

Map Series 3 of 7:

Culture Indicator



31 December 2019









Disclaimer

This document has been prepared by Ebbwater Consulting Inc. and its subconsultants for the exclusive use and benefit of the Okanagan Nation Alliance. It has been developed in accordance with generally accepted engineering practices and with full understanding of applicable natural hazard guidelines in the Province of British Columbia.

The contents may be used and relied upon by the officers and employees of the Okanagan Nation Alliance. However, Ebbwater Consulting Inc. (Ebbwater) denies any liability to other parties who access and use this document.

Copyright

All material presented in this report is provided under a Creative Commons License CC BY-NC-ND 4.0, with the exception of any content supplied by third parties. This license allows users to copy and redistribute the material in any medium or format, under the following terms:

- Provide appropriate credit by citing this document (see below).
- Do not use the material for commercial purposes.
- Refrain from remixing, transforming or building upon the material, without first contacting Ebbwater or Okanagan Nation Alliance.



Details for the Creative Commons License CC BY-NC-ND 4.0 (Attribution-NonCommercial-NoDerivatives 4.0 International) are available on Creative Commons 4.0 website: <u>https://creativecommons.org/licenses/by-nc-nd/4.0/</u>

All intellectual property rights to *Syilx* Okanagan traditional knowledge, including *nsyilxcan words, place names and traditional ecological knowledge (TEK)* presented in this report are held by the *Syilx* Okanagan Nation, and as such cannot be used outside of this report without the permission of the Okanagan Nation Alliance.

Additionally, Ebbwater requests that you contact the company by way of courtesy to inform of the purpose of your use of the material.

Suggested report citation: Ebbwater Consulting Inc. (2019): *Syilx* (Okanagan) Flood and Debris Flow Risk Assessment: Map Book. Prepared for the Okanagan Nation Alliance.

Acknowledgement

The *Syilx* Okanagan Flood and Debris Flow Risk Assessment is made possible by the many *Syilx* Okanagan Nation members from across the territory who generously contributed their input, knowledge, and lived experience – all of which form the foundations of this Assessment. Special recognition is given to the *Syilx* Okanagan traditional knowledge keepers and Elders who led the watershed tours and were a guiding force in rooting the assessment in traditional *Syilx* Okanagan perspectives.

This Assessment is a testament to the power of collaboration and partnership between *Syilx* and non-*Syilx* organizations, including the project team at Ebbwater Consulting Inc. (Ebbwater), and exhibits a shared concern for how water is managed and recognized in the territory.

Support for this project came from Emergency Management British Columbia (EMBC) and Public Safety Canada (PSC) as part of the National Disaster Mitigation Program (NDMP), First Nation Adapt Program and the Real Estate Foundation of B.C. through successful applications submitted by the Okanagan Nation Alliance (ONA).

Okanagan Nation Alliance would like to acknowledge Ebbwater for the production of this Map Book, which was completed by Dickon Wells, M. Eng, with support from Silja Hund, Ph.D., Nikoletta Stamatatou, M.Sc., and Robert Larson, M.Sc. Qualitative input for the Map Book is owed to project participants, as well as Erica Crawford (SHIFT Collaborative) and Kelly Terbasket (indigenEYEZ) for leading the workshops. Cory McGregor, GIT and Derek Cronmiller, P.Geo (both of Palmer Environmental Consulting Group Ltd.) provided the information to quantitively map debris flow hazard. The Map Book contains significant input from ONA team members Tessa Terbasket, Kathy Holland, and Skyeler Folks. The Map Book was reviewed by Tamsin Lyle, P.Eng of Ebbwater.

The team is grateful to *Syilx* Okanagan community staff who contributed to and supported the process; Colleen Marchand (OKIB), Brody Armstrong (PIB), Stephanie Paul (WFN), Jonathan Ford (WFN), Wendy Hawkes (LSIB), Trudy Peterson (LSIB), Mike Allison (USIB) and Robin Irwin (USIB). Finally, the team would like to thank the *Syilx* Okanagan Flood Adaptation Initiative Steering Committee members who will continue to work together and provide direction to co-build flood resilience in the region.

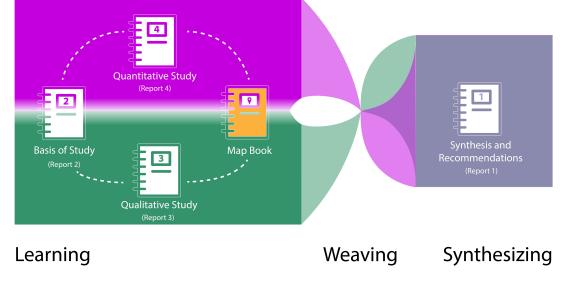
Document Index

Disclaimer1	
Copyright1	
Acknowledgement 2	
Document Index	
Introduction	
Overview of Maps	
Printing and Document Navigation5	
Notes to User	
Map Index7	
Qualitative Flood and Debris Flow Impact Maps	
Quantitative Flood Consequence Maps12	
Quantitative Debris Flow Consequence Maps	

Introduction

The ONA was a successful Stream 1 applicant to the National Disaster Mitigation Program (NDMP) to study flood and debris flow hazard risk in the Okanagan-Similkameen region. This project is the initial phase of a multi-year flood and debris flow adaptation initiative. This project's goal is to **understand the risk due to flood and debris flows within the project area, to support priority-setting of future work**.

This Map Book is one of four outputs that form the risk assessment component of this project (Figure 1). The Map Book may also be used as the main visual reference to the Synthesis and Recommendations report, for readers to obtain a summary understanding of the project. The Qualitative, Quantitative, and Basis of, studies contain more detailed information. The Map Book summarizes the spatial results following the methods described in the Qualitative and Quantitative studies.



Study, and the complementary Qualitative and Quantitative studies).

Overview of Maps

Ebbwater assessed the impacts from both flood and debris flow in the Okanagan-Similkameen watersheds. This assessment was done quantitively and qualitatively. This map series is one out of a series of 7 that together form the Map Book. In aggregate, the 7 series cover the 2 hazards assessed and 6 exposure indicators. The table below lists the 7 series, and highlights the series contained herein. The qualitative maps combine impacts from both flood and debris flow hazards. The quantitative maps show consequences from flood and debris flow hazards separately. In the quantitative maps, the consequences for flood hazard are shown for the moderate magnitude scenario only.

Series	Map Book Title	Information Shown
Series 1	Flood and Debris Flow Hazard	Debris FlowLow, Moderate, and High Magnitude Flood
Series 2	Environment Indicator	Qualitative (Impacts)Quantitative (Consequences)
Series 3	Culture Indicator	Qualitative (Impacts)Quantitative (Consequences)
Series 4	Mortality Indicator	Quantitative (Consequences)
Series 5	Affected People Indicator	Qualitative (Impacts)Quantitative (Consequences)
Series 6	Economy Indicator	Qualitative (Impacts)Quantitative (Consequences)
Series 7	Disruption Indicator	Qualitative (Impacts)Quantitative (Consequences)

Printing and Document Navigation

All maps are designed and scaled to be printed in 'ANSI D' format. Maps are linked and can be navigated through by clicking within the following:

- Index line items on page 3.
- Blue tiles, watersheds or text, located in the top right-hand corner of the maps, where present.
- Sub-watershed index maps on pages 12 and 37.
- Hyperlinked Map index on page 7.

Notes to User

Qualitative

1. Impacts were recorded primarily in Workshop 1 in West Kelowna on 13 February 2019 and Workshop 2 on 25 April 2019. Impacts were also recorded based on input obtained from learning sessions, watershed tours, personal communications and electronic feedback.

2. Methodologies and impacts are discussed further in the Qualitative Study which accompanies this Map Book.

Data Sources

1. Lakes, Watercourses, Roads, and Trails: BC Data Catalogue.

2. Syilx Place Names: Okanagan Nation Alliance.

3. Base Layer: OpenStreetMap data – openstreetmap.org (©

OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Quantitative

1. Cultural amenities have been identified based on the primary land use description. Properties have been selected which are likely to have a significant social or cultural value and includes parks as well as education, social care, and leisure facilities. While this provides an indication of cultural locations the list is not comprehensive.

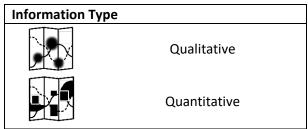
 Indigenous sites have been generalized using available archaeology data. These data are known to be incomplete, outdated, and inaccurate. The data are a limited representation of valued cultural sites; many other sites of cultural importance to Indigenous people are not shown on this map.
 Cultural (exposure) layers were clipped to the moderate flood or debris flow hazard area. The hazard layer is shown in the hazard maps, and was produced by Palmer Environmental Consulting Group Inc. The method used to produce the hazard layer is described in the Quantitative Study.

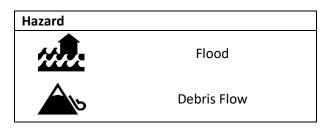
Data Sources

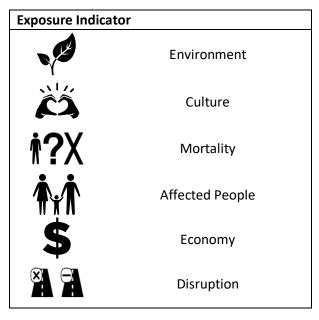
- 1. Lakes, Watercourses, Roads, and Trails: BC Data Catalogue.
- 2. Cultural Buildings: BC Assessment and Westbank First Nation.
- 3. Syilx Place Names: Okanagan Nation Alliance.
- 4. Icons: The Noun Project
- 5. Base Layer: OpenStreetMap data openstreetmap.org (©

OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

lcons







Map Index

Qualitative Maps

C-Q-001-001	Qualitative Impacts - Culture - Project Area Map
C-Q-001-002	Qualitative Impacts - Culture - Okanagan Map
C-Q-001-003	Qualitative Impacts - Culture - Similkameen Map

Quantitative Maps

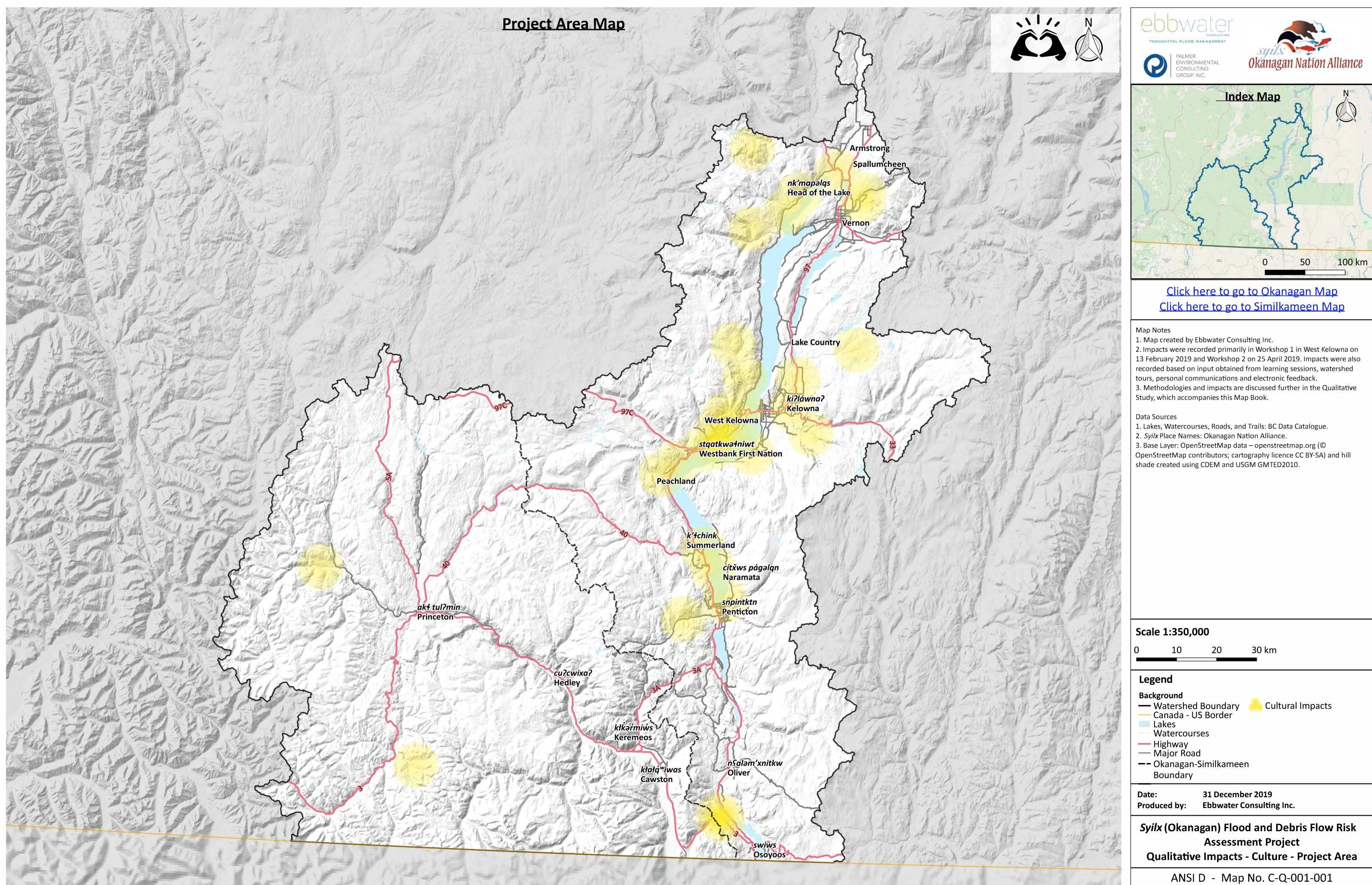
C-F-001-001	Flood - Culture - Sub-watershed Index	C-D-001-001	Debris Flow - Culture - Sub-watershed Index
C-F-002-001	Flood - Culture - Quantitative Project Area Map	C-D-002-001	Debris Flow - Culture - Quantitative Project Area Map
C-F-002-002	Flood - Culture - Quantitative Okanagan Map	C-D-002-002	Debris Flow - Culture - Quantitative Okanagan Map
C-F-002-003	Flood - Culture - Quantitative Similkameen Map	C-D-002-003	Debris Flow - Culture - Quantitative Similkameen Map
C-F-003-001	Flood - Culture - Quantitative Map Tile 1 of 20	C-D-003-001	Debris Flow - Culture - Quantitative Map Tile 1 of 20
C-F-003-002	Flood - Culture - Quantitative Map Tile 2 of 20	C-D-003-002	Debris Flow - Culture - Quantitative Map Tile 2 of 20
C-F-003-003	Flood - Culture - Quantitative Map Tile 3 of 20	C-D-003-003	Debris Flow - Culture - Quantitative Map Tile 3 of 20
C-F-003-004	Flood - Culture - Quantitative Map Tile 4 of 20	C-D-003-004	Debris Flow - Culture - Quantitative Map Tile 4 of 20
C-F-003-005	Flood - Culture - Quantitative Map Tile 5 of 20	C-D-003-005	Debris Flow - Culture - Quantitative Map Tile 5 of 20
C-F-003-006	Flood - Culture - Quantitative Map Tile 6 of 20	C-D-003-006	Debris Flow - Culture - Quantitative Map Tile 6 of 20
C-F-003-007	Flood - Culture - Quantitative Map Tile 7 of 20	C-D-003-007	Debris Flow - Culture - Quantitative Map Tile 7 of 20
C-F-003-008	Flood - Culture - Quantitative Map Tile 8 of 20	C-D-003-008	Debris Flow - Culture - Quantitative Map Tile 8 of 20
C-F-003-009	Flood - Culture - Quantitative Map Tile 9 of 20	C-D-003-009	Debris Flow - Culture - Quantitative Map Tile 9 of 20
C-F-003-010	Flood - Culture - Quantitative Map Tile 10 of 20	C-D-003-010	Debris Flow - Culture - Quantitative Map Tile 10 of 20
C-F-003-011	Flood - Culture - Quantitative Map Tile 11 of 20	C-D-003-011	Debris Flow - Culture - Quantitative Map Tile 11 of 20
C-F-003-012	Flood - Culture - Quantitative Map Tile 12 of 20	C-D-003-012	Debris Flow - Culture - Quantitative Map Tile 12 of 20
C-F-003-013	Flood - Culture - Quantitative Map Tile 13 of 20	C-D-003-013	Debris Flow - Culture - Quantitative Map Tile 13 of 20
C-F-003-014	Flood - Culture - Quantitative Map Tile 14 of 20	C-D-003-014	Debris Flow - Culture - Quantitative Map Tile 14 of 20
C-F-003-015	Flood - Culture - Quantitative Map Tile 15 of 20	C-D-003-015	Debris Flow - Culture - Quantitative Map Tile 15 of 20
C-F-003-016	Flood - Culture - Quantitative Map Tile 16 of 20	C-D-003-016	Debris Flow - Culture - Quantitative Map Tile 16 of 20
C-F-003-017	Flood - Culture - Quantitative Map Tile 17 of 20	C-D-003-017	Debris Flow - Culture - Quantitative Map Tile 17 of 20
C-F-003-018	Flood - Culture - Quantitative Map Tile 18 of 20	C-D-003-018	Debris Flow - Culture - Quantitative Map Tile 18 of 20
C-F-003-019	Flood - Culture - Quantitative Map Tile 19 of 20	C-D-003-019	Debris Flow - Culture - Quantitative Map Tile 19 of 20
C-F-003-020	Flood - Culture - Quantitative Map Tile 20 of 20	C-D-003-020	Debris Flow - Culture - Quantitative Map Tile 20 of 20

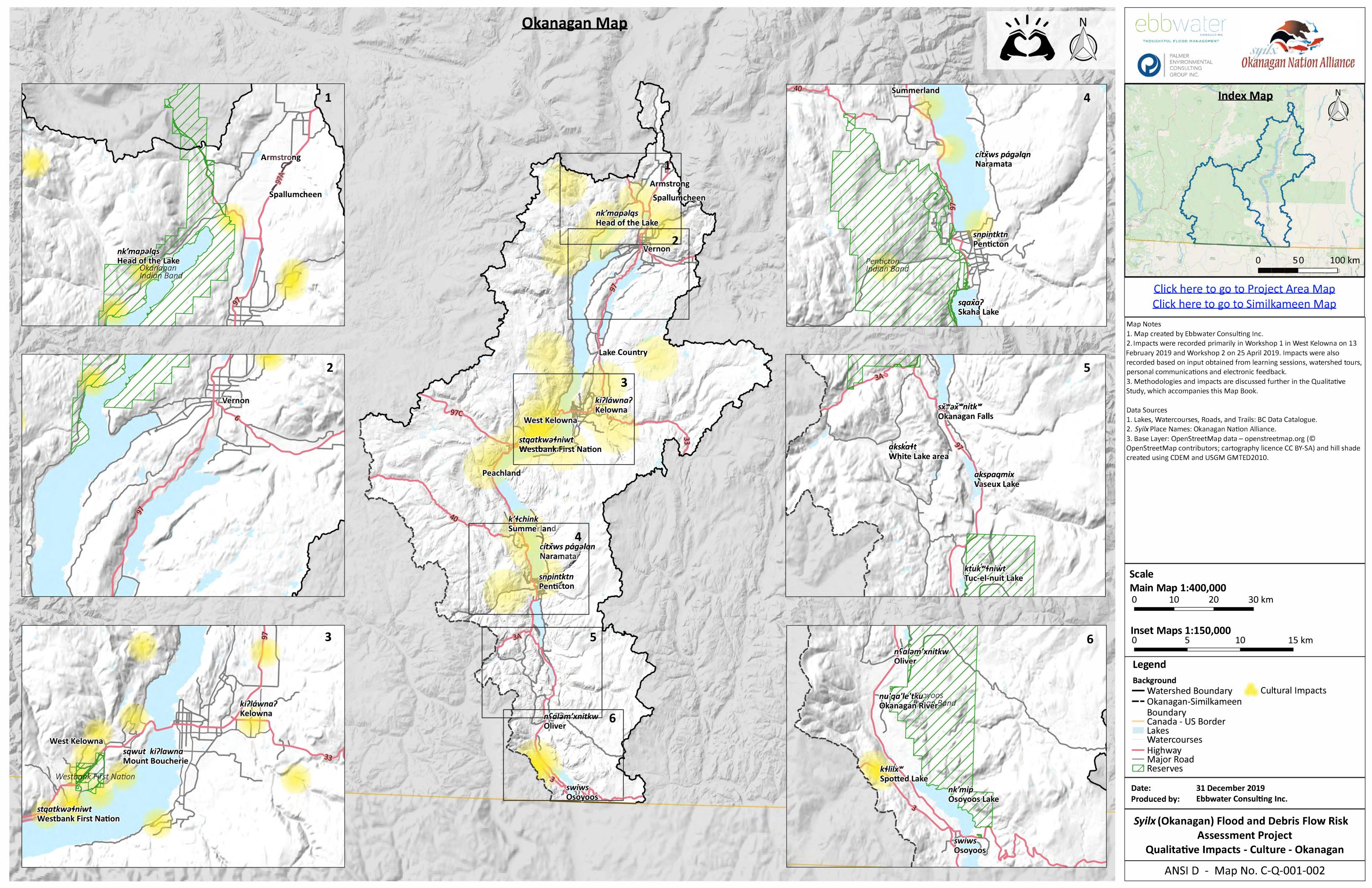
Syilx Okanagan Flood and Debris Flow Risk Assessment Map Book Map Series 3 of 7: Culture Indicator

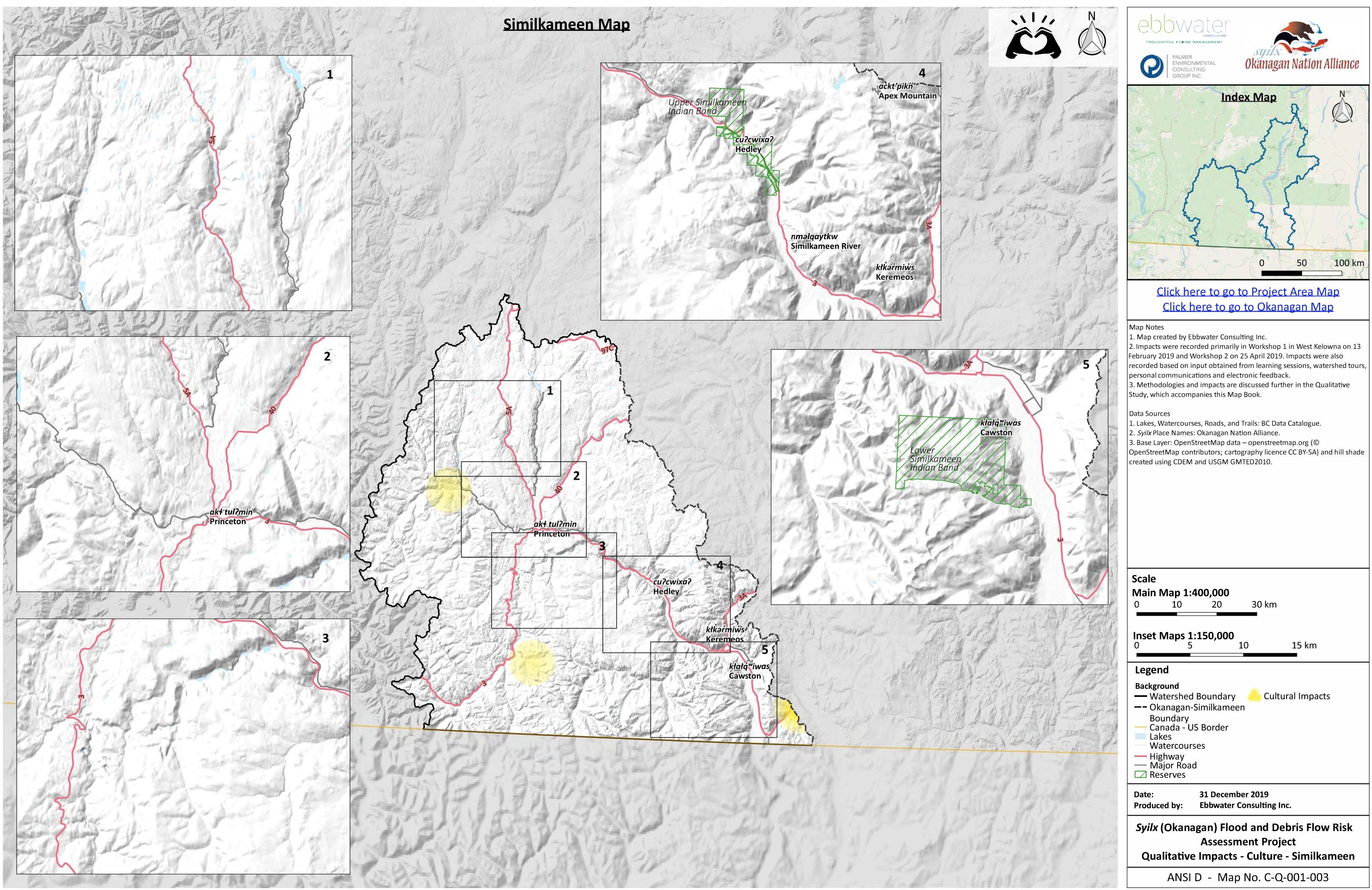


Qualitative Flood and Debris Flow Impact Maps







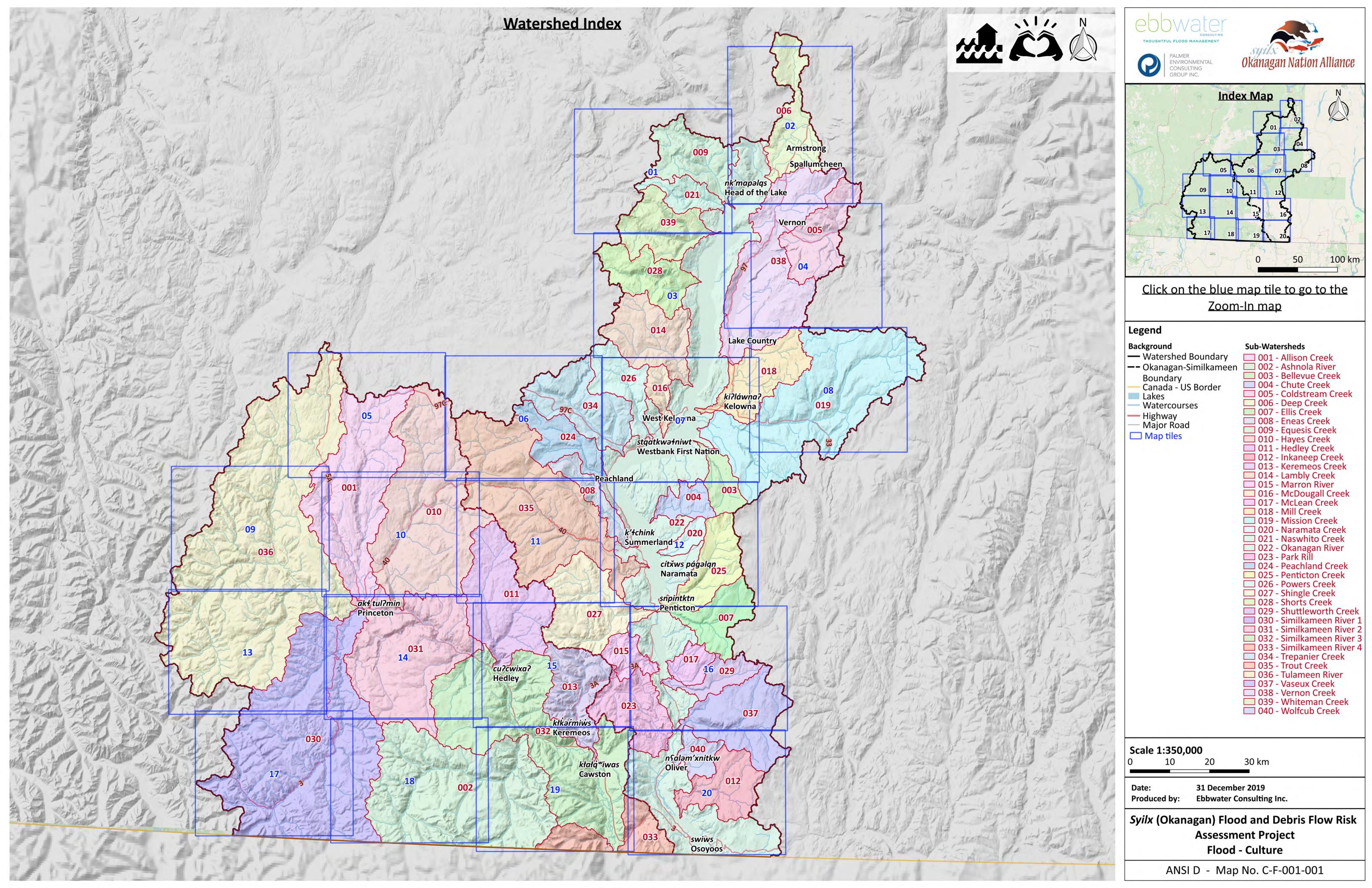


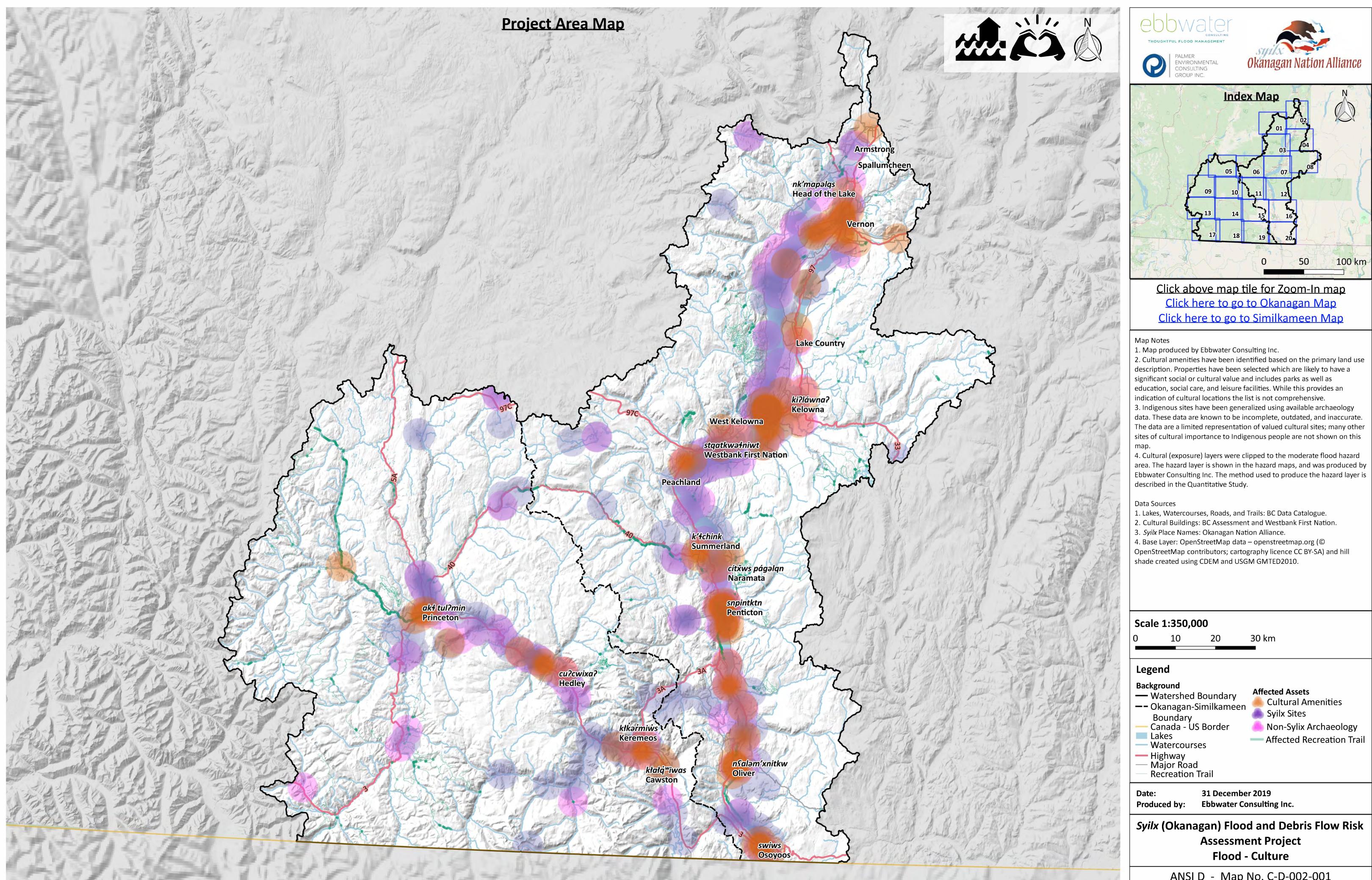
Syilx Okanagan Flood and Debris Flow Risk Assessment Map Book Map Series 3 of 7: Culture Indicator



