THE CITY OF EDMONTON

ENVIRONMENTAL IMPACT ASSESSMENT

GARIEPY NEIGHBOURHOOD

NE 16-052-25 W4M

FEBRUARY 01, 2024

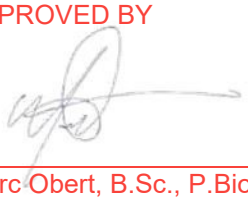
WSP CANADA INC.
SUITE 1200
10909 JASPER AVENUE
EDMONTON, AB, CANADA T5J 3L9
T: +1 780 466-6555
F: +1 780 421-1397
WSP.COM
WSP PROJECT NO. CA-WSP-211-11585-00

SIGNATURES

PREPARED BY

Rachael Firminger, M.Sc., P.Biol.
Senior Wildlife Biologist

APPROVED BY



Marc Obert, B.Sc., P.Biol.
Lead, Project Manager

PREPARED FOR:

City of Edmonton
9636 51 Avenue NW
Edmonton, AB, T6E 6A5

WSP prepared this report solely for the use of the intended recipient, City of Edmonton, in accordance with the professional services agreement between the parties. In the event a contract has not been executed, the parties agree that the WSP General Terms for Consultant shall govern their business relationship which was provided to you prior to the preparation of this report.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

WSP disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation, or evidence.

WSP makes no other representations whatsoever concerning the legal significance of its findings.

The intended recipient is solely responsible for the disclosure of any information contained in this report. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report.

WSP has provided services to the intended recipient in accordance with the professional services agreement between the parties and in a manner consistent with that degree of care, skill and diligence normally provided by members of the same profession performing the same or comparable services in respect of projects of a similar nature in similar circumstances. It is understood and agreed by WSP and the recipient of this report that WSP provides no warranty, express or implied, of any kind. Without limiting the generality of the foregoing, it is agreed and understood by WSP and the recipient of this report that WSP makes no representation or warranty whatsoever as to the sufficiency of its scope of work for the purpose sought by the recipient of this report.

In preparing this report, WSP has relied in good faith on information provided by others, as noted in the report. WSP has reasonably assumed that the information provided is correct and WSP is not responsible for the accuracy or completeness of such information.

Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

Design recommendations given in this report are applicable only to the project and areas as described in the text and then only if constructed in accordance with the details stated in this report. The comments made in this report on potential construction issues and possible methods are intended only for the guidance of the designer. The number of testing and/or sampling locations may not be sufficient to determine all the factors that may affect construction methods and costs. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

The original of this digital file will be kept by WSP for a period of not less than 11 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP, its integrity cannot be assured. As such, WSP does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

This limitations statement is considered an integral part of this report.

TABLE OF CONTENTS

TABLES (IN BODY OF REPORT)

APPENDICES

1 INTRODUCTION

The City of Edmonton (Proponent) retained WSP Canada Inc (WSP) to provide environmental support for the two components of the Gariepy Neighbourhood and Alley Renewal Project located within the existing Gariepy Neighbourhood within the City of Edmonton (the Program). These neighbourhood renewal components consist of upgrading walkways within the Gariepy Ravine with the addition of two Pedestrian Walkways (PWs) and upgrading the Top of Bank (ToB) Park, both within the North Saskatchewan River (NSR) Valley Area Redevelopment Plan boundary area (The Project; Bylaw 7188 area). See Appendix A, Figure 1 for an overview of the Project and Appendix C for applicable concept plans from the Gariepy Ravine submission package.

The purpose of this document is to evaluate the potential biophysical effects associated with the construction, operation, and maintenance of the Project. The following Environmental Impact Assessment (EIA) report was written pursuant to the *North Saskatchewan River Valley Area Redevelopment Plan* (Bylaw 7188) *A Guide to Completing Environmental Impact Assessments* (City of Edmonton [CoE], 1985) generated by the CoE Network Integration Section of the Urban Form and Strategic Development department (Network Integration), and through client-directed discussions with Network Integration. A terms of reference (TOR) was provided by the CoE for this EIA, and requests an abridged version of an EIA, focusing on soil conservation, wildlife, natural area protection and naturalization of the spaces (CoE, 2022a).

1.1 Property Description

The Project is located north of the North Saskatchewan River within the Gariepy Neighbourhood. There are three components proposed for the Project: two PWs will cross the Gariepy Ravine, approximately 150 m and 280 m east of 172 Street NW, and the ToB Park upgrades will occur along Lessard Rd NW and 53 Ave NW (Appendix A, Figure 1). Both Program components are under City ownership and are currently zoned as Neighbourhood Parks and Services. The Project is located along the North Saskatchewan River and subsequent valley linkages and intersects the Bylaw 7188 area (CoE, 1985).

A review of select historical aerial photos (Appendix A, Figures 2A to 2G) indicate the following land-use history:

- Native deciduous tree stands are present along Gariepy Ravine.
- The grassed area above the ToB has been maintained regularly, and an informal path system has been in place along 53 Avenue and Lessard Drive since the early 1980s (CoE, 2022b).
- Several viewpoints exist within the neighbourhood, but no formal pathways have been developed due to steep and forested terrain.

1.2 Scope of the Assessment

The purpose of this document is to evaluate the potential effects associated with the construction, operation and maintenance of the Project on the select environmental elements listed below and any historical resources identified. This EIA was prepared to meet the requirements under Bylaw 7188. The scope of the assessment will include:

- An overview of the Property
- An overview of the proposed Project
- Description of the regulatory and policy setting of the assessment
- Definition of assessment areas

- A summary of existing environmental context for:
  - Geology, geomorphology and soils
  - Surface water and groundwater (desktop)
  - Fish and fish habitat (desktop)
  - Vegetation
  - Wildlife
  - Historic resources
- Description of the Project
- Description of the potential environmental risks associated with the Project activities for each environmental element carried forward in the assessment
- A characterization of the effect for each anticipated Project activity, supplying mitigation measures and predicting any residual effects (effects that remain after mitigation is implemented) for each environmental element carried forward in the assessment
- Description of existing and proposed environmental monitoring programs
- Description of the public consultation process undertaken for the Project
- Conclusions and supporting information

1.2.1 Regulatory, Policy and Guideline Setting

Various federal, provincial, and municipal acts, regulations, bylaws, and guidelines were considered in the scoping of issues and selection of Valued Ecosystem Component (VEC) categories to carry forward in the assessment. Table 1–1 lists the general legislation, policies and guidelines that provide the regulatory and policy setting for this assessment. It also summarizes the influence each has on the assessment.

Table 1–1 Regulatory, Policy and Guideline Setting

Name of Legislation, Policy, or Guideline	Purpose or Intent	Anticipated Requirement
Federal		
Fisheries Act	Protection of fish and fish habitat, including avoiding any death of fish or the harmful alteration, disruption or destruction (HADD) of fish habitat that must be authorized by Fisheries and Oceans Canada (DFO). To minimize any adverse effects that result or may reasonably be expected to result from the unlawful deposit of a deleterious substance.	A Request for Review submission to DFO is not anticipated to be required.
Species at Risk Act (SARA)	Prohibits harming, killing, or harassing of listed species or damaging or destroying their residence on federal lands, and for aquatic species and migratory birds under the *Migratory Birds Convention Act* regardless of where they are located.	No agreements, permits and or licenses under SARA are anticipated.

Name of Legislation, Policy, or Guideline	Purpose or Intent	Anticipated Requirement
Migratory Birds Convention Act (MBCA)	Protection of migratory birds, their nests and habit.	Timing constraint for vegetation clearing or other work that is potentially harmful to breeding birds, their nests and young.
Provincial		
Environmental Protection and Enhancement Act (EPEA)	Prohibits (1) knowingly releasing or permitting the release, or (2) releasing or permitting the release of a substance into the environment in an amount, concentration or level or rate of release that is in excess of an approval or a regulation; or causes or may cause a significant adverse effect.	No agreements, permits and or licenses under SARA are anticipated.
Fisheries Act	Serves to facilitate and enhance the detection, suppression, elimination, and prevention of the spread of invasive organisms in Alberta.	Decontamination of equipment working in or near water.
Historical Resources Act (HRA)	Provides a framework for the Protection of Historic Resources in Alberta.	HRA approval is required for the Project.
Soil Conservation Act	Requires owner to take reasonable measures to prevent soil loss or deterioration or employ measures to cease soil loss or deterioration that is taking place.	Erosion and sediment control (ESC).
Water Act	Within the greater province, this Act requires an approval and/or license be obtained prior to construction within a water body or diverting and using water from a water body. Activities impacting wetlands are also regulated under this Act, with guidance from the Alberta Wetland Policy.	No permit or approval requirements under the *Water Act* are anticipated.
Weed Control Act and associated regulations	Regulation of the spread of *noxious* weeds, *prohibited noxious* weeds, and regulated weed seeds.	Monitoring for the presence and immediate removal of any *prohibited noxious* weeds and control the spread of *noxious* weeds.
Wildlife Act and associated regulations	Prohibits the harassment, destruction, or damage of wildlife or heaver dams on public land without approval from the minister. Provides protection for individual endangered or threatened and non-gram animals, as well as their house, nest or den.	Timing constraint for vegetation clearing or other work. A field-based pre-disturbance wildlife sweep conducted by a qualified wildlife biologist to determine the presence of wildlife, important wildlife features and nesting birds that must be avoided, or that require mitigation measures to avoid or reduce adverse effects of the Project, where applicable.

Name of Legislation, Policy, or Guideline	Purpose or Intent	Anticipated Requirement
Municipal		
Bylaw 7188 (CoE, 1985)	Ensures the application of Bylaw 7188 to all proposed public development and development of public land in the river valley.	EIA circulation to City departments, and final review and approval.
Drainage Bylaw (Bylaw 18093) (CoE, 2017)	Regulates surface drainage on private and public land and protects the environment by regulating releases into the sewer system and natural watercourses, including grading changes and management of surface drainage.	Compliance will be evaluated during circulation of EIA report, and/or detailed design, where requested by the CoE Drainage Services.
CoE Design and Construction Standards, 2022 Volume 5 Landscaping (CoE, 2022c)	Establishing standards and guidelines for the City of Edmonton expectations in the design and construction of landscape and open space assets.	Work should consider relevant guidelines within the Standards.
Public Tree Bylaw 18825 (CoE, 2023).	The Public Tree Permit process helps people working near City-owned trees work with the City's Urban Forestry team to preserve trees near their worksites.	A permit may be required for this Project.
CoE Corporate Tree Management Policy C456C (CoE, 2020a).	Applies to all City land and to all circumstances where City trees are to be pruned, removed or relocated.	Work will require adherence to the Policy.
CoE Tree Preservation Guidelines	Guidelines on how to preserve and protect City trees before, during and post work activities to maintain the health of the tree and prevent or minimize the likelihood of tree loss or damage.	Works will require the preparation of a Tree Protection Plan for trees adjacent to the construction areas associated with the PWs.
CoE Erosion and Sediment Control Guidelines and Field Manual (Stantec Consulting Ltd., 2005)	To assist Project and City personnel to understand Drainage Services' Erosion and Sedimentation Control (ESC) Framework and to meet the City's ESC requirements.	Compliance with the policies and expectations regarding ESC through all stages of the Project.
CoE Community Standards Bylaw (Bylaw 14600) (CoE, 2018a)	Sets noise limits and timing restrictions for construction activities.	Works must comply with bylaw noise and timing limits.
The City Plan (CoE, 2020b)	Supports implementing a multi-modal transportation system that creates a connected and accessible city for people of all ages and abilities.	This policy supports the implementation of the PWs and enhancements to the ToB.
ConnectEdmonton 2019-2028 (CoE, 2019a)	Provides direction to create a healthy city, vibrant urban places, regional prosperity and climate resilience. Supports safe bike routes, vibrant gathering spaces, adding missing sidewalks, and planting trees.	This policy supports the implementation of the PWs and enhancements to the ToB.
Breathe (CoE, 2024)	Supports green network with Edmonton and meets the needs of communities present and future by connecting people with year-round opportunities to	This policy supports the implementation of the PWs and enhancements to the ToB.

Name of Legislation, Policy, or Guideline	Purpose or Intent	Anticipated Requirement
	learn, commute, recharge, recreate, gather and celebrate.	
Climate Resilient Edmonton: Adaptation Strategy and Action Plan (CoE, 2018b)	Provides directions to limit the impacts of rising temperatures, increased rain, extreme weather, and changes to the ecosystem. This supports efforts to increase the tree canopy, and increasing low carbon transportation options for people biking, walking and rolling.	This policy supports the implementation of the PWs and enhancements to the ToB.
Access Design Guide, Version 4 (2021)	Supports access and use for people of all ages and abilities and was used to inform the design of wider and new sidewalks, seating along pathways and picnic table and bench selections.	This policy supports the implementation of the PWs and enhancements to the ToB.
Accessibility for People with Disabilities Policy (CoE, 2019b)	Supports accessibility as fundamental to design for all ages and abilities to use neighbourhood infrastructure for the next 50 years.	This policy supports the implementation of the PWs and enhancements to the ToB.
Active Transportation Policy No. C544 (CoE, 2009)	Directs improved opportunities for people to walk, roll and bike and promotes the inclusion of shared pathways. Encourages active transportation in Gariepy and nearby neighbourhoods.	This policy supports the implementation of the PWs and enhancements to the ToB.

2 ASSESSMENT METHODOLOGY

The following sections describe the methods used to determine potential Project interactions, and to characterize the existing environmental features and conditions within the local and regional setting for the Project based on information collected from a desktop review of existing environmental and Project design documentation and targeted field data collection. Field surveys were conducted to document general wildlife use, upland vegetation communities, potential rare plants, presence and extent of invasive plants in order to assess any potential species at risk within the Project area. Potential Project interactions were used to define the VECs that will be carried through the assessment.

2.1 Valued Ecosystem Components

VECs are defined as categories that are identified as having scientific, social, cultural, economic, historical, archaeological, or aesthetic importance (Canadian Environmental Assessment Agency [CEAA], 2006). VEC categories for the proposed Project were selected with the objective of scoping the effects assessment to Project interactions that are of interest to the regulatory authority, the public, and the scientific community. Within each VEC category, specific environmental elements present in the Project area, and potentially affected by Project activities, were identified for impact assessment. The selection criteria for VECs include consideration of legislative or policy drivers, presence in the Project vicinity, and likelihood of interactions with the Project. The target VECs determined for the Project include:

- Geology, geomorphology and soils

- Surface water and groundwater
- Fish and fish habitat
- Vegetation
- Wildlife
- Historical resources

2.2 Boundaries

The following sections describe the boundaries used in this assessment.

2.2.1 Spatial Boundaries

The spatial boundaries are the geographic extent within which the potential environmental and health effects of the Project are assessed. These include: the Project Footprint for consideration of direct physical effects within the area of disturbance; and the Local Study Area (LSA) for consideration of localized, direct and indirect Project effects on selected environmental elements.

- **Project Footprint**: The Project Footprint considers the direct physical effects within the area of disturbance and is the furthest extent that will be physically disturbed by the construction of the Project. Two Project Footprints have been defined for this Project and include both PWs and the ToB Park. The Project Footprint is approximately 2.51 ha in size for both PWs and 0.50 ha for the ToB Park (Appendix A, Figure 1). The Project Footprint will be used in the assessment of direct effects to all VECs for the Project.
- **LSA**: The LSA is the area within which adverse effects (i.e., direct and indirect) from construction and operation of the Project are reasonably expected to occur and can be described and includes a 100 m buffer of the Project Footprint. It also provides a broader context to help evaluate any resulting cumulative effects (if any) and occupies approximately 27 ha (Appendix A, Figure 1).

A regional study area (RSA) applicable to all VECs has not been defined; however, regional scale effects (i.e., beyond the LSA) are discussed where appropriate.

2.2.2 Administrative Boundaries

Bylaw 7188 was developed to protect the NSR Valley and Ravine System and to establish principles for future implementation plans and programs for parks development. The primary goals of this administrative boundary are to:

- Ensure preservation of the natural character and environment of the NSR Valley and Ravine System
- Establish public recreation areas
- To provide the opportunity for recreational, aesthetic, and cultural activities for the benefit of Edmonton residents and visitors

This boundary was reviewed to determine what aspects of the program fall within it. Based on a cursory examination, only the PWs and the TOB Park Project Footprints interact with the Bylaw 7188 area. Therefore, only these aspects of the Program will be discussed in this EIA report.

2.3 Baseline Data Review of Valued Ecosystem Components

In consideration of the significant amount of information available, a desktop review was used as the primary method for assessing baseline conditions for the Project Footprint and the LSA. The desktop methods used to

characterize baseline conditions of the Project VECs are presented below. Additionally, where appropriate, a review of current (2022) and historical (1948, 1965, 1976, 1990, 2001 and 2008) imagery were reviewed for the Project (Appendix A, Figures 2A to 2G).

2.3.1 Geology, Geomorphology, and Soils

The following reports and relevant databases were reviewed for geology and soil information pertaining to the Project area:

- AGRASID – Soil type and classification within the LSA (Alberta Agriculture and Forestry [AAF], 2023)
- *Urban Geology of Edmonton* (Kathol and McPherson, 1975)
- Alberta Energy Regulator (AER) Coal Mine Map Viewer (AER, 2023)

2.3.2 Surface Water and Groundwater

The following reports were reviewed for surface water and groundwater information pertaining to the Project area:

- *Hydrogeology of the Edmonton Area (Northwest Segment), Alberta* (Bibby, 1974)
- Fisheries and Wildlife Management Information System (FWMIS) (Alberta Environment and Protected Areas [AEPA], 2023a)

2.3.3 Fish and Fish Habitat

The following report and relevant database was reviewed for information pertaining to the Project:

- FWMIS – Historic occurrences of fish within 5 km of the Project Footprint (AEPA, 2023a)

2.3.4 Vegetation

The following reports and relevant databases were reviewed for vegetation information pertaining to the Project area:

- Alberta Conservation and Information Management System (ACIMS) – Historic records of rare plant species and rare ecological community types within or adjacent to the LSA (ACIMS, 2022)
- Alberta Merged Wetland Inventory – Potential wetland areas within or adjacent to the Project Footprint (Alberta Environment and Parks [AEPA], 2023)
- Urban Primary Land and Vegetation Inventory (uPLVI; CoE, 2018c)

The CoE, in collaboration with GreenLink, worked to develop the uPLVI for the City of Edmonton's natural areas following the *Primary Land and Vegetation Inventory (PLVI) – Stands and Specifications* (Government of Alberta [GOA], 2016). The uPLVI incorporates components of both the Alberta Vegetation Inventory (AVI; AAF, 2022) and Grassland Vegetation Inventory (GVI; AEP, 2019) and was developed to cover areas of the province that currently have no AVI or GVI data.

2.3.5 Wildlife

The following report and relevant database were reviewed for wildlife information pertaining to the Project area:

- FWMIS – Historic occurrences of wildlife within 3 km of the center of the Project Footprint (AEPA, 2023a)

2.3.6 Historical Resources

The following reports and relevant databases were reviewed for historic resources information pertaining to the Project area:

- Historic Resources Management Branch [HRMB]-External, Alberta Geospatial Services Platform (Government of Alberta, 2023)
- Listing of Historic Resources (Alberta Culture, 2023)

2.3.7 Environmental Sensitivity Ratings

The Environmental Sensitivity Project was initiated in 2015 and was designed to identify areas of significant ecological value (assets), threats to those valued resources and physical and cultural constraints to development (City of Edmonton, 2015). The resulting maps ranked those sensitivities and development constraints to identify areas that should be considered for protection, conservation or restoration and zones in which development poses low risk to the ecological network. To determine environmental sensitivity ratings for the Project, the following database was reviewed:

- Environmental Sensitivity Project (2015) (CoE, 2022d)

2.4 Field Studies

2.4.1 Vegetation

Rare vascular plant surveys were conducted on June 05, 2023. Rare plant surveys followed the *Alberta Native Plant Council (ANPC) Guidelines for Rare Vascular Plant Surveys in Alberta* (ANPC, 2012). Rare plant surveys were completed by a rare plant specialist. Each potential vegetation community identified in a preliminary mapping exercise was visited, and a comprehensive species list was compiled at each location until no additional species were found. Rare plant species and rare ecological communities in Alberta include species or communities that are either tracked or watched in the province (ACIMS 2022) or are species regulated under the *Wildlife Act* or are listed as 'Endangered,' 'Threatened,' or 'Special Concern' on Schedule 1 of Canada's *Species at Risk Act*.

General structural stage information was collected for each vegetation community. Species percent cover data were collected from 10 m × 10 m plots.

A site reconnaissance and tree survey of the PWs construction footprints was conducted on October 26, 2023, to gain a general understanding of the vegetation present; and review the number, species and size of trees within or in close proximity to the Project that may require removal or further mitigations.

2.4.2 Wildlife

Mammals

In support of the Project, WSP conducted wildlife and wildlife passage surveys (WSP, 2023a, Appendix E). Four remote trail cameras (Reconyx Rapidfire©) were deployed by a WSP biologist in the LSA from May 29 to June 26, 2023 (Appendix E) to identify wildlife movement corridors or stepping-stone habitats. The objective of the remote camera program was to better understand the abundance (number of individuals detected), richness (number of species), and distribution of wildlife species in and around the Study Area.

These cameras are equipped with motion sensors and infrared illuminators to capture images during the day and night. Photos are stored on a SD card within the camera housing. Programmable camera settings included a first picture delay set at two seconds, trigger sensitivity on high, with two pictures taken one second apart for each time the camera is triggered. The cameras were placed on large diameter trees about 1 m from the ground. They were oriented toward game trails, or movement corridors, such that an animal walking by could be photographed for as long as possible.

Camera photo data were grouped by species and/or species group. Species detections are defined as the number of individual observations for a given species or group. The total number of active camera days was calculated by subtracting any days the camera was inactive (e.g., broken, unable to be checked) for each camera with one day added as a correction factor to total 29, assuming no inactive camera days. A photo rate was calculated for each species recorded and was used as a metric for species relative abundance. The photo rate is the number of detections of a given species divided by the camera station sampling effort in days.

Breeding Bird and Amphibian

The objective of the Autonomous Recording Unit (ARU) program was to document breeding bird and amphibian species abundance and richness in the Study Area. Three Wildlife Acoustic© SM4 units programmed to record breeding songbirds and amphibians using an acoustic microphone, were deployed May 29, 2023, and retrieved June 26, 2023 (Appendix E). ARU programming and deployment were guided by methods outlined by the provincial Sensitive Species Inventory Guidelines (Government of Alberta, 2013) and the Alberta Biodiversity Monitoring Institute (ABMI) protocols (ABMI 2015). To maximize species detection and cost savings, recordings were set to occur at regular intervals throughout the daily timing interval (daily 10-minute recordings occurred at one hour prior to sunrise, 30 minutes after sunrise, 10:00 a.m., 04:00 p.m., 30 minutes prior to sunset and 30 minutes after sunset). This allowed for data collection during the entire deployment period and gave transcribers sufficient data to review if external factors (i.e., weather) impacted recording quality on certain days.

Habitat type, date, time, observer, plot number, GPS waypoint, weather conditions, and noise level were recorded at each plot. ARUs were deployed in locations where all target species groups could be detected such as the edges of wetlands adjacent forest stands. All units recorded as programmed for the entire deployment period. Historic weather on the day of recordings was researched using Government of Canada (2022a) weather data from the Edmonton Intl A, Alberta weather station. Recordings that fit the weather criteria and survey criteria (i.e., within recommended survey date ranges) were selected for analysis. If these recordings, once opened, contained ambient noise levels that impacted recording quality and/interfere with detections, a different recording was selected.

In addition to the species-specific surveys completed, incidental wildlife observations including any observations of wildlife features including nests and dens were noted during all field surveys.

2.5 Effects Assessment and Mitigation Measures

Potential Project interactions used to characterize the existing environmental features and conditions within the local and regional setting for the Project were determined based on a desktop review and field data collection. Potential Project interactions were used to define which VECs will be carried through the assessment.

Environmental risks (as they relate to the identified Project activities) will be defined for environmental elements selected for the target VEC categories (summarized in Section 6). Once identified, appropriate mitigation measures (including, but not limited to, Project planning, Project design, construction techniques, operational practices, and legislative/policy/guideline alignment) that eliminate or reduce the identified environmental risk will be discussed.

Each residual Project effect predicted to persist after the successful implementation of the mitigation measure(s) will also be summarized for all of the environmental element(s) identified for each VEC category carried forward. Residual effects will be characterized based on direction, geographic extent, duration, reversibility, magnitude, probability and frequency (Table 2–1). Monitoring and future study recommendations will be provided, where applicable.

Table 2–1 Effects Characterization Definitions

Impact Characterization	Description	Criterion Level	Definition
Direction	The value of the effect in relation to the environment	Positive	Net gain or benefit to the VEC
		Neutral	No change to the VEC
		Negative	Net loss or adverse effect on the VEC
Magnitude	A measure of the intensity of the effect or the degree of change caused by a project relative to baseline conditions or guideline values	Negligible	No discernable change predicted
		Low	Small change predicted, but may not be measurable or perceivable
		Medium	Modest change predicted, likely measurable and perceivable
		High	Large change predicted, clearly measurable and perceivable
Duration	The amount of time between the start and end of a project activity or stressor, plus the time required for the effect to be reversed	Short	Effect occurs during construction
		Medium	Post-construction – up to two years
		Long	Several years post-construction, reversible within a defined length of time
		Permanent	Residual effect is predicted to influence a VEC indefinitely
Spatial extent	The spatial extent to which a project effect can be detected	Project Footprint	Effects restricted to the Project Footprint
		Local	Effect is measured within the LSA
		Regional	Effect is measurable in a larger context
Frequency	The number of times the effect happens over the duration of the Project	Infrequent	Occurs or has the potential to occur once over the duration of the Project
		Frequent	Occurs or has the potential to occur periodically over the duration of the Project
		Continuous	Occurs or has the potential to occur continuously over the duration of the Project
Permanence	An indication of the potential for recovery of the VEC from the Project effect. Reversibility implies that the effect will not result in a permanent change to the state of the VEC compared to similar ecological influences on the VEC.	Reversible	Effect is reversible
		Irreversible	Effect is permanent

2.5.1 Residual and Cumulative Effects

Residual adverse effects are defined as effects remaining after the mitigation measures are applied (Section 6). Residual effects were characterized using direction (i.e., positive, negative or neutral), magnitude (i.e., negligible to high), duration (i.e., length of effect), spatial extent (i.e., extent of the effect), frequency (i.e., how often the effect occurs), and permanence (i.e., reversibility of the effect). These criteria were considered together, along with context identified within Section 5, to estimate the overall effects from the Project on each VEC.

For adverse residual effects, the evaluation for the individual criteria will be combined into an overall rating of significance as follows:

- Not Significant – Potential impact may result in a localized or short-term decline in a resource during the life of the Project and should be negligible to the overall status of the resource.
- Significant – Potential impact could jeopardize the long-term sustainability of the resource and result in a decline of a resource in terms of quality/quantity, such that the impact is considered sufficient in magnitude, extent, duration, and frequency, as well as being considered irreversible. Additional research, monitoring, and/or recovery initiatives are considered.

For the purposes of this EIA, cumulative effects are defined as the sum of all natural and human-related influences on the target VECs evaluated within their respective study boundaries until full build out and operation of the proposed Project is complete. An assessment of cumulative effects was achieved by adding the Project and known, proposed future developments in the vicinity of the Project Footprints and determining their combined impact.

3 BASELINE DATA REVIEW OF VALUED ECOSYSTEM COMPONENTS

The following sections summarize the environmental context for the VEC categories identified for the Project. Where appropriate, the text will refer to the supporting documents.

3.1 Historical Site Conditions

A summary of the review of select historical aerial images between 1950 and 2022 is presented in Table 3–1. Aerial imagery is presented on Figures 2A to 2G (Appendix A).

Table 3–1 Historical Aerial Imagery Summary

Year	Imagery Source	Description
1948	AEPA Roll AS: 11420 Photo: 100	A narrow band of trees can be seen along the top of the North Saskatchewan River (NSR) Valley and within the Gariepy Ravine within the Project Footprint. The surrounding area is mainly cultivated with forest patches present to the east and northwest. A small farmyard appears within 09-16-052-25 W4. The golf course also appears to the east.
1965	AEPA Roll R: 79 Photo: 28	The Project Footprint appears similar to the 1948 imagery, with expansion to the small farmyard appearing within 09-16-052-25 W4. The golf course appears to be under construction to the east.

Year	Imagery Source	Description
1976	AEPA Roll AS: 1546 Photo: 128	The Project Footprint appears similar to the 1962 imagery, with the addition of a second farmyard within 09-16-052-25 W4.
1990	AEPA Roll AS: AS4075 Photo: 49	The Gariepy neighbourhood has been developed, and a manicured area along the top of the NSR Valley appears. The ravine remains treed and undisturbed.
2001	AEPA Roll ED: 2001 Photo: 169	The Project Footprint appears similar to the 1990 imagery.
2008	AEPA Roll AS: 5462 Photo: 22	The area remains similar to the 1990 imagery.
2022	CoE	The area remains similar to the 1990 imagery.

3.2 Geology, Geomorphology, and Soils

3.2.1 Local Geology

The Project is located within the Central Parkland Natural Subregion (NSR; Natural Regions Committee [NRC], 2006). The Central Parkland NSR lies within the Alberta Plains in which non-marine Upper Cretaceous sandstone and mudstone formations underlie the eastern portion and Tertiary sandstone and mudstones underlie the western portion (NRC, 2006). The overall bedrock geology in the Edmonton area contains a mixture of fine-grained bentonitic sandstone and siltstone interbedded with bentonitic silty claystone (Kathol and McPherson, 1975). Coal seams and bentonitic beds along with claystone and sideritic sandstone are common throughout (Kathol and McPherson, 1975). The AER Coal Mine Map Viewer was reviewed to confirm previous mining activities; no historical mine sites were noted.

Surficial geology around the unnamed tributary is composed of alluvial material along the tributary and a mix of glacial and bedrock material in slump areas. The upper slopes and top of bank areas are dominated by silt and clay with minor sand (Kathol and McPherson, 1975). The terrace above the unnamed tributary was rated by Kathol and McPherson (1975) as having a low susceptibility to erosion and a high susceptibility to slumping.

3.2.2 Local Topography

Elevations range from 674 m in the northwest to 669 m in the southeast of the PWs and from 675 m down to 665 m along the ToB Park (AAF, 2023). The Gariepy ravine is more prominent at the western PWs location than the eastern one. Overall, the slopes within this Project Footprint are relatively gentle for a ravine finger.

The topography for the ToB Project Footprint is flat until the top of the bank edge which drastically drops towards the NSR.

3.2.3 Local Soils

Soils within the Parkland NSR are dominated by Orthic Black Chernozems under grasslands and open woodlands and Orthic Dark Gray Chernozemic and Dark Gray Luvisolic soils underlying forests (NRC, 2006). A large portion of the NSR (about 15%) contains Solonetzic soils (NRC, 2006).

The soils within the LSA consist primarily of silty clay loams where some unclassified soils and alluvium may be present within the Project area (Bowser et al., 1962). Due to the agricultural development within the LSA, the soils in this area are disturbed, while the soils that make up the slope below the top of the bank and along the creek are considered to be native.

3.3 Surface Water and Hydrogeology

3.3.1 Hydrology/Surface Water

The existing hydrological conditions of the LSA have been evaluated based on a review of spatial data layers and imagery for the Project assessment areas. RWMIS mapped based on topography, water within the unnamed tributary (AEPA, 2023a), when present, flows towards the North Saskatchewan River valley; however during the field assessment, a channel with defined bed and banks was not observed. Additionally, based on field observations, development to the east along the ravine prevents it from connecting to the NSR. The ravine and NSR in this area are apart of the Strawberry sub-watershed which drains to the North Saskatchewan Watershed.

3.3.2 Hydrogeology

The Hydrogeology of the Edmonton Area (Southwest Segment), Alberta (Ceroici, 1978) was reviewed to characterize the hydrogeology of the Gariepy Neighbourhood. Bedrock under this area is in the Wapiti Formation (Kwt) and consists of sandstone, mudstone, bentonite, and coal beds (Ceroici, 1978).

3.4 Fish and Fish Habitat

Two watercourses were identified within the Project Footprint and LSA: the North Saskatchewan River (ID2162) which does not interact at all with the Project (Appendix A, Figure 1) and an unnamed tributary to the NSR (ID44990). The unnamed tributary is within the PWs Project Footprint; however, during the field assessment, a channel with defined bed and banks was not observed, and the feature truncates at the Edmonton Country Club Golf Course. It appears this feature is ephemeral in nature. Due to the lack of fish and fish habitat interaction with the NSR, no additional information has been included at this time.

3.4.1 Watercourse Classification and Restricted Activity Period

The *Water Act* COP for *Watercourse Crossings* (Government of Alberta, 2019) and the COP St. Paul Management Area Map (Alberta Environment [AENV], 2006) were reviewed for the class of the water body and Restricted Activity Period (RAP). The unnamed tributary does not meet the definition of a watercourse under the *Water Act* (no defined bed and banks), and it does not have a Class or restricted activity period.

3.5 Vegetation

3.5.1 Ecological Setting

The Project resides within the Central Parkland NSR of the Parkland Natural Region (NRC, 2006). This NSR is dominated by cultivated lands with remnant native parkland areas, composed of aspen groves and prairie vegetation, distributed throughout (NRC, 2006). It is the most densely populated region in the province; therefore, most of the native vegetation has been altered by human development (NRC, 2006). Temperature, precipitation, and growing seasons are intermediate between the dry, warm grasslands to the south and the cooler, moist boreal forests to the west and north (NRC, 2006). Landform features include undulating till plains and hummocky uplands. Wetlands are common, occupying approximately ten percent of the NSR (NRC, 2006).

3.5.2 Plant Communities

The LSA is in an area that is dominated primarily by developed land, as the Project is situated within an area of established residential communities. Based on the uPLVI mapping, seven land class site types were identified within the LSA (Appendix B, Figure 3), a large proportion of which is unvegetated lands, identified as “Established Residential Community” and “Exposed Mineral Soil” (CoE, 2018). Plant communities within the PWs LSA are a combination of forested and maintained grass site types, while the plant communities within the ToB Park LSA are a combination of closed shrub, forested, maintained grass and medial shrub site types (CoE, 2018). A survey of the trees within the western pedestrian walkway location was completed on October 26, 2023. A total of 15 trees were noted within the construction footprint (Appendix A, Figure 6). Species included balsam poplar (*Populus balsamifera*), trembling aspen (*Populus tremuloides*) and blue spruce (*Picea pungens*), which is an ornamental species. The average diameter at breast height (DBH) was 7.87 with the largest tree being a blue spruce (DBH 24.1). In addition to the 13 trees noted within the construction footprint, two additional trees on private property are crowing the informal trail and may require pruning or removal in order to install the prefabricated bridge deck for the pedestrian walkway. The survey also noted several shrubs (prickly rose [*Rosa acicularis*]and saskatoon [*Amelanchier alnifolia*]) which will also require removal during construction.

3.5.3 Rare Plants, Rare Ecological Communities and Unique Species

A review of the ACIMS dataset in June 2023 (ACIMS, 2022a) returned historical records of three rare plant species and no historical records of rare ecological communities within 1 km of the LSA (Appendix A, Figure 4A to 4C). Historical records for flat-topped white aster (*Doellingeria umbellata* var. *pubens*), fox sedge (*Carex vulpinoidea*), and two occurrences of slender naiad (*Najas flexilis*) were noted south of the LSA, across the North Saskatchewan River in Terwillegar Park (Appendix A, Figure 4A to 4C). All three species are listed as S3, known from 100 or fewer occurrences, or somewhat vulnerable due to other factors, such as restricted range, relatively small population sizes, or other factors (ACIMS, 2022). Flat-topped white aster is generally found associated with swampy areas in moist woodlands, shrub thickets and meadows (ANPC, 2001). Fox sedge and slender naiad are both adapted to wet areas, where fox sedge can be found in wet ditches and fields (Flora of North America, n.d.a), and slender naiad most likely to be found in lakes and rivers (Flora of North America, n.d.b). While these three species have potential to occur within 1 km of the LSA, they are unlikely to occur within either Project Footprint.

Rare vascular plant surveys were completed within the Project Footprint on July 5, 2023. No rare plant species or rare ecological communities were identified within the Project Footprint at the time of the survey. The plant species observed during the rare plant surveys are summarized in Appendix D.

3.5.4 Weed Species

Weed species were recorded incidentally in conjunction with the rare plant surveys. Two *noxious* weeds, Canada thistle (*Cirsium arvense*) were observed at relatively low abundance throughout both Project Footprints with pockets of dense occurrences at highly disturbed locations. A single observation of scentless chamomile (*Tripleurospermum inodorum*) was observed at the south end of the eastern TW, (Appendix A, Figure 4A to 4C). No *prohibited noxious* weeds were observed within the Project Footprint. Under the Alberta *Weed Control Act*, *noxious* weeds must be controlled and *prohibited noxious* weeds must be destroyed to prevent the further spread of these species.

3.6 Wildlife

3.6.1 Wildlife Presence

A search of the FWMIS database in May 2023 (AEPA, 2023a) returned 12 historical wildlife records within 3 km of the Project Footprint. Refer to Table 3–2 for the sensitive species noted. The LSA also intersects sensitive ranges for bald eagle (*Haliaeetus leucocephalus*), sharp-tailed grouse (*Tympanuchus phasianellus*) and Key Wildlife and Biodiversity Zone (KWBZ). Further mitigations are discussed in Section 4.6.7 for these species/areas.

Table 3–2 FWMIS Dataset Query - Sensitive Species Records within 3 km of Project Footprint

Common Name	Scientific Name	Provincial Status[(a)]	Federal Status[(b)]	Habitat	Likelihood of Occurrence within the Project Footprint
Bald eagle	*Haliaeetus leucocephalus*	*Sensitive*	*Not at Risk*	Nest in forested areas adjacent to large water bodies, avoiding areas of heavy disturbance if possible. However, they are tolerant of human activity while feeding and can be found fishing around dumps, reservoirs, and dams (Cornell University, 2023).	Nil – No nesting or foraging habitat is present within either Project Footprint.
Bank swallow	*Riparia riparia*	*Sensitive*	*Threatened*	Natural and artificial sites with vertical banks, including riverbanks, lake and ocean bluffs, aggregate pits, road cuts and stockpiles of soil situated near open terrestrial habitats (COSEWIC, 2013).	Nil – No nesting or foraging habitat is present within either Project Footprint.
Barred owl	*Strix varia*	*Sensitive*	-	Nest in natural tree cavities or on top of broken trees. Prefer large unfragmented mature mixed and coniferous woodlands, riparian areas, and swamps with trees (Cornell University, 2023; Semenchuk, 2007).	Low – No large contiguous mature tree stands for nesting are present within the PWs Footprint; however, foraging habitat is present.
Eared grebe	*Podiceps nigricollis*	*Sensitive*	-	Breed in lakes and wetlands that are not bordered by trees. Forage in shallow lakes that typically lack fish but have invertebrates for foraging (Cornell University, 2023).	Nil – No nesting or foraging habitat is present within either Project Footprint.

Common Name	Scientific Name	Provincial Status[a]	Federal Status[b]	Habitat	Likelihood of Occurrence within the Project Footprint
Golden eagle	*Aquila chrysaetos*	*Sensitive*	*Not at Risk*	Occupy semi open or open country near cliffs, small tree stands, and/or human made structures for nesting (Cornell University, 2023).	Nil – No nesting or foraging habitat is present within either Project Footprint.
Great blue heron	*Ardea herodias*	*Sensitive*	-	Nesting occurs in large breeding colonies located within 5 km of foraging sites. Colonies are located in trees or on top of large shrubs near lakes or ponds (Cornell University, 2023).	Nil – No nesting or foraging habitat is present in either Project Footprint.
Horned grebe	*Podiceps auritus*	*Sensitive*	*Special Concern*	Breeds in semi-permanent or permanent fresh to brackish water ponds or marshes and shallow lake bays with vegetated borders (COSEWIC, 2009).	Nil – No nesting or foraging habitat is present within either Project Footprint.
Least flycatcher	*Empidonax minimus*	*Sensitive*	-	Breed in semi-open deciduous and mixedwood forests along forest edges. Nests are built in a deciduous tree in the lower to middle canopy (Cornell University, 2023).	High – Nesting and foraging habitat present within the PWs Footprint.
Pileated woodpecker	*Dryocopus pileatus*	*Sensitive*	-	Occupy mature deciduous and mixedwood forests with large dead or decaying trees. They also frequent suburban areas with large woodland patches (Cornell University, 2023).	Low – Limited nesting and foraging habitat is present in the PWs Footprint.
Sora	*Porzana carolina*	*Sensitive*	-	Nests are built on the ground in areas of dense riparian vegetation on mounds of vegetation or attached to plant stems suspended above water (Cornell University, 2023).	Low – Limited nesting and foraging habitat is present within t either Project Footprint.
Trumpeter swan	*Cygnus buccinator*	*Sensitive*	*Not at Risk*	Breeding occurs in shallow, undisturbed water bodies with abundant aquatic vegetation. They require large open bodies of water for landing and take-off (Cornell University, 2023).	Nil – No nesting or foraging habitat is present within either Project Footprint.

Common Name	Scientific Name	Provincial Status[a]	Federal Status[b]	Habitat	Likelihood of Occurrence within the Project Footprint
Western toad	*Anaxyrus boreas*	*Sensitive*	*Special Concern*	Require aquatic and upland habitats to complete their life cycle. They breed in a variety of riparian areas and hibernate in upland habitats that contain sandy soils with sufficient detritus to provide thermal cover (COSEWIC, 2012).	Low – No breeding habitat present within either Project Footprint.

