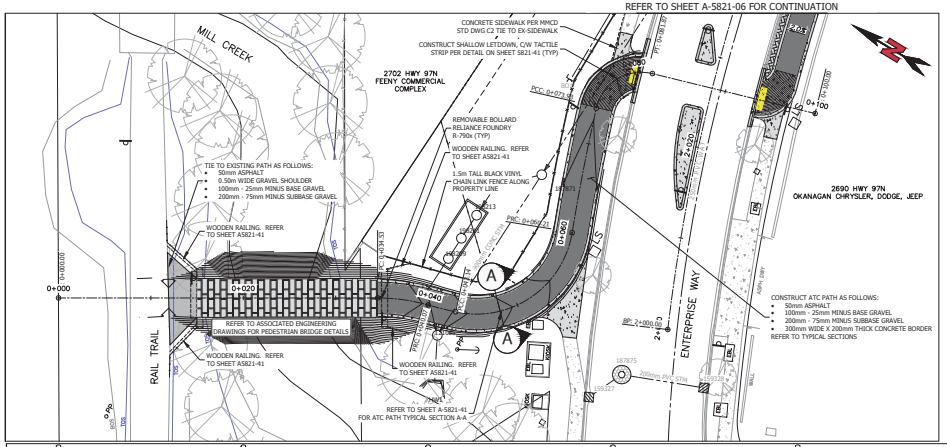
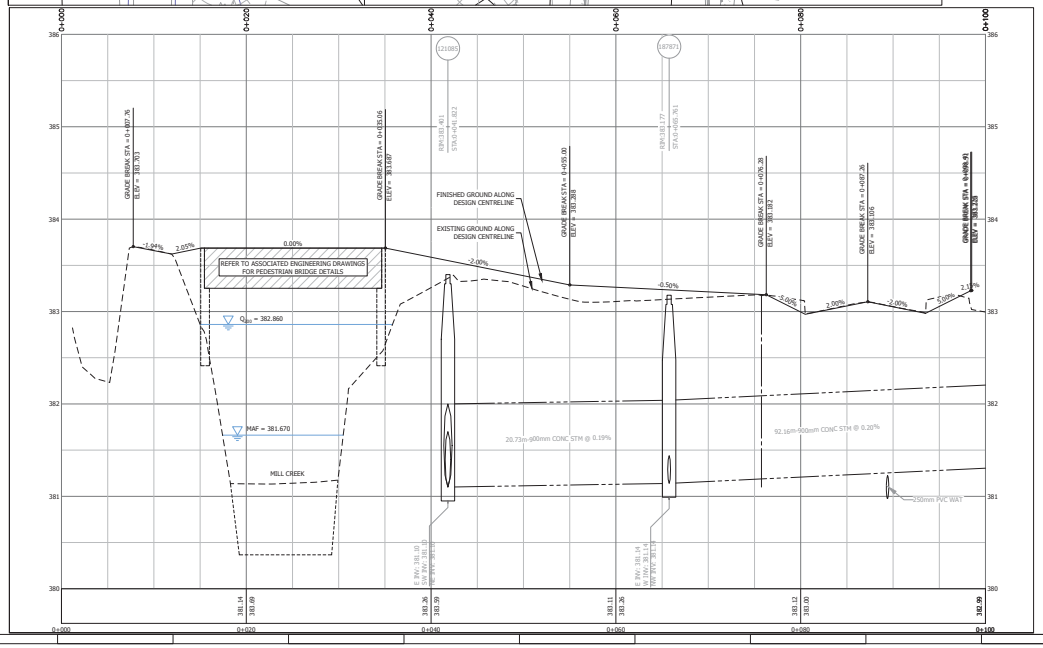
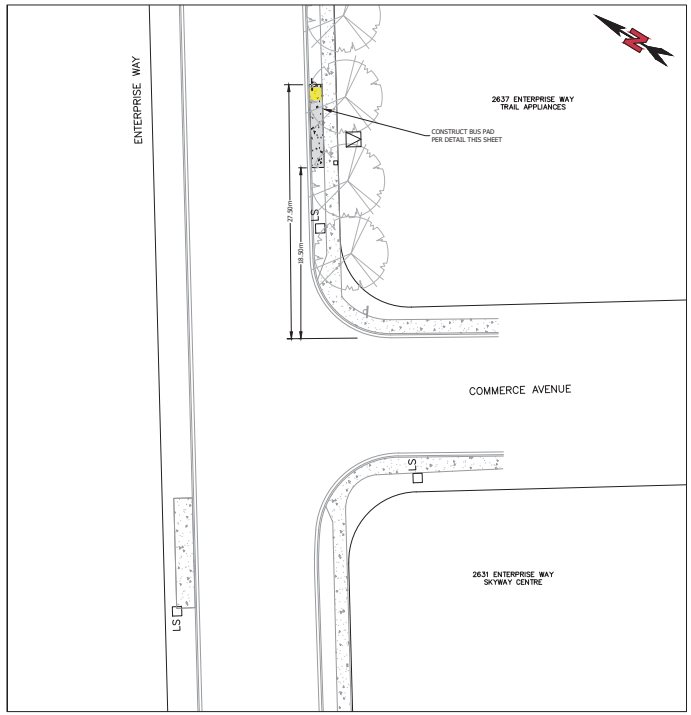
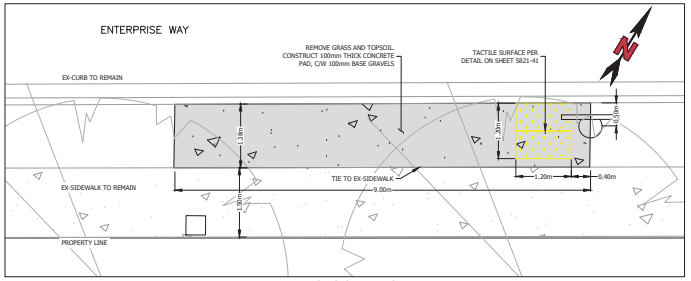






TRANSIT STOP RELOCATION TO COMMERCE AVENUE



TRANSIT STOP DETAILS

CONSULTANT

ALIGN ENGINEERING
www.alignengr.ca

PROJECT NO. A21-009

STAMPS

NO.	DATE	ISSUE/REVISION	BY	APPROVED	CHECKED
1	10/27/20	50% DETAILED DESIGN	SCR	BDB	BDB
2	01/22/21	ISSUED FOR APPROVAL	SCR	BDB	BDB
3	02/22/21	RE-ISSUED FOR APPROVAL	DGN	BDB	SCR
4	04/26/21	90% DETAILED DESIGN REVIEW	DGN	BDB	SCR
5	05/31/21	ISSUED FOR RFP	DGN	BDB	SCR
6	02/15/22	ISSUED FOR CONSTRUCTION	EEG	BDB	DGN

SEAL

SURVEY COFK
BASE DF
DESIGN SCR
ENG. OF RECORD BDB
SCALE
H 1:250 0 2.5 5 10
V 1:25 0 0.25 0.5 1

CITY OF KELOWNA

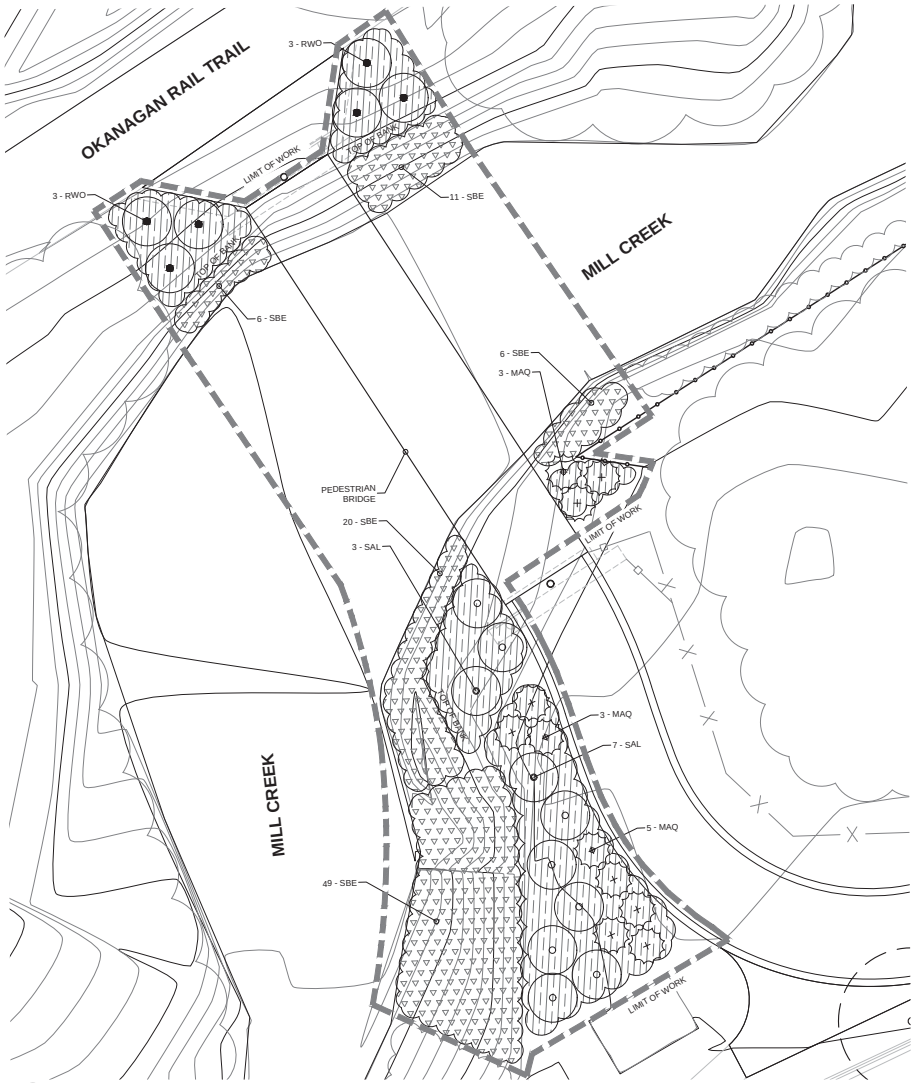
HOUGHTON ATC - PHASE 2
HOUGHTON RD TO RAIL TRAIL

ROAD AND WATER

MILL CREEK, RAIL TRAIL AND COMMERCE AVENUE TRANSIT STOP RELOCATION

CITY DEPT. INFRASTRUCTURE
CITY FILE NO. 336101A
PROJECT DWG NO. A-5821
REV NO. 6
CITY DWG NO. A-5821-5
SHEET NUMBER 5

/VOLUMES/BENCH/400 – PROJECTS/2021/21-008_COK_RUTLANDATC/440 – PRODUCTION/442 – DRAWINGS/01-DETAIL DESIGN/00-CURRENT/00_21-008_COK_RUTLANDATC_L5-RIPARIANPLANTING.DWG



1 L-5.0 RIPARIAN PLANTING PLAN
SCALE 1:100

GENERAL NOTES:

A CALL BEFORE YOU DIG:
THE CONTRACTOR SHALL CALL BC ONE-CALL AT 1-800-474-6886 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY CONSTRUCTION.

B EXISTING SITE CONDITIONS:
THE CONTRACTOR SHALL VISIT THE SITE TO CONFIRM ALL SITE CONDITIONS PRIOR TO MOBILIZING FOR CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONTRACT ADMINISTRATOR FOR CLARIFICATION.

C DESIGN INTENT:
THESE DRAWINGS REPRESENT THE GENERAL DESIGN INTENT TO BE IMPLEMENTED ON THE SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE CONTRACT ADMINISTRATOR FOR ANY ADDITIONAL CLARIFICATION OR DETAILS NECESSARY TO ACCOMMODATE SITE CONDITIONS OR DETAILS.

D LIMIT OF WORK:
THE CONTRACTOR SHALL VERIFY THE LIMIT OF WORK ON SITE WITH THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION. ALL WORK OF THE CONTRACTOR SHALL BE WITHIN THE LIMIT OF WORK IDENTIFIED ON THESE DRAWINGS. ANY DAMAGE TO AREAS OUTSIDE THE LIMIT OF WORK WILL BE REPAIRED OR REPLACED AT THE CONTRACTORS OWN EXPENSE.

E DISCREPANCIES:
ANY AMBIGUITY IN THESE DRAWINGS OR ACCOMPANYING DETAILS IS TO BE REPORTED TO THE CONTRACT ADMINISTRATOR FOR CLARIFICATION. THE CONTRACTOR IS NOT TO PROCEED IN UNCERTAINTY.

F CONSTRUCTION METHODS:
LANDSCAPE & IRRIGATION CONSTRUCTION METHODS SHALL CONFORM TO MINIMUM STANDARDS ESTABLISHED IN THE LATEST EDITION OF THE CANADIAN LANDSCAPE STANDARDS, PUBLISHED BY C.N.L.A. AND C.S.L.A. AS WELL AS THE CITY OF KELOWNA LANDSCAPE STANDARDS IN BYLAW 7900.

G INSPECTION NOTICE:
THE CONTRACTOR IS REQUIRED TO GIVE THE SITE INSPECTOR 48 HOURS NOTICE BEFORE ALL REQUIRED INSPECTIONS.

ENVIRONMENTAL PROTECTION NOTES:

H ENVIRONMENTAL PROTECTION:
REFER TO SECTION 01 57 01 (ENVIRONMENTAL PROTECTION) OF THE MMCD FOR WORK WITHIN THE 15m RIPARIAN AREA. AN ENVIRONMENTAL CONSULTANT HAS BEEN RETAINED TO BE THE QUALIFIED ENVIRONMENTAL PROFESSIONAL AND TO FUNCTION AS AN ADDITIONAL SITE INSPECTOR AS IT RELATES TO THE ENVIRONMENTAL PROTECTION.

I SEDIMENT AND EROSION CONTROL:
THE RELEASE OF THE FINE SEDIMENTS, CONCRETE-LADEN WATER OR OTHER SUBSTANCES DELETERIOUS TO THE ENVIRONMENT (e.g.GASOLINE) MUST BE PREVENTED THROUGHOUT ALL STAGES OF CONSTRUCTION. SEDIMENT AND EROSION CONTROL MEASURES MUST BE IN PLACE PRIOR TO CONSTRUCTION START-UP.

J STOCKPILED SOILS:
SOILS THAT WILL BE STOCKPILED FOR GREATER THAN ONE (1) WORKING DAY MUST BE COVERED/SECURED WITH A TARP TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENTATION, AND SHOULD BE LOCATED WITHIN THE AREA CONTAINED BY SILT FENCING.

K RIPARIAN AREAS:
THE RIPARIAN AREAS (15m) SHOULD BE DELINEATED IN THE FIELD PRIOR TO INITIALIZING CONSTRUCTION. THE SETBACK SHOULD BE DELINEATED IN THE FIELD BY A SURVEYOR AND STAKES SHOULD REMAIN THROUGHOUT CONSTRUCTION AS A GUIDE FOR ONSITE CREWS.

L MACHINE MAINTENANCE:
ENSURE ALL ONSITE MACHINERY IS IN GOOD OPERATIING CONDITION, CLEAN AND FREE OF ALL LEAKS, EXCESS OIL OR GREASE.

M MACHINE REFUELING & SERVICING:
NO EQUIPMENT REFUELING OR SERVICING SHOULD BE UNDERTAKEN WITHIN 15m OF THE CREEK. AN EQUIPMENT MAINTENANCE AND REFUELING STAGING LOCATION SHOULD BE IDENTIFIED AND USED FOR THE DURATION OF CONSTRUCTION, IF NECESSARY.

N SPILL KIT:
A SPILL CONTAINMENT KIT MUST BE AVAILABLE ON SITE DURING CONSTRUCTION ACTIVITIES IN CASE OF THE ACCIDENTAL RELEASE OF DELETERIOUS SUBSTANCE TO THE ENVIRONMENT. ANY SPILLS OF A TOXIC SUBSTANCE OF REPORTABLE QUANTITIES SHALL BE IMMEDIATELY REPORTED TO THE PROVINCIAL EMERGENCY PROGRAM 24 HOUR HOTLINE 1-800-663-3456.

O DISTURBED AREAS:
ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE REMEDIATED TO MITIGATE EROSION POTENTIAL AND TEMPORAL LOSS OF UPLAND AND RIPARIAN VEGETATION.

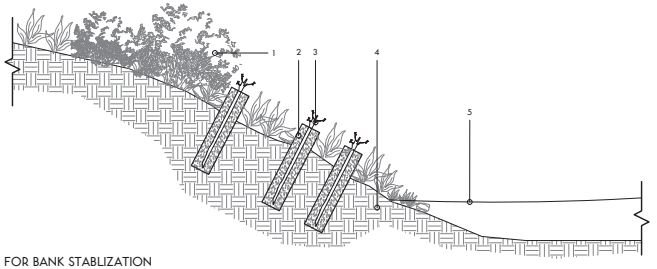
PLANT LIST:

SHRUBS

Qty	Key	Botanical Name	Common Name	Size	Spacing
11	MAQ	*Mahonia aquifolium*	Oregon-grape	#01 Pot	1.5m O.C.
6	RWO	*Rosa woodsii*	Woods' rose	#01 Pot	2.0m O.C.
10	SAL	*Symphoricarpus alba*	Common snowberry	#01 Pot	2.0m O.C.
92	SBE	*Salix bebbiana*	Bebb's willow	Live Stake	1.0m O.C.