Quantitative Flood Consequence Maps

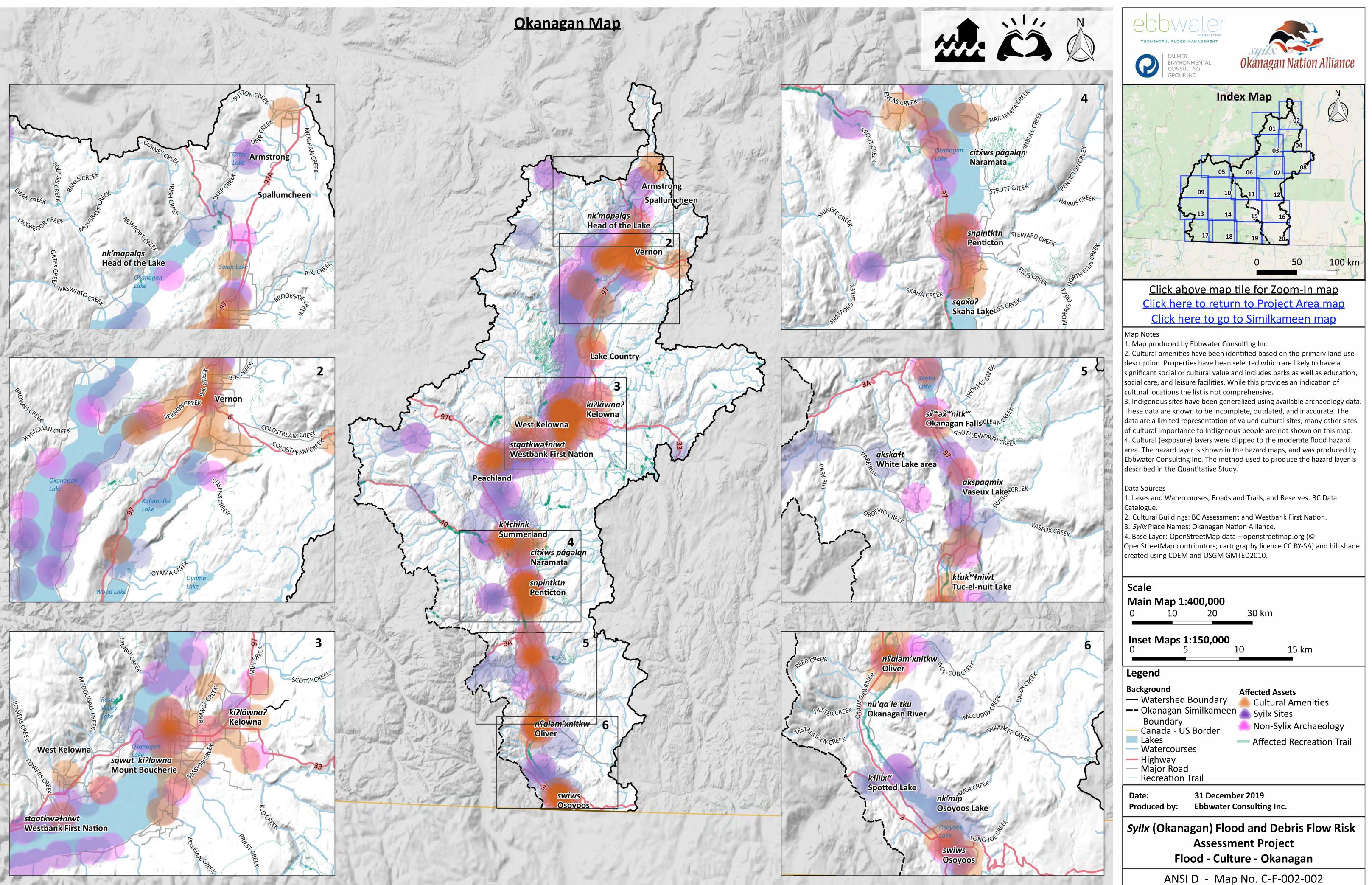




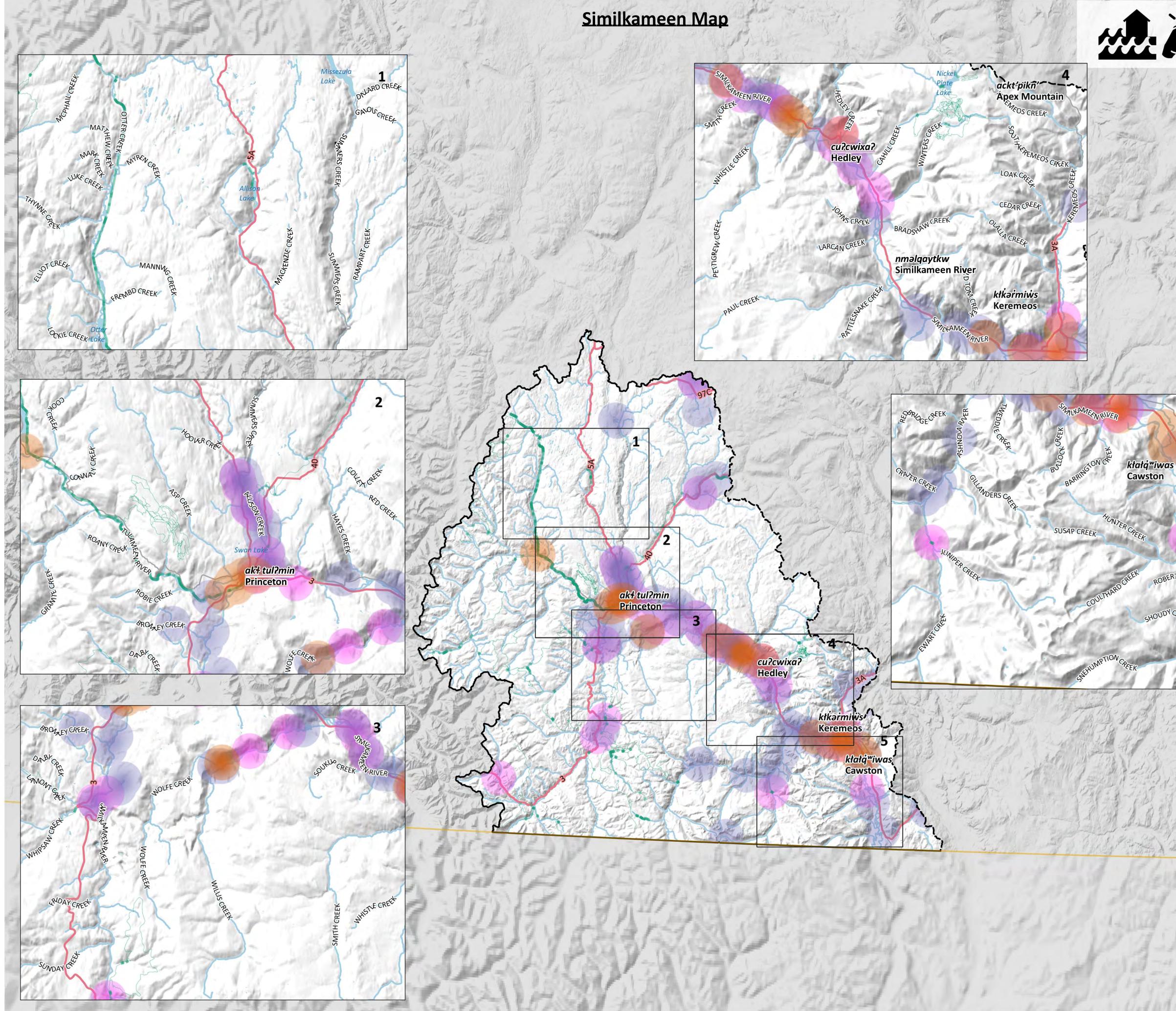


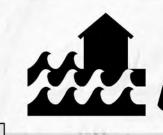
Scale 1:350,0	00					
0 10	20	30 km				
Legend Background — Watershed — Okanagan- Boundary — Canada - U Lakes — Highway — Highway — Major Road — Recreation	Similkame S Border ses	(ultural Amonities)				
Date: Produced by:	31 Decem Ebbwater	nber 2019 r Consulting Inc.				
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project Flood - Culture						

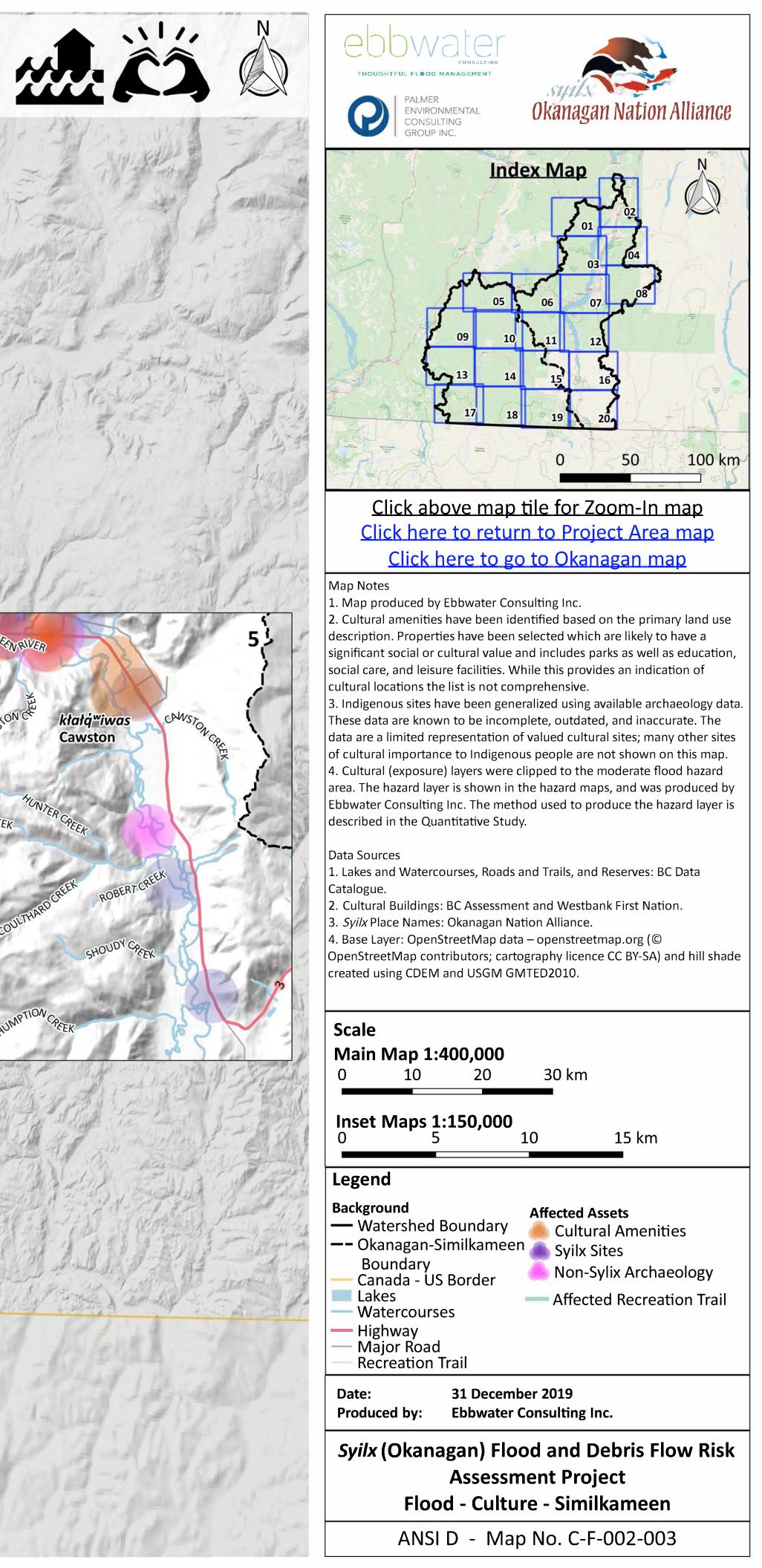
ANSI D - Map No. C-D-002-001

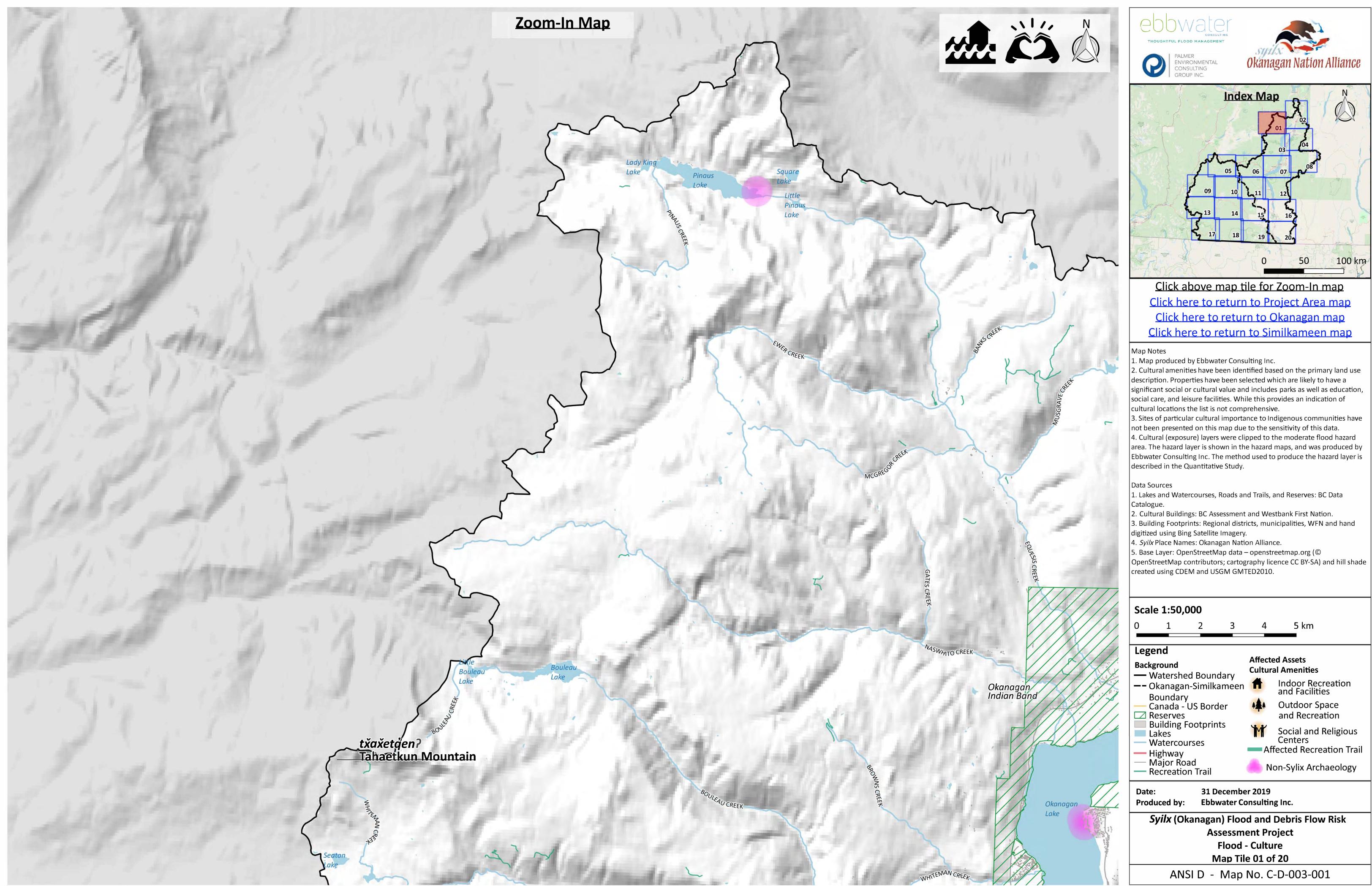


Scale Main Map 1:4 0 10	-	30 km
Inset Maps 1: 0 5	150,000 10	15 km
Legend Background Watershed Background Okanagan-Sir Boundary Canada - US I Lakes Watercourses Highway Major Road Recreation Tr	oundary milkameen Border s	fected Assets Cultural Amenities Syilx Sites Non-Sylix Archaeology Affected Recreation Trail
	31 December 2 Ebbwater Cons	
	Assessmen	and Debris Flow Risk It Project e - Okanagan

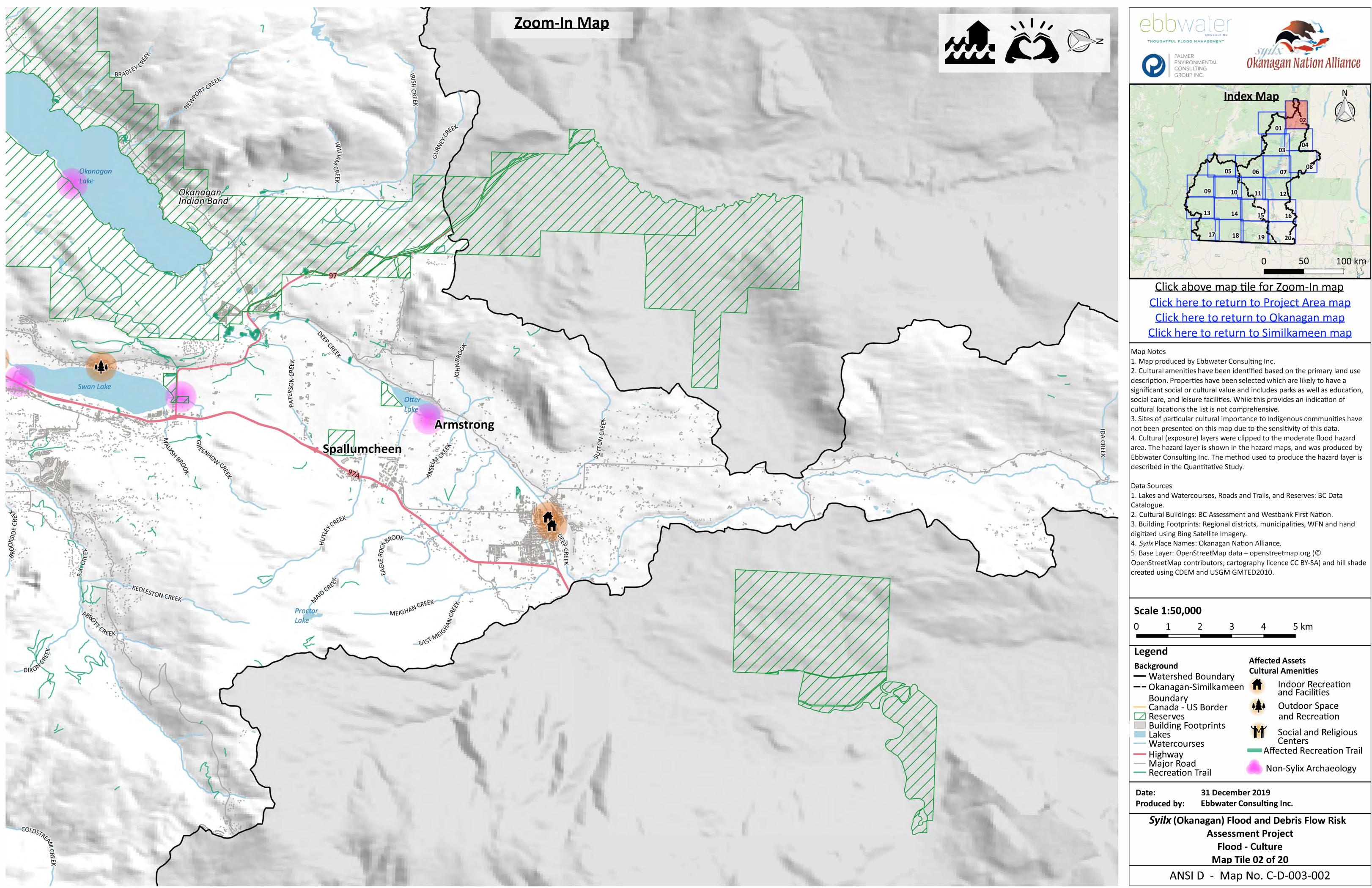




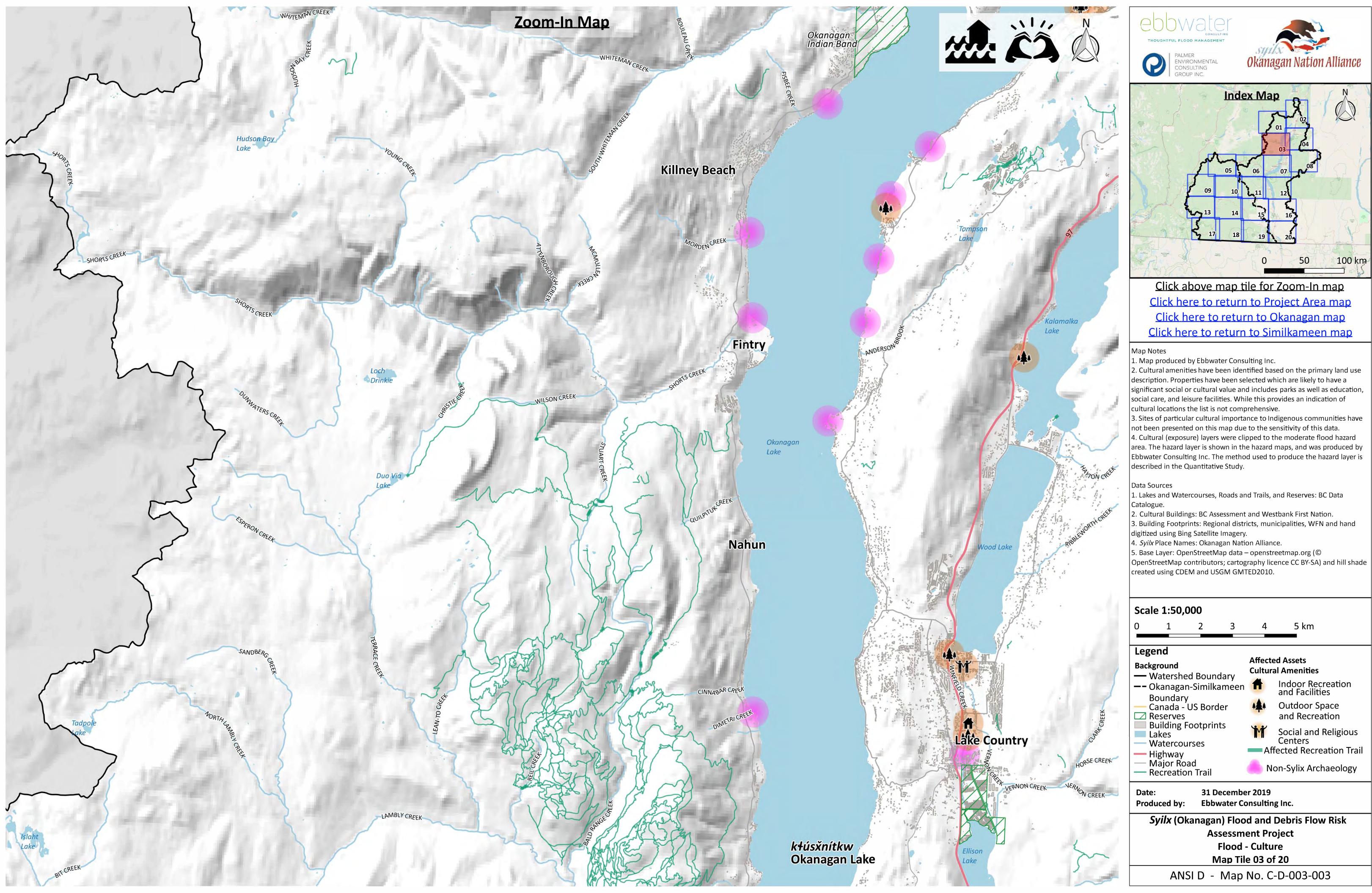




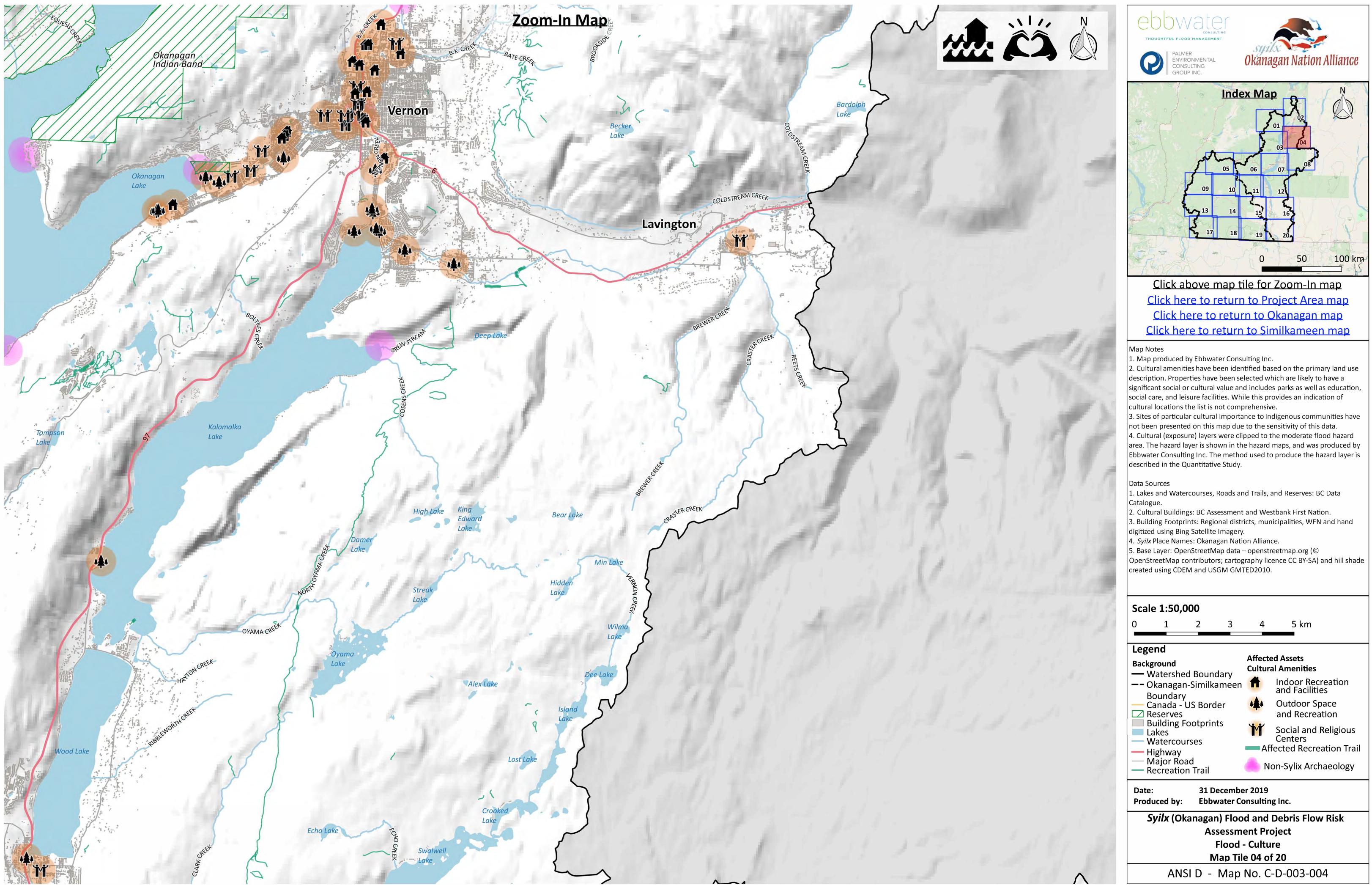
Scale 1:50,000						
0	1	2	3	4	5 km	
k,						
	end ground Watershe Dkanagar Boundary Canada - Reserves Building f Lakes Watercou Highway Major Ro Recreatio	n-Similka / US Borc Footprin urses ad	ameen der	Cultur Cultur	ed Assets Fal Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers ffected Recreation Trai	1
Date:31 December 2019Produced by:Ebbwater Consulting Inc.						
	Syilx (Ol	kanagai	n) Floo	d and	Debris Flow Risk	
		As	sessm	ent Pr	oject	
			Flood ·	- Cultu	ıre	
		N	/lap Til	<u>e 01 o</u>	f 20	
			N / - ···			



