Sanitary Grit Residuals Treatment Facility Site Location Study, Edmonton, Alberta

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Sign-off Sheet

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1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by EPCOR Water Services (EPCOR) to complete a Site Location Study (SLS) for the proposed Sanitary Grit Residuals Treatment Facility (SGRTF). The proposed location of the SGRTF is within the southeast portion of the existing Gold Bar Wastewater Treatment Plant (GBWWTP) within the North Saskatchewan River Valley (SW 12-053-24 W4M) in Edmonton, AB (Study Area, Figure 1; Appendix A).

The SGRTF will be located within the North Saskatchewan River Valley Area Redevelopment Plan area (NSRVARP, Bylaw 7188) and has been deemed a major facility under this legislation. As a result, Sustainable Development of the City of Edmonton (the City) has requested that a Site Location Study (SLS) and an Environmental Impact Assessment (EIA) be prepared for the proposed SGRTF. This report presents the results of the SLS; the EIA will be submitted under separate cover.

1.1 BACKGROUND

The City initiated actions to review options on the possible processing and disposal of grit slurry collected from the wastewater sewer systems. Historically, the City land-treated urban grit slurry collected from stormwater sewer systems, and disposed of wastewater grit slurry at the Kennedale Works Yard (Kennedale). However, the practice of disposing wastewater slurry at Kennedale was recently discontinued due to odours and the negative impact on impending developments surrounding the yard. Land treatment of wastewater grit slurry was not considered a viable option due to odours and health concerns related to handling, processing and disposal. Discontinuing the processing and disposal of wastewater grit slurry at the Kennedale yard necessitated the City to find other methods and means to manage this material. The City decided to dispose of the wastewater grit slurry in Cell 3E or 3W at the Clover Bar Biosolids Storage Lagoons (CBBSL) until a more environmentally sound practice could be implemented.

The City invited EPCOR to review options related to the handling and treatment of wastewater grit slurry at the GBWWTP. EPCOR requested Stantec to develop conceptual level designs and opinions of probable cost for handling and treatment options. A variety of technologies and processes were considered in regards to the integration of a solids receiving and handling system to the GBWWTP. Based on a review of GBWWTP treatment capacity, available land, and future site plans, it was determined that a standalone facility located on the east side of the plant site would be the preferred option.

On April 28, 2015 a scoping meeting was held between representatives from the City, EPCOR, and Stantec. The focus of the meeting was to discuss the scope of the project, confirm the requirements for environmental submissions on the proposed SGRTF, and verify the scope of the required studies.

1.2 SCOPE

The scope of this SLS will be to examine the financial, social, environmental, and institutional constraints that make it essential that the development of the SGRTF occur within the NSRVARP at the designated location. The study will focus solely on the proposed SGRTF and does not extend to any other current or future proposed facilities within the Study Area.

1.3 SITE DESCRIPTION

The proposed SGRTF will be located southeast of the existing GBWWTP within the North Saskatchewan River Valley in Edmonton, Alberta. The Study Area is located between the existing GBWWTP site (a brownfield site that has been extensively disturbed throughout its history) and Gold Bar Park Road (Figure 1, Appendix A). The vegetated area inside the project footprint is classified as Mixed Deciduous and Evergreen Woodland Alliance (Wheatley and Bentz 2002) and is entirely located within the existing plant fence line. The GBWWTP site is equipped with a variety of existing amenities such as access roads, utilities, laydown areas and infrastructure.

A Phase I Environmental Site Assessment (ESA), Phase II ESA and an updated Phase I ESA were conducted within the GBWWTP in 2010, 2010 and 2015 respectively. The most recent of these reports was conducted to accommodate the rezoning of the east area of the GBWWTP (where the Study Area is located) from a Metropolitan Recreation Zone to a Public Utility Zone in 2015. No Phase II ESA activities were recommended (AECOM 2015).