1 RIPARIAN RESTORATION PLANTING
2 200mm x 900mm (8" x 3') SONOTUBES W/ TOPSOIL
3 LIVE STAKE (SEE PLANTING PLAN)
4 SUBGRADE (COMPACT TO 95% M.P.D.)
5 MILL CREEK NATURAL BOUNDARY ELEVATION

NOTES:
A LIVE STAKE SHOULD BE HARVESTED FROM A NATURAL STAND OF NEARBY WILLOWS
B THE SONOTUBES MUST BE FILLED WITH A TOP SOIL THAT HAS LOW SAND/LOAM CONTENT AND HAVE A HIGH ORGANIC CONTENT TO ALLOW WATER RETENTION
C WHEN FIRST PLANTED, THE WILLOW CUTTING MUST BE WATERED TO SOAK THE SOIL WITHIN THE SONOTUBE.



2 L-5.0 LIVE STAKE SHRUBS PLANTING FOR BANK STABLIZATION
SCALE 1:25

PLANTING NOTES:

P CANADIAN LANDSCAPE STANDARD:
ALL WORK OF THE CONTRACTOR SHALL MEET OR EXCEED ALL STANDARDS OR SPECIFICATIONS ESTABLISHED IN THE LATEST EDITION OF THE CANADIAN LANDSCAPE STANDARD.

Q PLANT MATERIAL SHALL BE AVAILABLE FOR OPTIONAL INSPECTION BY THE CONTRACT ADMINISTRATOR AT SOURCE OF SUPPLY.

R THE CONTRACTOR SHALL PROVIDE A (1) YEAR REPLACEMENT WARRANTY ON ALL PLANT MATERIAL TO THE OWNER FROM THE DATE OF SUBSTANTIAL PERFORMANCE.

S SUBSTITUTIONS:
THE CONTRACTOR SHALL NOT SUBSTITUTE PLANT MATERIAL OR PRODUCTS WITHOUT THE WRITTEN CONSENT OF CONTRACT ADMINISTRATOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF ANY UNAPPROVED SUBSTITUTIONS.

T QUANTITIES:
THE QUANTITIES SHOWN ON THE PLAN SHALL TAKE PRECEDENCE OVER THE QUANTITIES SHOWN ON THE PLANT LIST. THE CONTRACTOR SHALL NOTIFY THE CONTRACT ADMINISTRATOR OF ANY DISCREPANCIES PRIOR TO ORDERING AND INSTALLING PLANT MATERIAL.

U RIPARIAN BAND STABILIZATION PLANTING AREAS:
.1 SUPPLY AND INSTALL RIPRAP AND SHORELINE LIVE STAKE PLANTING AS PER DETAILS.

V RIPARIAN PLANTING AREAS:
.1 PULL ALL VISIBLE INVASIVE WEEDS WITHIN AREAS AND DISPOSE OF AS YARD WASTE AT LANDFILL.
.2 MOW OR LINE TRIP EXISTING GROUND COVER VEGETATION TO 100mm (4") MIN. HEIGHT SO THAT THE SOIL BELOW IS VISIBLE.
.3 PLANT SHRUBS IN THE LOCATIONS IDENTIFIED ON THE PLAN. SHRUB PLUGS SHALL BE PLANTED IN SOIL POCKETS (2) TIMES THE DIAMETER OF THE PLUG.
.4 BROADCAST SEED AREA WITH THE NATIVE SEED MIX AT THE APPLICATION RATE SPECIFIED.

W INSTALLATION WINDOWS:
PLANTING AND SEEDING SHALL TAKE PLACE BETWEEN AUGUST 15 TO MARCH 31 TO AVOID IMPACTING NESTING BIRDS.

X NATIVE SEED MIX:
BROADCAST SEED ALL SHORELINE AND RIPARIAN PLANTING AREAS. SEED FOR NEW NATIVE PLANTING AREAS SHALL BE GRADE 'A' PREMIUM SEED AND AT THE FOLLOWING SPECIFICATION:

SEED MIX: PICKSEED INTERIOR NATIVE DRYLAND

BOTANICAL NAME	COMMON NAME	SEED WEIGHT (%)	SEED COUNT(%):
FESTUCA CAMPESTRIS	ROUGH FESCUE	25%	20.19%
FESTUCA IDAHOENSIS	IDAHO FESCUE	15%	18.17%
KOELERIA MACRANTHA	JUNEGRASS	5%	26.92%
LOLIUM PERENNE	PERENNIAL RYEGRASS	10%	6.65%
POA SECUNDA	SANDBERG'S BLUEGRASS	5%	12.45%
PSEUDOROEGNERIA SPICATA	BLUEBUNCH WHEATGRASS	20%	15.61%

BROADCAST RATE: 35 KG/HA
30 KG/HA OF COVER/NURSE CROP: LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)

LEGEND:

RIPARIAN BANK STABILZATION PLANTING (WILLOW STAKING & BROADCAST SEEDING AREA)

RIPARIAN RESTORATION PLANTING (BROADCAST SEEDING AREA)

EXISTING VEGETATION TO REMAIN

SHRUB PLANTING

EXISTING FENCE TO REMAIN

REVISIONS / ISSUED

NO.	DATE	DESCRIPTION
3	JUN 01/22	ISSUED FOR CONSTRUCTION
2	JULY 02/21	ISSUED FOR ENV. DP / TENDER
1	JUNE 11/21	ISSUED FOR ENV. REVIEW

PROJECT

HOUGHTON ACTIVE TRANSPORTATION CORRIDOR - PHASE 2

CITY OF KELOWNA

BENCH
| 4-1562 Water Street, Kelowna BC V1Y 1J7 | t 250 860 6778 |

SHEET TITLE
RIPARIAN PLANTING PLAN

SHEET NO. L-5.0
PROJECT # 21-008
SCALE 1:100

June 25, 2021

File: R8005901
Tracking No.: 100329708

Proposed Changes In and About a Stream - Notice to Habitat Officer

Re: Notice to Habitat Officer / Changes In and About a Stream under Part 3 of the Water Sustainability Regulation

Your Notice to a Habitat Officer of the Ministry of Forest, Lands, Natural Resources and Rural Development under the Water Sustainability Regulation (Part 3 of the regulation) regarding your proposal to make changes in and about a stream of the kind described in section 39 of the regulation, has been accepted. *You may now proceed with your proposed works based on your adherence to the below Terms & Conditions.*

Please Note: Only changes in and about a stream of the kind listed in the Water Sustainability Regulation (Part 3 "Changes in and About a Stream") can proceed on notice and in accordance with requirements of the regulation including any terms and conditions specified by a Habitat Officer. A change approval under the *Water Sustainability Act* to make changes in and about a stream is otherwise required if the change proposed is not of the kind listed in Section 39 of the regulation.

Under the provisions of the regulation, a person making a change in and about a stream under this regulation, other than under Sections 39(1)(o) to (s), 39(2) or 39(5), must then make that change in accordance with the regulation and any terms and conditions specified by the Habitat Officer *(including those further described in #1-17 below)*

1. Any work associated with the proposed changes in and about a stream must not cause stream channel instability or increase the risk of sedimentation into the stream.

2. During work onsite, erosion and sediment control materials must be available onsite at all times and must be installed if sedimentation is likely to occur into the stream. A contingency plan must be developed outlining the measures to be taken by workers when carrying out any work to control erosion and sediment.

3. Soil disturbance must not occur in heavy rain conditions and any soil removed must be placed in a location that ensures that sediment or debris does not enter the stream.

4. Within a work area, water that contains sediment must be pumped to a vegetated area away from the stream where it can seep into the ground, or to a settling pond that is sufficiently far from the stream to allow sediment to settle out before the water returns to the stream.

5. The disturbance of stream bank vegetation must not occur or be minimized as much as possible.

6. Any areas that are disturbed during the work (such as exposed soil) must be promptly restored at a minimum to the pre-disturbance condition.

Note: Guidance is provided in the Enhancement Section of the Best Management Practices

Instream Works

7. If possible, work must be conducted on, and equipment located and operated from, dry land (no water present) and the worksite must be isolated from flowing water.

8. Any equipment used in conducting work must be in good mechanical condition and, when operating in close proximity to the wetted perimeter of a stream, the operator must prevent entry of any substance, sediment, debris or material (e.g., hydrocarbons, silt) into the stream so as to prevent harm to fish, wildlife or the aquatic ecosystem of a stream. Note that Section 46 of the Water Sustainability Act *prohibits the introduction of foreign matter into a stream. Failure to comply may result in a remediation order and it is also an offence to do so.*

9. The original rate of water flow in the stream (existing prior to commencing work) must be maintained upstream and downstream of the worksite during all phases of instream activity associated with the work.

10. When work requires de-watering or isolation of the worksite in the stream, a permit for the salvage of fish and wildlife must be obtained prior to commencing work. All required salvage permits must be obtained from FrontCounter BC : ***http://www.frontcounterbc.gov.bc.ca/****. Any salvage must be carried out by a qualified environmental professional (such as an R.P.Bio.).*

11. Following de-watering or isolation of the worksite, stream flow must be returned gradually to the de-watered or isolated area within the stream and not in a single sudden rush so as to avoid erosion of the stream channel and sediment delivery to the stream.

12. The stream channel width must not change as a result of the work.

13. Any materials, such as riprap or gabion rock, placed within the stream must be clean and not contain substances that could be harmful to fish, wildlife or the aquatic ecosystem of the stream.

14. Any areas disturbed as part of the work must be restored as close as possible to their pre-disturbance condition. Any soil exposed at the worksite must be promptly re-vegetated.

15. *Subject to Sections 16 and 17 below, the work must be completed during the timing window for the stream in respect of which the changes are proposed. The applicable timing windows (by region and/or by stream) are specified in the following links (see below) and are designed to protect fish, wildlife or the aquatic ecosystem of a stream.* ***To determine the timing window, please select the relevant region from the map:***

http://www.frontcounterbc.ca/pdf/RegionMap.pdf

and then determine the applicable timing window for that region and for the stream where the proposed changes will be made.

Regional Timing Windows -* ***http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows*

For projects proposed to take place outside these timing windows, please see Sections 16 and 17 below

16. In addition to the timing windows specified in Section 15 above, work may be carried out during the following times provided these requirements are met when the changes are carried out:

i. If the stream channel is naturally dry (no flow) or frozen to the bottom at the worksite and the instream work / activity associated with the proposed change will not adversely impact fish, wildlife or the aquatic ecosystem of the stream (e.g. not result in any substance, sediment, debris

or other material entering or leaching into the stream that would adversely affect fish, wildlife or the aquatic ecosystem),

ii. In the construction of a winter crossing, the stream channel is frozen to the bottom at the worksite and related work does not adversely impact the stream channel (including stream bed and banks), or fish, wildlife or the aquatic ecosystem of the stream, or impede their passage (in both directions) in the stream.

17. If your work is proposed outside of the timing window (as described in Section 15 above), you must retain a qualified environmental professional (such as an R.P. Bio.). The professional will be responsible for providing a written technical rationale that assesses and addresses the risks of the proposed changes in and about a stream, including proposing site specific mitigation (e.g., an Erosion Control Plan that identifies contingency measures and emergency procedures related to the proposal) and onsite monitoring of their implementation. This document must be submitted to the Habitat Officer via FrontCounter B.C. with reference to your file number (shown on top of this document).

i. An approved variance request must take place within the authorized time frame. Further delays will likely result in works being delayed to the next Fisheries timing window.

ii. For those exceptions where the project is within a Rocky Mountain Ridge Mussel red zone, and a delay in startup times has resulted in work being undertaken in temperatures less than 16 degrees Celsius the qualified professional must demonstrate that an area large enough to account for movement of mussels into the work area has been accounted for in their original assessment. A notice of delay must be submitted to ecosystem staff in Penticton. Please note that delays beyond seven months of the original assessment will require a new assessment.

In proceeding outside the timing window in accordance with recommendations by your qualified environmental professional, you must comply with any measures specified by that professional to prevent impacts on the stream channel (including stream bed and banks) or fish, wildlife or the aquatic ecosystem of the stream, as well as any additional Habitat Officer terms and conditions specified in the confirmation of receipt of your original Notice.

In summary, you must meet the terms and conditions described above, In addition, you must also meet any other requirements of the regulation, as are described in Part 3 of the Water Sustainability Regulation (found at ***http://www.bclaws.ca/).***

Also, for assistance to the public, the Province has developed clear guidance/practices, also referred to as best management practices, for working around water and for designing and implementing different types of changes in and about a stream, particularly in respect of instream works. This information in combination with the terms and conditions described above, including any additional Habitat Officer terms and conditions specified, if all followed, will help ensure that your changes in and about a stream will be compliant with the regulation and related legislation, as well as minimizing impacts on the environment (including related fish, wildlife and aquatic ecosystems) in the stream and stream channel.

Follow the links and website directions (see below) to review the provincial guidance/practices provided for your proposed works. Please be advised that these documents may contain information which may be the subject of change due to amendments to the federal *Fisheries Act* and/or to related processes by Fisheries and Oceans Canada (DFO). Current up-to-date information on DFO process and legislation can be found at: ***http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html***

Province of BC Guidance / Practices:
Best Management Practices (BMP's) for Instream Works. When using this guide go to the list of "Guidebook Chapters" and select the appropriated chapters to match the specific activities relevant to your proposal for changes in and about a stream.

*Region specific BMP's for Instream Works links directly to other specific BMP pages for particular streams and regions (e.g. Shuswap and Mara foreshore guidelines):

*Standards and Best Management Practices for Instream Works - ***http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-rights/standards_bp_instream_work.pdf***

*Working Around Water - ***http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water***

Final Note: It is the responsibility of persons intending to carry out changes in and about a stream, as described under Part 3 of the Water Sustainability Regulation:

* To comply with federal, provincial and municipal enactments, including but not limited to the *Water Sustainability Act* (and its regulations), *Fisheries Act* (Canada), *Wildlife Act* (BC) or the *Navigation Protection Act* (Canada), as well as local government bylaws and regulations, as may be applicable to proposed changes and related works or activities; and
* To obtain the written consent of the landowner for proposed changes and related works or activities intended to take place on private land or premises or to use any privately owned works, before proceeding.

Please be advised that, in the event of non-compliance with the requirements of the regulation (including habitat officer terms and conditions), it is the responsibility of persons carrying out changes in and about a stream:
* To report non-compliance with the regulation within 72 hours and then to take measures to remedy the non-compliance, as may be specified by a *Water Sustainability Act* Engineer, as well as to comply with any additional terms and conditions specified by the Habitat Officer; and
* To report damage to an aquatic ecosystem within 72 hours to a Habitat Officer and then to restore and repair the habitat to the state that existed before the damage was caused or as directed by the Habitat Officer.

For information, the Ministry may undertake review and inspection of specific changes in and about a stream and related works and activities to confirm compliance with:
* The requirements of the regulation,
* Habitat Officer terms and conditions, including those listed in this document or any later specified by the Habitat Officer,
* Any site specific measures and mitigations specified by a qualified environmental professional for in-stream projects carried out outside accepted timing windows, and
* Any other applicable enactments.

In cases of demonstrated non-compliance with legal requirements, compliance and enforcement actions may subsequently be undertaken by the Ministry where circumstances warrant.

Contact;

Mya Eastmure
Senior Ecosystems Biologist
250-312-7321

ME/cl

Cc: Urban Systems Ltd., Darrin Filipic, dfilipic@urbansystems.ca

Fisheries and Oceans Canada
Pêches et Océans Canada

Pacific Region
Ecosystem Management Branch
200 – 401 Burrard Street
Vancouver, BC
V6C 3S4

Région du Pacifique
Gestion des ecosystems
Pièce 200 – 401 rue Burrard
Vancouver (C.-B.)
V6C 3S4

May 7, 2021

Our file *Notre référence*
21-HPAC-00354

City of Kelowna
ATTENTION: Steven Robertson
1435 Water Street
Kelowna, BC V1Y 1J4

Via email: srobertson@kelowna.ca

Dear Steven Robertson:

Subject: Pedestrian Bridge, Mill Creek, Kelowna – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on March 24, 2021. We understand that you propose to:

- Construct a clear span pedestrian bridge over Mill Creek in Kelowna BC with precast concrete abutments, and helical screw piles all situated above the high water mark; and
- Placement of seven individual boulders adjacent to the high water mark.