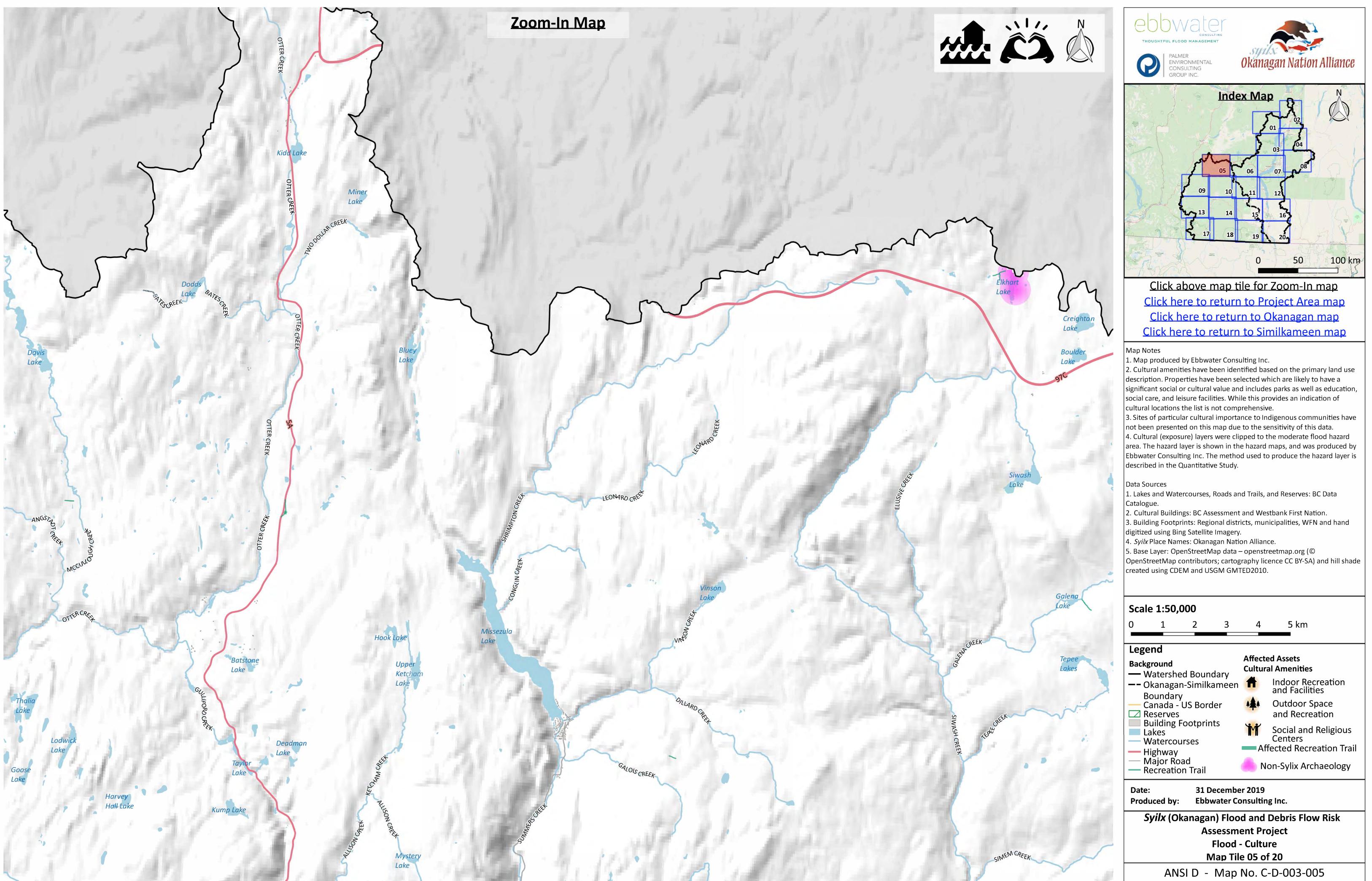
Scale 1:50),000							
0 1	2	3	4	5 km				
),					
Legend			Affect	ed Assets				
Background		- ما م س	1	ral Amenities				
── Watersl ── Okanag Bounda	gan-Similk	•	Ħ	Indoor Recreation and Facilities				
— Canada	- US Bor es		***	Outdoor Space and Recreation				
Lakes Waterco		nts		Social and Religious Centers ffected Recreation Trail				
— Highwa — Major F — Recreat				Ion-Sylix Archaeology				
Date:31 December 2019Produced by:Ebbwater Consulting Inc.								
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project								
	Flood - Culture Map Tile 02 of 20							
ANSLD - Map No. C-D-003-002								

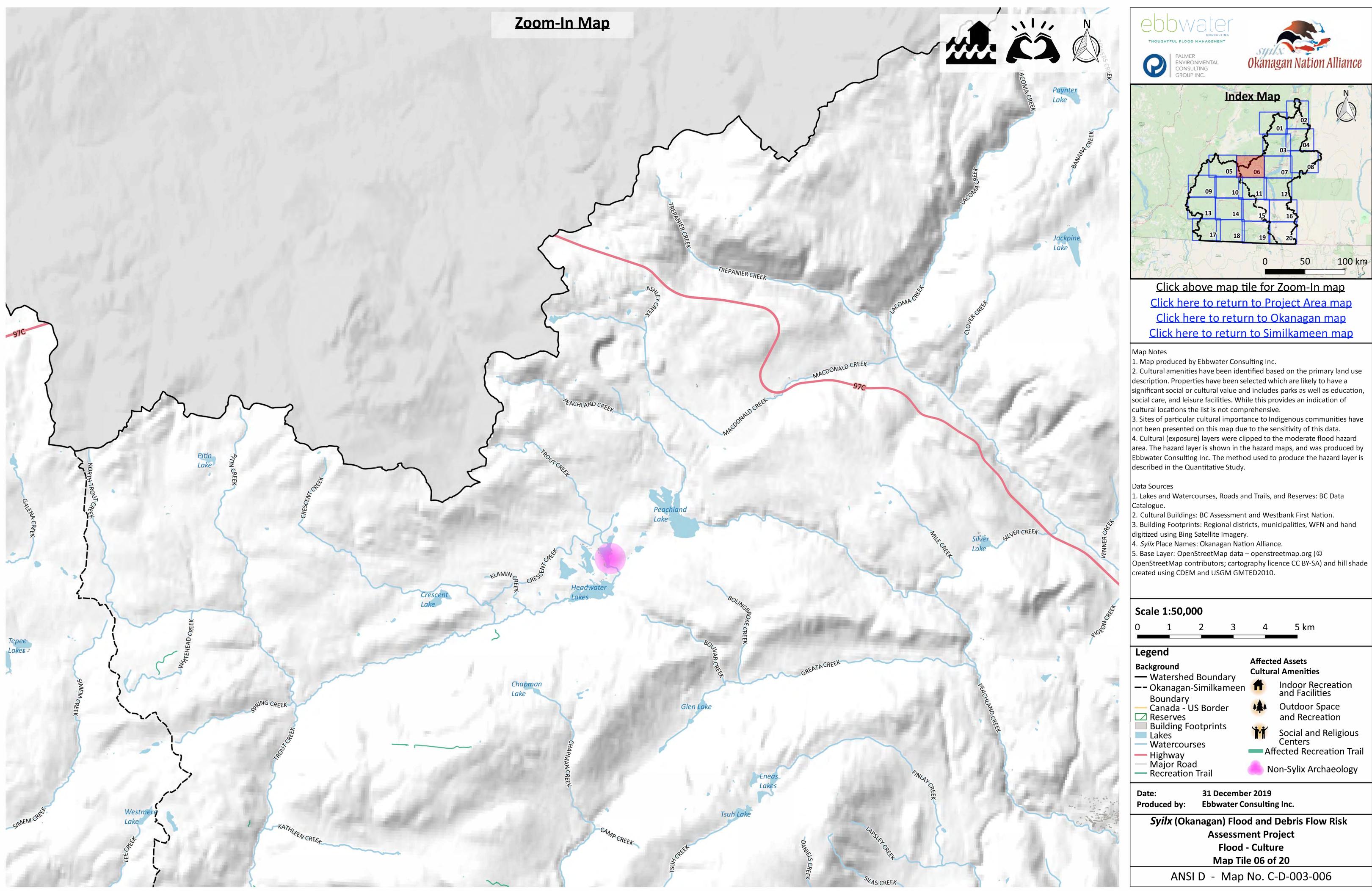


Scal	le 1:50,0	000						
0	1	2	3	4	5 km			
4								
	end ground Watershe Dkanagar Boundary Canada - Reserves Building F Lakes Watercou Highway Major Roa Recreatio	n-Similk / US Bord Tootprin Irses ad	kameen der	Cultur Cultur A	ed Assets al Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers fected Recreation Trail on-Sylix Archaeology			
Date:31 December 2019Produced by:Ebbwater Consulting Inc.Syilx (Okanagan) Flood and Debris Flow Risk								
			ssessm		-			
		~,	Flood					
		Г			-			
	Map Tile 03 of 20 ANSLD - Map No. C-D-003-003							



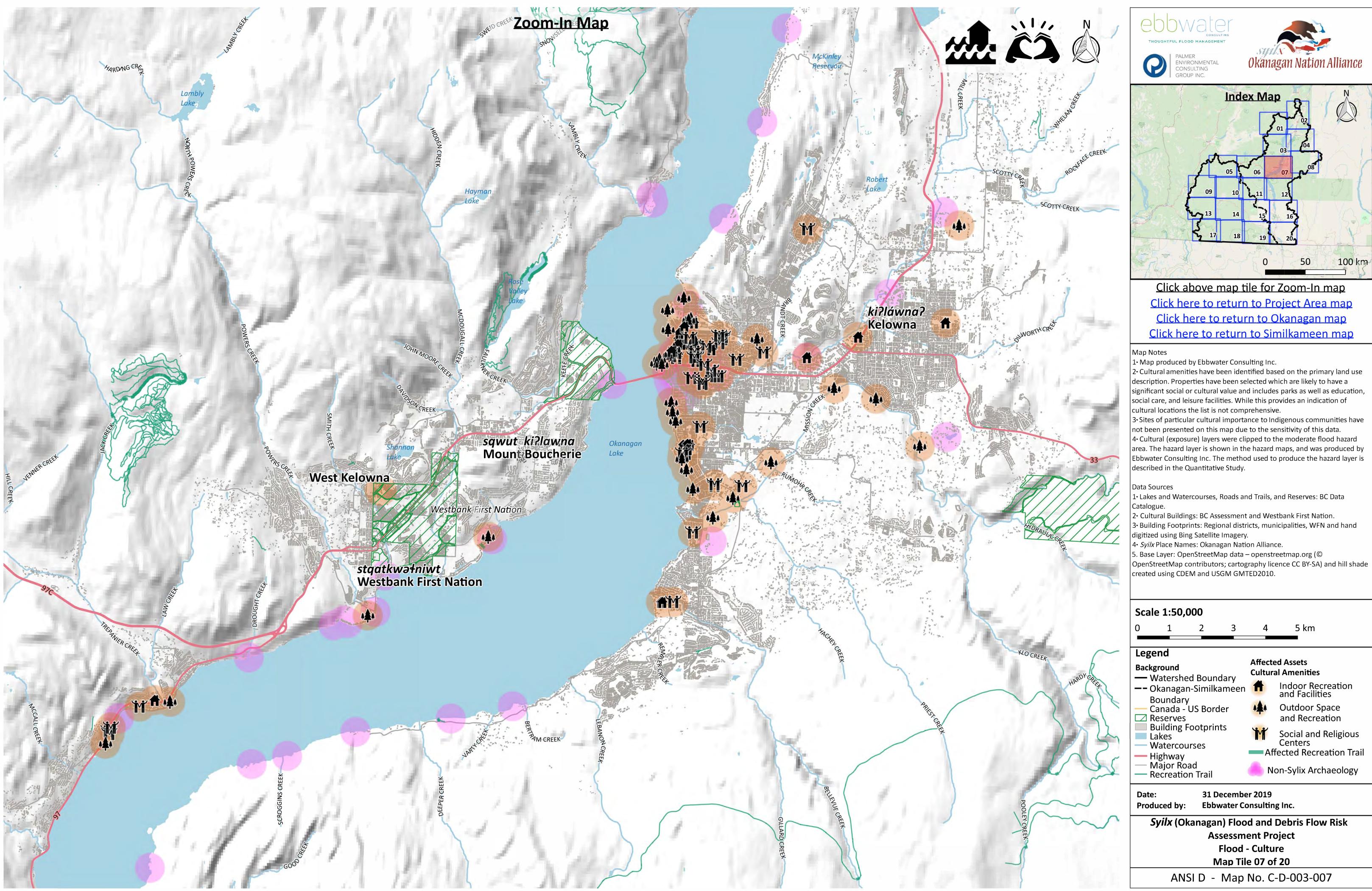
Scal	e 1:50,0	000					
0	1	2	3	4	5 km		
).							
	end ground Vatershe Okanagar Soundary Canada - Reserves Suilding F Akes Vatercou Highway Major Roa Recreatio	n-Similk / US Borc Footprir Irses ad	améen der	Cultur Cultur A	ed Assets ral Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers ffected Recreation Trail		
Date:31 December 2019Produced by:Ebbwater Consulting Inc.Syilx (Okanagan) Flood and Debris Flow Risk Assessment Project							
Flood - Culture Map Tile 04 of 20							
	ANS	SID -	Мар	No. C	C-D-003-004		