1.4 PROJECT DESCRIPTION

The sanitary grit to be accepted at the SGRTF is removed from the City's collection system by hydrovac trucks. The settled material is a mixture of fecal contaminated inorganic and organic materials that can settle and accumulate in the collection system at sanitary lift stations and sand traps. The settled debris is often highly odourous and typically contains a significant fraction of inert material (i.e. sand, gravel, stones). Sanitary grit collection activities are undertaken during warmer months of the year (typically mid-April to late October), weather permitting.

Trucks will access the site from the main GBWWTP entrance and travel along the existing South Avenue roadway. Modification to the laydown area at the east end of the existing site, directly north of the proposed SGRTF, will be required to upgrade and grade the current gravel surfacing to accommodate truck traffic.

The SGRTF building has a footprint of approximately 426 m^2, a building height of 6.3 m, and a bay height of 9.4 m. Excavation of the site is required for the lower level of the building which will house some of the processing equipment. The surface level of the building will be for unloading hydrovac trucks and storage of washed solids into the screening and grit disposal bins.

The process equipment includes a waste receiving hopper; a coarse drum screen; a grit slurry pump station; two grit washers; and a conveyor system. Existing utilities will be integrated into the

proposed SGRTF. Wash water for the equipment will come from treated and disinfected final effluent. New 200 mm diameter forcemains will be required to supply the wash water and to transfer reject water from the grit washing process. The reject water forcemain will connect to a return line which will convey the reject water back to the head end of the GBWWTP for full processing and treatment. The washed grit will be temporarily stored on site and then sent to landfill for disposal. This facility is the first of its kind in North America and, as outlined in the Sanitary Grit Residuals Treatment Facility Business Case (City of Edmonton 2015), the reuse of the washed grit will be investigated as currently practiced in parts of Europe.

To control odours released from truck discharges and grit processing operations, the building will be constructed to enclose the truck receiving area and processing equipment. The building is sized such that a hydrovac truck can park in the facility and discharge its contents with the door closed to contain odours. In addition, the facility will be equipped with a dedicated HVAC and odour control system. Air space volumes, exchange rates and ventilation rates will be designed to create an acceptable work environment for operations staff and a carbon absorber system will be installed to treat the exhaust air from the facility.

Construction is anticipated to begin in 2016 with the intent for the SGRTF to be operational by 2017.

1.4.1 Alternatives

Two offsite alternatives and two onsite alternatives were considered for the treatment of the highly odourous materials collected from the sand traps and sanitary lift stations.

- Option 1A – Construct a treatment facility at the Kennedale Yard
- Option 1B – Construct a treatment facility at the Edmonton Waste Management Centre
- Option 2A – Construct a treatment facility at the GBWWTP, directly adjacent to the existing sludge building
- Option 2B – Construct a treatment facility at the GBWWTP, in the treed area to the east of the storm sewer right-of-way
- Option 3 – Status Quo (dispose of the grit in the CBBSL)

Offsite Alternatives

The first offsite alternative considered consisted of constructing a treatment facility at the Kennedale Yard (Option 1A). This offsite alternative, detailed in the Business Case (City of Edmonton 2015), was considered primarily by the City and was not provided to EPCOR as a preferred option. As limited information was available with respect to the advantages and disadvantages of this location, this offsite alternative was not considered in this SLS.

The second offsite alternative considered consisted of constructing a treatment facility at the Edmonton Waste Management Centre (Option 1B). This offsite alternative would require the use of potable water for a wash water supply and it was not equipped with an existing water

treatment system. In the event that the sewer system would be used for transporting reject water, the offsite alternative would necessitate exceedance of the City's Sewer Bylaws or additional treatment processes would have to be considered prior to release of reject water into the sewer system (City of Edmonton 2015).