Our review considered the following information:

- Request for Review form and package received by email on March 24th, 2021;
- Email correspondence between Jaden Willes (DFO) and Darren Filipic (Urban Systems) on April 13th, 2021; and
- Email correspondence between Jaden Willes (DFO) and Darren Filipic (Urban Systems) on May 5th, 2021.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures listed below in addition to those set out in your project proposal:

1. The removal of or disturbance to riparian vegetation should be limited to the area of disturbance as outlined in the project proposal.
2. Avoid grubbing of riparian vegetation within temporary disturbances to enable quick recovery and ongoing soil stabilization.
3. Complete the works as quickly as possible once they are started.
4. Undertake works during dry weather and low water conditions.
5. Equipment is to be operated from the top of bank.
6. Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.
    - Ensure that material such as rock, riprap, or other materials placed on the banks or within the floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.
    - Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.
    - End dumping of rock is not permitted. Riprap should be carefully placed by thumb and bucket.
7. Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.
    - Develop and implement a spill response plan to avoid a deposit of deleterious substances into the watercourse.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above mentioned prohibitions and requirements.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, the *Species at Risk Act* and the *Aquatic Invasive Species Regulations*.

It is also your Duty to Notify DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to the DFO-Pacific Observe, Record and Report phone line at 1-800-465-4336 or by email at DFO.ORR-ONS.MPO@dfo-mpo.gc.ca.

We recommend that you notify this office via email a Jaden.Willes@dfo-mpo.gc.ca at least 10 days before starting your project and that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

Please note that this Letter of Advice does not provide relief from the obligations set out in the government of British Columbia's Riparian Areas Protection Regulations (RAPR), and can not be construed to provide authorization pursuant to section 3(2) of the RAPR, for any work, undertaking or activity within the Riparian Assessment Area. For more information on the RAPR, including contacts, please visit: https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/fish/aquatic-habitat-management/riparian-areas-regulation.

Please note that the advice provided in this letter will remain valid for a period of one year from the date of issuance. If you plan to execute your proposal after the expiry of this letter, we recommend that you contact the Program to ensure that the advice remains up-to-date and accurate. Furthermore, the validity of the advice is also subject to there being no change in the relevant aquatic environment, including any legal protection orders or designations, during the one year period.

If you have any questions with the content of this letter, please contact Jaden Willes by email at Jaden.Willes@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Charlotte Haley
Senior Biologist
Fish and Fish Habitat Protection Program

c.c.: Darren Filipic (Urban Systems Ltd.) at dfilipic@urbansystems.ca

ENVIRONMENTAL ASSESSMENT

RUTLAND ACTIVE TRANSPORTATION CORRIDOR
MILL CREEK BRIDGE

April 6, 2021

URBAN SYSTEMS

PREPARED FOR:

City of Kelowna
1435 Water St.
Kelowna, BC V1Y 1J4

Attention: Steven Robertson

PREPARED BY:

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Environmental Planner

File: 0467.0477.12

CONTENTS

1.0 INTRODUCTION

1.1 BACKGROUND

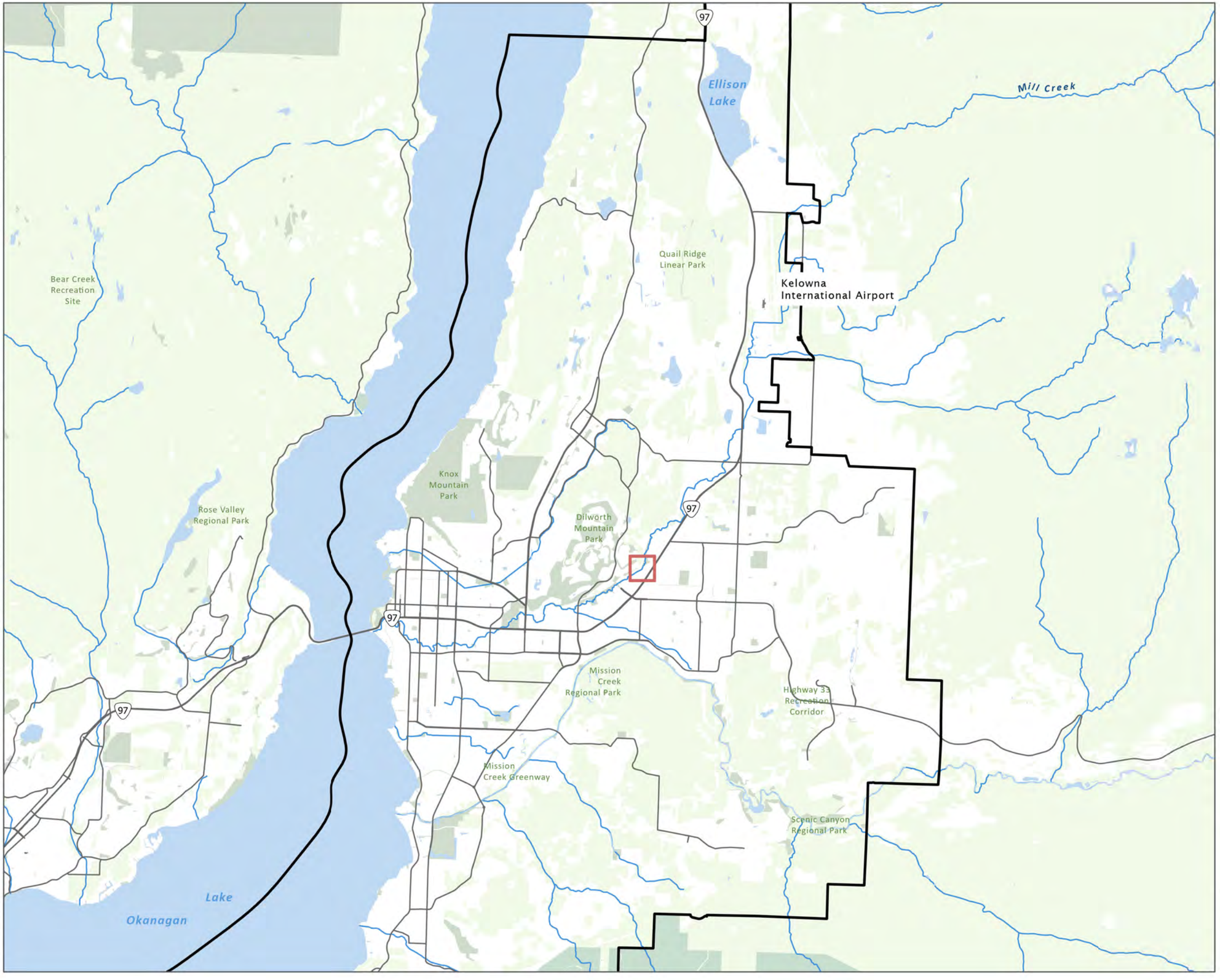
The City of Kelowna, located in the central Okanagan of BC, is committed to increasing safe and efficient walking and cycling throughout its communities. The City is planning to extend its active transportation network by connecting the existing Rutland Active Transportation Corridor (ATC), that currently terminates at Lester Road, to the Okanagan Rail Trail. The proposed ATC connection will travel north from the intersection of Houghton and Lester Roads, west on Leathead Road, cross Highway 97 to Enterprise Way and cross Mill Creek to join the Okanagan Rail Trail on the west side of Mill Creek (Figure 1.1). The connection will be a paved pathway and requires a new crossing of Mill Creek. A clear span bridge is proposed to minimize impacts to the Mill Creek ecosystem.

Mill Creek is mapped within the City's Natural Environment Development Permit Area (DPA). Development within this DPA requires an environmental assessment to accompany the development permit application to the City of Kelowna. Urban Systems prepared this environmental assessment with the objective of identifying valued ecosystem components (environmental inventory), assessing potential impacts of the project and providing general measures to mitigate and minimize potential adverse effects of the project on the environment.

1.2 SCOPE OF ENVIRONMENTAL ASSESSMENT

The environmental assessment was prepared based on a desktop and field study, and following the City of Kelowna's environmental assessment terms of reference and includes:

- Environmental inventory
    - A description of the environmental setting including valued ecosystem components such as vegetation, surface water and fisheries resources, groundwater, wildlife, species at risk and critical habitat.
    - Regulatory considerations including legislation and policies containing environmental direction and potential requirements relevant to the project.
    - Research of provincial and federal databases to determine rare element (species) occurrences and known contaminated sites from past use.
- Impact assessment outlining the potential impacts of the proposed works.
- Mitigation Strategy including recommendations to avoid and/or mitigate potential adverse impacts. Strategies include site-specific recommendations and general best management practices.



City of Kelowna

Rutland ATC Environmental Assessment

Location Map

- Project Area
- Watercourse
- City of Kelowna Boundary

The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.

0 1 2
Kilometers

N

Coordinate System:
NAD 1983 UTM Zone 11N

Scale: 1:85,000
(When plotted at 11"x17")

Data Sources:

- Data provided by
Urban Systems Ltd., Data BC, City of Kelowna, OpenStreetMaps

Project #:	0467.0477.12
Author:	BB
Checked:	AM
Status:	**Draft**
Revision:	A
Date:	2021 / 4 / 1

URBAN SYSTEMS

FIGURE 1.1

1.3 INFORMATION SOURCES

Information gathered for this environmental was sourced from the following databases:

- BC Conservation Data Centre and Species and Ecosystems Explorer
- BC Habitat Wizard
- BC iMap
- BC Ministry of Environment – Fisheries Information Summary System database
- Species at Risk Act (SARA) registry
- BC Online Contaminated Sites Registry
- Treasury Board of Canada Contaminated Sites Inventory web site
- Consultant reports

2.0 REGULATORY CONSIDERATIONS

Legislation and policies containing environmental direction and potential requirements that may be relevant to the proposed project are outlined below.

2.1 FEDERAL LEGISLATION AND POLICIES

Federal Fisheries Act

The Fisheries Act, which was amended on June 21, 2019, was established to manage, and protect Canada's fisheries resources. Section 35 of the Act may apply to any works where fish (or fish habitat) may be affected by a proposed development. Any project with the potential to adversely impact a stream, lake or riparian area must be reviewed by Fisheries and Oceans Canada through a Request for Review Application Form. A Qualified Environmental Professional should be engaged to undertake a DFO Self-Assessment to determine which activities require a Request for Review application. A determination will then be made by Fisheries and Oceans Canada under Section 35 of the Fisheries Act as to whether the project is likely to cause a harmful alteration, disruption, or destruction of fish habitat (HADD). If the project is considered a contravention of Section 35, an Authorization will need to be obtained prior to construction. It is not anticipated that the bridge replacement will require an Authorization under Section 35 of the federal Fisheries Act, which typically requires the implementation of a habitat off-setting plan. If a Fisheries Act Authorization is required, a Habitat Off-setting Plan will have to be prepared under a new scope of work.

Canadian Navigable Waters Act

The public right to travel on navigable waters is protected by law in Canada. This applies to all waters that the public may use for travel or transport, whether or not the waterway is on the list of "scheduled waters" of the Canadian Navigable Waters Act (CNWA). Navigable waters that are not listed on the schedule continue to be protected under the Act. The CNWA is administered by the Navigation Protection Program and can apply to anyone, including industry, all levels of government and the public who propose works on waters on which the public has the right to travel (navigable waters). The Act

creates a new category for "major" works that are likely to substantially interfere with navigation as defined in the Major Works Order. A bridge, for example, is considered a major work, and includes construction, placement, altering, rebuilding, removing, or decommissioning in a navigable water. Under the Major Works Order, the following bridges are designated as major works: (a) movable span bridges; (b) floating span bridges; and (c) fixed span bridges with one or more piers below the ordinary high-water mark. Major works require approval from Transport Canada (TC) whether the affected navigable waters are on the schedule or not. The Act also introduces a process to notify the public and help resolve conflicts about works on navigable waters that are not listed on the schedule. An application to TC is not required if a "minor" work that meets the requirements of the classes of work established under the Minor Works Order is proposed. An assessment tool is available on the Navigation Protection Program webpage to help determine what, if any, application is required.

The assessment tool indicated that Mill Creek is likely deemed navigable based on CNWA's definition of navigable water, and submission to Transport Canada's Navigation Protection Program is required.

Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22)

Most migrating birds in Canada are protected under the Migratory Birds Convention Act (MBCA). This Act and its complementary Regulations ensure the conservation of migratory bird populations by regulating potentially harmful human activities. A permit is not required under this Act provided that impacts to migratory birds, their nests, eggs and young are avoided. Impacts can be avoided by conducting land clearing activities outside of the nesting season for birds. The nesting season for most bird species in the Kelowna region is late March to mid August. However, species including raptors, owls and great blue heron commence nesting earlier. Should land clearing activities occur during the nesting season, or immediately before or after, a qualified environmental professional (QEP) should be engaged to ensure that birds and their nests are not adversely affected.

Species at Risk Act (S.C. 2002, c. 29)

The federal Species at Risk Act (SARA) provides protection to endangered or threatened organisms and their habitats. This legislation applies to endangered or threatened species on federal land, and to migratory birds protected under the *Migratory Birds Convention Act*, and aquatic species as defined in the *Fisheries Act*, on provincial and territorial lands and waters. Although SARA prohibitions are automatically imposed on federal lands including First Nations lands, the *intent* of SARA also applies to provincial crown and private lands. SARA encourages provincial and First Nations governments to cooperate to protect wildlife in Canada. Permitting under SARA is not required.

2.2 PROVINCIAL LEGISLATION AND POLICIES

BC Water Sustainability Act

The BC Water Sustainability Act (WSA) establishes the broad legal framework for managing water in British Columbia. The details of how the WSA principles are applied are outlined in regulations. The Water Sustainability Regulation addresses the requirements for the allocation of both ground and surface water (e.g., application requirements) and identifies the requirements for using water or making changes to a stream.

The project requires submission under Section 11 of the BC Water Sustainability Act. Based on the preliminary drawings for a clear-span bridge, the project may be submitted as a notification of works granted that conditions outlined in the regulation are met. These include:

i. Equipment is operated from the top of the bank;
ii. The bridge does not produce a back water or increase the head of the stream;
iii. The bridge is capable of passing the 1 in 200 year maximum daily flow;
iv. Bridge height will allow passage of flood debris and ice flows; and
v. Bridge materials meet the applicable standards of the Canadian Standards Association.

Notification of the works must be submitted 45 days before works commence.

Should instream armouring of bridge footings be required, submission as an Approval may be required.

An Environmental Management Plan (EMP), outlining environmental mitigation to avoid or minimize environmental impact, will support the submission.

BC Wildlife Act (RSBC 1996, c. 488)

The Wildlife Act governs the protection and management of wildlife in BC. The Act defines wildlife as all native and some non-native amphibians, reptiles, birds, mammals, and fish. The Wildlife Act protects virtually all vertebrate animals from direct harm, except as allowed by regulations (e.g., hunting or trapping). In BC, 152 wildlife species and sub-species are considered candidates for endangered, threatened, or vulnerable status. The Act deals with the protection and maintenance of suitable habitat and the conservation of wild species, in particular, those species that may be at risk of extinction, as well as nesting birds, their nests and their eggs. Section 34 of the Wildlife Act prohibits possessing, taking or destroying (i) a bird or its egg, (ii) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or (iii) the nest of a bird not mentioned in (ii), when the nest is occupied by a bird or its egg unless authorized under permit. By conducting vegetation and ground disturbance activities outside of the nesting season for birds, a proponent is often able to maintain compliance with respect to Section 34 of this Act. In addition, ensuring construction activities do not harm vertebrate animals will help to maintain compliance with this Act.

If instream works will occur, stream isolation and a fish collection permit is required under the Angling and Scientific Collection Regulation of the *Wildlife Act*.

BC Heritage Conservation Act (RSBC 1996, c187)

All archaeological sites in BC are protected under the *Heritage Conservation Act* and must not be damaged or altered without a Provincial heritage permit issued by the BC Archaeology Branch. This protection applies even when archaeological sites are previously unidentified or disturbed and applies to sites located on public and/or private land. Protected archaeological sites may not be altered or changed in any manner without a permit.

Projects involving excavation or land-altering activities should include the services of a registered professional archaeologist to ascertain any potential impacts to archaeological resources. An Archaeological Impact Assessment (AIA) may be recommended if archaeological sites are present within

the project area. We understand that the City of Kelowna is managing the archaeological review for this project.

2.3 LOCAL LEGISLATION AND POLICIES

City of Kelowna – Official Community Plan 2030

Natural Environment Development Permit Area

The objective of the Natural Environment Development Permit Area is to ensure that negative impacts on environmentally sensitive areas are minimized by:

- Protecting, restoring, and enhancing environmentally sensitive areas to a functioning ecosystem
- Protecting and/or enhancing water quality
- Protecting drinking water sources against possible contamination from land use and development activities
- Managing the introduction and spread of invasive species
- Minimizing soil disturbance
- Protecting the hydrological functions of environmentally sensitive areas
- Protecting biological diversity, wildlife and important wildlife habitats, features and functions
- Protecting subsurface aquifers forming part of the City of Kelowna water supply against possible pollution from land use and development activities
- Promoting the efficient use of water to ensure a sustainable hydrologic system in the watershed.