Notes:

a) Alberta Environment and Protected Areas, 2023b

b) Government of Canada, 2023a

Pileated woodpeckers occupy mature deciduous and mixedwood forests with large dead or decaying trees and are known to frequent suburban areas with large woodland patches (Cornell University, 2023). This species' nests are protected under Schedule 1 of the Migratory Bird Regulation (Government of Canada, 2022b). Although there is a foraging habitat present within the LSA, no evidence of nesting or foraging was observed during any field visits. As there is no evidence of nesting present within the Footprint, this species will not be discussed further in the effects assessment.

3.6.2 Mammals

Remote cameras were installed at four locations throughout the PWs LSA (Table 3–3) from December 22 to 31, 2021 and from January 1 to 21, 2022. Four remote cameras (RC01, RC02, RC03 and RC04) were deployed from May 29, 2023, to June 26, 2023, and were active for a total of 28 days. During this period, four wild species were detected as well as humans (Table 3–3). Coyotes were the most commonly detected wild species. Of these detected species, none are listed provincially (AEPA, 2023b) or federally (Government of Canada, 2023a).

Table 3–3 Mean Photo Rates for Wildlife Species Detected in the Gariepy Ravine Study Area, 2023

Common Name	Scientific Name	Photo Rate				
		RC01	RC02	RC03	RC04	Mean
Black-billed magpie	*Pica hudsonia*	0	0	0	0.1	0.03
Corvid species	*Corvus spp.*	0	0.03	0	0	0.01
Coyote	*Canis latrans*	0.28	0.03	0	0.14	0.11
Human	-	0	0.14	0.24	0.14	0.13
Red squirrel	*Tamiasciurus hudsonicus*	0	0	0	0.03	0.01

Notes:

Photo Rate = number of detections of a given species divided by the camera station sampling effort in days

RC = remote camera

The Safe Mobility group gathered collision data and complaints from the last five years (2016 to 2021) for the Gariepy Neighbourhood and Alley Renewal project. No collisions or complaints have been reported to the CoE or Edmonton Police Services at that time.

3.6.3 Breeding Birds

Three autonomous recording units (ARU01, ARU02, and ARU03) were deployed from May 29, 2023, to June 26, 2023, and were active for a total of 28 days. During this period, eleven species of birds were detected in the LSA (Table 3–4). Of these detected species, none are listed provincially (AEPA, 2023b) or federally (Government of Canada, 2023a). ARU02 had higher detection rates (17) compared to ARU01 (11) and ARU03 (6). The location of ARU02 was in the middle of the tree stand, away from walking paths and roads, which could explain the increased number of detections.

Table 3–4 Summary of the Breeding Bird Survey Results

Common Name	Scientific Name	Number of Individuals Detected			
		Plot Name			Total
		ARU01	ARU02	ARU03	
American crow	*Corvus brachyrhynchos*	1	5	2	**8**
American robin	*Turdus migratorius*	1	1	1	**3**
black-billed magpie	*Pica hudsonia*	2	5	1	**8**
black-capped chickadee	*Poecile atricapillus*	1	-	-	**1**
blue jay	*Cyanocitta cristata*	1	1	1	**3**
cedar waxwing	*Bombycilla cedrorum*	2	-	-	**2**
chipping sparrow	*Spizella passerina*	1	2	1	**4**
house sparrow	*Passer domesticus*	-	1	-	**1**
red-breasted nuthatch	*Sitta canadensis*	1	1	-	**2**
song sparrow	*Melospiza melodia*	1	-	-	**1**
white-throated sparrow	*Zonotrichia albicollis*	-	1	-	**1**
Grand Total		**11**	**17**	**6**	**34**

Notes: - “not detected”

3.6.4 Amphibians

Three autonomous recording units (ARU01, ARU02, and ARU03) were deployed from May 29, 2023, to June 26, 2023, and were active for a total of 28 days. During this period, no amphibian species were detected in the study area.

3.6.5 Species of Management Concern

For this assessment, species of management concern (SOMC) include species listed by EPA as Sensitive or At Risk (AEPA, 2023b) and/or those listed by Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or Schedule 1 of the SARA. No SOMC observations were documented during field surveys.

3.6.6 Wildlife Passage

According to the City of Edmonton's Wildlife Passage Engineering Design Guidelines (2010), crossing structures, such as elevated walkways, may become a barrier to wildlife movement. Therefore, some form of passage should be considered depending on the noted wildlife use in the area. Based on the observations made, coyotes were the largest mammal observed; it is recommended that the design for the PWs consider wildlife passage (e.g., maintain a minimum 'openness' to allow unfettered movement) for the medium ecological design group (EDG) detailed in the Guide.

Optimal dimensions for medium terrestrial EDG have been detailed in Table 3–5. Although deer have been sighted by residents, it is assumed they will continue to move along the top of the Gariepy ravine/backyards. It is understood that the PWs infrastructure will be limited to avoid the observed area(s) of movement.

Table 3–5 Wildlife Passage Openness Calculations for PWs

Ecological Design Group	Optimal Openness $Openness = \frac{Height\ x\ Width}{Length}$	Proposed Width (m)	Minimum Length (m) of Open Span for Optimal Openness	Minimum Height (m) for Optimal Openness
West Bridge				
Medium Terrestrial	0.4	3	15	2
East Bridge				
Medium Terrestrial	0.4	5	18.5	1.5

3.6.7 Restricted Activity Periods

The following wildlife related RAPs may affect construction activities in the Project Footprints.

3.6.7.1 Breeding Bird Restricted Activity Period

The MBCA regulates most of the native migratory bird species in Canada, including their eggs and nests. In Alberta, the Alberta *Wildlife Act* protects predatory bird species (hawks, raptors, owls etc.) and the active dens of mammalian species. Under MBCA, it is prohibited to disturb, destroy or move migratory birds, nests and eggs during the breeding season, which is generally from April 14 to August 28 in this part of Alberta (Zone B4) (Government of Canada, 2023b).

3.6.7.2 Amphibian Restricted Activity Period

The amphibian breeding period is typically from April 15 to June 14. The Alberta *Wildlife Act* protects wildlife, wildlife habitats and sensitive wildlife habitat features such as amphibian breeding ponds. However, based on observations from amphibian surveys, no active breeding ponds or areas of potential breeding were noted within the LSA.

3.6.7.3 Key Wildlife and Biodiversity Zone

The ToB Park Project Footprint lies within KWBZ associated with the NSR valley. As such, any work occurring within this component of the Project should abide by the timing restrictions of January 15 to April 30 to protect wintering ungulates (Government of Alberta, 2015).

3.7 Historic Resources

A review of Alberta Arts, Culture and Status of Women's Listing of Historic Resources revealed that the LSA and Project Footprints include lands that have been assigned HRVs of 5a for high archaeological sensitivity (high potential to contain archaeological sites), 5p for high palaeontological sensitivity (high potential to contain palaeontological resources), and 4p (presence of a known palaeontological resource site: Whitemud Creek, P84.4.1) (Appendix A, Figure 4A to 4C). While several historic resource sites have been previously recorded in the surrounding area, no known archaeological or registered heritage sites are located within the LSA (Government of Alberta, 2023).

3.8 Environmental Sensitivity Rating

A review of the City of Edmonton's Environmental Sensitivities Project shapefiles (CoE, 2022d) determined that the LSA intersects lands with low, moderate, high, very high, and extremely high sensitivity value ratings, with the Project Footprint intersecting lands with moderate, high, very high sensitivity and extremely high value ratings (Appendix A, Figure 5). Given the scope of the Project (at this time, it is anticipated that all activities will occur on existing hard surfaces, maintained grass sites and within existing disturbed areas requiring minimal vegetation disturbance) and that no physical disturbance is planned outside the Project Footprint, degradation of these lands is not expected.

These sensitivity value ratings have been applied to the VCs in the effects assessment to consider ecologically higher value lands and to inform the appropriate avoidance and mitigation measures to provide protection for the higher value lands.

4 PROJECT DESCRIPTION

4.1 Project Rationale

The City of Edmonton's Neighbourhood Renewal Program is part of the Building Great Neighbourhoods (BGN) Branch. The purpose of the Neighbourhood Renewal Program is to outline cost-effective and long-term strategic approaches to renew and rebuild infrastructure within mature neighbourhoods and along collector roadways. The scope of work for Neighbourhood Renewal typically includes the following elements:

- Replacement of sidewalks, local roadways and collector roadways
- Upgrading streetlights and LED luminaires
- Construction of curb ramps and other intersection improvements
- Addressing missing links in the sidewalk and bike network

Opportunities to improve other city-owned areas, such as green spaces and parks, are also reviewed with Neighbourhood Renewal. The intention is to make desired upgrades and enhancements in coordination with the Neighbourhood Renewal Program and leverage other funding sources.

This Project also includes the Alley Renewal Program, but that is not relevant to the environmental work being considered for this EIA.

Neighbourhood and Alley Renewal Projects are first initiated by the City of Edmonton's Life Cycle Management team following an infrastructure assessment that prioritizes neighbourhoods most in need of the program. The Gariepy neighbourhood was identified for construction to begin in 2024 and was awarded to WSP as the design consultant in 2021.

There are approximately 1,868 residents in the neighbourhood, and the percentage of seniors is higher than the City average with 20% compared to 11%. Residents here typically have much lower use of active modes than the City average and could benefit from additional connectivity to encourage mode shifts that reduce carbon intense travel options.

Through the Urban Design Analysis, public engagement, and policy and standard reviews many opportunities were identified, including the two that triggered this EIA and the supporting Site Location Study (submitted under separate cover [WSP, 2023]). These opportunities serve the residents and align with City policies, standards, and best practices. The EIA will outline how to implement them in a way that preserves the environment and protects the natural areas they are adjacent to and cross over.

4.2 Evaluation of Alternatives

Through an Urban Design Analysis, all existing park spaces in and around the neighbourhood were evaluated to consider the opportunities and potential of the various sites. Details pertaining to the various alternatives considered and the rationale regarding the selection of the Project components being evaluated in this EIA can be found in the Site Location Study (SLS; WSP, 2023) prepared and submitted under separate cover.

4.3 Project Description

4.3.1 Pedestrian Walkways

The two pedestrian walkways will vary in length and width. Currently, the design team proposes one structure with a width of nearly 4.8 m (measured from the outside of the handrails) and a length of approximately 26 m to replace the existing cleared space/informal path located on the east side of the Ravine. The second structure will cross the Ravine on the west, between Gariepy Crescent and Lessard Dr NW. This component will serve only walking and rolling travel at a reduced width of nearly 3.1 m (measured from the outside of the handrails) and a length of approximately 22 m, further enhancing the pedestrian connectivity goals noted above. This width was intentionally chosen to keep the footprint mostly to the area of the informal path/trail currently present and will not require extensive additional clearing for construction. An assemblage of native vegetation plantings will also be installed at this crossing location to mitigate the required woody vegetation removal and promote similar functions as outlined for the eastern crossing. The formalization provide a north-south route within the neighbourhood that is currently lacking and will provide a better platform for successful restoration around and below the proposed structure.

Both crossing structures will be constructed out of steel, concreate and other composites. Each one has been designed with wildlife passage in mind and considered, the optimum openness ratio of 0.4 for the Medium Ecological Design Group (EDG) (COE, 2010). However, despite the pilings being set into the existing bank and an open span design, the limitations of the ravine structure prevented the optimal openness from being achieved. Both structures will allow small mammal passage and at grade medium and large mammal passage. Under current design, the west structure has an openness ration of 0.31 and the east structure has an openness of 0.23.

4.3.2 Top of Bank Park

The proposed renewal of the space will include the removal and replacement of the existing sidewalk with a 3 m shared path that will now fully connect to paths from Lessard Road, the Donsdale Breezeway, and up Lessard Drive to 172 Street and 57 Avenue (as well as through Gariepy Park). The new path will support mode shift and accessibility for users of all abilities and ages. The boulevard created between the path and the road will be restored with native grasses and wildflowers in a no-mow area. Additional trees and other plantings typically native to the NSR Valley will also be added to the overall space to break up sightlines and enhance the user experience. Two new seating areas will be constructed to provide additional gathering areas along the NSR Valley. They will be installed in areas zoned AP (Public Parks Zone) near the proposed path intersections. Some caragana (Caragana sp.) beds will be removed and replaced with more appropriate native shrub selections. New and additional waste bins will also be installed to reduce littering. All the current viewpoints will have new standard pads and benches. The most western viewpoint will be connected to the pathway via a shared pathway to provide full accessibility to all abilities. Additional plantings and boulders around all three viewpoints are proposed to enhance the viewscape and better blend each viewpoint into the surrounding landscape.

4.3.3 Construction

General Project construction activities include the following.

4.3.3.1 Pedestrian Walkway Site Preparation and Grading

- Terrestrial ESC measures: Prior to work initiating on-site, ESC measures must be in place. These must be monitored and repaired as necessary.
- Vegetation clearing and grubbing: A portion of area indicated within the Gariepy ravine will be required to be cleared of some woody vegetation to accommodate construction of the PWs. The contractor will submit a proposed clearing drawing for approval, which will limit the clearing extents. Once identified clearing will commence after appropriate assessments have been conducted by City urban foresters (if required) and tree protection plans are implemented (if required) pursuant to the CoE Corporate Tree Management Policy #456C.
- Soil Stripping: If required, topsoil and some subsoil material will be removed for site preparation and stockpiled in the staging/laydown area for later use in the construction of the PWs.
- Grading: The Gariepy ravine upper slopes will be graded around the proposed TW entrance/exits to create a stable interface that allows for walkway construction and to direct post-construction runoff/run on to and from the structure. The ESC plan is designed to limit erosion and sedimentation concerns that may result during the work.

4.3.3.2 Top of Bank Park Site Preparation and Grading

- Terrestrial ESC measures: Prior to work initiating onsite, ESC measures must be in place. These must be monitored and repaired as necessary.
- Vegetation clearing and grubbing: A portion of area along the ToB will be required to be cleared of some manicured grasses to accommodate construction of the shared pathways, viewing areas and other amenities.
- Soil Stripping: Topsoil and sod material will be removed for site preparation and stockpiled in the staging/laydown area for later use in the construction of the ToB Park.

4.3.3.3 Site Access, Staging and Laydown

- **Access Preparation and Grading:** A small amount of grading may be necessary to facilitate construction access. Graded areas will be returned to existing condition following construction wherever possible. An ESC recommendation plan will be generated and will be further detailed by the contractor to limit erosion and sedimentation concerns that may result during the construction and subsequent use of the access road. The contractor will submit details of the proposed access upgrading requirements for Project engineer approval prior to commencement of the work in order to assure safe access while minimizing vegetation clearing.
- **Staging and Laydown:** Select areas outside of the Bylaw 7188 area, above the ToB lines will be prepared to accommodate the material laydown, site staging activities, etc. These areas will be determined closer to construction.

4.3.3.4 Revegetation

- Site Restoration: The construction footprint will be revegetated with appropriate landscaping materials post construction.

4.3.4 Operations and Maintenance

During the proponent's maintenance period, the operation and maintenance actives include the following:

4.3.4.1 Maintenance

- The new PWs will be inspected on a regular basis to identify if any maintenance, such as the removal of snow or debris. These inspections shall also monitor the structural component of the walkways and identify any deficiencies.
- Winter inspections will be necessary to monitor snow and ice buildup on the structures and ensure the safety of users year-round.
- The ToB Park pathways will be regularly inspected to ensure they are passable in all seasons and that snow and ice do not build up during winter months.

4.4 Schedule

Construction of the Project is scheduled to begin in 2024, pending regulatory approval. The anticipated schedule is as follows:

October to November 2023

Issued for Tender drawings to be completed.

February 2024

Contractor awarded and Issued for construction drawings completed.

Early Spring 2024 or 2025:

1. Site clearing

Late Summer 2024 or 2025:

2 Prepare access, staging, and work sites
3 Initiate construction of PWs and upgrades to the ToB Park
4 Complete construction of PWs and upgrades to the ToB Park

5 EFFECTS ASSESSMENT AND MITIGATION MEASURES

The effects analysis considers the interactions between known Project activities and the selected VEC categories within the identified spatial boundaries. Potential Project interactions with the VECs are identified in Table 5–1.

Table 5–1 Potential Interactions between the Project Activities and Identified VEC

Project Activities	Description
Pre-ground Disturbance Planning	– Locating existing underground infrastructure and obtaining necessary clearances to construct.
Project Set-up	– Project access, staging and temporary laydown areas.
Preliminary Grading	– Install erosion and sediment control measures. – Vegetation clearing. – Topsoil stripping and storage. – Grading as required.
TW construction and ToB Park upgrades	– Install piles. – Place and compact subgrade materials. – Construct walkways. – Backfilling and grading. – Pave pathways and install seating at viewpoints. – Install additional erosion protection matting.
Final Grading and Surfacing	– Compact and grade over backfilled trenches. – Topsoil replacement. – Landscaping.
Operation and Maintenance	– Regular monitoring and maintenance of Project components.

The assessment of potential Project interactions detailed in Table 5–1 indicates that five of the typical six (fish and fish habitat has not been included) identified VECs will be brought forward into the effects evaluation process to determine what environmental elements for each VEC should be assessed.

5.1 Geology, Geomorphology and Soils

5.1.1 Potential Effects

Potential effects to geology, geomorphology and soils (Table 5–2) occur during construction related activities (i.e., site clearing, topsoil and subsoil salvage and handling, excavation, grading, and reclamation).

Table 5–2 Possible Effects on Geology, Geomorphology and Soils

Environmental Element	Potential Direct Effects	Potential Indirect Effects
Change in native soils	– Soil compaction from construction activities. – Soil contamination from leaks or accidental spills. – Site clearing activities will result in the salvage of topsoil within the Project Footprint. Potential loss of topsoil through erosion of material stored in stockpiles or admixing of topsoil and subsoil during salvage and reclamation activities.	– Increase in exposed soil resulting in an increase in sediment transport off-site.
Change in local channel morphology	– Installation of PWs has potential to change the ravine channel.	– None

5.1.2 Mitigation Measures

1. Contractor to prepare a soil management plan prior to construction, which will, at a minimum include:
   - Review of borehole logs for topsoil depths prior to conducting any work.
   - Clearly stake and flag areas for laydown and walkway installation to restrict impacts to designated areas within the Project Footprint.
   - Use of appropriate topsoil stripping and stockpiling practices. Strip topsoil to colour change or as directed by environmental monitor.
2. Contractor to prepare an ESC Plan that will include, but is not limited to erosion control measures to:
   - Minimize deposition of tracked soil onto adjacent properties.
   - Prevent migration of soils outside the Project Footprint.
   - Control erosion of any stockpiled materials.
   - Prevent weed infestation or soil migration due to wind or rainfall events if stockpiled soil cannot be replaced within two months.
   - Details regarding how adjacent properties and Gariepy ravine will be protected from sedimentation.
   - Storm events may increase erosion impacts; therefore, monitoring to inspect the various mitigation measures installed will be undertaken for the duration of construction.
3. Limit construction activities in wet soils to reduce soil compaction.
4. Restrict heavy machinery use to cleared flat areas to prevent excessive compaction within and damage to areas outside of the Project Footprint.
5. Replace subsoil and topsoil once the walkways have been installed.
6. Decompact subsoil prior to subsoil and topsoil replacement, where practical.

5.1.3 Residual Effects

By following accepted soil conservation principles and applying mitigation measures detailed in Section 6.1.2, it is expected that potential change in native soils can be completely avoided. Effects regarding local slope stability (Table 5–3) should be completely mitigated through the application of the identified design and construction parameters.

Table 5–3 Geology, Geomorphology and Soils Residual Impact Characterization

Environmental Element	Residual Effect Characterization		Prediction Confidence	Significance
	Direction, Magnitude, Duration	Spatial Extent, Frequency, Permanence		
Change in native soils	– Negative – Low – Short	– Project Footprint – Isolated – Irreversible	High	Not significant
Change in slope stability	– Neutral – Low – Medium	– Local – Occasional – Irreversible	High	Not significant

5.1.4 Cumulative Effects

The proposed Project will result in disturbance to soil and land that has previously been disturbed, as well as some native undisturbed lands. Mitigation measures will be employed to reduce environmental consequences associated with changes in native soils, slope stability, and channel morphology.

5.2 Surface Water and Groundwater

5.2.1 Potential Effects

Potential effects to surface water occur during construction related activities and are related to changes in local drainage (Table 5–4).

Table 5–4 Possible Effects on Surface Water and Groundwater

Environmental Element	Potential Direct Effects	Potential Indirect Effects
Change in local drainage	– Unmanaged local storm water runoff during rain events throughout the active construction period could exacerbate any uncontrolled erosion or sedimentation issues associated with construction. – Increase in impermeable surfaces (e.g., ToB Park infrastructure).	– None

5.2.2 Mitigation Measures

1. Contractor or designate to prepare and implement an ECO Plan, which includes mitigation measures for surface water runoff control. The ECO Plan should include at a minimum:
   - Installation, maintenance and monitoring procedures for appropriate ESC measures to prevent any sediment laden runoff from entering Gariepy ravine.
   - A temporary storm water management plan that includes physical measures, as required, to direct surface water runoff away from the Project Footprint during construction.
   - Although the ToB infrastructure is increasing in overall surface area, the adjacent road will be reduced in width, resulting in a net neutral increase in overall impermeable surfaces.
   - ToB trail installations will be undertaken such that the local drainage flow paths will not be impacted.
   - The PWs design will not restrict or alter any ephemeral spring runoff that may occur.
2. Prepare and implement a Project specific Spill Response Plan to prevent deleterious substance from travelling outside the Project Footprints.
3. Ensure construction activities do not result in the ponding or channelization of surface water.
4. Immediately stabilize banks disturbed by construction activities to limit erosion, revegetate riparian areas with suitable, native plants immediately after construction activities are complete.
5. Ensure refuelling or equipment maintenance activities do not occur within 100 m of a water body or watercourse.
6. Hazardous or toxic products shall be stored no closer than 100 m from streams, wetlands, water bodies or waterways.
7. Sweep up loose material or debris. Any material that may pose a risk of contamination to soils, surface water or groundwater should be disposed of appropriately off-site.
8. If the work schedule requires working in the rain, the area of work must be isolated and appropriate sediment controls must be installed to prevent the release of sediment-laden water or any other deleterious substances into surface waters.
9. Backfill and compact excavations as soon as possible, optimize degree of compaction to minimize erosion and allow for re-vegetation.

5.2.3 Residual Effects

By following accepted erosion and sediment control principles and applying mitigation measures detailed in Section 6.2.2, it is expected that changes in local drainage (Table 5–5) (during construction and operation) can be mitigated.

Table 5–5 Surface Water and Groundwater Residual Impact Characterization

Environmental Element	Residual Effect Characterization		Prediction Confidence	Significance
	Direction, Magnitude, Duration	Spatial Extent, Frequency, Permanence		
Change in local drainage	– Neutral – Medium – Short	– Project Footprint – Isolated – Reversible	Medium	Not significant

5.2.4 Cumulative Effects

Construction of the Project will not change the local surface water runoff patterns. Mitigation measures will be employed to reduce environmental consequences associated with changes in location drainage, instream flows and water quality. As most of the disturbance will be temporary, and the majority of the Project Footprints will be returned to its current condition, no cumulative effects associated with change in local drainage are anticipated.

5.3 Vegetation

5.3.1 Potential Effects

Potential effects to vegetation (Table 5–6) are through Project-related change in plant communities, introduction and/or spread of weed species and loss of rare plant population.

Table 5–6 Possible Effects on Vegetation

Environmental Element	Potential Direct Effects	Potential Indirect Effects

Change in plant communities	– Temporary and permanent removal of modified and natural vegetation within the Project Footprint. Specifically:
	  – Western Pedestrian Walkway:
	  ▪ Removal of 13 trees and a small patch of shrubs within the ravine finger. Area of impact is approximately 300 m^2. Majority of impact area will be preexisting informal dirt path and manicured areas.
	– Trees to be removed for construction of the western pedestrian walkway include:
	  – Two blue spruce
	  – Six balsam poplar
	  – Five trembling aspen
	– No native vegetation will be disturbed as part of the Eastern Pedestrian Walkway construction.
	– Degradation of ecological communities due to the introduction or spread of non-native/invasive plant species.
	– Soil compaction as a result of equipment could damage tree root systems, resulting in reduced vigor and mortality of trees.
		– Dust deposition from construction activities

Introduction and/or spread of weed species	– As weed species may be present within the Project Footprint, movement of equipment may increase the spread of these species. – Soil disturbance could potentially lead to the establishment and spread of weeds.	– None
Loss of rare plants	– Loss of rare plant species, or degradation to rare plant habitat may occur within the Project Footprint.	– None

5.3.2 Mitigation Measures

1. Disturbance to the majority of the vegetation within Project Footprints is temporary and will be restored according to the landscaping plans (Appendix C). Specifcally:
   a. Western Pedestrian Walkway landscaping plan:
      i. To include five trembling aspen, 37 beaked hazelnut (*Corylus cornuta*), 46 prickly rose and 45 common snowberry (*Symphoricarpos albus*) to expand the naturalization of some of the manicured areas and offset the loss of woody vegetation within the ravine finger. Landscaping plan details are provided in Appendix C.
   b. Eastern Pedestrian Walkway Landscaping plan:
      i. To include the planting of three trembling aspen, 23 beaked hazelnut, 43 prickly rose and 23 common snowberry.
2. To limit changes to plant community composition, revegetation should be implemented immediately after the completion of construction following the landscaping plan.
3. To protect trees adjacent to the Project Footprints, a Tree Protection Plan as specified in CoE Corporate Tree Management Policy C456C (CoE, 2020a), will be required.
4. Limit vegetation clearing wherever practical.
5. Install, maintain and monitor appropriate tree protection plans and ESC measures to protect trees and to reduce loss of topsoil due to erosion and minimize duration of exposed soils.
6. Topsoil will be stored separately from subsoil to maintain soil nutrients and preserve the native seed bank.
7. Construction activities should be limited during wet soil conditions to reduce soil compaction and erosion and the possible introduction or spread of weeds.
8. Soils should be de-compacted, as necessary, before revegetation occurs.
9. Construction machinery will be cleaned prior to entering the Project Footprints.
10. Mechanical weed control should be implemented to control continued establishment and spread of weed populations.

5.3.3 Residual Effects

By following accepted erosion and sediment control principles and applying mitigation measures detailed in Section 6.4.2, it is expected that residual impacts (Table 5–7), including the introduction and/or spread of weed species can be completely avoided, and change in plant communities can be mitigated. Approximately 130 m^2 of vegetation will be permanently lost for the construction of the PWs and ToB Park; however, the Western Pedestrian Walkway landscaping plan will include planting five trees and 128 shrubs to expand the naturalization of some of the manicured areas and offset the loss of woody vegetation within the ravine finger. Additionally, the Eastern Pedestrian Walkway Landscaping plan will include planting three trees and 89 shrubs in an area that is currently entirely manicured. Landscaping plan details are provided in Appendix C. Refer to the cumulative effects section for additional details.

Table 5–7 Vegetation Residual Impact Characterization

Environmental Element	Residual Effect Characterization		Prediction Confidence	Significance
	Direction, Magnitude, Duration	Spatial Extent, Frequency, Permanence		
Change in plant communities	– Negative – Low – Medium	– Project Footprint – Isolated – Reversible	High	Not significant

Environmental Element	Residual Effect Characterization		Prediction Confidence	Significance
	Direction, Magnitude, Duration	Spatial Extent, Frequency, Permanence		
Introduction and/or spread of weed species	– Negative – Medium – Long	– Local – Continuous – Reversible	High	Not significant
Loss of rare plants	– Neutral – Low – Long	– Project Footprint – Isolated – Irreversible	High	Not significant

5.3.4 Cumulative Effects

Following mitigation measures outlined in Section 6.4.2 and the landscaping plans, it is anticipated there will be a positive cumulative effect to plant communities and no adverse effects from the introduction and/or spread of weed species.

5.4 Wildlife

5.4.1 Potential Effects

Potential effects to wildlife (Table 5–8) and wildlife habitat are through Project-related change in wildlife habitat, change in wildlife movement patterns and direct mortality of wildlife.

Table 5–8 Possible Effects on Wildlife

Environmental Element	Potential Direct Effects	Potential Indirect Effects
Changes in habitat	– Loss/alteration of potential nesting and foraging habitat, including removal of large trees, for general avian species and specifically listed species such as the barred owl, which are listed as sensitive by EPA. – Loss/alteration of foraging habitat for terrestrial mammals. – Loss/alteration of riparian vegetation that may reduce amphibian habitat.	– None
Change in wildlife movement	– Increased human activity and noise may cause wildlife to avoid habitat or displace wildlife from the LSA. – PWs may shift in how wildlife moves along Gariepy ravine.	– Noise from construction activities may reduce habitat utilization nearby the site
Change in wildlife mortality	– Site preparation may increase both direct and indirect mortality of avian species. If site preparation coincides with the “general nesting period” active nests could be destroyed. – Occupied nests or dens may be abandoned during removal of vegetation and other construction activities. – Excavation activities may result in the disturbance or removal of den sites for burrowing species. – Increased risk to amphibian species due to increased heavy equipment and construction-related traffic.	– None

5.4.2 Mitigation Measures

1. PWs have potential to act as barriers to wildlife movement; however, both crossing structures have been designed with wildlife passage in mind and have considered the optimum ‘openness ratio of 0.4 for the Medium EDG (COE, 2010).
2. Schedule vegetation clearing outside of local breeding bird nesting periods, or if clearing must occur during the nesting periods, then clearing will be preceded by breeding bird nest surveys with nests being identified and buffered with a no work zone while the nest remains active.
3. Restrict construction activities to the hours specified in the CoE Community Standards Bylaw 14600.
4. An approved seed mix should be used on riparian and erosion prone areas.
5. Reduce duration of construction activities to the extent possible.
6. Landscaping plan will include native tree seedlings and shrubs.
7. Provide temporary fencing around the Project Footprint to discourage wildlife from entering.
8. Vegetated areas (native, seeded and planted) upslope, upstream and downstream of the walkways and adjacent to the shared pathway will maintain wildlife passage around the PWs and associated permanent erosion protection. No barrier effects are anticipated.
9. Construction activities would occur outside sensitive wildlife periods (e.g., migratory bird breeding period B4 [April 15 to August 31], amphibian breeding period [April 15 to June 14; Government of Alberta, 2013]). If construction is delayed within the migratory bird nesting period, nest searches must be performed by an experienced wildlife biologist to identify breeding birds or their nests.
10. If breeding activity is identified, then appropriate setback buffers will be applied to the suspected nest location to minimize the risk of disturbing birds, nests or eggs in accordance with the *Migratory Bird Convention Act* and the Alberta *Wildlife Act.*

5.4.3 Residual Effects

By applying mitigation measures detailed in Section 6.5.2, it is expected that the residual impacts (Table 5–9) potential change in habitat, wildlife movement and mortality risk can be completely mitigated.

Table 5–9 Wildlife Residual Impact Characterization

Environmental Element	Residual Effect Characterization		Prediction Confidence	Significance
	Direction, Magnitude, Duration	Spatial Extent, Frequency, Permanence		
Change in habitat	– Neutral – Low – Short	– Project Footprint – Isolated – Reversible	Medium	Not significant
Change in wildlife movement	– Neutral – Low – Long	– Local – Isolated – Reversible	Medium	Not significant
Change in mortality risk	– Neutral – Low – Short	– Local – Isolated – Reversible	Medium	Not significant

5.4.4 Cumulative Effects

Following mitigation measures outlined in Section 6.5.2, it is anticipated there will be no cumulative effects to wildlife as a result of the Project.

5.5 Historical Resources

5.5.1 Potential Effects

The potential effects of the Project to Historic Resources (Table 5–10) are loss of / disturbance to historic, archaeological or palaeontological resources.

Table 5–10 Possible Effects on Historical Resources

Environmental Element	Potential Direct Effects	Potential Indirect Effects
Loss of / disturbance to historic resources	– HRV 5a (high archaeological sensitivity), 5p (high palaeontological sensitivity) and 4p (Whitemud Creek, P84.4.1 palaeontological site) have been mapped within the Project area. – Excavation activities may result in the disturbance or removal of historic resources.	– None

5.5.2 Mitigation Measures

1 A Historical Resource Act clearance will be obtained, and any conditions noted in the approval will be followed.
2 At the discovery of any sign of historic or paleontological resources (in place or in a waste or spoil pile) during construction of the Project, work will be immediately stopped, Alberta Arts, Culture and Status of Women will be notified, and no further work will be undertaken until further direction has been provided.

5.5.3 Residual Effects

By applying mitigation measures detailed in Section 6.6.2 and ensuring that any requirements issued by Alberta Arts, Culture and Status of Women are adhered to, residual effects to historic resources (Table 5–11), while irreversible, are anticipated too negligible.

Table 5–11 Historical Resources Residual Impact Characterization

Environmental Element	Residual Effect Characterization		Prediction Confidence	Significance
	Direction, Magnitude, Duration	Spatial Extent, Frequency, Permanence		
Loss of archaeological resource	– Neutral – Low – Short	– Project Footprint – Isolated – Irreversible	High	Not significant

5.5.4 Cumulative Effects

Following mitigation measures outlined in Section 6.6.2, it is anticipated there will be no cumulative effects to historic resources as a result of the Project.

6 PERMITTING AND ENVIRONMENTAL MONITORING

The following regulatory approvals/notifications will be required to be in place prior to construction:

- Historic Resources Act clearance

During construction, recommended monitoring will include:

- Regular inspection of ESC measures to determine that these are functional and sufficient. This should be undertaken immediately following any storm events.

Post construction monitoring will include:

- Following final grading and surfacing, revegetated areas should be monitored for two growing seasons to determine the success of revegetation efforts and to document the establishment or spread of weed species as regulated by the Alberta *Weed Control Act*.
- Structures should be checked to ensure that the installation was successful in preventing erosion and providing stability to the walkway above.

7 PUBLIC CONSULTATION

Ongoing engagement and communication has taken place with the various CoE departments and the public regarding the requirements and design elements of the Project.

Since 2021, the CoE has implemented a robust public engagement and communication plan led by WSP and Dialogue Partners. The Building Great Neighbourhoods Road Map is shown in the image to the right. The first step included collecting census data and reviewing the neighbourhood followed up with 1:1 stakeholder meetings and site visits to create a public engagement and communication plan to reach as many people as possible. The public then helped create a vision and guiding principles for the design and explored opportunities with the project team. In this event, we heard how the community valued the natural feel of the neighbourhood and the proximity of the river. The public suggested crossings over the ravine would help and that improvements to the ToB would also be of value. You can see this in detail in the *What We Heard Report* on the project webpage (CoE, 2022e).

In the Exploring Options and Tradeoffs phase, we showed a crossing over the east side of the Ravine but proposed closing the crossing over the west side to better preserve the natural area. There was a high level of comfort with a formal crossing on the east but nearly 50% of respondents were not comfortable with closing the connection on the west and only 29% comfortable. From a survey that was only accessible through a QR code on A-frame signs in the actual ravine, the results were stronger with 67 to 78% uncomfortable with the two options to close and only 22% comfortable. With these results, it became clear that any attempt to close the west crossing would have low compliance and continue to see people walking around any naturalized planting methods of closure. The public continued to support enhancements to the ToB. A *What We Heard Report* for this phase can also be found on the project webpage (CoE, 2022e).

In the Community Feedback on Draft Design phase, we presented the public with formalized crossings on both the east and west side of the Ravine and 74% of respondents were comfortable with this approach. The public continued to support enhancements to the ToB.

Throughout all of these phases, the City and WSP also hosted internal review meetings with City Stakeholders and utility owners. Most recently, this included the circulation of preliminary designs. Through these circulations, support was shared for both these areas with conditions for improvements that have been implemented throughout design.

8 CONCLUSIONS

The Project is being completed as part of the Gariepy Neighbourhood and Alley Renewal Project. Several of the proposed upgrades occur within the North Saskatchewan River (NSR) Valley Area Redevelopment Plan boundary area. These neighbourhood renewal components consist of upgrading walkways within the Gariepy Ravine with the addition of two Pedestrian walkways and upgrading the ToB Park.

The Project has no fish or fish habitat and no surface water for the majority of the year. Historical records for flattopped white aster (*Doellingeria umbellata*), fox sedge (*Carex vulpinoidea*), and two occurrences of slender naiad (*Najas flexilis*) were noted south of the LSA. No rare plant or rare ecological communities were observed during the rare plant survey on July 5, 2023. Two species of noxious weeds were observed within the Project Footprint: creeping thistle (*Cirsium arvense*) and scentless chamomile (*Tripleurospermum inodorum*).

Two mammal, eleven bird and no amphibian species were observed within the LSA during the various wildlife surveys completed. All species observed were not listed either provincially or federally and are commonly occurring within urban environments. Species observed during the wildlife field surveys included red squirrel, coyote and several commonly occurring songbird species. As the largest species observed within Gariepy Ravine was coyote, both PWs have been designed with wildlife passage in mind and will consider, at a minimum, the optimum ‘openness ratio of 0.4 for the Medium Ecological Design Group (COE, 2010).

A review of Alberta Arts, Culture and Status of Women’s Listing of Historic Resources revealed that the LSA and Project Footprint include lands that have been assigned HRVs of 5a for high archaeological sensitivity, 5p for high palaeontological sensitivity, and 4p (presence of a known palaeontological resource site: Whitemud Creek, P84.4.1). While several historic resource sites have been previously recorded in the surrounding area, no known archaeological or registered heritage sites are located within the LSA (Government of Alberta, 2023). A *Historical Resources Act* clearance application will be submitted for the Project.

Through the application of mitigation and monitoring measures discussed above, the Project is not anticipated to generate any risks to the environmental elements, with the exception of changes in local plant communities.

Limitations to this assessment include:

- Information from third party sources has not been vetted for accuracy; WSP assumes no liability for findings or conclusions given by the third-party reports referenced in this EIA report.
- Should revisions be made to Project design, this report may require revisions.
- The Project will be constructed in 2024/2025, and no conflicts are anticipated with adjacent utility owners or non-Project related construction activity.

9 REFERENCES

Alberta Biodiversity Monitoring Institute (2015). BioAcoustic Unit University of Alberta - Autonomous Recording Unit (ARU) Deployment Protocol Version: May 2017. Retrieved July 2023 from http://bioacoustic.abmi.ca/resources/protocols/.

Alberta Agriculture and Forestry (2022). *Alberta Vegetation Inventory (AVI) Crown.* Retrieved June 2023 from https://open.alberta.ca/opendata/gda-3dbcfa02-e97a-4059-9414-1ed8e0700e80#summary.

Alberta Agriculture and Forestry (2023). *Agricultural Regions of Alberta Soil Inventory Database.* Retrieved May 2023 from https://soil.agric.gov.ab.ca/agrasidviewer/.

Alberta Conservation and Information Management System (2022). Online data accessed (ACIMS). Alberta Tourism Parks and Recreation. Retrieved June 2023 from http://www.albertaparks.ca/acims-data#.

Alberta Culture (2023). *Listing of Historic Resources. Shapefiles.* Retrieved August 2023 from https://www.culturetourism.alberta.ca/heritage-and-museums/programs-and-services/land-use-planning/.

Alberta Energy Regulator. (2023). Coal Mine Map Viewer. https://extmapviewer.aer.ca/AERCoalMine/Index.html.

Alberta Environment (2006). *Code of Practice for Watercourse* Crossings – St. Paul Management Area Map. Alberta Kings Printer. https://open.alberta.ca/publications/2478000.

Alberta Environment and Parks (2019). *Grassland Vegetation Inventory (GVI) Data.* https://open.alberta.ca/opendata/gda-d3ab9031-8ec0-4589-9335-c1e50ae05992#summary.

Alberta Environment and Parks (2020b). *Whirling Disease Decontamination Risk Zone Map.* Current as of August 2020. Retrieved April 2023 from: https://open.alberta.ca/publications/whirling-disease-decontamination-risk-zone-map.

Alberta Environment and Parks (2020c). Retrieved April 2023 from: *Decontamination Protocol for Work in or Near Water.* https://open.alberta.ca/publications/9781460134986.

Alberta Environment and Parks (2022). *Alberta Merged Wetland Inventory*. Retrieved June 2023 from https://www.arcgis.com/home/item.html?id=6933a7b62a11440bbc2d69a0d6d047c0.

Alberta Environment and Protected Areas (2023a). *Fish and Wildlife Information Management System (FWMIS).* Retrieved April 2023 from https://geospatial.alberta.ca/FWIMT_Pub/Viewer/?TermsOfUseRequired=true&Viewer=FWIMT_Pub.

Alberta Environment and Protected Areas (2023b). *Wild Species Status Search.* Retrieved April 2023 from https://www.alberta.ca/lookup/wild-species-status-search.aspx.

Alberta Native Plant Council (2001). *Rare Vascular Plants of Alberta*. Edited by Linda Kershaw, Joyce Gould, Derek Johnson and Jane Lancaster. University of Alberta Pres, Natural Resources Canada, Canadian Forest Service.

Alberta Native Plant Council (2012). *ANPC Guidelines for Rare Vascular Plant Surveys in Alberta – 2012 Update*. Alberta Native Plant Council. https://anpc.ab.ca/wp-content/uploads/2015/01/Guidelines-For-Rare-Plant-Surveys-in-AB-2012-Update.pdf.

Allen, L. (2014). *Alberta Conservation Information Management System Ecological Community Tracking List*. Alberta Tourism, Parks and Recreation.

Big Lake Environment Support Society (2014). *Big Lake and the Sturgeon River*.

Bowser W.E., A.A. Kjearsgaard, T.W. Peters and R.E. Wells (1962). *Soil Survey of Edmonton Sheet (83-H)*. Canada Department of Agriculture. Alberta Soil Survey Report No. 21.

Canadian Environmental Assessment Agency (2006). *Glossary – terms commonly used in federal environmental assessments.* Public Works and Government Services Canada. http://publications.gc.ca/collections/collection_2008/ec/En106-58-2006E.pdf.