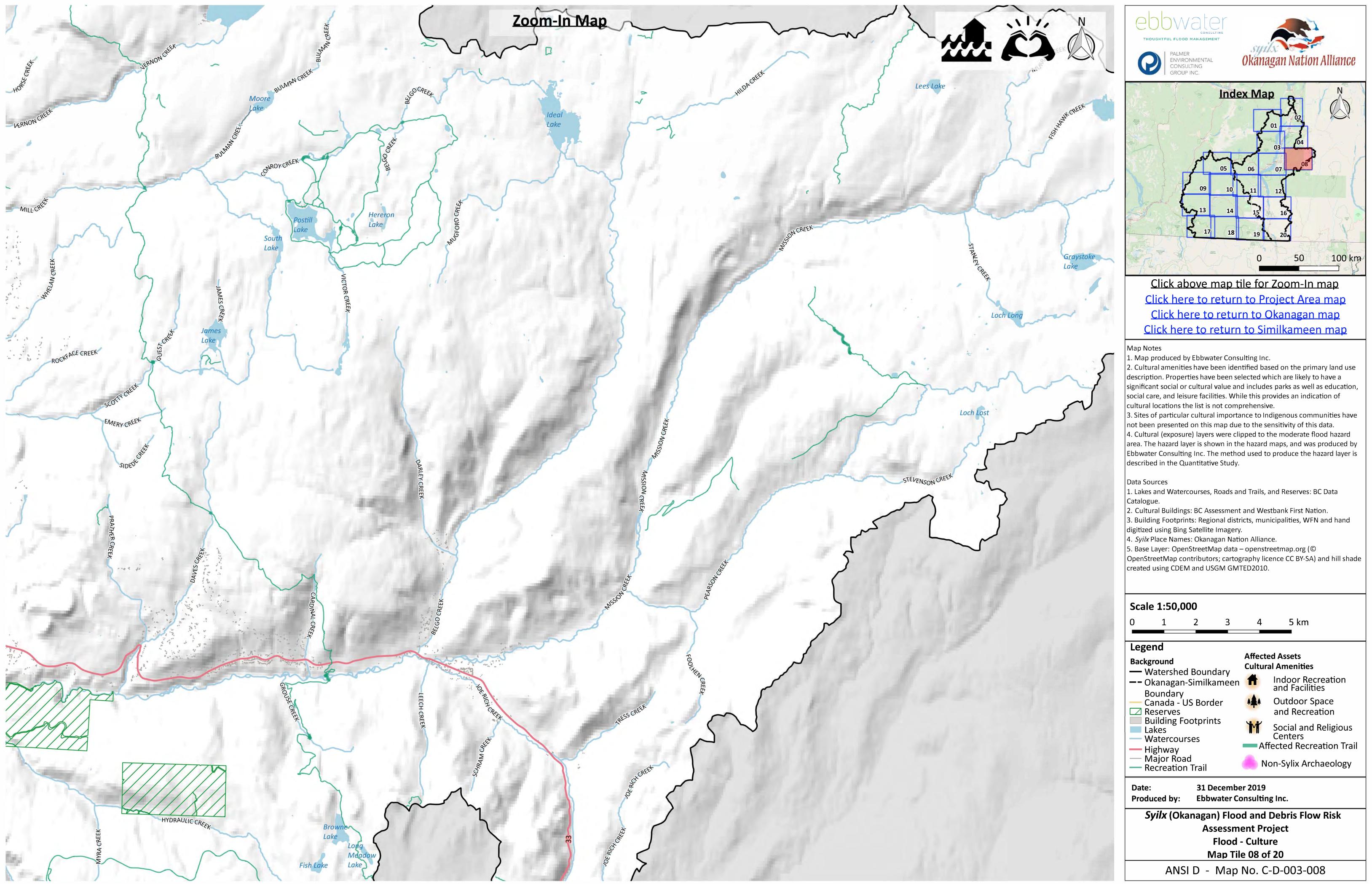


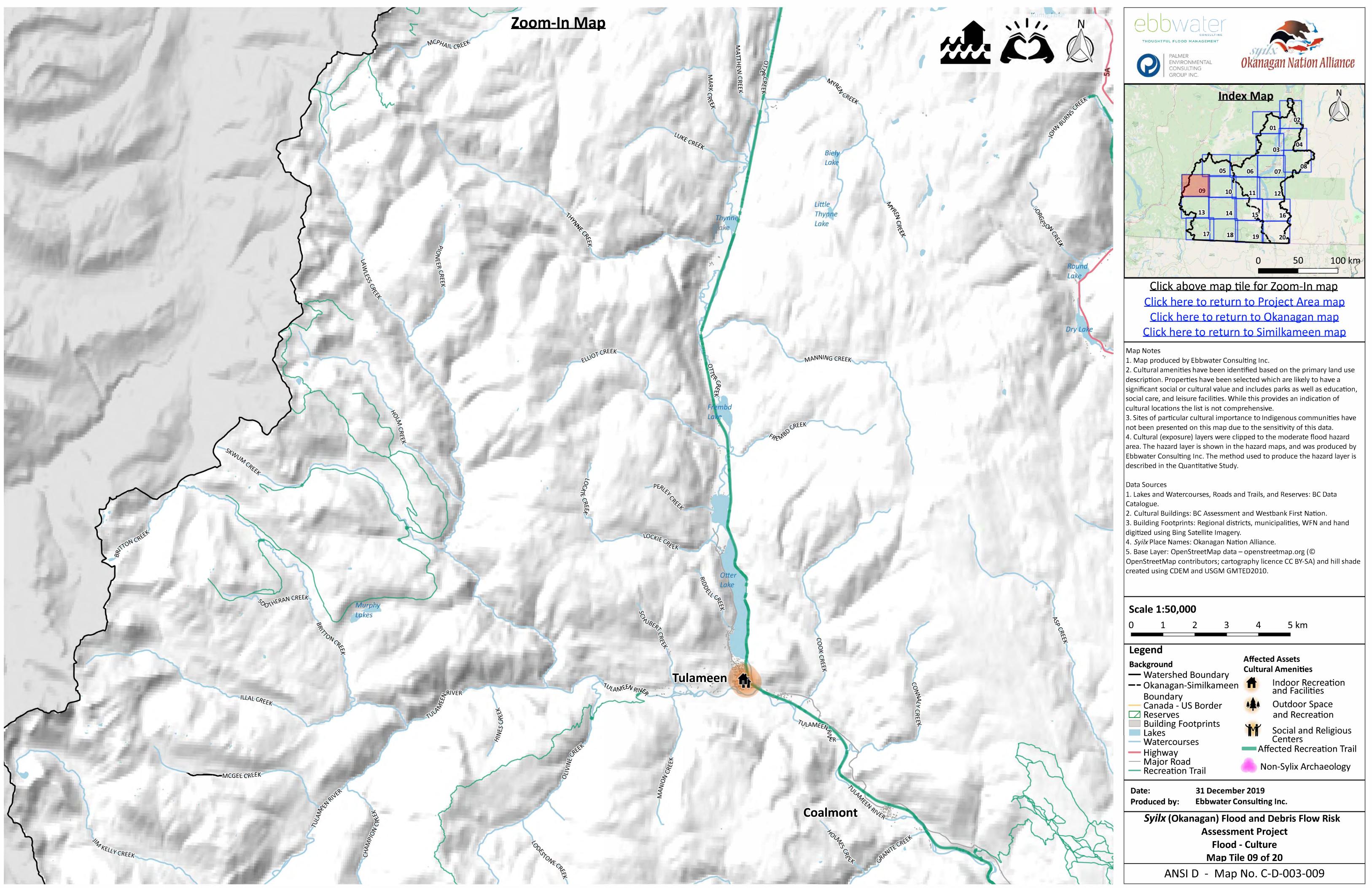


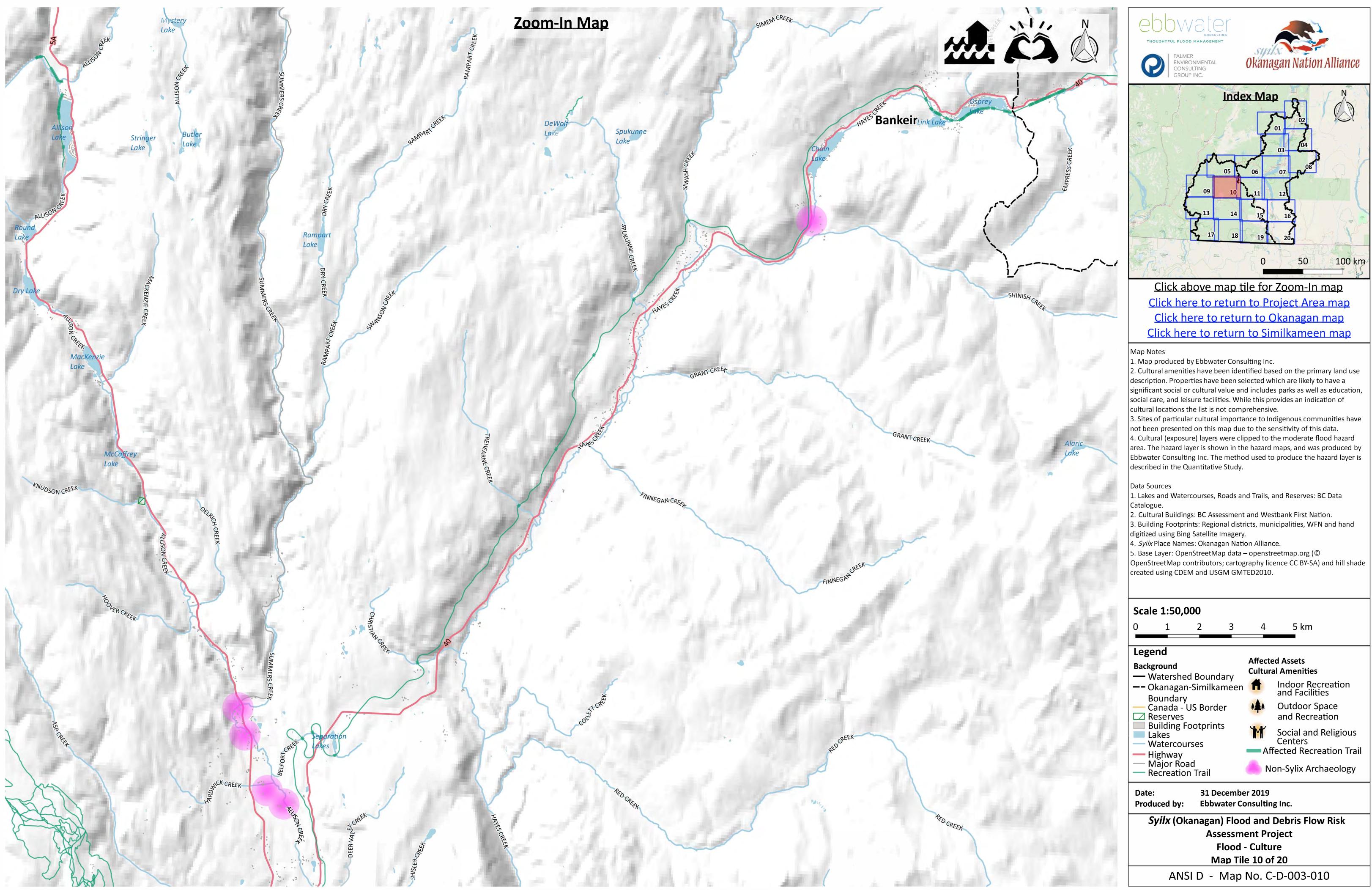
ANSI D - Map No. C-D-003-006

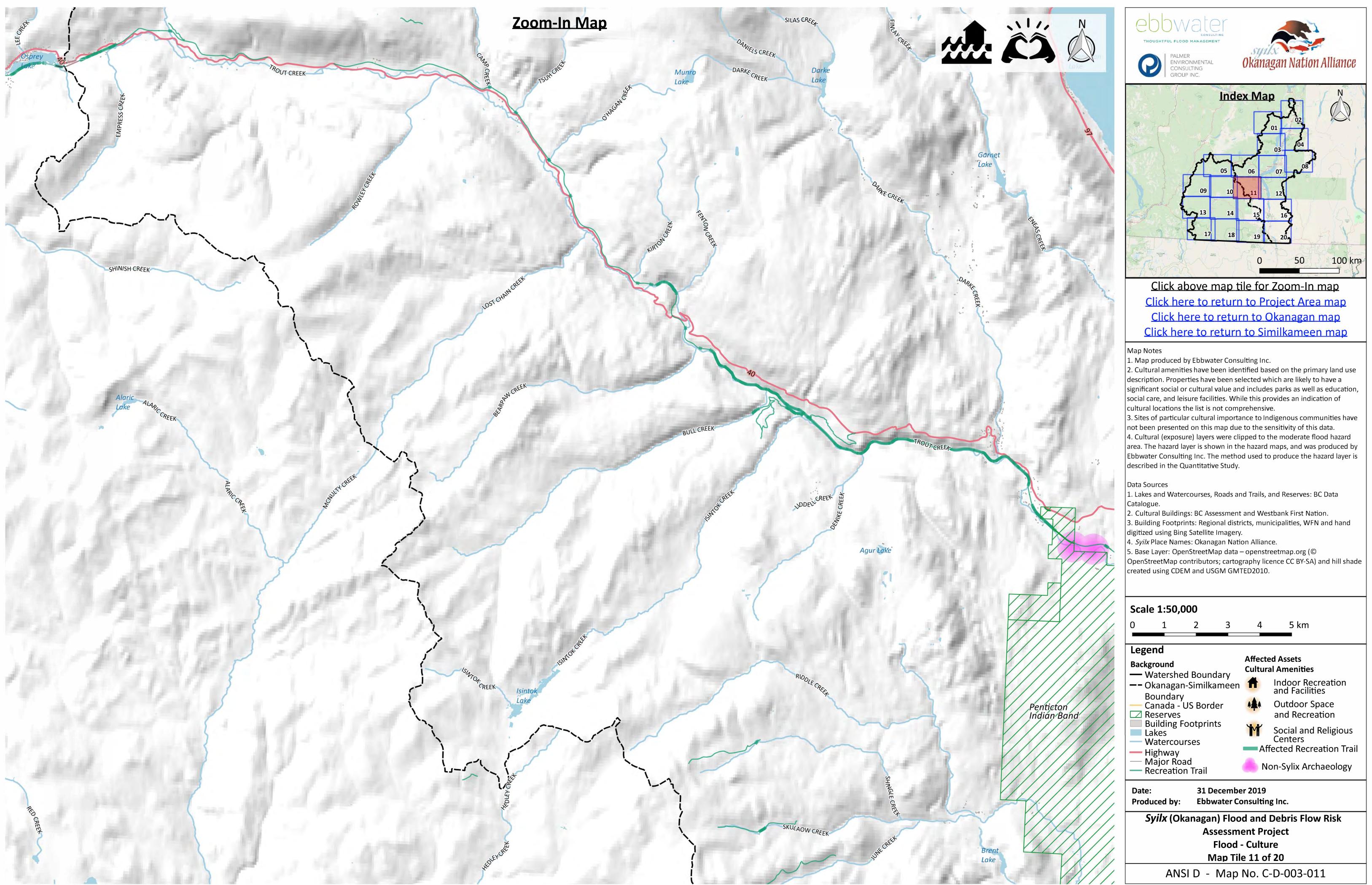
100 km

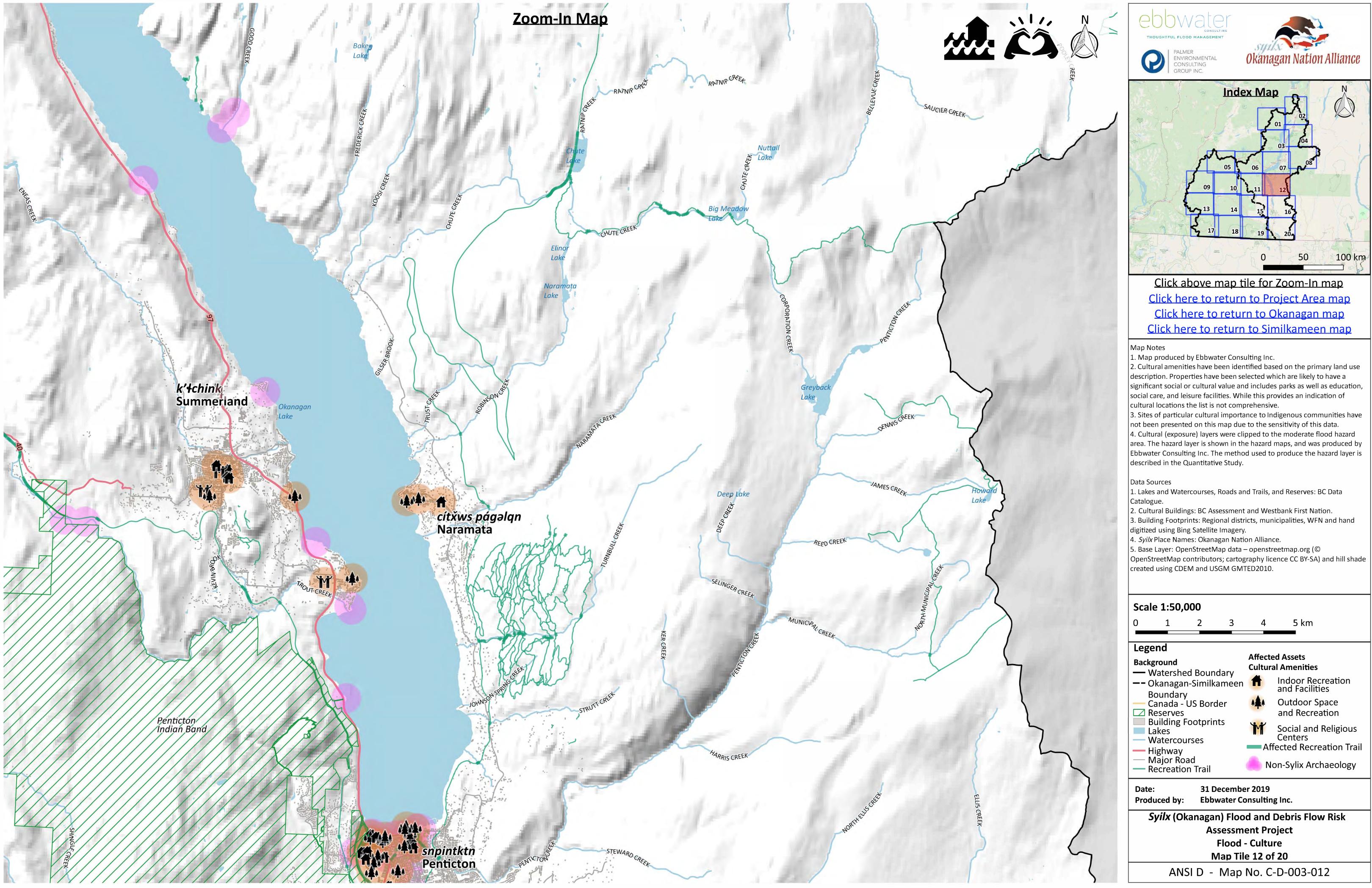






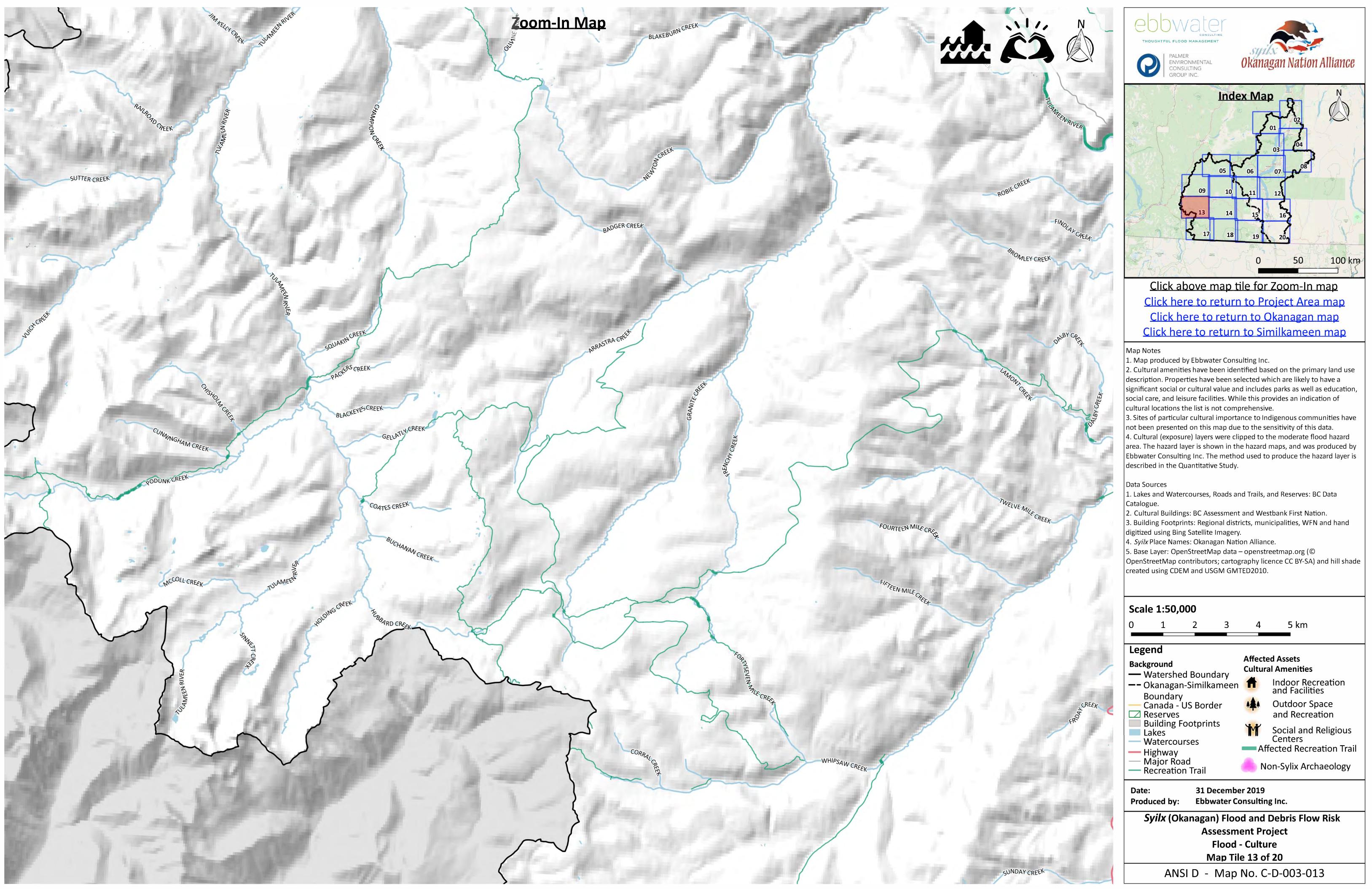


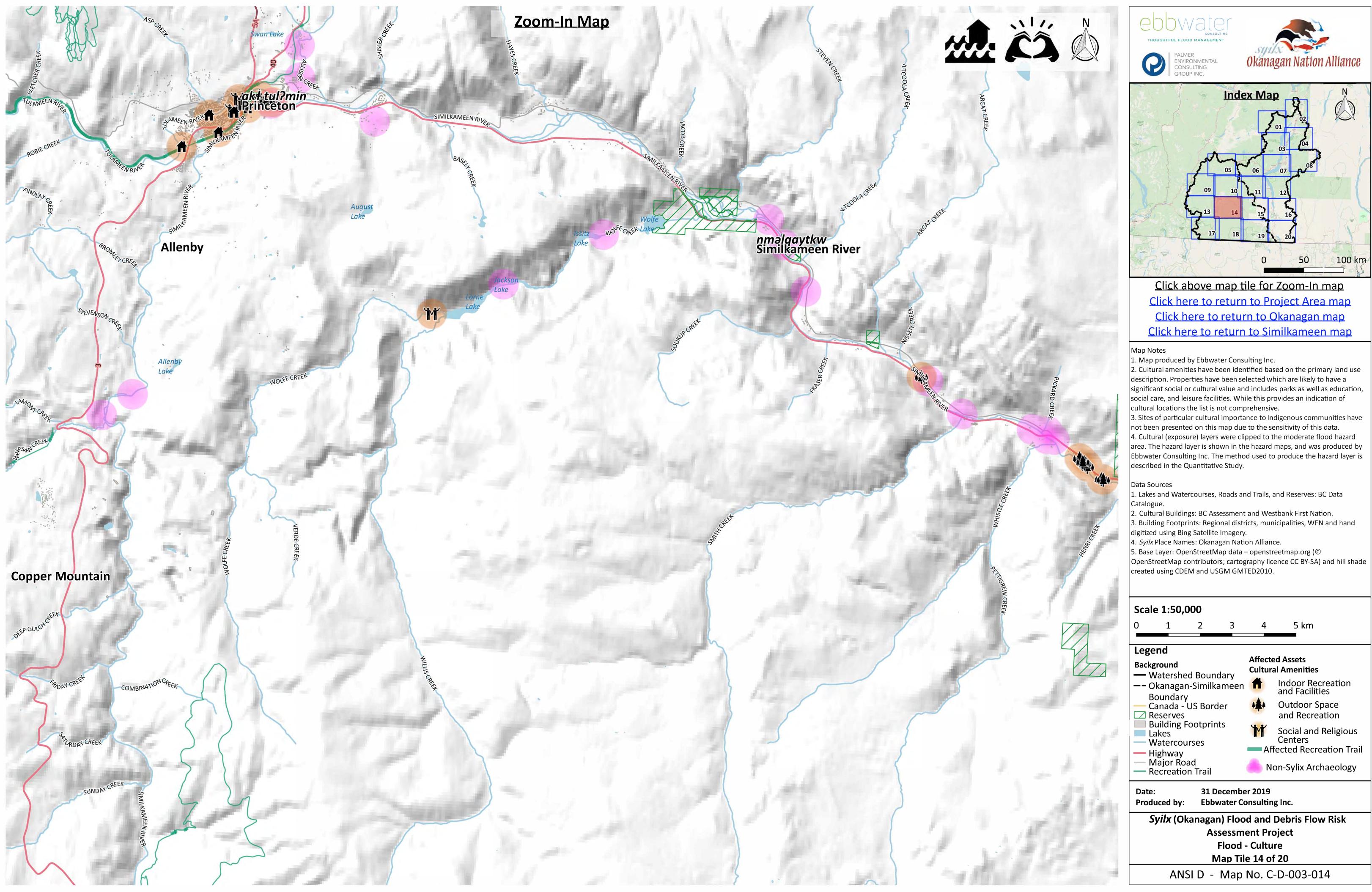




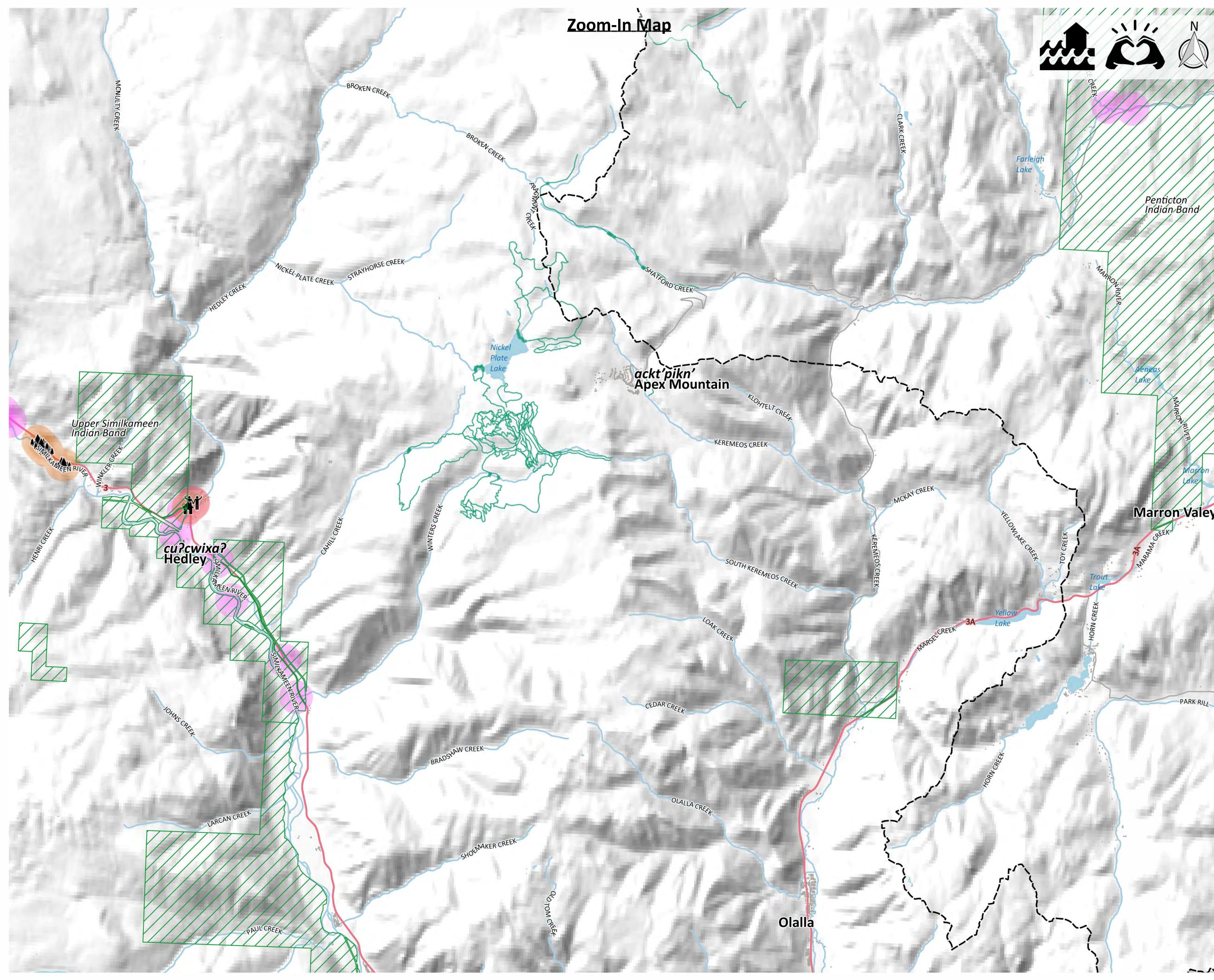


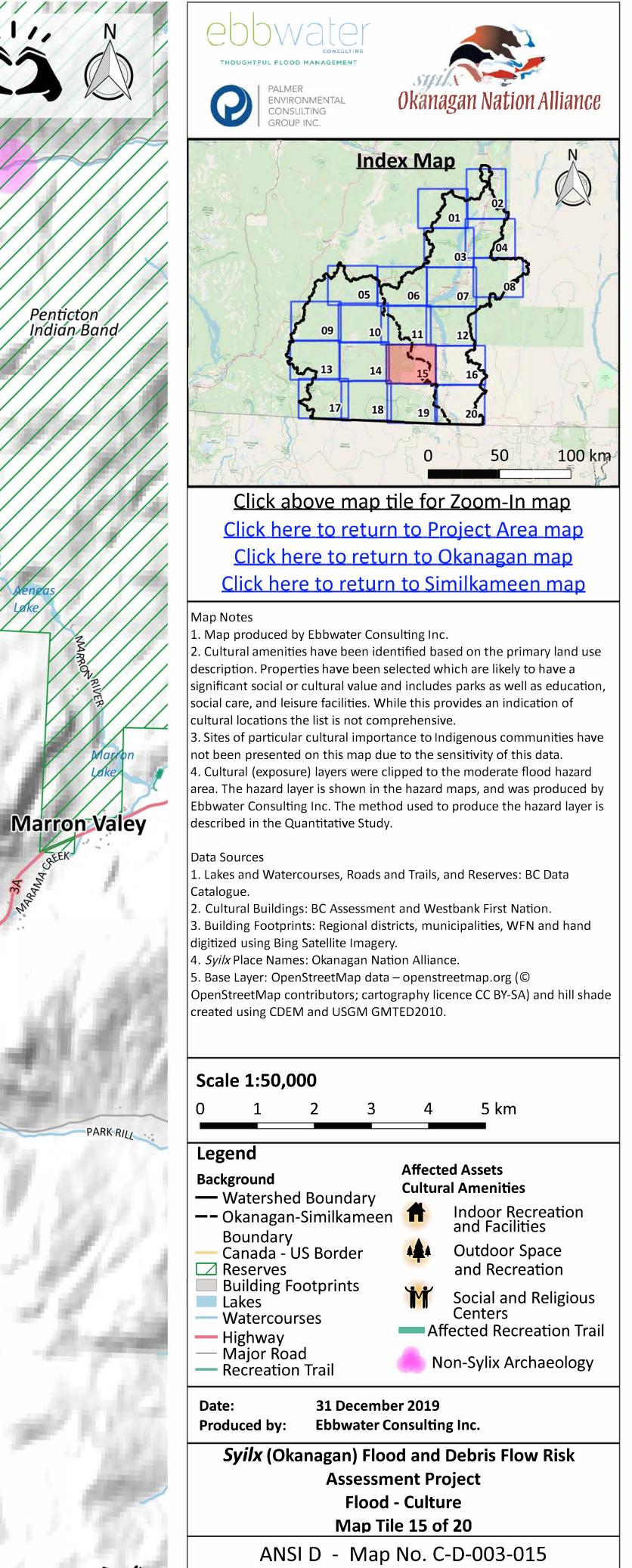
Scal	e 1:50,0	000					
0	1	2	3	4	5 km		
]]							
	end ground Vatershe Okanagar Okanagar Soundary Canada - Reserves Suilding F Ases Vatercou Highway Major Roa Recreatio	n-Similk / US Borc =ootprir urses ad	kaméen der	Cultur Cultur A	ed Assets ral Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers ffected Recreation Trail Ion-Sylix Archaeology		
Date:31 December 2019Produced by:Ebbwater Consulting Inc.							
Syilx (Okanagan) Flood and Debris Flow Risk Assessment Project Flood - Culture Map Tile 12 of 20							
	ANSI D - Map No. C-D-003-012						

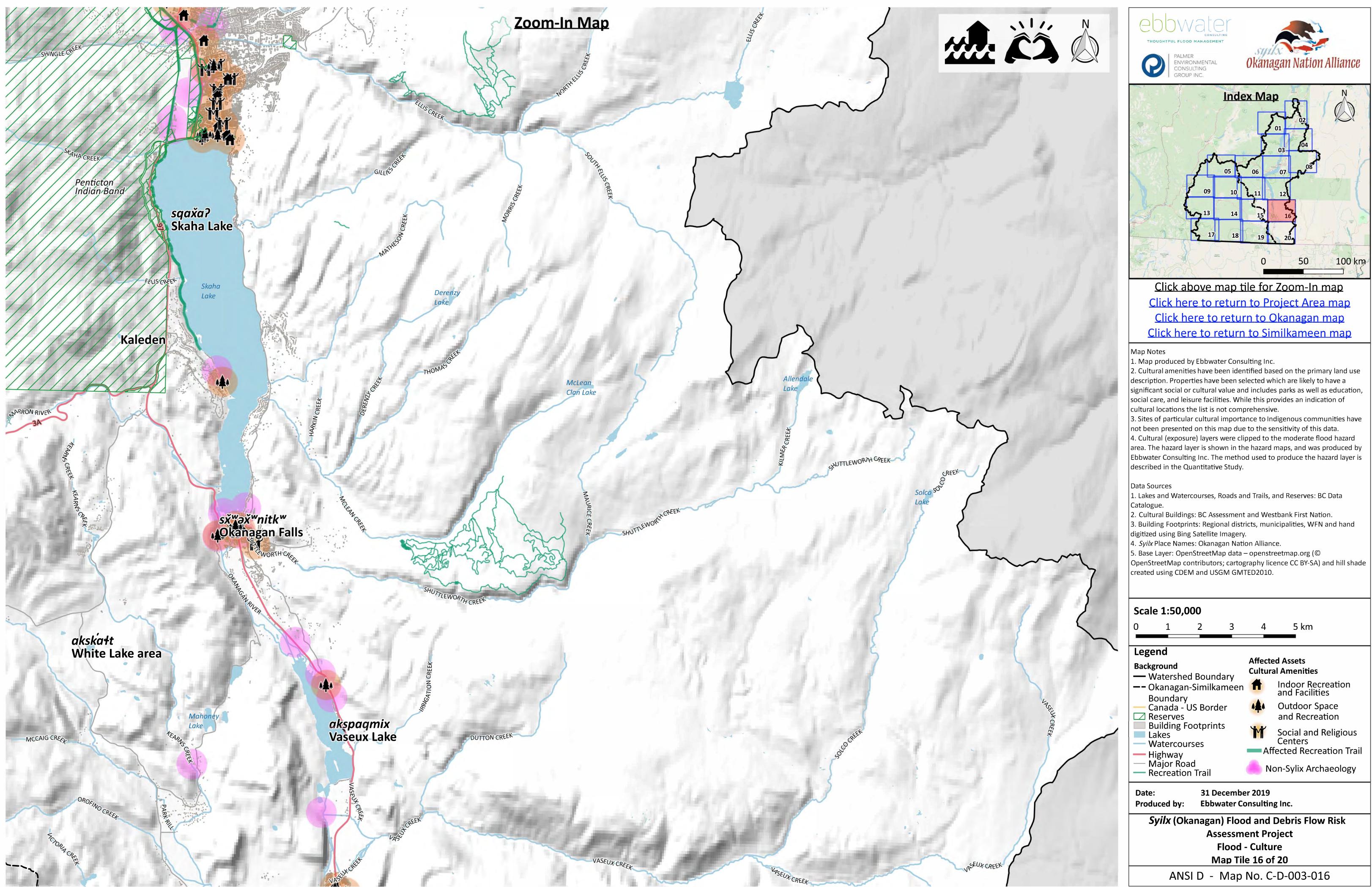


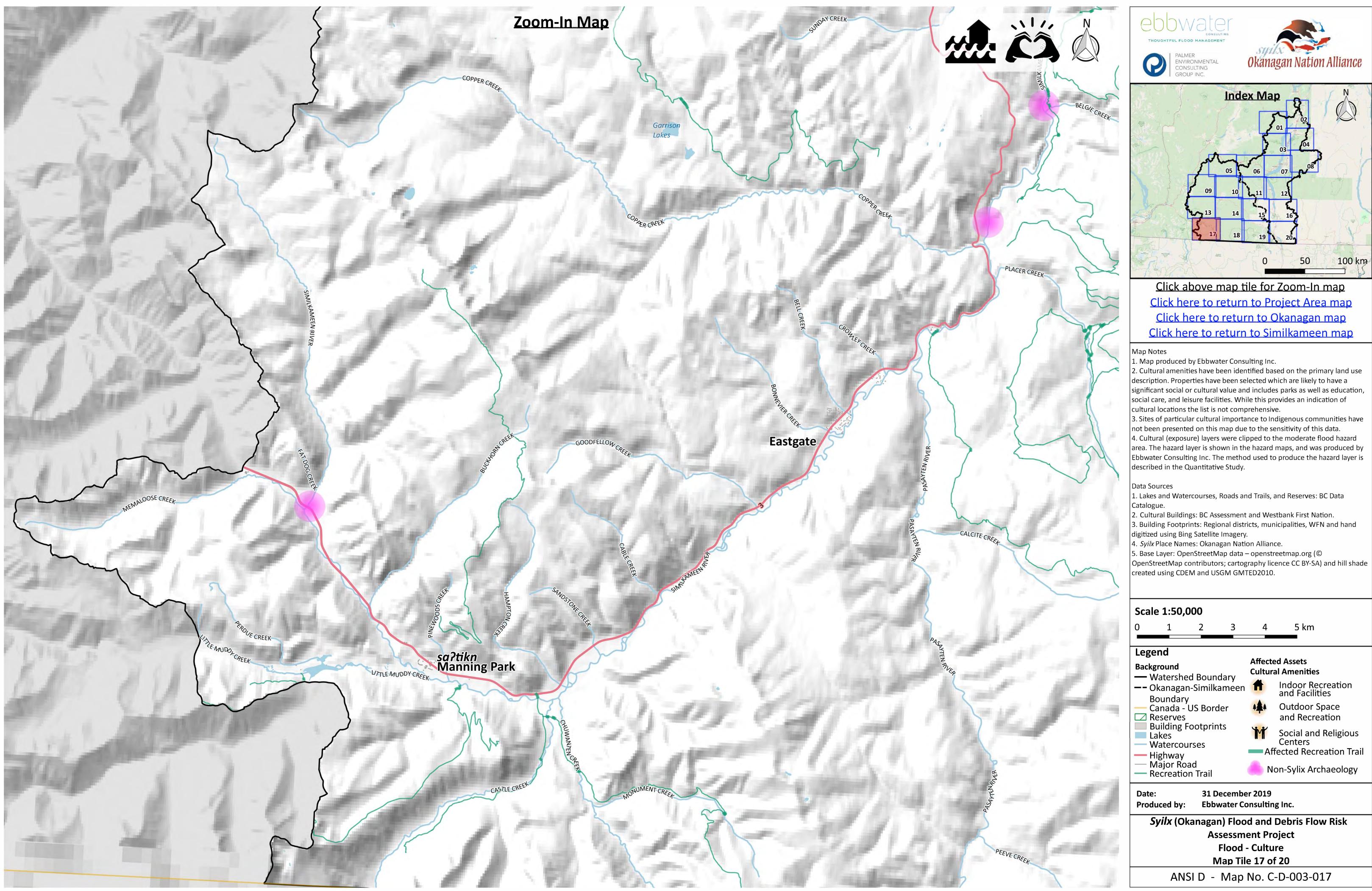


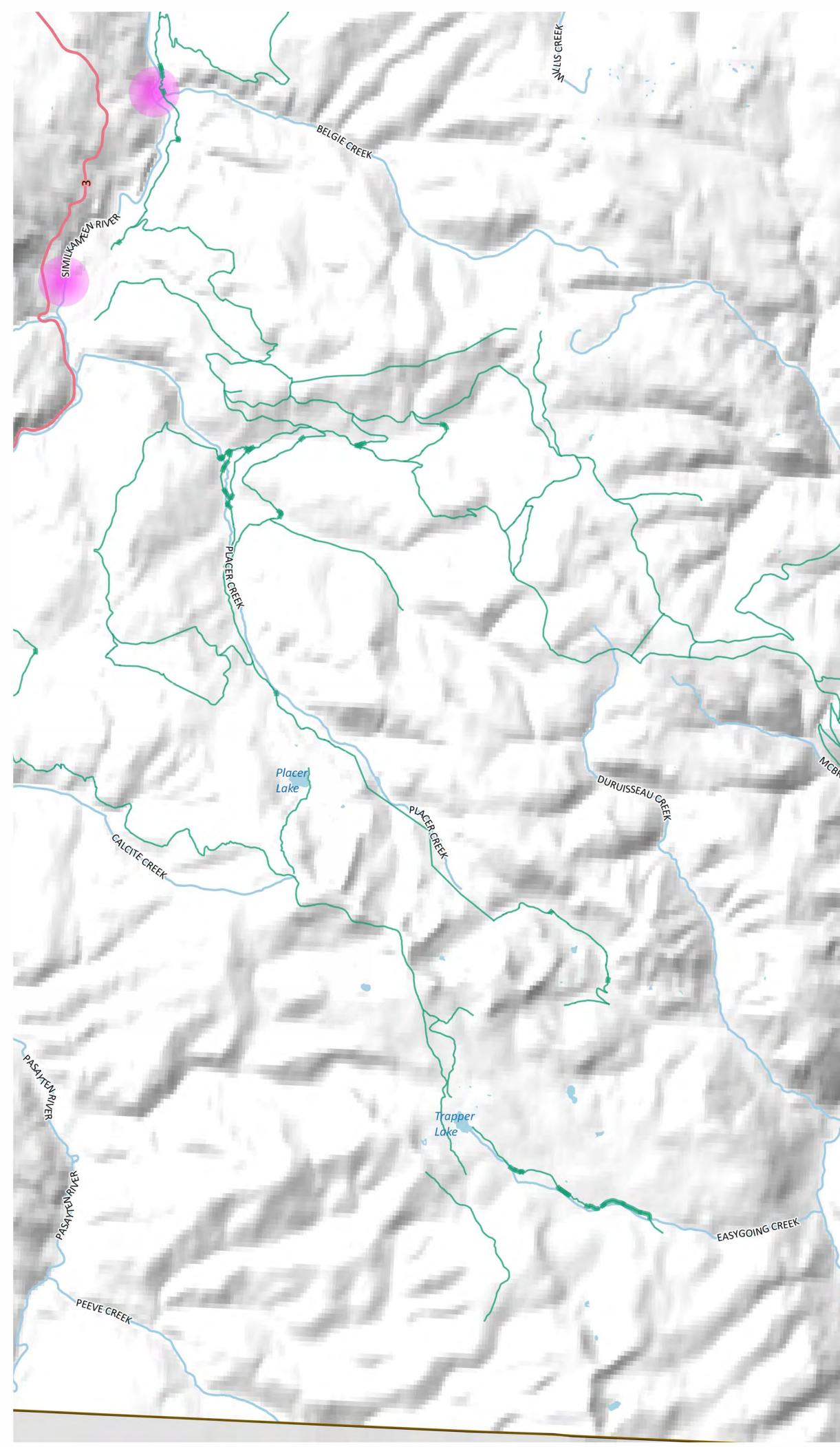
Scale 1:50,000							
0 1 2	3	4	5 km				
Legend Background — Watershed Boundary — Okanagan-Similkameen Boundary — Canada - US Border Reserves Building Footprints Lakes Watercourses Highway							
Date: 31 December 2019 Produced by: Ebbwater Consulting Inc.							
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project Flood - Culture Map Tile 14 of 20							
 Major Road Recreation Trail Non-Sylix Archaeology Date: 31 December 2019 Produced by: Ebbwater Consulting Inc. Syilx (Okanagan) Flood and Debris Flow Risk Assessment Project Flood - Culture 							









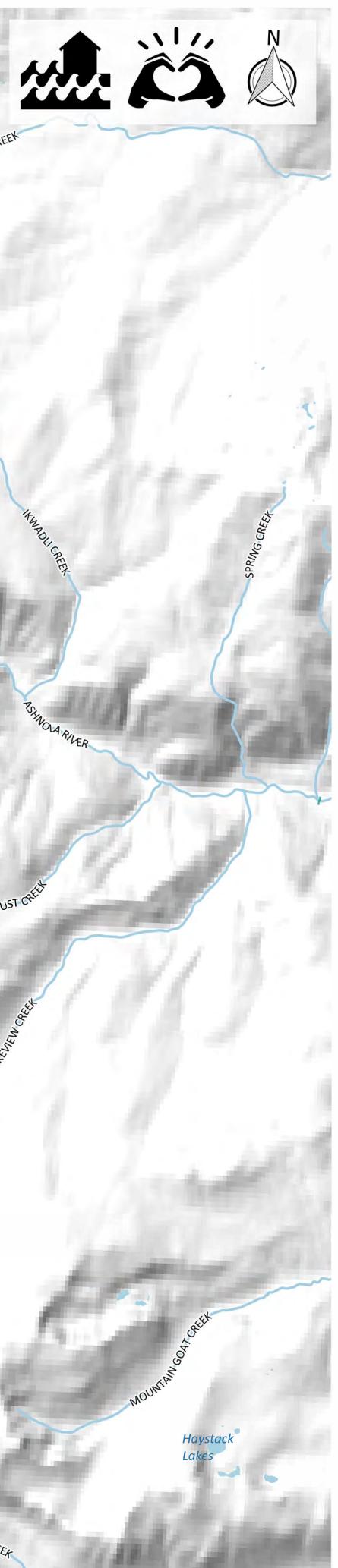


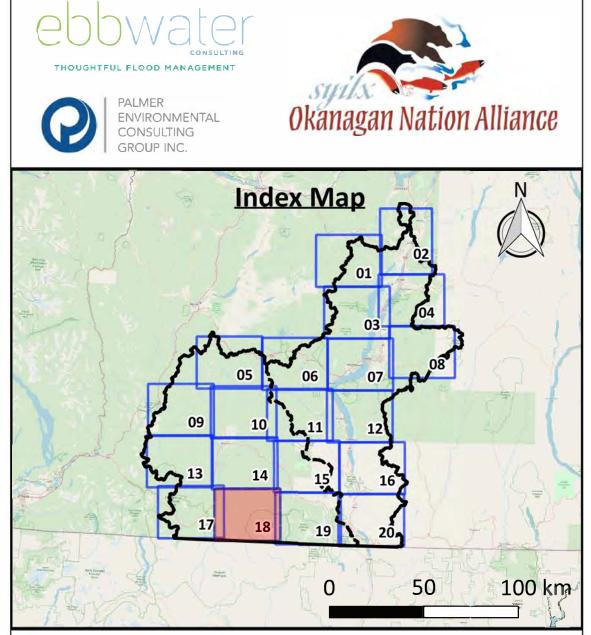






SKWEK





Click above map tile for Zoom-In map <u>Click here to return to Project Area map</u> <u>Click here to return to Okanagan map</u> <u>Click here to return to Similkameen map</u>

Map Notes

1. Map produced by Ebbwater Consulting Inc.

2. Cultural amenities have been identified based on the primary land use description. Properties have been selected which are likely to have a significant social or cultural value and includes parks as well as education, social care, and leisure facilities. While this provides an indication of cultural locations the list is not comprehensive.