The project is within the 30 m Riparian Management Area of Mill Creek; and therefore, a Natural Environment Development permit is required. The "no net loss" of habitat is a requirement of this permit, and an off-setting plan may be required.

3.0 THE PROJECT

3.1 SITE DESCRIPTION

At the proposed bridge location, the Mill Creek riparian area is restricted by Enterprise Way and urbanization to the east and southeast, and the Okanagan Rail Trail to the north and northwest. Beyond the rail trail is an area of undeveloped land that supports natural vegetation. At the project area, riparian vegetation is limited to young deciduous trees including topped trees and disturbed areas that are devoid of vegetation.

3.2 PROJECT DESCRIPTION

The Rutland ATC connection to the Okanagan Rail Trail requires a pedestrian bridge over Mill Creek. The preliminary design is for a clear span bridge built to the Q200 flood elevation with precast concrete abutments on helical piles above the top of bank (Drawings are included in Appendix A). Scour protection will be achieved using willow stalking and isolated boulders placed in the vicinity of the abutments. The bridge measured from abutment to abutment will be approximately 20 m in length.

The Associated Engineering drawing figure 100[1] is shows the structural abutment placement. The bridge design is not yet available. It is anticipated that the bridge construction will take one to two weeks.

3.3 LAND USE

Land use east and south of Mill Creek are urban commercial containing major roads (i.e., Highway 97 and Enterprise Way) and businesses such as a car dealership. Lands west and north of Mill Creek support the pedestrian Okanagan rail trail and undeveloped greenspace beyond the trail. west and north of Mill Creek.

4.0 ENVIRONMENTAL INVENTORY

A field inventory was conducted on February 11, 2021 by Darren Filipic, R.P.Bio., and Shayne Kuchma, B.I.T. The inventory included a stream assessment of Mill Creek at the project area. The details of the field visit, and other reference material relevant to the subject site are described in this section.

4.1 TOPOGRAPHY

The project is in the Kelowna lowlands, approximately 6 km east of Okanagan Lake, at the toe of Dilworth Mountain's eastern side. Lands southwest, south, and east of Mill Creek are relatively flat, whereas lands west, northwest and north are the lower slopes of Dilworth Mountain. At the proposed crossing location, Mill Creek has a stream gradient of 1.5% (Ecoscape, 2006) at an approximate elevation of 385 m asl (Google Earth Imagery, 2021).

4.2 CLIMATE

The climate of the general area can be generalized using the Biogeoclimatic Ecosystem Classification system. This system is used by natural resource practitioners within the province of British Columbia to describe general terrestrial ecosystem characteristics throughout the province, including regional vegetation, as well as biological, geographical, and climatic characteristics. The project area is in the Ponderosa Pine very dry hot biogeoclimatic sub-zone (PPxh). PP occurs at low elevations along the very dry valleys of the southern Interior Plateau of BC (Meidinger and Pojar, 1991).

The PP zone is the driest and, in summer, the warmest forested zone in BC due to the pronounced rainshadow of the Coast Mountains over the southern Interior Plateau. Climate Normals data from the Kelowna A station show July to be the warmest month with a daily maximum of 27.9°C and a daily average of 19.5°C, and January and December to be the coldest month with a daily minimum of - 5.9°C, and a daily average of -2.6°C. June is the wettest month, receiving an average of 46 mm of precipitation with an annual average of 387 mm. About 23% of the total precipitation falls as snow (Environment and Climate Change Canada, 2021).

[1] Issued for Review.

4.3 VEGETATION

Vegetation typical of the PP biogeoclimatic zone is dominated by ponderosa pine and an understory of bluebunch wheatgrass. Wetter sites, often associated with gullies and streams, can support Douglas-fir. Dense stands of trembling aspen are common in riparian areas or seepage sites, with water birch and black cottonwood associated with moisture receiving areas and floodplains, respectively (Meidinger and Pojar, 1991)

Riparian vegetation consists mainly of young black cottonwood trees, and shrubs and is limited to approximately 35 m between the rail trail and Enterprise Way. Some of the cottonwood trees were severely pruned leaving stump-like trees. Vegetation was inventoried in February 2021 by Urban Systems biologists to consist of black cottonwood (30%), willow (25%), snowberry (25%), hawthorn (20%), chokecherry (5%), and Oregon grape (5%). Site conditions can be viewed in photographs 1 to 4. Invasive plant species were not identified during the site visit but may exist in disturbed areas.

Photo 1: View of Mill Creek right bank at the approximate bridge location. The Okanagan Rail Trail is at the top of bank, and the undeveloped green space beyond the trail is visible. The right bank is sparsely vegetated, and trash is visible in the creek. Photo taken facing northwest.

Photo 2: View of proposed bridge location from the left bank to the right bank. An estimated 2-3 topped, young black cottonwood trees will be lost from the development. Trash is visible on the shore.

Photo 3: View upstream at the approximate bridge location. The riparian area at photo right (left bank) is restricted by adjacent existing land use. Trash instream is visible in the photo foreground.

Photo 4: View downstream from the approximate bridge location. A large concrete stormwater outfall is visible at photo left. The retaining wall supporting Enterprise Way is visible on the left bank.

4.4 GEOLOGY AND SOILS

The Soils of Canada[2] show soils in the project region to be gleysols (60%) and regosols (40%). The Geological Survey of Canada[3] indicates the surficial geology of the project area to be alluvial fan sediments that are poorly sorted gravel, sand, silt and clay.

4.5 SURFACE WATER AND FISHERIES RESOURCES

Mill Creek originates from the hills north east of the project area and flows in a south southwesterly direction through Kelowna, to drain into Okanagan Lake at the Highway 97 William R. Bennett Bridge. The creek receives water from numerous tributaries including headwater lakes (Postill, South, and Moore Lakes), Whelan and Scotty Creeks.

Mill Creek supports a spawning run of Okanagan Lake kokanee in the fall and a small run of spring-spawning rainbow trout.

In 2006, Ecoscape Environmental Consultants conducted sensitive habitat inventory and mapping for Mill Creek. The inventory calculated approximately 21 km of the 23.3 km stream (89%) within the Kelowna city limits to be modified to some degree, 13 km to be modified but not channelized, and 7.5 km to be severely altered (i.e., channelized, ditched and culverted). Only 11% of Mill Creek is in a natural state.

[2] Soil Classification Working Group. 1998. The Canadian System of Soil Classification, 3rd ed. Agriculture and Agri-Food Canada Publication 1646, 187 pp.
[3] Paradis, S.J. 2009. Surficial geology, Kelowna, British Columbia; Geological Survey of Canada, Open File 6146, scale 1:50,000. Available: https://ftp.maps.canada.ca/pub/nrcan_rncan/publications/STPublications_PublicationsST/248/248144/gscof_6146_e_2009_mn01.pdf

Over the length of Mill Creek, 32 beaver dams, one natural debris jam, and one concrete weir/dam were noted. Fifteen of the beaver dams were identified as fish barriers during all or part of the year (Ecoscape, 2006), while the remaining dams have the potential to become barriers from beaver activity or natural processes. The combined length of stream physically influenced by beaver is roughly 3 km.

Spawning habitat, identified by the presence of suitable gravel, was documented in 745 linear metres (3.2%) of the stream length, and its presence is largely attributed to past habitat enhancement initiative involving additions of gravel.

The project area is in reach segment 29 and has a primary character of "channelized". Channelized segments make up 24% of the total stream length. Segment 29 is described as "*riffle-pool-run, channelized along the right bank by the rail trail and armoured over much of the left bank*". The bankfull width is 6.5 m and cover (in 2006) was estimated at 10 % of total comprised of large woody debris (40%), deep pool (20%), overhanging vegetation (15%), small woody debris (15%), boulder and undercut bank (both 5%) (Ecoscape, 2006). Substrate was documented as fines (20%), gravel (25%), cobble (40%), and boulder (5%). The presence of spawning habitat is unknown. Riparian vegetation is disturbed, broadleaf forest at a young seral stage (Ecoscape, 2006).

The provincial database, Habitat Wizard, indicates Mill Creek to support brook trout, burbot, carp, chub, kokanee, largescale sucker, longnose dace, longnose sucker, mountain whitefish, northern pikeminnow, peamouth chub, prickly sculpin, rainbow trout, redside shiner, sculpin and sucker. Fish records at the project area indicate goldfish, and redside shiner, and a fish record 1.4 km downstream indicates largescale sucker, northern pikeminnow, longnose dace, and rainbow trout. Rainbow trout and brook trout appear to be present throughout the system, evidenced by upstream records in the Ellison region of Mill Creek. Habitat Wizard also indicates stocking of brook trout, rainbow trout, and kokanee was common during the 1940s, 50's and 60's with the last stocking record dated 1968.

On February 11, 2021 Urban Systems' biologists described instream habitat as summarized in Table 4.1. Biologists noted the disturbed state of Mill Creek including the presence of trash instream and in the riparian area. See Appendix B for site photographs.

Table 4.1: Mill Creek habitat assessment summary

	MILL CREEK HABITAT
Channel width	12 m
Wetted width	6 m
Morphology	Riffle run- riffle pool
Substrate Composition	Fines (15%), gravel (45%), cobble (35%), boulders (5%)
Dominant instream cover	Small woody debris (10%)

4.6 GROUNDWATER

The BC Water Resource Atlas was searched for groundwater resources indicating Aquifer 467 (Mission Creek Aquifer) extends under the project area. The aquifer is an unconfined sand and gravel- small

stream system aquifer with high productivity, high vulnerability, and moderate demand (DataBC Water Resources Atlas, 2020).

Two aquifers are mapped as bordering the project, these are Aquifer 464 (greater Kelowna aquifer), and Aquifer 1191 (central Kelowna aquifer). Aquifer 464 is a confined sand and gravel- glacial aquifer with high productivity, low vulnerability, and low demand. Aquifer 1190 is a confined sand and gravel – glacial aquifer with high productivity, moderate vulnerability, and low demand.

A search for groundwater wells revealed that there are no wells in the project area and two within close proximity. The closest well is approximately 95 m southeast of the project behind a building in a parking lot (Table 4.2).

Table 4.2. Groundwater wells within a 200 m radius of the project.

WELL TAG NUMBER	DEPTH TO WATER (M)	WELL DEPTH (M)	DIAMETER (MM)	WELL USE	REPORTED YIELD (L/S)	DISTANCE TO SITE (M)
19836	4.5	7.3	n/a	Unknown	6.3	95
21288	4.5	8.2	n/a	Unknown	0.9	150

4.7 WILDLIFE

Wildlife species assemblages characteristic of the various habitats within the PP biogeoclimatic zone are described in Meidinger and Pojar (1991). Wildlife common to riparian areas include mule deer, black-tailed deer, bats, mice, water shrew, numerous birds, and reptiles such as common garter snake (Meidinger and Pojar, 1991). Wildlife observed during the site visit was limited to a ring-necked pheasant.

4.8 SPECIES AT RISK

Species at risk are ranked and listed by both federal and provincial government agencies. The federal and provincial species at risk ranking processes are discussed in the following sections.

4.8.1 FEDERAL SPECIES AT RISK ACT

Under the Species at Risk Act (SARA), species ranking is conducted by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), established under Section 14 of SARA. COSEWIC is a committee of experts that assesses and designates, under Sections 15 to 21 of the SARA, those wild species of animal, plant or other organisms that are in danger of disappearing from Canada. COSEWIC status categories are Extinct, Extirpated, Endangered, Threatened, Special Concern, Data Deficient, and Not at Risk. COSEWIC species assessments are then reviewed under SARA and a decision is made to accept the assessment and add the species to the SARA Schedule 1 or not.

Schedule 1 of the SARA is the official list of species that are classified as Extirpated, Endangered, Threatened and of Special concern. To ensure the protection of species at risk, SARA contains general prohibitions that apply to endangered, threatened or extirpated species listed on Schedule 1. While the prohibitions do not apply to species of special concern protection may be provided provincially or under regional management plans. Species on Schedules 2 and 3 of the SARA are not protected under the Act but have been assessed by COSEWIC and may eventually be listed under Schedule 1.

Under SARA's general prohibitions, it is an offence to:

- Kill, harm, harass, capture, or take an individual of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated;
- Possess, collect, buy, sell or trade an individual of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated; and
- Damage or destroy the residence (e.g. nest or den) of one or more individuals of a species listed in Schedule 1 of SARA as an endangered or threatened species, or as an extirpated species if a recovery strategy has recommended the reintroduction of the extirpated species into the wild in Canada.

Critical Habitat

Critical habitat is identified for species listed as Endangered or Threatened under SARA and is defined under section 2 of the Act as: "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species".

Under SARA, it is illegal to destroy any part of the critical habitat of any listed endangered species or of any listed threatened species – or of any extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada if:

a) the critical habitat is on federal land, in the exclusive economic zone of Canada or on the continental shelf of Canada;

b) the listed species is an aquatic species; or

c) the listed species is a species of migratory birds protected by the Migratory Birds Convention Act.

4.8.2 PROVINCIAL SPECIES AT RISK

The BC Conservation Data Center (CDC) tracks and categorizes species according to their conservation status in BC. Provincially, the CDC assigns a provincial rank or listing of 'Red' or 'Blue' or 'Yellow' to a species based on its status within BC. The rankings or provincial listing categories described below highlight the wildlife and plant species as well as natural plant communities that require special attention. The CDC listing is an advisory and management tool and is not a legal designation in the province.

- **Red:** any indigenous species, subspecies or plant community that is extirpated, endangered, or threatened in BC. Extirpated elements no longer exist in the wild in BC but do occur elsewhere. Endangered elements are facing imminent extirpation or extinction. Threatened elements are likely to become endangered if limiting factors are not reversed.
- **Blue**: any indigenous species, subspecies or community considered to be vulnerable (special concern) in BC. Vulnerable elements are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed elements are at risk, but are not extirpated, endangered or threatened.
- **Yellow**: indigenous species which are not at risk in British Columbia.

In 2017, the BC government mandated the enactment of an endangered species law. The legislation is currently under development.

4.8.3 SPECIES AT RISK SEARCH METHODOLOGY

To determine potential species at risk and or wildlife species of management concern that may occur within the project area, the following information review was conducted:

- Search for species at risk using BC's Conservation Data Centre "BC Species and Ecosystems Explorer". A comprehensive list of species is created by searching by forest district, biogeoclimatic zone, and Ministry of Environment region. Species duplicates are removed, and the list is refined for known species distribution and preferred habitat. All species with legal protection that are listed under the BC Wildlife Act, Species at Risk Act, the Forest, and Range Protection Act, were considered in this methodology as well as species with a provincial listing of red and blue[4]. The result is a list of species at risk with the potential to occur in or near the project area.
- Overlay SARA critical habitat mapping with the project area to determine potential conflict with mapped critical habitat. Map layers are from DataBC.
- Search for documented occurrences of red and blue-listed species within or adjacent to the project area using BC's Conservation Data Centre iMap web application. Species occurrences are based on sightings that are reported to the provincial database. The BC Conservation Data Center illustrates these occurrences using polygons that reflect locational uncertainty associated with the source data and are represented with varying sized circles.

Species at risk and or wildlife species of management concern are assigned a rank of **high**, **medium**, **low**, or **nil** for potential to occur in the project area based on occurrence records, known habitat associations and professional experience (i.e., familiarity if habitat requirements and distribution of the species. Presence ratings are based on the following definitions developed by senior technical expert/ biologist J Hobbs Ecological Consulting (Hobbs, 2019):

- **High**: current understanding of the species' range and/or known species habitat associations suggests that the species is expected to occur in the project area regularly, and in densities that would be expected to occur in provincial benchmark habitats. (The provincial benchmark is the highest capability habitat for a particular species in the province, against which all other habitats for that species are rated).
- **Medium**: current understanding of the species' range and/or known species habitat associations suggests that the species is expected to occur in the project area on a temporary or regular (i.e., predictable seasonal basis and in densities that facilitate persistence of a functional population within the project area.
- **Low**: current understanding of the species' range and/or known species habitat associations suggests that the species is unlikely occur within the project area with regularity or in adequate density to facilitate a functional population. Several ecological life-requisite stages would be challenged based on existing habitat conditions in the project area and/or connectivity with larger, more contiguous occurrence of the species.

[4] Red and blue listed species (not listed in SARA) considered in this methodology included vascular plants, vertebrate animals, and invertebrate animals. Red and blue listed Ecological communities at risk, fungi, and non-vascular plants were excluded from the search.

- **Nil**: current understanding of the species' range and/or known species habitat associations suggests that the species is not expected to occur in the project area. Species occurrence in the project area would be considered accidental.