Ceroici, W.J. (1979): *Hydrogeology of the southwest segment, Edmonton, Alberta*. Alberta Research Council, ARC/AGS Earth Sciences Report 1978-05, 17 p.

City of Edmonton (1985). *North Saskatchewan River Valley Area Redevelopment Plan*. Bylaw No. 7188. Office of Consolidation, September 2017.

City of Edmonton (2009). *Active Transportation Policy No. C544.*

City of Edmonton (2017). *City of Edmonton Bylaw 18093 Drainage Bylaw.*

City of Edmonton (2018a). *City of Edmonton Bylaw 14600 Community Standards Bylaw*. Consolidated on March 20, 2018.

City of Edmonton (2018b). *Climate Resilient Edmonton: Adaptation Strategy and Action Plan.*

City of Edmonton. (2018c). Open Data - uPLVI shapefiles. Accessed August 2023. Available at: https://data.edmonton.ca/.

City of Edmonton (2019a). *ConnectEdmonton: Edmonton's Strategic Plan 2019-2028.*

City of Edmonton (2019b). *Accessibility for People with Disabilities Policy.*

City of Edmonton (2020a). *City of Edmonton's Corporate Tree Management Policy C456C.*

City of Edmonton (2020b). *The City Plan – Edmonton's City Plan, Charter Bylaw 20,000.*

City of Edmonton (2021). *City of Edmonton's Access Design Guide*, Version 4.

City of Edmonton (2022a). *Gariepy Ravine SUP and Walkway EIA/SLS Terms of Reference.*

City of Edmonton (2022b). *Gariepy Neighbourhood and Alley Renewal – Urban Design Analysis – Chapter 1: Background Report.*

City of Edmonton (2022c) *City of Edmonton Design and Construction Standards, 2022 Volume 5 Landscaping*.

City of Edmonton (2022d). *Environmental Sensitivity Project (2015).*

City of Edmonton (2022e). What We Heard Report: *Gariepy Neighbourhood and Alley Renewal – Exploring Options and Tradeoffs.*

City of Edmonton (2023). *Public Tree Bylaw 18825*.

City of Edmonton (2024). *Breathe*. https://www.edmonton.ca/city_government/initiatives_innovation/about-breathe

Cornell University (2023). The Cornell Lab of Ornithology – Birds of the World. Retrieved June 2023 from: https://birdsoftheworld.org/.

COSEWIC (2009). COSEWIC Assessment and Status Report on the Horned Grebe *Podiceps auratus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii +42 pp.

COSEWIC (2012). COSEWIC Assessment and Status Report on the Western Toad *Anaxyrus boreas* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 71 pp.

COSEWIC (2013). COSEWIC assessment and status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

Fisheries and Oceans Canada (2023). Aquatic Species at Risk Map. Retrieved April 2023 from: https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html.

Flora of North America (n.d.a.). *Carex vulpinoidea.* Retrieved June 2023 from http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242357627.

Flora of North America (n.d.b.). *Najas flexilis*. Retrieved June 2023 from: http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=222000255.

Government of Alberta (2013). *Sensitive Species Inventory Guidelines.* Environment and Sustainable Resource Development.

Government of Alberta (2015). *Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zone.* Environment and Sustainable Resource Development. Edmonton, AB.

Government of Alberta (2016). *Primary Land and Vegetation Inventory (PLVI) – Standards and Specifications*. Version 2.

Government of Alberta (2023). *HRMB-External,* Alberta Geospatial Services Platform (restricted). Accessed August 2023.

Government of Canada (2022a). *Government of Canada Past Weather and Climate: Historical Data*. Retrieved July 2023 from https://climate.weather.gc.ca/historical_data/search_historic_data_e.html.

Government of Canada (2022b). Fact sheet: Nest Protection under the Migratory Birds Regulations, 2022. Retrieved July 2023 from https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/fact-sheet-nest-protection-under-mbr-2022.html#toc2.

Government of Canada (2023a). *Species at Risk Public Registry.* Retrieved April 2023 from http://www.registrelep-sararegistry.gc.ca/search/SpeciesSearch_e.cfm.

Government of Canada (2023b). Environment and Climate Change Canada - General nesting periods of migratory birds. Retrieved April 2023 from https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html.

Greenlink Forestry Inc. (2016). *Urban Primary Land and Vegetation Inventory (uPLVI).* Prepared for Parks and Biodiversity, Sustainable Development.

Hoggan Engineering & Testing (1980) Ltd. (2008). *Geotechnical Investigation Slope Stability Analysis Proposed Glendale Estates Subdivision NW & SW 20-53-25-W4M 199 Street and 137 Avenue NW Edmonton, Alberta*. Prepared for Rohit Group of Companies.

Kathol C.P. and R.A. McPherson (1975). *Urban Geology of Edmonton*. Alberta Research Council Bulletin 32. 92 pp.

Natural Regions Committee (2006). *Natural Regions and Subregions of Alberta*. Compiled by D.J. Downing and W.W. Pettapiece, Government of Alberta. Pub. No. T/852.

Semenchuk, G. A. (2007). *The atlas of Alberta breeding birds: A second look*. Edmonton, AB: Federation of Alberta Naturalists.

Stantec Consulting Ltd. (2005). *Erosion and Sedimentation Control Guidelines.* Prepared for the City of Edmonton.

WSP. (2024). Gariepy Neighbourhood and Alley Renewal Project Site Location Study.

9.1.1.1 Acts/Regulations

- *Canadian Environmental Protection Act*. Statutes of Canada. 1999. Chapter 33
- *Environmental Protection and Enhancement Act*. Revised Statutes of Alberta. 2000. Chapter E-12
- *Fisheries Act*. Statutes of Canada. 1985. Chapter F-14
- *Historical Resources Act*. Revised Statutes of Alberta. 2000. Chapter H-9
- *Migratory Birds Convention Act*. Statutes of Canada. 1994. Chapter 22
- Migratory Bird Regulation. Statutory Orders and Regulations. 2022. Chapter 105
- *Public Lands Act*. Revised Statutes of Alberta. 2000. Chapter P-40
- *Species at Risk Act*. Statutes of Canada. 2002. Chapter 29
- *Soil Conservation Act*. Revised Statutes of Alberta. 2000. Chapter S-15
- *Water Act*. Revised Statutes of Alberta. 2000. Chapter W-3
- *Weed Control Act*. Statutes of Alberta. 2008. Chapter W-5.1
- *Weed Control Regulation*. Alberta Regulation 19/2010
- *Wildlife Act*. Revised Statutes of Alberta. 2000. Chapter W-10
- *Wildlife Regulation.* Alberta Regulation 143/1997

APPENDIX

A FIGURES

LIST OF FIGURES

LEGEND

- Project Footprint
- Local Study Area
- Bylaw 7188 Area

DRAFT

0 50 100 150 200 250

1:3,000 Meters

Coordinate System: NAD 1983 UTM Zone 12N

NOTE(S)

REFERENCE(S)

1. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT
CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
PROJECT OVERVIEW

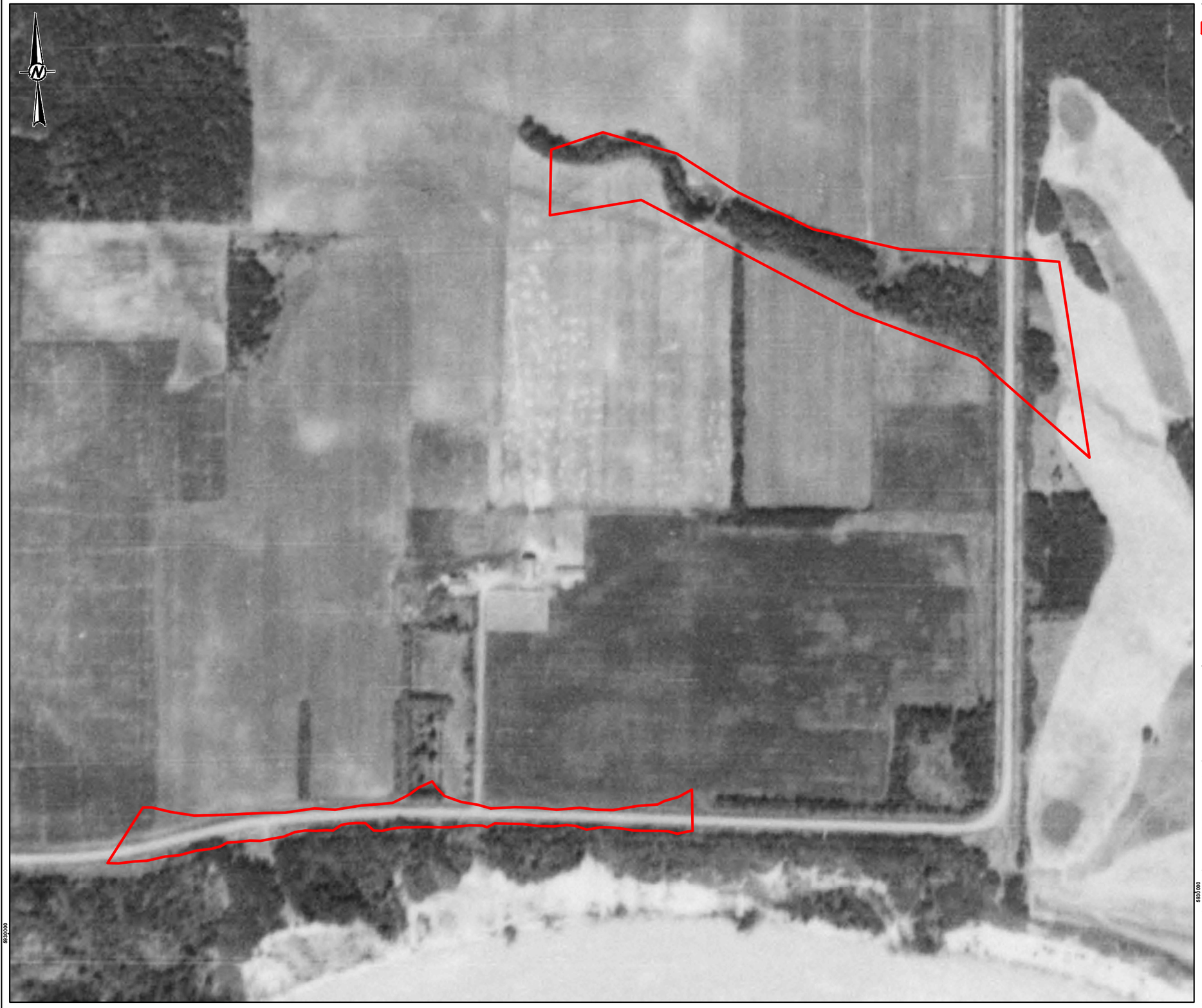
CONSULTANT

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
1

PATH: I:\WSPAB\00_Projects_2021\211-12305-00_Gariepy\EIA_Figure1_ProjectOverview.mxd PRINTED ON: 2023-08-25 AT: 8:09:40 AM



LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [1948]

6030000

CONSULTANT

wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2A

LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [1965]

CONSULTANT

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2B

PATH: I:\WSPAB\00_Projects_2021\211-12305-00_Gariepy\EIA_Figure2_HistoricalImagery.mxd PRINTED ON: 2023-08-25 AT: 10:21:49 AM

LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [1976]

CONSULTANT

wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	RF
OFFICE	CALGARY

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2C

PATH: I:\WSPAB00_Projects_2021\211-12305-00_Gariepy\EIA_Figure2_HistoricalImagery.mxd PRINTED ON: 2023-08-25 AT: 10:14:48 AM

LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [1990]

CONSULTANT

wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	RF
OFFICE	CALGARY

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2D

5930000

5930000

PATH: I:\WSPAB00_Projects_2021\211-12305-00_Gariepy\EIA_Figure2_HistoricalImagery.mxd PRINTED ON: 2023-08-25 AT: 10:15:24 AM

LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [2001]

CONSULTANT

wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	RF
OFFICE	CALGARY

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2E

5935000

5930000

PATH: I:\WSPAB60\0_Projects_2021\211-12305-00_Gariepy\EIA_Figure2_HistoricalImagery.mxd PRINTED ON: 2023-08-25 AT: 10:15:57 AM

LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [2008]

5930000

CONSULTANT

wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	RF
OFFICE	CALGARY

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2F

PATH: I:\WSP\AB\00_Projects_20211311-12305-00_Gariepy\EIA_Figure\2_HistoricalImagery.mxd PRINTED ON: 2023-08-25 AT: 10:16:22 AM

LEGEND

Project Footprint

DRAFT

0 50 100 150 200

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

IMAGERY SOURCE

Image: 6
Source: ESRI
Date: 10-Jun-22
Roll: N/A
Line: N/A
Scale: 1:2,500

CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
HISTORICAL IMAGERY [2022]

CONSULTANT

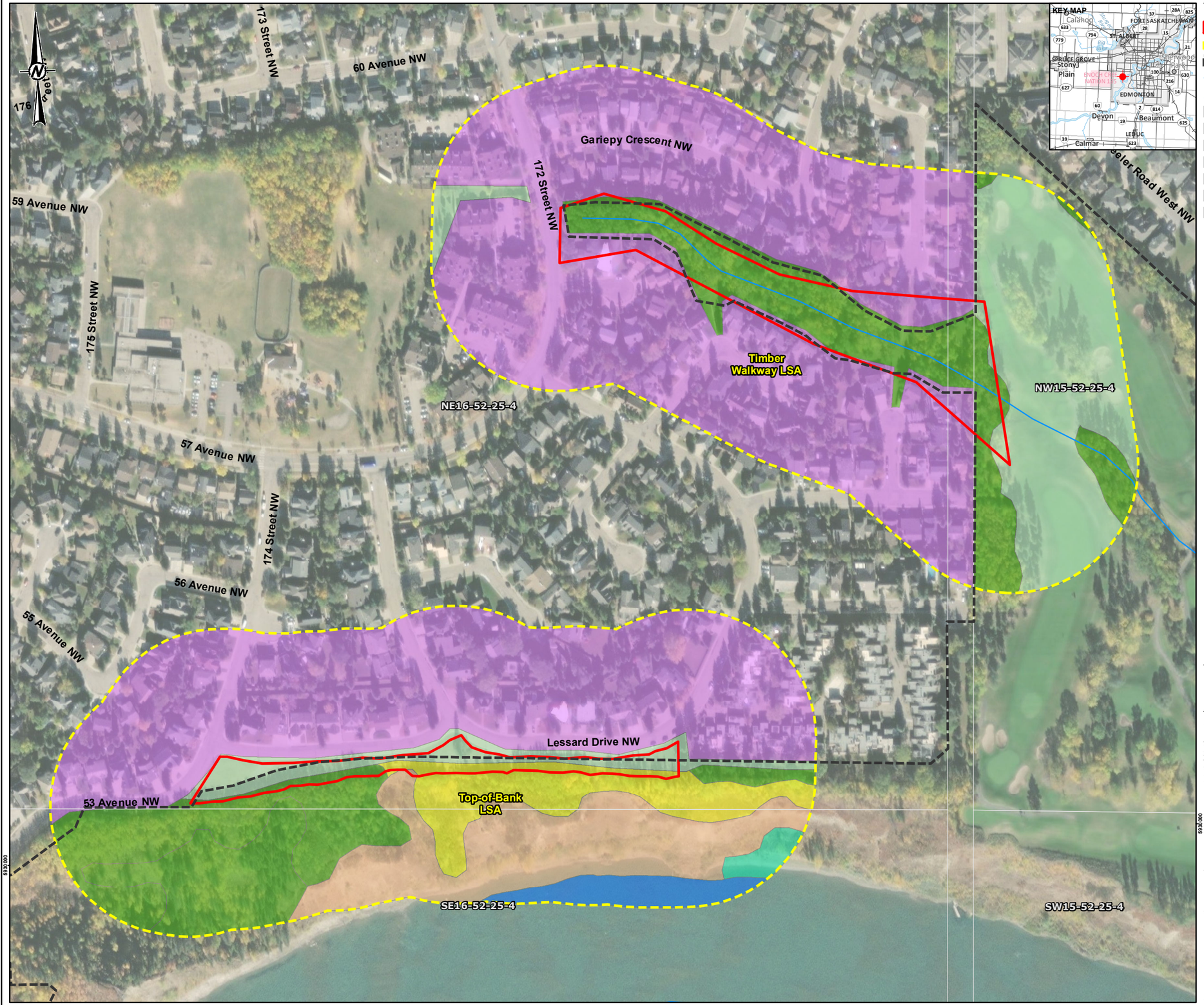
wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
2G

PATH: I:\WSPAB\00_Projects_2021\211-12305-00_Gariepy\EIA_Figure2_HistoricalImagery.mxd PRINTED ON: 2023-08-25 AT: 10:19:44 AM



PATH: I:\WSPAB\00_Projects_2021\211-12305-00_Gariepy\EIA_Figure3_PlantCommunities.mxd PRINTED ON: 2023-08-25 AT: 8:10:07 AM

LEGEND

- Project Footprint
- Local Study Area
- Bylaw 7188 Area
- FWMIS Watercourse

Urban Primary Land and Vegetation Inventory (uPLVI)[1] Site Types

- Closed Shrub
- Established Residental Community
- Exposed Mineral Soil
- Forested
- Maintained Grass
- Medial Shrub
- Natural Water Body

DRAFT

0 50 100 150 200 250

1:3,000 Meters

Coordinate System: NAD 1983 UTM Zone 12N

NOTE(S)

REFERENCE(S)

1. URBAN PRIMARY LAND AND VEGETATION INVENTORY (PLVI) - HTTPS://DATA.EDMONTON.CA/ENVIRONMENTAL-SERVICES/URBAN-PRIMARY-LAND-VEGETATION-INVENTORY/IU6B-N5SR
2. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT
CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
PLANT COMMUNITIES

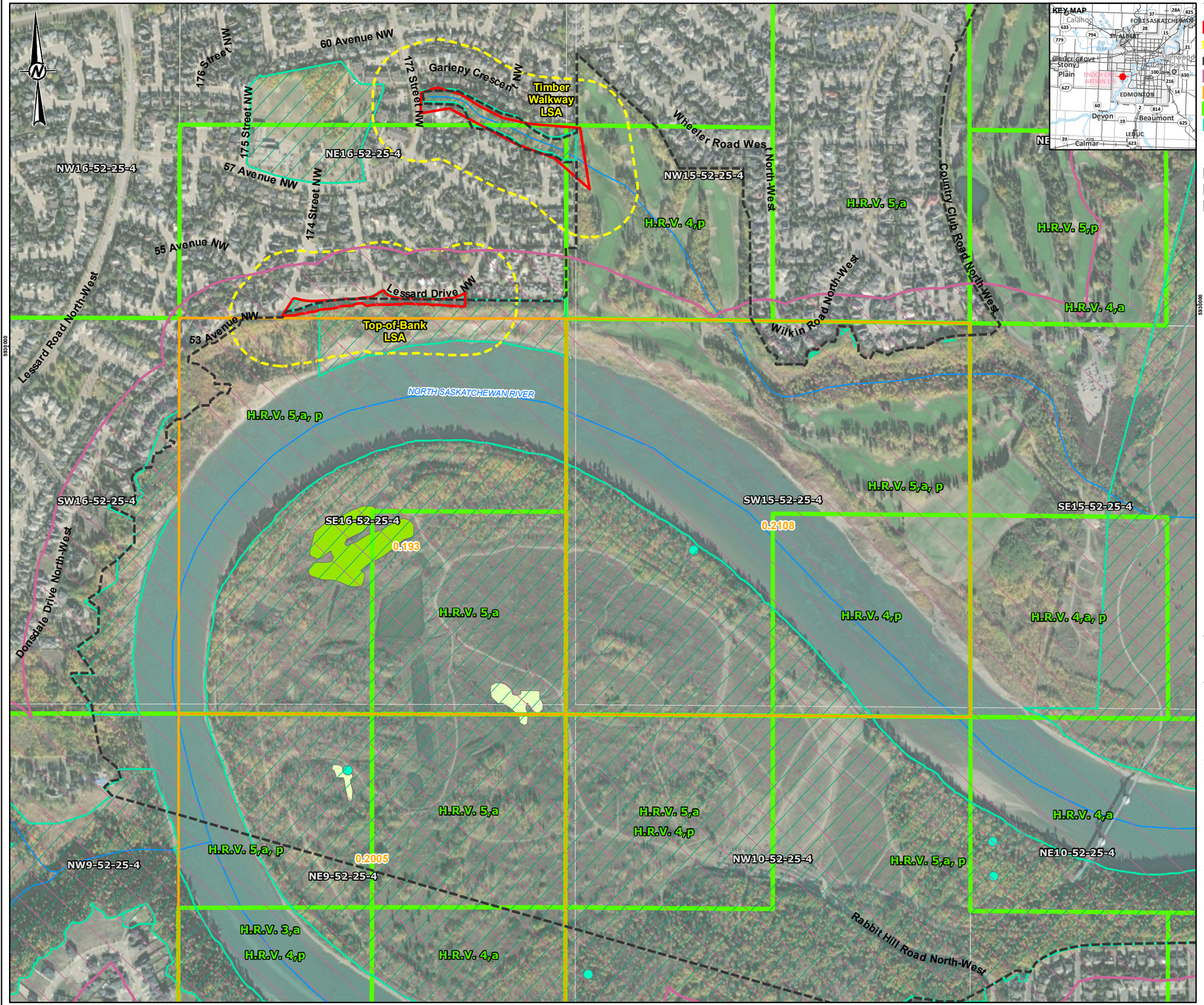
CONSULTANT

wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
3



DRAFT

LEGEND

- Project Footprint
- Local Study Area
- Bylaw 7188 Area
- Key Wildlife and Biodiversity Zone
- Environmentally Significant Area
- Historical Resource Values [2]
- City of Edmonton Park
- FWMIS Watercourse

Historical Rare Plant Observations

- Fox Sedge
- Flat-Topped White Aster
- Slender Naiad

0 100 200 300 400 500

1:8,000 Meters

Coordinate System: NAD 1983 UTM Zone 12N

NOTE(S)

REFERENCE(S)

1. ALBERTA CONSERVATION INFORMATION MANAGEMENT SYSTEM (ACIMS) - HTTPS://WWW.ALBERTAPARKS.CA/ALBERTAPARKSCA/MANAGEMENT-LAND-USE/ALBERTA-CONSERVATION-INFORMATION-MANAGEMENT-SYSTEM-ACIMS/
2. HISTORICAL RESOURCE VALUES (SPRING, 2023) - HTTPS://WWW.ALBERTA.CA/LISTING-HISTORIC-RESOURCES
3. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT
CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
ENVIRONMENTAL SENSITIVITIES

CONSULTANT

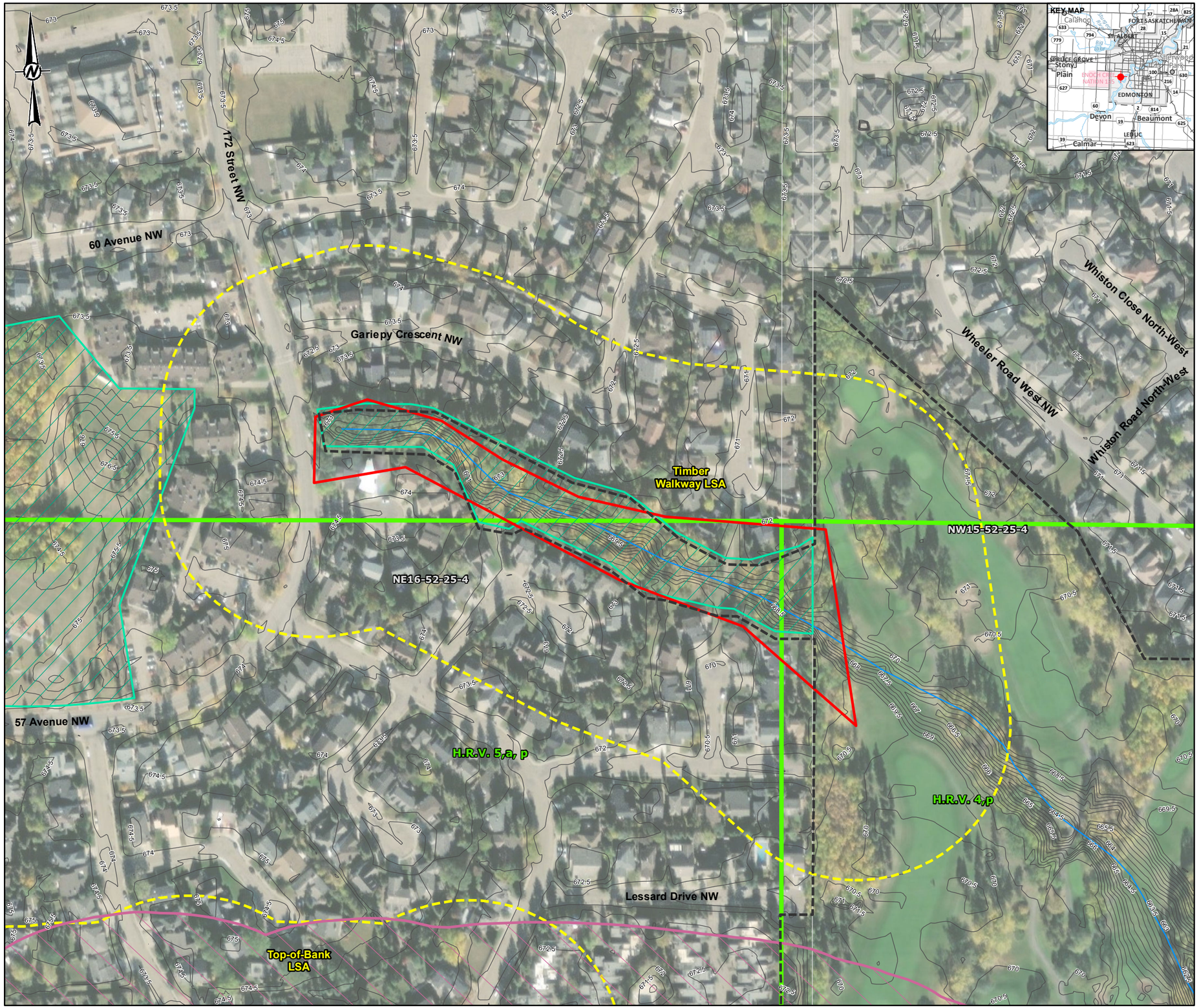
wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
4A

PATH: I:\WSPAB\00_Projects_2021\211-12305-00_GariepyEIA_Figure\4A_Environmental\Sensitivities.mxd PRINTED ON: 2023-08-25 AT: 10:06:36 AM



LEGEND

- Project Footprint
- Local Study Area
- Bylaw 7188 Area
- Key Wildlife and Biodiversity Zone
- Historical Resource Values [2]
- City of Edmonton Park
- 0.5m Contour
- FWMIS Watercourse

DRAFT

0 25 50 75 100 125

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

NOTE(S)

REFERENCE(S)

1. ALBERTA CONSERVATION INFORMATION MANAGEMENT SYSTEM (ACIMS) - HTTPS://WWW.ALBERTAPARKS.CA/ALBERTAPARKSCA/MANAGEMENT-LAND-USE/ALBERTA-CONSERVATION-INFORMATION-MANAGEMENT-SYSTEM-ACIMS/
2. HISTORICAL RESOURCE VALUES (SPRING, 2023) - HTTPS://WWW.ALBERTA.CA/LISTING-HISTORIC-RESOURCES
3. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT
CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
TIMBER WALKWAY LSA ENVIRONMENTAL SENSITIVITIES

CONSULTANT

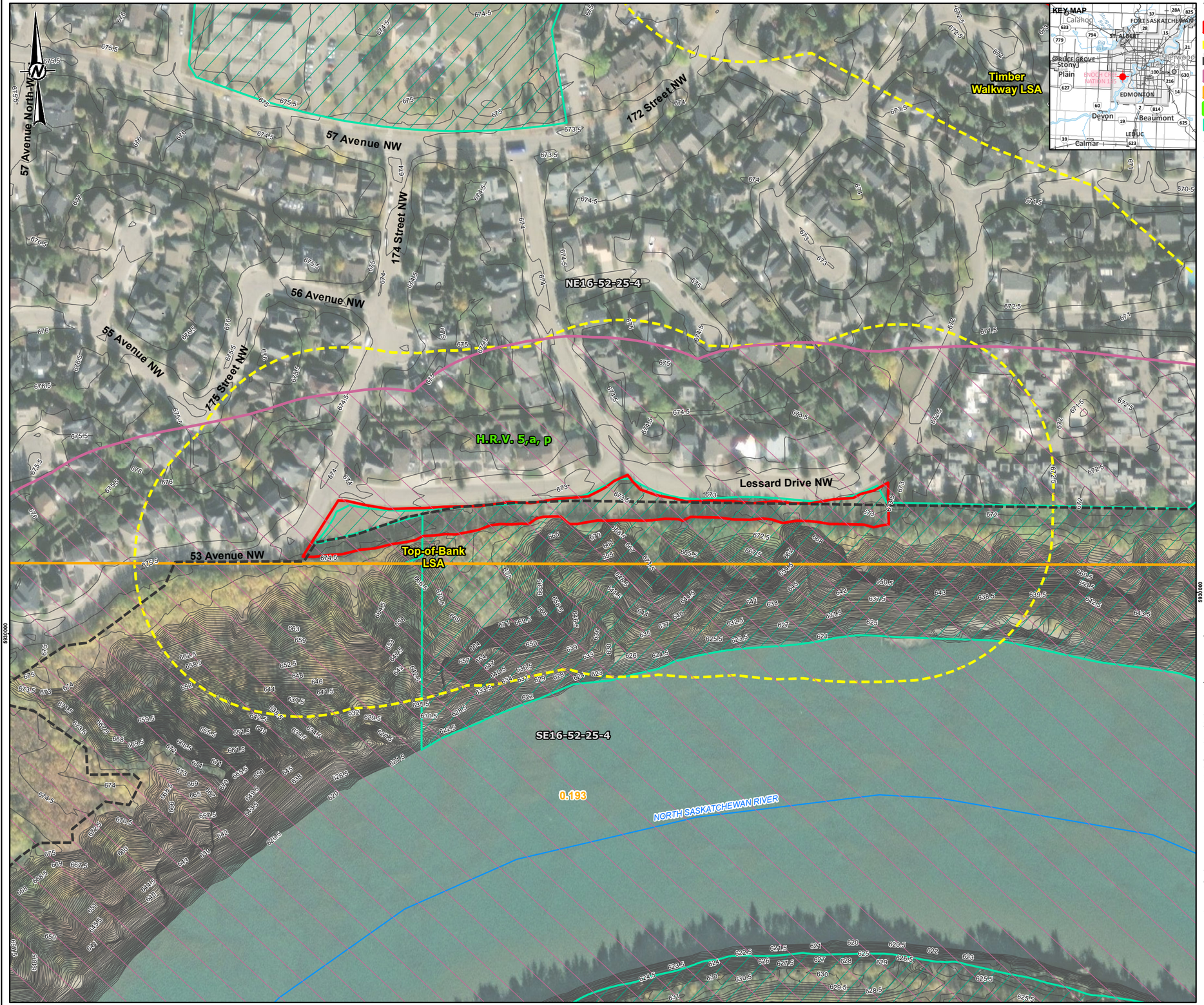
wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
4B

PATH: I:\WSPABR00_Projects_2021\211-12305-00_Gariepy\EIA_Figure4B_TimberWalkway-Environmental\Sensitivities.mxd PRINTED ON: 2023-08-25 AT: 9:59:29 AM



LEGEND

- Project Footprint
- Local Study Area
- Bylaw 7188 Area
- Key Wildlife and Biodiversity Zone
- Environmentally Significant Area
- Historical Resource Values [2]
- City of Edmonton Park
- 0.5m Contour
- FWMIS Watercourse

DRAFT

0 25 50 75 100 125

1:2,500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

NOTE(S)

REFERENCE(S)

1. ALBERTA CONSERVATION INFORMATION MANAGEMENT SYSTEM (ACIMS) - HTTPS://WWW.ALBERTAPARKS.CA/ALBERTAPARKSCA/MANAGEMENT-LAND-USE/ALBERTA-CONSERVATION-INFORMATION-MANAGEMENT-SYSTEM-ACIMS/
2. HISTORICAL RESOURCE VALUES (SPRING, 2023) - HTTPS://WWW.ALBERTA.CA/LISTING-HISTORIC-RESOURCES
3. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT
CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
TOP-OF-BANK LSA ENVIRONMENTAL SENSITIVITIES

CONSULTANT

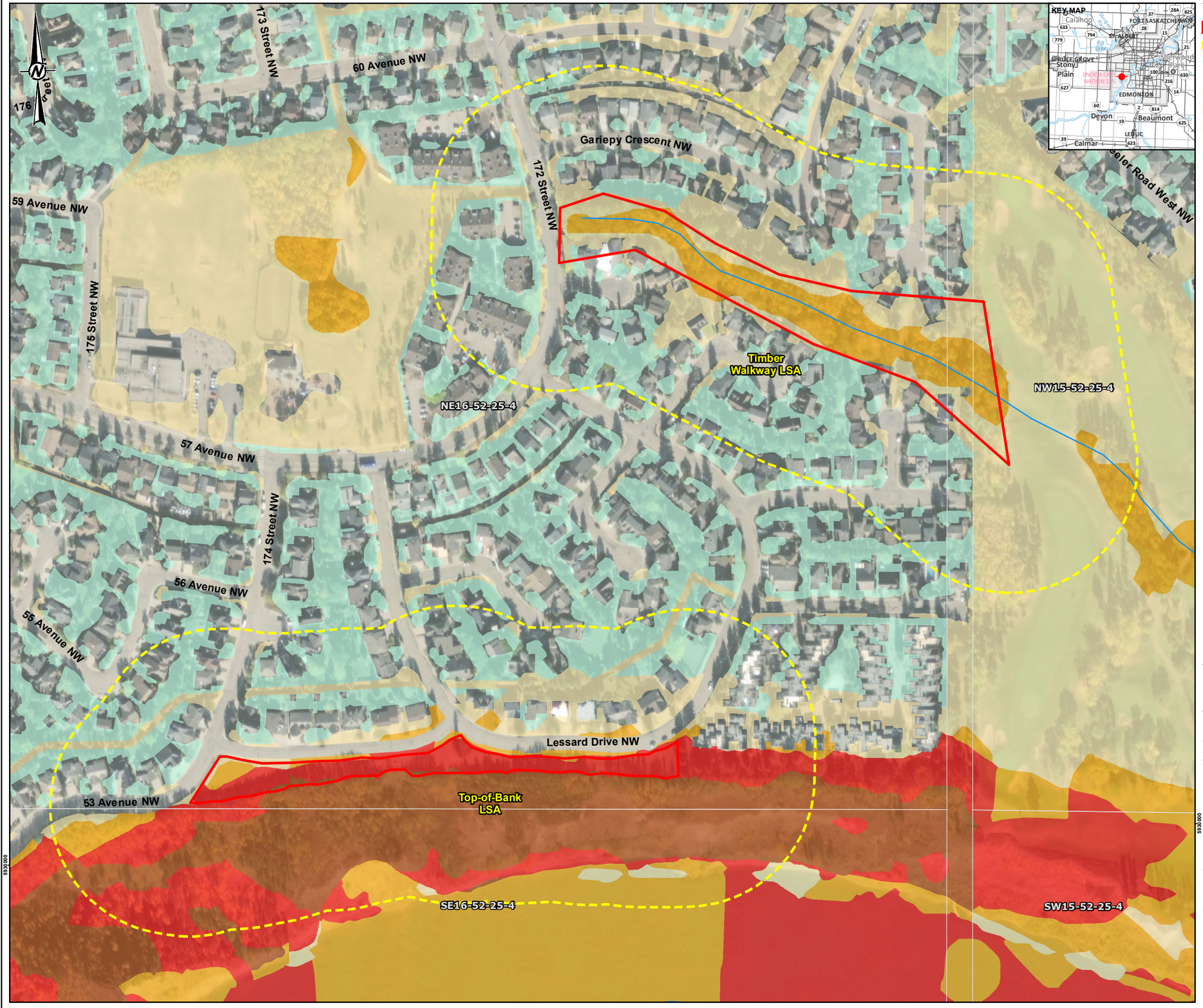
wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
4C

PATH: I:\WSP\ABG0_Projects_20212\211-12305-00_Gariepy\EIA_Figure\4C_TopOfBank-EnvironmentalSensitivities.mxd PRINTED ON: 2023-08-25 AT: 9:52:39 AM



LEGEND

- Project Footprint
- Local Study Area
- FWMIS Watercourse

Environmental Sensitivity Rating

- Extremely High Value
- Very High Value
- High Value
- Moderate Value
- Low Value

DRAFT

0 50 100 150 200 250

1:3,000 Meters

Coordinate System: NAD 1983 UTM Zone 12N

NOTE(S)

REFERENCE(S)

1. URBAN PRIMARY LAND AND VEGETATION INVENTORY (PLVI) - HTTPS://DATA.EDMONTON.CA/ENVIRONMENTAL-SERVICES/URBAN-PRIMARY-LAND-VEGETATION-INVENTORY/IU6B-N5SR
2. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT
CITY OF EDMONTON

PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE
ENVIRONMENTAL SENSITIVITY RATING

CONSULTANT

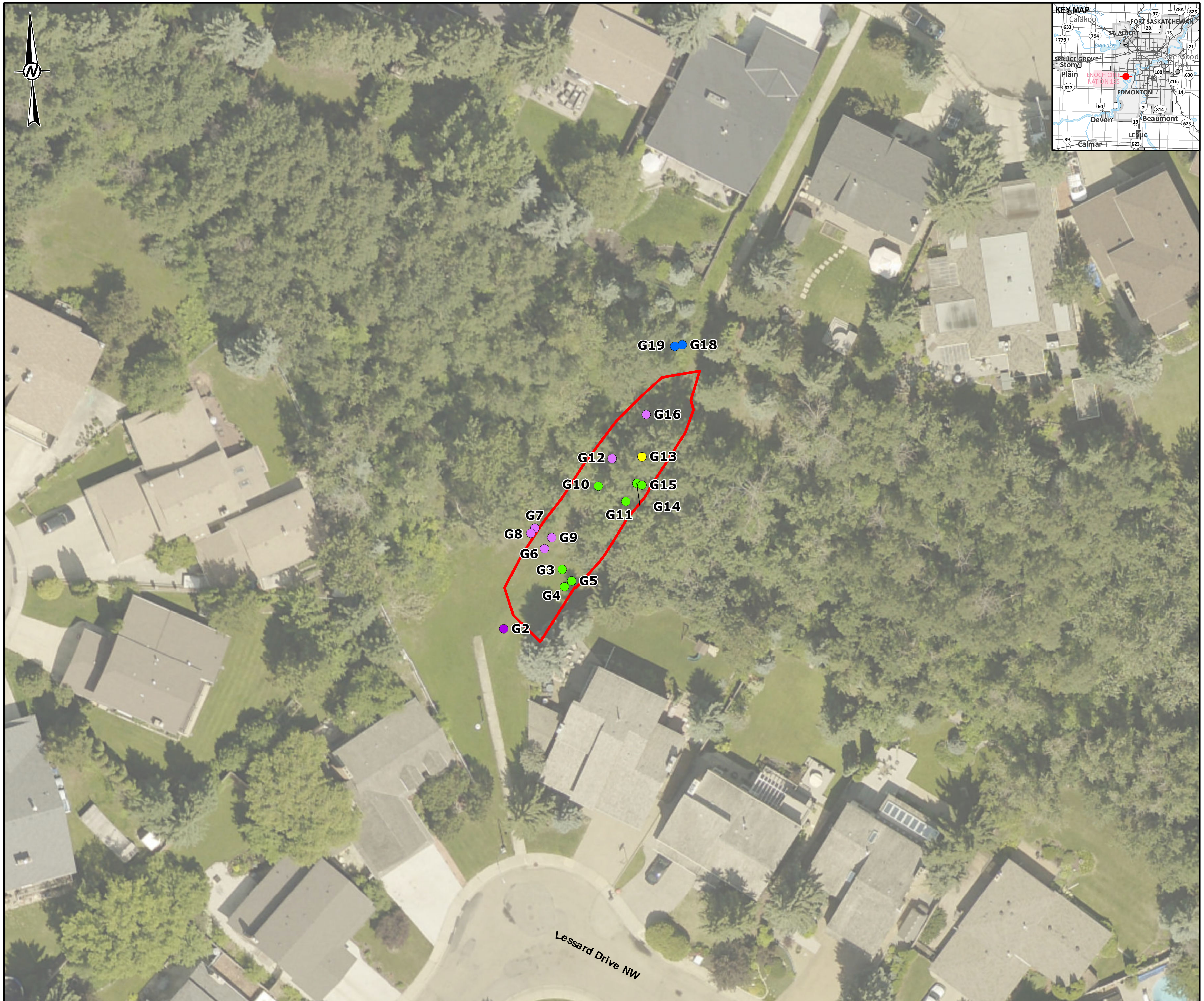
wsp

YYYY-MM-DD	2023-08-18
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.
CA-WSP-211-12305-00

FIGURE
5

PATH: I:\WSP\AB\00_Projects_2021\211-12305-00_Gariepy\EIA_Figure5_EnvironmentalSensitivityRating.mxd PRINTED ON: 2023-08-25 AT: 10:04:12 AM



LEGEND

- Construction Footprint

Trees to be Removed

- Balsam Poplar
- Blue Spruce
- Canada Thistle
- Prickly Rose and Saskatoon Berry
- Trembling Aspen

0 5 10 15 20 25

1:500 Meters

Coordinate System: NAD 1983 UTM Zone 12N

REFERENCE(S)

1. IMAGERY SOURCE: ESRI IMAGERY SERVICE [2022]

CLIENT

CITY OF EDMONTON

PROJECT

ENVIRONMENTAL IMPACT ASSESSMENT
GARIEPY NEIGHBOURHOOD

TITLE

TREES TO BE REMOVED

CONSULTANT

wsp

YYYY-MM-DD	2024-01-26
REPORT BY	RF
DRAWN BY	JH
REVIEWED BY	JL
OFFICE	EDMONTON

PROJECT NO.