3. Sites of particular cultural importance to Indigenous communities have not been presented on this map due to the sensitivity of this data. 4. Cultural (exposure) layers were clipped to the moderate flood hazard area. The hazard layer is shown in the hazard maps, and was produced by Ebbwater Consulting Inc. The method used to produce the hazard layer is described in the Quantitative Study.

Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.

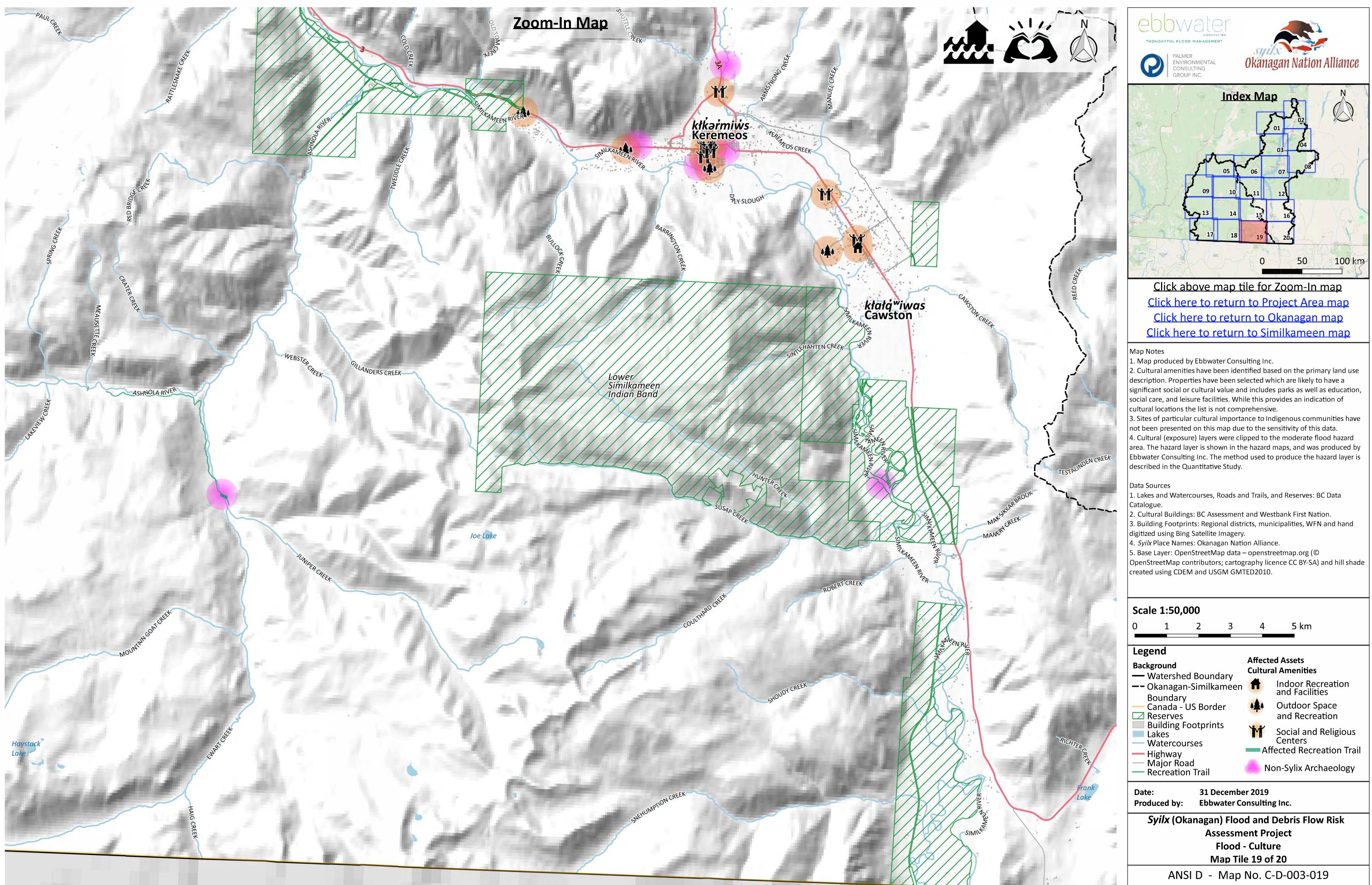
2. Cultural Buildings: BC Assessment and Westbank First Nation.

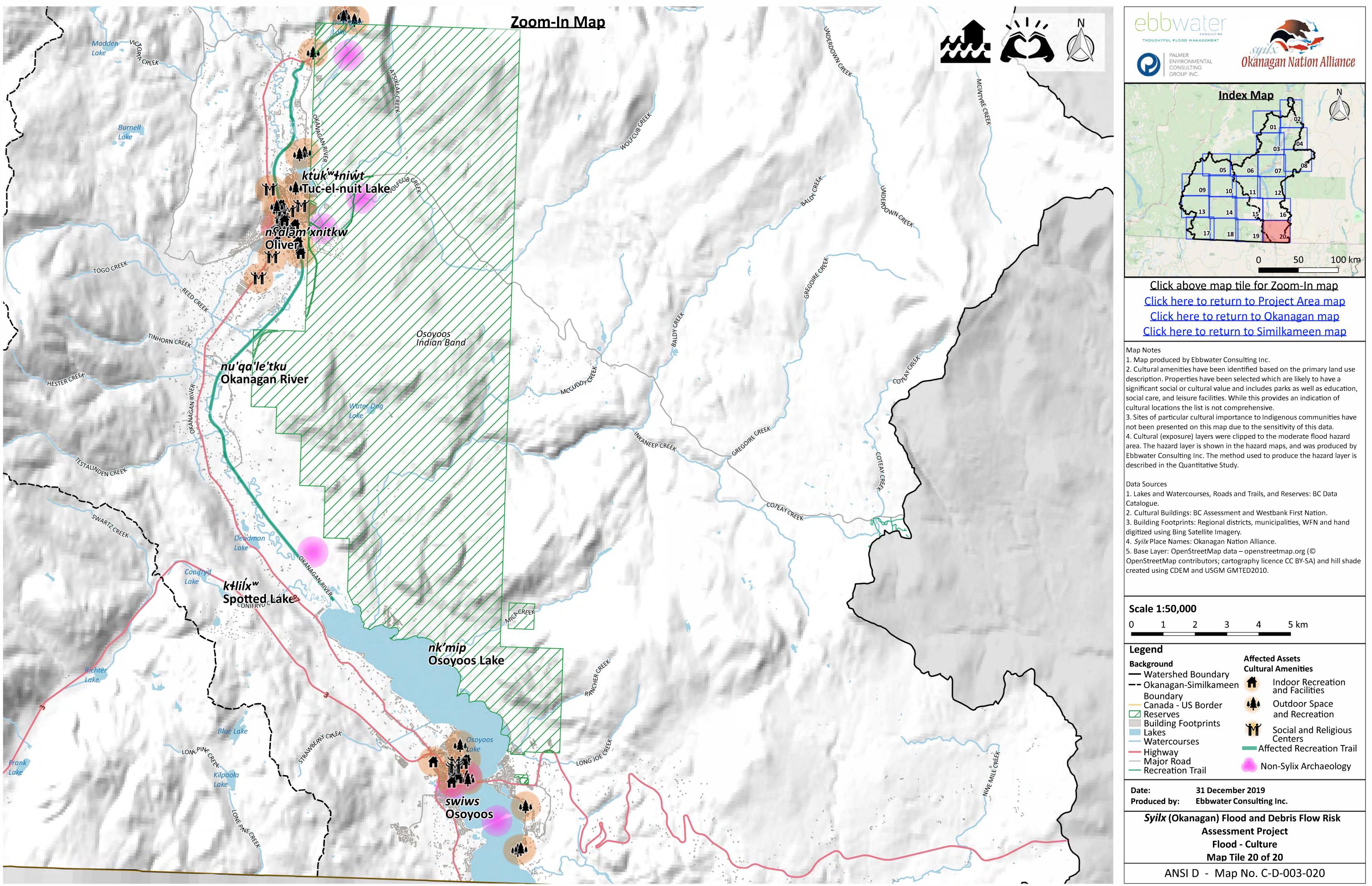
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.

4. Syilx Place Names: Okanagan Nation Alliance.

5. Base Layer: OpenStreetMap data – openstreetmap.org (C OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000						
0	1	2	3	4	5 km	
Leg	end					
Background Affected Assets Watershed Boundary Cultural Amenities						
 Okanagan-Similkameen Boundary Canada - US Border Reserves Building Footprints Lakes Watercourses Highway 					Indoor Recreation and Facilities	
				***	Outdoor Space and Recreation	
				M Af	Social and Religiou Centers fected Recreation Tr	
 Major Road Recreation Trail 						
Date:31 December 2019Produced by:Ebbwater Consulting Inc.						
Syilx (Okanagan) Flood and Debris Flow Risk						
Assessment Project Flood - Culture						
Map Tile 18 of 20						
ANSI D - Map No. C-D-003-018						



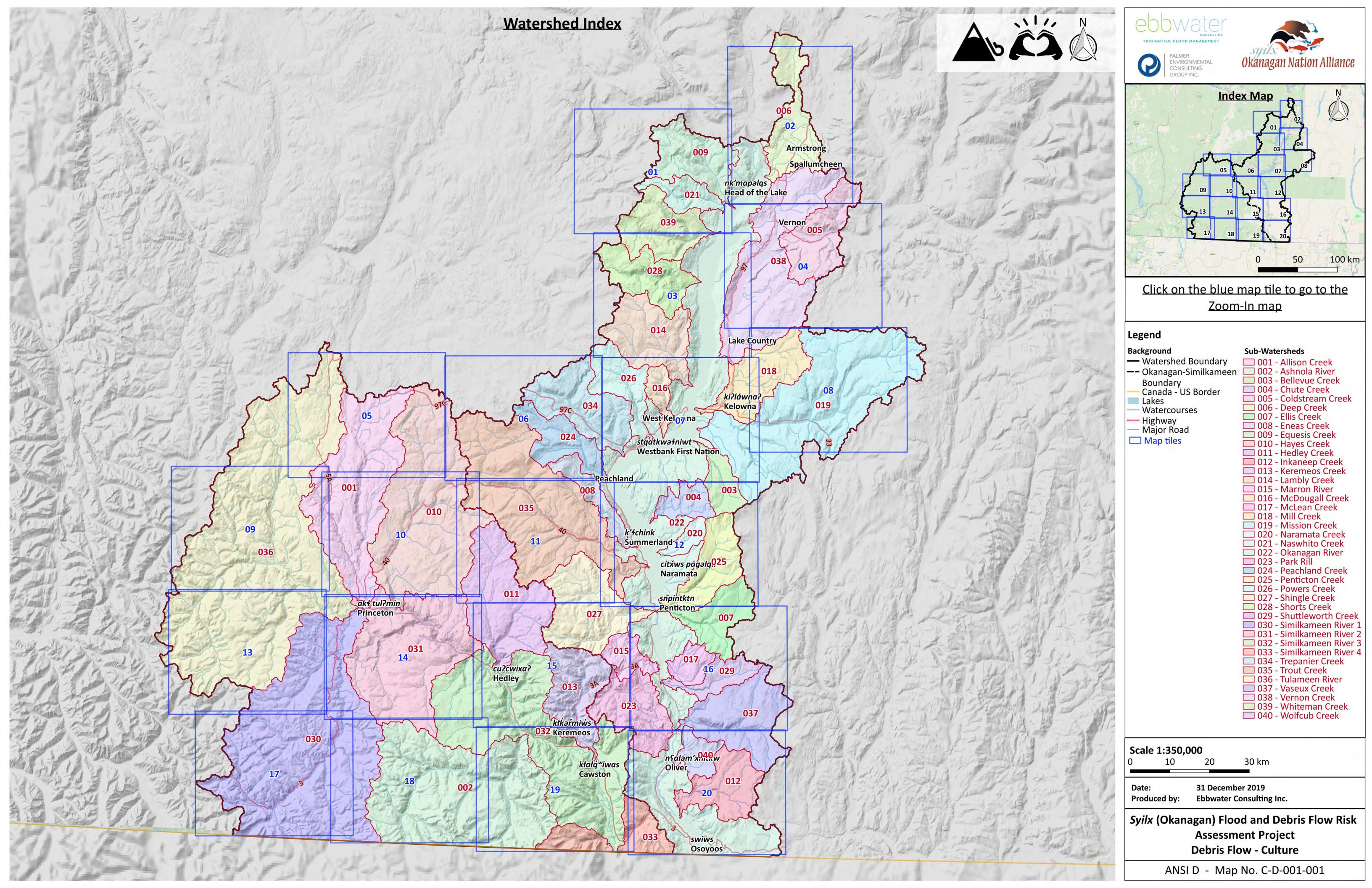


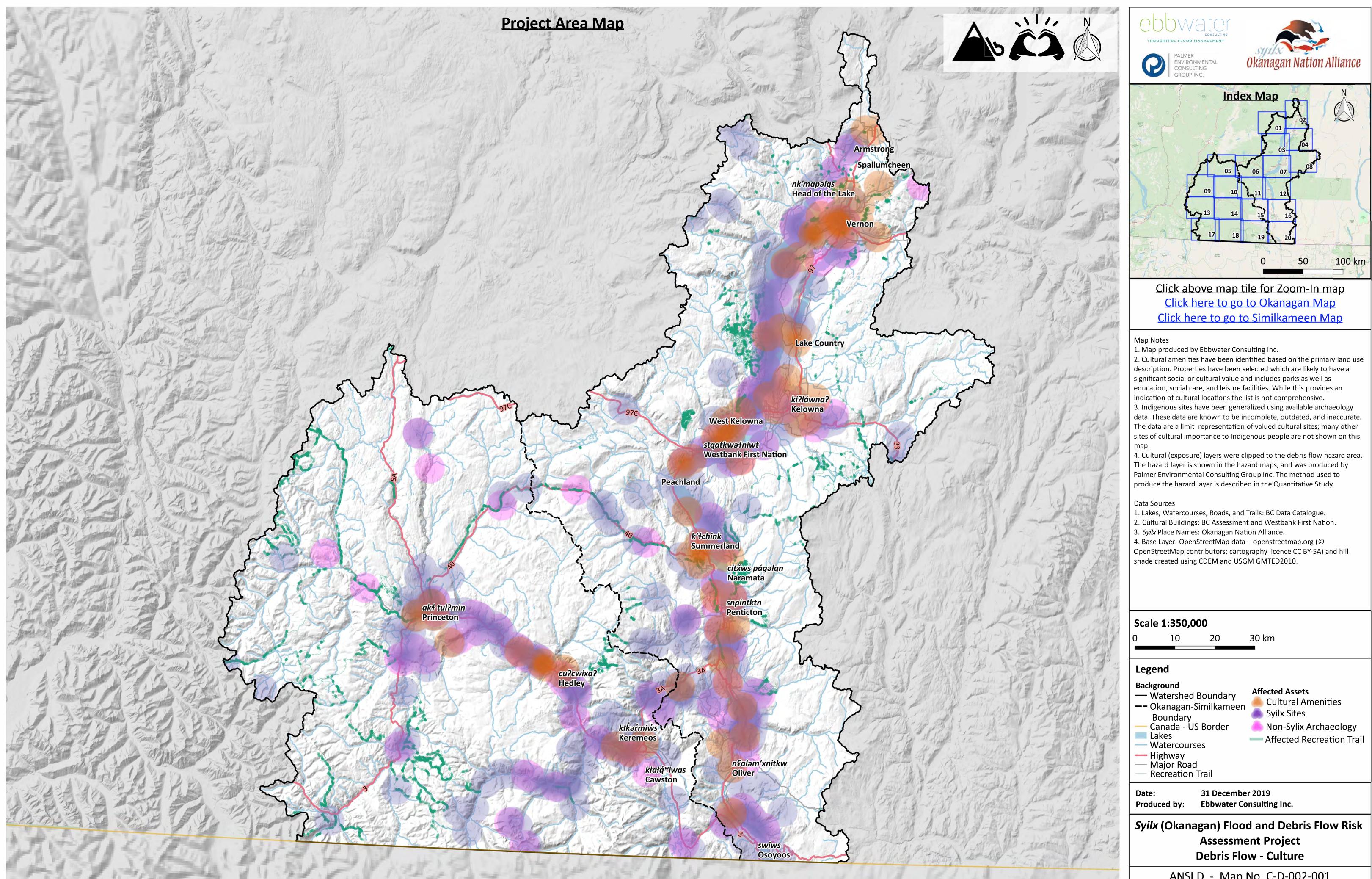
Syilx Okanagan Flood and Debris Flow Risk Assessment Map Book Map Series 3 of 7: Culture Indicator



Quantitative Debris Flow Consequence Maps

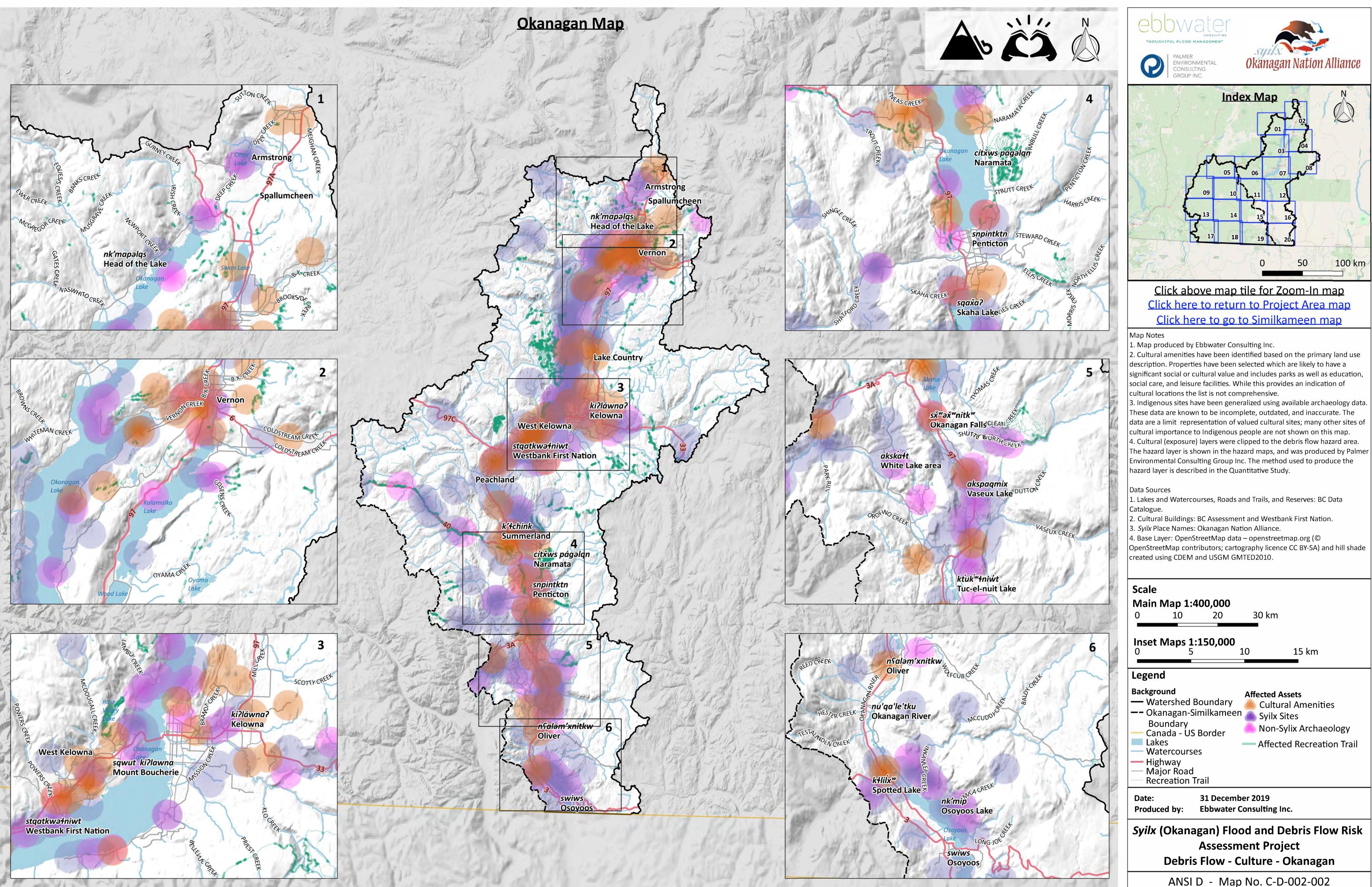




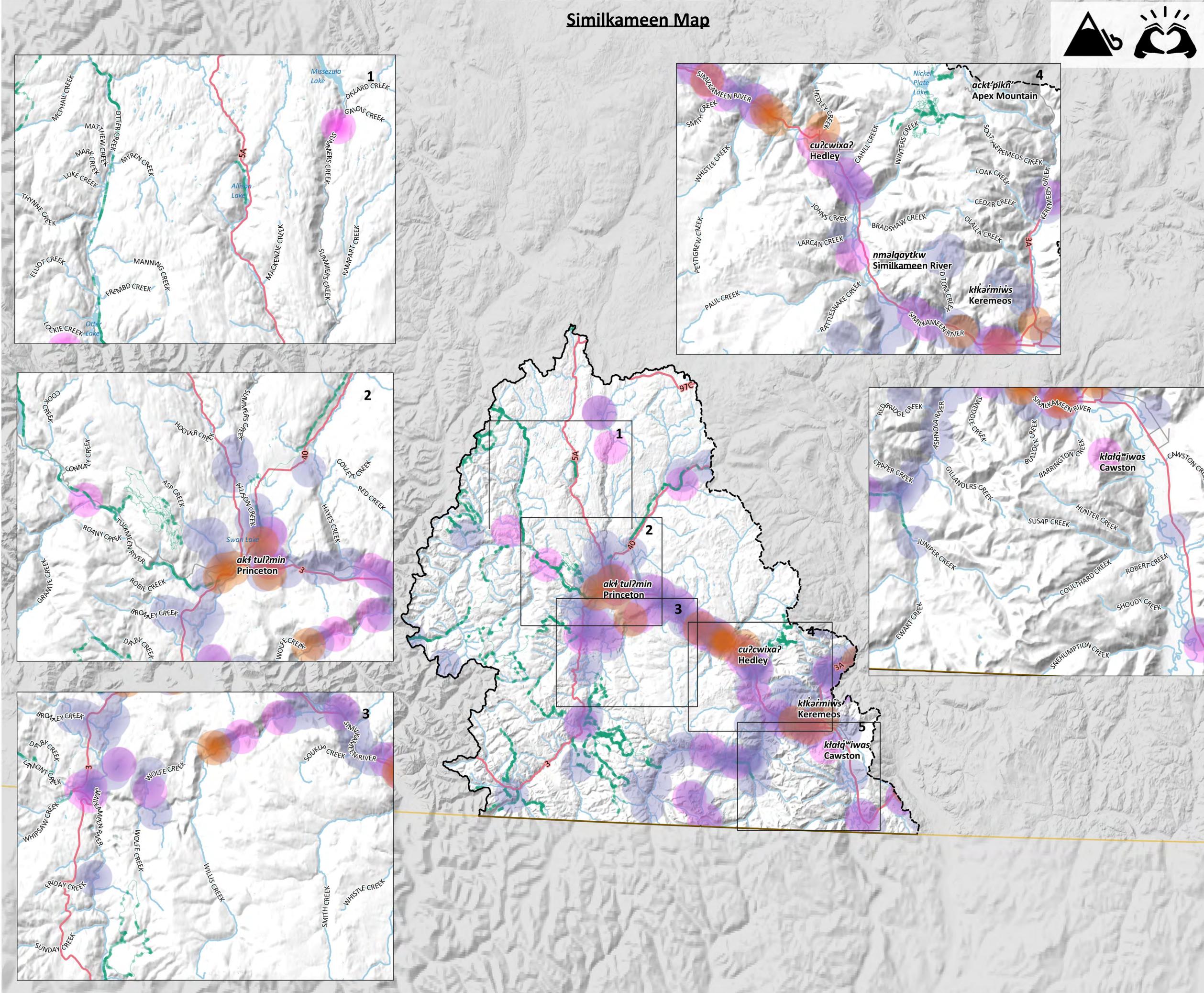


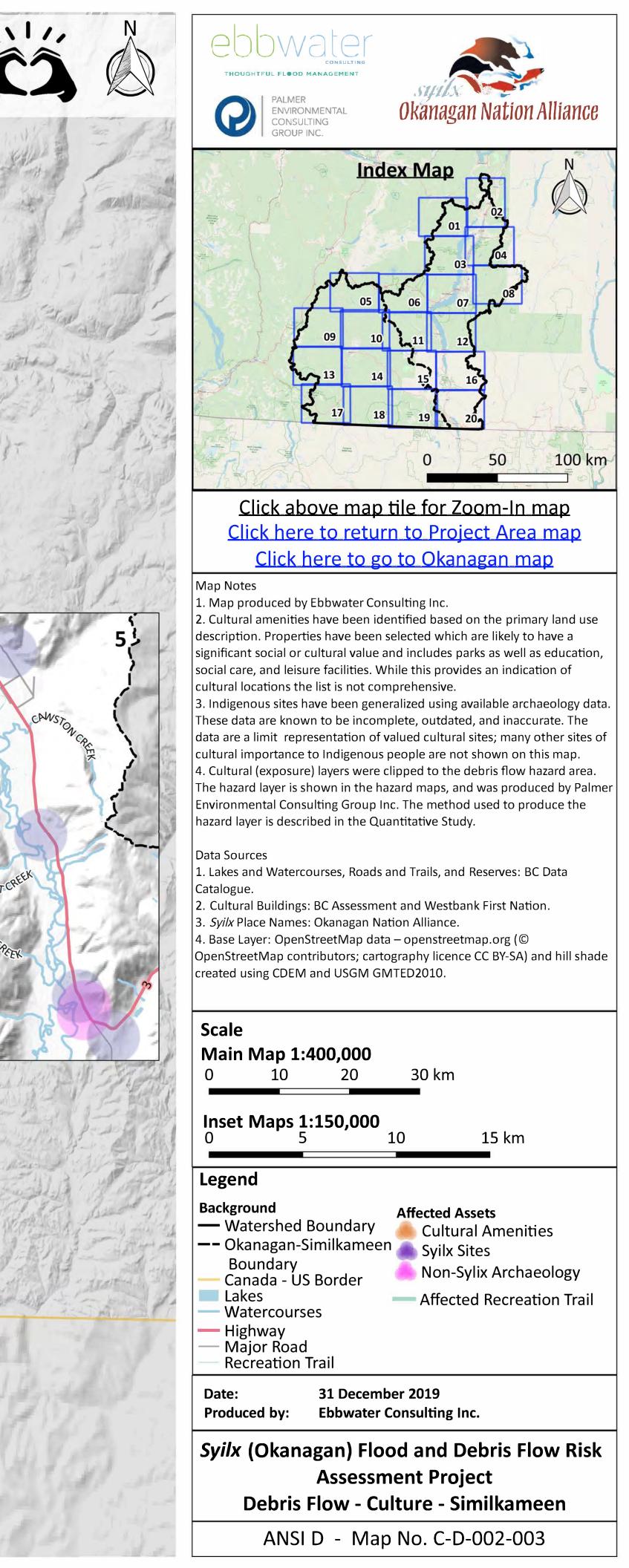
Scale 1:350),000					
0 10	20	30 km				
Okanaga Boundai	ÚS Border urses bad	Affected Assets Cultural Amenities Syilx Sites Non-Sylix Archaeology Affected Recreation Trail				
Date: Produced by:		31 December 2019 Ebbwater Consulting Inc.				
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project Debris Flow - Culture						

