will employ.

Expected timeline that will be followed for all project activities below the OHWM is January 1 - March 15, 2026.

Have you considered and incorporated all options for redesigning and relocating your project to avoid causing risks to fish and fish habitat*?

◉ Yes ○ No

If yes, describe.

Outfall location and grades can't be changed due to upstream pipe network and the area of riprap placement was made as small as possible while providing the required bank stability.

Have you consulted DFO's Measures to Protect Fish and Fish Habitat to determine which measures apply to your project? ◉ Yes ○ No

Will you be incorporating applicable measures into your project? ◉ Yes ○ No

If yes, identify which ones. If no, identify which ones and provide reasons.

All of the Measures to protect fish will be implemented.

PREVENT THE DEATH OF FISH
- avoiding killing fish by means other than fishing
- avoiding using explosives in or near water
- planning in water work, undertaking or activity to respect timing windows to protect fish, their eggs, juveniles, spawning adults, and organisms upon which they feed and migrate

MAINTAIN FISH PASSAGE
- by avoiding changing flow or water level
- obstructing or interfering with the movement and migration of fish

ENSURE PROPER SEDIMENT CONTROL
- avoiding introduction of sediment in water like silts, clays, and sands
- developing and implementing an erosion and sediment control plan
- disposing of and stabilizing all excavated material above the high water mark or top of bank of nearby waterbodies and ensuring sediment re-entry to the watercourse is prevented
- heeding weather advisories and scheduling work to avoid wet, windy, and rainy periods that may result in high flow volumes and/or increase

All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review

erosion and sedimentation
- regularly monitoring the watercourse for signs of sedimentation during all phases of work, undertaking or activity and taking corrective action if required
- using biodegradable erosion and sediment control materials whenever possible and removing all exposed non-biodegradable erosion and sediment control materials once site is stabilized
- operating machinery on land in stable dry areas
- stopping work and containing sediment-laden water to prevent dispersal
- installing temporary clear span bridges to accommodate expected high water flows and to not damage erodible banks
- limiting the impacts to stream or shoreline banks

PREVENT ENTRY OF DELETERIOUS SUBSTANCES IN WATER
- avoiding depositing any deleterious substances in the watercourse
- developing a response plan to be implemented immediately in the event of a spill of a deleterious substance
- keeping an emergency spill kit on site
- stopping work and containing deleterious substances to prevent dispersal
- reporting any spills of sewage, oil, fuel or other deleterious materials whether near or directly into a waterbody
- ensuring clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse
- cleaning up and appropriately disposing of the deleterious substances
- planning activities near water such that materials and chemicals don't enter the watercourse, including grout, paint, primers, degreasers, rust solvents, pour concrete, blasting abrasives, and other chemicals
- maintaining all machinery on site in a clean condition and free of fluid leaks to prevent any deleterious substances from entering the water
- washing, refuelling and servicing machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water
- disposing all waste materials (including construction, demolition, excavation) above the high water mark of nearby waterbodies to prevent entry
- ensuring that building material used in a watercourse is handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish

Have you considered whether DFO standards and codes of practice apply to your project? ○ No ◉ Yes

If Yes, include a list.

Interim standard: in-water site isolation

Have you considered other avoidance and mitigation measures? ◉ No ○ Yes

If yes, include a list.

N/A

Are there any relevant measures that you are unable to incorporate? ○ Yes ◉ No

If yes, identify which ones.

N/A

Describe how the project design, construction and implementation of mitigation measures may impact fish passage and detail how fish passage will be maintained or altered, whether temporarily or permanently. If fish passage has not been considered, please indicate your rationale below.

Fish passage will not be altered temporarily or permanently as the project will not change flows or water levels, or obstruct or interfere with the movement and migration of fish. The project will take place outside of any fish migration or spawning periods.

All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review

What harmful impacts to fish and fish habitat* do you foresee after taking into account the avoidance and mitigation measures described above?

The permanent alteration to a 8.6 sq.m. area of cobble/boulder/gravel and 332.1 sq.m. area of sand/silt/clay/gravel substrate that is potential Mapleleaf mussel habitat.

Do these include effects on aquatic species at risk*? (•) Yes ( ) No

If yes, please describe, including which species, how many individuals will be harmed, harassed, or otherwise affected by the project, and how.

Bigmouth Buffalo is identified as being present in the subject area and is identified as "Special Concern"; however, the work will be done in the winter to avoid fish spawning and migration season, and there is no critical habitat identified in the area for the fish species.

Mapleleaf mussel are also identified as being present in the vicinity of the project site. In order to provide the required riverbank stabilization to protect the City asset, the riprap footprint will permanently alter 340.7 sq.m. of potential Mapleleaf mussel habitat.

Do these include effects on areas identified as the residence* or critical habitat* of an aquatic species at risk? (•) Yes ( ) No

If yes, please describe

Approximately 340.7 sq.m. of Mapleleaf mussel habitat will be lost due to the necessary extent of the riprap blanket.

Are there any aquatic invasive species* in the vicinity of your project area? (•) Yes ( ) No

If yes, identify which ones.

Spiny water flea and zebra mussels are known to be present in the Red River.

Does your project aim to, or will it be likely to, effect any of these aquatic invasive species? ( ) Yes (•) No

If yes, explain how.

N/A

6. Confirmation that the following are attached

- ☒ Site Plan (See Section 2)
- ☒ Map (See Section 3)
- ☒ Representative Photos (See Section 3)

7. Proponent signature

I, [redacted] (print name) certify that the information given on this form is to the best of my knowledge, correct and completed.

All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review

Signature

20/10/2025
Date

Information about the above-noted proposed work, undertaking or activity is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the Fish and Fish Habitat Protection Provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank number DFO PPU 680. Under the provisions of the *Privacy Act*, individuals have a right to, and on request shall be given access to, any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than “personal” information may be accessible or protected as required by the provision of the *Access to Information Act*.

Guidance on Submitting a Request for Review

This document explains the requirements for submitting a Request for Review by DFO under the fish and fish habitat protection provisions of the *Fisheries Act*. To determine whether you should request a review, follow the steps on DFO's Projects Near Water webpage.

Incomplete Requests for Review will be returned to the applicant without review by DFO. All information requested must be provided. If you attach documents to your application with additional information, you must still provide appropriate summaries in the spaces provided on the application form or your application will be considered incomplete.

Section 1: Contact Information

Provide the full legal name of the proponent and primary mailing address for the proponent. When the proponent is a company, identify the full legal registered name of the company.

If applicable, also provide the contact information of the duly authorized representative of the proponent. Please note that a copy of correspondence to Contractor/Agency/Consultant will also be sent to the proponent.

Section 2: Project Description

This information is meant to provide background about the proposed project. All components of the proposed project in or near water must be described.

Proponents should provide information about all phases of the project, i.e., the construction, operation, maintenance and closure phases for the proposed project.

All details about the construction methods to be used, associated infrastructure, permanent and temporary structures, type of structure (e.g., corrugated iron pipe or arch culvert), structure dimensions, building materials to be used, machinery and equipment to be used must also be provided. For example, the construction of **permanent structures** may require the construction of temporary structures such as temporary dikes, in conjunction with other associated activities like the withdrawal of water, land clearing, excavation, grading, infilling, blasting, dredging, installing structures, draining or removing debris from water. Similarly, the equipment and materials to be used may include hand tools, backhoes, gravel, blocks or armour stone (provide the average diameter), concrete (indicate if precast or poured in-water), steel beams or wood.

When physical structures in or near water are proposed, provide the plan and specifications for works within the riparian zone*, and works below the ordinary high water mark*. For example, for culverts and bridges, the proponent must indicate the type (e.g., corrugated iron pipe, box culvert), length and width of the existing structure, describe the type, length and width of the proposed structure, and specify the area (in square metres) of any riprap installed at the structure's inlet and outlet, or around the abutments, below the ordinary high water mark*.

Include side/profile/overhead drawings and site plans of a sufficient size and scale that provide clear visual representation of the above information.

Section 3: Project Location

The purpose of this information is to describe and illustrate the location of the proposed project, and to provide geographical and spatial context. The information should also facilitate an understanding of how the project will be situated in relation to existing structures.

The details to be provided must include:

- Coordinates of the project (e.g., Latitude and Longitude or Universal Transverse Mercator Grid coordinates);
- A map(s), site plan, or diagrams indicating the ordinary high water mark* and the location, size and nature of proposed and existing structures (e.g., floating or fixed), landmarks and proposed activities. In a marine setting, it may be helpful to depict the approximate location of the proposed development on a nautical chart or showing the relation of the site to sea marks or other navigational aids. These plans, maps or diagrams should be at an appropriate scale to help determine the relative size of the proposed structures and activities, the proximity to the watercourse or water body and the distance from existing structures;
- Photographs: include the location of all temporarily or permanent project components, site overview with appropriate landmarks and adjacent habitats, upstream and downstream;
- If available, provide aerial photographs or satellite imagery of the water source(s) and water body(ies);
- The community nearest to the location of the proposal as means to provide a general reference point;
- Names of the watershed(s), water source(s) and/or water body(ies) likely to be affected by the proposal; and
- Brief directions to access the proposed project site.