CA-WSP-211-12305-00

FIGURE

6

PATH: \\golder.gds\gal\Calgary\CALIM\GISActive\WSPAB\00_Projects_2021\211-12305-00_Gariepy\EIA_Figure1_TreesRemoved.mxd PRINTED ON: 2024-01-26 AT: 9:58:03 AM

APPENDIX

B TERMS OF REFERENCE

Gariepy Ravine SUP and Walkways EIA/SLS

Project EIA and/or SLS - Tentative Project Timeline

Timeline	Date	Action	Key Items	Who
-	February 2022	Background Information for the Project Scoping	Project Manager provided project background, concept design for River Valley ARP scoping evaluation for the proposed Project.	IIS, OSPD
-	April 3, 2023	River Valley Scoping Meeting	The consultant shared the project concept and provided project status including studies completed up to the project date. City reviewers provided feedback to the proposed concept plan.	City Departments/ Consultant
-	May 8, 2023	TORs sent to proponent	EIA Lite - Focus on soil conservation, wildlife, natural area protection, naturalization, etc.	River Valley ARP
Key requirements for similar projects include, but are not limited to, ***concept plan*** (preliminary stage drawing), **technical assessment** (e.g. historical, geotechnical, ecological, rare plant surveys) and ***site location study*** for impact analysis and mitigation (see TOR below). *Public consultation and participation processes are the responsibility of the proponent.				
1 week processing + 4-6 week review circulation	TBD	Draft EIA and/or SLS submission	There may be time specific (seasonal) requirements applied to this project (e.g. rare plant survey, migratory bird window, winter survey etc.) (conditional approval may applied based on the specific study and technical information if required)	River Valley ARP Team, Stakeholders, PM & Consultant
1 week processing + 2-4 week review circulation	TBD	Final EIA and/or SLS submission	4-6 weeks of initial circulation and 2-4 weeks of second round circulation once a complete package is received.	River Valley ARP Team, Stakeholders, PM & Consultant
1-3 days for processing	TBD	River Valley ARP sign off	Should the time, scale, or scope of the project change, recirculation and an amended sign-off will be required.	UPE and other City Departments/ EPCOR
-	TBD	Council Report Preparation and Approval (Internal Review)	Includes time to write a report, cut-off dates applied for review (both lead and other departments). Cut off dates applied for Branch manager/DCMO office/Presentation, Q&A, and Speaking notes.	TBD
-	TBD	Potential dates to present @ UPC	Council Report and presentation.	TBD
-	TBD	Potential dates to present @ EC	Council Report and presentation.	TBD
***These are the best case scenarios presented, a more accurate timeline could be provided following the RV scoping meeting.**				

North Saskatchewan River Valley Area Redevelopment Plan

A Guide to Completing Environmental Impact Assessments

Table of Contents

Introduction

The North Saskatchewan River Valley Area Redevelopment Plan (The River Valley Area Redevelopment Plan) protects, preserves, and enhances the North Saskatchewan River Valley and Ravine System as Edmonton's greatest asset and mitigates the impacts of development upon the natural functions and character of the river valley and ravine system.

The following guide has been developed to outline the process and content required for completing environmental impact assessments under Section 3.3.3 of the North Saskatchewan River Valley Area Redevelopment Plan. The aim is to provide a consistent approach to assessing impacts, to increase efficiency in report preparation and review, and to improve communication between the agencies and individuals involved.

This Guide is general in nature, applying to a range of projects including park master plans, park and facility development projects and utility and infrastructure projects. Proponents are advised that under Section 3.5.3 of the River Valley Area Redevelopment Plan a Site Location Study in addition to an environmental impact assessment that details costs, and social, environmental and institutional constraints which make a River Valley location essential must be prepared for City Council approval. The terms of reference and reporting requirements for the Site Location Study are included as Appendix 1 (Guide to undertaking a Site Location Study). The environmental impact assessment and site location study should be undertaken prior to Council committing funds for capital expenditure related to any project.

Project Specific Notes:

- **This project requires Administration approval.**
- **This project has received Council approval through the Neighborhood Renewal process.**

Environmental Impact Assessment Guide

These guidelines provide a general framework in completing an environmental impact assessment in accordance with the requirements outlined in the North Saskatchewan River Valley Area Redevelopment Plan. Emphasis is placed on early consultation with the City of Edmonton and other review agencies (e.g. Province of Alberta). This helps to improve communication, identify issues and constraints at an early stage, avoid costly delays, and make efficient use of time and resources. On-going dialogue and reporting is expected throughout the process.

Prior to commencing work on the environmental impact screening assessment report, a pre-consultation, scoping and project review with City Planning is strongly advised.

The pre-consultation meeting for an environmental impact screening assessment will include staff from City Planning, other review agency staff where appropriate, the individual(s) preparing the environmental impact assessment, and, if desired, the project proponent. If the applicant has already retained a consultant to complete the environmental report, then the consultant should be included in this meeting. The purpose of the pre-consultation meeting will be to:

- Screen proposed projects to determine the type of environmental review required, and
- Identify preliminary ecological constraints and other issues requiring assessment.

Based on the outcomes of the meeting, a preliminary scope of work for the environmental report will be determined and will depend on the following:

- The scale and the nature of the proposed development or site alteration;
- The character of the natural environment and its associated ecological functions;
- The site's setting within the landscape and/or watershed;
- The availability of previous studies and information; and,
- Any social or socio-economic considerations.

Some specific study requirements for the environmental report, such as breeding bird surveys or field investigations of potential species at risk and their habitats, may be identified and agreed upon during pre-consultation, based upon the known natural features and ecological functions that could be affected by the proposed project.

Once the preliminary scope of the environmental impact assessment has been determined, the author of the report can proceed to gather information from available background

sources and/or original field studies, confirm the scope of the report with the City, conduct the impact assessment and report on the study findings.

Specifications for field investigations are provided in Section Two. In general, however, applicants and their consultants should be aware that at least one site visit is required for every environmental impact assessment report regardless of scope. An environmental impact assessment without direct, personal observations of the site will be considered incomplete. Site visit(s) will occur during the growing season rather than in the winter, when snow cover and normal seasonal dormancy severely limit potential observations. Multiple site visits may be required to provide an adequate understanding of the existing conditions at the site; in these cases, winter site visits may be acceptable for the purpose of investigating seasonal wildlife or locating certain nests more easily seen when the trees are bare of leaves.

The initial site visit for the environmental impact assessment should occur prior to any clearing of natural vegetation, or intrusive site investigations (e.g. installation of test wells or boreholes). If, during this initial site visit, any potential areas of constraints are identified where intrusive surveys could result in negative impacts on significant natural features or ecological functions, recommendations to avoid or minimize these impacts will be required.

Ongoing dialogue between applicants, their consultants and City staff is expected during the completion of the environmental impact assessment. Concerns or questions may be raised with staff at any time. Recommended points of contact with City staff include:

- Following the background information review and field study, to confirm the scope of the environmental impact assessment and discuss any environmental constraints identified; and,
- During the impact assessment, to discuss potential impacts, options for mitigation, and possible monitoring requirements.

In some cases, it may be beneficial to hold such discussions at the site, with other agency staff included where appropriate.

Once the environmental impact assessment report is complete it is submitted to City Planning. Electronic submission (PDF) of reports is sufficient to facilitate the review process. Applicants should be aware that the environmental impact assessment report, along with other supporting materials, may be posted on the City's website as part of the public consultation process.

Once the report is submitted, City Planning will coordinate a review of the report and supporting information. A number of civic departments, as well as external agencies may be part of the review depending on the context and potential impacts of the proposed project. A minimum three weeks is required to complete the review and prepare comments

to be forwarded to the proponent. Based on the results of the review, an environmental impact assessment may be accepted as written, or it may require revision to address comments and concerns raised by the reviewers or changes to the proposed project arising during the application review process. The resolution of comments or concerns may be achieved through discussions or meetings, or may in some cases require additional research or field investigations, with subsequent revision to the report. Open, ongoing communications between the report author and the City during the preparation of the environmental impact assessment should significantly reduce the likelihood of substantial revisions being required.

Section One: The Property

At the outset of the process, existing legislation, plans and studies should be reviewed as a means of understanding the legislative restrictions, land-use history, and ecological landscape of the area in question. Recent and historic air photos for the project area and its surrounding environment should be reviewed and included in the report.

Basic information on the property to be referenced in the environmental report include:

- Land ownership;
- Location of the property (municipal address and legal address);
- Current zoning;
- Description of existing and historic land uses and reference to current and historic air photos;
- Summary of federal, provincial and municipal regulatory requirements that apply to the project area.

In cases where a master plan project is being undertaken, or where a project encompasses multiple properties, the Property Description will identify the entire project area.

In some cases a Phase I Environmental Site Assessment, or other applicable environmental assessment may be required. Requirements for Environmental Site Assessments are generally determined through pre-consultation prior to commencing work on the environmental report. If required, approval of the Environmental Site Assessment shall precede environmental approval as per the North Saskatchewan River Valley Area Redevelopment Plan.

Section Two: Environmental Context

The description of the subject site and its environmental context provides the basis for the assessment. This description should consider the lands adjacent to the site, not just the site itself. The level of detail required will vary based on the scale and complexity of the project. It is recognised that lack of access to adjacent lands may result in less detailed information. The environmental report should include an introductory overview that establishes the environmental setting for the proposed project relative to any known significant natural features on or adjacent to the site, followed by more detailed discussions of the various environmental components as outlined below. An environmental sensitivities map that clearly illustrates the key features (assets and threats) associated with the site will be required to accompany the environmental report. The use of photographs to illustrate and accompany the environmental report is encouraged.

If the area in question has been assessed through a previous project/report please reference the project/report and include the relevant information as an appendix.

Depending on the location of the site, City staff may be able to provide background information and/or mapping resources.

2.1. Surface Water, Groundwater and Fish Habitat (Desktop analysis sufficient)

Water features connect and contribute to the significance of natural system features and functions. While a detailed description of surface water, groundwater and fish habitat may not be required for all environmental reports, the following information must be identified:

- Delineation of the 1:100 year floodplain;
- Runoff characteristics. Runoff characteristics are relevant to identify locations where the buildup of moisture could potentially cause concern over a long period of time;
- Depth of the water table. The depth of water table is an indicator of areas that are developable/undevelopable.

2.2. Geology/Geomorphology and Soils

While a brief description of the physical characteristics of the site is always relevant, detailed information on soils and geology may not be required for all environmental reports. The need for this information will be determined through pre-consultation

meetings with staff from City Planning and other city departments as required. For all projects the geomorphological boundary and relevant geomorphological features must be included to highlight the location of steep slopes, floodplains, hills, ravine channels and any other relevant features.

The presence of modifying factors will influence the potential for slope movement and should be considered as part of project development. Modifying factors include:

- Presence of slope failure (active/inactive/recurrent);
- Evidence of river erosion;
- Potential for high water table;
- Previous mining activity;
- Presence of slip-off slope

Where modifying factors are present, additional studies may be required in order to adequately inform the assessment of geotechnical risk, potential impacts from erosion, sedimentation and changes in local hydrogeology. Site-specific studies conducted in support of development proposals (e.g. hydrogeological and terrain analyses, geotechnical studies and/or slope stability analyses) should be referenced, when available.

The Genetic Class of materials should be included in the site's description as it relates to soil classification. This description should include a brief description of soils on the site and surrounding area and shall include information on the following:

- Potential run-off: Involves the analysis of the slope and the infiltration capacity of the soil unit. Soil that has low or moderate-low runoff characteristics may pose a constraint.
- Erosion potential: Involves the analysis of the slope along with the infiltration capacity and erodibility rating of the soil unit.

If additional site-specific information is required, this background data should be supplemented with further soil characterization resulting from Ecological Land Classification field studies or other investigations (e.g. geotechnical studies). Where relevant, shallow and poorly drained soils should be indicated.

2.3. Vegetation

The report should include a description of the area’s vegetation, in order to assess habitat and biodiversity value, develop mitigation/management strategies, and strengthen the post-development ecological network. The need for specific field

surveys may be identified during pre-consultation. The environmental report will include:

- Identification of vegetation community types present using classifications consistent with those in use by the City of Edmonton (i.e. Urban Primary Land and Vegetation Inventory). If an alternative classification system is used to provide supplementary information, please reference and describe the system as required.
- Description of native plant diversity (e.g. number of species, evenness, etc.).
- List of rare or unique species or communities. This includes those species that are listed as:
    - Threatened or Endangered under the provincial Wildlife Act
    - Sensitive, May be At Risk under the General Status of Alberta Wild Species
    - S1, S2 or S3 by the Alberta Conservation Information Management System (ACIMS).

  Unique species are those that may not be listed as rare but are considered to be ecologically underrepresented in the Edmonton area.
- Description of the presence and distribution of invasive, non-native species or noxious/prohibited weed species.

2.4. Wildlife

As with vegetation cover, a thorough review of available background information on wildlife is expected as part of the environmental review. Incidental observations will be the minimum standard required for fieldwork. The need for specific field studies of taxonomic groups (e.g. breeding bird surveys, etc.) may be identified during pre-consultation. The environmental report will include:

- Lists of species observed, reported or expected to occur on or adjacent to the site, presented in tabular format (as an appendix) with notes on the species' relative abundance at the site, its residency status (i.e. is it present year-round, seasonally or only periodically; does it live on the property, forage there or use it as part of a movement corridor) and the evidence supporting its inclusion on the list (e.g., sighting, tracks previously reported);
- Description and mapping of any "wildlife trees" (i.e. tree with visible nests, or large trees with cavities) or other features that could provide nesting or den sites;
- An assessment of the site's suitability for any significant species (including species at risk - ANHIC, FWMIS, database research results on the potential presence of listed species at risk, species of special status or rare communities).

- An assessment of whether or not any significant wildlife habitat is present on or adjacent to the site.

2.5. Historical Resources

The identification of historical/archeological sites within the River Valley and Ravine System does not indicate the existence of an environmental hazard. However, it does provide the location of potential areas to be preserved when future development/redevelopment is being proposed.

In accordance with Section 37(2) of the *Alberta Historical Resources Act*, the Minister of Alberta Culture and Tourism may require that any proposed activity that is likely to threaten the integrity of a historic resource be preceded by a Historic Resources Impact Assessment. In determining whether a Historic Resources Impact Assessment is required, the proponent should submit a Historic Resources Application to Alberta Culture.

Historic Resource Impact Assessments and related mitigation strategies are paid for by the person or company (proponent) undertaking or proposing to undertake the project or activity. Professional private-sector archaeologists, paleontologists, historians and traditional use consultants perform the required work.

For additional information visit the Historic Resource Impact Assessments website for the Government of Alberta.

2.6. Environmental Sensitivities Map

The environmental sensitivities map illustrating the areas environmental sensitivities and identified development constraints will support the descriptive overview for the subject site. The map will include a key map to show the subject site's location in relation to the surrounding major roads and other landmarks. The use of recent aerial photography as a base for the natural environment is strongly encouraged. The map will:

- Illustrate the property boundary or project area included in the scope of the assessment;
- Be drawn to scale, with standard mapping elements such as a scale bar, north arrow, date and legend;
- Identify all of the aquatic, terrestrial, and geomorphological features, natural ecosystems and vegetation communities on the site as referenced in the descriptive report and identified in Sections 2.1 - 2.5 of this report;

- Identify all of the terrestrial and aquatic natural features, natural ecosystems and vegetation communities in the surrounding area that might be affected by the proposed development or site alteration;
- Include topographic information (i.e. elevation contours) at a level of detail sufficient to show general slope trends and specific topographic features.
- Outline the site-specific Environmental Sensitivity Class based on consideration of environmental assets (vegetation, wildlife, aquatic habitat, unique landforms) and environmental constraints (slope, flood risk and cultural resources) in accordance with the City of Edmonton's Environmental Sensitivity Mapping database (Table One).

Table One: Environmental Sensitivity Class

Environmental Sensitivity Class	**Description of Sensitivity**	**Best Practices**	**Ribbon of Green Equivalent**
Extremely high	These sites are mostly found in the River Valley, its tributary ravines and near Big Lake.. Sites are often dominated by native vegetation, and have multiple ecological and physical assets and steep slopes or other physical or cultural constraints that would limit development activities. Threats due to land use or aquatic impacts to these sites are minimal. Many of these sites are already protected, particularly in the River Valley and at Big Lake, but will require management of surrounding lands to ensure connectivity, and buffer from adjacent land use.	Planning for building infrastructure in these areas is not recommended due to the abundance of assets. These areas should be protected from future development. Buffering such sites through conservation or restoration of lower sensitivity sites will help sustain their assets, and minimize impacts due to adjacent land use. Opportunities to maintain or enhance connectivity of these sites to other sensitive sites should be assessed across the City and implemented through the development and planning process. Develop strategic initiatives to engage developers or residents in conservation, restoration and stewardship of these sites and adjacent lands, to promote broader awareness and support for their conservation.	Protection
Very high	These areas are found in the River Valley, in and near its tributary ravines and at Big Lake.. They too are often dominated by native vegetation and have multiple ecological assets and/or cultural or physical constraints, and less likely to be affected by land use or aquatic threats.	Planning for building infrastructure in these areas is not recommended due to the abundances of assets. Limiting land use to passive recreation and development to low impact infrastructure will best protect the resources in these areas. Buffering these sites by conserving or restoring adjacent sensitive sites and maintaining connectivity, as recommended for extremely high sensitive sites will be important to sustain ecological function.	Protection

		Similarly, strategic initiatives to raise awareness of the need for conservation and stewardship of these areas, as recommended above, will help develop community support and cooperation in conservation and site stewardship.	
High	High sensitivity sites are found across the City and range in size from relatively small sites up to larger sites found in the River Valley, Big Lake, Beaver Hills moraine and Devon Dunes areas. These sites have various combinations of ecological and physical assets, and may also be affected by threats. Vegetation could include some non-native vegetation communities, but would mainly comprise native communities. In the River Valley, these sites could contain any one or a combination of ecological or physical and/or cultural or development constraints.	Conservation and protection of these sites can add to the ecological network. These areas require the greatest scrutiny and study at the site level, as combinations of assets may vary and sites may be contiguous with those of other sensitivities. Detailed evaluation is needed to ensure appropriate planning and land use for the assets at a given site. Limited development may be possible at some sites in the river valley, depending on the assets present. Where threats exist, management may reduce their effect. Explore opportunities to buffer these sites, enhance connectivity or restore key ecological functions within the site and in adjacent sensitive sites. This could include stewardship activities on private lands, encouraged through engagement programs targeting local residents and businesses.	Conservation
Moderate	These sites are the most abundant type of sensitive site in the City and are distributed across the City. They support fewer assets than higher sensitivity sites, and are more likely to include non-native vegetation. They are located in areas that are influenced by human land use. Larger sites lie within unique landscapes that may have limited development in the past. Such sites may contain ecological assets that are limited distribution or are easily disturbed by development (e.g., sandy soils, wetlands). These areas often have strong restoration potential that can benefit surrounding ecological assets, as well as sustaining their own ecological value. They also often lie within connective habitat and play a role in linking other sensitive areas.	Retention or enhancement of these sites can add to the ecological network, by buffering higher sensitivity sites or enhancing connectivity. Opportunities to conserve all or part of these sites should be explored during the land development or redevelopment planning process, or as part of open space planning. Where public lands will be dedicated or retaining (in the case of development) and the proposed land use is compatible with conservation of natural areas, site specific conservation or restoration may be possible. Where these sites lie within existing developed lands under private ownership, City-sponsored habitat enhancement and stewardship programs could enhance ecological functions (e.g. planting native trees or shrubs, managing weedy species, minimizing pesticide or herbicide use).	Conservation Restoration/ Stewardship
Low	These sites are also found across the City, and range from moderately large to quite small sites. They may include	Development and redevelopment proposals should consider how to retain or enhance the contributions of these	Conservation Restoration/

	both native and non-native vegetation communities, which may be their sole environmental asset. Such sites can play an important role in ecological connectivity or in buffering adjacent higher sensitivity lands, despite a lack of other ecological or physical assets. They are likely affected by land use or aquatic threats, an effect that can be reversed through land management and appropriate stewardship. Some sites are located in public lands such as the Transportation Utility Corridor and other transportation or utility rights-of-way, and have some level of protection through limitations on land development.	sites to the ecological network. Appropriate recommendations will require site survey and site-specific plans that consider site context, site assets and local connectivity. As noted above, options to maintain, restore or enhance natural areas may existing on private and public land. Depending on the site, opportunities to buffer other higher sensitivity sites, or enhance connectivity may exist. City sponsored habitat enhancement and stewardship programs could help to retain ecological function of these sites, as well as adjacent lands. Some low sensitivity sites include naturalized stormwater facilities and associated upland areas, as well as naturalized parks. Consider how creation of such features might be incorporated into development and redevelopment plans, to add to the ecological network.	Stewardship
Intensive Use	Existing developed areas, with land uses ranging from open space/recreational area to transportation, commercial, industrial and residential.	Intensive use areas are private or public lands adjacent to or surrounding many of the sensitive sites identified above, and can influence the ecological health of those sites. Stewardship options to reduce threats will be critical to long term sustainability of sensitive sites. Programs targeting City corporate operations (e.g., drainage, transportation, parks) and the public can help reduce impact of key threats, by promoting naturalization, minimal use of herbicide and pesticide and removal of invasive species.	Intensive Use

2.7. Spatial Data Delivery (Not required)

If requested at the pre-consultation, scoping and project review stage, spatial information collected during the production of the environmental impact assessment is to be delivered electronically to the City, and shall consist of a series of export files in ArcGIS 9.3 or GeoMedia format (with associated metadata). The projection of the data for Edmonton is 3TM, NAD83.

Spatial outputs requested may include shape files associated with the requirements outlined above which could include, but not be limited to:

- Study Area and area of construction impact (Section 1.0);

- Delineation of 1:100 year floodplain (Section 2.1);
- Geomorphic features of the site (Section 2.2);
- Homogeneously mapped vegetation community types updated to the most recent year of available aerial photography (Section 2.3)
    - Note: The City's urban Primary Land and Vegetation Inventory (uPLVI) was last updated for the entire City (plus a 3.2 km buffer) in 2015
    - These uPLVI base files are available for use by the applicant from which to update vegetation mapping, increase resolution to an appropriate size for the study area, and align vegetation mapping with the City's existing data sets;
    - For more information, please see the following:
        - Greenlink, 2016. *Primary land and vegetation inventory for urban environments (Urban PLVI). 2015 edition*. Prepared for: The City of Edmonton, Alberta –Parks and Biodiversity, Sustainable Development. Prepared by: Greenlink Forestry Inc. Edmonton Alberta.
        - Greenlink, 2016. *Primary land and vegetation inventory for urban environments (Urban PLVI). Interpretation Manual.* Third edition. Prepared for: The City of Edmonton, Alberta –Parks and Biodiversity, Sustainable Development. Prepared by: Greenlink Forestry Inc. Edmonton Alberta;
- Locations (points and routes) of vegetation community types and weed locations that were verified in the field (Section 2.3);
- Locations (points) of wildlife observed (include date of observation and common and scientific name in spatial file) (Section 2.4); and/or
- Environmental Sensitivities Map (Section 2.5)
    - Note: in 2016, City Planning completed a City-wide Environmental Sensitivities Mapping Project
    - These Environmental Sensitivity spatial files are available for use by the applicant from which to update the Environmental Sensitivity Mapping, increase resolution to an appropriate level for the study area in questions, and align environmental sensitivity analysis with the City's existing work.
    - For more information, please see the following:
        - Solstice, 2016. *Environmental Sensitivity Project, Model data.* Prepared for: The City of Edmonton, Alberta –Parks and Biodiversity, Sustainable Development. Prepared by: Solstice Canada. Edmonton Alberta.
        - Solstice, 2016. *Environmental Sensitivity Project, draft final report.* Prepared for: The City of Edmonton, Alberta –Parks and Biodiversity, Sustainable Development. Prepared by: Solstice Canada. Edmonton Alberta.

As part of any geodatabase compilation, the applicant is requested to ensure that the data is cleaned and corrected for:

- Overlapping polygons
- over-/under shoots
- dangling arcs
- duplicates or near duplicates removed
- short spikes removed
- polygons are closed
- sliver polygons
- gaps/holes
- no polygons without attributes

The applicant may submit preliminary datasets for examination. All requested spatial files are to be submitted for review to the Urban Analysis Unit of City Planning upon first submission of the Environmental Impact Assessment.

Section Three: The Project

In order to assess the environmental impacts of the proposed project on the identified natural features and functions on and adjacent to the site, a clear understanding of the project is required. ***Environmental sensitivities should be identified prior to beginning concept design, to the extent possible, to ensure the project is designed to avoid existing environmentally sensitive areas.***

The project description must include information about all phases of the project, including site preparation, construction, landscaping and intended use of the property once the construction work is completed, and (in some cases) decommissioning, if this information is available. Any related off-site works by the proponent should also be included in the project description and impact assessment. This section of the report should also describe how any environmental constraints identified in Section 2 have been considered and mitigated. Consideration of project alternatives justifying why a location within the boundaries of the North Saskatchewan River Valley Area Redevelopment Plan is essential shall be submitted as part of a Site Location Study (Appendix One).

The level of detail should reflect the size and complexity of the development or site alteration. The description must be accompanied by one or more graphical representations of the project.

3.1. Concept Plans and Drawings

The use of actual concept plans, development plans, site plans or other figures to illustrate and support the project description is required. At a minimum, the environmental report must include one or more plans showing the proposed development, park master plan or site alteration as an overlay applied to the environmental sensitivities map. The following information should be included in the plan(s), to the extent possible:

- Location of all existing and proposed lot lines, building envelopes and structures, fences, driveways, parking areas, roads, trails and pathways and any other park amenities;
- Services, including stormwater management facilities and drainage systems, public infrastructure and utilities;
- Erosion and sediment control measures;
- Grading limits and post grading contours; and,
- Natural features and areas of vegetation that will be removed or impacted. May require a permit through the Tree Protection Bylaw.

Where vegetation impacts are anticipated including construction or project activity within five meters of a City-owned tree, a Tree Protection or Preservation Plan shall be required as per the Public Tree Bylaw. The Plan will outline how project work will be accomplished while protecting public trees. Urban Foresters with the City of Edmonton can provide assistance in drafting the necessary tree protection plans.

It is recognized that this level of detail will not be available nor appropriate for all projects and that additional information may still be in development. The results of the environmental review will (and should) inform and be incorporated into the final plans for the project.

Section Four: Project Impacts and Mitigation Measures

Once an understanding of both the existing environment and the proposed project has been established, the identification and assessment of impacts can begin. Assessing impacts and recommending appropriate mitigation measures is the most difficult and important task of the environmental impact assessment. In some cases Provincial and Federal approvals may be required in addition to City approval as part of Bylaw 7188. This section should also highlight any relevant Provincial and Federal approval requirements.

It is important to provide a clear assessment methodology that will lead to specific recommendations. Tools should be employed that will provide demonstrable rationale for recommending specific mitigation measures. Examples include but are not limited to matrix evaluation, checklist evaluation, ecological land classification and valued ecosystem components. Assessment methodology should include the following:

- Approach to the assessment;
- Scoping the assessment;
- Spatial and temporal extents;
- Assessment of effects;
- Determining the significance of effects; and
- Cumulative effects Assessment: A description of potential positive and negative environmental, social, economic and cultural impacts of the proposed activity, including cumulative, regional, temporal and spatial considerations.

4.1. Assessing Impacts

This section further describes the project, the associated impacts and related mitigation. Details on the interactions between the specific project components identified and elements of the environment where there is a potential to result in an impact (positive or negative) should be identified.

The proponent will classify the potential environmental effects into negative impacts and positive environmental effects, and characterize them using standard criteria, including, but not limited to::

- Nature of Impact: Is it direct, such as the loss of a feature, or indirect, such as an increase in downstream sedimentation?
- Magnitude: What is the severity of the impact, especially as compared with available benchmarks or targets?

- Geographic extent: How large an area will be affected?
- Duration and timing: Is the impact temporary or permanent? Is it seasonal?
- Likelihood: What is the probability that the impact will occur?
- Potential for cumulative impacts: What is the potential for interacting impacts as a result of previous or future development or site alteration?

4.2. Identifying Cumulative Impacts

Cumulative impacts are compound environmental effects that may result due to multiple or successive development or site alteration activities (e.g. implementation of a park master plan which includes multiple elements). Cumulative impacts may affect natural features or their ecological functions, water quality or quantity, sensitive surface or groundwater features, and their related hydrologic functions. They are an important consideration in any environmental review.

Potential cumulative impacts are estimated by considering project effects within an expanded geographic area as well as a longer timeframe. For example, a cumulative impacts analysis should consider a reasonable and ecologically relevant area within which the proposed development is located. Development in the recent past and probable development activities in the future should be described, and if relevant, mapped.

4.3. Mitigation Measures

Mitigation measures must be identified for each potential negative impact, to eliminate or reduce the impact to the extent possible. Preferred mitigation measures avoid or minimize impacts, and may be supported by compensatory measures such as site rehabilitation or restoration.

Avoiding or eliminating impacts through design (or redesign where necessary) is the preferred approach, and should always be considered as a first step. Designing around the feature is the only option when significant wetlands or significant habitat for endangered and threatened species occur within a proposed project's boundaries. Recommendations for the preservation of natural features within or adjacent to the project area must be accompanied by recommendations regarding appropriate setback distance(s) and any buffer required to protect the feature and its ecological functions from impact.

Minimizing impacts to the extent possible is expected when avoidance is not feasible. Examples include the establishment of strict limits on the extent of vegetation clearing, or the use of specific timing windows for construction to reduce

impacts on wildlife by avoiding sensitive life stages such as breeding seasons or hibernation. The supporting rationale for these measures is to be included in the environmental report.

Compensation may be required in circumstances where impacts cannot be avoided or minimized. This includes consideration for the City of Edmonton's Corporate Tree Management Policy (C456A). Restoration and enhancement may also be recommended in the absence of such legal requirements, to support the long-term conservation of the City's natural systems.

In proposing mitigation measures, the environmental report should refer to recent science and/or guidelines, where necessary, to demonstrate that the measures will be sufficient to minimize impacts or replace lost habitat. The environmental report will include the following:

- A full description of proposed mitigation measures, including recommendations for timing windows or other specifications for implementation, for all potential negative impacts;
- For each negative impact, an indication of whether there will be any residual impact following implementation of the recommended mitigation measure(s);
- A description of proposed restoration or enhancement plans to compensate for impacts that cannot be avoided or minimized;
- Maps and/or drawings (if relevant) depicting the location, extent, and design details of proposed mitigation measures.

Section Five: Environmental Monitoring

Where impacts have been avoided or minimized through the environmental review process, monitoring may not be needed. In cases where negative impacts have not been eliminated, or where innovative solutions are being used, monitoring may be required to measure impacts over time. The environmental report must identify any monitoring needs associated with the project, and should provide recommendations regarding the design and implementation of the required monitoring program. Consultation with City staff will be required to establish the scope of all monitoring programs, and to ensure that recommendations are feasible and appropriate.

Monitoring will usually be site-specific and may be required during the pre-construction, construction, and/or post-construction periods. The environmental report should:

- Clearly differentiate between monitoring recommendations aimed at ensuring effectiveness of mitigation, and any monitoring required for legal compliance (e.g. to meet conditions of a Certificate of Approval);
- Specify the appropriate stage(s), schedule and duration for the monitoring program;
- Propose appropriate thresholds or benchmarks for monitoring purposes;
- Identify who will be responsible for monitoring, and the reporting structure required to ensure that results are acted upon as needed; and,
- Outline contingency plans if an impact is detected or if the proposed thresholds are not met.

Section Six: Public Consultation

Open and transparent public involvement is required for all projects. The proponent should demonstrate that the affected public and other stakeholders have been given the opportunity to become involved in reviewing the project, and should indicate how the proponent has considered or addressed any resultant questions and concerns. The opportunity for public involvement benefits citizens most when they take an active role at an early stage in the process, and clearly articulate their specific questions or concerns.

Information on public consultation should include:

- A completed Public Involvement Plan;
- A summary of consultation sessions including a summary of the information collected; and
- A statement as to how public feedback has been incorporated into the project.

Section Seven: Conclusions and Supporting Information

The environmental report must include a concise summary that addresses major points and highlights any issues of concern. Limitations of the study should be clearly identified (e.g. assumptions, timing, context).

This section must include a conclusion based on the results of the impact analysis. The report author's professional opinion must be stated, responding to the following questions:

- Provided that the recommended mitigation measures are implemented as planned, will there be any residual negative impacts on natural features or ecological functions as a result of the proposed project?
- What is the significance of any such residual negative impacts to ecological function(s)?
- Can the proposed project be accepted as planned, or should it be (further) revised to prevent, eliminate or reduce impacts? If so, what specific changes are recommended to the proposal?

If the environmental report concludes that the project will have a residual negative impact on one or more of the values or functions of the triggering feature(s), then a recommendation to proceed with the project must be accompanied by a rationale for proceeding that is based upon the provisions of the existing City of Edmonton statutory plans, policies etc. Projects with residual negative impacts to significant natural features or ecological functions may not be supported.

Supporting Information

Supporting information may include:

- Literature cited;
- A list of subject matter experts or other individuals contacted during the study, along with their title and agency affiliation, where applicable, and the subject(s) on which they were consulted;
- Species lists;
- Geotechnical reports;
- Public Involvement Plan;
- Previous studies or reports that may apply to the subject site.

Appendix 1: Guide to Completing a *Site Location Study Report*

Pursuant to the North Saskatchewan River Valley Area Redevelopment Plan, all proposals for the development of a major facility that is publicly owned or is developed on public lands shall be subject to a Site Location Study detailing costs, and social, environmental and institutional constraints which make a River Valley location essential. The following identifies the information and reporting requirements for completing a Site Location Study.

When completing the Site Location Study report please be as thorough and descriptive as possible. The Site Location Study shall stand as a separate document in support of the accompanying Environmental Impact Assessment and will be forwarded to City Council for review.

The Site Location Study and related Environmental Impact Assessment shall require approval by City Council. If Council approval has already been obtained via another avenue (i.e. neighbourhood renewal design or otherwise), please provide confirmation.

Site Location Study Report:
Table of Contents

Gariepy Ravine SUP and Walkways EIA/SLS

Executive Summary:

The Project Name should be the same as that referenced in the Environmental Impact Assessment.

Project Description:

Describe the project including location and surrounding context. This information can be copied directly from the accompanying Environmental Impact Assessment report. Where relevant, please include supporting maps.

Project Scope:

Identify what is included as part of this project. The Site Location Study should only reference project components that meet the definition of a Major Facility as defined in the North Saskatchewan River Valley Area Redevelopment Plan:

A MAJOR FACILITY is defined as any permanent or temporary development or use which is included in the Zoning Bylaw (12800) under the following use class definition:

- Basic service
- Community, educational, recreational, cultural services
- Natural resource development

Where relevant, please include supporting plans and drawings which illustrate project components included as part of the Site Location Study.

A discussion of construction methodology or mitigation measures identified in the Environmental Impact Assessment is not required as part of the Site Location Study.

Location Analysis and Justification

The following questions must be addressed within this section of the report:

1. What other locations were considered for this project including other river valley and non river valley locations?
2. Could the proposed project reasonably function at a location outside of the North Saskatchewan River Valley Area Redevelopment Plan boundary?
3. Is the project dependent on either the river valley and ravine location or the users of the park system?

Please describe any relevant Bylaws/Plans/Policies which support the project's location within the North Saskatchewan River Valley Area Redevelopment Plan boundary.

Constraints Analysis

The Site Location Study must identify potential constraints that relate to the project that make a river valley location essential. Do the constraints (financial, social, environmental, institutional) limit the feasibility of locating the project outside of the river valley?

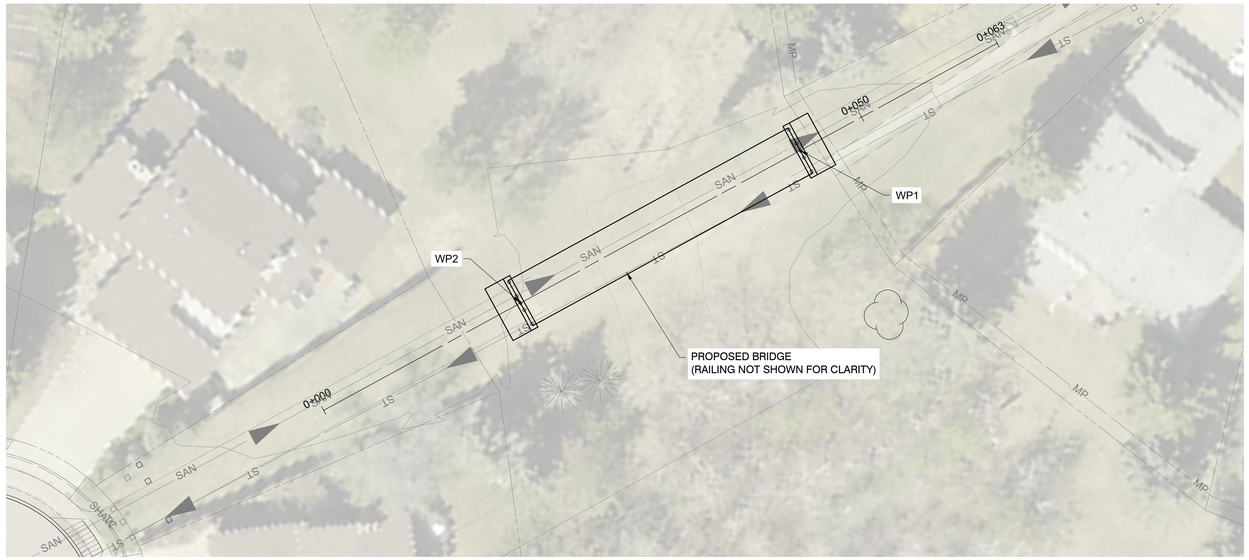
If the project includes multiple *'Major Facility'* components, each component must be assessed separately to address the following questions:

1. What are the financial constraints which limit the feasibility of locating the project outside of the river valley?
2. What are the social constraints which limit the feasibility of locating the project outside of the river valley?
3. What are the environmental constraints which limit the feasibility of locating the project outside of the river valley?
4. What are the institutional constraints which limit the feasibility of locating the project outside of the river valley?

Conclusion

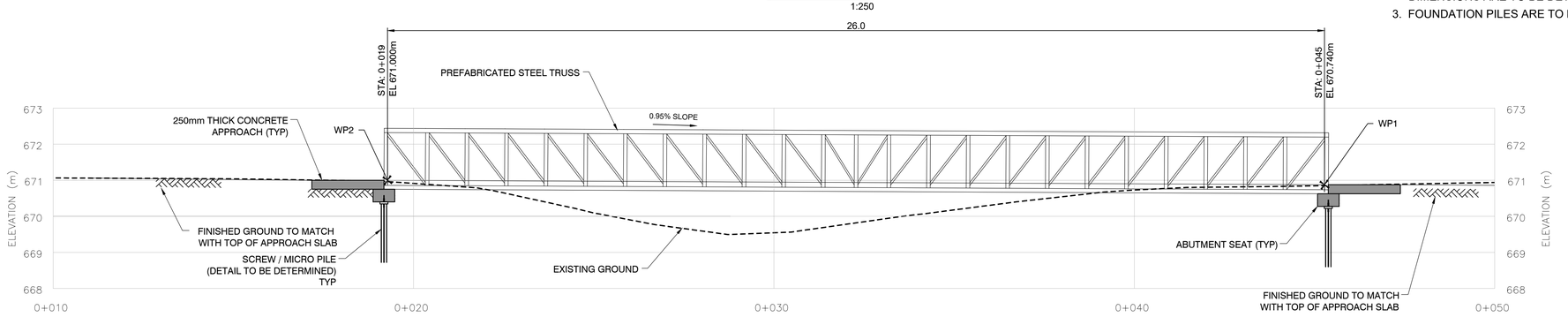
APPENDIX

C DRAFT DESIGNS AND LANDSCAPE PLANS



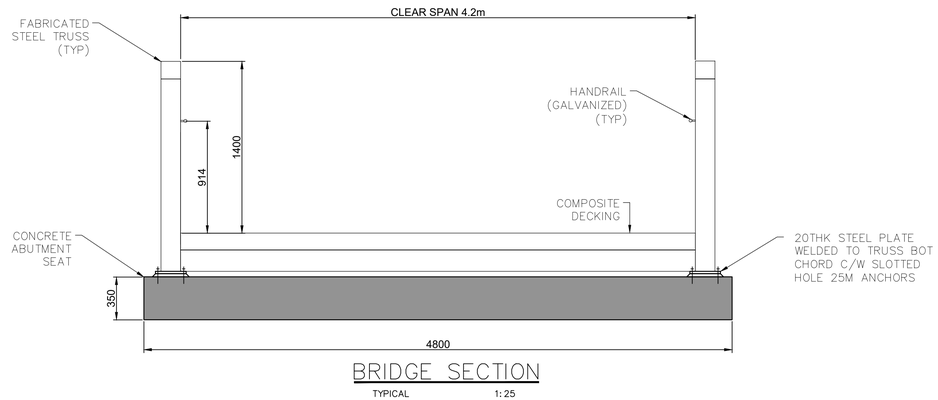
PLAN VIEW

1:250



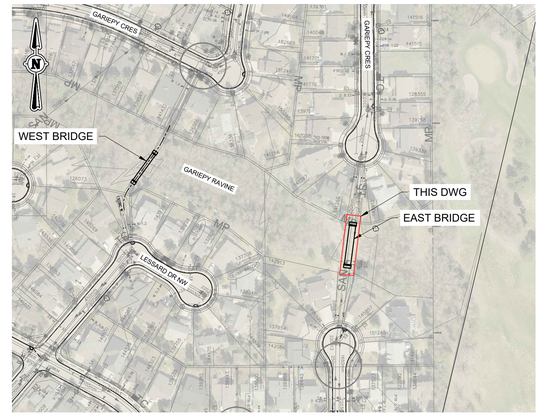
BRIDGE ELEVATION

LOOKING NORTHEAST - SCALE 1:75



BRIDGE SECTION

TYPICAL 1: 25



KEYPLAN

1:2000

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. TRUSS COMPONENTS ARE SHOWN FOR ILLUSTRATION PURPOSE, ACTUAL SIZE AND DIMENSIONS ARE TO BE DETERMINED AT THE TIME OF DETAIL DESIGN.
3. FOUNDATION PILES ARE TO BE RECONFIRMED AFTER GEOTECHNICAL INVESTIGATION.