Onsite Alternatives

A variety of technologies and processes were considered in regards to the integration of a solids receiving and handling system to the GBWWTP. Based on potential downstream unit process impacts, available land, and future site plans, it was determined that a standalone facility located on the east side of the plant site would be the preferred option. The first onsite alternative considered (Option 2A) was located directly south of the existing bioreactors between the sludge building/pumping station and a storm sewer right-of-way (Figure 2, Appendix A). Incorporating the existing sludge building and wet well amenities was also considered in Option 2B. Several challenges were noted with respect to this location as available space is limited. The placement of the SGRTF at this location required the relocation of existing sludge lines and a number of repairs related to roofing, decking, access doors, structure and potential material abatement. A desktop review concluded that truck movements would be restricted with higher safety risks. Future expansion potential for the SGRTF itself (for future truck bays) is also limited and would require the complete demolition of the sludge building and wet wells. Based on conversations with the City, any work to be done on the existing sludge building would trigger a materials hazard assessment.

Based on the location and drawbacks associated with the existing sludge building, a second onsite alternative (Option 2B, i.e. the proposed SGRTF), located in the treed area to the east of the storm sewer right-of-way, was considered (Figure 2, Appendix A). This location provides adequate space, room for truck maneuvering, and is relatively straight forward with respect to the construction of the SGRTF and supporting utilities. Additional details regarding the Option 2B are outlined in Section 1.4, above.

Status Quo

The City is currently disposing the highly odourous grit into CBBSL's. This practice was intended to be a temporary measure until a more environmentally sound practice could be implemented and therefore has not been considered as an alternative for handling the sanitary grit in this SLS.

2.0 CONSTRAINTS ANALYSIS

This section contains a constraints analysis on the selected location for the proposed Project. Financial, social and environmental opportunities and constraints are presented for the proposed location of the SGRTF. Institutional policies and legislation will also be discussed in relation to how they apply to the proposed SGRTF. The constraints and opportunities provided here form the basis for the conclusions presented in Section 3.0.

2.1 FINANCIAL OPPORTUNITIES AND CONSTRAINTS

The proposed SGRTF requires the excavation of the site to accommodate underground equipment, construction of a building to enclose the truck receiving area and processing equipment, modification to the laydown area to upgrade and grade the current gravel surface, and updates to the utility lines. The design of the facility is still being finalized; however, conceptual design costs are outlined in the Business Case (City of Edmonton 2015).

The updated Phase I ESA conducted for the GBWWTP indicated that no Phase II environmental assessment activities were recommended, however, based on preliminary discussions with the City, any major work to be done on the existing sludge building would trigger a materials hazards assessment (Option 2A).

In addition, if the sludge building were to be demolished, the removal of the concrete foundations and buried utilities would add to the cost and complexity of the SGRTF project. The foundations are approximately 5m below grade and their removal would potentially encroach on the adjacent boundary fence and trails. Special excavation protection would be required to facilitate demolition and removal of the foundation along with underground utilities.

In comparison to the offsite alternative (Option 1), the efficiency for handling the grit is increased due to the accessibility of the GBWWTP and the existing infrastructure. The proposed SGRTF eliminates the transportation of the reject water therefore reducing infrastructure requirements and cost. The proposed SGRTF also eliminates the potential of grit returning to the sewer system, if the reject water was transported via sewer system, therefore reducing City activities and cost to maintain the collection system at lift stations and sand traps.

Overall, the financial opportunities outweigh the constraints for the proposed site.

2.2 SOCIAL OPPORTUNITIES AND CONSTRAINTS

Specific technologies/processes were not considered for the offsite alternatives therefore social comparisons were limited. The social opportunities and constraints for the onsite alternatives (Option 2A and 2B) are similar therefore a comparison has not been provided.

The SGRTF will likely pose some inconveniences to residents of the Gold Bar neighborhood as a result of increased traffic flow associated with construction and operation. Additional trucks to the GBWWTP are expected from the transportation of the grit slurry to the SGRTF and from the transportation of the clean grit offsite. Approximately two additional hydrovac trucks per day are anticipated from the sewer cleaning operations, and since these operations are typically seasonal, increased traffic flow is expected to be from mid-April to late October, weather permitting.