**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*

Section 4: Description of the Aquatic Environment

Proponents must describe the environmental context and aquatic resources present at the proposed site. The information must identify the current state of the fish and fish habitat* prior to the carrying on of the project.

It is important to include information about the fish species present, the biological, chemical, physical features present (habitat characteristics), and the fish life-cycle functions (fish characteristics).

The spatial scope for assessing fish and fish habitat* should encompass the direct physical footprint of the project, and the upstream and downstream areas affected.

As an example, the following is a non-exhaustive and non-prescriptive list of some common attributes which may characterize the aquatic environment:

- Type of water source or watercourse (groundwater, river, lake, marine, estuary, etc.);
- Characteristics of the water source or water body could include:
  - Substrate characterization - describe the types of substrate (e.g., bedrock, boulder, cobble, gravel, etc.), identify the predominant substrate type (e.g., 80% cobble, 20% gravel, etc.) and provide maps of the substrate;
  - Aquatic and riparian vegetation characterization - identify the prevalent types of vegetation (e.g., rooted, submerged, emergent, etc.), identify the relative abundance of the vegetation (e.g., 10% cattails, 80% grass, 10% sedge) , indicate the predominant vegetation (e.g., by species or types) and identify the vegetation densities (e.g., type of vegetation/area);
  - Flow characterization - specify if the flow is controlled or if it is natural, identify if the flow is permanent or intermittent, identify the current and tide (marine environment) etc.;
  - Physical water body characterization - identify the average depth of water for water bodies, identify bathymetry of water bodies, provide bathymetric maps where available, channel width (determine the width of the channel from the ordinary high water mark*), slope ;
  - Water quality characterization - (e.g., annual or average pH, salinity, alkalinity, total dissolved solids, turbidity, temperature, etc.);
  - Biological water quality characterization - (e.g., benthic macro-invertebrates, zooplankton, phytoplankton, etc.)
- Fish species characterization - identify the fish species (including molluscs, crustaceans, and marine animals) known or suspected to be in the area, predator prey relationships, etc. Identify what source of information was used to determine the presence of fish in that area; and
- Estimate the fish abundance - estimate the number of fish present, estimate the year class for each species, etc.

There are many different methods and attributes available to characterize fish and fish habitat*. Proponents must describe all sources of information used, all fish and environmental sampling techniques used, all modelling techniques used and all other approaches used to define the fish and fish habitat*. Proponents are encouraged to use recognized fisheries inventory methods such as those approved by DFO or provinces and territories, and/or scientifically defensible methodologies and techniques whenever possible.

Whenever possible, proponents should support descriptions of the aquatic environment with the use of detailed drawings, such as plans or maps and photographs of the habitat features. If possible, provide aerial photographs or satellite images of water bodies. In an offshore marine setting, photos may not be useful to depict the proposed development site. Instead describe and/or sketch the specific features of the sea floor which may include the presence of submarine features such as canyons, cliffs, caverns, etc.

Include/reflect appropriate site landmarks such as existing structures, direction of flow, low and high water mark or tide, riparian area, floodplains or flood return levels, in all of the above information and supporting documentation. Note: While current water levels are useful, ordinary high water mark and high/low tides should also be included.

Section 5: Potential Effects of the Proposed Project

The objective of this section is to describe all anticipated effects on fish and fish habitat* likely to be caused by the project. Proponents should review the Pathways of Effects (PoE) diagrams that relate to their proposed project to identify the changes to fish and fish habitat* that are likely to occur as a result of their proposed project. Changes to riparian habitat, fish passage, wetted area, sedimentation, habitat structure and cover, sublethal effects to fish, and fish mortality are the most common (see round boxes in the diagrams).

The work schedule should, at minimum, identify the proposed start and end dates for carrying out each proposed activity, and where applicable, identify the respective phase of the proposal; i.e., the construction, operation, maintenance and closure phases. In some cases, in order to provide additional context, it may be relevant to identify other information such as the expected life span of permanent and temporary structures.

**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*

Avoidance measures, mitigation measures, standards and codes of practice that will be implemented to protect fish and fish habitat* should be identified by the proponent, as well as any limitations to their implementation.

An aquatic effects assessment which includes an assessment of any effects on aquatic species at risk*, their critical habitat* and residences*, should be undertaken describing all potential harmful impacts remaining after taking into account avoidance measures, mitigation measures, standards and codes of practice.

The spatial scope of the aquatic effects assessment would include the direct physical "footprint" of the proposed project, and any areas indirectly affected by the works, undertakings and activities, such as downstream or upstream areas. This may also include areas in or on the water, on the shoreline, coast or bank(s) (i.e., in the riparian zone*).

The aquatic effects assessment should also describe qualitative and/or quantitative information, including:

- Identification of all fish species affected by the proposed project; as well as their life stages (e.g., juvenile, yearling, adult, etc.)
- Identification of the type of fish habitat* affected (e.g., spawning habitat - gravel and cobble, feeding and rearing areas - side channel slough, small tributaries, etc.), estimate of the affected area (e.g., square metres or hectares);
- Description of the effect (e.g., mortality to fish from entrapment, delayed migration of spawning adults, reduction in prey availability, loss of fish passage, removal of riparian vegetation, loss of wetted area, etc.)
- Probability of the effect - this is the likelihood of the effect occurring (e.g., probability of fish strike from turbines for specific fish sizes, probability of sediment plume within a distance from source, etc., or qualitative assessment: low, medium, high)
- Magnitude of the effect - this is the intensity or severity of the effect (e.g., total number of fish affected, or qualitatively assessment: low, medium, high).
- Geographic extent of the effect - this is the spatial range of the effect (e.g., localized to 100 m from the work, channel reach or lake region, entire watershed, etc.); and
- Duration of the effect - this is the temporal period for which the effect will persist (e.g., duration of delay to fish migration in hours, days, months or years).

The information should also describe the methods and techniques used to conduct the assessment. As much as possible, methods and techniques used should be scientifically defensible.

Include representative photos of affected areas (including upstream and downstream areas) and clearly identify the location of the project.

Information on aquatic invasive species* in Canada can be found here.

Section 6: Confirmation that the following are attached

Check all the appropriate boxes to indicate that a site plan, a map, and representative photos are included with the request.

Section 7: Proponent Signature

The proponent must sign their application. A signed original of the Request for Review must be provided to the regional DFO office , even if an electronic copy was sent by email.

Section 8: Definitions

Aquatic Invasive Species: fish, invertebrate or plant species that have been introduced into a new aquatic environment, outside of their natural range.

Aquatic Species at Risk: Any aquatic species listed under Schedule 1 of the Species at Risk Act as endangered, threatened, or extirpated.

Aquatic Species at Risk Critical Habitat: the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species critical habitat in the recovery strategy or in an action plan for the species.

Aquatic Species at Risk Residence: means a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating.

Emergency Situation: You may submit an application for authorization under emergency situation, if your project must be conducted without delay in response to the following situations:

- The project is required as a matter of national security

**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*

- The project is being conducted in response to a national emergency where special temporary measures are being taken under the federal *Emergencies Act* or
- The project is required to address an emergency that poses a risk to public health or safety or to the environment or property.

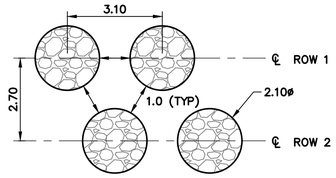
Fish Habitat: means water frequented by fish and any other areas, on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas.

Harmful Alteration, Disruption or Destruction: means any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes of fish.

Ordinary High Water Mark: The usual or average level to which a body of water rises at its highest point and remains for sufficient time to change the characteristics of the land. In flowing waters (e.g., rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body, bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (i.e., full supply level).

Riparian Zone: Area located between a water body's ordinary high water mark and upland area.