WSP E&I CANADA LIMITED
5681-70 STREET, EDMONTON, ALBERTA, T6B 3P6
PHONE 780-436-2152, FAX 780-435-8425

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
	ISSUED FOR ENVIRONMENTAL APPROVALS	RAL	23-DEC-22	S.A.

NO.	ISSUE	BY	DATE
1	TENDER AWARD DATE		

PROGRAM NO. CM-00-0000
CONTRACT NO. 0000

CONSTRUCTION RETURN
CONTRACTOR
SURVEYOR
DATE
FILE NUMBER
CONSTRUCTION ENGINEER DATE
GENERAL SUPERVISOR DATE

APPROVED FOR CONSTRUCTION
DATE

TRANSPORTATION PLANNING AND DESIGN - SUPERVISOR		
DEPARTMENT / BRANCH	APPROVAL	DATE

TRANSPORTATION INFRASTRUCTURE DELIVERY DATE

SURVEY
JOB NO.
SCALE
HOR 0 1 2 3 4m
VER 0 0.5 1.0 1.5m

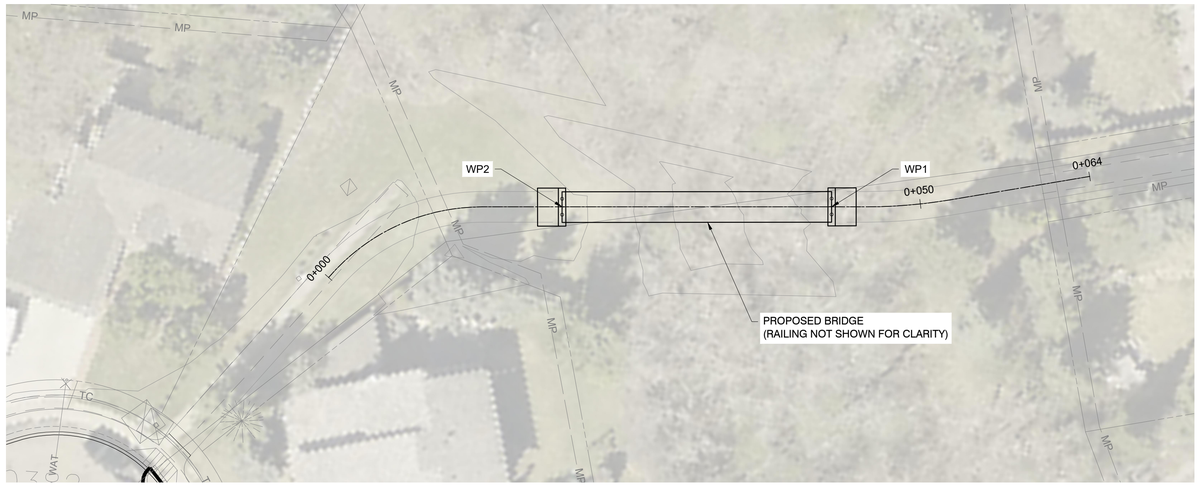
DRAWN R.A.L DATE 19 DEC 2023
DESIGNED S.A. DATE 18 DEC 2023
CHECKED R.A. DATE 20 DEC 2023

CITY OF Edmonton
INTEGRATED INFRASTRUCTURE SERVICES
ENGINEERING SERVICES

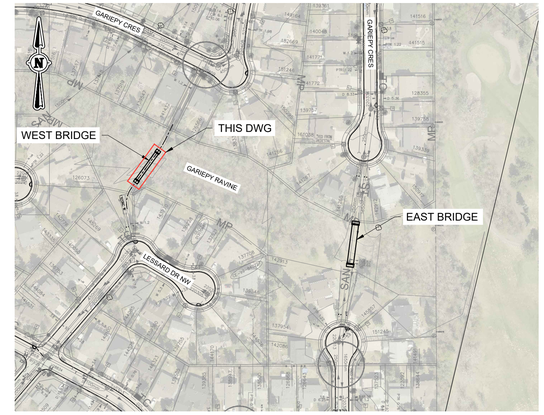
PROJECT
GARIEPY
NEIGHBOURHOOD AND ALLEY RENEWAL
EAST BRIDGE (COMPOSITE WALKWAY)

DRAWING
GARI 241 EB

LAST SAVED: 2024-01-03 1:03:46 PM
PATH: C:\Users\cat\0437513\Desktop\cross\Gariepy Ravine_walkway\GARI 241 U05 - WEST_EAST BRIDGE.dwg - EAST BRIDGE - 01/03/2024 1:07:12 PM - cat\0437513-CofC Black and Grey (Half).ctb



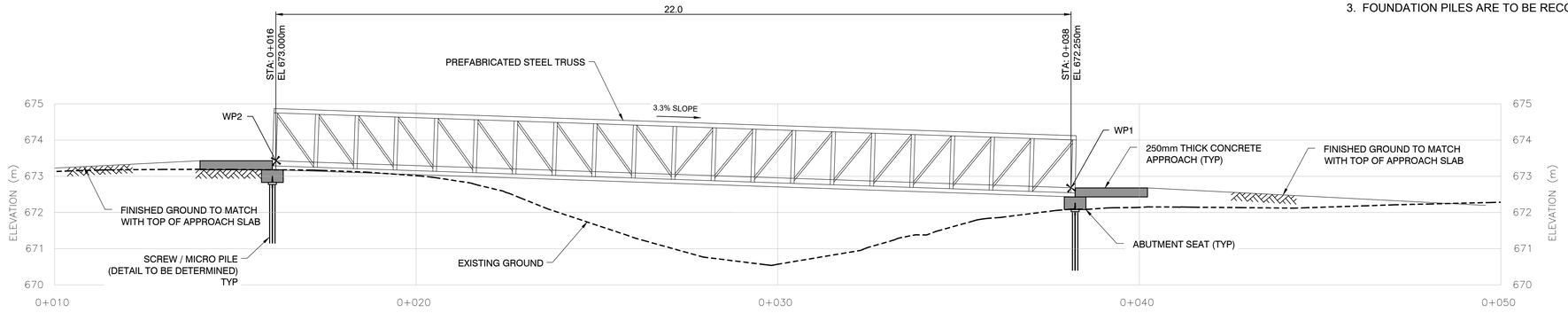
PLAN VIEW
1:250



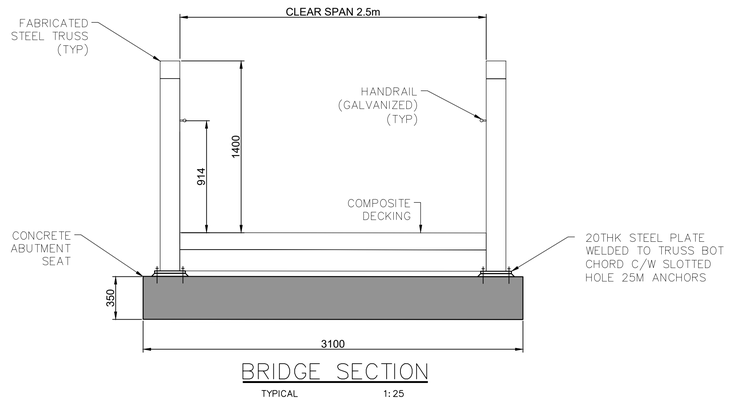
KEYPLAN
1:2000

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. TRUSS COMPONENTS ARE SHOWN FOR ILLUSTRATION PURPOSE, ACTUAL SIZE AND DIMENSIONS ARE TO BE DETERMINED AT THE TIME OF DETAIL DESIGN.
3. FOUNDATION PILES ARE TO BE RECONFIRMED AFTER GEOTECHNICAL INVESTIGATION.



BRIDGE ELEVATION
LOOKING NORTHEAST - SCALE 1:75



BRIDGE SECTION
TYPICAL 1: 25

WSP E&I CANADA LIMITED
5681-70 STREET, EDMONTON, ALBERTA, T6B 3P6
PHONE 780-436-2152, FAX 780-435-8425

NO.	REVISIONS	BY	DATE	APP'D
1	ISSUED FOR ENVIRONMENTAL APPROVALS	RAL	23-DEC-22	S.A.

NO.	ISSUE	BY	DATE
1	TENDER AWARD DATE		

PROGRAM NO. CM-00-0000
CONTRACT NO. 0000

CONSTRUCTION RETURN
CONTRACTOR
SURVEYOR
DATE
FILE NUMBER
CONSTRUCTION ENGINEER DATE
GENERAL SUPERVISOR DATE

APPROVED FOR CONSTRUCTION
DATE

TRANSPORTATION PLANNING AND DESIGN - SUPERVISOR
DEPARTMENT / BRANCH APPROVAL DATE

TRANSPORTATION INFRASTRUCTURE DELIVERY DATE

SURVEY
JOB NO.
SCALE
HOR 0 1 2 3 4m
VER 0 0.5 1.0 1.5m

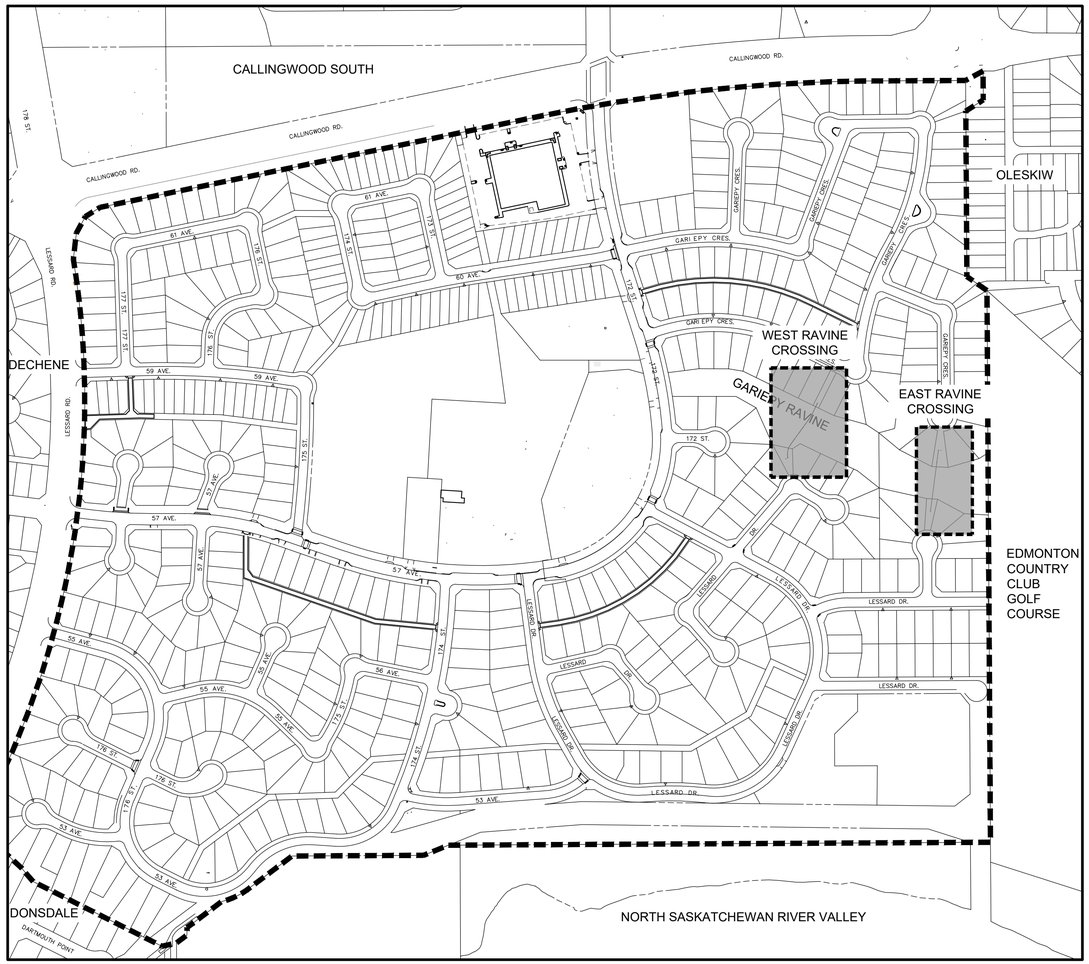
DRAWN R.A.L DATE 19 DEC 2023
DESIGNED S.A. DATE 18 DEC 2023
CHECKED R.A. DATE 20 DEC 2023

THE CITY OF Edmonton
INTEGRATED INFRASTRUCTURE SERVICES
ENGINEERING SERVICES

PROJECT
GARIEPY
NEIGHBOURHOOD AND ALLEY RENEWAL
WEST BRIDGE (COMPOSITE WALKWAY)

DRAWING
GARI 241 WB

LAST SAVED: 2024-01-03 12:59:39 PM
PATH: C:\Users\carl043751\Desktop\cesi\Gariepy Ravine_walkway\GARI 241 U05 - WEST_EAST BRIDGE.dwg - WEST BRIDGE - 01\03\2024 1:03:01 PM - carl043751-CofC Black and Grey (Half).ctb



1 H51 **RAVINE CROSSINGS CONTEXT PLAN**
SCALE: 1:3000

LANDSCAPE NOTES

1. GENERAL NOTES:

a. CONTRACTOR TO CALL ALBERTA ONE-CALL AT 1-800-242-3447 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY CONSTRUCTION.

b. CONTRACTOR IS TO VISIT THE SITE TO CONFIRM ALL SITE CONDITIONS PRIOR TO MOBILIZING FOR CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONSULTANT FOR CLARIFICATION.

c. LIMITS OF THE WORK ARE TO BE CLEARLY UNDERSTOOD BY THE CONTRACTOR PRIOR TO ANY WORK TAKING PLACE ON SITE. THE CONTRACTOR IS TO CONTACT THE CONSULTANT FOR CLARIFICATION IF REQUIRED.

d. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE CONSULTANT FOR FURTHER DIRECTION.

e. LAYOUT IS TO BE APPROVED BY THE CONSULTANT PRIOR TO THE START OF CONSTRUCTION.

f. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE NOTED.

g. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS (CEDCS) CURRENT EDITION, PROJECT SPECIFIC SPECIFICATIONS, DRAWINGS, AND DETAILS FOR THE PROJECT.

h. ANY AMBIGUITY IN THIS DRAWING OR ACCOMPANYING DETAILS IS TO BE REPORTED TO THE CONSULTANT FOR CLARIFICATION. THE CONTRACTOR IS NOT TO PROCEED IN UNCERTAINTY.

i. CONTRACTOR IS TO PROVIDE FIELD NOTES DOCUMENTING ALL FIELD CHANGES TO DRAWINGS. CONTRACTOR IS TO SUBMIT FIELD NOTES TO CONSULTANT TO BE USED AS RECORD (AS-BUILT) DRAWINGS.

2. PERMITS AND STANDARDS NOTES:

a. THE CONTRACTOR IS TO ENSURE THAT ALL NECESSARY ARRANGEMENTS ARE MADE WITH THE PIPELINE COMPANIES CONCERNING THE MOVEMENT OF MATERIALS AND EQUIPMENT NEAR ANY PIPELINE RIGHTS OF WAY.

b. ALL ANCILLARY WORK NORMALLY ASSOCIATED WITH THIS TYPE OF CONSTRUCTION SHALL BE DEEMED TO BE PART OF THE CONTRACT.

3. SITE WORK NOTES:

a. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TREE PROTECTION (SNOW FENCE OR HOARDING) FOR ALL TREES WITHIN (5) FIVE METERS OF PROJECT SITE OR ADJACENT TO CONSTRUCTION AREAS. PROTECTION REQUIREMENTS INCLUDE:

   I. SNOW FENCING FOR TREES WITHIN 3-5 METERS.

   II. 13mm TH. PLYWOOD X 1.22m HT. WITHIN 1-3 METERS.

b. IN THE EVENT DAMAGE OCCURS TO TREE(S) WITHIN AREA OF PROTECTION, CITY OF EDMONTON FORESTRY IS TO BE ADVISED. CALL 311.

c. THE CONTRACTOR SHALL SUPPLY ALL MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE DRAWINGS. ANY DISCREPANCIES IN QUANTITIES SHALL BE REPORTED TO THE CONSULTANT IMMEDIATELY FOR CLARIFICATION.

d. NO SUBSTITUTIONS OF MATERIAL, PRODUCTS, OR QUANTITIES SHALL BE PERMITTED WITHOUT PRIOR CONSENT OF THE CONSULTANT.

e. THE CONTRACTOR IS RESPONSIBLE FOR THE ADJUSTMENT OF ALL EXISTING CATCH BASINS, MANHOLES, WATER VALVES, HYDRANTS, ETC. TO MATCH PROPOSED GRADES.

f. THE CONTRACTOR IS RESPONSIBLE FOR THE HAULING OF ALL EXCESS MATERIALS OFF THE SITE TO A LOCATION DESIGNATED BY THE CONSULTANT.

g. THE CONTRACTOR IS RESPONSIBLE FOR GENERAL SITE CLEAN-UP.

h. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO LANDSCAPED AREAS AND MUST MAKE ALL NECESSARY RESTORATIONS AND REPAIRS.

4. UTILITY SETBACKS NOTES:

a. CONTRACTOR TO LOCATE ALL SITE UTILITIES PRIOR TO CONSTRUCTION. ALL SETBACKS TO BE AS PER VOLUME 1 TABLE OF MINIMUM OFFSETS (FEBRUARY 2021).

- 1.0m FROM POWER LINES, GAS (CONTACT UTILITY), AND OTHER SHALLOW UNDERGROUND UTILITIES
- 3.0m FROM STREETLIGHTS AND POWER POLES
- 3.0m FROM EDGE OF BASE ON EACH SIDE WHERE DOORS OPEN FROM 3-PHASE SWITCHING CUBICLE
- 2.0m ON SIDES, 3.0 IN FRONT OF DOORS, AND 1.5m BEHIND EDGE OF BASE FROM TRANSFORMERS
- 3.0m IN FRONT, 4.0m ON SIDES, AND 2.5m BEHIND EDGE OF BASE FROM 1-PHASE SWITCHING CUBICLES
- 1.8m FROM DECIDUOUS TREES TO WATER MAINS, WATER SERVICES, AND MANUAL AIR VENTS
- 3.5m FROM CONIFEROUS TREES TO WATER MAINS, WATER SERVICES, AND MANUAL AIR VENTS
- 3.5m FROM DECIDUOUS TREES TO FIRE HYDRANTS
- 7.0m FROM CONIFEROUS TREES TO FIRE HYDRANTS
- 1.8m FROM STORM AND SANITARY SERVICES
- 1.8m FROM STORM AND SANITARY MANHOLES
- 1.0m FROM SIDEWALKS AND FACE OF CURB (LOCAL)
- 1.25m FROM FACE OF CURB (COLLECTOR <20m ROW)
- 1.65m FROM FACE OF CURB (COLLECTOR >20m ROW)
- 2.0m FROM FACE OF CURB (ARTERIAL)
- 1.5m FROM EDGE OF COMMERCIAL OR INDUSTRIAL ACCESS
- 3.5m FROM STOP AND YIELD SIGNS
- 2.0m FROM ALL OTHER SIGNS
- 3.5m FROM TRANSIT ZONES
- 15m FROM INTERSECTIONS
- 1.0m FROM PROPERTY LINES IN BOULEVARDS AND WALKWAYS
- 2.5m FROM CENTRE OF DECIDUOUS TREES AND EDGE OF MATURE SPREAD OF CONIFEROUS TREES TO PROPERTY LINES IN OPEN PARKLAND
- 3.5m FROM TELECOMMUNICATION PEDESTALS (CONTACT UTILITY)
- 2.0m FROM TELECOMMUNICATION DUCT STRUCTURE (CONTACT UTILITY)
- 1.0m FROM TELECOMMUNICATION CABLE FACILITIES (CONTACT UTILITY)

b. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES AND LIABILITIES INCURRED BY DAMAGES TO SITE UTILITIES.

c. ALL SETBACKS TO BE AS PER CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS VOLUME 1 TABLE OF MINIMUM OFFSETS (FEBRUARY 2021):

5. MATERIALS NOTES:

a. THE CONTRACTOR IS TO SUPPLY AND INSTALL 12MM ASPHALT IMPREGNATED FIBRE BOARD ISOLATION JOINTS WHENEVER MATCHING TO, OR ABUTTING TO, ANY EXISTING CONCRETE OR FIXED EDGE (SUCH AS BUILDING, MANHOLES, ETC.)

6. PLANTING NOTES:

a. A TOPSOIL TEST IS REQUIRED BEFORE INSTALLATION. THE SOIL ANALYSIS REPORT IS TO BE SUBMITTED TO THE CONSULTANT PRIOR TO INSTALLATION.

b. ALL PLANT MATERIAL AND WORKMANSHIP IS TO CONFORM TO THE CITY OF EDMONTON. DESIGN AND CONSTRUCTION STANDARDS 2021 (CEDCS).

c. ALL PLANT MATERIAL IS TO BE NURSERY GROWN STOCK AND SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE CANADIAN NURSERY TRADES ASSOCIATED (CNTA) FOR SIZE, HEIGHT SPREAD, GRADING, QUALITY, AND METHOD OF CULTIVATION.

d. ALL PLANTING BEDS TO INCLUDE 100mm DEPTH DECIDUOUS WOOD CHIP MULCH (OR APPROVED EQUAL) AS PER CEDCS SECTION 02914.

e. ALL TREE STAKES ARE TO BE REMOVED AT THE END OF THE ONE YEAR MAINTENANCE AND GUARANTEE PERIOD, EXCEPT FOR THE TREE REPLACEMENTS. A SPOT OF SPRAY PAINT ON THE TREE REPLACEMENT STAKES WILL BE COLOURED FOR THE YEAR OF PLANTING AS PER THE (CEDCS) SECTION 02918.

   A. TREE STAKE COLOUR REQUIREMENTS:

   2024 - BLUE 2025 - WHITE

   2026 - YELLOW 2027 - GREEN

f. AS PER CITY OF EDMONTON DESIGN STANDARDS (2021) 4 TREES PER 35 LINEAR METERS OF WALKWAY ARE REQUIRED.

g. A SUBSTITUTION OF 7 SHRUBS PER TREE CAN BE MADE UP TO A MAXIMUM OF 10% OF TOTAL TREES REQUIRED, WHERE APPLICABLE.

7. SOD AND SEED NOTES:

a. CERTIFIED NO. 1 CULTIVATED TURF SOD WITH STRONG FIBROUS ROOT SYSTEM, THICK AND HEALTHY GROWTH AND DELIVERED 24 HOURS FROM THE TIME OF CUTTING. SOD SHOWING SIGNS OF DETERIORATION DUE TO AGE OR LACK OF MOISTURE WILL BE REJECTED. SOD MUST BE FREE OF STONES, BURNS, DRY OR BARE SPOTS, TEARS AND DELIVERED MOIST, CUT IN STRIPS OF UNIFORM WIDTH AND THICKNESS AND OF THE FOLLOWING MIX OR APPROVED EQUAL.

b. SOD MUST MEET OR EXCEED CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS 2021 (CEDCS). SECTION 02920. CANADA #1 MIX. SEE PLANTING LEGEND.

c. SOD LAYING IS TO OCCUR BETWEEN MAY 1ST - SEPT. 30TH. LAYING OF SOD OUTSIDE THE RECOMMENDED SEASON WILL REQUIRE CONSULTANT APPROVAL PRIOR TO START OF WORK.

d. PREPARATION, INSTALLATION, FERTILIZATION, WARRANTY AND MAINTENANCE OF SOD IS TO BE IN ACCORDANCE WITH (CEDCS).

e. CERTIFIED CANADA NO. 1 MIXTURE, FREE OF DISEASE, WEED SEEDS, OR FOREIGN MATTER. MINIMUM GERMINATION OF 75%, MINIMUM PURITY OF 97% AND CONFORMING TO THE MIXES BELOW OR APPROVED ALTERNATIVES.

f. SEED MUST MEET OR EXCEED CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS 2021 (CEDCS). SECTION 02920. ALL SEED MUST BE FROM A RECOGNIZED SEED FIRM, MEETING THE REQUIREMENTS FOR THE SEEDS ACT FOR CANADA #1 SEED. SEED SHALL BE CERTIFIED #1 GRADE. SEE PLANTING LEGEND.

g. SEED INSTALLATION TO OCCUR BETWEEN MAY 1st - SEPTEMBER 15th. INSTALLATION OF SEED OUTSIDE OF RECOMMENDED SEASON WILL REQUIRE CONSULTANT APPROVAL PRIOR TO START DATE.

h. DELIVER SEED IN THE ORIGINAL CONTAINERS, TAGGED WITH IDENTIFICATION AS TO THE ANALYSIS OF SEED MIXTURE, PERCENTAGES OF SEED, YEAR OF SEED PRODUCTION, NET WEIGHT AND DATE.

i. PREPARATION, INSTALLATION, FERTILIZATION, WARRANTY AND MAINTENANCE OF SEEDING IS TO BE IN ACCORDANCE WITH CEDCS.

j. ALL AREAS TO RECEIVE **SOD** ARE TO HAVE TYPE 1 NATIVE TOPSOIL TO A MINIMUM DEPTH OF **300mm**.

k. ALL AREAS TO HAVE **SEED** ARE TO HAVE TYPE 1 NATIVE TOPSOIL TO A MINIMUM DEPTH OF **300mm**.

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION

DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN DATE

DATE

SURVEY

JOB NO.

SCALE 1:3000

0m 30 60 90 120

DRAWN C.V. DATE NOVEMBER 10, 2023

DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023

CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton

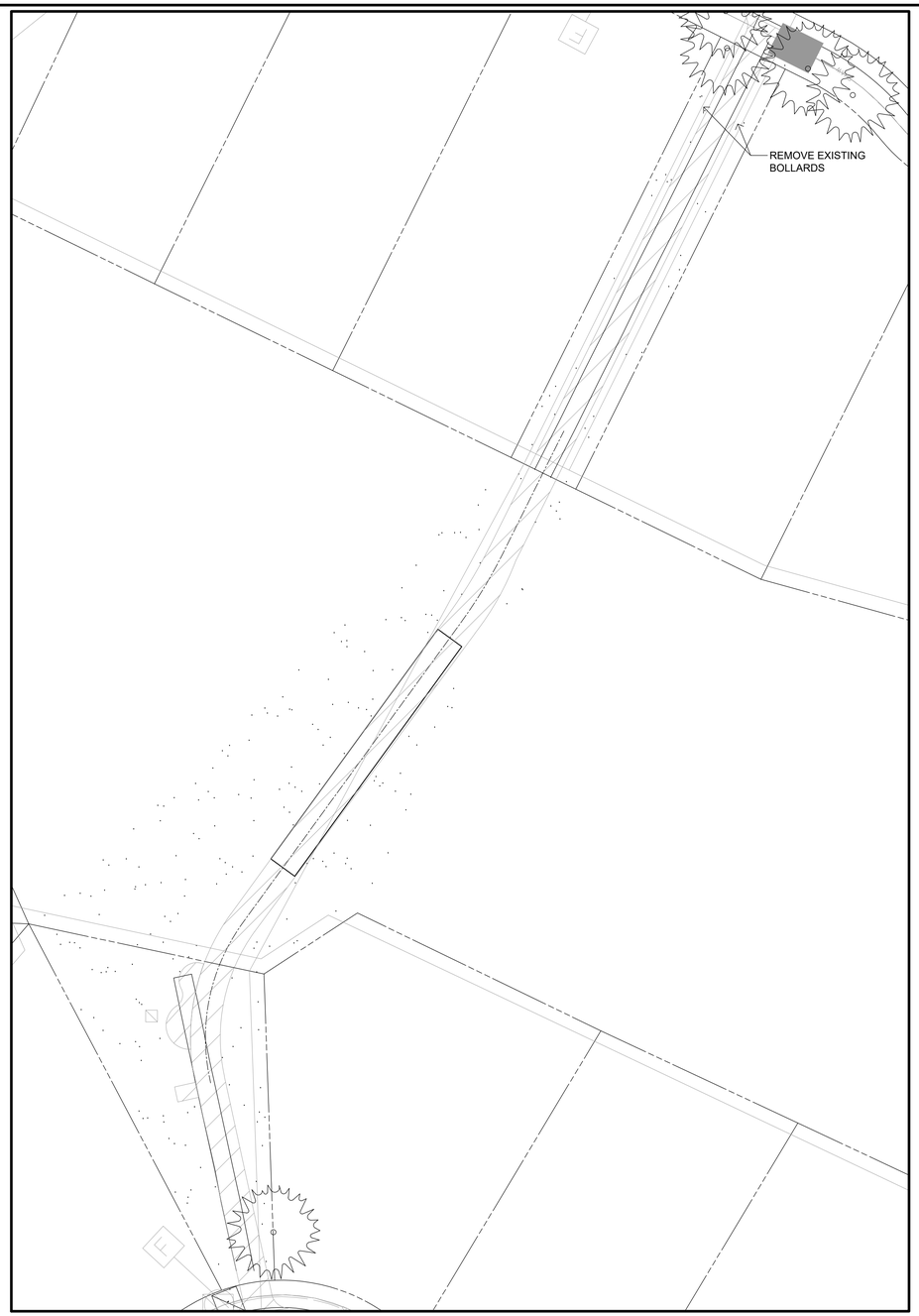
INTEGRATED INFRASTRUCTURE SERVICES

BUILDING GREAT NEIGHBOURHOODS BRANCH

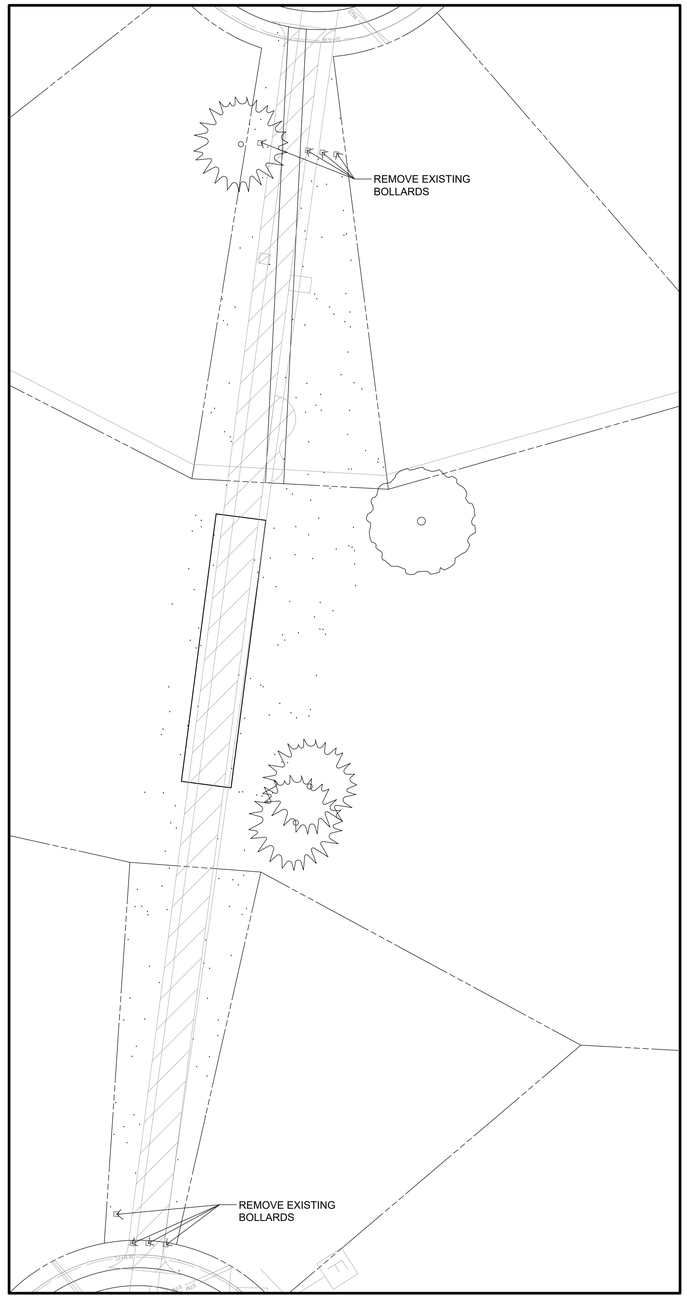
PROJECT **GARIEPY NEIGHBOURHOOD RENEWAL**

RAVINE CROSSINGS CONTEXT PLAN

DRAWING **GARI 242 H51**



1 H52 **WEST RAVINE CROSSING**
SCALE: 1:250



2 H52 **EAST RAVINE CROSSING**
SCALE: 1:250

LANDSCAPE LEGEND

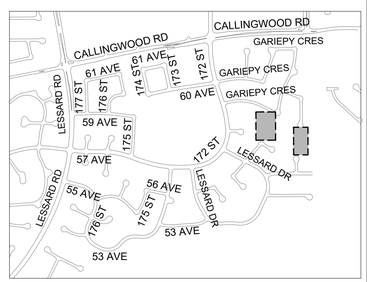
- EXISTING TREE TO REMAIN AND BE PROTECTED.
- EXISTING TREE TO BE REMOVED BY CITY OF EDMONTON URBAN FORESTRY. CONTRACTOR TO CONTACT URBAN FORESTRY AT 311.
- EXISTING TURF TO REMAIN. RE-GRADE AND RE-SOD ALL DISTURBED AREAS AS REQUIRED. ADDITIONAL TOPSOIL TO BE ADDED AS REQUIRED TO A DEPTH OF 300mm. EXISTING TOPSOIL IS TO BE RE-USED SUBJECT TO CITY APPROVAL.
- REMOVALS FOR CONCRETE PAD, PATHWAY, AND PLANTING BED INSTALLATION.
- EXISTING STREET LIGHT

TREE PROTECTION NOTES:

1. ALL EXISTING TREES TO REMAIN WITHIN 5.0m OF THE PROJECT SITE TO BE PROTECTED FOR THE DURATION OF CONSTRUCTION WITH MINIMUM:
   - 1.1. 13mm THICK x 1.22m HEIGHT PLYWOOD HOARDING FOR TREES WITHIN 1.0-3.0m
   - 1.2. SNOW FENCING FOR TREES WITHIN 3.0-5.0m
2. REFER TO DETAIL LA101, CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS, VOLUME 5 FOR MINIMUM PROTECTION DISTANCES FROM TREES.
3. IN THE EVENT DAMAGE OCCURS TO TREE(S) WITHIN AREA OF PROTECTION, CITY OF EDMONTON PARKS AND RECREATION IS TO BE ADVISED. CALL 311.

SITE DEMOLITION NOTES:

1. ITEMS SHALL REMAIN UNLESS DESIGNATED FOR REMOVAL. REMOVE DESIGNATED ITEMS SHOWN ON PLAN TO THE FULL DEPTH OF THEIR CONSTRUCTION UNLESS OTHERWISE NOTED.
2. VERIFY THE LOCATION OF ITEMS AND STRUCTURES TO BE REMOVED PRIOR TO COMMENCEMENT OF SITE WORK. EXISTING ELEMENTS THAT WILL BE STORED AND RE-INSTALLED SHOULD BE NUMBERED TO RECORD THEIR LOCATION AND RELATIONSHIP TO ADJACENT COMPONENTS.
3. ANY ITEMS OR STRUCTURES ENCOUNTERED BELOW GROUND AND NOT SHOWN ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
4. REMOVE ALL DEMOLISHED MATERIAL FROM SITE. DISPOSAL BY BURNING AND/OR BURYING IS PROHIBITED.
5. CONTRACTOR TO CALL ALBERTA ONE-CALL AT 1-800-242-3447 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY WORK.
6. THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THE PLANS MAY VARY IN RELATION TO ACTUAL EXISTING CONDITIONS; ADDITIONAL UTILITIES NOT SHOWN ON THE DRAWING MAY EXIST. VERIFY IN THE FIELD THE DATA SHOWN, AND CALL ANY DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR SITE REPRESENTATIVE BEFORE STARTING WORK.
7. PERFORM EXCAVATION IN THE VICINITY OF EXISTING UTILITIES BY HAND WHERE APPLICABLE. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO EXISTING UTILITIES CAUSED BY ANY PERSON, VEHICLE, EQUIPMENT OR TOOL RELATED TO THE EXECUTION OF THE CONTRACT.
8. CONTRACTOR TO PROVIDE A DETAILED DEMOLITION PLAN FOR APPROVAL BY THE SITE ENGINEER PRIOR TO REMOVAL.