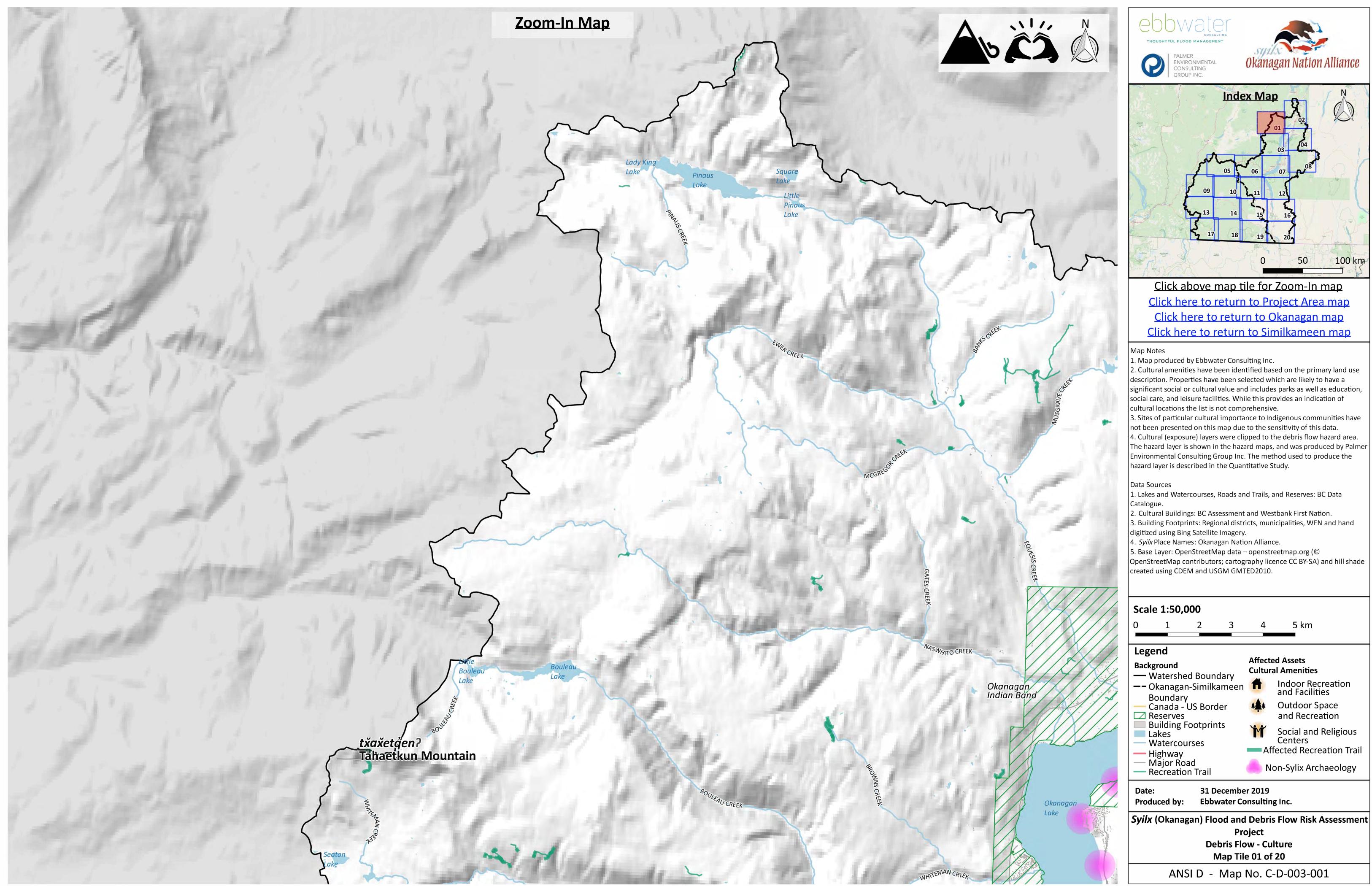
ANSI D - Map No. C-D-002-001



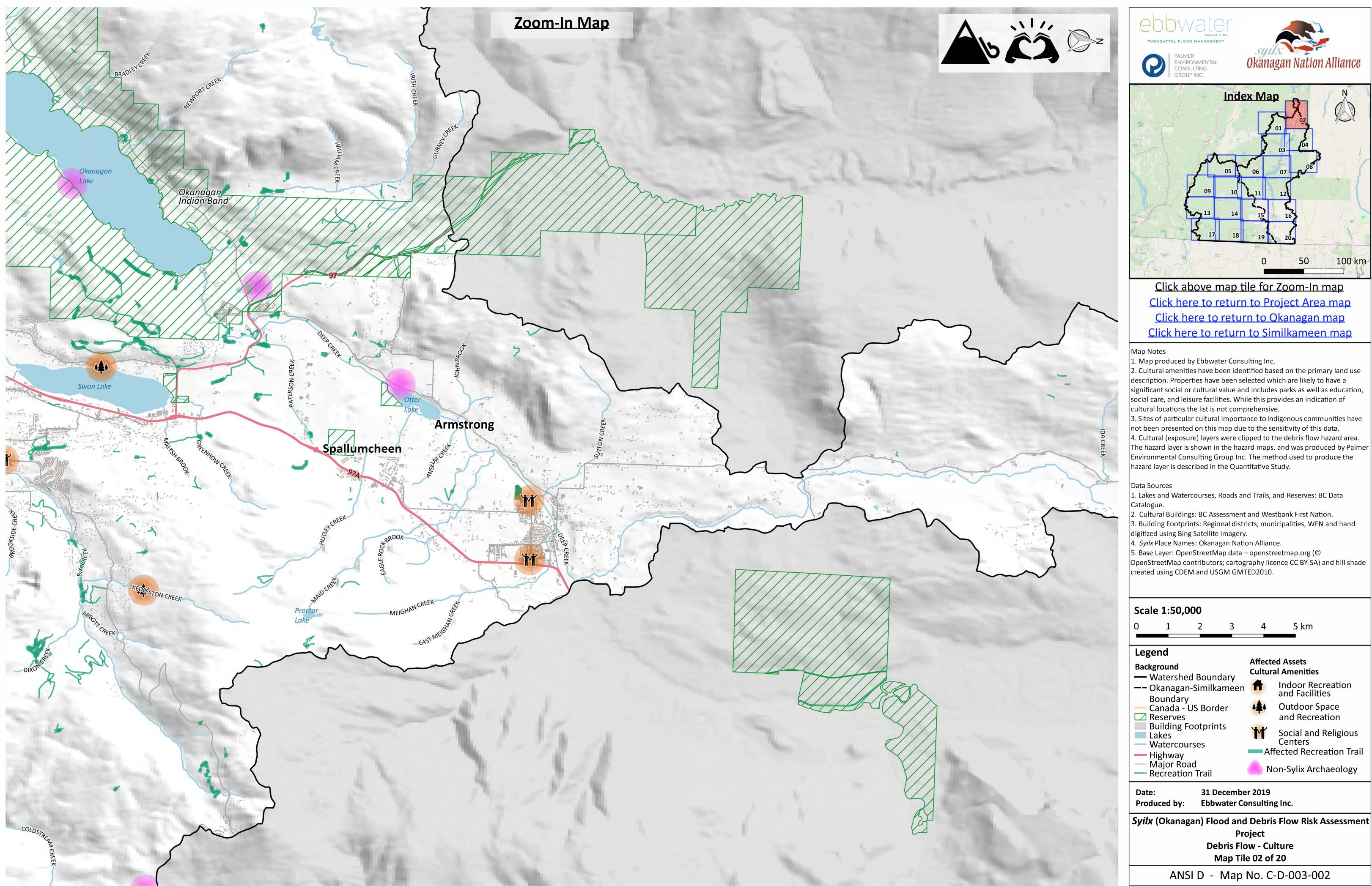
ANSI D - Map No. C-D-002-002



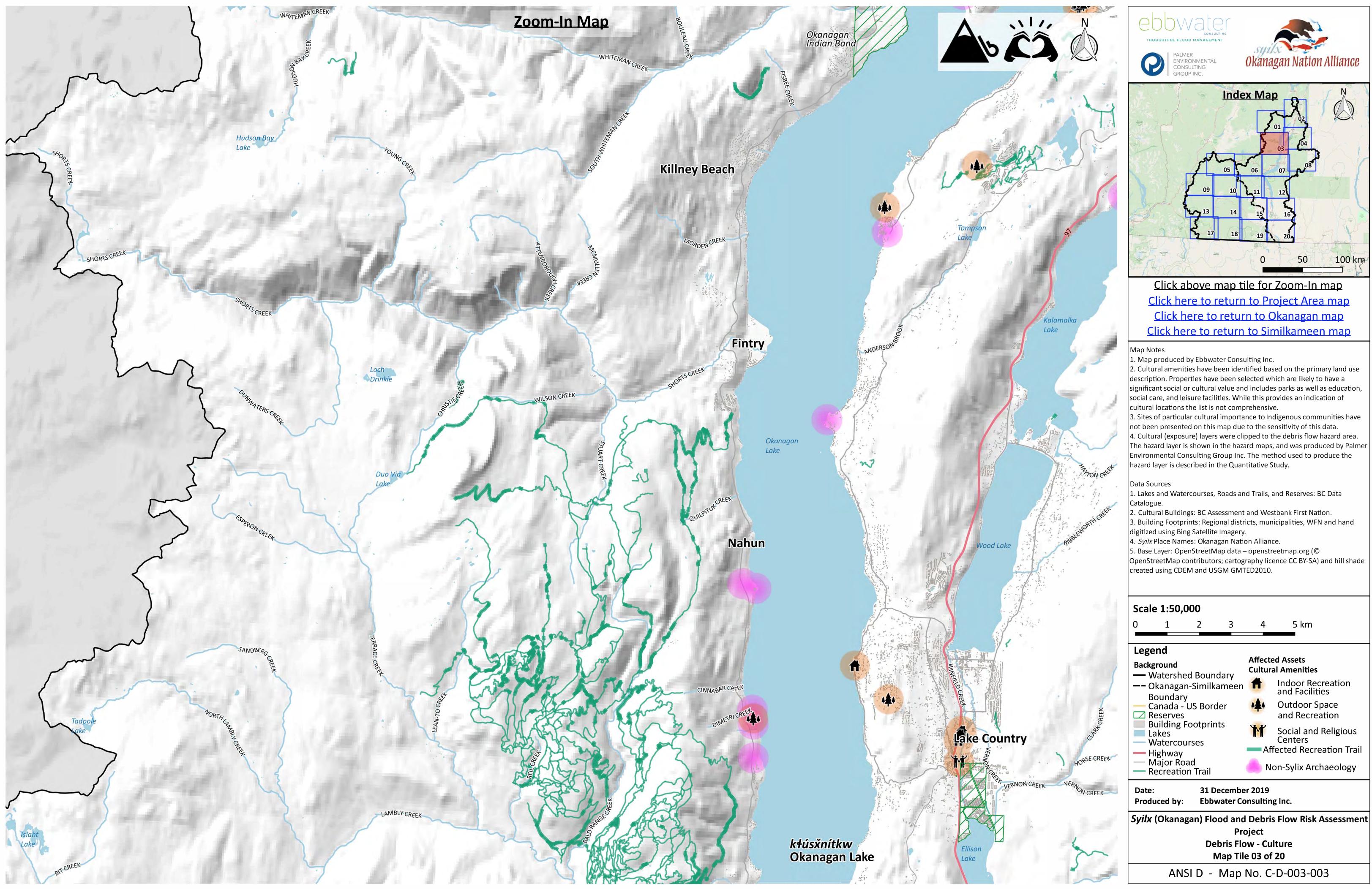




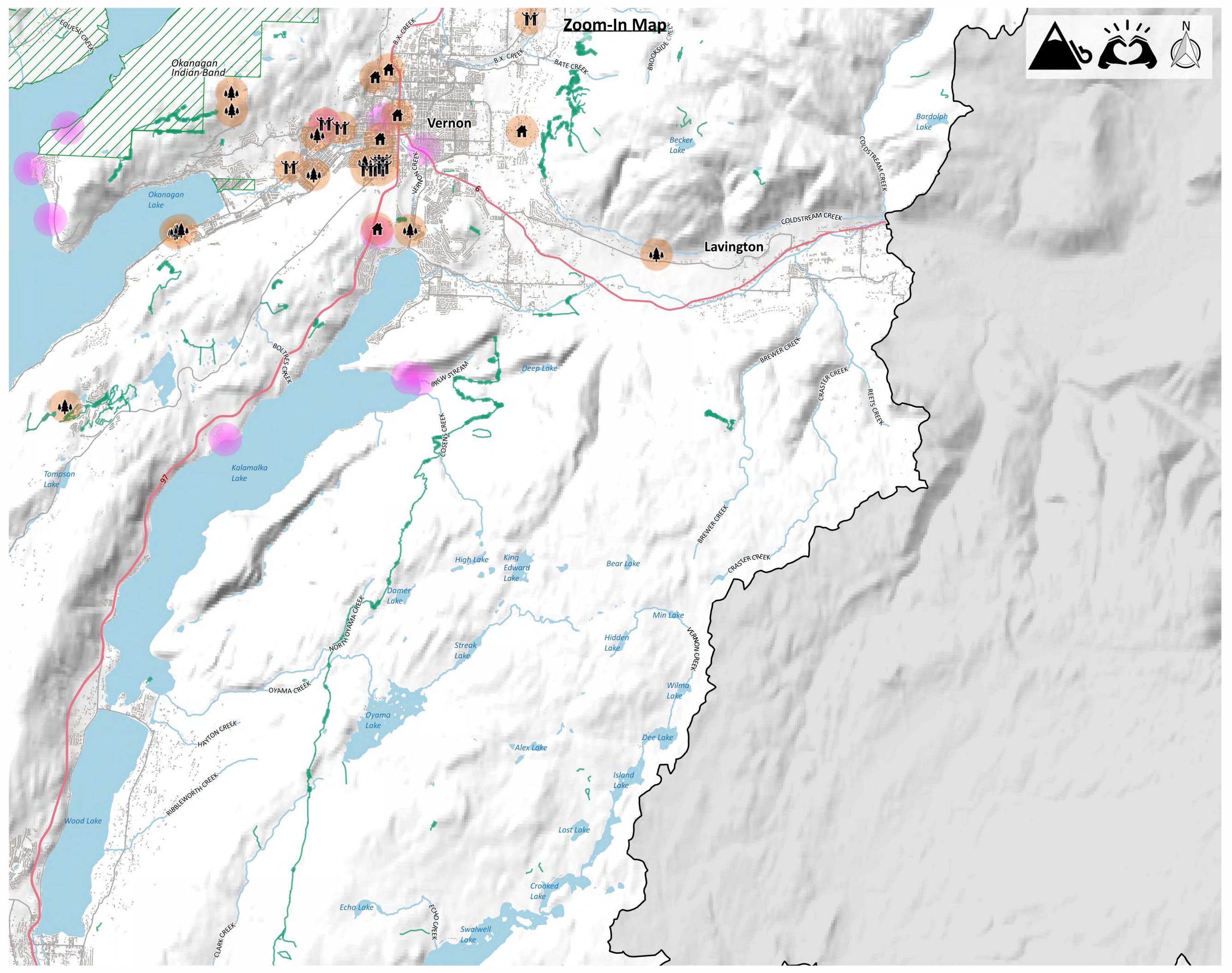
Scale 1:50 000								
Scale 1:50,00	2	3	4	5 km				
Legend Background — Watershed — Okanagan- Boundary Canada - U Z Reserves Building Fo Lakes Watercour Highway Major Road Recreation	Similk IS Boro ootprin ses d	kameen der	Cultura	ed Assets al Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers fected Recreation Trail on-Sylix Archaeology				
Date:31 December 2019Produced by:Ebbwater Consulting Inc.Syilx (Okanagan) Flood and Debris Flow Risk Assessment Project Debris Flow - Culture Map Tile 01 of 20								

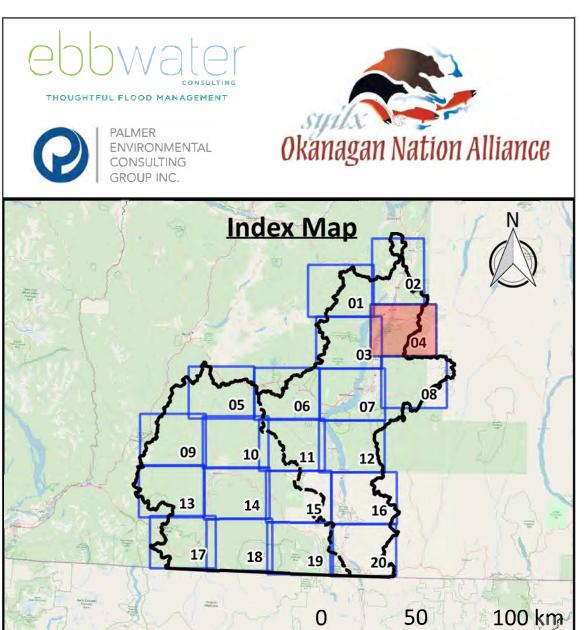


Scale 1:50,000								
0	1	2	3	4	5 km			
¢								
Lege	nd							
-	r ound /atershe	ed Bour	ndary	Cultur	ed Assets al Amenities			
	kanagar oundary		kameen		Indoor Recreation and Facilities			
Ca	 Canada - US Border Reserves Building Footprints Lakes Watercourses 			***	Outdoor Space and Recreation			
📕 La					Social and Religious Centers ffected Recreation Trail			
— N	ighway 1ajor Roa ecreatio				Ion-Sylix Archaeology			
Date: Produ	Date:31 December 2019Produced by:Ebbwater Consulting Inc.							
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project								
Project Debris Flow - Culture Map Tile 02 of 20								
			-		°-D-003-002			



Scale 1:50,000							
0	1	2	3	4	5 km		
 Legend Background Watershed Boundary Okanagan-Similkameen Boundary Canada - US Border Reserves Building Footprints Lakes Watercourses Highway Major Road Recreation Trail 			kameen der nts	Cultur A Cultur A A A N	ed Assets ral Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers fected Recreation Trail Ion-Sylix Archaeology		
Pro	Date:31 December 2019Produced by:Ebbwater Consulting Inc.						
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project							
			ebris Flo Map Til				





Click above map tile for Zoom-In map Click here to return to Project Area map Click here to return to Okanagan map Click here to return to Similkameen map

Map Notes

1. Map produced by Ebbwater Consulting Inc.

2. Cultural amenities have been identified based on the primary land use description. Properties have been selected which are likely to have a significant social or cultural value and includes parks as well as education, social care, and leisure facilities. While this provides an indication of cultural locations the list is not comprehensive.

3. Sites of particular cultural importance to Indigenous communities have not been presented on this map due to the sensitivity of this data.
4. Cultural (exposure) layers were clipped to the debris flow hazard area.
The hazard layer is shown in the hazard maps, and was produced by Palmer Environmental Consulting Group Inc. The method used to produce the hazard layer is described in the Quantitative Study.

Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.

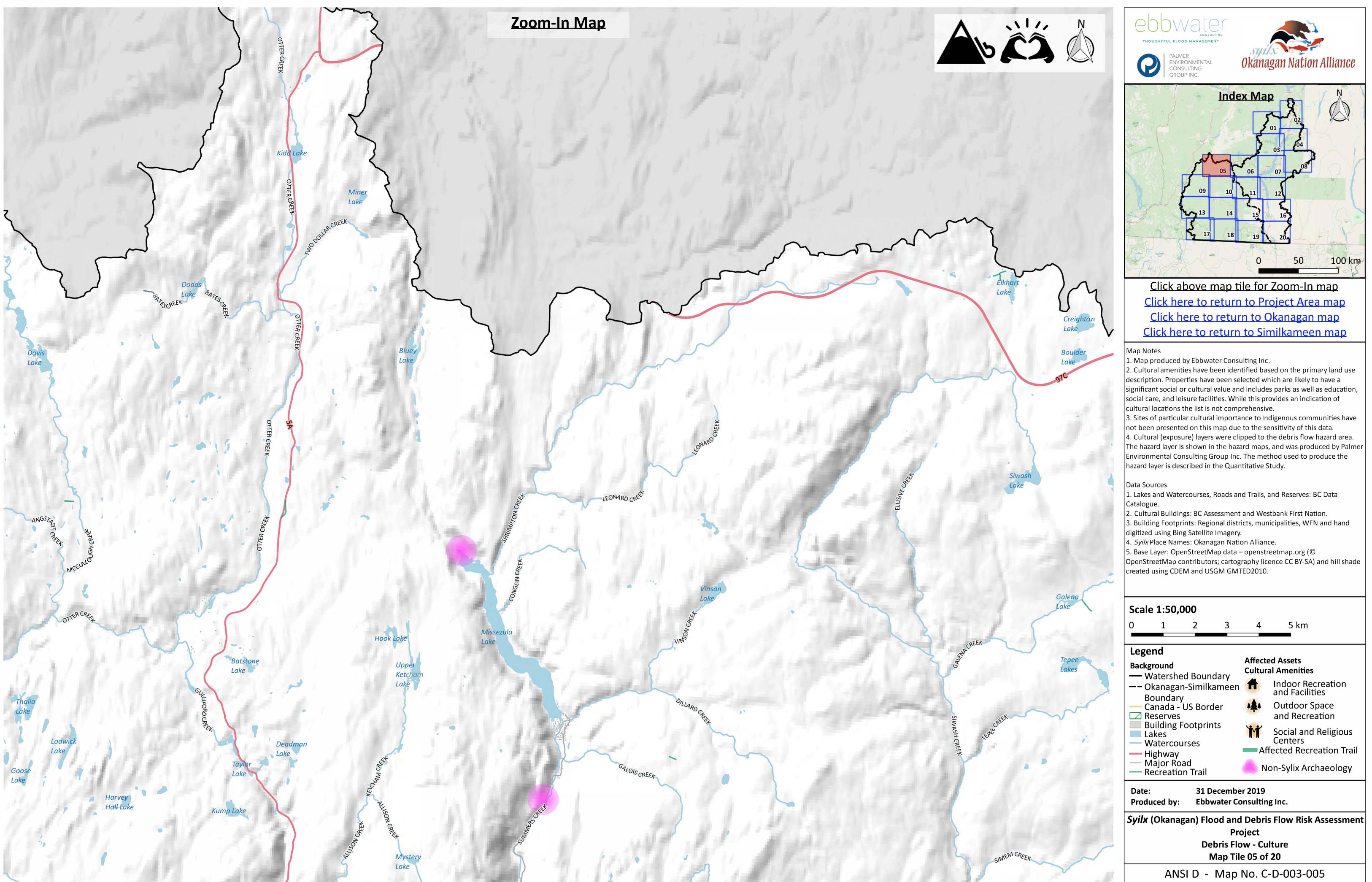
2. Cultural Buildings: BC Assessment and Westbank First Nation.

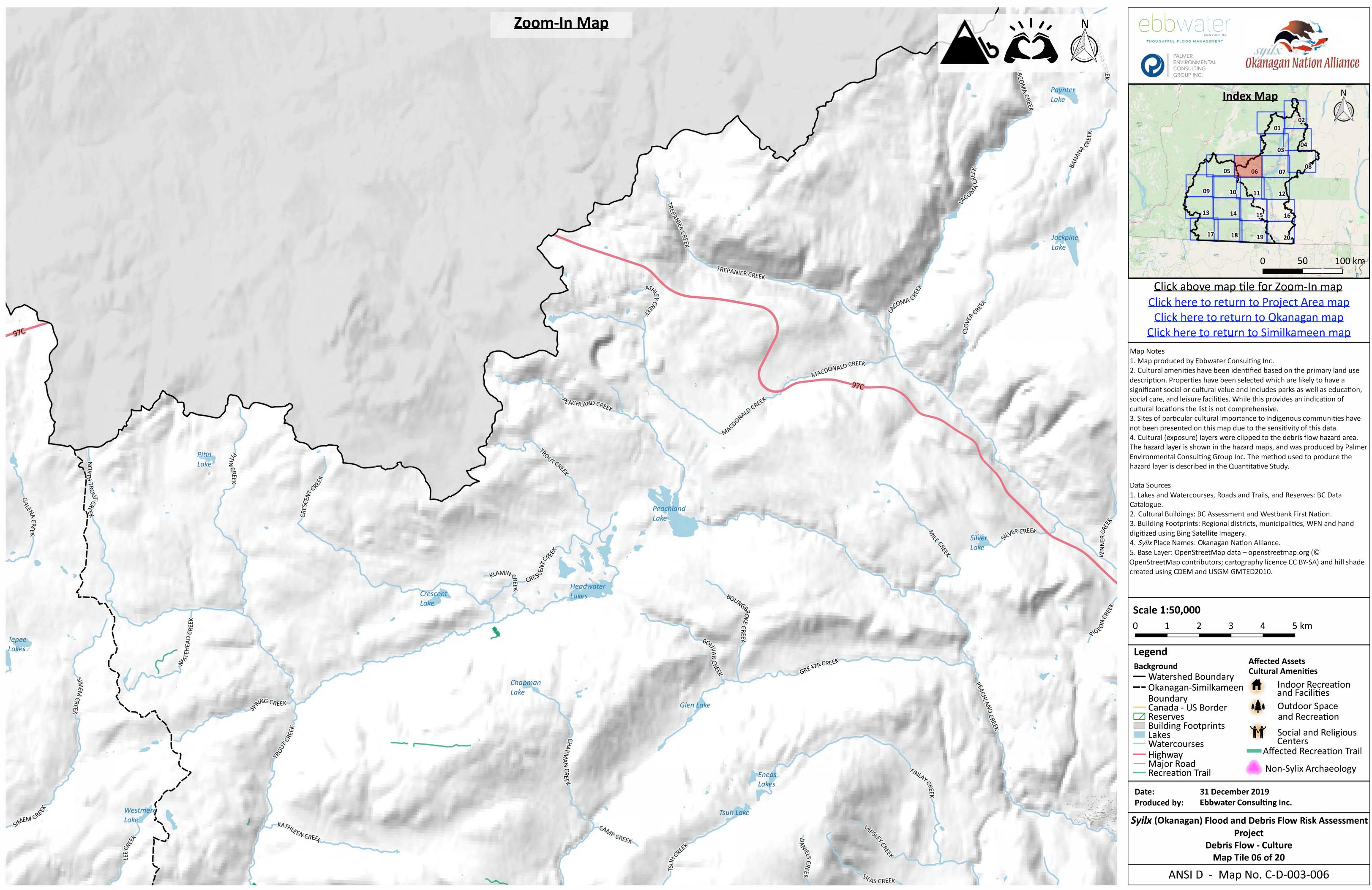
3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.