Species at risk that are assigned a rank of high, medium or low are presented in Table 4.3.

4.8.4 SPECIES AT RISK SEARCH RESULTS

Six species, including one insect, one mammal, two plants and two reptiles were assigned a rank of **low** for potential to occur in the project area (Table 4.3).

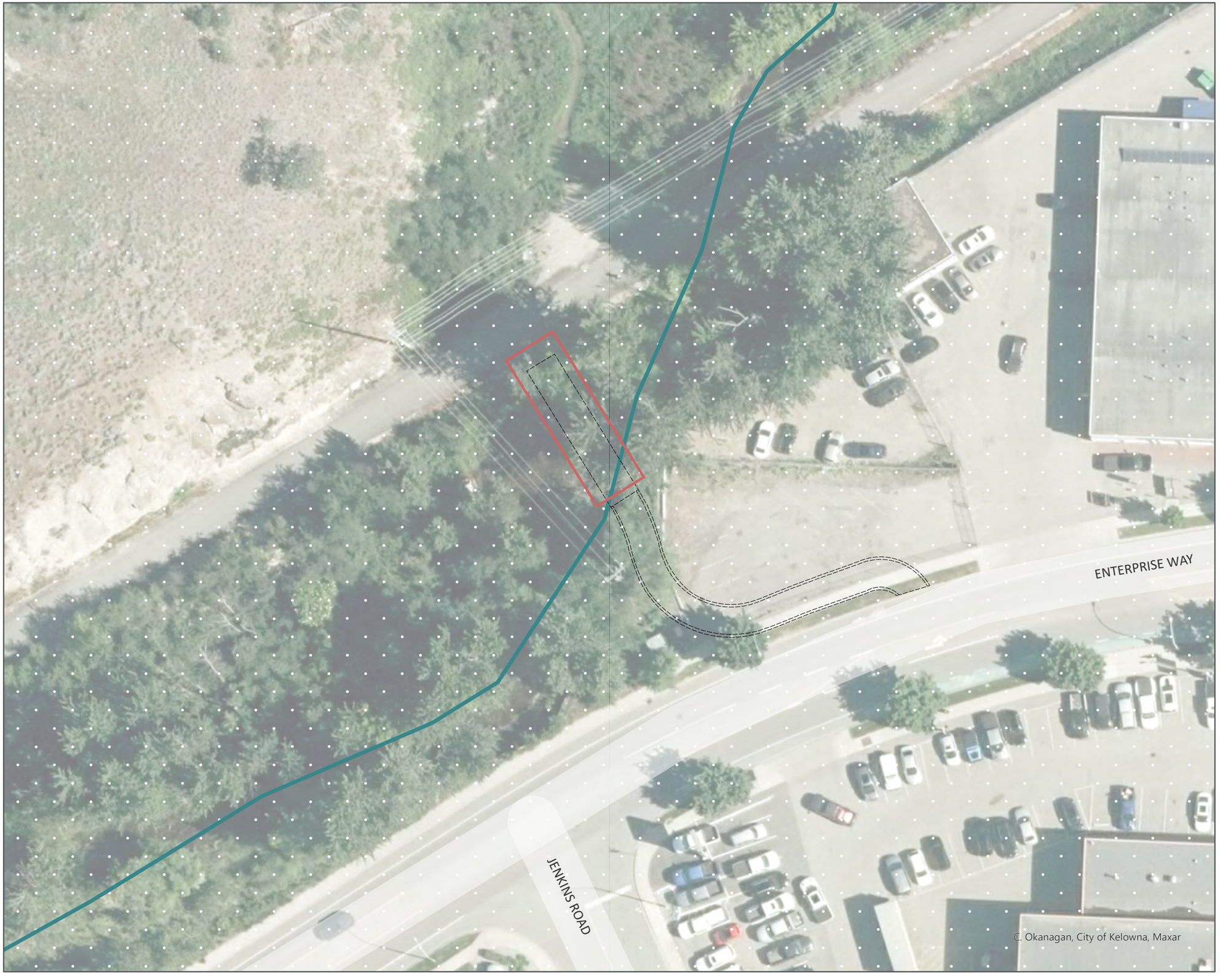
The project area is within a map quadrat identified by SARA as containing critical habitat for the Great Basin gopher snake. The critical habitat layer is mapped using UTM grid squares and blankets the entire Okanagan Valley region, which would include suitable and unsuitable habitat (Figure 4.1).

One occurrence record for a provincially listed species overlaps the project. The occurrence record is for American badger, illustrated by a vast polygon on the east side of Okanagan Lake, extending from the north end of Okanagan Lake south to the US border. American badger has large territories and this polygon likely encompasses multiple occurrences.

Table 4.3: Species at Risk and Wildlife Species of Management Concern Search Results Summary

COMMON NAME	SCIENTIFIC NAME	TAXON	STATUS UNDER SARA	PROVINCIAL STATUS	PREFERRED HABITAT	POTENTIAL TO OCCUR IN PROJECT AREA[5]
Western bumble bee	*Bombus occidentalis*	Insects	Not Listed	Blue	Inhabits open coniferous, deciduous and mixed-wood forests, wet and dry meadows, montane meadows and prairie grasslands, meadows bordering riparian zones, and along roadsides in taiga adjacent to wooded areas, urban parks, gardens and agricultural areas, subalpine habitats and more isolated natural areas. Requires habitat with abundant floral resources and suitable nesting sites (underground in abandoned rodent burrows or in hollows in decaying wood). Overwinter by burrowing in loose soil or rotting trees. Nests in rodent burrows.	Overwintering and foraging habitat is present. Rodent burrows not observed. **Potential to Occur: Low**
American badger	*Taxidea taxus*	Mammals	Schedule 1 – Endangered	Red	Extremely large ranges in non-forested grassland and shrubland with friable soil for burrowing. Soil and prey availability are key defining features of habitat; coherent soils that can be burrowed into without collapsing are preferred. Closed canopied forested areas generally are not used but early seral habitats along forest corridors can support prey populations that attract American badgers into forest areas.	No suitable denning habitat, only potential for pass through. Project area is adjacent to undeveloped land (north and west) that may be used as a migration corridor, and that may support prey species. Project within CDC occurrence polygon. **Potential to Occur: Low**
Okanagan hawthorn	*Crataegus okanaganensis var. okanaganensis*	Plants	Not Listed	Blue	Occurs on moist, deep, fine-textured soils. *Crataegus okanaganensis* is widely distributed and common from the Okanagan valley	Hawthorn was identified during the site visit; however, it is unclear if this subspecies is present. **Potential to Occur: Low**
Peach-leaved willow	*Salix amygdaloides*	Plants	Not Listed	Blue	Floodplain (river or stream floodplains), forests, shores of rivers or lakes, swamps, wetland margins.	Willow was identified during the site visit; however, the willow was not identified to species. **Potential to Occur: Low**
Great Basin gopher snake	*Pituophis catenifer deserticola*	Reptiles	Schedule 1 – Threatened	Blue	Grasslands, shrub steppes, and rocky outcrops in bunchgrass grasslands with sagebrush. Overwintering habitat can be sites associated with rock and burrows in deep soils on hillsides often on south facing slopes.	No overwintering habitat. Potential presence during the late spring and summer from the undeveloped land west and north of Mill Creek and the rail trail. **Potential to Occur: Low**
North American racer	*Coluber constrictor*	Reptiles	Schedule 1 – Special Concern	Blue	Typically hibernate in fractured rock outcroppings and talus slopes on warm aspects. Foraging occurs in open habitats such as grasslands and shrub-steppe, where vision is unobstructed and high body temperatures can be maintained. Eggs are laid in underground tunnels or burrows, rotting stumps, sawdust piles or under rocks.	No overwintering habitat. Potential presence during the late spring and summer from the undeveloped land west and north of Mill Creek and the rail trail. **Potential to Occur: Low**

[5] Based on the rating system developed by J Hobbs Ecological Consulting Ltd. that is defined in section 3.8.3 of this report.



City of Kelowna

Rutland ATC Environmental Assessment

Environmental Conditions

- Project Area
- Proposed Bridge Location

City of Kelowna Natural Environment DPA

- Watercourses
- *Entire map extent is SARA identified Critical Habitat for Great Basin Gophersnake and BC CDC occurence for American Badger

0 5 10
Meters

N

Coordinate System:
NAD 1983 UTM Zone 11N

Scale: 1:450
(When plotted at 11"x17")

Data Sources:

- Data provided by
Urban Systems Ltd., City of Kelowna,
DataBC, OpenStreetMaps

Project #:	0467.0477.12
Author:	BB
Checked:	AM
Status:	**Draft**
Revision:	A
Date:	2022 / 6 / 16

URBAN SYSTEMS

FIGURE 4.1

4.9 CONTAMINATED SITES

4.9.1 PROVINCIAL CONTAMINATED SITES REGISTRY

The provincial contaminated site registry was searched using the province's IMapBC online webmap database. IMapBC's Environmental Remediation Sites layer indicated no recorded contaminated sites in the project area and the nearest records to be 215 m[6], and 230[7] m east and northeast of the project. The status of the sites and additional information can be requested if needed.

4.9.2 FEDERAL CONTAMINATED SITES INVENTORY

The Treasury Board of Canada's Federal Contaminated Sites Inventory web site was searched on February 25, 2021. The search revealed that no known federally registered contaminated sites exist within or near the project area.

5.0 IMPACT ASSESSMENT AND MITIGATION STRATEGIES

5.1 VALUED COMPONENTS

Valued Components (VC) are elements of the natural and human environment that are considered to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance. VCs vary by project to reflect the nature of the project's potential effects. For the purposes of this report, the VCs are based on the potential effects of the Mill Creek bridge crossing for the Rutland ATC.

The following valued components are considered in this environmental impact assessment in terms of potential adverse effects[8]:

- Environment
  - Aquatic resources (surface water and fisheries resources)
  - Vegetation
  - Wildlife and species at risk and their habitat
  - Geology and soils
  - Groundwater
- Health
  - Air Quality
  - Noise
  - Safety

[6] Feeny Oil Limited – 2702 Highway 97 North
[7] Former Kelowna Pay-N-Save – 2693 Highway 97 North
[8] Cultural Resources and Archaeology is a valued component; however, the City of Kelowna is managing review of cultural resources, and therefore, it will not be discussed herein.

5.2 POTENTIAL EFFECTS

Construction of a bridge at Mill Creek will require the use of heavy machinery to clear and grub vegetation, excavate soil, and construct the bridge infrastructure. Potential effects resulting from the bridge construction are summarized as:

- Removal and disturbance of vegetation resulting in a loss of riparian habitat. Vegetation removal is estimated to be 10 m^2 and comprised of two to three young, topped cottonwood trees, and some snowberry shrub.
- Erosion and sedimentation into Mill Creek resulting in a temporary increase in turbidity. While the bridge is designed above the top of bank of Mill Creek, there is potential for sedimentation and erosion into Mill Creek. The temporary decrease in water quality has the potential to impact fish including salmonids.
- Spills of deleterious substances, such as fuels to land or to Mill Creek.
- Introduction and spread of invasive plants.
- Disturbance to wildlife including nesting birds and denning animals.

Species with the potential to occur were assessed for the potential to experience project related effects. Based on the assumptions in Table 5.1, adverse effects to species at risk are not anticipated.

Table 5.1. Potential for Project Related Effects on Species at Risk

SPECIES	POTENTIAL FOR PROJECT-RELATED EFFECTS	ASSUMPTIONS
Western Bumble Bee	Nil	• Construction for new bridge will disturb native soils, however the footprint is small and habitat features including old rotting wood and rodent burrows were not observed during the site visit.
American Badger	Nil	• Suitable den habitat is not available. If an individual passes through the worksite, works will temporarily halt to allow free passage.
Okanagan hawthorn	Nil	• If this species is identified within the clearing limits, the plant will be salvaged and replanted after works are complete.
Peach-leaved willow	Nil	• If this species is identified within the clearing limits, the plant will be salvaged and replanted after works are complete.
Great basin gopher snake	Nil	• Suitable den habitat is not available. If an individual passes through the worksite, works will temporarily halt to allow the individual free passage.
North American racer	Nil	• Suitable den habitat is not available. If an individual passes through the worksite, works will temporarily halt to allow free passage.

5.3 "NO NET LOSS" OF RIPARIAN HABITAT

The Natural Environment Development Permit guidelines indicate that the City of Kelowna will consider applications that achieve a no net loss in habitat within the Riparian Management Area (RMA). This area of Mill Creek has a 30 m RMA (measured shoreward from the top of each bank). While the habitat at the proposed bridge location currently exists in a disturbed state, the footprint of the bridge and associated pathway still require habitat compensation.

The proposed habitat compensation plan, prepared by Bench Site Design, is provided in Appendix B. The following specifications were provided by Bench:

Asphalt path riparian disturbance: 95 m^2

Restoration compensation: 101 m^2 (1:1)

Bridge Construction disturbance: 30 m^2

Restoration compensation: 93 m^2 (3:1)

The riparian planting will feature:

- 92 live willow stakes;
- 11 Oregon grape shrubs;
- 6 Woods' rose; and
- 10 common snowberry.

5.4 MITIGATION STRATEGIES

Mitigation strategies to avoid or minimize potential effects are outlined in Table 5.2. When mitigation is implemented, adverse effects to the Mill Creek ecosystem can be avoided.

Table 5.2: Potential Environmental Effect on Valued Components and Mitigation for Construction

VALUED COMPONENT	DEVELOPMENT IMPACTS	POTENTIAL ADVERSE EFFECTS	MITIGATION MEASURES
Vegetation	Removal of limited riparian vegetation Construction of permanent structure Machinery working in Mill Creek riparian area	Temporary decrease in riparian vegetation (gained back following growth of live staking) Permanent loss of vegetation potential Introduction and spread of invasive plants	• Restrict vegetation clearing to the project footprint. • Power wash equipment and machinery to be free of soil, seeds, and plant parts, prior to arriving on site. • Re vegetate disturbed areas and areas that are devoid of vegetation using native grass seed and live willow stakes. Ensure seed is weed-free. • Remove and dispose of invasive species, if any, at an approved facility.
Geology and Soils	Excavation and compaction	Soil contamination from leaking equipment or fuel spill Alteration to subsurface materials	• Restrict the operation of heavy machinery to existing roads. • Ensure equipment is clean and leak-free. • Ensure equipment maintenance is conducted off site. • Ensure secondary containment for all fuel storage. • Have a spill response plan, spill kits in all machines and a general spill kit on-site. • Ensure staff are trained in the implementation of the spill response plan and use of spill response materials. • Stockpile native topsoil and re-use where possible.
Surface Water and Fisheries Resources	Removal of limited riparian vegetation Excavation Construction of permanent structure	Surface water contamination from a spill or leaking equipment Sedimentation into Mill Creek Temporary decrease in riparian vegetation (gained back following growth of live staking)	• Use erosion and sediment control measures to prevent sediment entering Mill Creek. • Remove erosion and sediment control measures upon project completion. • Monitor water quality (i.e., turbidity) to ensure no change to Mill Creek background levels. • Avoid construction during high precipitation events. • Re-fuel equipment in an area with secondary containment where a potential spill will not enter Mill Creek. • Have spill kits in all machines.
Groundwater	Excavation	Groundwater/aquifer contamination from leaking equipment, fuel/oil spill.	• Same mitigation as above.
Wildlife and Species at Risk	Removal of limited riparian vegetation Excavation Machinery working in Mill Creek riparian area	Loss of riparian habitat. Disturbance to nesting/ denning species Introduction and spread of invasive plants	• Clear vegetation and conduct earthworks between August 15 and March 15 (i.e., outside of the bird nesting season). If vegetation clearing and ground disturbance will occur during the nesting season, an active nest survey is required by a QEP to ensure active nests are not disturbed. • Minimize impacts to vegetation. • If wildlife is observed within the project area, temporarily halt works to allow the individual to vacate.
Air Quality	Excavation, vehicle/machinery idling	Disturbance to wildlife/people from decreased air quality from dust or idling	• Spray with dust palliatives, if needed. • Avoid idling of machinery.
Noise	All construction activities	Disturbance to wildlife/people from noise	• Adhere to Kelowna's Noise Control Bylaw No. 6647 that prohibits construction before 7:00 am and after 10:00 pm. • Use hearing protection, if or when required.
Safety	All construction activities	Accidents causing harm to workers or local area residents	• Follow WorkSafe BC standards and use personal protective equipment. • Ensure safety information and warning signs are displayed in visually prominent areas.