KEY PLAN

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION
DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN DATE
DATE

SURVEY
JOB NO.
SCALE 1:250
0m 2.5 5 7.5 10

DRAWN C.V. DATE NOVEMBER 10, 2023
DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023
CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton
INTEGRATED INFRASTRUCTURE SERVICES
BUILDING GREAT NEIGHBOURHOODS BRANCH

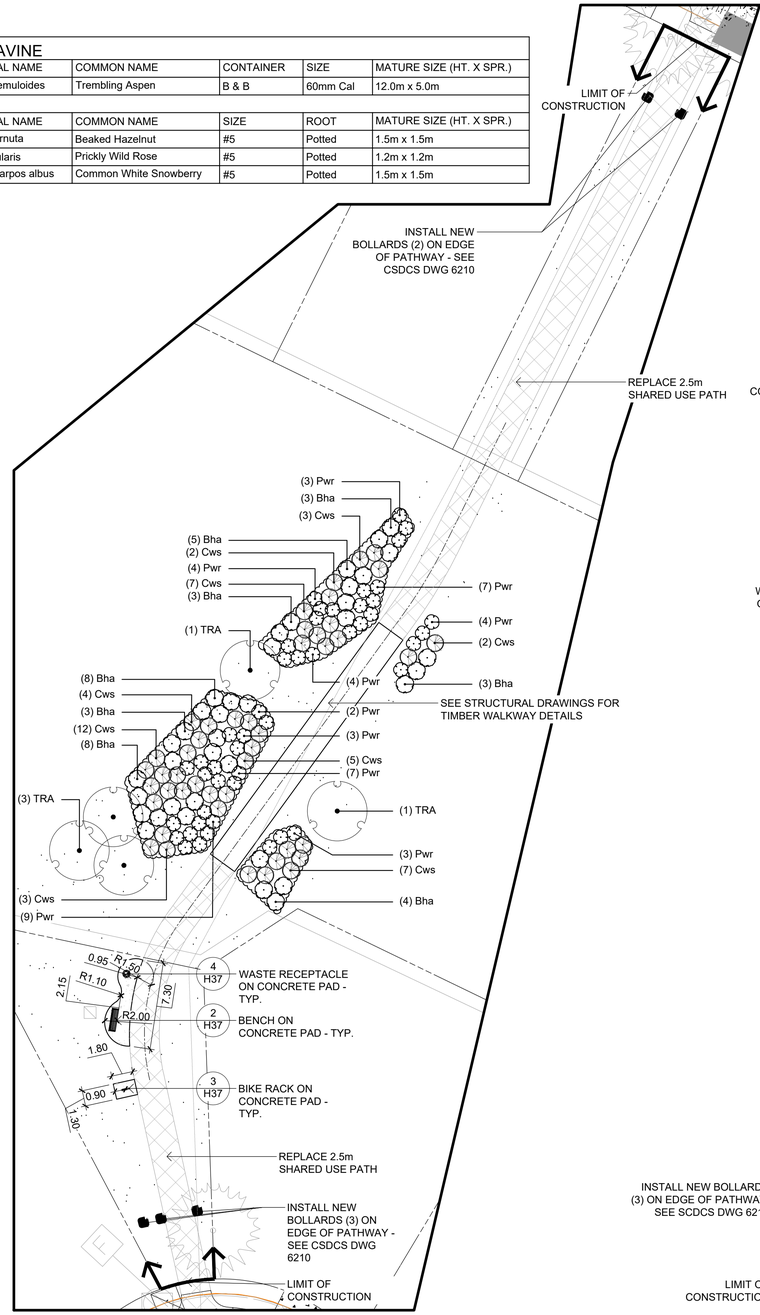
PROJECT
GARIEPY NEIGHBOURHOOD RENEWAL

RAVINE CROSSINGS REMOVALS AND PROTECTION PLAN

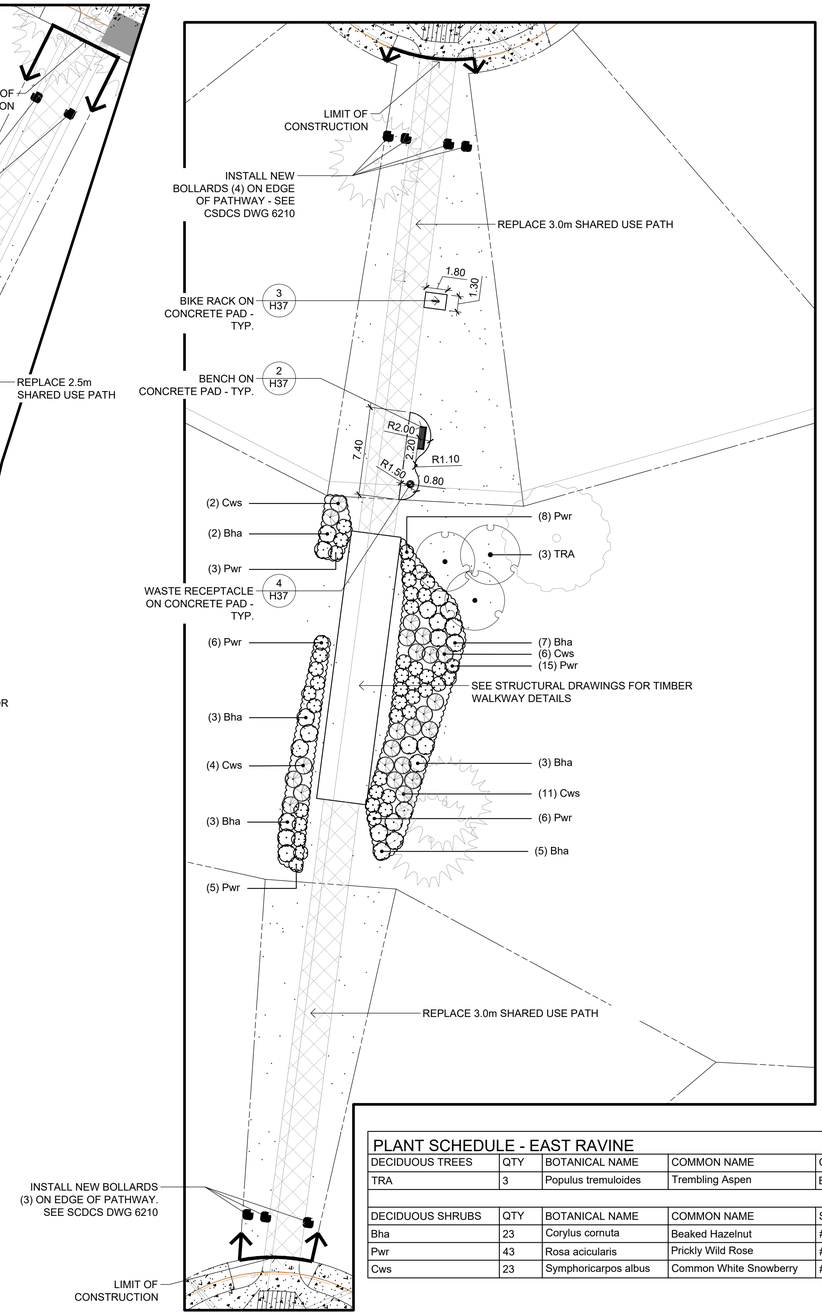
DRAWING
GARI 242 H52

PLANT SCHEDULE - WEST RAVINE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	CONTAINER	SIZE	MATURE SIZE (HT. X SPR.)
TRA	5	Populus tremuloides	Trembling Aspen	B & B	60mm Cal	12.0m x 5.0m
DECIDUOUS SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	MATURE SIZE (HT. X SPR.)
Bha	37	Corylus cornuta	Beaked Hazelnut	#5	Potted	1.5m x 1.5m
Pwr	46	Rosa acicularis	Prickly Wild Rose	#5	Potted	1.2m x 1.2m
Cws	45	Symphoricarpos albus	Common White Snowberry	#5	Potted	1.5m x 1.5m



1 H53 **WEST RAVINE CROSSING**
SCALE: 1:250



PLANT SCHEDULE - EAST RAVINE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	CONTAINER	SIZE	MATURE SIZE (HT. X SPR.)
TRA	3	Populus tremuloides	Trembling Aspen	B & B	60mm Cal	12.0m x 5.0m
DECIDUOUS SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	MATURE SIZE (HT. X SPR.)
Bha	23	Corylus cornuta	Beaked Hazelnut	#5	Potted	1.5m x 1.5m
Pwr	43	Rosa acicularis	Prickly Wild Rose	#5	Potted	1.2m x 1.2m
Cws	23	Symphoricarpos albus	Common White Snowberry	#5	Potted	1.5m x 1.5m

2 H53 **EAST RAVINE CROSSING**
SCALE: 1:250

LANDSCAPE LEGEND

EXISTING TREE TO REMAIN AND BE PROTECTED

EXISTING TURF TO REMAIN. RE-GRADE AND RE-SOD ALL DISTURBED AREAS AS REQUIRED. ADDITIONAL TOPSOIL TO BE ADDED AS REQUIRED TO A DEPTH OF 300mm. EXISTING TOPSOIL IS TO BE RE-USED SUBJECT TO CITY APPROVAL.

NOTE:

1. SEED TO MEET OR EXCEED CITY OF EDMONTON LANDSCAPING DESIGN & CONSTRUCTION STANDARDS (LATEST EDITION).
2. SCARIFY SUB - GRADE MIN 300mm PRIOR TO PLACEMENT OF TOPSOIL AND SOD / SEEDING.
3. ALL PLANTING BEDS TO INCLUDE 100mm DEPTH DECIDUOUS WOOD CHIP MULCH (OR APPROVED EQUAL) AS PER CEDCS SECTION 02914. ALL PLANT MATERIAL SHALL BE PLANTED SUCH THAT THE EDGE OF THE 100% MATURE SIZE OF THE PLANT MATERIAL IS A MINIMUM OF 0.5m FROM CONCRETE AND/OR SHARED USE PATHWAY.
4. LANDSCAPE CONTRACTOR TO VERIFY AS-BUILT UTILITY LOCATIONS AS NECESSARY.
5. ALL CONIFEROUS TREES TO BE TRIMMED FOR SITE LINES BY CITY OF EDMONTON FORESTRY.

SITE FURNISHINGS

- WASTE RECEPTACLE (QTY: 2)
- BENCH (QTY: 2)
- BIKE RACKS (QTY: 2)
- POTENTIAL PEDESTRIAN LIGHT (BY OTHERS)
- EXISTING STREET LIGHT

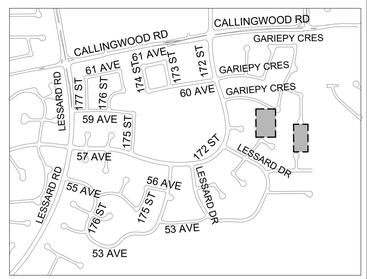
CIVIL LEGEND (REFERENCE ONLY)

LEGAL

- EXISTING PROPERTY LINE

UTILITY

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- POWERLINE
- GAS LINE
- PROPOSED EASEMENT
- CONCRETE, UNLESS OTHERWISE NOTED
- ASPHALT SHARED PATHWAY
- HYDRANT
- VALVE
- MANHOLE
- CATCH BASIN
- STREET IDENTIFICATION SIGN
- LIGHT STANDARDS,
- POWER PEDESTALS
- WATER SERVICES
- POWER SERVICES



KEY PLAN

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION
DATE

DEPARTMENT / BRANCH | APPROVAL | DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN DATE
DATE

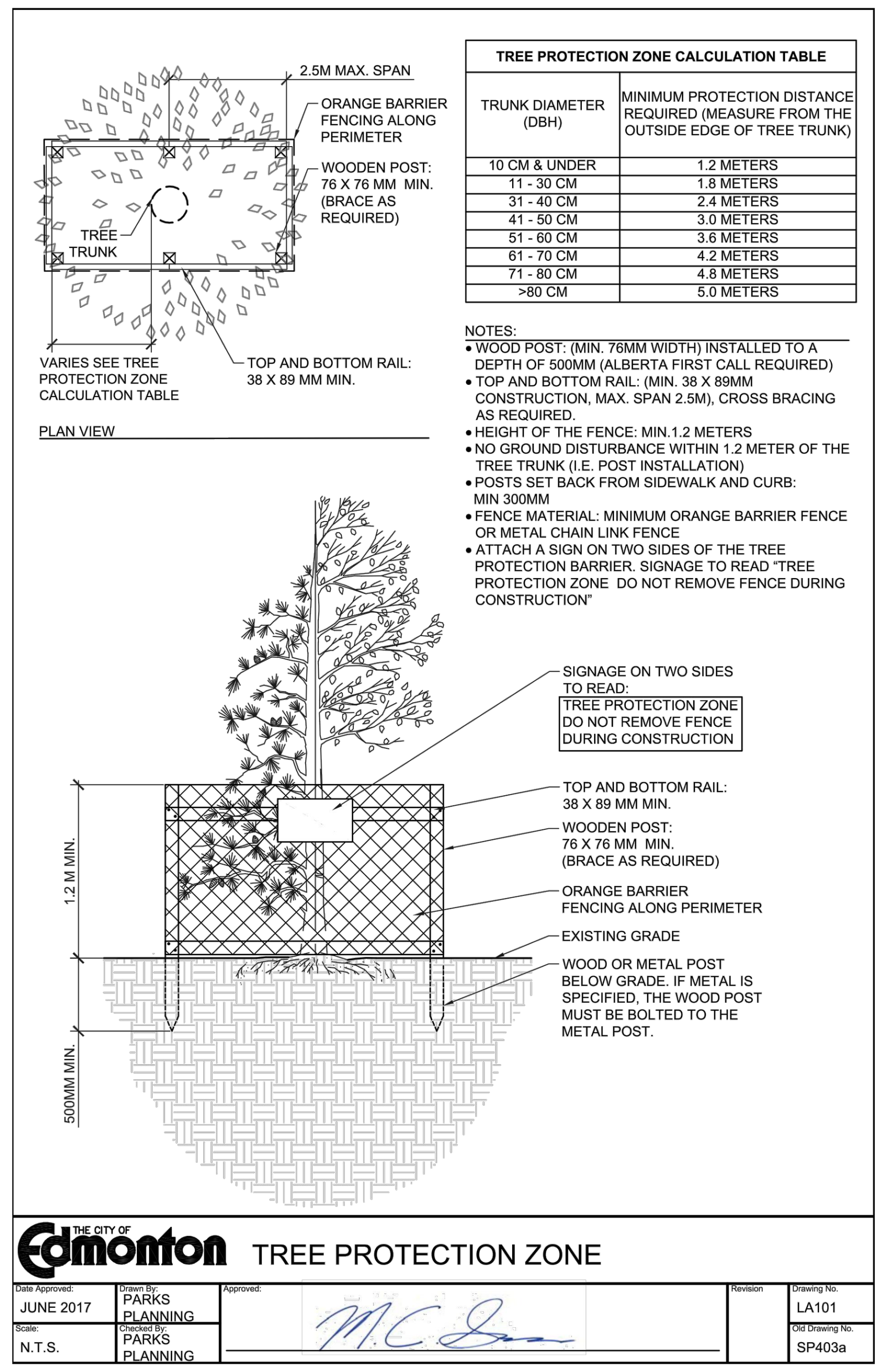
SURVEY
JOB NO.
SCALE 1:250
0m 2.5 5 7.5 10

DRAWN C.V. DATE NOVEMBER 10, 2023
DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023
CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton
INTEGRATED INFRASTRUCTURE SERVICES
BUILDING GREAT NEIGHBOURHOODS BRANCH

PROJECT
GARIEPY NEIGHBOURHOOD RENEWAL
RAVINE CROSSINGS LANDSCAPE PLANS

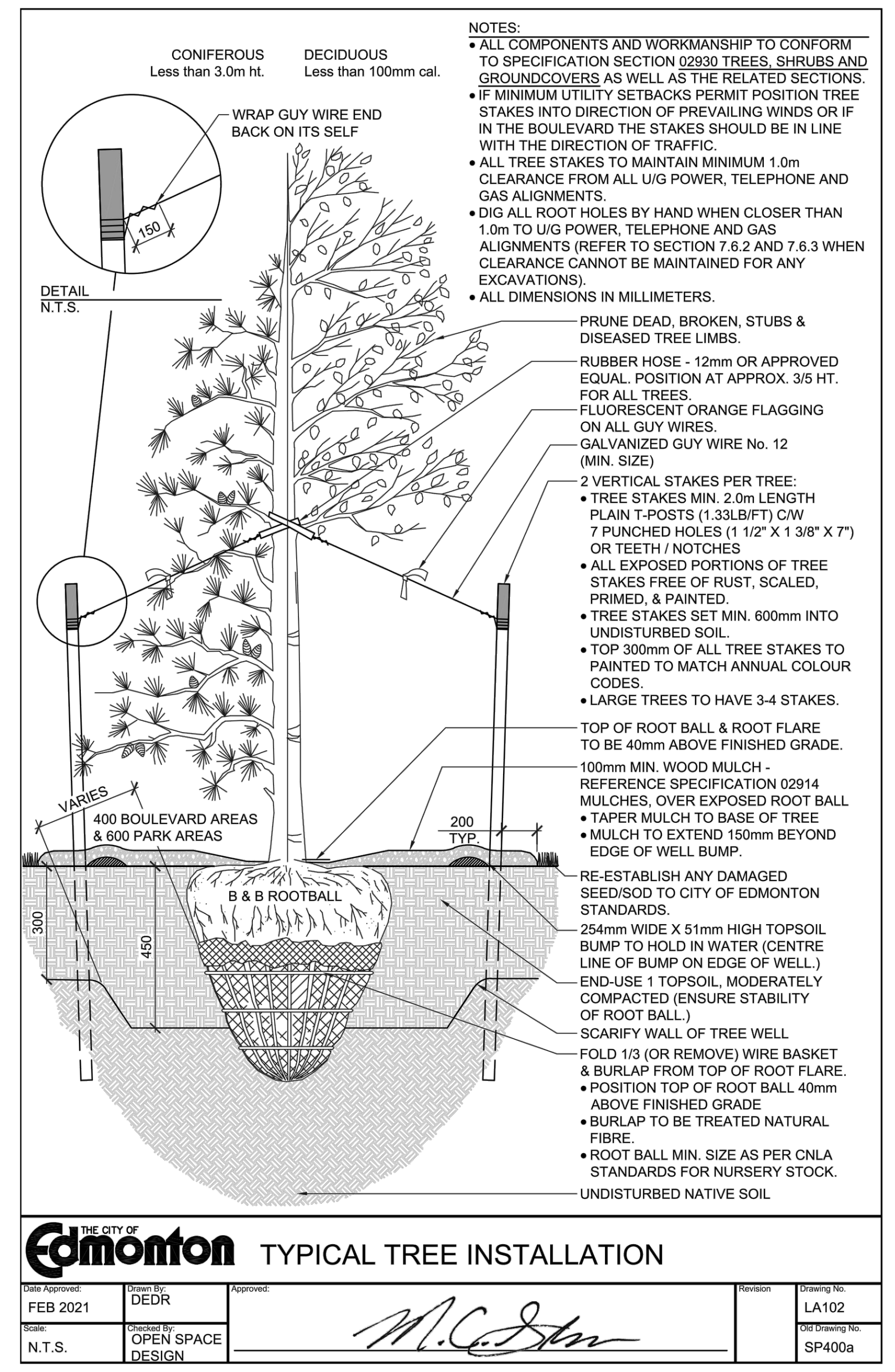
DRAWING
GARI 242 H53



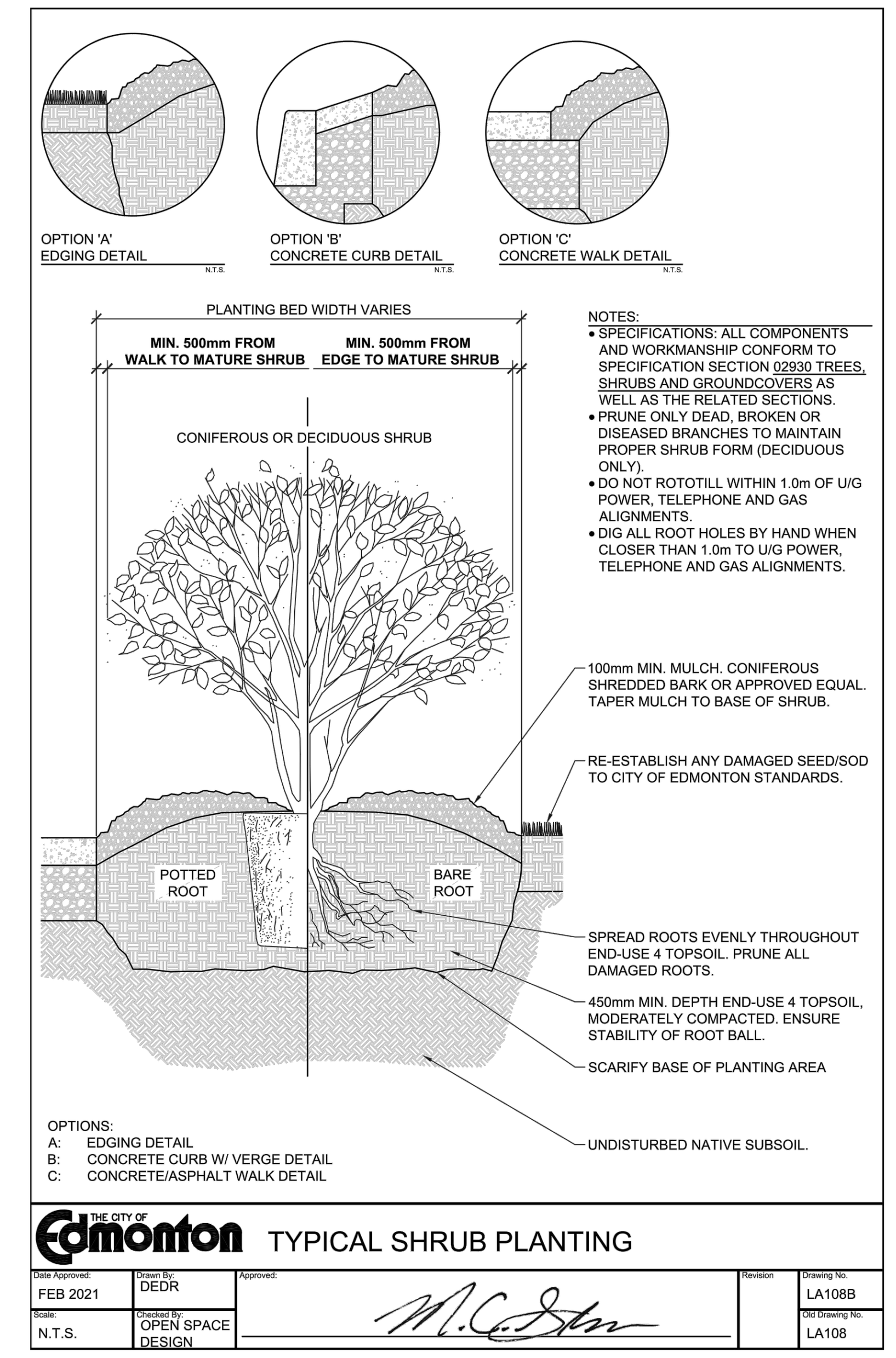
TREE PROTECTION ZONE CALCULATION TABLE	
TRUNK DIAMETER (DBH)	MINIMUM PROTECTION DISTANCE REQUIRED (MEASURE FROM THE OUTSIDE EDGE OF TREE TRUNK)
10 CM & UNDER	1.2 METERS
11 - 30 CM	1.8 METERS
31 - 40 CM	2.4 METERS
41 - 50 CM	3.0 METERS
51 - 60 CM	3.6 METERS
61 - 70 CM	4.2 METERS
71 - 80 CM	4.8 METERS
>80 CM	5.0 METERS

NOTES:
- WOOD POST: (MIN. 76MM WIDTH) INSTALLED TO A DEPTH OF 500MM (ALBERTA FIRST CALL REQUIRED)
- TOP AND BOTTOM RAIL: (MIN. 38 X 89MM CONSTRUCTION, MAX. SPAN 2.5M), CROSS BRACING AS REQUIRED.
- HEIGHT OF THE FENCE: MIN.1.2 METERS
- NO GROUND DISTURBANCE WITHIN 1.2 METER OF THE TREE TRUNK (I.E. POST INSTALLATION)
- POSTS SET BACK FROM SIDEWALK AND CURB: MIN 300MM

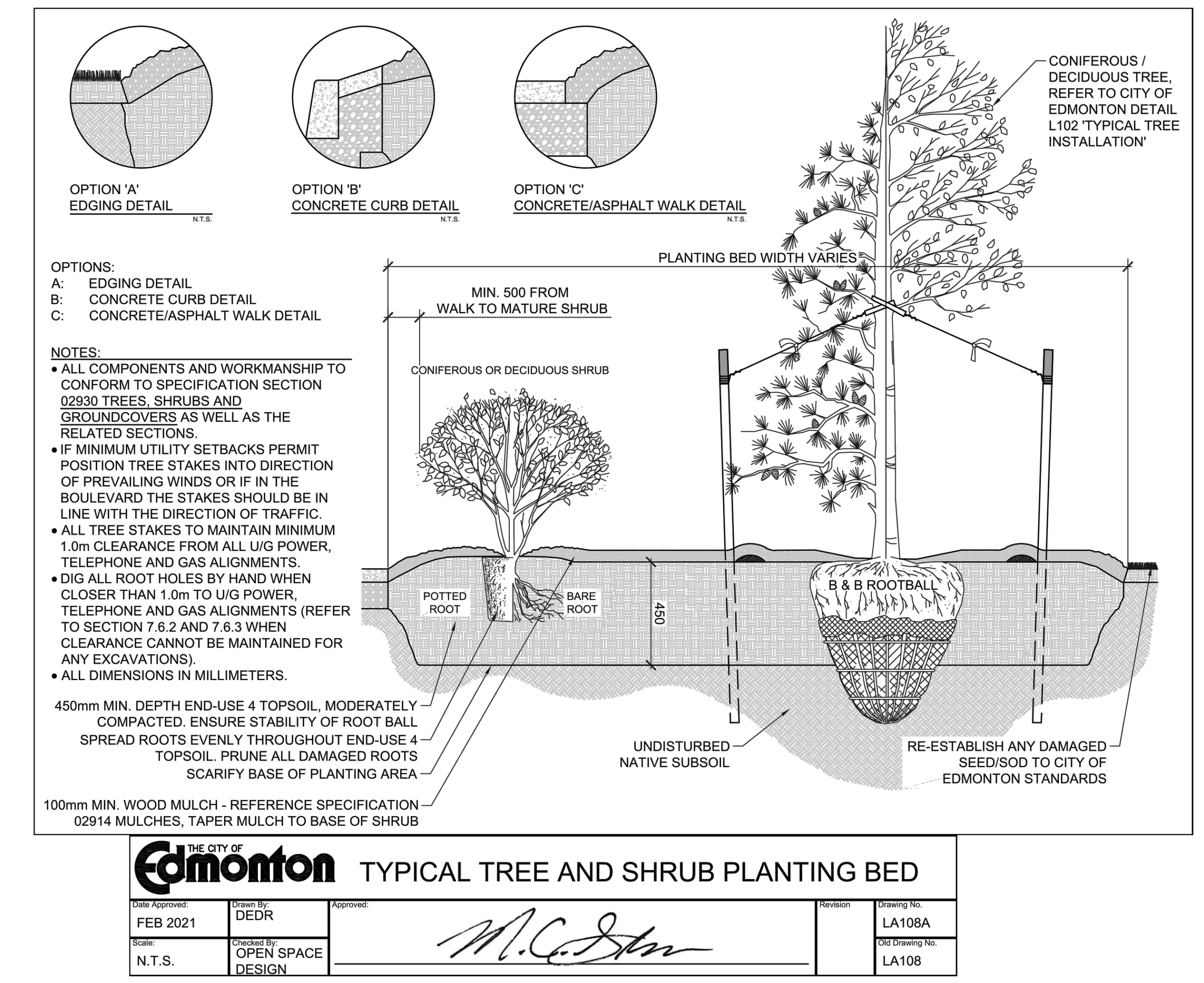
1 TYPICAL TREE PROTECTION
H54 SCALE: N.T.S.



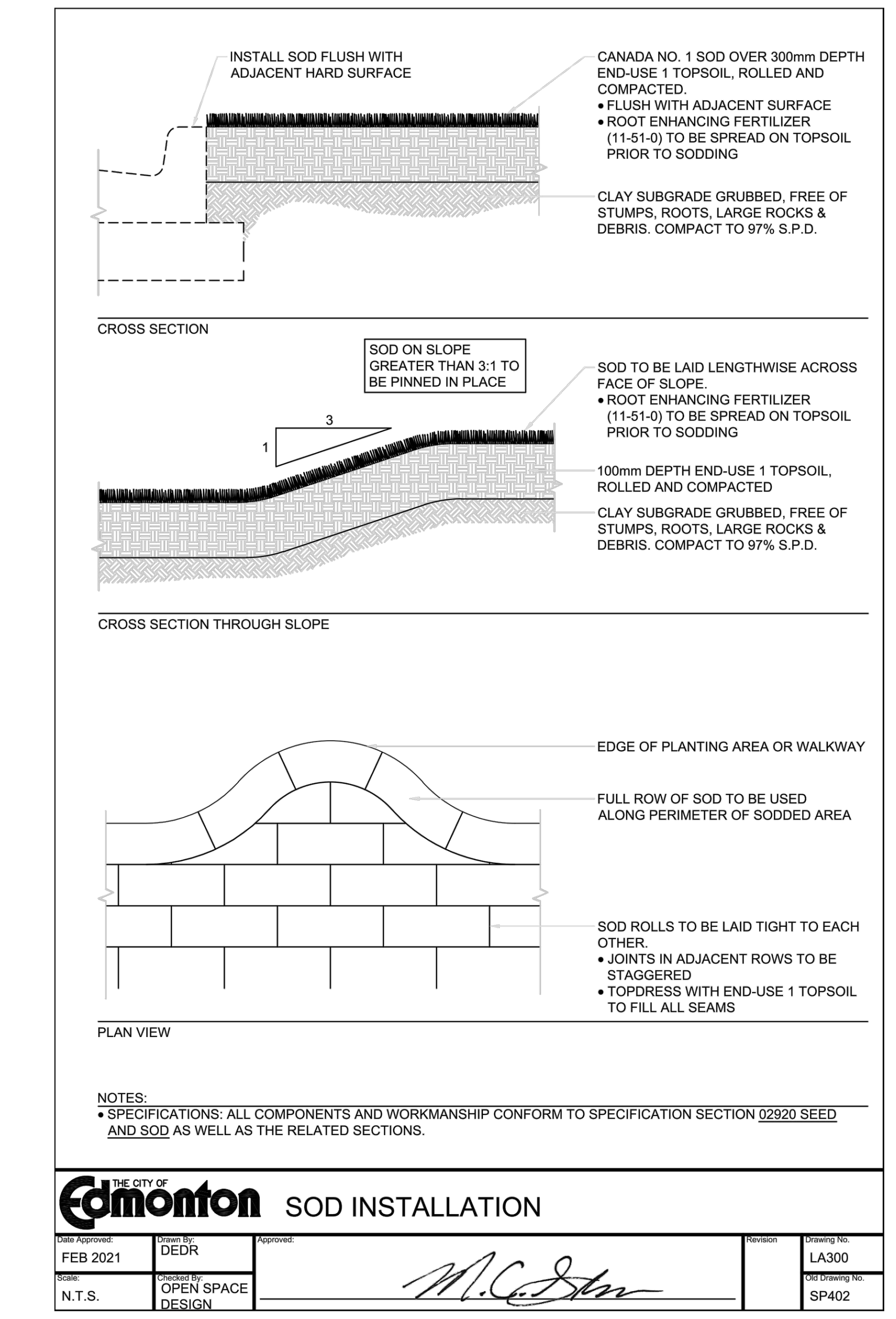
2 TYPICAL TREE PLANTING
H54 SCALE: N.T.S.



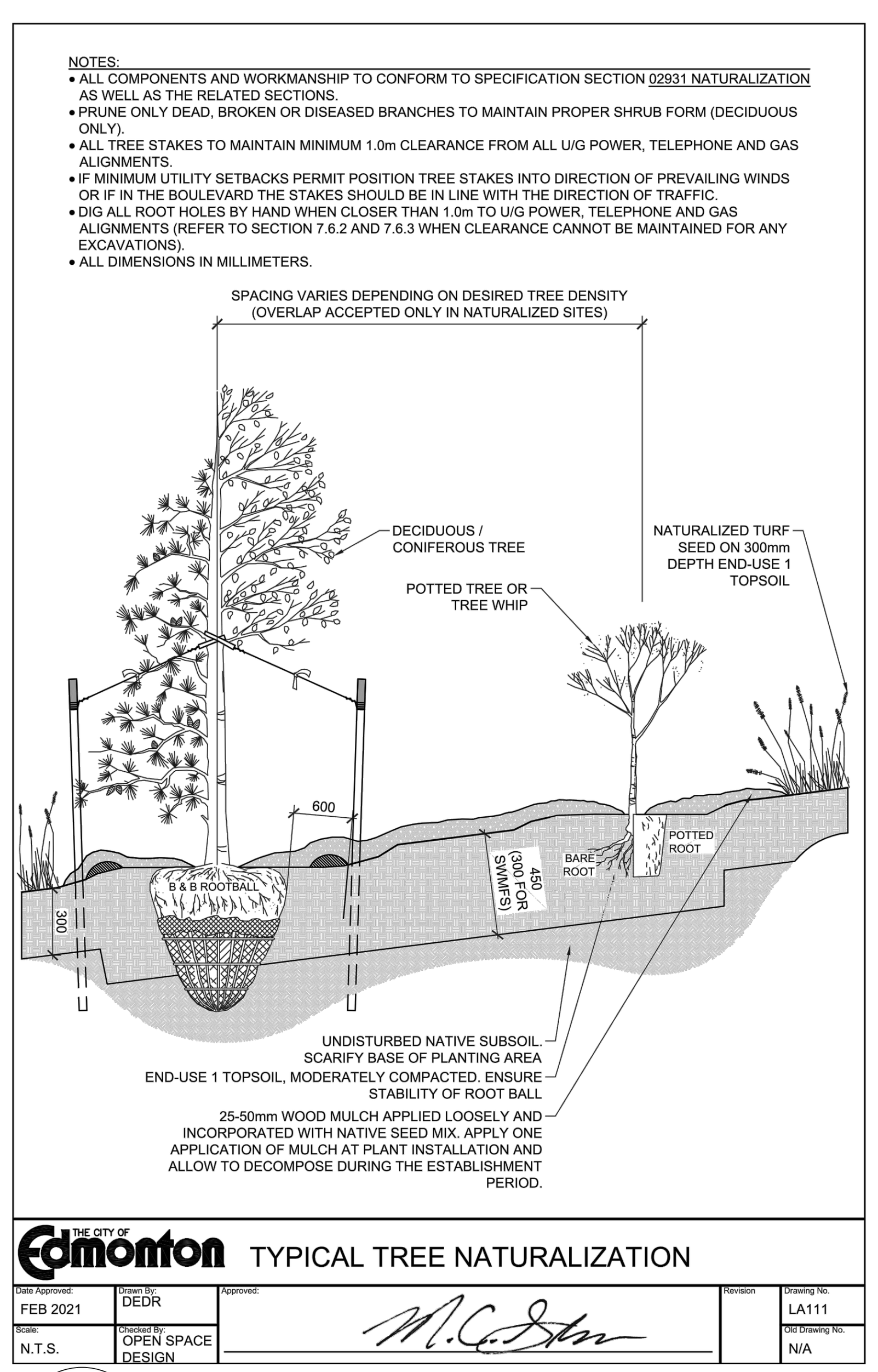
3 TYPICAL SHRUB PLANTING
H54 SCALE: N.T.S.



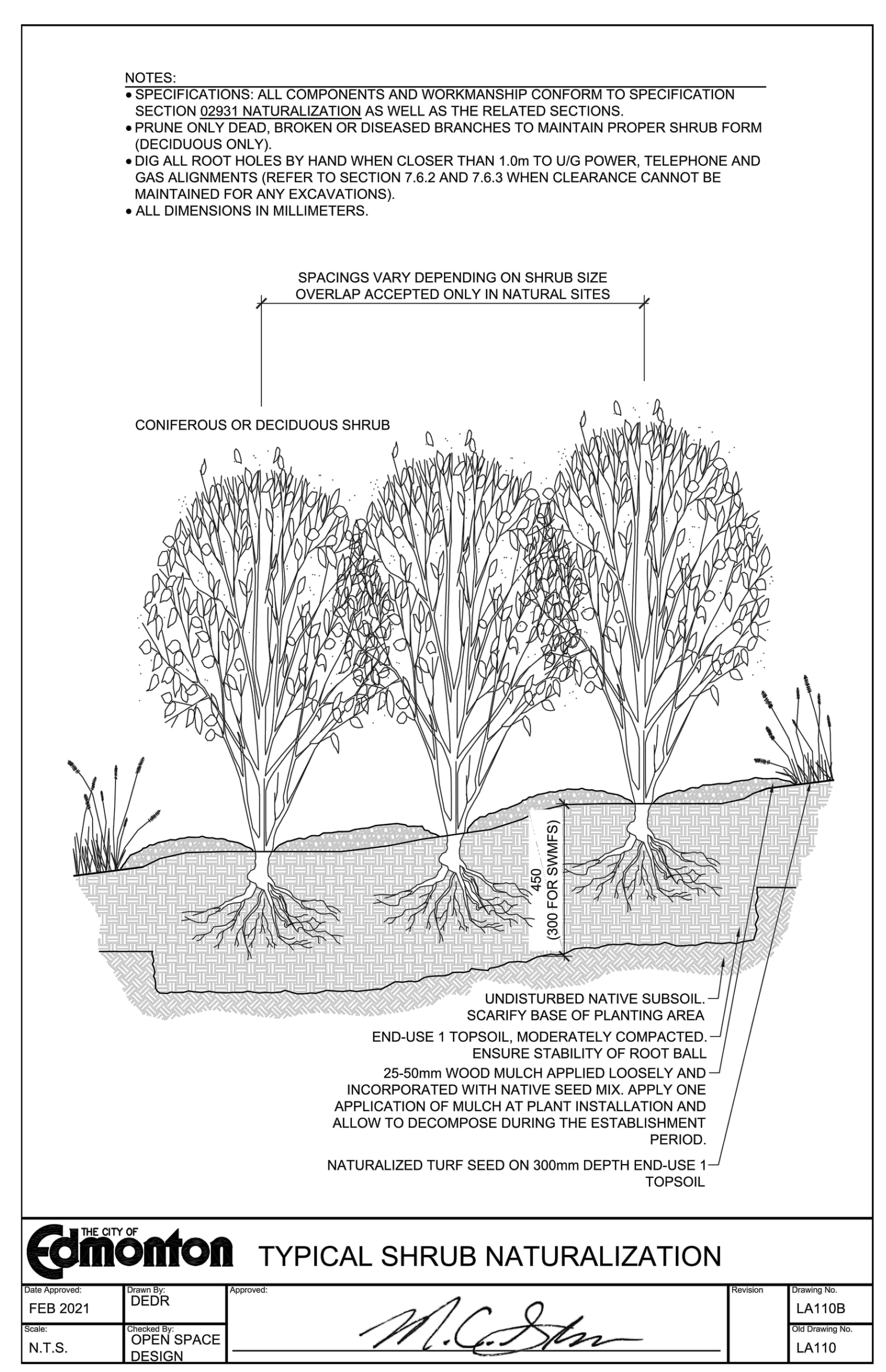
4 TYPICAL TREE AND SHRUB PLANTING BED
H54 SCALE: N.T.S.



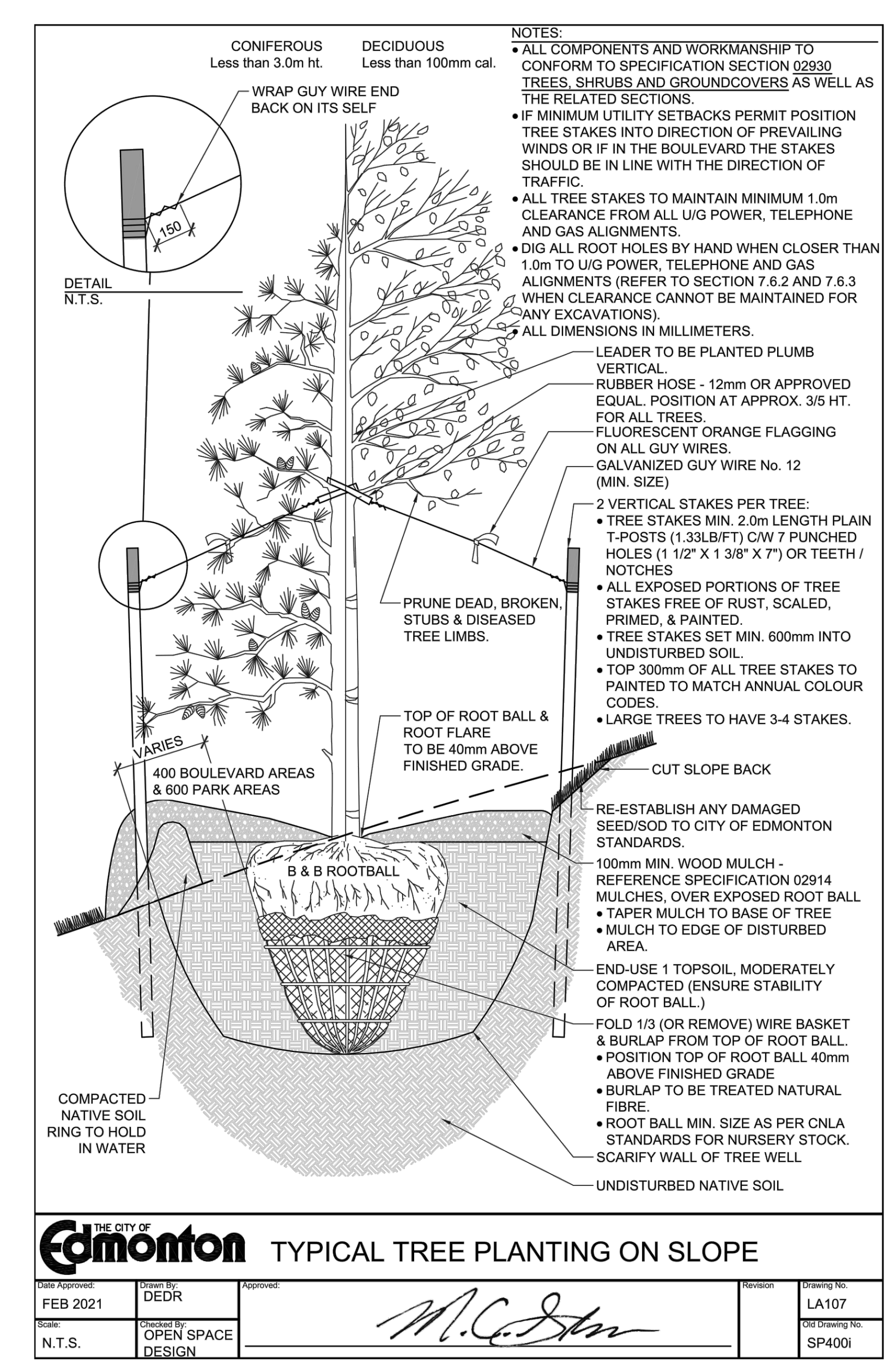
5 TYPICAL SOD DETAIL
H54 SCALE: N.T.S.



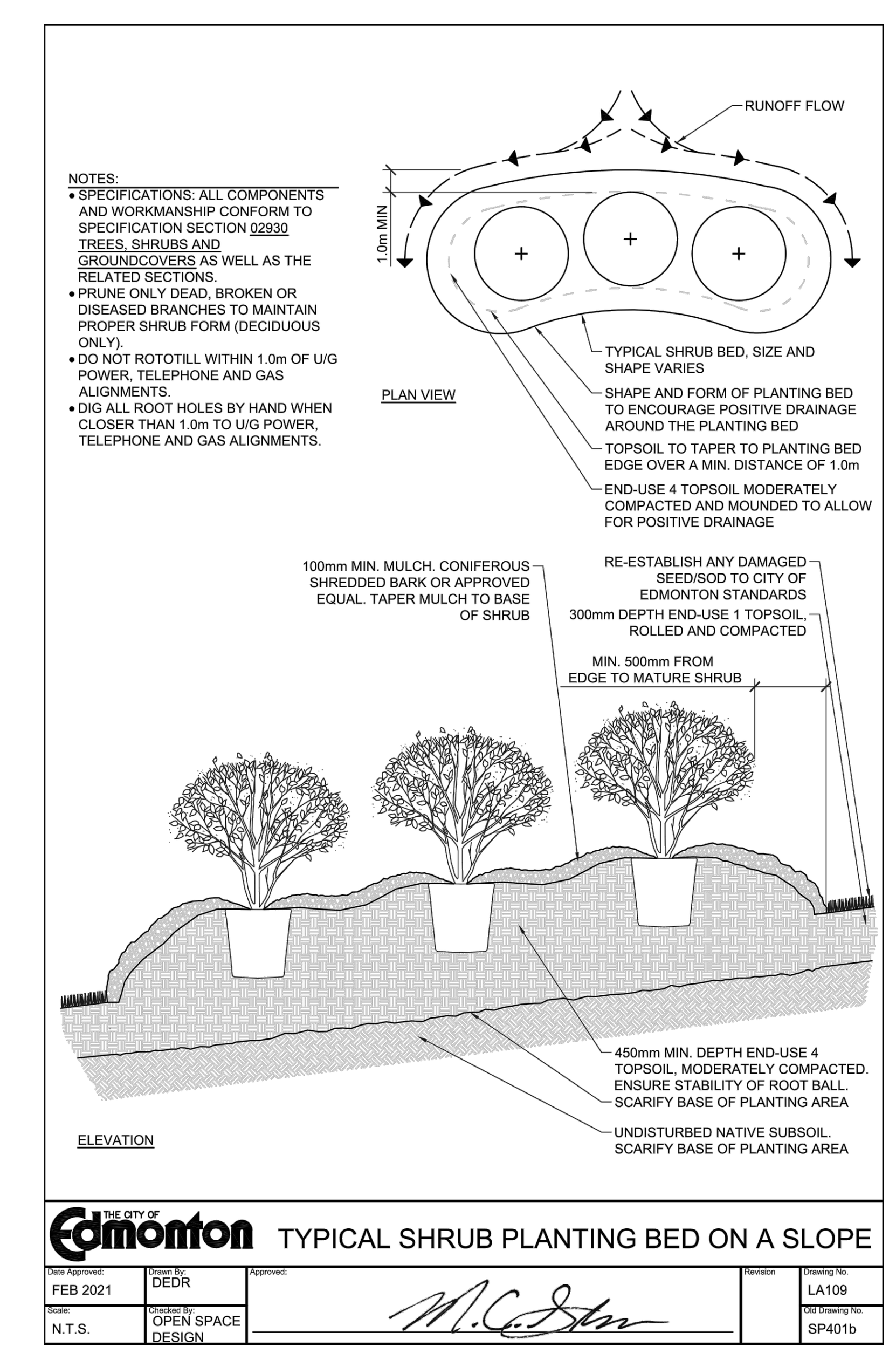
6 TYPICAL TREE NATURALIZATION
H54 SCALE: N.T.S.