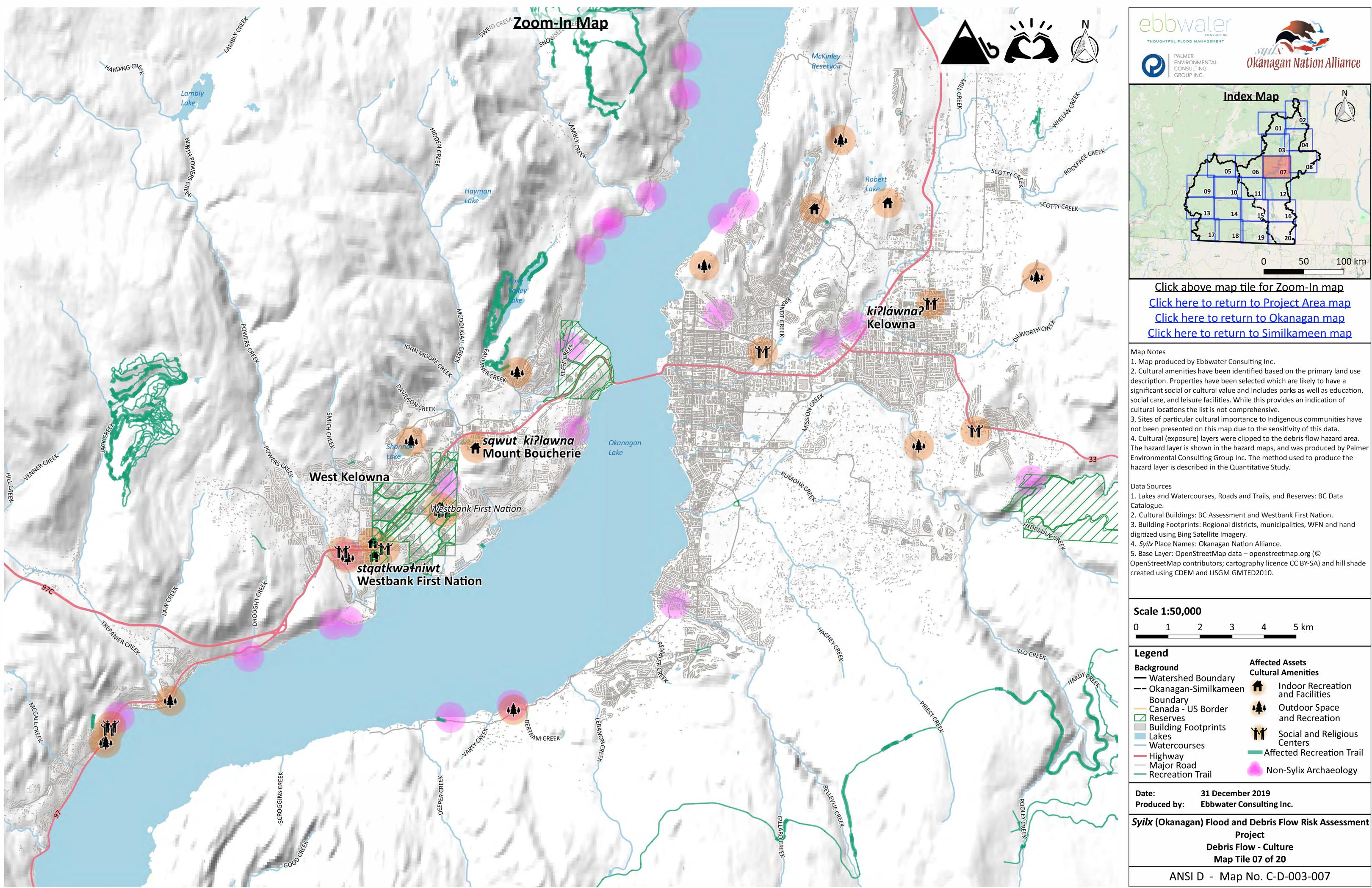
4. Syilx Place Names: Okanagan Nation Alliance.

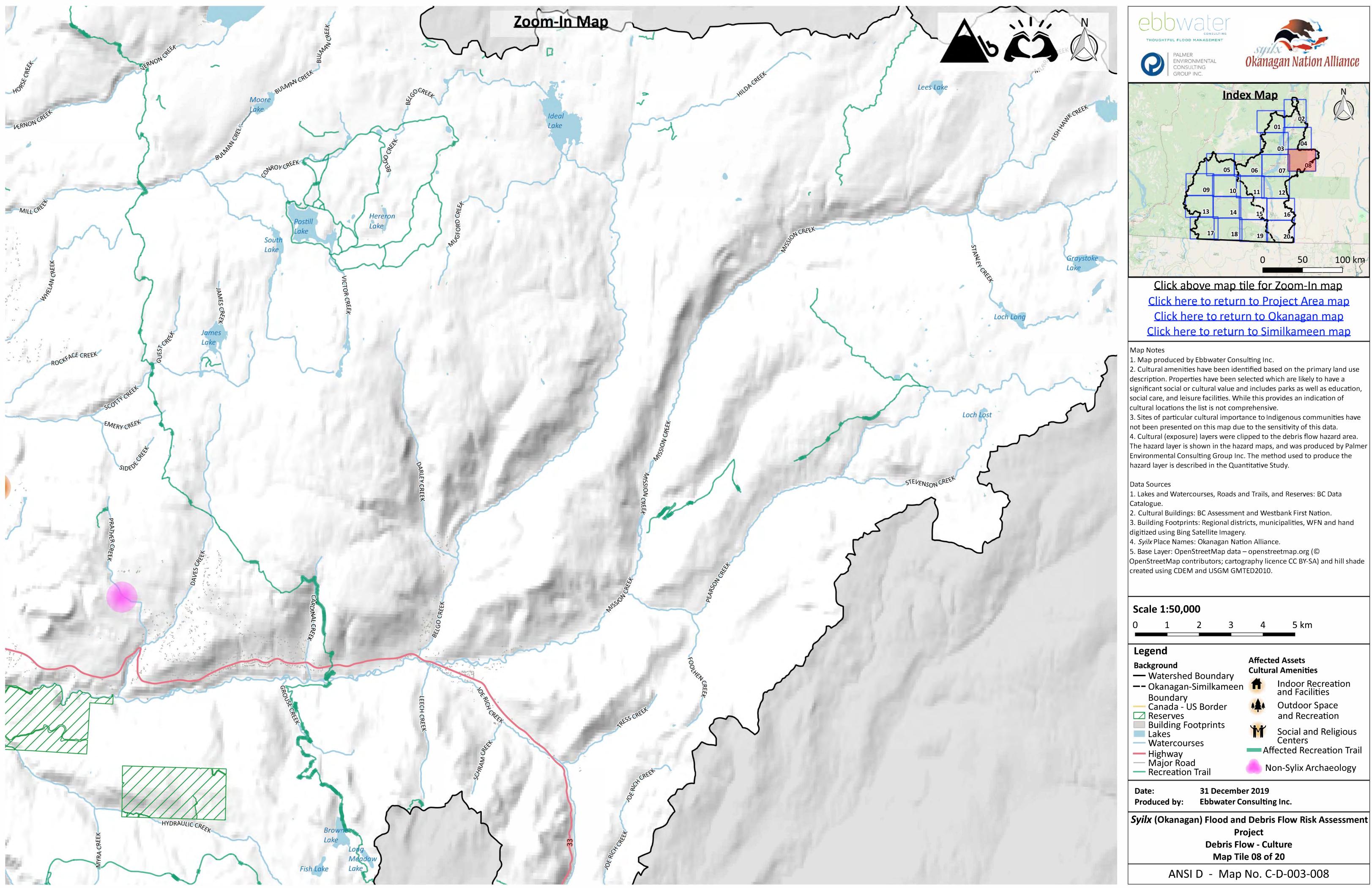
5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000									
0	1	2	3	4	5 km				
Į.									
Leg	gend								
	Background Affected Assets Watershed Boundary Cultural Amenities								
	Okanagar	n-Similk	•	Ħ	Indoor Recreation and Facilities				
	Boundary — Canada - US Border Reserves				Outdoor Space and Recreation				
	Building F Lakes Watercou	•	nts	M	Social and Religious Centers				
	Highway			At	ffected Recreation Trail				
	Major Ro Recreatio			len N	Ion-Sylix Archaeology				
Date Proe	e: duced by:		Decembe water Co		ng Inc.				
Syil	x (Okana	gan) Flo			is Flow Risk Assessment				
Project Debris Flow - Culture									
			Map Til						
	AN:	SID -	Мар	No. C	C-D-003-004				

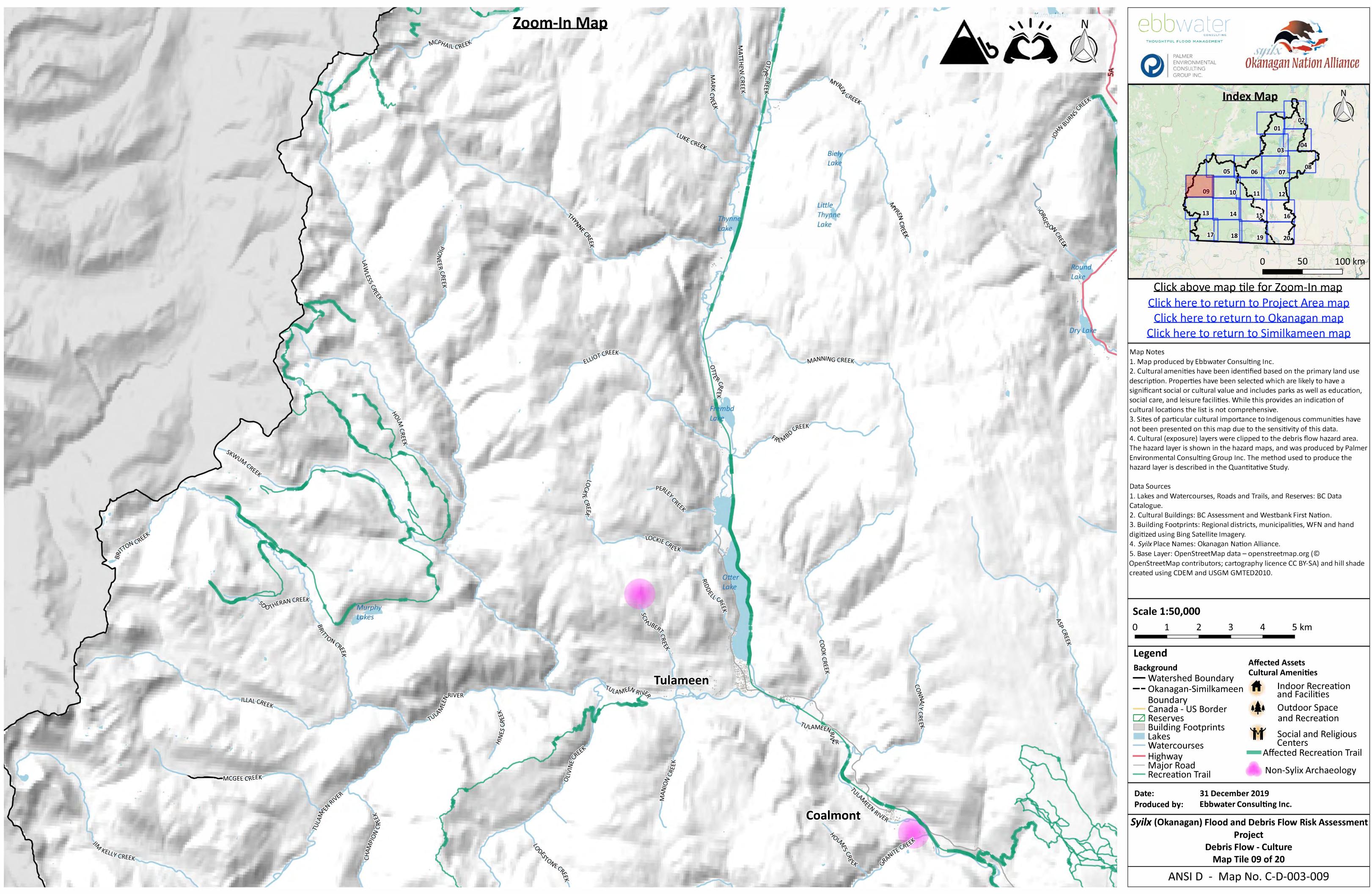




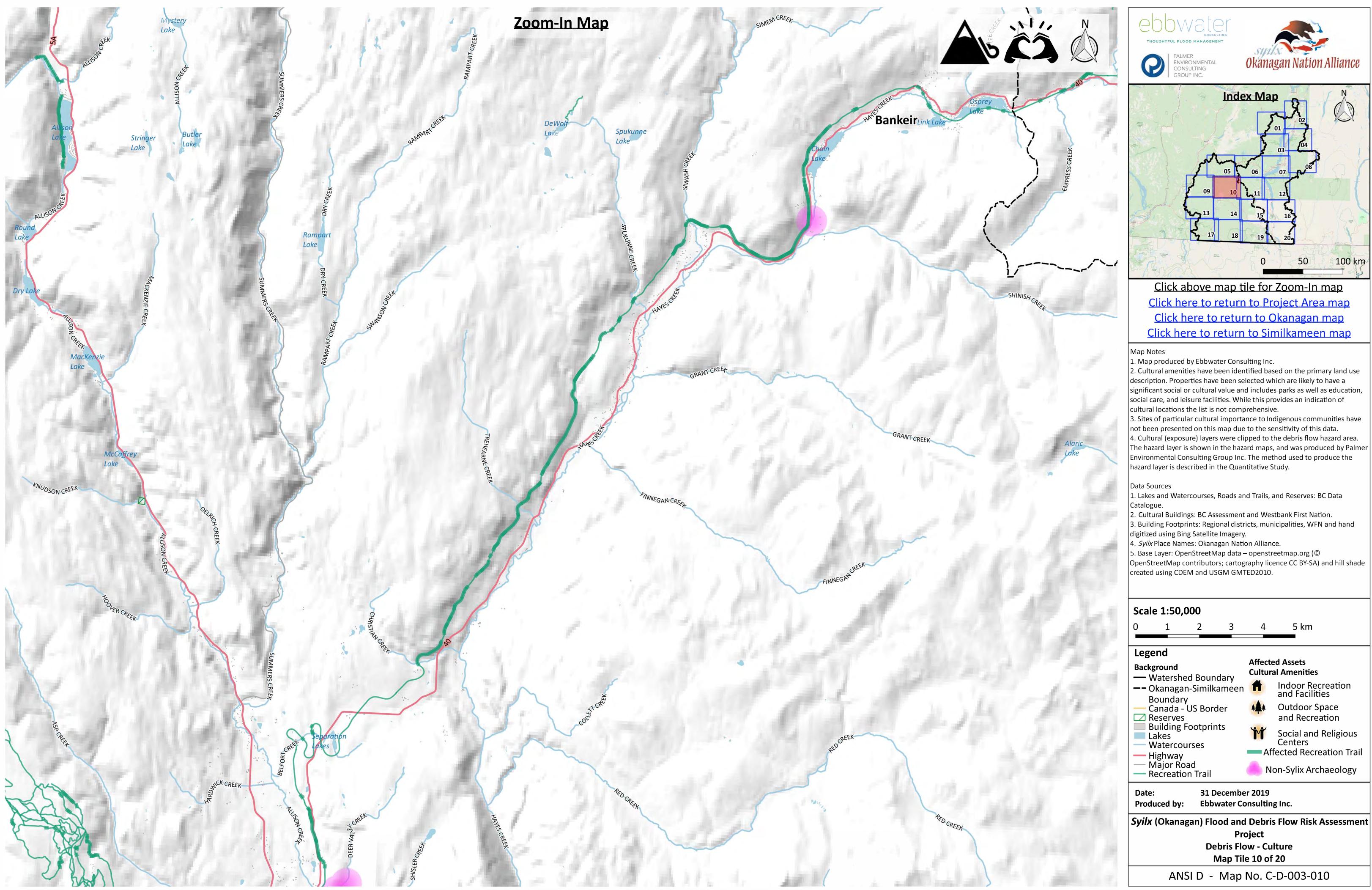




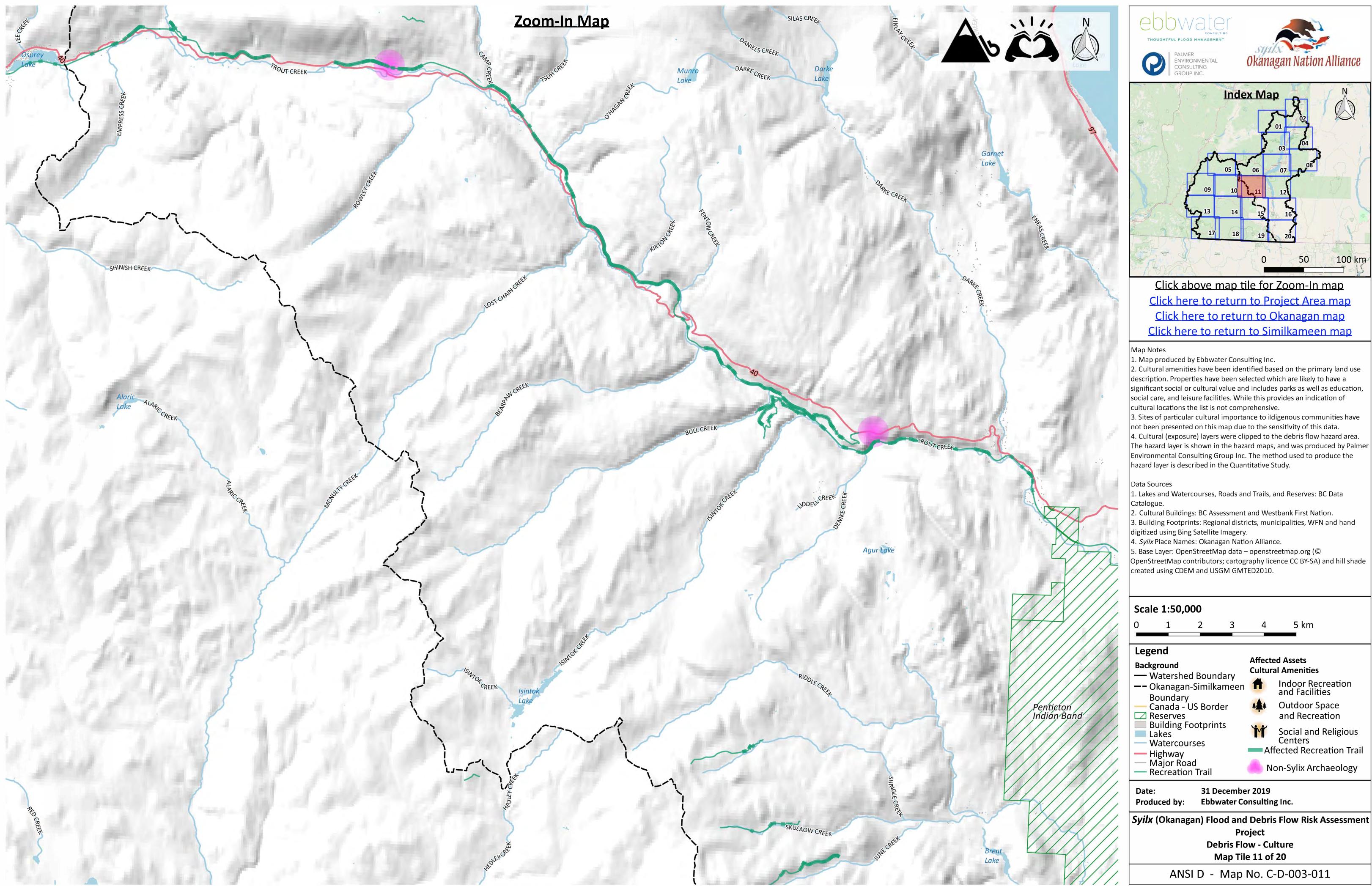
Scale 1:50,000								
0 1	2	3	4	5 km				
Legend Background — Watershed Boundary — Okanagan-Similkameen Boundary — Canada - US Border Canada - US Border Building Footprints Lakes Watercourses — Highway								
— Major Ro — Recreatio			N	on-Sylix Archaeology				
Date: Produced by:		ecembe water Co		ig Inc.				
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project Debris Flow - Culture Map Tile 08 of 20								
AN	SID -	Мар	No. C	-D-003-008				

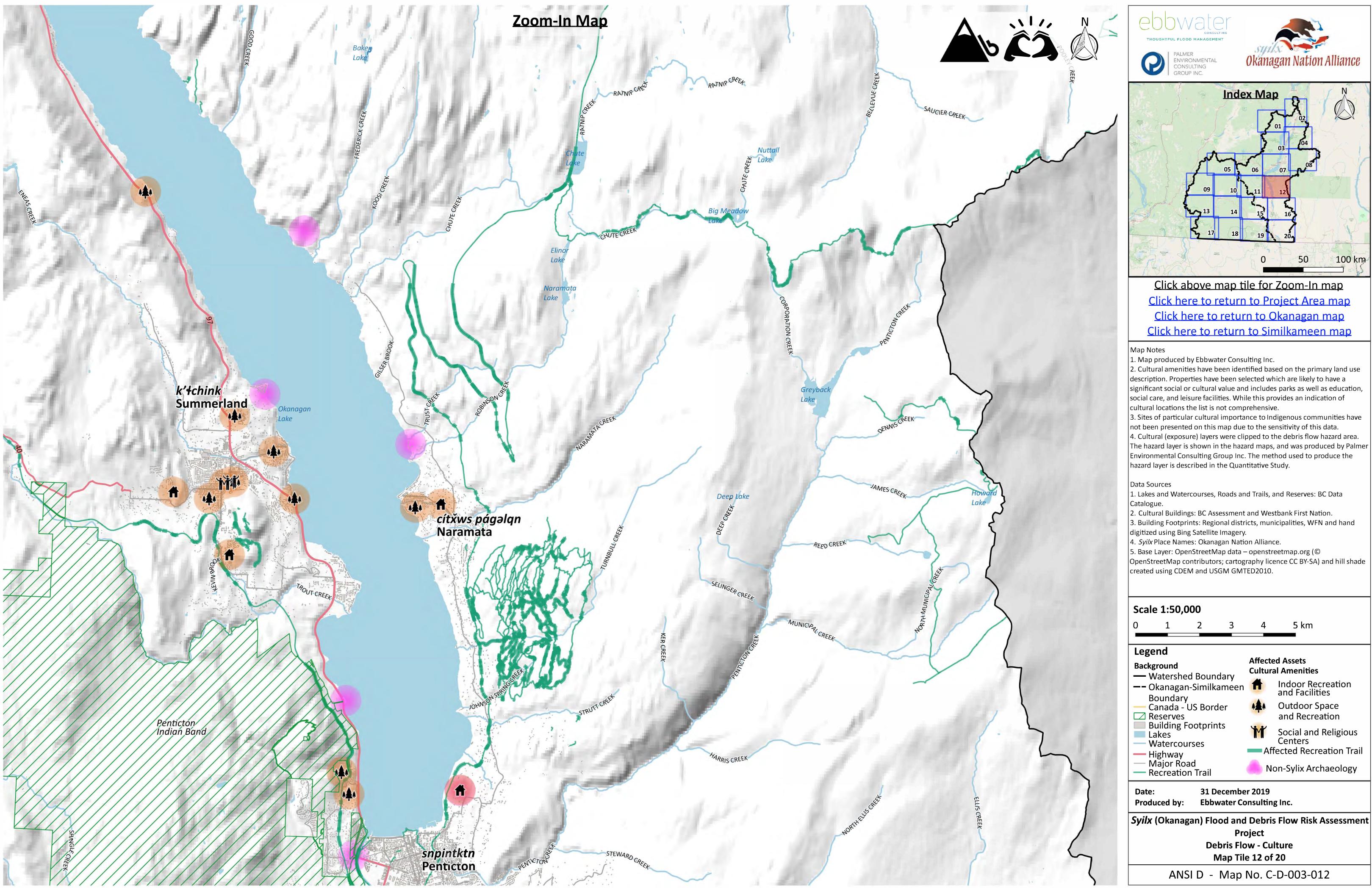


Scale 1:50,000								
0 1	2	3	4	5 km				
Legend								
Background — Waters		ndarv		ed Assets al Amenities				
—– Okana	gan-Similk	•	Ħ	Indoor Recreation and Facilities				
Boundary — Canada - US Border Z Reserves			***	Outdoor Space and Recreation				
Buildin Lakes Watero	ng Footprin courses	nts	M	Social and Religious Centers				
— Highwa — Major — Recrea				fected Recreation Trail on-Sylix Archaeology				
Date: Produced b		Decembe water Co		ng Inc.				
<i>Syilx</i> (Oka	Syilx (Okanagan) Flood and Debris Flow Risk Assessment							
	Project							
	Debris Flow - Culture							
		Map Til	le 09 of	f 20				
Map Tile 09 of 20								



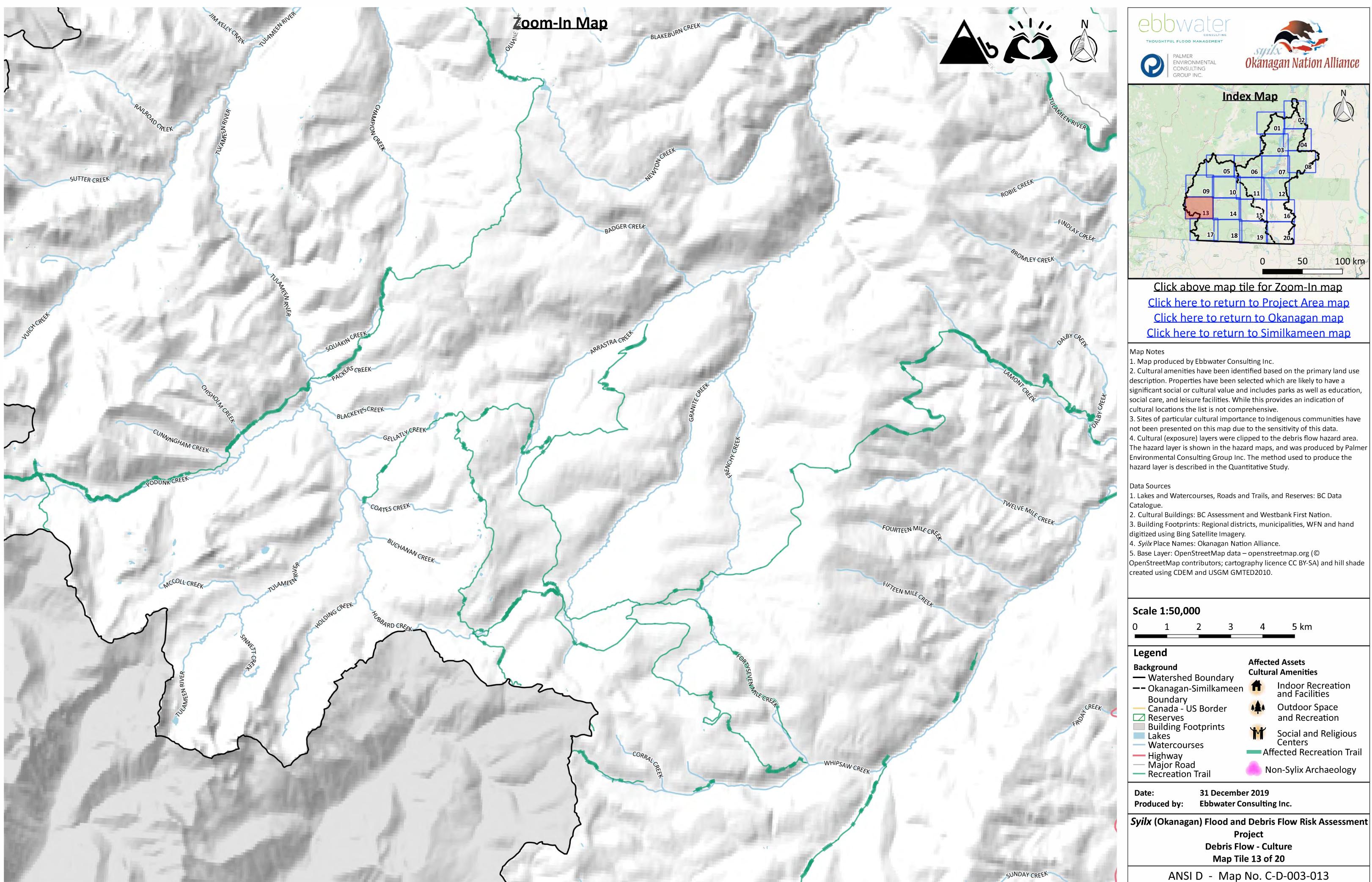
Scale 1:50,000								
0	1	2	3	4	5 km			
Legend Background — Watershed Boundary — Okanagan-Similkameen Boundary Canada - US Border Canada - US Border Canada - US Border Reserves Building Footprints Lakes Watercourses Highway Major Road Recreation Trail				Cultur A	ed Assets ral Amenities Indoor Recreation and Facilities Outdoor Space and Recreation Social and Religious Centers fected Recreation Trail			
Date Prod	: uced by:		ecembo water Co	er 2019 onsultir	ng Inc.			
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project Debris Flow - Culture Map Tile 10 of 20								