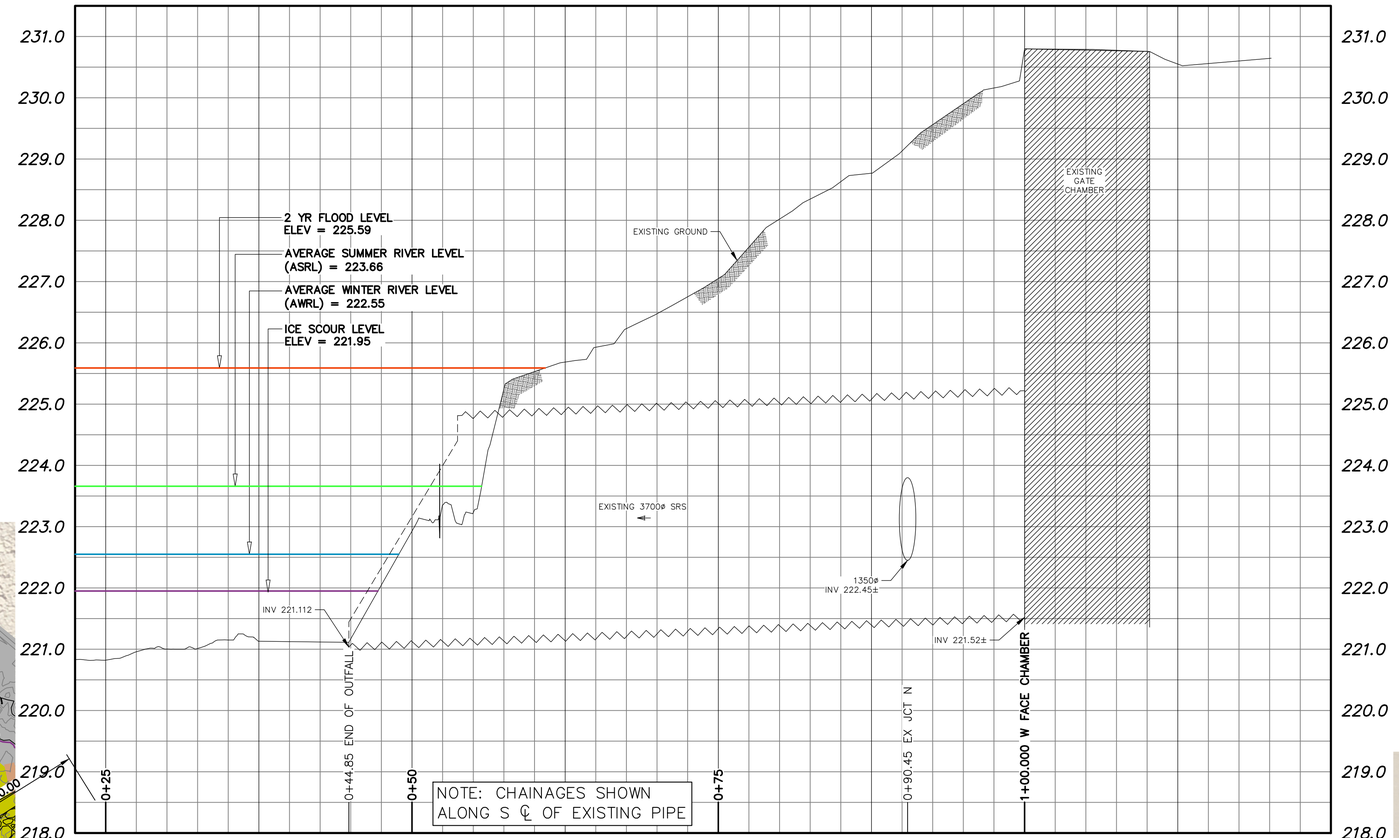
**All definitions are provided in Section 8 of the Guidance on Submitting a Request for Review*



ROCKFILL COLUMN SPACING DETAIL
SCALE: 1:100

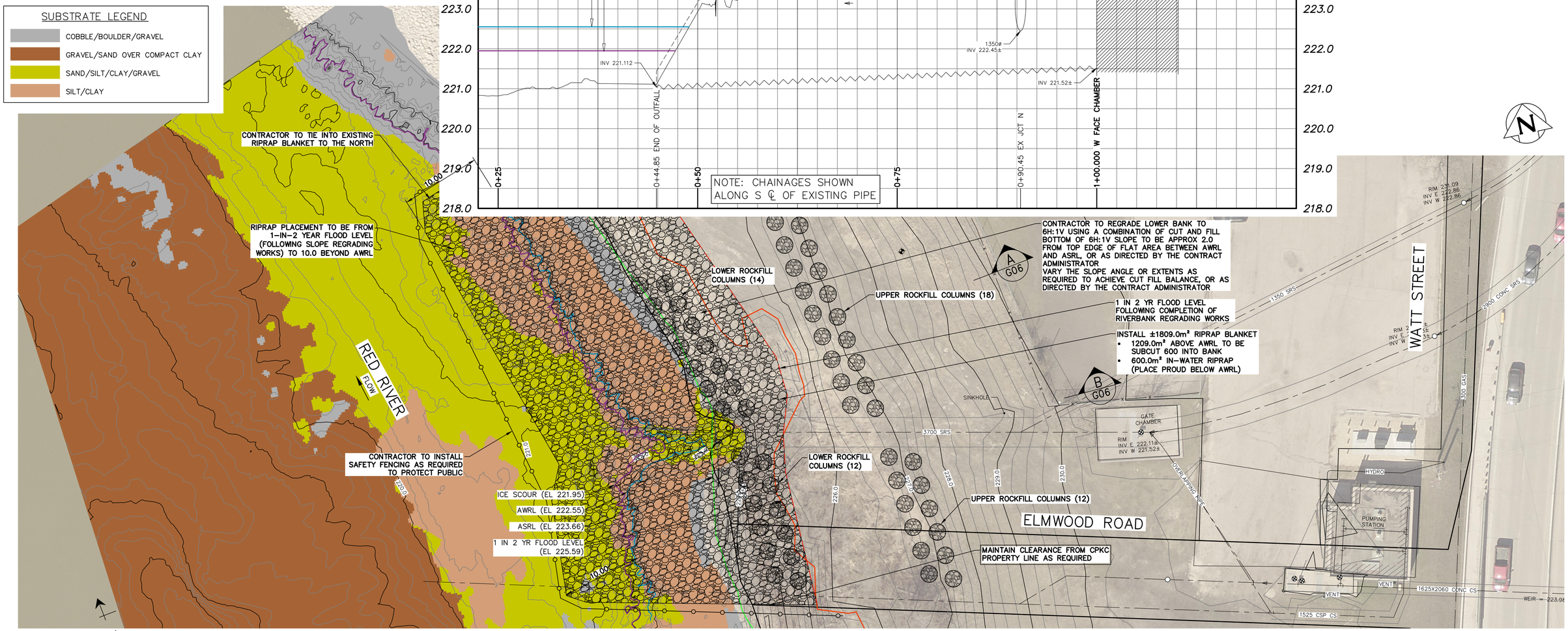
SUBSTRATE TYPES BELOW ICE SCOUR AFFECTED BY THE PROJECT	
EXISTING SUBSTRATE	PERMANENT AREA (m²)
COBBLE/BOULDER/GRAVEL	8.6
GRAVEL/SAND OVER COMPACT CLAY	0.0
SAND/SILT/CLAY/GRAVEL	332.1
SILT/CLAY	164.4
TOTAL AREA AFFECTED	505.1

SUBSTRATE LEGEND
- COBBLE/BOULDER/GRAVEL
- GRAVEL/SAND OVER COMPACT CLAY
- SAND/SILT/CLAY/GRAVEL
- SILT/CLAY



NOTES:

1. ALL EXCAVATED MATERIAL WITHIN 107.0 OF THE ASRL (AVERAGE SUMMER RIVER LEVEL) MUST BE REMOVED FROM SITE (NO STOCKPILING).
2. CONTRACTOR TO RESTORE SITE, INCLUDING ROAD, CURBS, AND LANDSCAPING FEATURES TO PRE-CONSTRUCTION CONDITION.
3. VIBRATION MONITORS SHALL BE INSTALLED AT ADJACENT PRIVATE PROPERTIES PRIOR TO CONSTRUCTION (ALLOWANCE INCLUDED IN CONTRACT).
4. VIBROCOMPACTION OF ROCKFILL COLUMNS TO BE COMPLETED IN ADVANCE OF PIPE INSTALLATION WORKS.
5. EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED ALONG THE TOP EDGE OF THE RIPRAP BLANKET AFTER COMPLETION OF RIPRAP PLACEMENT AND MAINTAINED UNTIL VEGETATION ESTABLISHES ON SITE.



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

FOR INDEX PAGE SEE DWG C02

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

0.0 5.0 10.0 15.0 20.0 25.0

WARNING

IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT THE CONTRACTOR MUST:

1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.

2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.