6.0 SUMMARY AND CONCLUSION

The City of Kelowna is planning to extend its active transportation network by connecting the existing Rutland Active Transportation Corridor (ATC) to the Okanagan Rail Trail. Connection to the Okanagan Rail Trail requires crossing Mill Creek. The proposed preliminary design is a clear span bridge crossing from top of east bank to top of west bank. Mill Creek is mapped within the City's Natural Environment Development Permit Area (DPA). Development within this DPA requires an environmental assessment to accompany the development permit application to the City of Kelowna. Urban Systems prepared this environmental assessment with the objective of inventorying valued ecosystem components, assessing potential impacts and providing mitigation measures to avoid or minimize potential impacts of the project on the Mill Creek ecosystem. The information herein will inform the City of Kelowna during its review of the Natural Environment development permit application.

Mill Creek is fish bearing supporting rainbow trout and kokanee (Ecoscape, 2006; Habitat Wizard, 2021). Mill Creek at the project area is channelized and disturbed due to adjacent land uses.

Six species at risk have a low potential to occur within the project area. Denning/nesting habitat for the four wildlife species was not observed and occurrence, if any, is expected to be limited to pass-through. If the two at-risk plants are identified, the plants will be salvaged and replanted post construction. As such, the potential for project related effects is nil for the six species at risk.

The project area is within an occurrence record for American badger. As stated above, suitable den habitat is not present. The project is within a map quadrat identified by SARA as containing critical habitat for Great Basin gophersnake. As stated above, suitable snake denning habitat was not identified in the project area.

Potential adverse effects listed in Section 5.2 can be avoided or minimized by following mitigative measures and best management practices outlined in Table 5.2. The "no net loss" requirement of developing within the DPA will be achieved by following the planting plan provided by Bench Site Design.

Environmental impact of the bridge construction is limited to removal and disturbance of approximately 10 m^2 of riparian vegetation. Implementing mitigation measures listed in Table 5.2 minimizes the potential for environmental impacts associated with bridge installation.

7.0 REFERENCES

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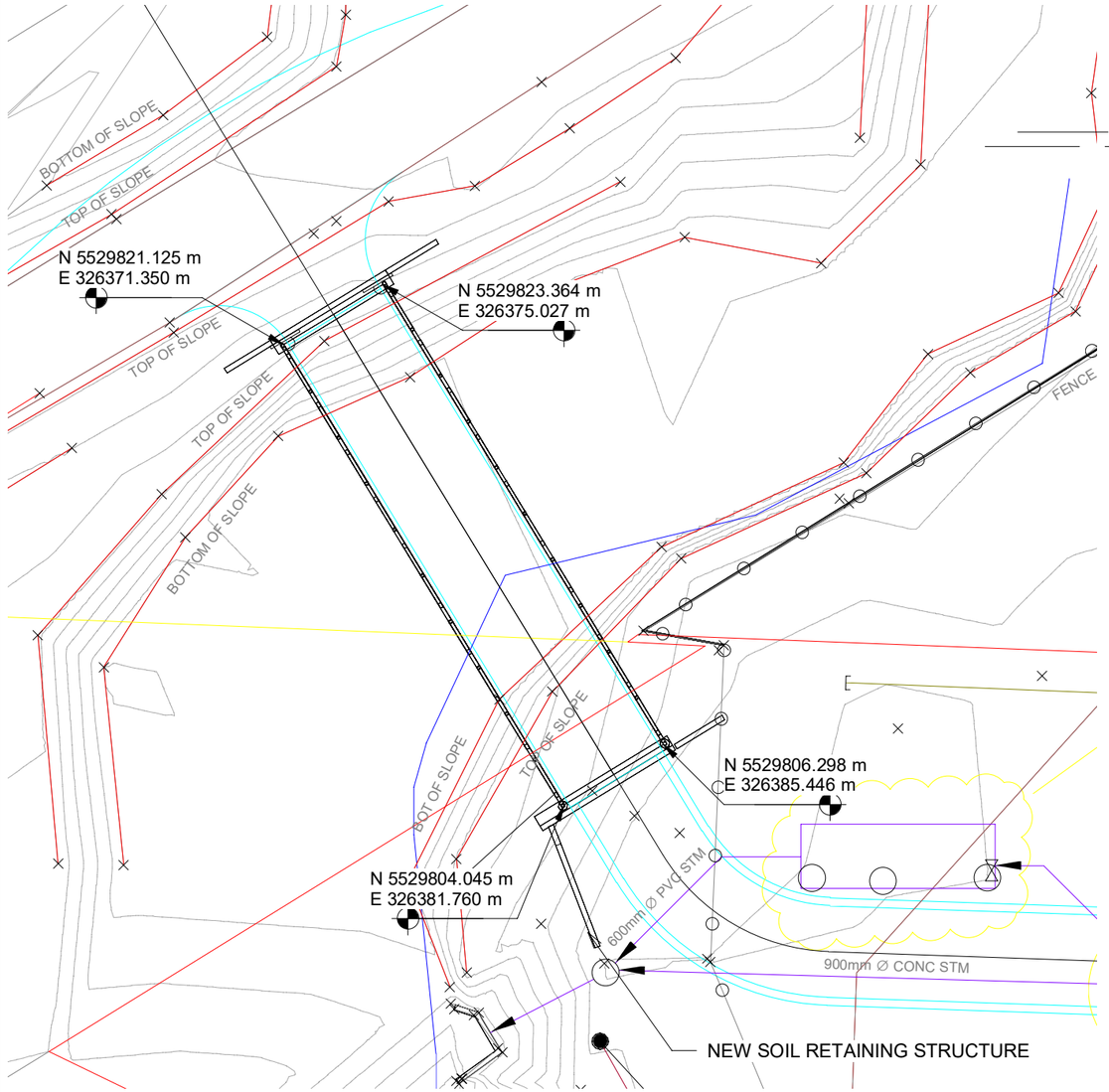
APPENDIX A: ENGINEERING DRAWINGS

City of Kelowna

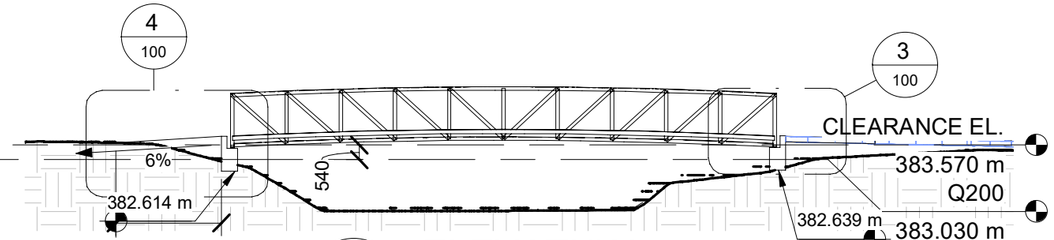
Rutland ATC – Mill Creek Pedestrian Bridge

IF NOT 25 mm ADJUST SCALES

SCALE(S) SHOWN ARE INTENDED FOR TABLOID (11X17) SIZE DRAWINGS UNLESS NOTED OTHERWISE

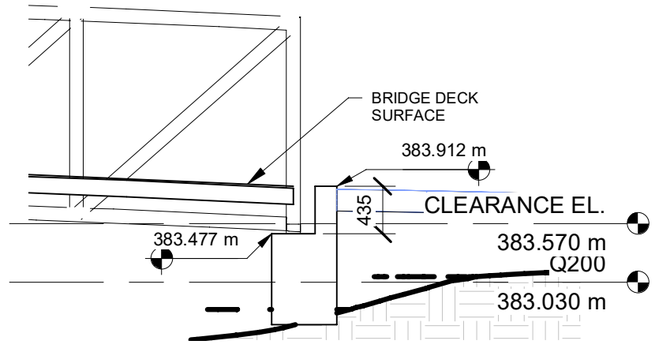


1 PLAN 1 : 200



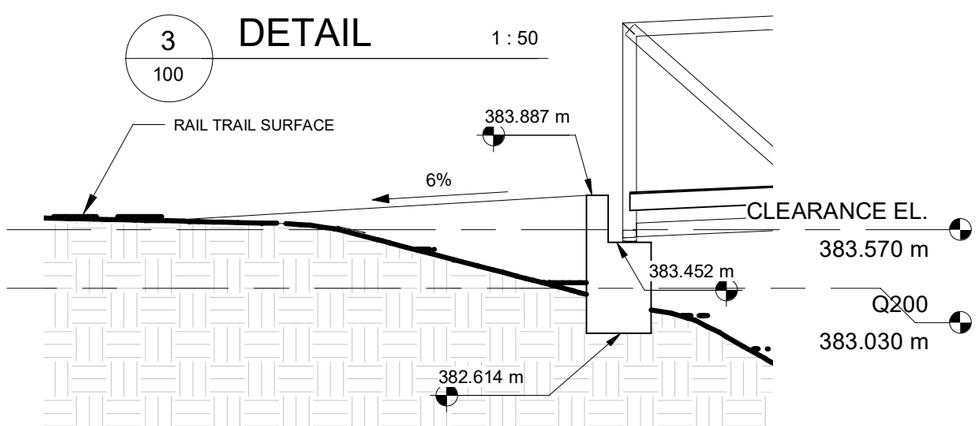
2 - ELEVATION 1 : 200

BRIDGE



3 100 DETAIL 1 : 50

NOTES
- ABUTMENT TO BE PLACED ON HELICAL PILES.
- SUPERSTRUCTURE TO BE DESIGNED AND SUPPLIED BY OTHERS. SUPERSTRUCTURE SHOWN IS FOR ILLUSTRATION FOR PRELIMINARY PLANNING ONLY.
- Q200 FLOOD ELEVATION 383.030 M
- STEEL STRUCTURE TO BE PREFABRICATED AND PLACED ON ABUTMENTS
- COORDINATES SHOWN ARE IN UTM ZONE 11 COORDINATE SYSTEM.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE



4 100 DETAIL 1 : 50

SAVE DATE: 2/8/2021 4:41:34 PM
FILE PATH: C:\Users\teald\Documents\2021-2094_Rutland ATC_teald2XUL5.rvt

Associated Engineering
Suite 610 - 1632 Dickson Ave., Kelowna, British Columbia, V1Y 7T2
Ph: 250 763 3638 Fax: 250 763 8880
www.ae.ca

BEST MANAGED COMPANIES

City of Kelowna

AE PROJECT No.	2021-2094
SCALE	AS SHOWN
APPROVED	D. TEAL
DATE	2021FEB08
REV	A
DESCRIPTION	ISSUED FOR REVIEW

DRAFT

FIGURE 100

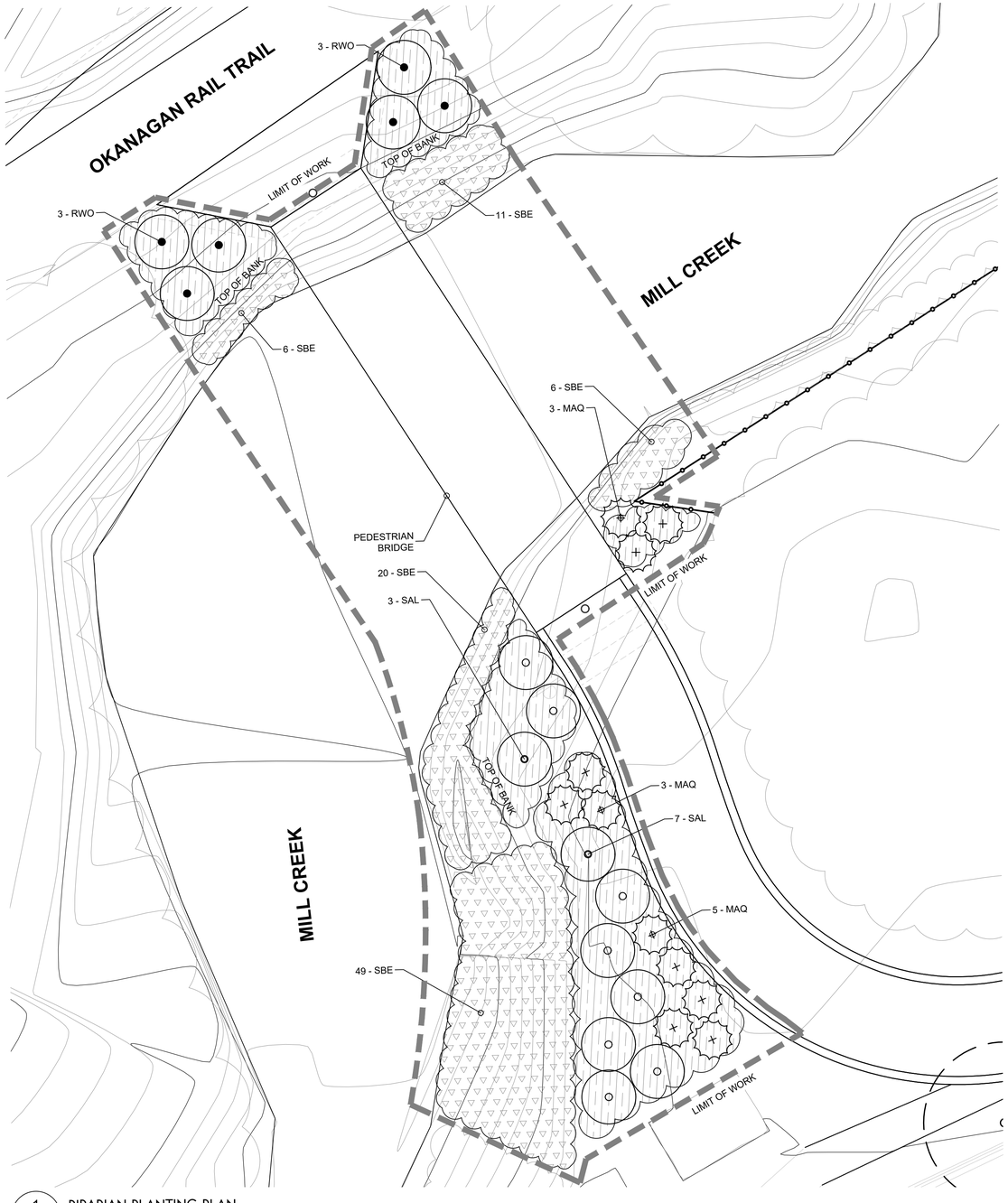
CITY OF KELOWNA
RUTLAND ATC - MILL CREEK PEDESTRIAN BRIDGE

STRUCTURAL
ABUTMENT PLACEMENT

APPENDIX B: RIPARIAN PLANTING PLAN

City of Kelowna

Rutland ATC – Houghton Active Transportation Corridor



1 L-5.0 RIPARIAN PLANTING PLAN
SCALE 1:100

GENERAL NOTES:

A CALL BEFORE YOU DIG:
THE CONTRACTOR SHALL CALL BC ONE-CALL AT 1-800-474-6886 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY CONSTRUCTION.

B EXISTING SITE CONDITIONS:
THE CONTRACTOR SHALL VISIT THE SITE TO CONFIRM ALL SITE CONDITIONS PRIOR TO MOBILIZING FOR CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONTRACT ADMINISTRATOR FOR CLARIFICATION.

C DESIGN INTENT:
THESE DRAWINGS REPRESENT THE GENERAL DESIGN INTENT TO BE IMPLEMENTED ON THE SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE CONTRACT ADMINISTRATOR FOR ANY ADDITIONAL CLARIFICATION OR DETAILS NECESSARY TO ACCOMMODATE SITE CONDITIONS OR DETAILS.

D LIMIT OF WORK:
THE CONTRACTOR SHALL VERIFY THE LIMIT OF WORK ON SITE WITH THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION. ALL WORK OF THE CONTRACTOR SHALL BE WITHIN THE LIMIT OF WORK IDENTIFIED ON THESE DRAWINGS. ANY DAMAGE TO AREAS OUTSIDE THE LIMIT OF WORK WILL BE REPAIRED OR REPLACED AT THE CONTRACTORS OWN EXPENSE.

E DISCREPANCIES:
ANY AMBIGUITY IN THESE DRAWINGS OR ACCOMPANYING DETAILS IS TO BE REPORTED TO THE CONTRACT ADMINISTRATOR FOR CLARIFICATION. THE CONTRACTOR IS NOT TO PROCEED IN UNCERTAINTY.

F CONSTRUCTION METHODS:
LANDSCAPE & IRRIGATION CONSTRUCTION METHODS SHALL CONFORM TO MINIMUM STANDARDS ESTABLISHED IN THE LATEST EDITION OF THE CANADIAN LANDSCAPE STANDARDS, PUBLISHED BY C.N.L.A. AND C.S.L.A. AS WELL AS THE CITY OF KELOWNA LANDSCAPE STANDARDS IN BYLAW 7900.

G INSPECTION NOTICE:
THE CONTRACTOR IS REQUIRED TO GIVE THE SITE INSPECTOR 48 HOURS NOTICE BEFORE ALL REQUIRED INSPECTIONS.