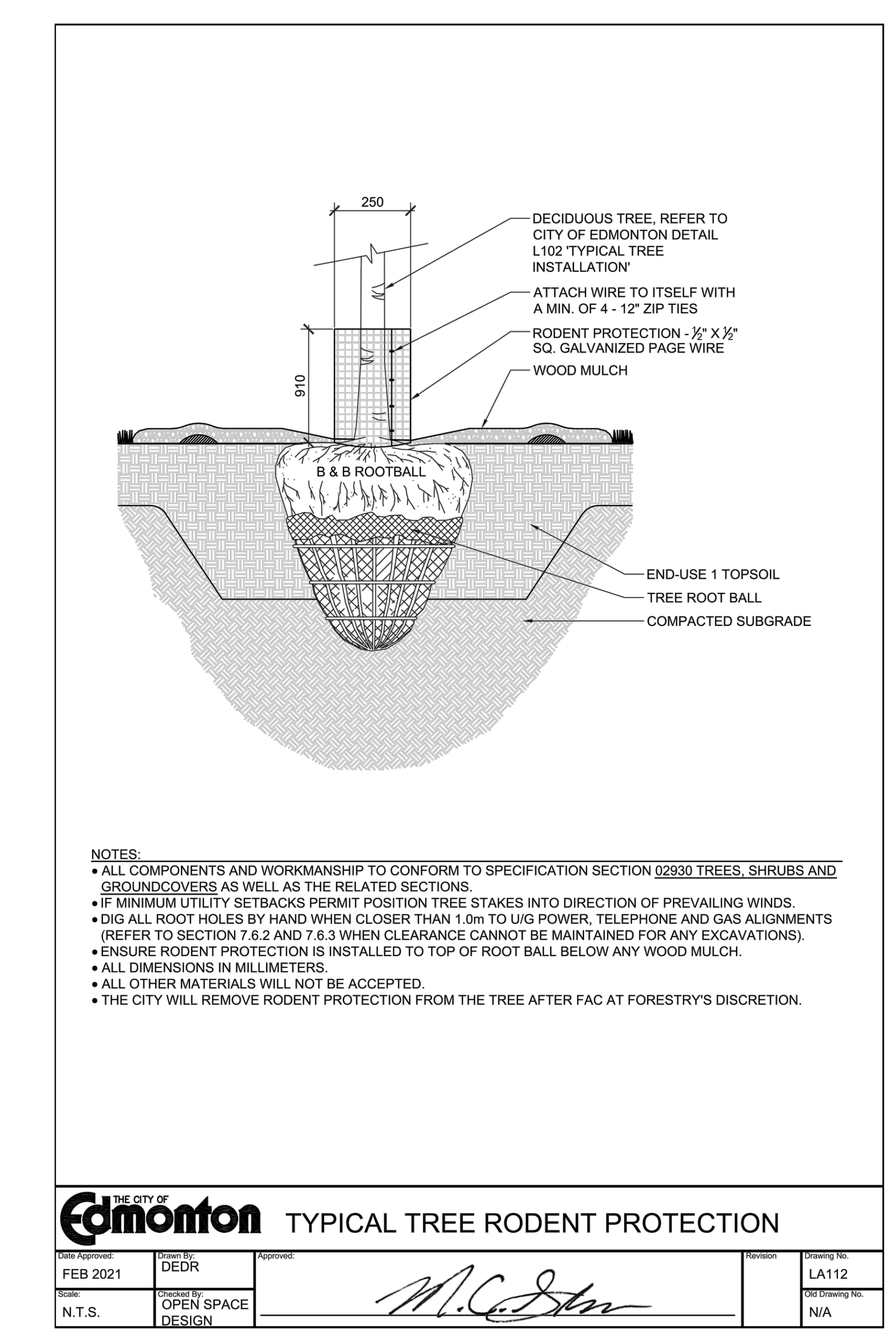
7 TYPICAL SHRUB NATURALIZATION
H54 SCALE: N.T.S.



8 TYPICAL TREE PLANTING ON SLOPE
H54 SCALE: N.T.S.



9 TYPICAL SHRUB PLANTING ON SLOPE
H54 SCALE: N.T.S.



10 TYPICAL TREE RODENT PROTECTION
H54 SCALE: N.T.S.

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION

DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN — DATE

DATE

SURVEY

JOB NO.

SCALE

DRAWN C.V. DATE NOVEMBER 10, 2023

DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023

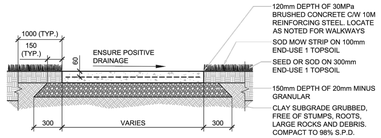
CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton — INTEGRATED INFRASTRUCTURE SERVICES — BUILDING GREAT NEIGHBOURHOODS BRANCH

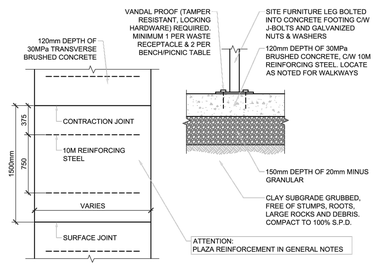
PROJECT: GARIEPY NEIGHBOURHOOD RENEWAL

RAVINE CROSSINGS PLANTING DETAILS

DRAWING: GARI 242 H54



CONCRETE CROSS SECTION (TYP.)



CONCRETE WALKWAY PLAN VIEW

SITE FURNITURE WITHIN CONCRETE AREA

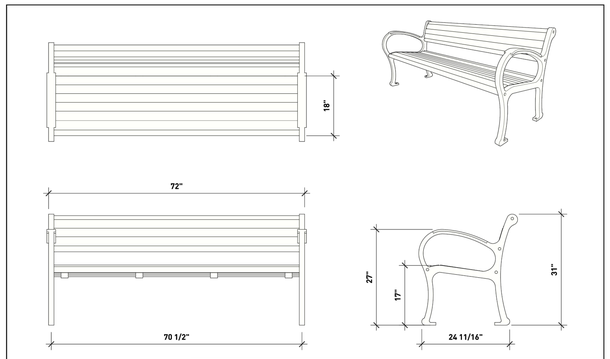
NOTES:

- DIMENSIONS/DEFINITION: A CONCRETE WALKWAY HAS A WIDTH OF 1500-2400mm AND A PLAZA IS GREATER IN WIDTH THAN 2400mm.
- FOR PLAZA AREAS INSTALL WELDED STEEL WIRE FABRIC AS PER TRANSPORTATION REQUIREMENTS. INSTALL CONTRACTION JOINTS AS PER LAYOUT DETAIL ON LANDSCAPE DRAWINGS.
- SET CONCRETE SURFACE FLUSH WITH ADJACENT GRADES.
- ENSURE DRAINAGE OFF CONCRETE AT ALL LOCATIONS & IN COMPLIANCE WITH THE OVERALL SITE DRAINAGE PLAN.
- 20mm MINUS GRANULAR - SECTION 2060 AGGREGATE DESIGNATION 3, CLASS 20A, COMPACT TO 100% S.P.D.

THE CITY OF Edmonton — CONCRETE WALKWAY OR PLAZA

Date Approved:	Drawn By:	Approved:	Revision:	Drawing No.
FEB 2021	DEDR			LA302
Scale: N.T.S.	Design By: OPEN SPACE DESIGN			Old Drawing No.: -

1 H55 CONCRETE PLAZA
SCALE: N.T.S.



NOTE: C/W BLACK TEXTURED POWDERCOAT, AND SAND COLOURED PLASTIC LUMBER

Wishbone site furnishings

WISHBONE SITE FURNISHINGS
210-27090 GLOUCESTER WAY LANGLEY, BC

DWG. TITLE: MOUNTAIN CLASSIC 6' BENCH
REVISION: 01/01/20 R:00

MATERIAL:	DWG. NO.		DRAWN BY:	
ALUMINUM	DWSBBN01012000		JAMES NEDEN	
PATTERN NO.	MODEL NO.	SCALE:	SHEET:	DATE:
N/A	MCB-6	1:16	1 OF 2	01 JAN 20

2 H55 BENCH
SCALE: N.T.S.

LOOP 2 SPACE BIKE RACK
Model Number : LBRP-1

DESIGNER NOTES

Providing accommodation for up to 2 bikes, the Loop Bike Rack is a simple yet familiar design. Extremely durable and functional, this bike rack looks great alongside classic or contemporary landscape architecture. What makes our Loop Bike Rack design unique are the materials we use in its construction. Traditional steel bike racks tend to be heavy and not very corrosion resistant over time with-out galvanization. Our new thick walled aluminum pipe design provides similar strength qualities to steel ensuring safe storage of the bikes while the light weight corrosion resistant aluminum ensures it looks great over years of service.

Wishbone site furnishings

PRODUCT SPECIFICATIONS

Schedule 40 Aluminum Pipe

Super Durable Powder Coated Aluminum Pipe

Standard Colours: Brown Slate, Victor Ridge II, Nordic Lichen, Timeless Rust, Grey Gold, Textured Silver, Precious Sand, Groovy Red, Black Textured, Earth Clay, Noble Bronze, Modern Khaki, Flame Red, Pastel Orange, Signal Violet, Traffic Yellow, Ultramarine Blue, Water Blue, Yellow Green

Surface Mount

NOTE: C/W BLACK TEXTURED POWDERCOAT

CUSTOMIZED SOLUTIONS

Custom Colour
(Setup Charges May Apply)
In-ground Mounting
Galvanized Steel design option
INST-1 Stainless steel mounting kit for concrete

PRODUCT DIMENSIONS

Height	44 inches / 112 mm
Wall Thickness	2 inches /51 mm
Diameter at widest point	40 inches / 1016 mm
Weight	9.5 lbs / 4.3 kg

RECYCLED CONTENT

100% RECYCLABLE

100% Canadian Made

Wishbone Ltd. provides an extended 10 year limited warranty from the date of invoice.

Visit us online at www.Wishboneltd.com

Wishbone Site Furnishings | #210-27090 Gloucester Way | Langley, BC CANADA V4W 3Y5
1.866.626.0476 sales@wishboneltd.com

3 H55 BIKE RACK
SCALE: N.T.S.

NOTES:

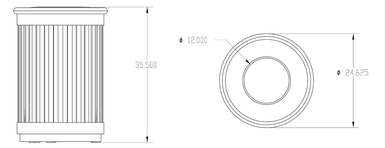
1. RECEPTACLES TO BE PLACED WITH SIDE OPENING FACING AWAY FROM SIDEWALK OR S.U.P.
2. ALL FURNISHINGS TO BE SECURED WITH TRIDENT TAMPER PROOF NUT OR APPROVED ALTERNATE. MIN. 1 PER WASTE RECEPTACLE, 2 PER BENCH/PICNIC TABLE.

200 SERIES

MTR-0250-00004
Legacy # MLWR250-32-ST

DESCRIPTION:	200 Series – 250 Trash Receptacle: Heavy Duty Steel Flat Bar and H.S. Steel Frame, Metal Lid, 1 x 32 Gallon Polyethylene Liner
FINISH:	All steel components are protected with E-Coat rust proofing. The Maglin Powdercoat System provides a durable finish on all metal surfaces.
INSTALLATION:	The trash container is delivered pre-assembled. Holes (0.5") are provided in each mounting foot for securing to base.
TO SPECIFY:	Select MTR-0250-00004 Choose: - Powdercoat Color BLACK

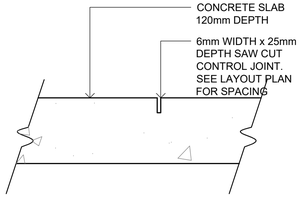
HEIGHT: 35.5" (90.2cm) DIAMETER: 24.63" (62.5cm) WEIGHT: 200lbs (90kg)



MAGLIN Site Furniture

T 800 798 5506
F 877 280 9393
www.maglin.com
sales@maglin.com

4 H55 WASTE RECEPTACLE
SCALE: N.T.S.



5 H55 CONCRETE JOINT DETAIL
SCALE: N.T.S.

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION
DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN — DATE
DATE

SURVEY
JOB NO.
SCALE

DRAWN C.V. DATE NOVEMBER 10, 2023
DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023
CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton — INTEGRATED INFRASTRUCTURE SERVICES
BUILDING GREAT NEIGHBOURHOODS BRANCH

PROJECT
GARIEPY NEIGHBOURHOOD RENEWAL
RAVINE CROSSINGS LANDSCAPE DETAILS

DRAWING
GARI 242 H55

1 H21 **TOP OF BANK CONTEXT PLAN**
SCALE: 1:3000

LANDSCAPE NOTES

1. GENERAL NOTES:

a. CONTRACTOR TO CALL ALBERTA ONE-CALL AT 1-800-242-3447 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY CONSTRUCTION.

b. CONTRACTOR IS TO VISIT THE SITE TO CONFIRM ALL SITE CONDITIONS PRIOR TO MOBILIZING FOR CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONSULTANT FOR CLARIFICATION.

c. LIMITS OF THE WORK ARE TO BE CLEARLY UNDERSTOOD BY THE CONTRACTOR PRIOR TO ANY WORK TAKING PLACE ON SITE. THE CONTRACTOR IS TO CONTACT THE CONSULTANT FOR CLARIFICATION IF REQUIRED.

d. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE CONSULTANT FOR FURTHER DIRECTION.

e. LAYOUT IS TO BE APPROVED BY THE CONSULTANT PRIOR TO THE START OF CONSTRUCTION.

f. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE NOTED.

g. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS (CEDCS) CURRENT EDITION, PROJECT SPECIFIC SPECIFICATIONS, DRAWINGS, AND DETAILS FOR THE PROJECT.

h. ANY AMBIGUITY IN THIS DRAWING OR ACCOMPANYING DETAILS IS TO BE REPORTED TO THE CONSULTANT FOR CLARIFICATION. THE CONTRACTOR IS NOT TO PROCEED IN UNCERTAINTY.

i. CONTRACTOR IS TO PROVIDE FIELD NOTES DOCUMENTING ALL FIELD CHANGES TO DRAWINGS. CONTRACTOR IS TO SUBMIT FIELD NOTES TO CONSULTANT TO BE USED AS RECORD (AS-BUILT) DRAWINGS.

2. PERMITS AND STANDARDS NOTES:

a. THE CONTRACTOR IS TO ENSURE THAT ALL NECESSARY ARRANGEMENTS ARE MADE WITH THE PIPELINE COMPANIES CONCERNING THE MOVEMENT OF MATERIALS AND EQUIPMENT NEAR ANY PIPELINE RIGHTS OF WAY.

b. ALL ANCILLARY WORK NORMALLY ASSOCIATED WITH THIS TYPE OF CONSTRUCTION SHALL BE DEEMED TO BE PART OF THE CONTRACT.

3. SITE WORK NOTES:

a. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TREE PROTECTION (SNOW FENCE OR HOARDING) FOR ALL TREES WITHIN (5) FIVE METERS OF PROJECT SITE OR ADJACENT TO CONSTRUCTION AREAS. PROTECTION REQUIREMENTS INCLUDE:

I. SNOW FENCING FOR TREES WITHIN 3-5 METERS.

II. 13mm TH. PLYWOOD X 1.22m HT. WITHIN 1-3 METERS.

b. IN THE EVENT DAMAGE OCCURS TO TREE(S) WITHIN AREA OF PROTECTION, CITY OF EDMONTON FORESTRY IS TO BE ADVISED. CALL 311.

c. THE CONTRACTOR SHALL SUPPLY ALL MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE DRAWINGS. ANY DISCREPANCIES IN QUANTITIES SHALL BE REPORTED TO THE CONSULTANT IMMEDIATELY FOR CLARIFICATION.

d. NO SUBSTITUTIONS OF MATERIAL, PRODUCTS, OR QUANTITIES SHALL BE PERMITTED WITHOUT PRIOR CONSENT OF THE CONSULTANT.

e. THE CONTRACTOR IS RESPONSIBLE FOR THE ADJUSTMENT OF ALL EXISTING CATCH BASINS, MANHOLES, WATER VALVES, HYDRANTS, ETC. TO MATCH PROPOSED GRADES.

f. THE CONTRACTOR IS RESPONSIBLE FOR THE HAULING OF ALL EXCESS MATERIALS OFF THE SITE TO A LOCATION DESIGNATED BY THE CONSULTANT.

g. THE CONTRACTOR IS RESPONSIBLE FOR GENERAL SITE CLEAN-UP.

h. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO LANDSCAPED AREAS AND MUST MAKE ALL NECESSARY RESTORATIONS AND REPAIRS.

4. UTILITY SETBACKS NOTES:

a. CONTRACTOR TO LOCATE ALL SITE UTILITIES PRIOR TO CONSTRUCTION. ALL SETBACKS TO BE AS PER VOLUME 1 TABLE OF MINIMUM OFFSETS (FEBRUARY 2021).

- 1.0m FROM POWER LINES, GAS (CONTACT UTILITY), AND OTHER SHALLOW UNDERGROUND UTILITIES
- 3.0m FROM STREETLIGHTS AND POWER POLES
- 3.0m FROM EDGE OF BASE ON EACH SIDE WHERE DOORS OPEN FROM 3-PHASE SWITCHING CUBICLE
- 2.0m ON SIDES, 3.0 IN FRONT OF DOORS, AND 1.5m BEHIND EDGE OF BASE FROM TRANSFORMERS
- 3.0m IN FRONT, 4.0m ON SIDES, AND 2.5m BEHIND EDGE OF BASE FROM 1-PHASE SWITCHING CUBICLES
- 1.8m FROM DECIDUOUS TREES TO WATER MAINS, WATER SERVICES, AND MANUAL AIR VENTS
- 3.5m FROM CONIFEROUS TREES TO WATER MAINS, WATER SERVICES, AND MANUAL AIR VENTS
- 3.5m FROM DECIDUOUS TREES TO FIRE HYDRANTS
- 7.0m FROM CONIFEROUS TREES TO FIRE HYDRANTS
- 1.8m FROM STORM AND SANITARY SERVICES
- 1.8m FROM STORM AND SANITARY MANHOLES
- 1.0m FROM SIDEWALKS AND FACE OF CURB (LOCAL)
- 1.25m FROM FACE OF CURB (COLLECTOR <20m ROW)
- 1.65m FROM FACE OF CURB (COLLECTOR >20m ROW)
- 2.0m FROM FACE OF CURB (ARTERIAL)
- 1.5m FROM EDGE OF COMMERCIAL OR INDUSTRIAL ACCESS
- 3.5m FROM STOP AND YIELD SIGNS
- 2.0m FROM ALL OTHER SIGNS
- 3.5m FROM TRANSIT ZONES
- 15m FROM INTERSECTIONS
- 1.0m FROM PROPERTY LINES IN BOULEVARDS AND WALKWAYS
- 2.5m FROM CENTRE OF DECIDUOUS TREES AND EDGE OF MATURE SPREAD OF CONIFEROUS TREES TO PROPERTY LINES IN OPEN PARKLAND
- 3.5m FROM TELECOMMUNICATION PEDESTALS (CONTACT UTILITY)
- 2.0m FROM TELECOMMUNICATION DUCT STRUCTURE (CONTACT UTILITY)
- 1.0m FROM TELECOMMUNICATION CABLE FACILITIES (CONTACT UTILITY)

b. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES AND LIABILITIES INCURRED BY DAMAGES TO SITE UTILITIES.

c. ALL SETBACKS TO BE AS PER CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS VOLUME 1 TABLE OF MINIMUM OFFSETS (FEBRUARY 2021):

5. MATERIALS NOTES:

a. THE CONTRACTOR IS TO SUPPLY AND INSTALL 12MM ASPHALT IMPREGNATED FIBRE BOARD ISOLATION JOINTS WHENEVER MATCHING TO, OR ABUTTING TO, ANY EXISTING CONCRETE OR FIXED EDGE (SUCH AS BUILDING, MANHOLES, ETC.)

6. PLANTING NOTES:

a. A TOPSOIL TEST IS REQUIRED BEFORE INSTALLATION. THE SOIL ANALYSIS REPORT IS TO BE SUBMITTED TO THE CONSULTANT PRIOR TO INSTALLATION.

b. ALL PLANT MATERIAL AND WORKMANSHIP IS TO CONFORM TO THE CITY OF EDMONTON. DESIGN AND CONSTRUCTION STANDARDS 2021 (CEDCS).

c. ALL PLANT MATERIAL IS TO BE NURSERY GROWN STOCK AND SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE CANADIAN NURSERY TRADES ASSOCIATED (CNTA) FOR SIZE, HEIGHT SPREAD, GRADING, QUALITY, AND METHOD OF CULTIVATION.

d. ALL PLANTING BEDS TO INCLUDE 100mm DEPTH DECIDUOUS WOOD CHIP MULCH (OR APPROVED EQUAL) AS PER CEDCS SECTION 02914.

e. ALL TREE STAKES ARE TO BE REMOVED AT THE END OF THE ONE YEAR MAINTENANCE AND GUARANTEE PERIOD, EXCEPT FOR THE TREE REPLACEMENTS. A SPOT OF SPRAY PAINT ON THE TREE REPLACEMENT STAKES WILL BE COLOURED FOR THE YEAR OF PLANTING AS PER THE (CEDCS) SECTION 02918.

A. TREE STAKE COLOUR REQUIREMENTS:

2024 - BLUE 2025 - WHITE

2026 - YELLOW 2027 - GREEN

f. AS PER CITY OF EDMONTON DESIGN STANDARDS (2021) 4 TREES PER 35 LINEAR METERS OF WALKWAY ARE REQUIRED.

g. A SUBSTITUTION OF 7 SHRUBS PER TREE CAN BE MADE UP TO A MAXIMUM OF 10% OF TOTAL TREES REQUIRED, WHERE APPLICABLE.

7. SOD AND SEED NOTES:

a. CERTIFIED NO. 1 CULTIVATED TURF SOD WITH STRONG FIBROUS ROOT SYSTEM, THICK AND HEALTHY GROWTH AND DELIVERED 24 HOURS FROM THE TIME OF CUTTING. SOD SHOWING SIGNS OF DETERIORATION DUE TO AGE OR LACK OF MOISTURE WILL BE REJECTED. SOD MUST BE FREE OF STONES, BURNS, DRY OR BARE SPOTS, TEARS AND DELIVERED MOIST, CUT IN STRIPS OF UNIFORM WIDTH AND THICKNESS AND OF THE FOLLOWING MIX OR APPROVED EQUAL.

b. SOD MUST MEET OR EXCEED CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS 2021 (CEDCS). SECTION 02920. CANADA #1 MIX. SEE PLANTING LEGEND.

c. SOD LAYING IS TO OCCUR BETWEEN MAY 1ST - SEPT. 30TH. LAYING OF SOD OUTSIDE THE RECOMMENDED SEASON WILL REQUIRE CONSULTANT APPROVAL PRIOR TO START OF WORK.

d. PREPARATION, INSTALLATION, FERTILIZATION, WARRANTY AND MAINTENANCE OF SOD IS TO BE IN ACCORDANCE WITH (CEDCS).

e. CERTIFIED CANADA NO. 1 MIXTURE, FREE OF DISEASE, WEED SEEDS, OR FOREIGN MATTER. MINIMUM GERMINATION OF 75%, MINIMUM PURITY OF 97% AND CONFORMING TO THE MIXES BELOW OR APPROVED ALTERNATIVES.

f. SEED MUST MEET OR EXCEED CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS 2021 (CEDCS). SECTION 02920. ALL SEED MUST BE FROM A RECOGNIZED SEED FIRM, MEETING THE REQUIREMENTS FOR THE SEEDS ACT FOR CANADA #1 SEED. SEED SHALL BE CERTIFIED #1 GRADE. SEE PLANTING LEGEND.

g. SEED INSTALLATION TO OCCUR BETWEEN MAY 1st - SEPTEMBER 15th. INSTALLATION OF SEED OUTSIDE OF RECOMMENDED SEASON WILL REQUIRE CONSULTANT APPROVAL PRIOR TO START DATE.

h. DELIVER SEED IN THE ORIGINAL CONTAINERS, TAGGED WITH IDENTIFICATION AS TO THE ANALYSIS OF SEED MIXTURE, PERCENTAGES OF SEED, YEAR OF SEED PRODUCTION, NET WEIGHT AND DATE.

i. PREPARATION, INSTALLATION, FERTILIZATION, WARRANTY AND MAINTENANCE OF SEEDING IS TO BE IN ACCORDANCE WITH CEDCS.

j. ALL AREAS TO RECEIVE **SOD** ARE TO HAVE TYPE 1 NATIVE TOPSOIL TO A MINIMUM DEPTH OF **300mm**.

k. ALL AREAS TO HAVE **SEED** ARE TO HAVE TYPE 1 NATIVE TOPSOIL TO A MINIMUM DEPTH OF **300mm**.

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION

DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN DATE

DATE

SURVEY

JOB NO.

SCALE 1:3000

0m 30 60 90 120

DRAWN C.V. DATE NOVEMBER 10, 2023

DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023

CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton

INTEGRATED INFRASTRUCTURE SERVICES

BUILDING GREAT NEIGHBOURHOODS BRANCH

PROJECT **GARIEPY NEIGHBOURHOOD RENEWAL**

TOP OF BANK CONTEXT PLAN

DRAWING **GARI 242 H21**

SITE FURNISHINGS

- WASTE RECEPTACLE
- BENCH
- BIKE RACKS
- BOULDER
- EXISTING STREET LIGHT

LANDSCAPE LEGEND

- EXISTING TREE TO REMAIN AND BE PROTECTED
- EXISTING TURF TO REMAIN. RE-GRADE AND RE-SOD ALL DISTURBED AREAS AS REQUIRED. ADDITIONAL TOPSOIL TO BE ADDED AS REQUIRED TO A DEPTH OF 300mm. EXISTING TOPSOIL IS TO BE RE-USED SUBJECT TO CITY APPROVAL.

NOTE:

1. SEED TO MEET OR EXCEED CITY OF EDMONTON LANDSCAPING DESIGN & CONSTRUCTION STANDARDS (LATEST EDITION).
2. SCARIFY SUB - GRADE MIN 300mm PRIOR TO PLACEMENT OF TOPSOIL AND SOD / SEEDING.
3. ALL PLANTING BEDS TO INCLUDE 100mm DEPTH DECIDUOUS WOOD CHIP MULCH (OR APPROVED EQUAL) AS PER CEDCS SECTION 02914. ALL PLANT MATERIAL SHALL BE PLANTED SUCH THAT THE EDGE OF THE 100% MATURE SIZE OF THE PLANT MATERIAL IS A MINIMUM OF 0.5m FROM CONCRETE AND/OR SHARED USE PATHWAY.
4. LANDSCAPE CONTRACTOR TO VERIFY AS-BUILT UTILITY LOCATIONS AS NECESSARY.
5. ALL CONIFEROUS TREES TO BE TRIMMED FOR SITE LINES BY CITY OF EDMONTON FORESTRY.

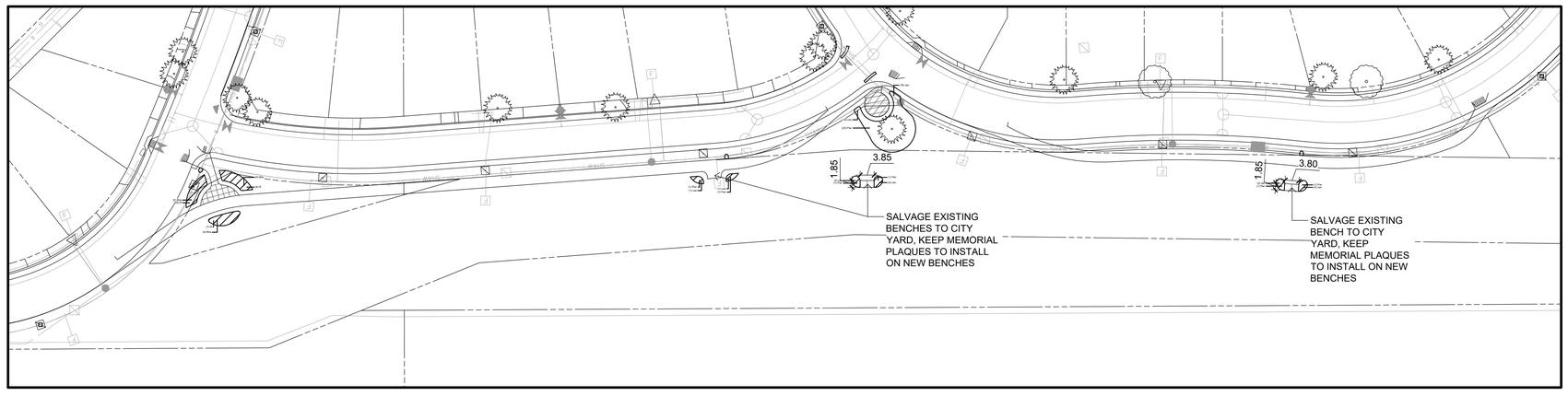
CIVIL LEGEND (REFERENCE ONLY)

LEGAL

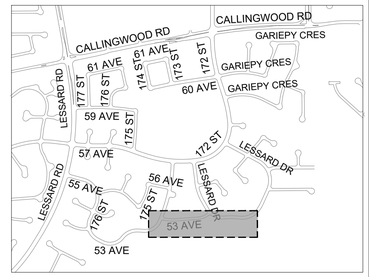
- EXISTING PROPERTY LINE

UTILITY

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- POWERLINE
- GAS LINE
- PROPOSED EASEMENT
- CONCRETE, UNLESS OTHERWISE NOTED
- ASPHALT SHARED PATHWAY
- HYDRANT
- VALVE
- MANHOLE
- CATCH BASIN
- STREET IDENTIFICATION SIGN
- LIGHT STANDARDS,
- POWER PEDESTALS



1 H22 **TOP OF BANK REMOVALS AND PROTECTION PLAN**
SCALE: 1:750



KEY PLAN

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION

DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN DATE

DATE

SURVEY

JOB NO.

SCALE 1:750

0m 7.5 15 22.5 30

DRAWN C.V. DATE NOVEMBER 10, 2023

DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023

CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton

INTEGRATED INFRASTRUCTURE SERVICES

BUILDING GREAT NEIGHBOURHOODS BRANCH

PROJECT **GARIEPY NEIGHBOURHOOD RENEWAL**

TOP OF BANK REMOVALS AND PROTECTION PLAN

DRAWING **GARI 242 H22**

SITE FURNISHINGS

- WASTE RECEPTACLE
- BENCH
- BIKE RACKS
- BOULDER
- EXISTING STREET LIGHT

LANDSCAPE LEGEND

EXISTING TREE TO REMAIN AND BE PROTECTED

EXISTING TURF TO REMAIN. RE-GRADE AND RE-SOD ALL DISTURBED AREAS AS REQUIRED. ADDITIONAL TOPSOIL TO BE ADDED AS REQUIRED TO A DEPTH OF 300mm. EXISTING TOPSOIL IS TO BE RE-USED SUBJECT TO CITY APPROVAL.

NOTE:

1. SEED TO MEET OR EXCEED CITY OF EDMONTON LANDSCAPING DESIGN & CONSTRUCTION STANDARDS (LATEST EDITION).
2. SCARIFY SUB - GRADE MIN 300mm PRIOR TO PLACEMENT OF TOPSOIL AND SOD / SEEDING.
3. ALL PLANTING BEDS TO INCLUDE 100mm DEPTH DECIDUOUS WOOD CHIP MULCH (OR APPROVED EQUAL) AS PER CEDCS SECTION 02914. ALL PLANT MATERIAL SHALL BE PLANTED SUCH THAT THE EDGE OF THE 100% MATURE SIZE OF THE PLANT MATERIAL IS A MINIMUM OF 0.5m FROM CONCRETE AND/OR SHARED USE PATHWAY.
4. LANDSCAPE CONTRACTOR TO VERIFY AS-BUILT UTILITY LOCATIONS AS NECESSARY.
5. ALL CONIFEROUS TREES TO BE TRIMMED FOR SITE LINES BY CITY OF EDMONTON FORESTRY.

CIVIL LEGEND (REFERENCE ONLY)

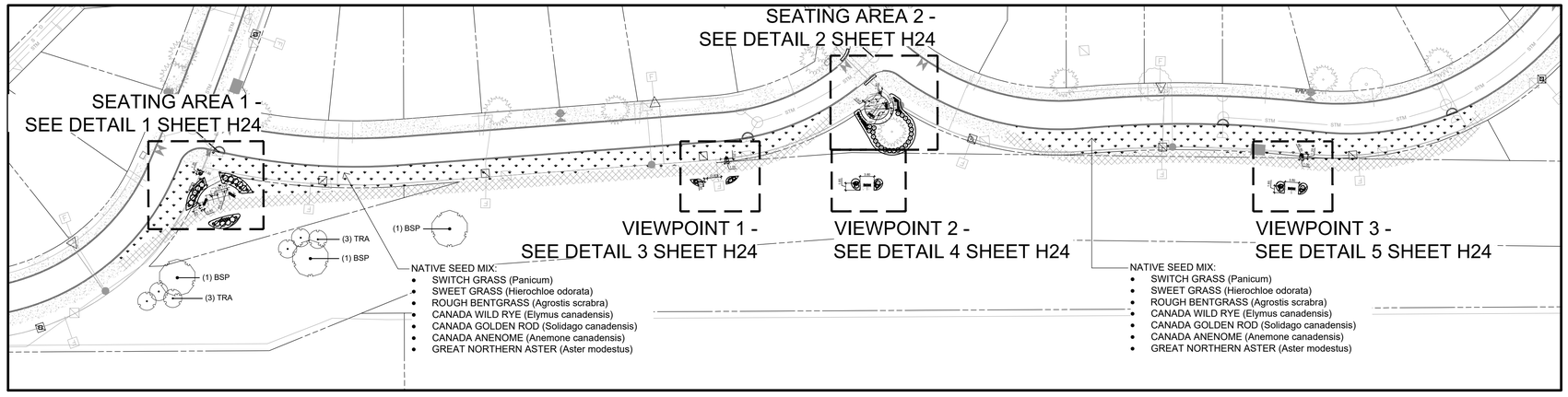
LEGAL

- EXISTING PROPERTY LINE

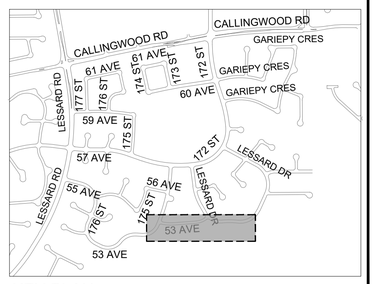
UTILITY

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- POWERLINE
- GAS LINE
- PROPOSED EASEMENT
- CONCRETE, UNLESS OTHERWISE NOTED
- ASPHALT SHARED PATHWAY
- HYDRANT
- VALVE
- MANHOLE
- CATCH BASIN
- STREET IDENTIFICATION SIGN
- LIGHT STANDARDS,
- POWER PEDESTALS
- **WATER SERVICES**

PLANT SCHEDULE - TOP OF BANK - TREES						
DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	CONTAINER	SIZE	MATURE SIZE (HT. X SPR.)
BSP	3	Populus balsamifera	Balsam Poplar	B & B	60mm Cal	15.0m x 10.0m
TRA	6	Populus tremuloides	Trembling Aspen	B & B	60mm Cal	12.0m x 5.0m



1 / H23 **TOP OF BANK LANDSCAPE PLAN**
SCALE: 1:750



KEY PLAN

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION
DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN — DATE
DATE

SURVEY
JOB NO.
SCALE 1:750
0m 7.5 15 22.5 30

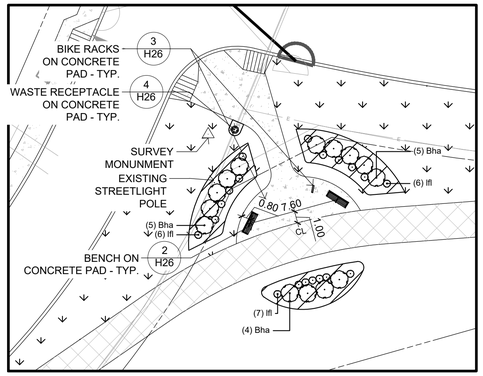
DRAWN DATE C.V. NOVEMBER 10, 2023
DESIGNED DATE C.V./A.K. NOVEMBER 10, 2023
CHECKED DATE A.K./L.W. JANUARY 11, 2024

THE CITY OF Edmonton
INTEGRATED INFRASTRUCTURE SERVICES
BUILDING GREAT NEIGHBOURHOODS BRANCH

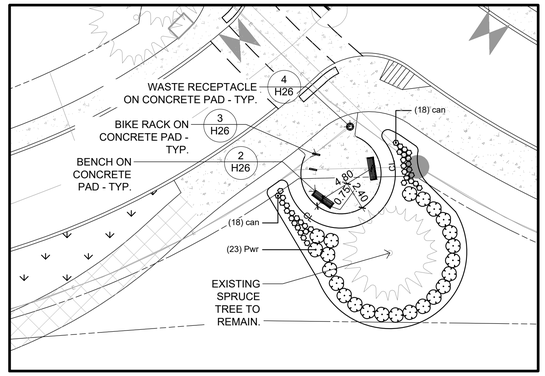
PROJECT **GARIEPY NEIGHBOURHOOD RENEWAL**

TOP OF BANK LANDSCAPE PLAN

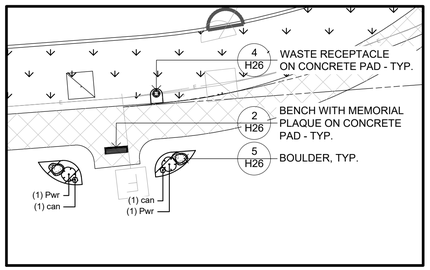
DRAWING **GARI 242 H23**



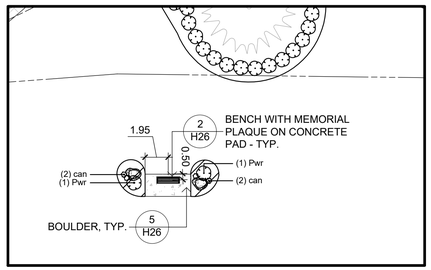
1 H24 **SEATING AREA 1**
SCALE: 1:250



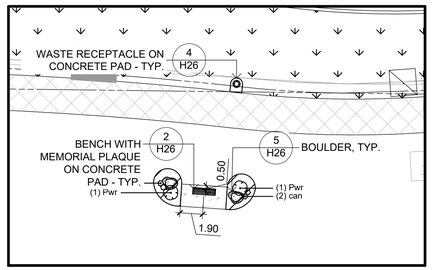
2 H24 **SEATING AREA 2**
SCALE: 1:250



3 H24 **VIEWPOINT 1**
SCALE: 1:250



4 H24 **VIEWPOINT 2**
SCALE: 1:250



5 H24 **VIEWPOINT 3**
SCALE: 1:250

PLANT SCHEDULE - TOP OF BANK - SHRUBS, GRASSES, & PERENNIALS						
DECIDUOUS SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	MATURE SIZE (HT. X SPR.)
Bha	14	Corylus cornuta	Beaked Hazelnut	#5	Potted	1.5m x 1.5m
Pwr	29	Rosa acicularis	Prickly Wild Rose	#5	Potted	1.2m x 1.2m
GRASSES & PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	MATURE SIZE (HT. X SPR.)
can	46	Anenome canadensis	Canada Anemone	#2	Potted	0.45m x 0.45m
lfl	19	Linum lewisii	Lewis Flax	#2	Potted	0.45m x 0.6m

SITE FURNISHINGS

- WASTE RECEPTACLE (QTY: 4)
- BENCH (QTY: 7)
- BIKE RACKS (QTY: 4)
- BOULDER (QTY: 6)
- EXISTING STREET LIGHT

LANDSCAPE LEGEND

- EXISTING TREE TO REMAIN AND BE PROTECTED
- EXISTING TURF TO REMAIN. RE-GRADE AND RE-SOD ALL DISTURBED AREAS AS REQUIRED. ADDITIONAL TOPSOIL TO BE ADDED AS REQUIRED TO A DEPTH OF 300mm. EXISTING TOPSOIL IS TO BE RE-USED SUBJECT TO CITY APPROVAL.