SEE PROVINCIAL REGULATION 210/72 FOR DETAILS

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE _____ DATE _____

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

VERTICAL DATUM: CGVD28 (HT2.0 Geoid)
HORIZONTAL DATUM: NAD83 (June 1990), Zone 14

NO.	REVISIONS	DATE (YYYY/MM/DD)	BY
A	ISSUED FOR	2025/XX/XX	

KGS GROUP

DESIGNED BY	NGV	CHECKED BY	.
DRAWN BY	GEL	APPROVED BY	.
SCALE: HORIZONTAL	1:250	RELEASED FOR CONSTRUCTION	
VERTICAL		DATE	

PLOT DATE:

ENGINEER'S SEAL

CONSULTANT DRAWING NUMBER
G03

BID OPP: ###-20##
CONTRACT NUMBER: #

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENGINEERING SERVICES DIVISION

2025 OUTFALL PROGRAM

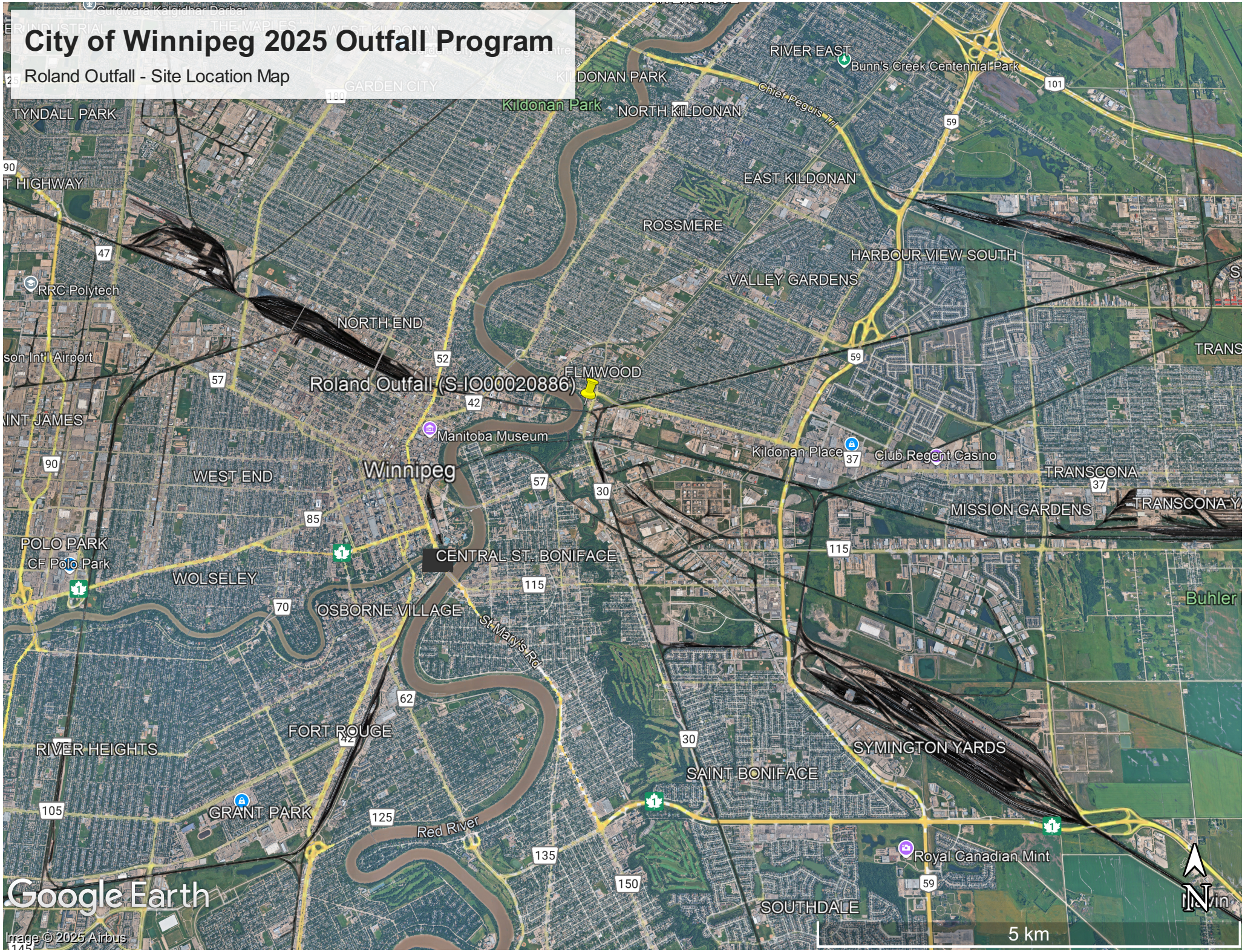
ROLAND OUTFALL
PLAN AND PROFILE
S-MA40011011

SHEET — OF —
CITY DRAWING NUMBER
#####

FILE PATH: C:\Users\glowen\Documents\FMS\25-0107-015\
FILE NAME: 25-0107-015_Plan&Profiles.dwg

City of Winnipeg 2025 Outfall Program

Roland Outfall - Site Location Map



CITY OF WINNIPEG OUTFALL PROGRAM

RED RIVER - ROLAND

AQUATIC HABITAT ASSESSMENT

A Report Prepared for

KGS Group

By

North/South Consultants Inc.

October 2025

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TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 METHODS 1

2.1 Habitat Mapping 1

2.2 Fish and Fish Habitat 3

2.3 Mussels 4

2.4 Species at Risk 4

3.0 RESULTS 4

3.1 Physical Environment 4

3.2 Habitat Mapping 5

3.3 Fish and Fish Habitat 5

3.4 Mussels 6

3.5 Species at Risk 6

4.0 REFERENCES 7

LIST OF TABLES

Table 1. Substrate validations taken along the Red River at the Roland Outfall, Winnipeg, MB. 8

Table 2. Potential fish species inhabiting the Red River and its tributaries in the vicinity of Winnipeg, Manitoba[1,2] 9

Table 3. Freshwater mussel species potentially inhabiting the Red River and its tributaries, Manitoba[1]. 11

LIST OF FIGURES

Figure 1. Survey area for the Roland outfall area, Winnipeg, Manitoba. 12

Figure 2. Bathymetric map of the Roland outfall area, Winnipeg, Manitoba. 13

Figure 3. Substrate map of the Roland outfall area, Winnipeg, Manitoba. 14

Figure 4. Data collection locations on the Red River at the Roland outfall area, Winnipeg, Manitoba. 15

LIST OF PHOTOS

Photo 1. Survey area of the Red River at the Roland outfall area, showing low-gradient sloped shoreline composed of clay, interspersed with boulders, Winnipeg, MB. 16

Photo 2. Shoreline of the Red River at the Roland outfall, upstream area, showing low-gradient sloped shoreline composed predominantly of boulder with some large woody debris, Winnipeg, MB. 16

Photo 3. Survey area of the Red River at the Roland outfall, downstream area, showing low-gradient sloped boulder shoreline, interspersed with some large woody debris, Winnipeg, MB. 17

Photo 4. Culvert outfall at Roland outfall area, Winnipeg, MB, Red River. 17

Photo 5. Substrate validation from Grab #5 on the Red River at the Roland Outfall, Winnipeg, MB, showing a small sample of compacted petrified clay interspersed with gravel. Live zebra mussels shown in grab. 18

Photo 6. Substrate validation from Grab #11 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay/silt substrate of hard compaction. 18

Photo 7. Substrate validation from Grab #12 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay substrate of hard compaction interspersed with gravel. 19

Photo 8. Substrate validation from Grab #14 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay/gravel/sand substrate. 19

Photo 9. Substrate validation from Grab #16 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay substrate of soft compaction and potentially containing small amounts of silt layered on top. 20

Photo 10. Substrate validation from Grab #17 on the Red River at the Roland Outfall, Winnipeg, MB, showing silt substrate with sand and gravel. 20

Photo 11. Substrate validation from Grab #18 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay/gravel substrate with zebra mussels. 21

Photo 12. Substrate validation from Grab #21 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay substrate with sand. 21

ACKNOWLEDGEMENTS

KGS Group is thanked for the opportunity to conduct this study.

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1.0 INTRODUCTION

The City of Winnipeg is continuing its Outfall Program during 2025. The Outfall Program involves riverbank erosion protection and repair and/or cleaning at a number of outfalls in the Red and Assiniboine rivers and their tributaries within Winnipeg, MB. KGS Group was awarded the contract and North/South Consultants Inc. (NSC) was sub-contracted by KGS Group to conduct the aquatic habitat assessments at three outfall locations, including one on the Assiniboine River and two on the Red River.

Both the Red and Assiniboine rivers fall within the range of the Mapleleaf mussel (*Quadrula quadrula*), a species listed as "Threatened" under the *Species at Risk Act* (SARA). Due to the potential occurrence of the Mapleleaf at the project sites, bathymetric and substrate sampling surveys were conducted to determine if suitable habitat for the Mapleleaf exists in the study areas.