ENVIRONMENTAL PROTECTION NOTES:

H ENVIRONMENTAL PROTECTION:
REFER TO SECTION 01 57 01 (ENVIRONMENTAL PROTECTION) OF THE MMCD FOR WORK WITHIN THE 15m RIPARIAN AREA. AN ENVIRONMENTAL CONSULTANT HAS BEEN RETAINED TO BE THE QUALIFIED ENVIRONMENTAL PROFESSIONAL AND TO FUNCTION AS AN ADDITIONAL SITE INSPECTOR AS IT RELATES TO THE ENVIRONMENTAL PROTECTION.

I SEDIMENT AND EROSION CONTROL:
THE RELEASE OF THE FINE SEDIMENTS, CONCRETE-LADEN WATER OR OTHER SUBSTANCES DELETERIOUS TO THE ENVIRONMENT (e.g.GASOLINE) MUST BE PREVENTED THROUGHOUT ALL STAGES OF CONSTRUCTION. SEDIMENT AND EROSION CONTROL MEASURES MUST BE IN PLACE PRIOR TO CONSTRUCTION START-UP.

J STOCKPILED SOILS:
SOILS THAT WILL BE STOCKPILED FOR GREATER THAN ONE (1) WORKING DAY MUST BE COVERED/SECURED WITH A TARP TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENTATION, AND SHOULD BE LOCATED WITHIN THE AREA CONTAINED BY SILT FENCING.

K RIPARIAN AREAS:
THE RIPARIAN AREAS (15m) SHOULD BE DELINEATED IN THE FIELD PRIOR TO INITIALIZING CONSTRUCTION. THE SETBACK SHOULD BE DELINEATED IN THE FIELD BY A SURVEYOR AND STAKES SHOULD REMAIN THROUGHOUT CONSTRUCTION AS A GUIDE FOR ONSITE CREWS.

L MACHINE MAINTENANCE:
ENSURE ALL ONSITE MACHINERY IS IN GOOD OPERATIING CONDITION, CLEAN AND FREE OF ALL LEAKS, EXCESS OIL OR GREASE.

M MACHINE REFUELING & SERVICING:
NO EQUIPMENT REFUELING OR SERVICING SHOULD BE UNDERTAKEN WITHIN 15m OF THE CREEK. AN EQUIPMENT MAINTENANCE AND REFUELING STAGING LOCATION SHOULD BE IDENTIFIED AND USED FOR THE DURATION OF CONSTRUCTION, IF NECESSARY.

N SPILL KIT:
A SPILL CONTAINMENT KIT MUST BE AVAILABLE ON SITE DURING CONSTRUCTION ACTIVITIES IN CASE OF THE ACCIDENTAL RELEASE OF DELETERIOUS SUBSTANCE TO THE ENVIRONMENT. ANY SPILLS OF A TOXIC SUBSTANCE OF REPORTABLE QUANTITIES SHALL BE IMMEDIATELY REPORTED TO THE PROVINCIAL EMERGENCY PROGRAM 24 HOUR HOTLINE 1-800-663-3456.

O DISTURBED AREAS:
ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE REMEDIATED TO MITIGATE EROSION POTENTIAL AND TEMPORAL LOSS OF UPLAND AND RIPARIAN VEGETATION.

PLANT LIST:

SHRUBS

Qty	Key	Botanical Name	Common Name	Size	Spacing
11	MAQ	*Mahonia aquifolium*	Oregon-grape	#01 Pot	1.5m O.C.
6	RWO	*Rosa woodsii*	Woods' rose	#01 Pot	2.0m O.C.
10	SAL	*Symphoricarpus alba*	Common snowberry	#01 Pot	2.0m O.C.
92	SBE	*Salix bebbiana*	Bebb's willow	Live Stake	1.0m O.C.

PLANTING NOTES:

P CANADIAN LANDSCAPE STANDARD:
ALL WORK OF THE CONTRACTOR SHALL MEET OR EXCEED ALL STANDARDS OR SPECIFICATIONS ESTABLISHED IN THE LATEST EDITION OF THE CANADIAN LANDSCAPE STANDARD.

Q PLANT MATERIAL SHALL BE AVAILABLE FOR OPTIONAL INSPECTION BY THE CONTRACT ADMINISTRATOR AT SOURCE OF SUPPLY.

R THE CONTRACTOR SHALL PROVIDE A (1) YEAR REPLACEMENT WARRANTY ON ALL PLANT MATERIAL TO THE OWNER FROM THE DATE OF SUBSTANTIAL PERFORMANCE.

S SUBSTITUTIONS:
THE CONTRACTOR SHALL NOT SUBSTITUTE PLANT MATERIAL OR PRODUCTS WITHOUT THE WRITTEN CONSENT OF CONTRACT ADMINISTRATOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF ANY UNAPPROVED SUBSTITUTIONS.

T QUANTITIES:
THE QUANTITIES SHOWN ON THE PLAN SHALL TAKE PRECEDENCE OVER THE QUANTITIES SHOWN ON THE PLANT LIST. THE CONTRACTOR SHALL NOTIFY THE CONTRACT ADMINISTRATOR OF ANY DISCREPANCIES PRIOR TO ORDERING AND INSTALLING PLANT MATERIAL.

U RIPARIAN BAND STABILIZATION PLANTING AREAS:
.1 SUPPLY AND INSTALL RIPRAP AND SHORELINE LIVE STAKE PLANTING AS PER DETAILS.

V RIPARIAN PLANTING AREAS:
.1 PULL ALL VISIBLE INVASIVE WEEDS WITHIN AREAS AND DISPOSE OF AS YARD WASTE AT LANDFILL.
.2 MOW OR LINE TRIP EXISTING GROUND COVER VEGETATION TO 100mm (4") MIN. HEIGHT SO THAT THE SOIL BELOW IS VISIBLE.
.3 PLANT SHRUBS IN THE LOCATIONS IDENTIFIED ON THE PLAN. SHRUB PLUGS SHALL BE PLANTED IN SOIL POCKETS (2) TIMES THE DIAMETER OF THE PLUG.
.4 BROADCAST SEED AREA WITH THE NATIVE SEED MIX AT THE APPLICATION RATE SPECIFIED.

W INSTALLATION WINDOWS:
PLANTING AND SEEDING SHALL TAKE PLACE BETWEEN AUGUST 15 TO MARCH 31 TO AVOID IMPACTING NESTING BIRDS.

X NATIVE SEED MIX:
BROADCAST SEED ALL SHORELINE AND RIPARIAN PLANTING AREAS. SEED FOR NEW NATIVE PLANTING AREAS SHALL BE GRADE 'A' PREMIUM SEED AND AT THE FOLLOWING SPECIFICATION:

SEED MIX: PICKSEED INTERIOR NATIVE DRYLAND

BOTANICAL NAME	COMMON NAME	SEED WEIGHT (%)	SEED COUNT(%):
FESTUCA CAMPESTRIS	ROUGH FESCUE	25%	20.19%
FESTUCA IDAHOENSIS	IDAHO FESCUE	15%	18.17%
KOELERIA MACRANTHA	JUNEGRASS	5%	26.92%
LOLIUM PERENNE	PERENNIAL RYEGRASS	10%	6.65%
POA SECUNDA	SANDBERG'S BLUEGRASS	5%	12.45%
PSEUDOROEGNERIA SPICATA	BLUEBUNCH WHEATGRASS	20%	15.61%

BROADCAST RATE: 35 KG/HA
30 KG/HA OF COVER/NURSE CROP: LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)

LEGEND:

RIPARIAN BANK STABILZATION PLANTING
(WILLOW STAKING & BROADCAST SEEDING AREA)

RIPARIAN RESTORATION PLANTING
(BROADCAST SEEDING AREA)

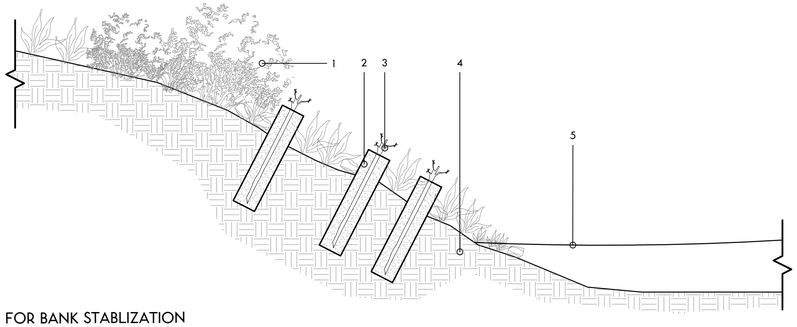
EXISTING VEGETATION
TO REMAIN

SHRUB PLANTING

EXISTING FENCE
TO REMAIN

1 RIPARIAN RESTORATION PLANTING
2 200mm x 900mm (8" x 3') SONOTUBES W/ TOPSOIL
3 LIVE STAKE (SEE PLANTING PLAN)
4 SUBGRADE (COMPACT TO 95% M.P.D.)
5 MILL CREEK NATURAL BOUNDARY ELEVATION

NOTES:
A LIVE STAKE SHOULD BE HARVESTED FROM A NATURAL STAND OF NEARBY WILLOWS
B THE SONOTUBES MUST BE FILLED WITH A TOP SOIL THAT HAS LOW SAND/LOAM CONTENT AND HAVE A HIGH ORGANIC CONTENT TO ALLOW WATER RETENTION
C WHEN FIRST PLANTED, THE WILLOW CUTTING MUST BE WATERED TO SOAK THE SOIL WITHIN THE SONOTUBE.



2 L-5.0 LIVE STAKE SHRUBS PLANTING FOR BANK STABLIZATION
SCALE 1:25

REVISIONS / ISSUED

NO.	DATE	DESCRIPTION
1	JUNE 11/21	ISSUED FOR ENV. REVIEW

PROJECT

HOUGHTON ACTIVE TRANSPORTATION CORRIDOR - PHASE 2

CITY OF KELOWNA

NOT FOR CONSTRUCTION

BENCH
| 4-1562 Water Street, Kelowna BC V1Y 1J7 | t 250 860 6778 |

SHEET TITLE
RIPARIAN PLANTING PLAN

SHEET NO. L-5.0
PROJECT # 21-008
SCALE 1:100

DRAFT REPORT

URBAN SYSTEMS

ENVIRONMENTAL MANAGEMENT PLAN

City of Kelowna
Rutland Active Transportation Corridor
Mill Creek Bridge

March 12, 2021

File No.: 0467.0477.12

URBAN SYSTEMS
200-286 St. Paul Street
Kamloops, BC V2C 6G4

T: 250-374-8311

City of Kelowna
Environmental Management Plan
Rutland Active Transportation Corridor Mill Creek Bridge

Client: City of Kelowna
1435 Water Street
Kelowna, BC V1Y IJ4
Attention: Steve Robertson, AScT – Design Technician

Prepared by: Urban Systems Ltd.
200-286 St. Paul Street
Kamloops, BC V2C 6G4

REVIEWED BY:

Amber Michaud, R.P.Bio. M.Sc.
Environmental Consultant

Rhonda Maskiewich, R.P.Bio., R.P.P.
Environmental Planner

Date issued: 2021-12-03

Project No.: 0467.0477.12

URBAN SYSTEMS

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 BACKGROUND

The City of Kelowna, located in the central Okanagan of BC, is committed to increasing safe and efficient walking and cycling throughout its communities. The City is planning to extend its active transportation network by connecting the existing Rutland Active Transportation Corridor (ATC) that currently terminates at Lester Road, to the Okanagan Rail Trail. The proposed ATC connection will travel north from the intersection of Houghton and Lester Roads, west on Leathead Road, cross Highway 97 to Enterprise Way and cross Mill Creek to join the Okanagan Rail Trail on the west side of Mill Creek (Figure 1.1). The connection will be a paved pathway and requires a new crossing of Mill Creek. A clear span bridge is proposed to minimize impacts to the Mill Creek ecosystem.

The City of Kelowna engaged Urban Systems Ltd. to create an Environmental Management Plan (EMP) for the Rutland ATC Mill Creek Bridge construction project. The EMP outlines environmental mitigation strategies to avoid or minimize potential adverse effects resulting from the project and will accompany environmental permit submissions.

1.2 PROJECT DESCRIPTION

The Rutland ATC connection to the Okanagan Rail Trail requires a pedestrian bridge over Mill Creek. The preliminary design is for a clear span steel bridge built to the Q200 flood elevation with precast concrete abutments on helical steel piles above the channel top of bank (Appendix A). Scour protection will be achieved using willow stalking and isolated boulders placed in the vicinity of the abutments. The bridge will not require instream works to construct. The bridge superstructure will be designed by Associated Engineering.

It is anticipated that the bridge construction will take one to two weeks.

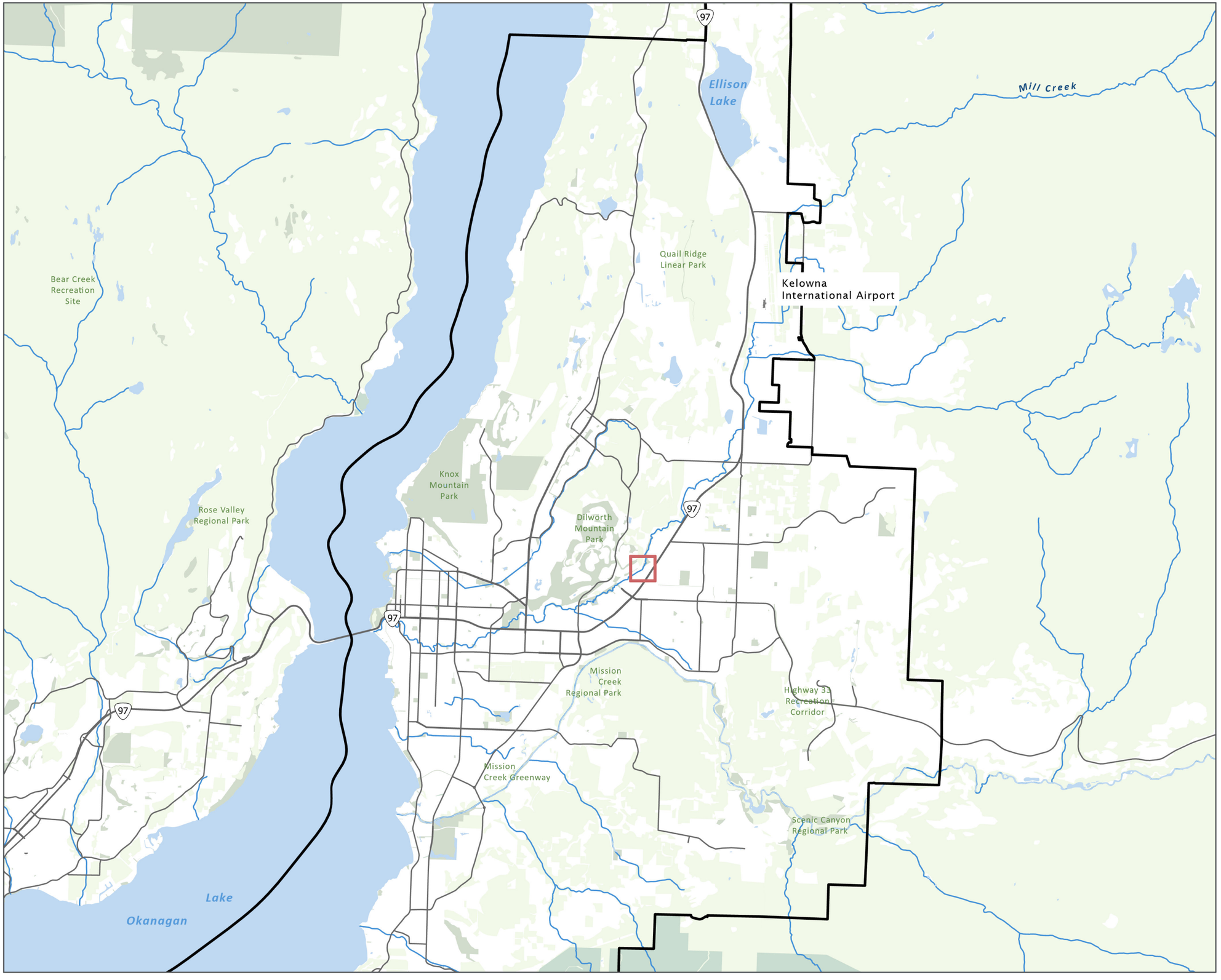
1.3 PROPOSED ACTIVITIES

The main project activities associated with bridge construction include:

- Clearing and grubbing
- Stripping of organic materials
- Excavation for installation of precast concrete bridge abutments
- Construction of clear span bridge structure
- Rehabilitation of riparian area post construction

1.4 TIMING WINDOWS

Construction of the Mill Creek Bridge will not require instream works. However, the project will require vegetation clearing, which is recommended to occur outside of the bird nesting season to avoid potential adverse effects to nesting birds.



City of Kelowna

Rutland ATC Environmental Assessment

Location Map

- Project Area
- Watercourse
- City of Kelowna Boundary

The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.