NOTE:

1. SEED TO MEET OR EXCEED CITY OF EDMONTON LANDSCAPING DESIGN & CONSTRUCTION STANDARDS (LATEST EDITION).
2. SCARIFY SUB - GRADE MIN 300mm PRIOR TO PLACEMENT OF TOPSOIL AND SOD / SEEDING.
3. ALL PLANTING BEDS TO INCLUDE 100mm DEPTH DECIDUOUS WOOD CHIP MULCH (OR APPROVED EQUAL) AS PER CEDCS SECTION 02914. ALL PLANT MATERIAL SHALL BE PLANTED SUCH THAT THE EDGE OF THE 100% MATURE SIZE OF THE PLANT MATERIAL IS A MINIMUM OF 0.5m FROM CONCRETE AND/OR SHARED USE PATHWAY.
4. LANDSCAPE CONTRACTOR TO VERIFY AS-BUILT UTILITY LOCATIONS AS NECESSARY.
5. ALL CONIFEROUS TREES TO BE TRIMMED FOR SITE LINES BY CITY OF EDMONTON FORESTRY.

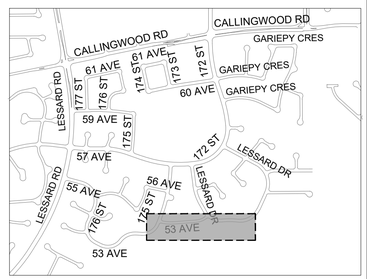
CIVIL LEGEND (REFERENCE ONLY)

LEGAL

- EXISTING PROPERTY LINE

UTILITY

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- POWERLINE
- GAS LINE
- PROPOSED EASEMENT
- CONCRETE, UNLESS OTHERWISE NOTED
- ASPHALT SHARED PATHWAY
- HYDRANT
- VALVE
- MANHOLE
- CATCH BASIN
- STREET IDENTIFICATION SIGN
- LIGHT STANDARDS,
- POWER PEDESTALS
- WATER SERVICES
- POWER SERVICES



KEY PLAN

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION

DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN — DATE

DATE

SURVEY

JOB NO.

SCALE 1:250

0m 2.5 5 7.5 10

DRAWN C.V. DATE NOVEMBER 10, 2023

DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023

CHECKED A.K./L.W. DATE JANUARY 11, 2024

THE CITY OF Edmonton

INTEGRATED INFRASTRUCTURE SERVICES

BUILDING GREAT NEIGHBOURHOODS BRANCH

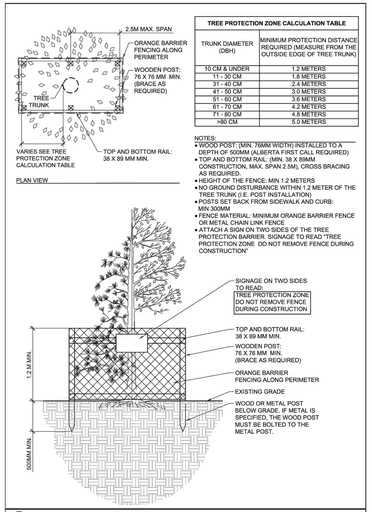
PROJECT

GARIEPY NEIGHBOURHOOD RENEWAL

TOP OF BANK LANDSCAPE ENLARGEMENT PLANS

DRAWING

GARI 242 H24



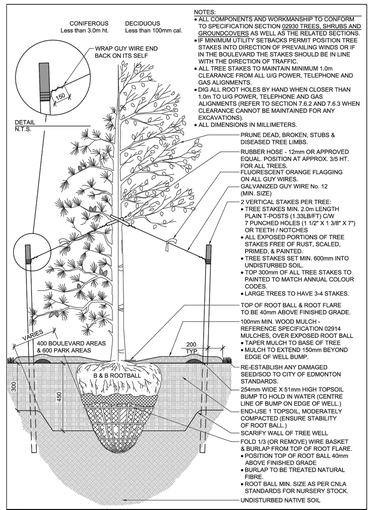
TREE PROTECTION ZONE CALCULATION TABLE	
TRUNK DIAMETER (DBH)	MINIMUM PROTECTION DISTANCE REQUIRED (MEASURE FROM THE OUTSIDE EDGE OF TREE TRUNK)
10 CM & UNDER	1.2 METERS
11 - 30 CM	1.8 METERS
31 - 40 CM	2.4 METERS
41 - 50 CM	3.0 METERS
51 - 60 CM	3.6 METERS
61 - 70 CM	4.2 METERS
71 - 80 CM	4.8 METERS
>80 CM	5.0 METERS

NOTES:
- WOOD POST: (MIN. 76MM WIDTH) INSTALLED TO A DEPTH OF 500MM (ALBERTA FIRST CALL REQUIRED)
- TOP AND BOTTOM RAIL: (MIN. 38 X 89MM CONSTRUCTION, MAX. SPAN 2.5M), CROSS BRACING AS REQUIRED.
- HEIGHT OF THE FENCE: MIN.1.2 METERS
- NO GROUND DISTURBANCE WITHIN 1.2 METER OF THE TREE TRUNK (I.E. POST INSTALLATION).
- POSTS SET BACK FROM SIDEWALK AND CURB: MIN 300MM
- FENCE MATERIAL: MINIMUM ORANGE BARRIER FENCE OR METAL CHAIN LINK FENCE
- ATTACH A SIGN ON TWO SIDES OF THE TREE PROTECTION BARRIER. SIGNAGE TO READ "TREE PROTECTION ZONE. DO NOT REMOVE FENCE DURING CONSTRUCTION"

THE CITY OF Edmonton — TREE PROTECTION ZONE

Date Approved	Drawn By	Approved	Revision	Drawing No.
JUNE 2017	PARKS PLANNING			LA101
Scale	Designed By			Old Drawing No.
N.T.S.	PARKS PLANNING			SP403a

1 H25 TYPICAL TREE PROTECTION
SCALE: N.T.S.

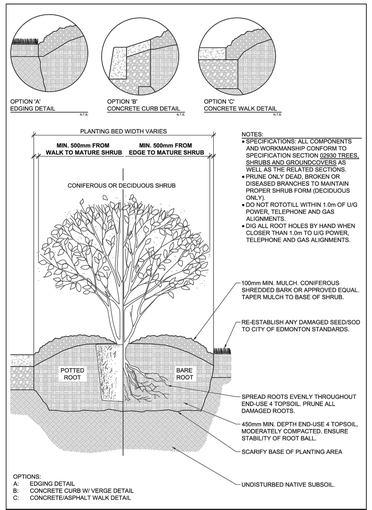


NOTES:
- ALL COMPONENTS AND WORKMANSHIP TO CONFORM TO SPECIFICATION SECTION 02930 TREES, SHRUBS AND GROUNDCOVERS AS WELL AS THE RELATED SECTIONS.
- IF MINIMUM UTILITY SETBACKS PERMIT POSITION TREE STAKES INTO DIRECTION OF PREVAILING WINDS OR IF IN THE BOULEVARD THE STAKES SHOULD BE IN LINE WITH THE DIRECTION OF TRAFFIC.
- ALL TREE STAKES TO MAINTAIN MINIMUM 1.0m CLEARANCE FROM ALL U/G POWER, TELEPHONE AND GAS ALIGNMENTS.
- DIG ALL ROOT HOLES BY HAND WHEN CLOSER THAN 1.0m TO U/G POWER, TELEPHONE AND GAS ALIGNMENTS (REFER TO SECTION 7.6.2 AND 7.6.3 WHEN CLEARANCE CANNOT BE MAINTAINED FOR ANY EXCAVATIONS).
- ALL DIMENSIONS IN MILLIMETERS.

THE CITY OF Edmonton — TYPICAL TREE INSTALLATION

Date Approved	Drawn By	Approved	Revision	Drawing No.
FEB 2021	DEDR			LA102
Scale	Designed By			Old Drawing No.
N.T.S.	OPEN SPACE DESIGN			SP400a

2 H25 TYPICAL TREE PLANTING
SCALE: N.T.S.

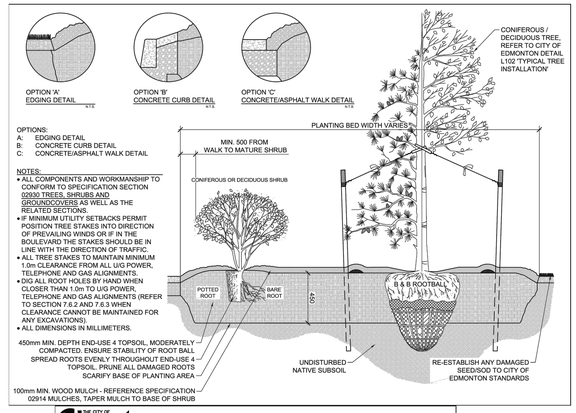


NOTES:
- SPECIFICATIONS: ALL COMPONENTS AND WORKMANSHIP CONFORM TO SPECIFICATION SECTION 02930 TREES, SHRUBS AND GROUNDCOVERS AS WELL AS THE RELATED SECTIONS.
- PRUNE ONLY DEAD, BROKEN OR DISEASED BRANCHES TO MAINTAIN PROPER SHRUB FORM (DECIDUOUS ONLY).
- DO NOT ROTOTILL WITHIN 1.0m OF U/G POWER, TELEPHONE AND GAS ALIGNMENTS.
- DIG ALL ROOT HOLES BY HAND WHEN CLOSER THAN 1.0m TO U/G POWER, TELEPHONE AND GAS ALIGNMENTS.

THE CITY OF Edmonton — TYPICAL SHRUB PLANTING

Date Approved	Drawn By	Approved	Revision	Drawing No.
FEB 2021	DEDR			LA108
Scale	Designed By			Old Drawing No.
N.T.S.	OPEN SPACE DESIGN			LA108

3 H25 TYPICAL SHRUB PLANTING
SCALE: N.T.S.

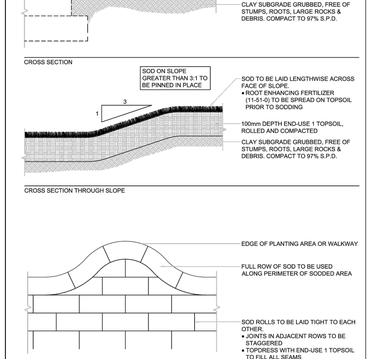


NOTES:
- ALL COMPONENTS AND WORKMANSHIP TO CONFORM TO SPECIFICATION SECTION 02930 TREES, SHRUBS AND GROUNDCOVERS AS WELL AS THE RELATED SECTIONS.
- IF MINIMUM UTILITY SETBACKS PERMIT POSITION TREE STAKES INTO DIRECTION OF PREVAILING WINDS OR IF IN THE BOULEVARD THE STAKES SHOULD BE IN LINE WITH THE DIRECTION OF TRAFFIC.
- ALL TREE STAKES TO MAINTAIN MINIMUM 1.0m CLEARANCE FROM ALL U/G POWER, TELEPHONE AND GAS ALIGNMENTS (REFER TO SECTION 7.6.2 AND 7.6.3 WHEN CLEARANCE CANNOT BE MAINTAINED FOR ANY EXCAVATIONS).
- DIG ALL ROOT HOLES BY HAND WHEN CLOSER THAN 1.0m TO U/G POWER, TELEPHONE AND GAS ALIGNMENTS (REFER TO SECTION 7.6.2 AND 7.6.3 WHEN CLEARANCE CANNOT BE MAINTAINED FOR ANY EXCAVATIONS).
- ALL DIMENSIONS IN MILLIMETERS.

THE CITY OF Edmonton — TYPICAL TREE AND SHRUB PLANTING BED

Date Approved	Drawn By	Approved	Revision	Drawing No.
FEB 2021	DEDR			LA108A
Scale	Designed By			Old Drawing No.
N.T.S.	OPEN SPACE DESIGN			LA108

4 H25 TYPICAL TREE AND SHRUB PLANTING BED
SCALE: N.T.S.

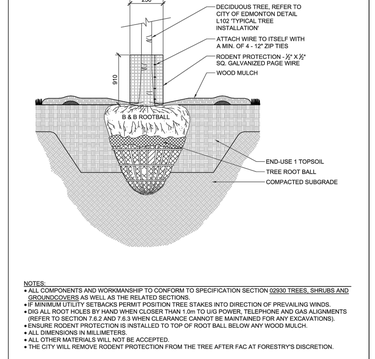


NOTES:
- SPECIFICATIONS: ALL COMPONENTS AND WORKMANSHIP CONFORM TO SPECIFICATION SECTION 02920 SEED AND SOD AS WELL AS THE RELATED SECTIONS.

THE CITY OF Edmonton — SOD INSTALLATION

Date Approved	Drawn By	Approved	Revision	Drawing No.
FEB 2021	DEDR			LA300
Scale	Designed By			Old Drawing No.
N.T.S.	OPEN SPACE DESIGN			SP402

5 H25 TYPICAL SOD DETAIL
SCALE: N.T.S.



NOTES:
- ALL COMPONENTS AND WORKMANSHIP TO CONFORM TO SPECIFICATION SECTION 02930 TREES, SHRUBS AND GROUNDCOVERS AS WELL AS THE RELATED SECTIONS.
- IF MINIMUM UTILITY SETBACKS PERMIT POSITION TREE STAKES INTO DIRECTION OF PREVAILING WINDS.
- DIG ALL ROOT HOLES BY HAND WHEN CLOSER THAN 1.0m TO U/G POWER, TELEPHONE AND GAS ALIGNMENTS (REFER TO SECTION 7.6.2 AND 7.6.3 WHEN CLEARANCE CANNOT BE MAINTAINED FOR ANY EXCAVATIONS).
- ENSURE RODENT PROTECTION IS INSTALLED TO TOP OF ROOT BALL BELOW ANY WOOD MULCH.
- ALL DIMENSIONS IN MILLIMETERS.
- ALL OTHER MATERIALS WILL NOT BE ACCEPTED.
- THE CITY WILL REMOVE RODENT PROTECTION FROM THE TREE AFTER FAC AT FORESTRY'S DISCRETION.

THE CITY OF Edmonton — TYPICAL TREE RODENT PROTECTION

Date Approved	Drawn By	Approved	Revision	Drawing No.
FEB 2021	DEDR			LA112
Scale	Designed By			Old Drawing No.
N.T.S.	OPEN SPACE DESIGN			N/A

6 H25 TYPICAL TREE RODENT PROTECTION
SCALE: N.T.S.

NO.	REVISIONS	BY	DATE	APP'D
7				
6				
5				
4				
3				
2				
1				

CONTRACT NO. 2400

NO.	ISSUE	BY	DATE
3	TO G.B.I.S.		
2	AS BUILT		
1	TENDER AWARD DATE		

SEAL

APPROVED FOR CONSTRUCTION

DATE

DEPARTMENT / BRANCH	APPROVAL	DATE

SUPERVISOR NEIGHBOURHOODS PLANNING AND DESIGN — DATE

DATE

THE CITY OF Edmonton — INTEGRATED INFRASTRUCTURE SERVICES
BUILDING GREAT NEIGHBOURHOODS BRANCH

SURVEY

JOB NO.

SCALE

DRAWN C.V. DATE NOVEMBER 10, 2023

DESIGNED C.V./A.K. DATE NOVEMBER 10, 2023

CHECKED A.K./L.W. DATE JANUARY 11, 2024

PROJECT
GARIEPY NEIGHBOURHOOD RENEWAL
TOP OF BANK PLANTING DETAILS

DRAWING
GARI 242 H25

APPENDIX

D VEGETATION SPECIES LIST

Table D1 Vegetation Species List

Gariepy Ravine - 15/16-052-25 W4M

Scientific Name	Common Name	Rank	GRP-S01	GRP-S02	GRP-S03	Tracking
Acer negundo	Manitoba maple	SU		x	x	Do not track
Picea glauca	white spruce	S5	x	x	x	Do not track
Pinus banksiana	jack pine	S5		x		Do not track
Populus balsamifera	balsam poplar	S5	x	x	x	Do not track
Populus tremuloides	aspen	S5	x	x	x	Do not track
Quercus macrocarpa	burr oak	SNA		x		Do not track
Amelanchier alnifolia	saskatoon	S5		x	x	Do not track
Caragana arborescens	common caragana	SNA			x	Do not track
Cornus stolonifera	red-osier dogwood	S5	x	x	x	Do not track
Corylus cornuta	beaked hazelnut	S5	x	x		Do not track
Elaeagnus commutata	silverberry	S5			x	Do not track
Lonicera involucrata	bracted honeysuckle	S5	x			Do not track
Prunus virginiana	choke cherry	S5		x	x	Do not track
Ribes oxyacanthoides	northern gooseberry	S5			x	Do not track
Rosa acicularis	prickly rose	S5	x	x	x	Do not track
Rubus idaeus	wild red raspberry	S5		x		Do not track
Salix discolor	pussy willow	S5			x	Do not track
Salix sp.	willow	S5			x	Do not track
Shepherdia canadensis	Canada buffaloberry	S5		x	x	Do not track
Sorbus scopulina	western mountain-ash	S5	x	x	x	Do not track
Symphoricarpos albus	snowberry	S5		x		Do not track
Symphoricarpos occidentalis	buckbrush	S5		x	x	Do not track
Viburnum edule	low-bush cranberry	S5			x	Do not track
Bromus inermis	smooth brome	SNA	x	x	x	Do not track
Elymus repens	quackgrass	SNA		x		Do not track
Elymus trachycaulus	slender wheatgrass	S5	x		x	Do not track
Festuca rubra	red fescue	S5			x	Do not track
Poa pratensis	Kentucky bluegrass	S5	x	x	x	Do not track
Achillea millefolium	common yarrow	S5		x		Do not track
Anemone canadensis	Canada anemone	S5		x		Do not track
Aralia nudicaulis	wild sarsaparilla	S5			x	Do not track
Cirsium arvense	**Canada thistle**	**SNA**	x	x		**Do not track**
Equisetum arvense	common horsetail	S5	x	x		Do not track
Eurybia conspicua	showy aster	S5			x	Do not track
Galium boreale	northern bedstraw	S5	x	x	x	Do not track
Galium verum	yellow bedstraw	SNA		x		Do not track
Heracleum maximum	cow parsnip	S5		x		Do not track
Lappula squarrosa	bluebur	SNA	x			Do not track
Lathyrus ochroleucus	cream-colored vetchling	S5			x	Do not track
Maianthemum canadense	wild lily-of-the-valley	S5			x	Do not track
Maianthemum stellatum	star-flowered Solomon's-seal	S5			x	Do not track
Medicago sativa	alfalfa	SNA			x	Do not track
Plantago major	common plantain	SNA	x	x		Do not track
Symphyotrichum laeve	smooth aster	S5			x	Do not track
Taraxacum officinale	common dandelion	SNA	x	x	x	Do not track
Trifolium hybridum	alsike clover	SNA	x	x		Do not track
Trifolium repens	white clover	SNA		x		Do not track
Tripleurospermum inodorum	**scentless chamomile**	**SNA**	**x**			**Do not track**
Viola canadensis	western Canada violet	S5		x		Do not track

Note:

Bolded species are listed as *noxious* under the Alberta *Weed Control Act*

APPENDIX

E WILDLIFE SURVEY MEMO

MEMO

SUBJECT: **City of Edmonton Gariepy Ravine Autonomous Recording Units/Remote Camera Summary**

DATE: **July 11, 2023**

1. INTRODUCTION

The City of Edmonton (CoE) retained WSP Canada Inc. (WSP) to complete a targeted review of the activities proposed within North Saskatchewan River Valley Area Redevelopment Plan (Bylaw 7188) area associated with the Gariepy Neighbourhood Renewal (the Project).

As part of the environmental evaluation process, a remote wildlife camera and autonomous recording unit (ARU) field program was completed to:

- Better understand the abundance (number of individuals detected), richness (number of species), and distribution of wildlife species in and around two pedestrian crossing structures (Timber Walkways) that will be proposed within the Gariepy Ravine.
- Document breeding songbirds and amphibian species presence in the Study Area through ARU recordings

The data collected will be used to inform the design of the crossing structures proposed and assist in the evaluation of any identified Project impacts pursuant the issued Terms of Reference issued as per the *North Saskatchewan River Valley Area Redevelopment Plan* (Bylaw 7188) (City of Edmonton [COE], 1985).

STUDY AREA

The Study Area consisted of the Gariepy Ravine from 172 St NW to the Edmonton County Club property boundary, which is dominated by aspen trees and grass, with a few shrubs (Attachment A).

2. METHODS

Field surveys conducted included remote cameras to capture wildlife movements and ARU recordings to capture breeding birds and amphibian presence within the Study Area.

REMOTE CAMERAS

Four remote trail cameras (Reconyx Rapidfire©) were deployed by a WSP biologist in the Study Area on May 29, 2023 (Attachment A) and subsequently retrieved on June 26, 2023.

The cameras selected contain infrared illuminators able to capture both day and night imagery. All cameras were programmed to capture first picture with a delay set at two seconds. Trigger sensitivity was set to high, with two pictures taken one second apart for each time a camera is activated.

All cameras were placed facing north on large diameter trees about 1 metre (m) from the ground to capture the greatest range of terrestrial faunal moving through the area from east to west along the ravine. All cameras were oriented toward observable game trails, or probable movement corridors such that an animal walking by could be photographed for as long as possible.

Species detections was organized by the number of individual observations for a given species or group at a target camera. As part of the photo rate calculation, the total number of active camera days was calculated by subtracting any days the camera was inactive (e.g., broken, unable to be checked) for each camera. A photo rate was then calculated (number of detections of a given species divided by the camera station sampling effort in days) for each species recorded and was used as a metric for species relative abundance.

Once data was appropriately organized, movement direction, animal presence/frequency was noted. Once the most abundant species was confirmed a target EDG was identified for crossing design consideration. See detailed methods regarding wildlife passage calculations below.

AUTONOMOUS RECORDING UNITS

Three Wildlife Acoustic© SM4 ARU units programmed to record breeding songbirds and amphibians using an acoustic microphone, were deployed in locations where all target species groups could be detected on May 29, 2023, and retrieved June 26, 2023 (Attachment A).

ARU programming and deployment were guided by methods outlined by the provincial *Sensitive Species Inventory Guidelines* (ESRD, 2013). To maximize species detection and cost savings, recordings were set to occur at regular intervals throughout the daily timing interval (daily 10-minute recordings occurred at 1 hour prior to sunrise, 30 minutes after sunrise, 10:00am, 04:00pm, 30 minutes prior to sunset and 30 minutes after sunset). This allowed for data collection during the entire deployment period and gave transcribers sufficient data to review if external factors (i.e., weather) impacted recording quality on certain days.

To aid in determining which recordings to review to capture avian and amphibian presence, historic weather data that occurred during the recording period was reviewed using Government of Canada (2022a) and the Edmonton International Airport, Alberta weather station data. Recordings that fit the required weather conditions, no precipitation and minimal wind and survey criteria (i.e., within recommended survey date ranges) were selected for analysis. If the selected recordings, once opened, contained ambient noise levels that impacted recording quality and/interfere with detections, a different recording on another day within the same timeframe was selected. The level of ambient noise and current weather conditions were also recorded for each sample.

To avoid the likelihood of double counting the same individual during each survey replicate, the maximum count of individuals of each species detected at each survey plot was used to calculate species abundance. The mean and standard deviation were calculated using the maximum individuals for each species among all three ARU plots.

Breeding Birds

Analyses for breeding birds were completed for each ARU, two, 10-minute audio recordings (point count equivalents) were selected for transcription. An effort was made to only analyse days where all ARU plots had suitable weather conditions for optimal recording quality at that survey date and time. Recordings were not sampled during periods of high winds, or when inclement weather reduced the likelihood of identifying species.

Transcribers used Song Scope software to view and listen to recordings. The objective was to identify all species and individuals present. To maintain the highest possible accuracy in transcription, a transcriber was permitted to listen to each recording an unlimited number of times, or re-listen to listening intervals where an unidentified bird was heard singing during the first pass.

The time of first detection of all individuals was recorded. If multiple individuals of the same species were detected during a recording, a letter was assigned to each individual (alphabetically in order of detection), to differentiate between individuals. Type of species vocalization was recorded as either song, which is the primary territorial vocalization of male passerines, or equivalent territorial sound display in non-passerines, or call, which is any call unrelated to territorial display that can be given by a bird of either sex. Only primary calls (vocalizations of passerines that sing) were recorded, because they may represent the only detection of that species and could be useful in analyses of species presence and species richness. Secondary calls, which are other vocalization of passerines that sing, such as contact ("chip") calls, alarm calls, and flight calls were not recorded.

The identification of each individual bird was assigned a confidence level:

- Low = transcriber is essentially guessing (e.g., a very faint recording is heard that most closely resembles this species).
- Medium = transcriber believed the species was correctly identified but could not eliminate similar species with certainty (e.g., strongly believe it is a Philadelphia vireo [Vireo philadelphicus] but could possibly be mistaking a red-eyed vireo [Vireo olivaceus]).
- High = transcriber was certain in their identification (e.g., ovenbird [Seiurus aurocapillus]; dark-eyed junco [Junco hyemalis] heard clearly by interpreter, and they are sure that it is not a chipping sparrow [Spizella passerina]).

Amphibians

Amphibian species were assigned a calling index value based on the estimated number of calls as the actual number of calling males is difficult to estimate. Calling index values were defined as:

- Calling Index 0 – No individuals of a given species calling
- Calling Index 1 – Individual calls are non-overlapping (i.e., 1 to 5 individuals)
- Calling Index 2 – Individual calls can be distinguished but there is some call overlap (i.e., 6 to 10 individuals)
- Calling Index 3 – Full chorus, individual calls are indistinguishable (i.e., 10 or more individuals)

Amphibian chorus size (call ranks) were estimated and recorded for each of the observed species. Presence or absence and relative abundance (rank of the chorus and estimated number of individuals in the chorus) of amphibians detected in each listening interval were also documented. All transcribed recordings were selected based on suitable environmental conditions (i.e., air temperature was greater than 6°C, days with calm winds, and no rain; ESRD, 2013) across all ARUs.

INCIDENTAL WILDLIFE OBSERVATIONS

During the deployment of both remote cameras and ARUs, incidental wildlife observations were recorded. These included avian species observed or heard singing within the Study Area as well as tracks, scat and other signs of wildlife.

WILDLIFE PASSAGE

In order to aid in the design of the proposed timber walkways, passage openness was calculated in accordance with the City of Edmonton's Wildlife Passage Engineering Design Guidelines (CoE, 2010).

3. RESULTS

The camera and ARU field program was executed between May 29 and June 26, 2023. The installed equipment was active for a total of 28 days. The following subsections summarize the data collected. Site photographs taken during installation and equipment removal can be found in Attachment B.

REMOTE CAMERA SURVEYS

Four cameras (RC01, RC02, RC03 and RC04) were deployed to capture wildlife movement and presence from May 29 to June 26, 2023. Cameras were located at various points along the ravine.

Over the duration of the data collection period, four wild species were detected as well as humans (Table 2-1). Of the detected species, none are listed provincially (AEP 2022) or federally (Government of Canada 2022b). Coyotes (*Canis latrans*) were the most commonly observed species.

Table 3-1. Mean Photo Rates for Wildlife Species Detected in the Gariepy Ravine Study Area, 2023

Common Name	Scientific Name	Photo Rate				
		RC01	RC02	RC03	RC04	Mean
Black-billed magpie	*Pica hudsonia*	0	0	0	0.1	0.03
Corvid species	*Corvus spp.*	0	0.03	0	0	0.01
Coyote	*Canis latrans*	0.28	0.03	0	0.14	0.11
Human	-	0	0.14	0.24	0.14	0.13
Red squirrel	*Tamiasciurus hudsonicus*	0	0	0	0.03	0.01

Notes: Photo Rate = number of detections of a given species divided by the camera station sampling effort in days
RC = remote camera

AUTONOMOUS RECORDING UNITS (ARU)

Three ARUs (ARU01, ARU02 and ARU03) were placed to capture songbird and amphibian presence within the ravine. All three units were places along Gariepy ravine to capture seasonal use by migratory songbirds and identify the presence of breeding amphibians.

Breeding Birds

Eleven species of birds (Table 2-2) were detected by the units deployed. Of these detected species, none are listed provincially (AEPA, 2022) or federally (Government of Canada 2022b). ARU02 had higher detection rates (17) compared to ARU01 (11) and ARU03 (6). It is assumed the location of

ARU (e.g., more central to a habitat patch, away from actively used trails and related edge effects) was the primary contributor to the noted number.

Table 3-2. Songbird Species Abundance Across Plots, 2023

Common Name	Scientific Name	Number of Individuals Detected			
		Plot Name			Total
		ARU01	ARU02	ARU03	
American crow	*Corvus brachyrhynchos*	1	5	2	**8**
American robin	*Turdus migratorius*	1	1	1	**3**
black-billed magpie	*Pica hudsonia*	2	5	1	**8**
black-capped chickadee	*Poecile atricapillus*	1	-	-	**1**
blue jay	*Cyanocitta cristata*	1	1	1	**3**
cedar waxwing	*Bombycilla cedrorum*	2	-	-	**2**
chipping sparrow	*Spizella passerina*	1	2	1	**4**
house sparrow	*Passer domesticus*	-	1	-	**1**
red-breasted nuthatch	*Sitta canadensis*	1	1	-	**2**
song sparrow	*Melospiza melodia*	1	-	-	**1**
white-throated sparrow	*Zonotrichia albicollis*	-	1	-	**1**
Grand Total		**11**	**17**	**6**	**34**

Note: - = not detected.

Amphibians

During the deployment period, no amphibian species were detected.

INCIDENTAL WILDLIFE OBSERVATIONS AND FEATURES

Four species including one mammal, and three birds were observed incidentally during deployment/retrieval (Table 2-3). No defined wildlife trails were observed within the ravine however there were several braided trails that indicate human use throughout that wildlife may also be utilizing.

In addition, anecdotal observations by local residence noted occasional deer (*Odocoileus sp.*) moving through the area. It is understood that animals were observed traversing backyards along the top of bank area(s) in the vicinity of the current informal trails and future timber walkway locations.

None of the additional species noted are listed provincially (AEP 2022) or federally (Government of Canada 2022b).

Table 3-3. Incidental Wildlife Species Observations and Features in the Gariepy Ravine Study Area, 2023

COMMON NAME	SCIENTIFIC NAME	OBSERVATION/FEATURE
American crow	*Corvus brachyrhynchos*	visual/audio
blue jay	*Cyanocitta cristata*	visual
red squirrel	*Tamiasciurus hudsonicus*	visual/audio/middens
woodpecker spp.	*Picidae spp.*	feeding cavities

4. PASSAGE RECOMMENDATIONS

Based on the results of the data collected, coyote was the largest mammal observed traversing the Gariepy Ravine. According to the City of Edmonton's Wildlife Passage Engineering Design Guidelines (CoE, 2010), crossing structures such as elevated walkways may become a barrier to wildlife movement. Therefore, some form of passage should be considered depending on the noted wildlife use in the area. Based on to the observations made, it is recommended that the timber walkway crossing include passage (e.g., maintain a minimum 'openness' to allow unfettered movement) for the medium ecological design group (EDG) detailed in the Guide.

Optimal dimensions for medium terrestrial EDG have been detailed in Table 4-1. Although deer have been sighted by local residence, it is assumed they will continue to move along the top of bank/backyards. It is understood the proposed walkway infrastructure limited to avoid the observed area(s) of movement.

Table 4-1. Wildlife Passage Openness Calculations for Timber Walkways

Ecological Design Group	Optimal Openness $Openness = \frac{Height\ x\ Width}{Length}$	Proposed Width (m)	Minimum Length (m) of Open Span for Optimal Openness	Minimum Height (m) for Optimal Openness
West Bridge				
Medium Terrestrial	0.4	3	15	2
East Bridge				
Medium Terrestrial	0.4	5	18.5	1.5

Prepared by:
WSP Canada Inc.
16820 – 107 Avenue
Edmonton, Alberta
T5P 4C3

Rachael Firminger, M.Sc., P.Biol., R.P.Bio.
Senior Wildlife Biologist

Marc Obert, P.Biol
Senior Environmental Planer

Attachments:

Attachment A	City of Edmonton Gariepy Ravine ARU and RC Locations 2023
Attachment B	Site Photos 2023

REFERENCES

ABMI (Alberta Biodiversity Monitoring Institute). (2015). Autonomous Recording Unit (ARU) Deployment Protocol Version: May 2017. BioAcoustic Unit University of Alberta. http://bioacoustic.abmi.ca/resources/protocols/

AEPA (Alberta Environment and Protected Areas). (2021). Master Schedule of Standards and Conditions. Available at https://open.alberta.ca/dataset/133e9297-430a-4f29-b5d9-4fea3e0a30c2/resource/37d91717-08ab-4998-a13f-ce5c103c0735/download/aep-master-schedule-of-standards-and-conditions-2021-04.pdf. Accessed July 5, 2023.

AEPA. (2022). *The General Status of Alberta Wild Species.* Updated 2020. Available at: https://www.alberta.ca/lookup/wild-species-status-search.aspx. Accessed: July 5, 2023.

City of Edmonton (1985). *North Saskatchewan River Valley Area Redevelopment Plan*. Bylaw No. 7188. Office of Consolidation, September 2017.

City of Edmonton (2010). *Wildlife Passage Engineering Design Guidelines, June 2010.*

ECCC (Environment and Climate Change Canada). 2018. General nesting periods of migratory birds. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html. Modified May 30, 2023. Accessed July 5, 2023.

ECCC. 2019. Guidelines to reduce risk to migratory birds. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html#toc5. Modified May 30, 2023. Accessed July 5, 2023.

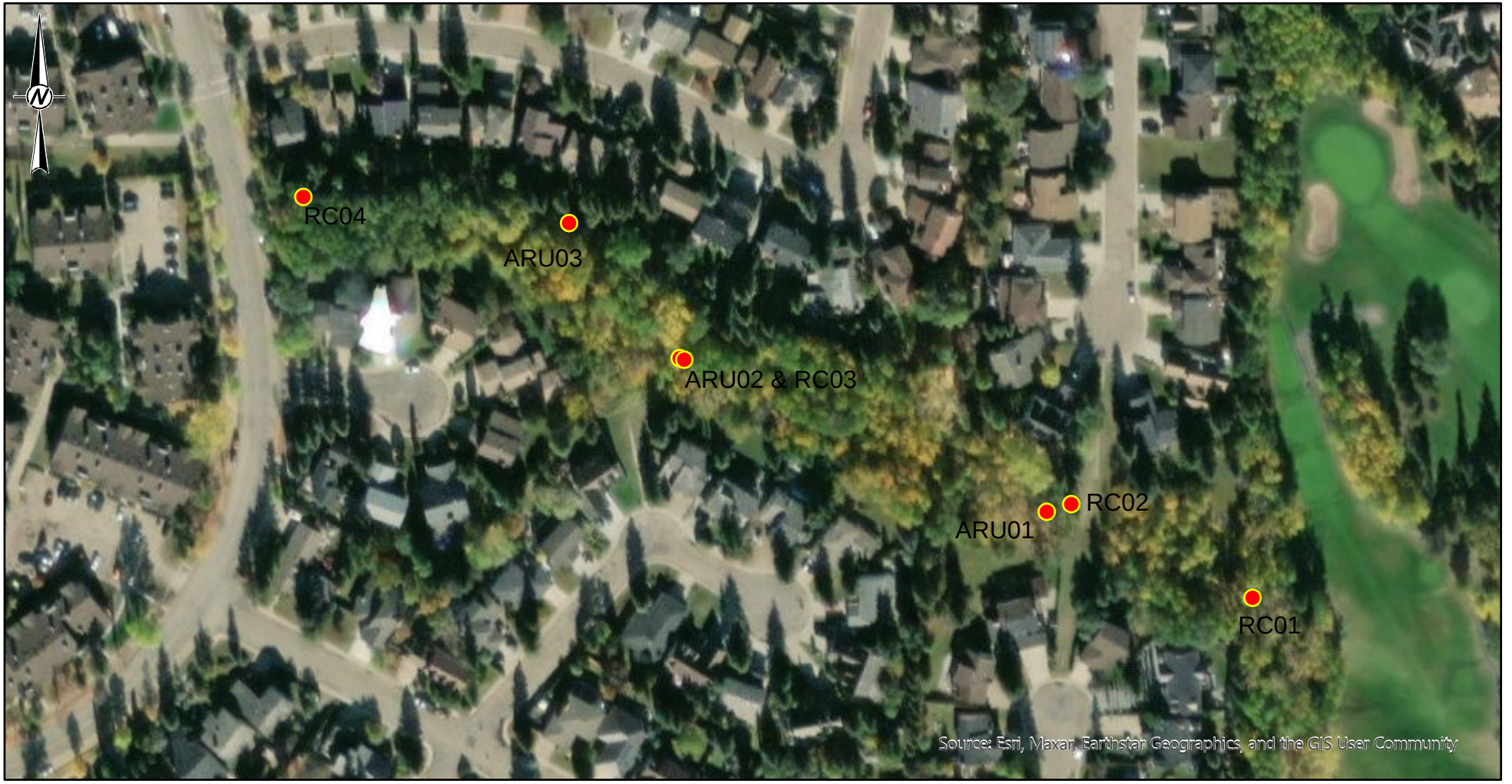
ESRD (Environment and Sustainable Resource Development). (2013). Sensitive Species Inventory Guidelines. Edmonton, Alberta. https://open.alberta.ca/publications/sensitive-species-inventory-guidelines

Government of Alberta. 2020. Wildlife Regulation. Wildlife Act. Alberta Regulation 143/1997. With amendments up to and including Alberta Regulation 98/2023. King's Printer, Edmonton, AB. Available at: https://www.qp.alberta.ca/documents/Regs/1997_143.pdf. Accessed July 5, 2023. 328 pp.

Government of Canada. (2022a). *Government of Canada Past Weather and Climate: Historical Data. [accessed July 5, 2023].* Historical Data - Climate - Environment and Climate Change Canada (weather.gc.ca)

Government of Canada. (2022b). *Species at Risk Public Registry*. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html. Accessed: July 5, 2023.

Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22) Act current to 2023-06-12 and last amended on 2017-12-12.



LEGEND

- GAL_PNO_Wildlife_ARU Survey Data Locations
- GAL_PNO_Wildlife_RemoteCamera Survey Data Locations

DRAFT

WEBMAP VERSION

0 60 120

1:3,200 m

NOTE(S)

1.
2.
3.

REFERENCE(S)

ANY REFERENCES
PROJECTION: WGS 1984 WEB MERCATOR AUXILIARY SPHERE
EXTENT MIN: 12648266.99W 7074713.43N M; MAX:12647441.98W 7075141.6N M

CLIENT

CONSULTANT

wsp

YYYY-MM-DD	2023-07-03
DESIGNED	
PREPARED	
REVIEWED	
APPROVED	

PROJECT

CITY OF EDMONTON GARIEPY RAVINE

TITLE

CITY OF EDMONTON GARIEPY RAVINE 2023

PROJECT NO.	CONTROL	REV.	FIGURE

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM: ANSI A

0 25mm

Photo 1. Looking south at RC01 (12U 326514 5930352).

Photo 2. Looking north from RC01 (12U 326514 5930352).

Photo 3. Looking north from ARU01 (12U 326464 5930386).

Photo 4. Looking west from RC02 (12U 326462 5930395).

Photo 5. Looking east from ARU02 (12U 326332 5930438).

Photo 6. Looking south at ARU02 (12U 326332 5930438).

Photo 7. Looking west from RC03 (12U 326335 5930441).

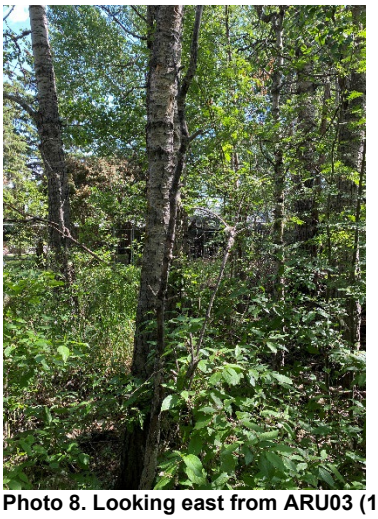


Photo 8. Looking east from ARU03 (12U 326303 5930479).

Photo 9. Looking east from RC04 (12U 326213 5930493).

Photo 10. Looking north from RC04 (12U 326213 5930493).

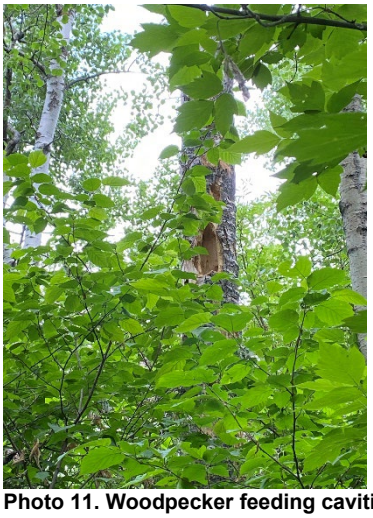


Photo 11. Woodpecker feeding cavities (12U 326493 5930371).

Photo 12. Red squirrel midden (12U 326242 5930482).

APPENDIX

F SITE PHOTOGRAPHS

July 5, 2023

Photograph 1 – Patch of trees at centre of GRP-S03.

Located at intersection of 53 Ave NW and Lessard Drive, looking north.

July 5, 2023

Photograph 2 – Bench area along 53 Ave NW at GRP-S03.

South of Project Footprint, looking south towards North Saskatchewan River.

O July 5, 2023

Photograph 3 – Rare Plant Survey GRP-S01

Looking north.

July 5, 2023

Photograph 4 – Rare Plant Survey GRP-S02

Looking north.

July 5, 2023

Photograph 5 – Rare Plant Survey GRP-S03.

Looking east.

July 5, 2023

Photograph 6 – Rare Plant Survey GRP-S03.

Looking west.

July 5, 2023

Photograph 7 – Potential swallow habitat along river valley.

Looking east.

July 5, 2023

Photograph 8 – Scentless Chamomile

Population of scentless chamomile in the Project Footprint.

July 5, 2023

Photograph 9 – Canada Thistle.

Population of Canada thistle in the Project Footprint.