This report provides the results of the aquatic habitat assessment conducted at the outfall located at the Roland site. A description of fish habitat and potential fish use of the project area is also included. The aquatic habitat assessments will be used to support the submission of a Request for Review to Fisheries and Oceans Canada (DFO) for each outfall site as required.

2.0 METHODS

2.1 HABITAT MAPPING

2.1.1 Field Methods

On August 27, 2025, a boat-based hydroacoustic survey was conducted along an approximately 120 m stretch of the Red River centered on the outfall pipe at Roland in Winnipeg, Manitoba (Figure 1). Depth and substrate data were collected using a Ping DSP Inc. 3DSS-iDX-450 multibeam echosounder (MBES) coupled to a Septentrio dual antenna Global Navigation Satellite System (GNSS) in order to collect high-resolution 3D sidescan amplitude data, backscatter data and swath bathymetric data simultaneously. Survey transects were conducted from an 18 ft boat with a 50 hp Honda outboard motor. Surveys were conducted at boat speeds of less than 10 km/hr. Shoreline water level elevation and survey control measurements were recorded using a

Trimble R8 GNSS real-time kinematic (RTK) rover receiver connected to a survey controller and to a Trimble R8 GNSS base station receiver via radio link, using Trimble Access survey controller software.

In order to validate the acoustic data and assist in the development of a substrate type classification, the river bottom was sampled along transects throughout the survey area. Samples were collected using a Petite Ponar (0.023m^2 surface area) and photos of each sample were taken using a GPS-linked Nikon COOLPIX camera. Where a sample could not be collected (i.e., hard substrates), validation was completed by probing with the ponar and/or a paddle for texture, hardness and sound of substrate. Primary, secondary and tertiary substrate types were identified at each validation site and classified according to a modified Wentworth size classification (Wentworth 1922 see below).

Modified Wentworth Scale (after Wentworth 1922):

Particle Size Range	Class Name
> 256 mm	Boulder
64-256 mm	Cobble
2-64 mm	Gravel
62.5 µm -2 mm	Sand
4-62.5 µm	Silt
< 4 µm	Clay

2.1.2 Data Processing and Analysis

Hydroacoustic data collected with the MBES were converted to an XTF 2D sidescan and multibeam bathymetric format for post-processing in SonarWiz® 8 software (Chesapeake Technology Inc., Mountain View, California). Depth soundings were compiled, and a bathymetric map was created using ESRI ArcGIS Pro 3.5 software (Esri, Redlands, California). The image mosaics were then exported to .png georeferenced (UTM Zone 14N, NAD83 CSRS) digital image format for additional mapping and display using ESRI ArcGIS Pro 3.5.

An estimated shoreline (land/water interface at the time of the survey) was digitized using the georeferenced sidescan mosaic imaging and available City of Winnipeg Lidar elevation data using ArcGIS Pro 3.5 software. The resulting vector shoreline was compared to the shoreline measurements recorded with the Trimble R8 GNSS receiver. The digitized shoreline was used as a boundary file for the final substrate and depth mapping products.

Relative backscatter amplitude data recorded by the MBES was used to assist in the production of the substrate classification and mapping. The amplitude value provides a relative measure of benthic hardness within the mapped survey area. High values generally represent coarse and hard reflective substrate classes (e.g. cobble or boulder - rock), while low amplitude values generally represent soft fine absorptive substrate classes (e.g. silt or clay - mud). The number of attempts, the sound heard as the ponar hits the substrate, and the size of the validation grabs were also taken into consideration when interpreting the hardness of the substrate, as sometimes the validation grab grazed a small sample of fines that was layering over top of hard substrates such as cobbles and boulders. Creation of the amplitude grids followed a similar procedure as the depth grids. An 'Amplitude Blend' gridding algorithm was used to produce a 0.5m grid. The amplitude grids were exported to a .grd format for additional processing and substrate classification in ArcGIS 10.8 software. A preliminary five class vector boundary classification product was produced using the sidescan image data, amplitude and depth grids, and the standard deviation and entropy sidescan texture classifiers using the Seabed Characterization Tool in Sonarwiz 8. The substrate validation (ground-truthing), sidescan mosaic and amplitude grid were used to refine the boundaries and label the Sonarwiz seabed characterization classification product. Once the class boundaries were refined and labelled, they were compared back to the sidescan mosaic and amplitude grid. In general, the substrate classification showed excellent agreement with the visible boundaries between fine and coarse substrates. Areas for each mapped substrate class were tabulated. Classes were symbolized and final detailed maps were produced.

2.2 FISH AND FISH HABITAT

A high level and qualitative description of the potential fish use of aquatic habitat within the project area was provided. As part of the aquatic survey, fish habitat features were noted, including flow pattern, cover and bank condition. Representative photos were captured using the GPS-linked Nikon COOLPIX camera. Results of the aquatic habitat survey and available information describing fish occurrence and life history characteristics were used to provide the description.

2.3 MUSSELS

A cursory search for mussels was conducted (e.g., shoreline survey) in support of substrate mapping. Empty mussel shells are typically collected and identified to species. Live mussels found in the river are recorded and photographed but not removed from their location. The presence or absence of empty or live mussel shells is used to aid in the evaluation of habitat suitability within the survey area.

2.4 SPECIES AT RISK

A species at risk review of the Red River within Winnipeg was conducted using the DFO Species at Risk Map Viewer (https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html) and Provincially through the Manitoba Conservation Data Center. The review included identifying any areas within the project marked as critical habitat for species protected under the SARA or provincially under the *Endangered Species and Ecosystems Act* (ESEA) and any potential regulatory requirements for the project.

3.0 RESULTS

3.1 PHYSICAL ENVIRONMENT

Water level in the Red River within Winnipeg at the time of the survey, i.e., August 27, 2025, averaged 223.793 masl, measured at Station 05OJ015 at James Avenue Pumping Station (CGVD28). This level was approximately 0.004 m higher than the historical average of 223.789 masl for that date (historical range: 1971-2025; Water Survey of Canada 2025). Mean shoreline elevation measured on site August 27, 2025, during the survey was 223.691 m (CGVD28).

The majority of the shoreline above the current water level along the survey area was low gradient, characterized predominantly by boulders with trace amounts of clay, gravel and cobble scattered throughout (Photos 1-4). Riparian vegetation consisted primarily of willows, sedge and dogbane within the first 10 m, followed by graminoids and some trees such as Trembling Aspen and Maple further upland of the survey area.

3.2 HABITAT MAPPING

The total aquatic area surveyed near the Roland Outfall was 9,043 m^2. The average water depth recorded was 3.58 m, and the max depth was 7.62 m. A bathymetric map of the survey area is presented in Figure 2.

A total of 18 substrate samples were collected to assist in interpretation of the acoustic survey data. Results of validation grabs and substrate probes are presented in Table 1, and examples are provided in Photos 5-12.

A substrate map including validation locations is presented in Figure 3. A graphical depiction of data collection locations, including survey transects, is presented in Figure 4. Substrate was divided into four classes based on primary, secondary and tertiary substrates. The deepest area of the study reach (nearing the centre of the river) consisted of a gravel/sand over compact clay, accounting for 49% of the total survey area (Figure 3). The nearshore substrate consisted of soft compact clay and silt (15%). It should be noted that although validation grabs determined the fines were smooth (not gritty) and thus predominantly clay, the soft compaction of the substrate suggests the presence of fine silt and is interpreted as such in Figure 3. Between the nearshore area and the outermost instream area, substrate consisted of a sand/silt/clay/gravel substrate, accounting for 25% of the total survey reach. Throughout all three of these substrates, patches of cobble/boulder/gravel were present (11%). Less than 0.5% of the substrate was unclassified, likely a result of a processing anomaly with respect to the edges of boundary polygons; this category was not included in the substrate descriptions.

3.3 FISH AND FISH HABITAT

The Red River and its tributaries within Winnipeg provide year-round habitat for a variety of fish species, including species that are sought after for recreational fishing, such as Walleye (*Sander vitreus*), Sauger (*Sander canadensis*), Channel Catfish (*Ictalurus punctatus*), and Northern Pike (*Esox lucius*) (Table 2). The species assemblage includes a wide variety of fish trophic guilds, including omnivorous and piscivorous species, and species that inhabit predominantly benthic or pelagic habitats.

Habitat within the survey area consisted mostly of low to moderate velocity run habitat over a mix of substrates consisting of various degrees of gravel, sand, soft- to hard-compact clay (with soft compaction likely derived from finer silt content), silt, and patches of gravel, cobble, and

boulder. The shoreline substrate, above the current water level, was predominantly boulder. Instream cover was limited to boulders and some large woody debris (Photos 2 and 3). Overall, the survey area provides suitable habitat for various life stages of both forage and large bodied fish species. The habitat in the survey area is not rare or limiting and is readily available both upstream and downstream of the site. It is expected that the survey area is suitable for foraging throughout the open water season and would provide adequate overwintering habitat for fish. The survey area may also provide spawning habitat for a variety of species that spawn during the spring or early summer.