Additional noise generated from construction and operation of the SGRTF may also disrupt the Gold Bar residents or trail users of the trail south of the SGRTF. The main sources of potential noise during operation will be associated with the HVAC supply air unit, the odour control unit, and the backing up of trucks in preparation for offloading. Depending on the equipment selected, screen walls to buffer noise will be considered. Noise modeling of these systems will be incorporated into the detailed design for the SGRTF. The natural setback created by Gold Bar Park between the residents of the Gold Bar neighborhood and the existing facility as well as the substantial elevation change between the two elements, will limit the disruption to residents in regards to onsite activities. Noise associated with construction will be temporary and will comply with the Community Standards Bylaw (City of Edmonton 2014).

Due to the nature of the material being handled, there is a potential for odour concerns. The proposed SGRTF building has been designed to enclose the truck receiving area and processing equipment and all air generated from odour generating processes will be scrubbed (using a carbon absorber) prior to release to the atmosphere.

In comparison to the offsite alternative (Option 1), the efficiency for handling the grit is increased due to the accessibility of the GBWWTP and the existing infrastructure. The proposed SGRTF eliminates the addition of onsite treatment processes or the offsite transportation of the reject water. The proposed SGRTF also eliminates the potential of grit returning to the sewer system, if the material was transported via the sewer system, therefore reducing the overall hydrovac requirements and the overall traffic and noise associated with the hydrovac activities within the City of Edmonton.

Overall, the social opportunities outweigh the constraints for the proposed site.

2.3 ENVIRONMENTAL OPPORTUNITIES AND CONSTRAINTS

The onsite alternatives (Option 2A and 2B) are located partially within and adjacent to a brownfield site that has been extensively disturbed throughout its history; therefore, wildlife in the area should be well habituated to anthropogenic activity.

As noted above, any major work to be done on the existing sludge building would trigger a materials hazards assessment. Some of the challenges associated with Option 2A (relocating the sludge line and decommissioning/repairing the sludge building) pose a variety of potential

environmental issues such as material abatement, spills associated with utility alignment, and the disposal of decommissioning materials.

The main environmental constraint associated with Option 2B is the clearing in the vegetated community along the southeast side of the plant and of planted trees within the existing plant site. Details regarding tree compensation are discussed in Section 2.4.6, below.

In comparison to the offsite alternative (Option 1), the proposed SGRTF reduces the volume of potable water consumed and eliminates the offsite transportation of the reject water.

2.4 INSTITUTIONAL OPPORTUNITIES AND CONSTRAINTS

The City of Edmonton has policies and bylaws that regulate and guide the construction of new facilities below the top-of-bank within the North Saskatchewan River Valley system. These policies are in place to protect Edmonton's natural features from increasing development pressures. Policies that may apply to the proposed SGRTF include, but are not necessarily limited to Bylaw 7188 (NSRVARP), Bylaw 14600 (Community Standards Bylaw), Bylaw 15100 (The Way We Grow), The Way We Live, The Way We Green, City Policy C456A (Corporate Tree Management), and City Policy C531 (Natural Area Systems). Each of these pieces of legislation is discussed below in regards to how they relate to construction of the Project.

2.4.1 Bylaw 7188: North Saskatchewan River Valley and Area Redevelopment Plan (City of Edmonton 1985)

NSRVARP (City of Edmonton 1985) was developed to protect the North Saskatchewan River Valley and Ravine System as part of the City of Edmonton's open space heritage. The NSRVARP envisions a major portion of the River Valley and Ravine System used as an environmental protection area. The major goal of the NSRVARP is:

- To ensure preservation of the natural character and environment of the North Saskatchewan River Valley and its Ravine System.

The Environmental Protection Objective that applies to the proposed project is:

2.4.2 To consider environmental factors when planning for use in the River Valley.

The Major Facility and Natural Resource Development Objectives that apply to the proposed project are:

2.6.1 To control the expansion and construction of major facilities and minimize the adverse impacts of major facilities on the natural environment and park development.

2.6.4 To minimize the adverse environmental impacts of all existing and future public works, landfill and solid waste disposal facilities.