0 1 2
Kilometers

N

Coordinate System:
NAD 1983 UTM Zone 11N

Scale: 1:85,000
(When plotted at 11"x17")

Data Sources:

- Data provided by
Urban Systems Ltd., Data BC, City of Kelowna, OpenStreetMaps

Project #:	0467.0477.12
Author:	BB
Checked:	AM
Status:	**Draft**
Revision:	A
Date:	2021 / 3 / 16

URBAN SYSTEMS

FIGURE 1.1

Vegetation clearing should be conducted during the least risk timing window for nesting birds, which is August 15 and March 31. If clearing will occur outside of this timing window (or immediately before or after the timing window), a qualified environmental professional (QEP) must assess the area for nests prior to clearing.

1.5 PERMITS AND APPROVALS

The following environmental permit applications will be submitted to regulatory agencies in advance of the construction period. Required permits and approvals include:

1. **Fisheries Act**
    a. Request for Review submission[1]
2. **BC Water Sustainability Act**
    a. Submission under Section 11
3. **Canadian Navigable Waters Act**
    a. Submission to Transport Canada's Navigation Protection Program
4. **City of Kelowna Natural Environment Development Permit**

1.6 COMMUNICATION

The contact information for key project roles is outlined in Table 1.1 and is intended to be a quick reference tool for use during construction.

Table 1.1: Emergency Contacts

PERSONNEL OR AGENCY	NAME	ORGANIZATION	NUMBER
Project Manager	Steven Robertson	City of Kelowna	250-469-8464
Project Environmental Lead	Darren Filipic	Urban Systems	250-318-5228
Environmental Monitor	TBD	TBD	TBD
Site Supervisor	TBD	TBD	
BC Environmental Emergency Program	--	Provincial	1-800-663-3456
Fisheries and Ocean (DFO) report a violation	--	Fisheries and Oceans	1-800-465-4336

[1] A Request for Review is not a permit, but an opportunity for Fisheries and Oceans to review the proposed project to assess if an authorization under the *Fisheries Act* is required.

2.0 ENVIRONMENTAL SENSITIVITIES

The environmental condition of Mill Creek at the project area is described in the Rutland Active Transportation Corridor Mill Creek Bridge Environmental Assessment prepared by Urban Systems (draft March 2021). The environmental sensitivities at the project area are summarized herein.

2.1 AQUATIC AND RIPARIAN RESOURCE VALUES

Mill Creek originates from the hills north east of the project area and flows in a south southwesterly direction through Kelowna, to drain into Okanagan Lake at the W.R. Bennet Bridge. The creek receives water from numerous tributaries including headwater lakes (Postill, South, and Moore Lakes), and Whelan and Scotty Creeks.

Mill Creek supports a spawning run of Okanagan Lake kokanee in the fall and a small run of spring-spawning rainbow trout, in addition to occurrences of brook trout. In 2006 Ecoscape conducted a sensitive habitat inventory of the full length of Mill Creek and described conditions by reach. The reach at the project area was described as riffle-pool-run morphology and having a primary character of channelized along the right bank by the rail trail and armoured over much of the left bank. Substrate was documented (in 2006) as fines (20%), gravel (25%), cobble (40%), and boulder (5%). The presence of spawning habitat was listed as unknown in the 2006 inventory. Over the length of Mill Creek, spawning habitat, identified by the presence of suitable spawning gravels, was only documented in 745 linear metres or 3.2% of the stream length, and was largely attributed to past habitat enhancement initiatives involving additions of gravel.

Riparian vegetation at the crossing site consists mainly of black cottonwood trees and shrubs and is limited to approximately 35 m between the Rail Trail and Enterprise Way. Some of the cottonwood trees were severely pruned leaving stump-like trees. Vegetation was inventoried in February 2021 by Urban Systems biologists to consist of black cottonwood (30%), willow (25%), snowberry (25%), hawthorn (20%), chokecherry (5%), and Oregon grape (5%).

Invasive plant species were not identified during the winter site visit but may exist in disturbed areas.

2.2 WILDLIFE AND SPECIES AT RISK

The Mill Creek riparian area contains habitat that may be used by mule deer, black-tailed deer, bats, mice, numerous birds, and reptiles such as common garter snake.

The provincial species at risk occurrence database and the federal critical habitat mapping layers were searched to aid in determining the potential for species at risk to occur in the project area.

The BC Conservation Data Centre indicated an occurrence record for the red listed American badger overlaps the project area. The mapped occurrence polygon is large and extends east from the north end of Okanagan Lake south to the US border. American badgers have large territories and this polygon likely encompasses multiple occurrences.

Critical habitat identified under the Species At Risk Act overlaps the project area for great basin gopher snake. The critical habitat layer is mapped using UTM grid squares and blankets the entire Okanagan Valley region, which includes suitable and unsuitable habitat. Great Basin gopher snake typically

overwinter in well known/mapped hibernacula located in exposed rocky areas, talus slopes and/or crevasses. However, gopher snakes can also use rodent burrows to overwinter individually.

The dry hillside on the west side of Mill Creek is suitable habitat for the Great Basin gopher snake and snakes may temporarily enter the Mill Creek riparian area and project area. Denning habitat for the Great Basin gopher snake is not present in the project area.

2.3 ARCHAEOLOGICAL AND HERITAGE RESOURCES

The City of Kelowna is managing all aspects of archaeological and heritage resource management for this project.

3.0 POTENTIAL EFFECTS

Construction of a clear span bridge at Mill Creek will require the use of heavy machinery to clear and grub vegetation, excavate soil, and construct the bridge infrastructure. Potential effects resulting from the bridge construction may include:

- Removal and disturbance of vegetation resulting in a loss of riparian habitat.
- Disturbance to wildlife including nesting birds and denning animals.
- Increase in impermeable surfaces.
- Erosion and sedimentation into Mill Creek.
- Spills of deleterious substances, such as fuels, or uncured concrete to land or to Mill Creek.
- Introduction and spread of invasive plants.

By following the mitigation strategies and best management practices outlined in this EMP, adverse environmental effects can be avoided or minimized.

4.0 ENVIRONMENTAL MANAGEMENT PLAN

The intent of the Environmental Management Plan is to provide guidance during planning and construction of the Mill Creek Bridge to avoid or minimize potential adverse effects to environmentally sensitive features associated with the Mill Creek project area.

4.1 ENVIRONMENTAL MONITORING

An Environmental Monitor will be engaged to monitor the Mill Creek clear span bridge construction. The Environmental Monitor will:

- Ensure measures/conditions outlined in the EMP and/or environmental permits are implemented.
- Have the authority to stop work if there is potential for harm to the environment and/or the activity is not in compliance with the permit conditions, environmental legislation, or the EMP.
- Provide advice to the Contractor concerning incident response, remediation procedures and methods to resolve non-conformances, as needed.

- Maintain documentation and records of relevant information pertaining to applicable environmental practices and mitigation measures, including:
    - Accidents, spills, leaks, and releases and the reporting and clean-up procedures used.
    - Reviews, improvements, and adjustments to environmental mitigation measures.
    - Records of monitoring activities, including equipment inspection and maintenance.
    - Contingency measures used, if any.
- Report environmental incidents to the site supervisor and provide a summary within one day of the incident occurring.
- Prepare a post-construction completion report including a summary of project compliance with regulatory requirements, the effectiveness of mitigation measures employed, and any corrective actions undertaken to address deficiencies.

The Contractor will

- Communicate regularly with the Environmental Monitor regarding schedule, schedule changes and discuss any changes to construction activities.
- Inform the Environmental Monitor of any incidents and near misses that occur while the Environmental Monitor is not on-site.

4.2 CLEARING AND GRUBBING

Clearing and grubbing is required on both sides of Mill Creek for the bridge construction, and for connections to the Rail Trail to the west and the ATC paved trail to the east. Measures to avoid or minimize adverse effects include:

- Restrict clearing and grubbing to the project footprint, by clearly delineating the clearing boundary in the field.
- Conduct vegetation clearing and ground disturbing activities between August 15 and March 15 (i.e., outside of the bird nesting season) to avoid impacts to nesting birds and to maintain compliance with the federal Migratory Birds Convention Act and BC Wildlife Act. Or, alternatively, have a Qualified Environmental Professional (QEP) conduct an active nest survey prior to clearing.
- While suitable bat roost habitat was not identified, clearing vegetation between October 1 and April 15 will ensure that bats are not present. If suitable roost habitat is identified and will be impacted by construction outside of the period listed above, an QEP must assess the trees for roosting bats.
- Stop work immediately if wildlife enters the worksite. Wildlife will be allowed to vacate the area on its own and guidance will be sought from the Environmental Monitor.

4.3 WILDLIFE AND SPECIES AT RISK MANAGEMENT

Wildlife and species at risk may occur in or pass through the project area. Mitigation strategies are provided to avoid or minimize effects to wildlife and species at risk, and to maintain compliance with the federal *Migratory Birds Convention Act* and the provincial *Wildlife Act*.

- Conduct vegetation clearing and ground disturbing activities between August 15 and March 15 (i.e., outside of the bird nesting season) to avoid impacts to nesting birds to maintain compliance with the federal *Migratory Birds Convention Act*, *Species at Risk Act*, and BC *Wildlife Act*. Or, alternatively, have an QEP conduct an active nest survey prior to clearing.
- Include/implement conditions and mitigation outlined in permits or regulatory communications (i.e., BC *Water Sustainability Act* submission for works in and about a stream and response from the *Fisheries Act* Request for Review).
- All food and food wastes, including food packaging waste will be kept in animal-proof containers and wastes will be removed regularly from the site.
- If wildlife and/or species at risk including great basin gopher snake and American badger are encountered during construction, the Contractor must stop work in the area, ensure no harm is caused to the wildlife and call the Environmental Monitor.

4.4 AQUATIC HABITAT PROTECTION

Mill Creek and its riparian area are environmentally sensitive habitats. Mitigation to avoid adverse effects to fisheries resources and water quality are provided.

- Ensure equipment/vehicles are free of silt and other substances which may negatively impact fish health and aquatic habitat. Inspect vehicles and equipment upon arrival at the worksite.
- Ensure mechanical equipment is in a state of good repair and free of leaks and operated in a manner to prevent deleterious substances from entering Mill Creek or area drainages.
- Ensure vehicle and equipment refuelling is conducted in an area where a potential spill will not drain into Mill Creek.
- Ensure secondary containment for all refuelling and fuel storage within 30 m of Mill Creek.
- Return woody debris, if moved from the riparian area, back to its original location.
- Ensure that sediment laden water is directed into vegetated areas that will not directly drain into Mill Creek.
- Ensure a spill containment kit is on site during all works and construction personnel are trained in its use. Report all spills to water to:
- Environmental Monitor
- Fisheries and Oceans - 1-800-465-4336
- Environmental Emergency Program (EEP)'s Report A Spill - 1-800-663-3456

4.5 EROSION AND SEDIMENT CONTROL

The purpose of erosion and sediment control (ESC) management is to avoid or minimize erosion and the mobilization of sediment, or other deleterious substances, into Mill Creek. ESC management measures include:

- Limit vegetation clearing and excavation to the project footprint. Maintenance of riparian vegetation is a natural erosion prevention measure.
- Suspend work during heavy rain to avoid erosion and sediment migration into Mill Creek.

- Implement ESC measures to avoid sedimentation into Mill Creek, if needed. Have ESC supplies available on-site during construction (e.g., sandbags and sediment fencing).
- Engage an Environmental Monitor to monitor the effectiveness of ESC measures.
- Ensure ESC measures are removed upon project completion.
- Stockpile excavated material (such as salvaged organic soil) in an area where it cannot migrate into Mill Creek and not on top of native vegetation. Soil can be redistributed in disturbed areas following works, so long as it does not contain weeds.
- Areas disturbed from construction and areas lacking riparian vegetation will be rehabilitated using live willow staking and bioengineering techniques, if needed, and exposed soils revegetated, as soon as possible after construction is completed.

4.6 INVASIVE AND NOXIOUS PLANT MANAGEMENT

Invasive and noxious plants were not identified during the winter site visit; however, they may be present in disturbed areas. To avoid invasive species spread and establishment, the following best management practices are recommended.

- Ensure equipment and machinery is power washed and free of soils, seeds, and plant parts prior to mobilizing to the project site.
- Minimize the creation of bare soils.
- Re-seed and revegetate bare soils as soon as possible following construction.
- Manage topsoil stockpiles to limit/avoid weed germination.
- Remove and dispose of noxious plant species in the project area during construction period and during the establishment period of the restored area.

4.7 AIR QUALITY AND DUST CONTROL

The project is not expected to generate significant dust or exhaust fumes. However, measures to avoid adverse effects to local air quality include:

- Use a dust palliative such as water if dust becomes an issue.
- Avoid vehicle and equipment idling.

4.8 CONSTRUCTION AND WASTE MANAGEMENT PLAN

The bridge construction is not expected to generate a large volume of waste. However, the following waste management measures are recommended.

- All non-toxic or non-hazardous wastes will be either recycled or disposed of in an approved sanitary landfill or other specialized area.
- Any waste material that is inadvertently dumped in or adjacent to Mill Creek shall be removed by the Contractor and disposed of in an approved manner.
- The Contractor is responsible for the regular collection, storage, and disposal of all waste material generated by employees and subcontractors.

- Construction debris will be removed from the site regularly. Wastes will be stored in suitable animal-proof containers and disposed of at an approved waste disposal site.

4.9 RESTORATION PLAN

Limited clearing is required for the Mill Creek clear span bridge construction and surrounding native vegetation will be maintained as much as possible. An estimated 30 m^2 of riparian area will be lost to the permanent footprint of the bridge and trail connections to the Okanagan Rail Trail and Rutland ATC.

- Disturbed areas will be seeded with a native seed mix and staked with live willow stakes to reduce erosion potential and minimize weed establishment.

4.10 SPILL CONTINGENCY AND RESPONSE

The Contractor will take all necessary precautions to prevent the discharge of contaminants that could pollute or degrade the natural environment. Measures to avoid or mitigate the effects of a potential spill are outlined below.

4.10.1 Contingency Plan

The most likely source of contaminant is from malfunction or leaks in equipment used on-site that require fuel. To minimize the potential impact of a spill, the Contractor must:

- Clean all equipment prior to bringing to site.
- Inspect all equipment for leaks prior to the commencement of the work. Leaking equipment will be immediately removed from the site and repaired.
- Re-fuel equipment and machinery at a pre-determined staging area located in an area where a spill can not migrate into Mill Creek.
- Remove equipment requiring repair or maintenance from the site. Repairs or maintenance will not occur on-site and will be conducted at an appropriate facility.
- Report all spills to the appropriate contact as outlined below.
- Environmental Monitor – report all spills regardless of size and/or type.
- Environmental Emergency Program (EEP)'s Report A Spill - 1-800-663-3456 -report all spills to water and spills of a reportable quantity to ground[2]
- Fisheries and Oceans - 1-800-465-4336 - report all spills to water.
- Ensure spill kits are on-site and in all equipment and machinery. Ensure all staff and operators are trained in their use.
- Clean up spills immediately by covering with an absorbent material such as an industrial standard oil absorbing material. Sawdust or straw are not recommended and will not be used. Used spill clean-up materials and contaminated soils will be removed from the work site and disposed of at an appropriate disposal facility as per the *Environmental Management Act*.

[2] Reportable quantities of contaminants spilled to ground are listed in the Spill Reporting Regulation schedule of the *Environmental Management Act*.

4.10.2 Emergency Spill Response Procedure

All construction personnel should be familiar with the spill response procedure, and a spill incident report form must be filled out for any incident that occurs (Appendix B).

INITIAL ASSESSMENT

Step 1

- Identify product and extent of contamination.
- Identify any safety concerns.
- Notify Project Superintendent.

Step 2

- Eliminate the source of the spill.
- Contain the spill and mark the extent of the spill.
- Absorb spill using pads, booms, pillows or granular absorbent.
- For spills to water, isolate the contamination, if possible.
- Dispose of contaminated spill cleaning equipment at appropriate facilities; and
- Contaminated soils must not be removed from the site without prior approval from the Ministry of Environment.

All spills must be reported to the Environmental Monitor, the Site Supervisor, and to the Environmental Emergency Program (EEP) if the spill is to water or is a reportable quantity to ground (see Table 1.1: Emergency Contacts).

APPENDIX A

Preliminary Engineering Drawings

APPENDIX B

Spill Incident Report

URBAN SYSTEMS

Appendix B - Spill Incident Report

Date of Report:	
Date and Time of Incident:	
Date and Time Reported to Site Supervisor:	
Date and Time Reported to the Contractor:	
Personnel at Spill Site:	
Spilled contents and amount:	
Cause and effect of spill:	
Spill stopped or continuing:	
Spill contained:	
Extent of contamination:	
Containment method:	
Further action required:	
Hazards to persons, property or environment:	
Comments:	

Form filled out by:	
Position:	
Contact:	

Copies of this form must be provided to the City of Kelowna, the Contractor and the Project Supervisor