3.4 MUSSELS

The Red River is inhabited by a variety of freshwater mussel species, including Mapleleaf (Table 3). During the cursory shoreline survey, no live mussels were observed, nor were any shells observed.

Mapleleaf are typically found in medium to large rivers, in substrates of firmly packed, coarse gravel and sand, and to a lesser extent firmly packed clay/mud (COSEWIC 2016). Areas with shifting substrates (i.e., active erosion or deposition) do not represent suitable habitat for Mapleleaf. A large proportion of the area surveyed at the Roland outfall site is overlaid by clay of both soft and hard compaction, with varying degrees of gravel and sand. Although no mussels were observed within the survey area, these substrates would be considered suitable for Mapleleaf.

3.5 SPECIES AT RISK

The Saskatchewan-Nelson River population of Lake Sturgeon which includes the Red River was recommended to be listed as “Endangered” by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) in 2017 (COSEWIC 2017), but the species has not been added to the list of species protected under SARA. The Bigmouth Buffalo (*Ictiobus cyprinellus*) in the Red River is currently listed as “Special Concern” under Schedule 1 of the SARA and, as such, it is not afforded any additional protections. Neither species is listed under Manitoba Natural Resources and Indigenous Futures’ Endangered Species and Ecosystems Act (ESEA; MNRIF 2025).

Mapleleaf are listed as “Endangered” under the provincial ESEA and “Threatened” under the SARA and are therefore protected under the provisions of both Acts.

4.0 REFERENCES

COSEWIC 2016. COSEWIC assessment and status report on the Mapleleaf *Quadrula quadrula*, Great Leaks – Upper Ste. Lawrence population and Saskatchewan – Nelson Rivers population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 86 pp. (http://www.registrelepsararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1).

COSEWIC. 2017. COSEWIC assessment and status report on the Lake Sturgeon *Acipenser fulvescens*, Western Hudson Bay populations, Saskatchewan-Nelson River populations, Southern Hudson Bay, James Bay populations and Great Lakes-Upper Ste. Lawrence populations in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxx + 153 pp. (http://www.registrelepsararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1).

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Table 1. Substrate validations taken along the Red River at the Roland Outfall, Winnipeg, MB.

Grab ID	Substrate Type[1]			Substrate %			Report Photo #	Compaction	UTM (14U)	
	1°	2°	3°	1°	2°	3°			Easting	Northing
1	CL	OM	-	95	5	-	-	Soft	635895	5529545
2	CL	GR	-	70	30	-	Photo 5	Hard	635867	5529554
3	CL	GR	SI	33.3	33.3	33.3	-	Hard	635834	5529550
4	CL	OM	-	99	1	-	-	Soft	635896	5529580
5	CL	SA	-	60	40	-	-	Hard	635873	5529574
6	SA	CL	SI	40	30	30	-	Hard	635834	5529568
7	CL	OM	-	99	1	-	-	Medium	635893	5529596
8	CL	SI	-	50	50	-	Photo 6	Hard	635867	5529591
9	CL	GR	-	90	10	-	Photo 7	Hard	635834	5529591
10	CL	OM	-	99	1	-	-	Medium	635896	5529608
11	CL	GR	SA	45	30	25	Photo 8	Hard	635870	5529607
12	CL	SA	-	50	50	-	-	Hard	635838	5529618
13	CL	-	-	100	-	-	Photo 9	Soft	635885	5529630
14	SI	SA	GR	50	20	20	Photo 10	Hard	635855	5529631
15	CL	GR	ZM	45	45	10	Photo 11	Hard	635826	5529628
16	CL	-	-	100	-	-	-	Soft	635894	5529615
17	CL	OM	-	98	2	-	-	Soft	635897	5529589
18	CL	SA	-	60	40	-	Photo 12	Hard	635884	5529602

1 – BO: Boulder; CO: Cobble; GR: Gravel; SA: Sand: SI: Silt; CL: Clay; OM: Organic Matter; ZM: Zebra Mussels

Table 2. Potential fish species inhabiting the Red River and its tributaries in the vicinity of Winnipeg, Manitoba[1,2].

FAMILY	SYSTEMATIC NAME	COMMON NAME
Petromyzontidae	*Ichthyomyzon castaneus*	Chestnut Lamprey
	Ichthyomyzon unicuspis	Silver Lamprey
Acipenseridae	*Acipenser fulvescens*	Lake Sturgeon
Hiodontidae	*Hiodon alosoides*	Goldeye
	Hiodon tergisus	Mooneye
Catostomidae	*Carpiodes cyprinus*	Quillback
	Catostomus commersonii	White Sucker
	Ictiobus cyprinellus	Bigmouth Buffalo
	Moxostoma anisurum	Silver Redhorse
	Moxostoma erythrurum	Golden Redhorse
	Moxostoma macrolepidotum	Shorthead Redhorse
	Carassius auratus	Goldfish[3]
Cyprinidae	*Cyprinus carpio*	Common Carp[3]
Leuciscidae	*Alburnops blennius*	River Shiner
	Chrosomus eos	Northern Redbelly Dace
	Chrosomus neogaeus	Finescale Dace
	Cyprinella spiloptera	Spotfin Shiner
	Hudsonius hudsonius	Spottail Shiner
	Luxilus cornutus	Common Shiner
	Macrhybopsis storeriana	Silver Chub
	Miniellus stramineus	Sand Shiner
	Nocomis buguttatus	Hornyhead Chub
	Notemigonus chrysoleucas	Golden Shiner
	Notropis atherinoides	Emerald Shiner
	Pimephales promelas	Fathead Minnow
	Platygobio gracilis	Flathead Chub
	Rhinichthys cataractae	Longnose Dace
	Rhinichthys obtusus	Western Blacknose Dace
	Semotilus atromaculatus	Creek Chub
Ictaluridae	*Ameiurus melas*	Black Bullhead
	Ameiurus nebulosus	Brown Bullhead
	Ictalurus punctatus	Channel Catfish
	Noturus flavus	Stonecat
	Noturus gyrinus	Tadpole Madtom
Esocidae	*Esox lucius*	Northern Pike
	Umbra limi	Central Mudminnow
Percopsidae	*Percopsis omiscomaycus*	Trout-perch
Gadidae	*Lota lota*	Burbot
Fundulidae	*Fundulus diaphanus*	Banded Killifish

Table 2. Continued

FAMILY	SYSTEMATIC NAME	COMMON NAME
Centrarchidae	*Ambloplites rupestris*	Rock Bass
	Lepomis gibbosus	Pumpkinseed[3]
	Lepomis macrochirus	Bluegill
	Micropterus dolomieu	Smallmouth Bass[3]
	Micropterus nigricans	Largemouth Bass[3]
	Pomoxis annularis	White Crappie
	Pomoxis nigromaculatus	Black Crappie
Gasterosteidae	*Culaea inconstans*	Brook Stickleback
	Pungitius pungitius	Ninespine Stickleback
Moronidae	*Morone chrysops*	White Bass[3]
Percidae	*Etheostoma exile*	Iowa Darter
	Etheostoma nigrum	Johnny Darter
	Perca flavescens	Yellow Perch
	Percina caprodes	Logperch
	Percina maculata	Blackside Darter
	Percina shumardi	River Darter
	Sander canadensis	Sauger
	Sander vitreus	Walleye
Sciaenidae	*Aplodinotus grunniens*	Freshwater Drum

1 – List compiled from Stewart and Watkinson 2004
2 – Taxonomy updated from: Page et al. 2023
3 – Introduced

Table 3. Freshwater mussel species potentially inhabiting the Red River and its tributaries, Manitoba[1].