Applicable Major Facility and Natural Resource Development Policies of this ARP include:

3.5.1 Development of Major Facilities

It is a policy of this Plan that major public facilities shall not be constructed or expanded unless their location within the River Valley is deemed essential and approved by City Council.

3.5.3 Site Location Study and Environmental Impact Screening Assessment

It is a policy of this Plan that all proposals for the development of a major facility that is publicly owned or is developed on public lands shall be subject to an environmental impact screening assessment as outlined in Schedule D, and a detailed site location study detailing costs, and social, environmental and institutional constraints which make a River Valley location essential must be prepared for Council approval. These studies shall be undertaken prior to Council committing funds for capital expenditure for the development of this proposal.

3.2.17 Urban Design and Architectural Guidelines

It is the policy of this Plan that all public development will conform to Council approved environmental, urban and architectural design guidelines to be developed in future studies and park development plans.

3.3.3 Application of Environmental Impact Assessment

It is the policy of this Plan to ensure the application of an environmental impact screening and assessment to all proposed public development and development on public land.

The proposed Project meets the requirements of this bylaw in the following ways:

- The proposed SGRTF footprint is partially within a historically disturbed area; therefore, adverse impacts of the facility on the natural environment in the River Valley will be minimized. Sheet piling will be used to limit the excavation footprint and volume. This will minimize the area affected during construction and preserve as much green space as practical.
- The SGRTF is designed to reduce environmental impacts associated with public works, landfill and solid waste disposal facilities by utilizing existing infrastructure and by handling and treating the sanitary grit that is removed from the City of Edmonton's collection system without allowing residual solids to return to the sewer system. In addition, the SGRTF has been designed with the possibility of creating a valuable end product that can be reused or marketed, diverting it from landfill.

- Construction of the SGRTF within the River Valley is deemed necessary because of the location of the existing GBWWTP which will provide a wash water supply (i.e disinfected final effluent) and will treat the reject water.
- The color schemes and material pallet for the proposed SGRTF will be consistent with that of recent constructions at the GBWWTP as it will be visible from adjacent trails, park and from the north side of the North Saskatchewan River.
- This SLS and an EIA have been prepared for the proposed Project.

2.4.2 Bylaw 14600: Community Standards Bylaw (City of Edmonton 2014)

The purpose of the Community Standards Bylaw (City of Edmonton 2007) is to regulate the conduct and activities of people on privately owned property and immediately adjacent areas in order to promote the safe, enjoyable and reasonable use of such property for the benefit of all citizens of the City.

6(1) A person shall not cause or permit a nuisance to exist on land they own or occupy.

6(2) For the purpose of greater certainty a nuisance, in respect of land, means land, or any portion thereof, that shows signs of a serious disregard for general maintenance and upkeep, whether or not it is detrimental to the surrounding area, some examples of which include:

(f) production of any generally offensive odours.

14(2) A person shall not cause or permit any noise that disturbs the peace of another individual.

The SGRTF has been strategically designed to handle the highly odourous material in an enclosed environment equipped with effective odour control measures.

As noted above, screen walls to buffer noise will be considered depending on the HVAC and odour control units selected and noise modeling will be incorporated into the detailed design. In addition, design parameters with respect to noise limits, based on zoning, will be confirmed with the City.

2.4.3 Bylaw 15100: The Way We Grow (City of Edmonton 2010)

The Way We Grow (City of Edmonton 2010) is the City of Edmonton's Municipal Development Plan, and is designed to guide the City's growth and development until 2020. This bylaw includes the following policies that are relevant to the proposed construction the proposed Project:

7.1.1 Protect, preserve and enhance a system of conserved natural areas within a functioning and interconnected ecological network.

7.1.1.7 Public projects, new neighborhoods and developments will protect and integrate ecological networks, as identified in the Natural Connections Strategic Plan, by adopting an ecological network approach to land use planning and design.

7.1.1.11 Require new developments, adjacent to natural areas, to demonstrate that they have incorporated ecological design best-practices to mitigate negative consequences.