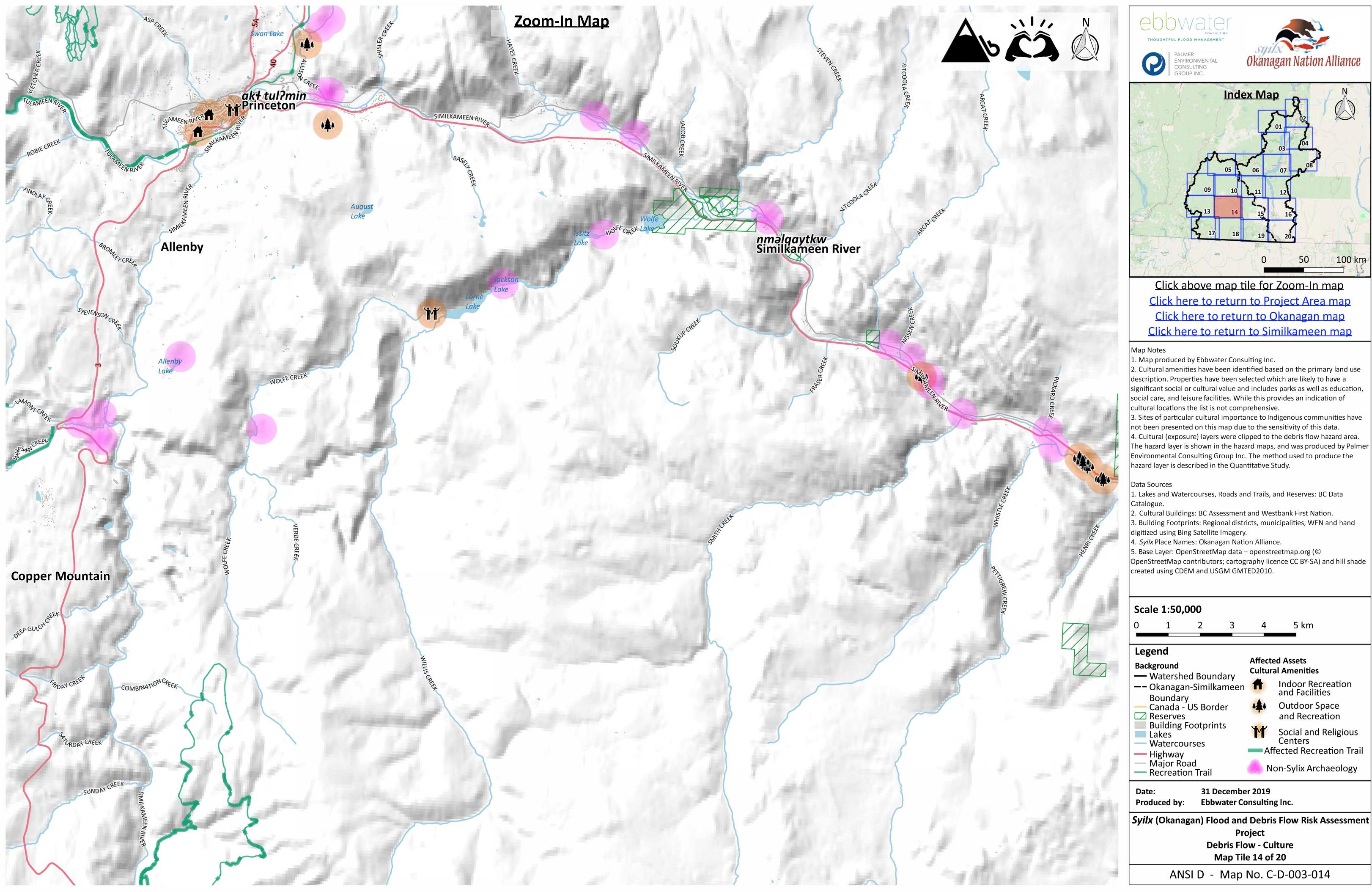




Scale 1:50,000								
0	1	2	3	4	5 km			
Leg	gend							
Background Watershed Boundary Affected Assets Cultural Amenities								
(Okanaga	n-Similk	•		Indoor Recreation and Facilities			
	Boundary — Canada - US Border Reserves				Outdoor Space and Recreation			
	Building I Lakes Watercou	·	nts	M	Social and Religious Centers			
	Highway			Af	ffected Recreation Trail			
	Major Ro Recreatic	bad		N N	Ion-Sylix Archaeology			
Date Proc	e: duced by:		Decembe water Co					
Syil	c (Okana	gan) Flo		d Debri oject	is Flow Risk Assessment			
		D	ebris Flo	•	.14			
			Map Til		_			
	AN	SID -	Мар	No. C	C-D-003-012			

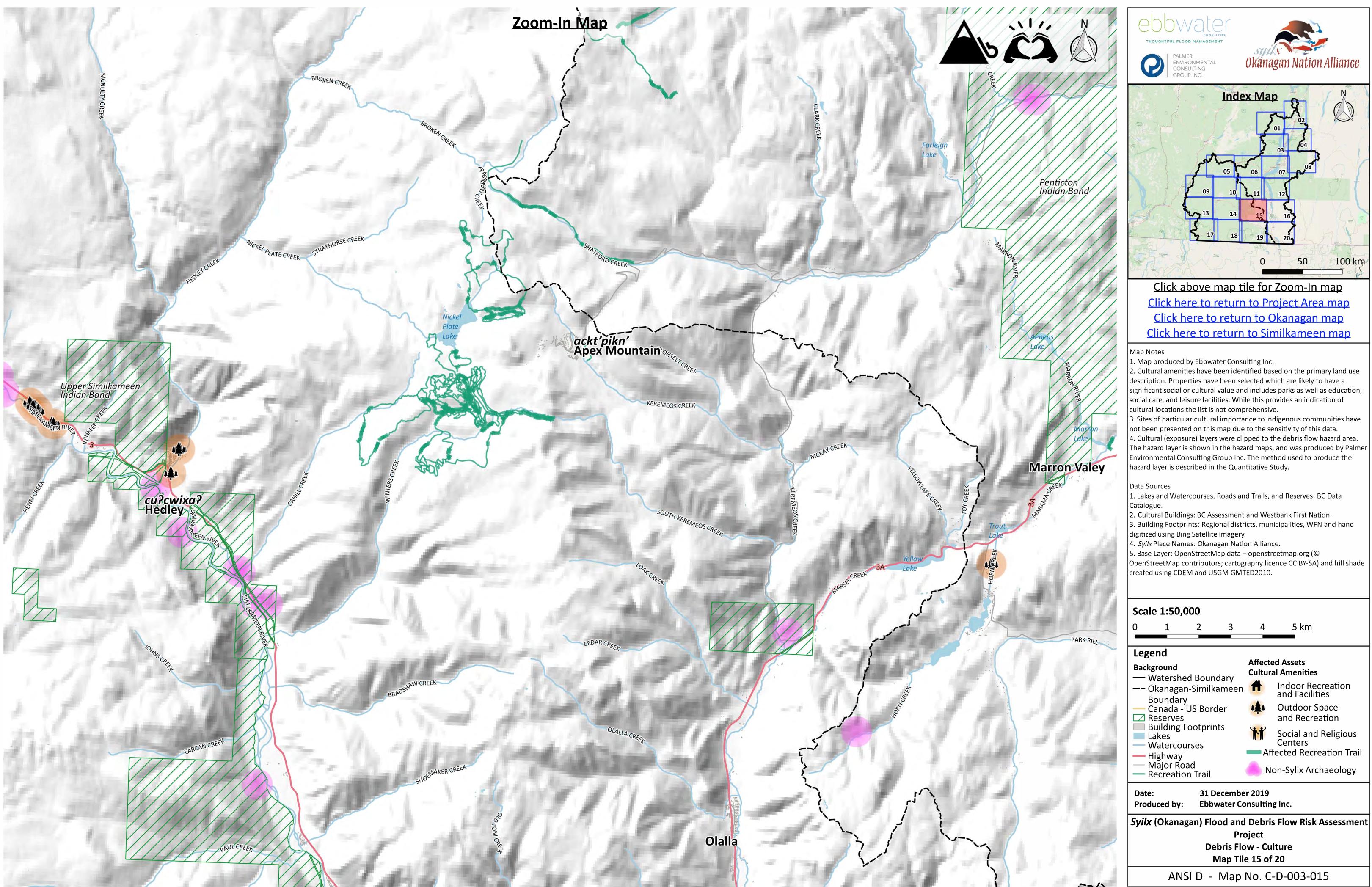


Scale 1:50,000								
0	1	2	3	4	5 km			
10	7				-			
LegendAffected AssetsBackgroundAffected Assets Watershed BoundaryCultural Amenities Okanagan-Similkameen BoundaryIndoor Recreation and FacilitiesBoundary Canada - US BorderM Reserves Building FootprintsOutdoor Space and Recreation Building Footprints LakesM								
	 Lakes Watercourses Highway Major Road Recreation Trail 			Af	Centers fected Recreation Trail on-Sylix Archaeology			
Date Prod	: uced by:		ecembe water Co		ng Inc.			
Syilx	(Okana	gan) Flo			s Flow Risk Assessment			
	Project							
Debris Flow - Culture Map Tile 13 of 20								
			-					

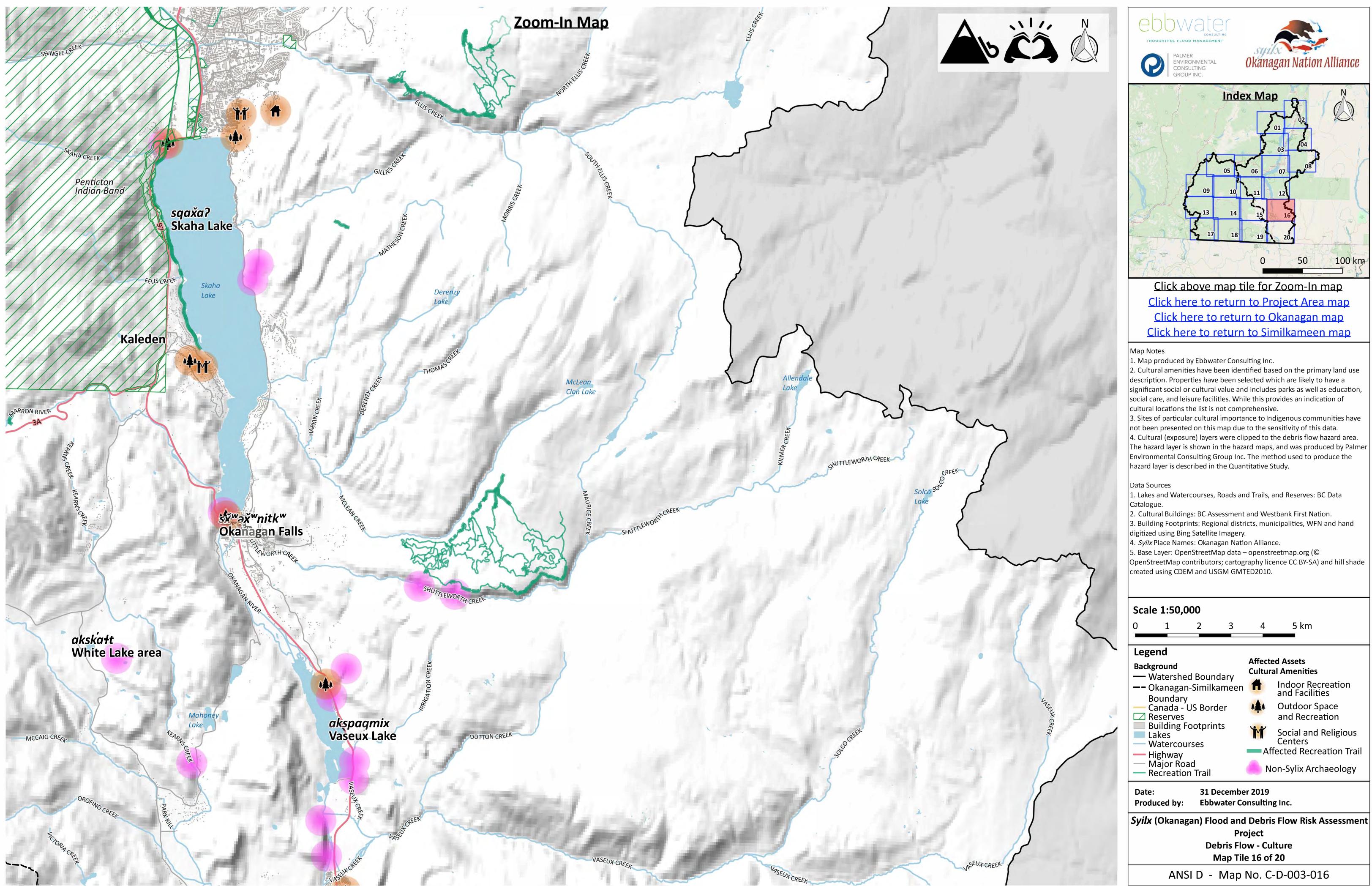




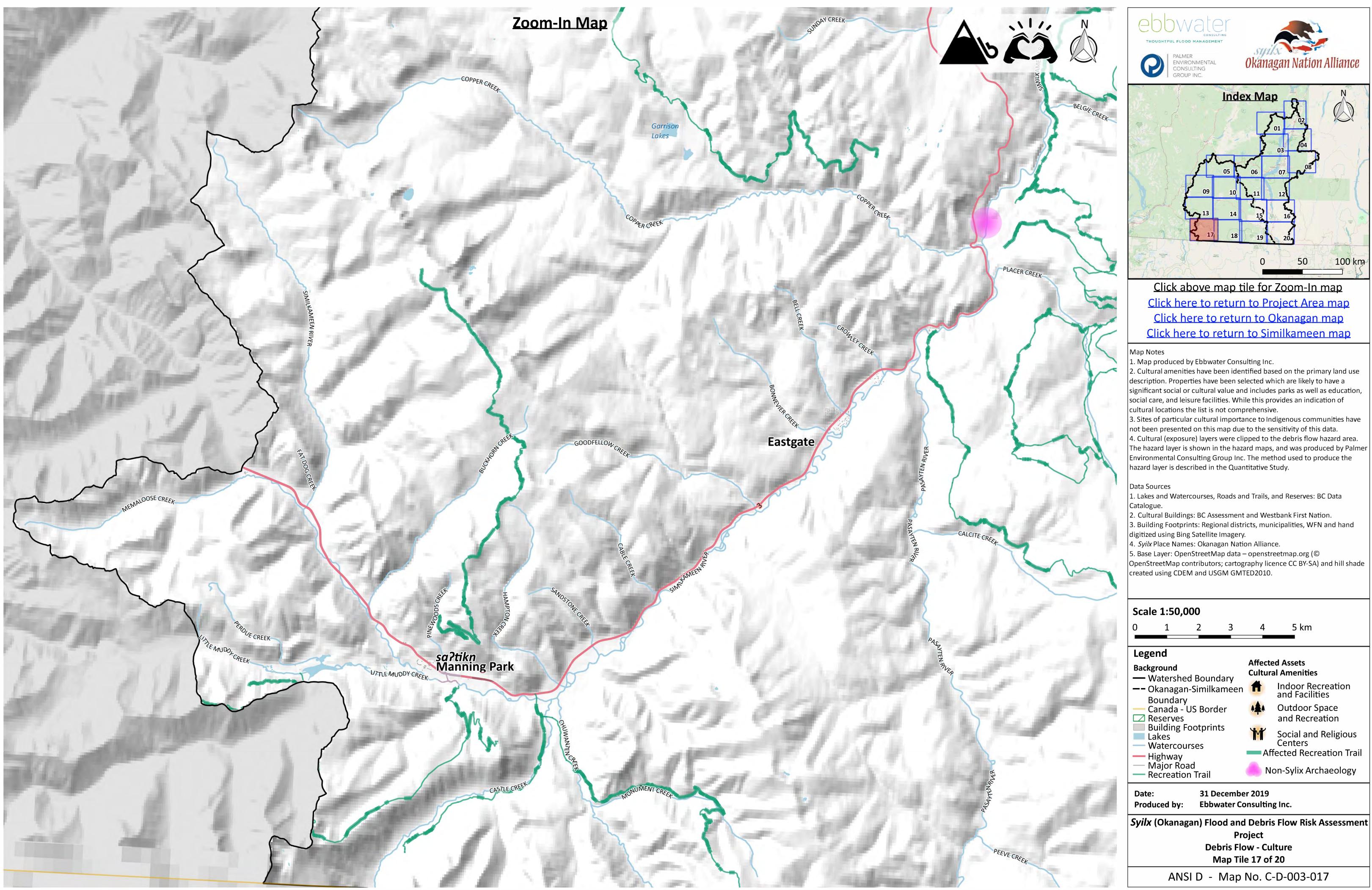
Scale 1:50,000								
0	1	2	3	4	5 km			
	ground				ed Assets ral Amenities			
—- (Okanaga	ned Boun an-Similk	•		Indoor Recreation and Facilities			
Boundary — Canada - US Border Reserves				***	Outdoor Space and Recreation			
	 Building Footprints Lakes Watercourses 				Social and Religious Centers			
H	Highway Major Ro	/			ffected Recreation Trail			
	Recreation				Ion-Sylix Archaeology			
Date Prod	e: luced by:		Decembe water Co		ng Inc.			
Syilx	(Okana	agan) Flo	ood and	d Debri	is Flow Risk Assessment			
	Project							
Debris Flow - Culture								
			Map Til	e 14 of	F 20			

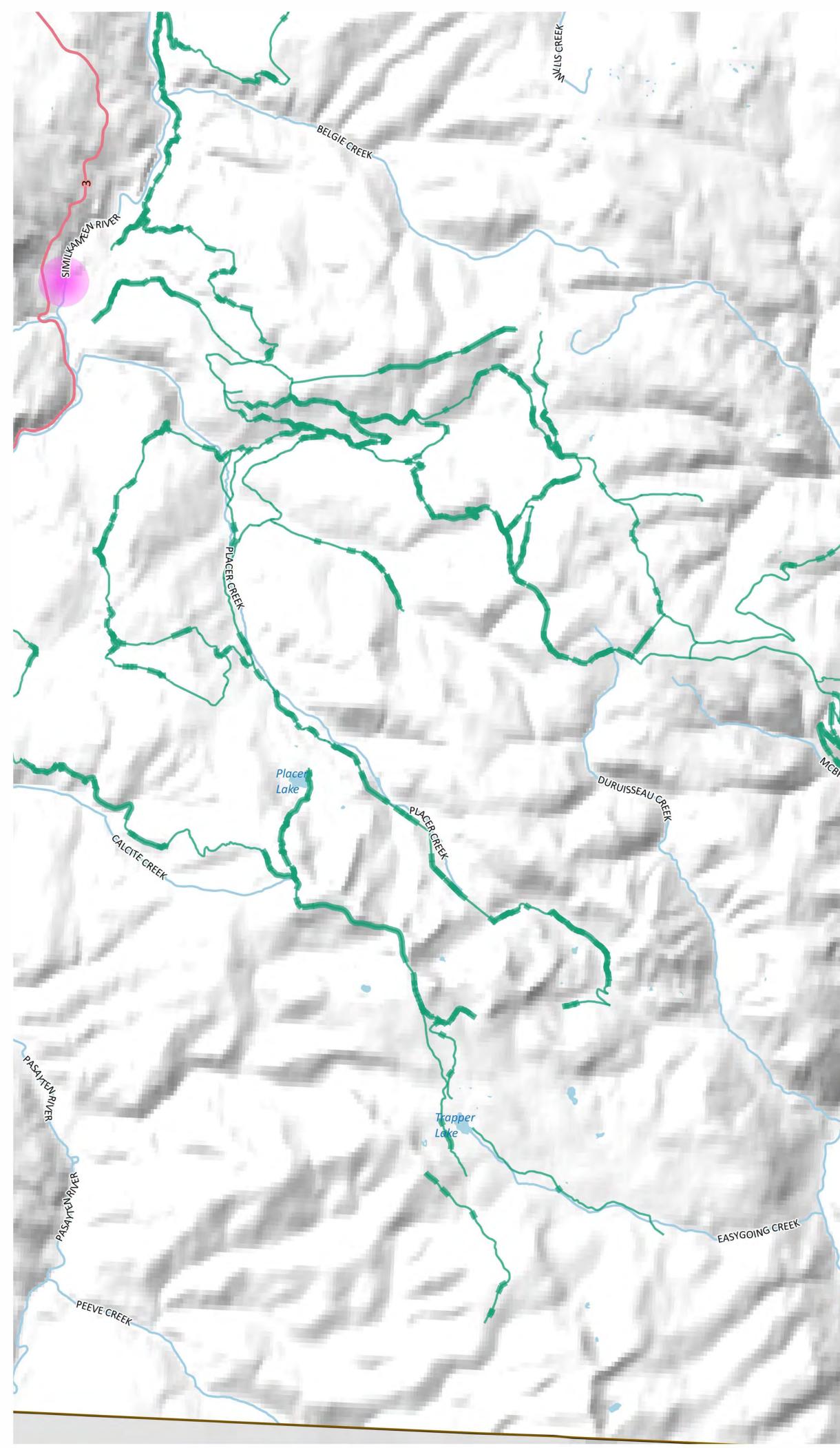


Scale 1:50,000								
0	1	2	3	4	5 km			
<u>)</u>								
Lege	end							
	ground Matershi	ed Boun	Idary		ed Assets al Amenities			
— – C	Okanaga	n-Similk	•	Ħ	Indoor Recreation and Facilities			
C	Boundary Canada - US Border Reserves Building Footprints Lakes Watercourses Highway			***	Outdoor Space and Recreation			
– L				M Af	Social and Religious Centers fected Recreation Trail			
	Major Ro Recreatio			N 💧	on-Sylix Archaeology			
Date Prod	: uced by:		ecembe water Co	er 2019 onsultin	ig Inc.			
Syilx (Okanagan) Flood and Debris Flow Risk Assessment								
Project								
Debris Flow - Culture								
			Map Til	le 15 of	⁵ 20			



Scale 1:50,000				
0 1 2 3	4 5 km			
Legend				
Background	Affected Assets Cultural Amenities			
	Indoor Recreation and Facilities			
 Canada - US Border Reserves 	Outdoor Space and Recreation			
 Building Footprints Lakes Watercourses 	Social and Religious Centers			
— Highway	Affected Recreation Trail			
— Major Road — Recreation Trail	Non-Sylix Archaeology			
Date:31 December 2019Produced by:Ebbwater Consulting Inc.				
Syilx (Okanagan) Flood and Debris Flow Risk Assessment				
Proj	Project			
Debris Flow	Debris Flow - Culture			
Map Tile 16 of 20				





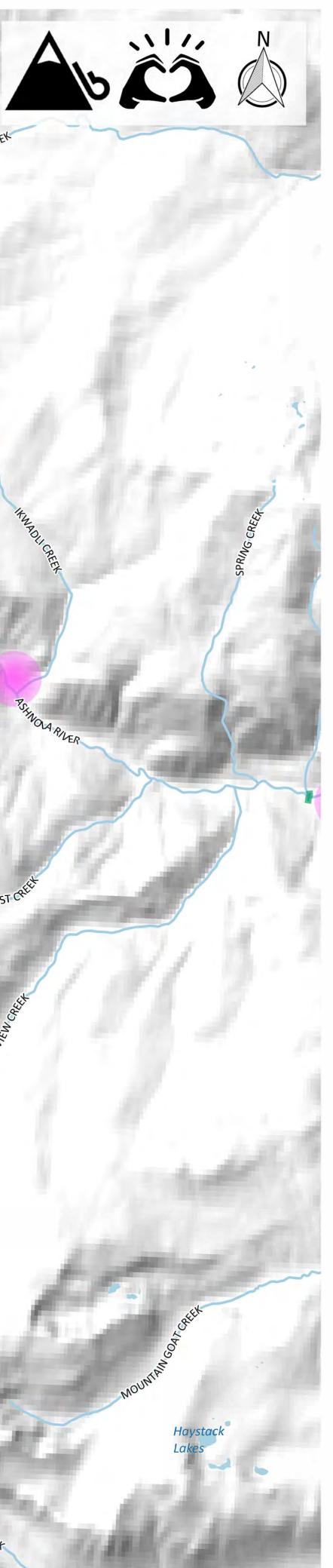


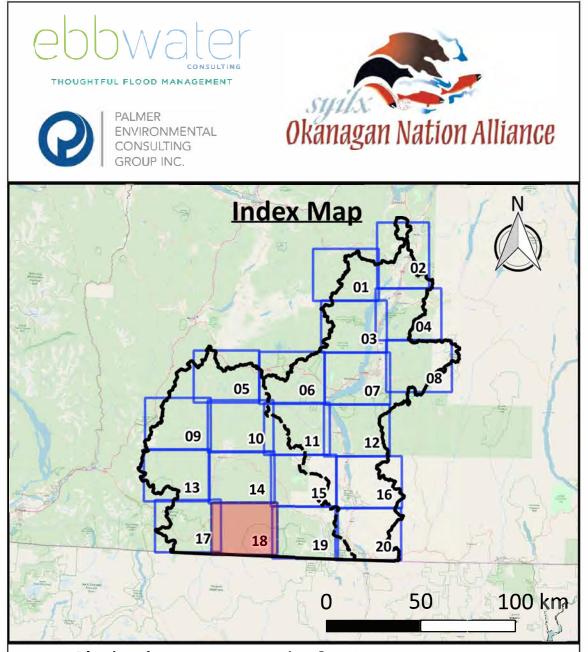




EWART CREF

SKWEK





<u>Click above map tile for Zoom-In map</u> <u>Click here to return to Project Area map</u> <u>Click here to return to Okanagan map</u> <u>Click here to return to Similkameen map</u>

Map Notes

1. Map produced by Ebbwater Consulting Inc.

2. Cultural amenities have been identified based on the primary land use description. Properties have been selected which are likely to have a significant social or cultural value and includes parks as well as education, social care, and leisure facilities. While this provides an indication of cultural locations the list is not comprehensive.

3. Sites of particular cultural importance to Indigenous communities have not been presented on this map due to the sensitivity of this data. 4. Cultural (exposure) layers were clipped to the debris flow hazard area. The hazard layer is shown in the hazard maps, and was produced by Palmer Environmental Consulting Group Inc. The method used to produce the hazard layer is described in the Quantitative Study.

Data Sources

1. Lakes and Watercourses, Roads and Trails, and Reserves: BC Data Catalogue.

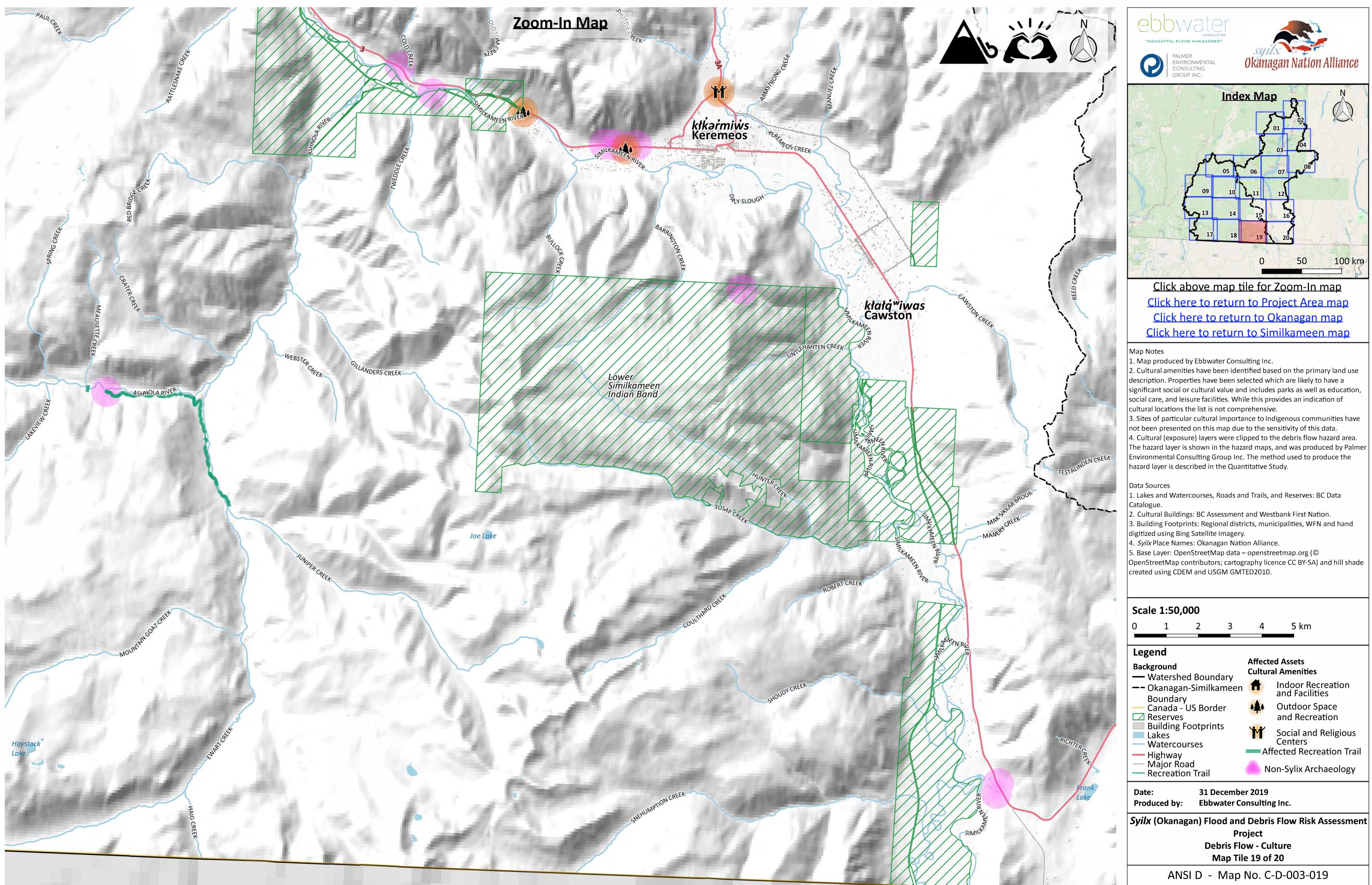
2. Cultural Buildings: BC Assessment and Westbank First Nation.

3. Building Footprints: Regional districts, municipalities, WFN and hand digitized using Bing Satellite Imagery.

4. *Syilx* Place Names: Okanagan Nation Alliance.

5. Base Layer: OpenStreetMap data – openstreetmap.org (© OpenStreetMap contributors; cartography licence CC BY-SA) and hill shade created using CDEM and USGM GMTED2010.

Scale 1:50,000 5 km 3 4 Legend Affected Assets Background **Cultural Amenities** — Watershed Boundary Indoor Recreation and Facilities -- Okanagan-Similkameen T Boundary Canada - US Border **Mathe State** Outdoor Space ReservesBuilding Footprints and Recreation M Social and Religious Lakes Centers Watercourses Affected Recreation Trail – Highway Major Road Recreation Trail Non-Sylix Archaeology 31 December 2019 Date: Produced by: Ebbwater Consulting Inc. Syilx (Okanagan) Flood and Debris Flow Risk Assessment Project **Debris Flow - Culture** Map Tile 18 of 20 ANSI D - Map No. C-D-003-018



Scale 1:50,000			
0 1 2 3	4 5 km		
Legend Background — Watershed Boundary — Okapagap Similkamoon			
 Okanagan-Similkame Boundary Canada - US Border Reserves Duilding Factorists 	en Indoor Re and Facili Outdoor S and Recre	ties Space	
 Building Footprints Lakes Watercourses Highway 	Social and Centers Affected Reci	d Religious reation Trail	
 Major Road Recreation Trail 	🥚 Non-Sylix Ar	chaeology	
Date:31 December 2019Produced by:Ebbwater Consulting Inc.			
<i>Syilx</i> (Okanagan) Flood and Debris Flow Risk Assessment Project Debris Flow - Culture			
Map Tile 19 of 20			
ANSI D - Man No C-D-003-019			