Sub-Family	Scientific Name	Common Name
Ambleminae	*Amblema plicata*	Threeridge
	Fusconaia flava	Wabash Pigtoe
	Lampsilis cardium	Plain Pocketbook
	Lampsilis siliquoidea	Fatmucket
	Ligumia recta	Black Sandshell
	Potamilus alatus	Pink Heelsplitter
	Quadrula quadrula	Mapleleaf
Anodontinae	*Anodontoides ferussacianus*	Cylindrical Papershell
	Lasmigona complanata	White Heelsplitter
	Lasmigona compressa	Creek Heelsplitter
	Pyganodon grandis	Giant Floater
	Strophitus undulatus	Creeper

1 – Hnytka et al. 2022

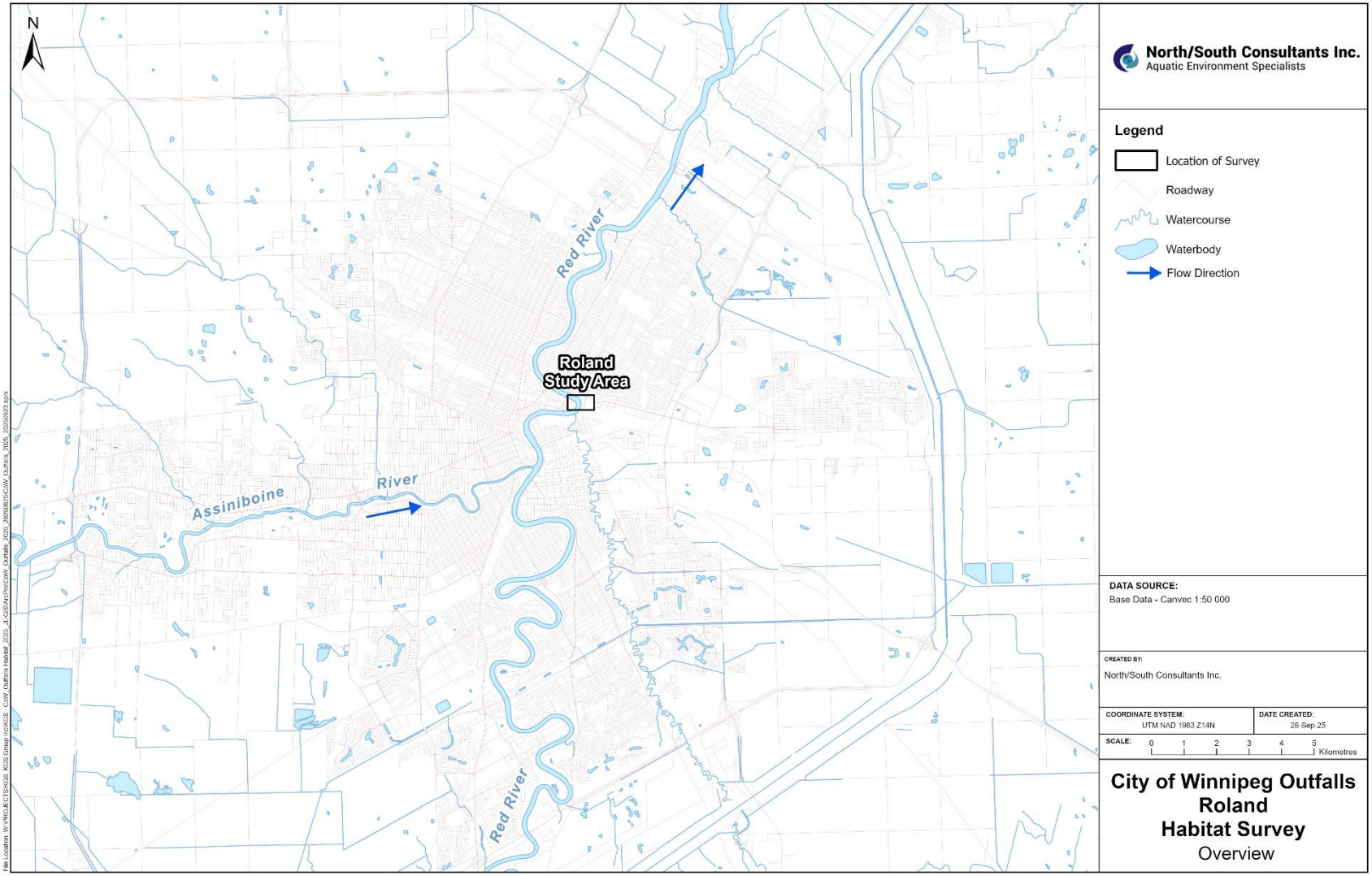

Figure 1. Survey area for the Roland outfall area, Winnipeg, Manitoba.

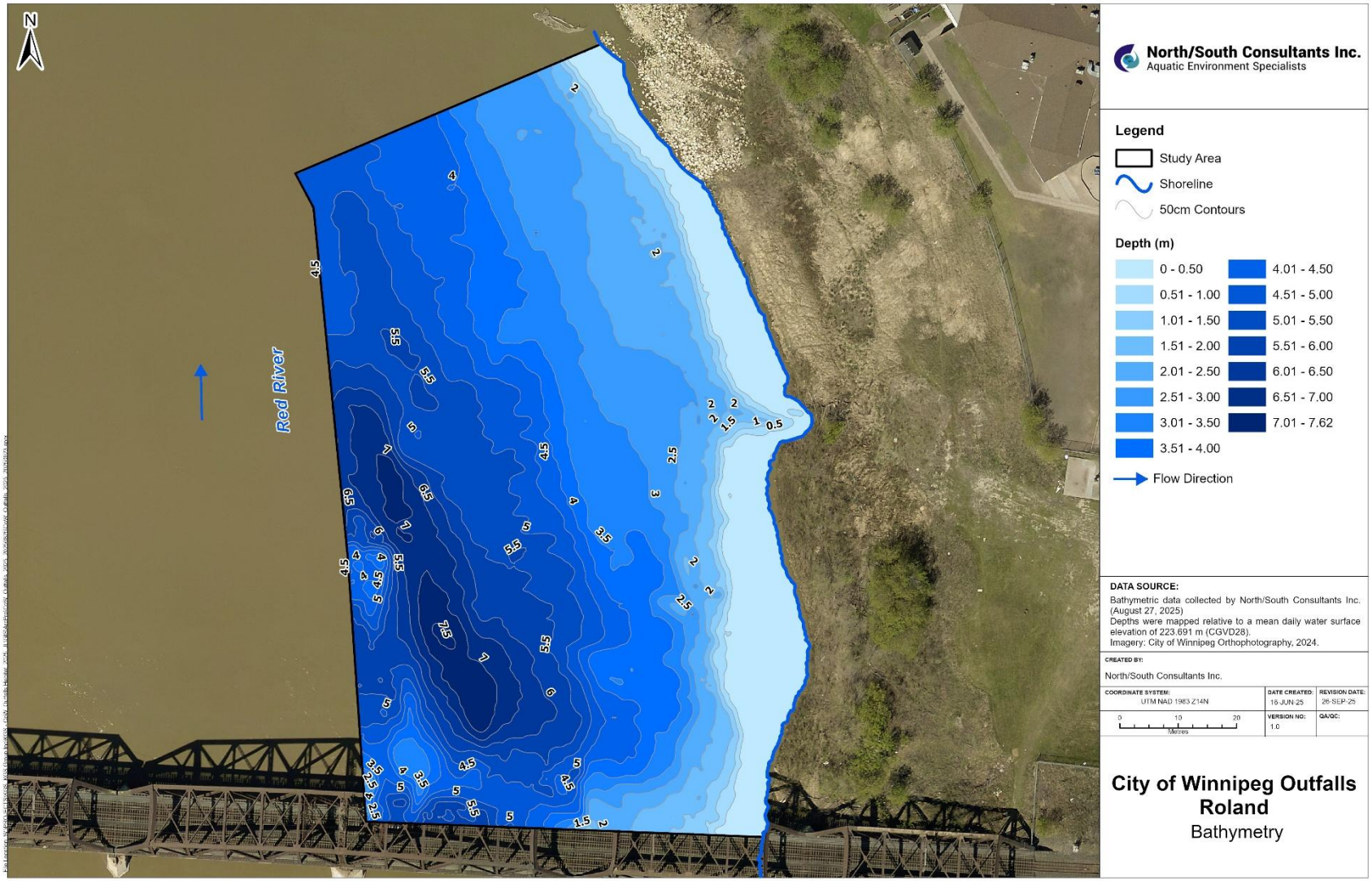

Figure 2. Bathymetric map of the Roland outfall area, Winnipeg, Manitoba.