7.3.1 Protect, preserve and enhance the North Saskatchewan River Valley and Ravine System as Edmonton's greatest natural asset.

7.3.1.1 The City will work in partnership with local, regional and provincial organizations to conserve, protect, restore and enhance the North Saskatchewan River Valley and Ravine System for its ecological, recreational, aesthetic, educational and natural resource value.

7.3.3 Mitigate the impact of development upon the natural functions and character of the North Saskatchewan River Valley and Ravine System.

7.3.3.1 New development within the North Saskatchewan River Valley and Ravine System will be planned according to, and will demonstrate that it embodies, the following priorities:

- *Conservation and protection of natural areas and the connections that link them, from and within the North Saskatchewan River Valley and Ravine System.*
- *Public utilities installations, services and facilities.*

7.3.3.3 Require development projects within the North Saskatchewan River Valley and Ravine System to undertake an Environmental Impact Assessment as specified in the North Saskatchewan River Valley Area Redevelopment Plan (Bylaw No. 7188).

7.5.1 Mitigate impacts on Edmonton's water resources by ensuring that new developments in Edmonton embody an exemplary standard of ecological design.

7.5.1.1 Require new development to demonstrate it has incorporated ecological design best-practices into the design of neighborhoods and buildings to reduce stormwater run-off.

7.5.2 Protect, maintain and continually enhance the water quality of the North Saskatchewan Watershed.

7.5.2.2 Adopt and enforce regulations and guidelines that will enhance the quality of Edmonton's watershed.

7.5.3 Water resources are conserved and used efficiently by the public, industry and the City of Edmonton.

7.5.3.2 Ecological design best-practices will be used in the operation and design of City owned and/or managed facilities and infrastructure.

7.5.3.5 Design, arrange and located new infrastructure and buildings to mitigate impacts on the water system.

The proposed Project meets the requirements of this bylaw in the following ways:

- Although some tree removal is required within the existing fence line, the location of the facility has been strategically placed such that connectivity is maintained in the already narrowed vegetated area south of Gold Bar Park Road and to the north of the GBWWTP.
- The SGRTF will be graded such that stormwater runoff will be directed to existing storm drains protecting the North Saskatchewan River from pollution and erosion caused by stormwater. In addition, the facility has been designed to utilize existing infrastructure, water supplies, and water treatment processes. By utilizing the GBWWTP, the footprint and impact on the North Saskatchewan River Valley and Ravine System as well as the North Saskatchewan Watershed are minimized.
- An EIA will be conducted and will identify, assess, and evaluate potential impacts and corresponding mitigation measures associated with the construction and operation of the SGRTF.

2.4.4 The Way We Live (City of Edmonton 2010)

The Way We Live: Edmonton's People Plan (City of Edmonton 2010) is designed to outline how to improve the quality of life of Edmontonians in a socially, environmentally and financially sustainable way and puts a focus on relationships between people, their neighborhoods, local government and the world.

The main objectives of this plan that are relevant to the proposed Project include the following:

- The City of Edmonton is an environmentally sustainable society.

The current method of handling the highly odourous grit is not considered environmentally sustainable. The SGRTF is designed to handle and treat the grit in an environmentally sound manner while utilizing existing infrastructure and resources. As outlined above, the proposed SGRTF is the first of its kind in North America and the reuse of the material will be investigated as currently practiced in parts of Europe.

2.4.5 The Way We Green (City of Edmonton 2011)

The Way We Green: the City of Edmonton's Environmental Strategic Plan (City of Edmonton 2011), outlines the principles, goals, objectives and strategic actions and approaches for Edmonton to live in balance with nature. The focus of the plan is to address the sustainability and resilience challenges related to the ecosystem (land, water and air), energy/climate change, food and solid waste.

The main objectives of this plan that are relevant to the proposed Project are outlined below. Objectives pulled from The Way We Grow that have been identified in The Way We Green are not included in this section.

- The North Saskatchewan River and its tributaries are protected from pollution and erosion caused by stormwater runoff from Edmonton's built areas.
- The North Saskatchewan River is protected from pollution cause by discharges from the Gold Bar Wastewater Treatment Plant.
- Edmonton's air is effectively managed to minimize nuisance odours.

The SGRTF has been designed control stormwater runoff by grading the site and utilizing existing infrastructure to protect the North Saskatchewan River from pollution and erosion caused by stormwater runoff. As outlined in The Way We Green, the City of Edmonton works closely with ECPOR to continually reduce loadings of all types from the GBWWTP, to monitor water quality, and to quantify aquatic ecosystem health effects on the North Saskatchewan River downstream of effluent discharges. EPCOR will continue to work with the City of Edmonton to protect the North Saskatchewan River.

The purpose of the SGRTF is to accept and treat the grit slurry that was causing odour issues at the Kennedale facility. The SGRTF has been engineered to handle the material in an enclosed environment that has been equipped with effective odour control measures.

2.4.6 City Policy C456A: Corporate Tree Management (City of Edmonton 2010)

The purpose of the Corporate Tree Management Policy (City of Edmonton 2010) is to ensure that all trees on City owned property are adequately protected from destruction, loss or damage. Where damage to or loss of City trees occurs, as a result of not complying with the City Guidelines, equitable compensation for that loss will be recovered from the civic or private entity causing the damage or loss and applied to future tree replacements.

Clearing of the Mixed Deciduous and Evergreen Woodland Alliance (Wheatley and Bentz 2002) and of the planted trees within the existing plant fence line will be required to construct SGRTF and supporting infrastructure. At the time the SLS was written, the City owned the land within the Study Area and EPCOR was in the process of acquiring the land. If by the time tree clearing is required and the land transfer has not gone through, the trees on City land removed for the proposed SGRTF will be compensated either through monetary means, revegetation elsewhere

on the site, or revegetation offsite, as per the City of Edmonton Corporate Tree Policy. To determine a compensation value of the trees within the project disturbance area, a tree evaluation of the project site will be conducted.

2.4.7 City Policy C531: Natural Area Systems (City of Edmonton 2007)

The Natural Area Systems Policy (City of Edmonton 2010) was developed to help conserve, protect, and restore the natural wetlands, uplands, water bodies and riparian areas within the City of Edmonton to safeguard the City's natural capital and associated ecological services. As per this policy, the City of Edmonton will balance ecological and environmental considerations with economic and social considerations in its decision making and demonstrate that it has done so.

The main purposes of this policy that are relevant to the proposed Project include the following:

- Conserve, protect and restore natural area systems through the physical planning and development process; according to the provisions of municipal, provincial and federal policy and legislation.
- Ensure consistent, uniform and equitable conservation practices that are based on the best available science.
- Direct Administration to plan our city so that our ecological systems will function effectively at neighborhood, city and regional scales.

As noted above, disturbance to vegetation is required within the existing fence lines for the construction of the facility however connectivity will be maintained in the remaining vegetated areas south of Gold Bar Park Road and to the north of the GBWWTP. As the plant site has been extensively disturbed throughout history and is surrounded by a high chain-link fence, it is likely that medium to large sized wildlife have already been excluded from the Study Area and the narrow passages to the south of Gold Bar Park Road and to the north of the GBWWTP will be available for smaller wildlife. Additional impacts and mitigation measures related to the surrounding ecological system will be identified in the EIA.

3.0 CONCLUSIONS

This Site Location Study was conducted pursuant to the NSRVARP (Bylaw No. 7188) to evaluate the proposed construction of the Gold Bar residual solids receiving facility, which is located southeast of the existing Gold Bar Wastewater Treatment Plant, within SW12-053-24 W4M, Edmonton, Alberta.

An analysis of the financial opportunities and constraints revealed additional financial costs would be incurred should the facility be constructed offsite (due to the handling of the reject water) or adjacent to the sludge building (due to the relocation of the sludge line and the sludge building demolition/repair).

Socially, the construction and operation of the SGRTF may cause some inconveniences for Gold Bar residents and trail users. Additional modeling and mitigation measures will be considered in the detailed design.