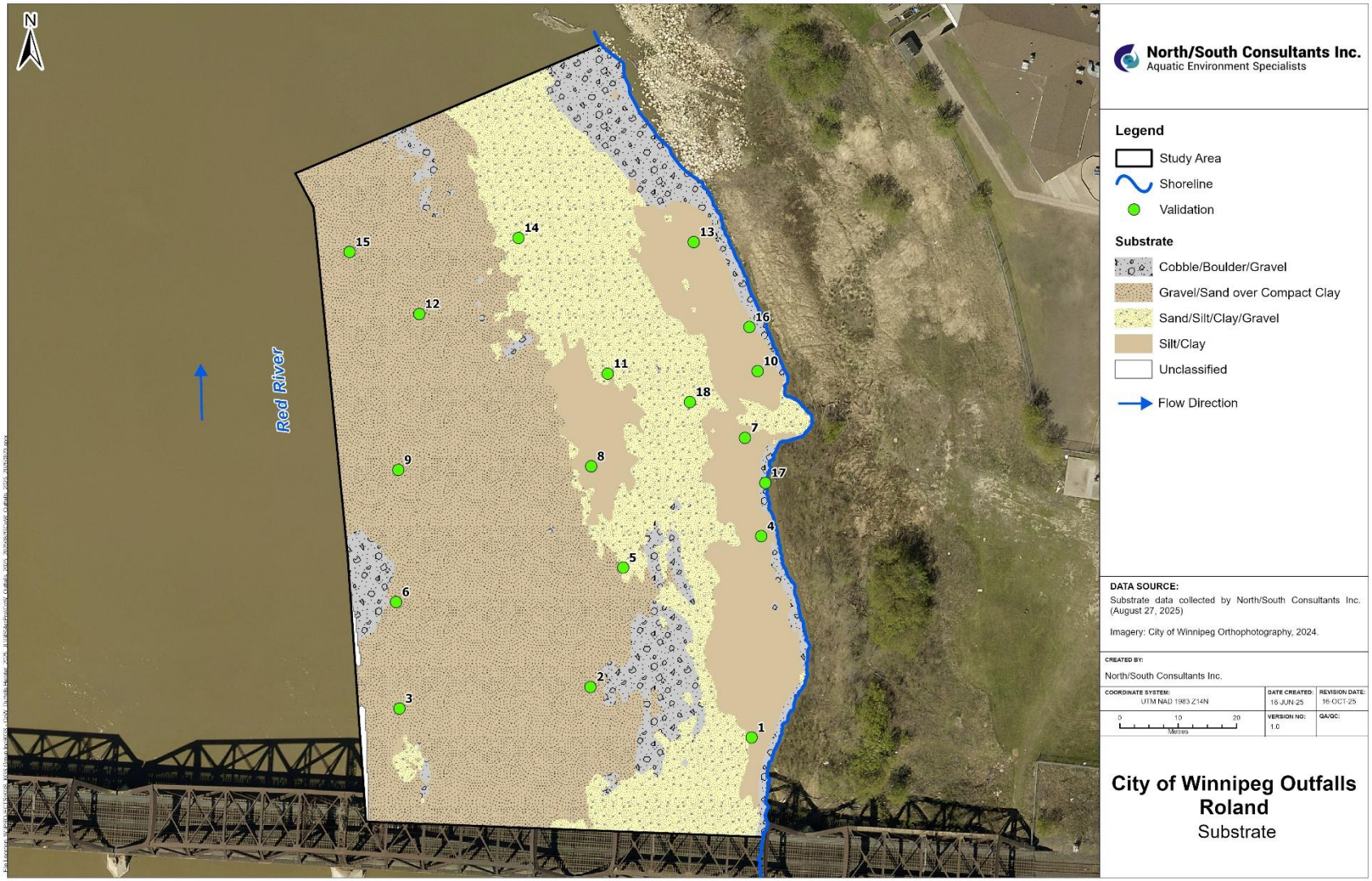

Figure 3. Substrate map of the Roland outfall area, Winnipeg, Manitoba.

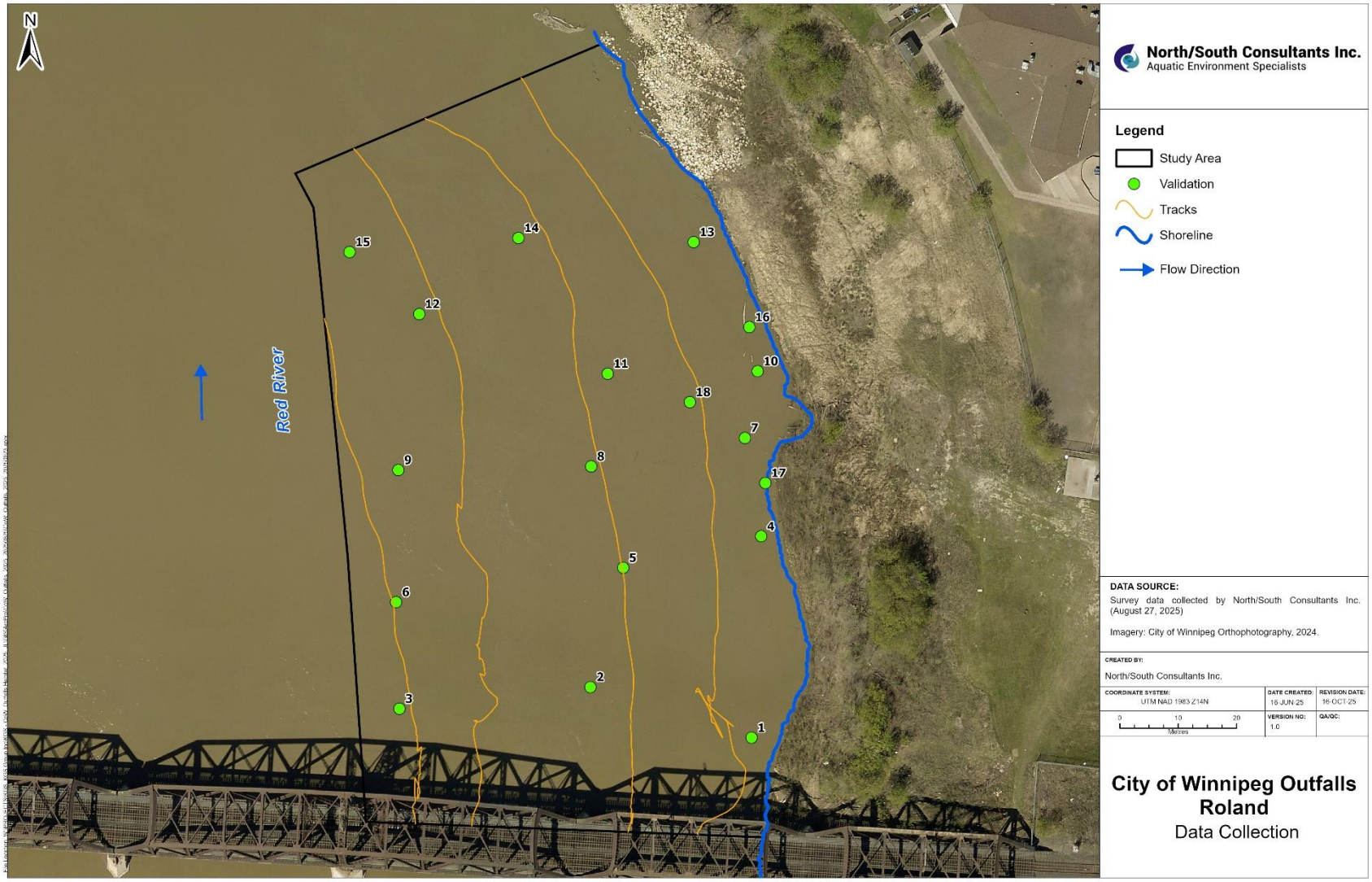

Figure 4. Data collection locations on the Red River at the Roland outfall area, Winnipeg, Manitoba.

Photo 1. Survey area of the Red River at the Roland outfall area, showing low-gradient sloped shoreline composed of clay, interspersed with boulders, Winnipeg, MB.

Photo 2. Shoreline of the Red River at the Roland outfall, upstream area, showing low-gradient sloped shoreline composed predominantly of boulder with some large woody debris, Winnipeg, MB.

Photo 3. Survey area of the Red River at the Roland outfall, downstream area, showing low-gradient sloped boulder shoreline, interspersed with some large woody debris, Winnipeg, MB.

Photo 4. Culvert outfall at Roland outfall area, Winnipeg, MB, Red River.

Photo 5. Substrate validation from Grab #2 on the Red River at the Roland Outfall, Winnipeg, MB, showing a small sample of compacted petrified clay interspersed with gravel. Live zebra mussels shown in grab.

Photo 6. Substrate validation from Grab #8 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay/silt substrate of hard compaction.

Photo 7. Substrate validation from Grab #9 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay substrate of hard compaction interspersed with gravel.

Photo 8. Substrate validation from Grab #11 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay/gravel/sand substrate.

Photo 9. Substrate validation from Grab #13 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay substrate of soft compaction and potentially containing small amounts of silt layered on top.

Photo 10. Substrate validation from Grab #14 on the Red River at the Roland Outfall, Winnipeg, MB, showing silt substrate with sand and gravel.

Photo 11. Substrate validation from Grab #15 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay/gravel substrate with zebra mussels.

Photo 12. Substrate validation from Grab #18 on the Red River at the Roland Outfall, Winnipeg, MB, showing a clay substrate with sand.