Environmentally, the proposed SGRTF does require tree clearing. Moreover, the location is ideal for taking advantage of existing resources by utilizing final effluent as wash water and discharging reject water back to the GBWWTP for full treatment. The alternative scenarios pose other potential environmental concerns with respect to material abatement, utility realignments, decommissioning, wash water supplies, and the transportation of reject water.

The policy analysis did not identify any contraventions that would prevent the SGRTF from moving forward. It is therefore the conclusion of this Site Location Study that the proposed location within the NSRVARP is essential for this proposed project.

4.0 LIMITATIONS AND QUALIFICATIONS

In conducting the investigation and rendering our conclusions, Stantec gives the benefit of its best judgment based on its experience and in accordance with generally accepted professional standards for this type of investigation. This report was submitted with the best information to date and on the information provided. The conclusions made within this report are a professional opinion, not a certification of the site's environmental condition, or analysis of the environmental impacts of the project, no other warranty, expressed or implied is made. This report has been prepared for the exclusive use of EPCOR for the purposes of assessing the suitability of the proposed Project at the proposed location. Any use which any third party makes of this report, or any reliance on or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any other third party as a result of decisions made or actions based on this report. Our conclusions are limited by the following:

- The information contained within this report is based on the information provided to date by various agencies and the design figures available at the time of report preparation. Should the figures be amended in the future, revisions to the report may be required.
- The investigation was limited to those parameters specifically outlined in this report.
- The findings of this report were based off a desktop review of current information. No fieldwork was conducted.

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APPENDIX A
FIGURES

38400 38600 38800 39000 39200 39400

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5936400

SE-11-053-24W4

SW-12-053-24W4

SE-12-053-24W4

North Saskatchewan River

N

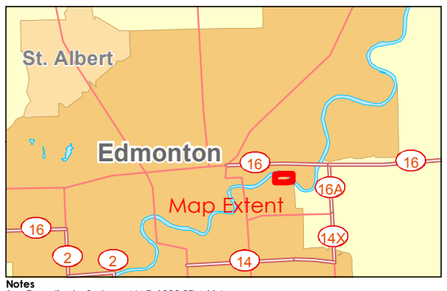
50 Street North-west

Gold Bar Park Road

109A Avenue North-west

109 Avenue North-west

46 Street North-west



Study Area

0 60 120 metres

1:3,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 3TM 114
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Orthoimagery: City of Edmonton, Transportation, 2014.

Stantec EPCOR

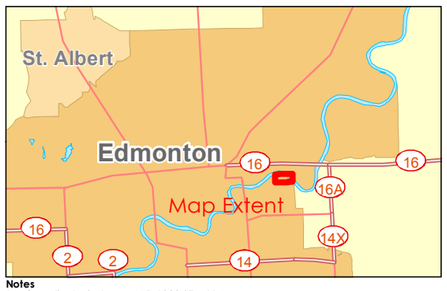
Project Location
Gold Bar Park Road, SW-12-053-24W4
NE Edmonton

110146363
Prepared by LF on 2015-06-26
Review by JC on 2015-06-29
Revised by JC on 2015-10-02

Client/Project
EPCOR
Sanitary Grit Residuals Treatment Facility
Site Location Study

Figure No.
1.0

Title
Overall Site Plan



Candidate Location Footprint
Utility Right of Way
Future Bioreactor Expansion
Study Area

0 60 120 metres

1:3,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 3TM 114
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Orthoimagery: City of Edmonton, Transportation, 2014.
4. Site Details: Stantec, Water, Figure 5.0 Residual Solid Receiving Facility Location C, (.DWG).

Stantec EPCOR

Project Location
Gold Bar Park Road, SW-12-053-24W4
NE Edmonton

110146363
Prepared by LF on 2015-09-15
Review by MK on 2015-09-16

Client/Project
EPCOR
Sanitary Grit Residuals Treatment Facility
Site Location Study

Figure No.
2.0

Title
Onsite Alternatives