FIGURES AND STREAMLINE SUMMARY PAGES

Bellevue Creek

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 1-5

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
1.0	Channelized	232	Riffle	2.0	0	Unknown	None	5	5	10	70	10	0	3.50	6.50	0.05	0.95	10	100	0	0	0	0	0	0
2.0	Channelized	121	Riffle/Pool	3.0	1-20%	Potential	None	1	4	15	60	20	0	3.50	6.50	0.05	0.95	40	25	50	0	25	0	0	0
3.0	Channelized	112	Riffle	4.0	1-20%	Unknown	None	0	5	10	80	5	0	3.40	10.00	0.05	0.95	5	100	0	0	0	0	0	0
4.0	Channelized	222	Riffle	3.0	21-40%	Unknown	None	0	5	5	75	15	0	5.50	8.90	0.05	0.95	20	100	0	0	0	0	0	0
5.0	Channelized	241	Riffle	4.0	41-70%	Unknown	Side	0	5	5	75	15	0	5.50	8.90	0.05	0.95	25	80	10	0	0	0	10	0

a. Substrate codes: O=organics; F=silt/sand; G=gravel; C=cobble; B=boulder; R=bedrock

b. Cover codes: B=boulder; DP=deep pool; IV=instream vegetation; LWD=large woody debris; OV=overstream vegetation; SWD=small woody debris; UC=undercut bank

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability		
1.0	Mixed forest	Urban Residential	sapling >10m	34-66%	High	Broadleaf forest	Urban Residential	low shrubs <2m	5-33%	High	6	Moderate
2.0	Mixed forest	Urban Residential	young forest	5-33%	High	Mixed forest	Urban Residential	young forest	5-33%	High	5	Moderate
3.0	Mixed forest	Urban Residential	young forest	5-33%	High	Broadleaf forest	Urban Residential	young forest	5-33%	High	5	High
4.0	Mixed forest	Urban Residential	young forest	67-100%	Medium	Broadleaf forest	Urban Residential	young forest	5-33%	High	3	Moderate
5.0	High Impervious	Urban Residential	mature forest	34-66%	High	Broadleaf forest	Urban Residential	mature forest	5-33%	High	5	Moderate

c. Impact rating: 0=nil; 1 = 1-bank low; 2 = 1-bank moderate; 3 = 1-bank high; 4 = both banks low; 5 = both banks moderate; 6 = both banks high

Segment: 1



Segment: 2

Higher gradient; Above lake level influence; Instream habitat enhance-ments present. Enhancements adding consider-able complexity and responsible for majority of total instream cover.



Segment: 3

Left bank naturaliz-ing but right bank with recent rip rap armouring. Cobbles and occasional boulders provide minor cover for coarse fish and juvenile salmonids.



Segment: 4

Historic channeliza-tion (excavation and diking) but with banks more naturalized. Discontinuous armouring. Occasional veteran cottonwood.



Segment: 5

Some naturalization of banks. High imperviousness just beyond left top of bank (parking lot). Both banks composed primarily of cobbles/boulders excavated during channelization. Some veteran cottonwood along bank



Bellevue Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 1-5

30 0 30 60 90 Meters

N W E S

Map:	1 of 7
Title:	Segments 1-5 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream Centreline
- Top of Bank
- Segment break

Modification
- Bridge
- Channelization
- Garbage/Pollution
- PipeCrossing
- Retaining Wall/Bank Stability
- Water Withdrawal

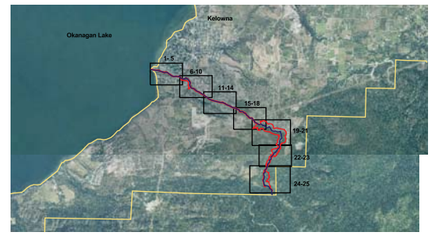
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

Fish Habitat
- Boulder
- Deep Pool
- Instream Woody Debris
- Spawning Habitat

- Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

Base map:	82E.083 - 073 Kelowna
Orthophotos:	2003, provided by City of Kelowna
Stream information:	field inventory
Location information:	field, GPS (Trimble Geo XM)
Feature information:	field inventory
Date of inventory:	2005/11
Inventory management:	Kyle Hawes, R.P.Bio.

ECOSCAPE

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 6-10

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
6.0	Modified	151	Riffle/Pool	5.0	1-20%	Unknown	Side	0	0	5	55	40	0	3.60	9.00	0.08	0.85	30	90	10	0	0	0	0	0
7.0	Modified	210	Riffle/Pool	3.0	1-20%	Unknown	None	0	1	1	73	25	0	3.70	9.30	0.08	0.85	20	100	0	0	0	0	0	0
8.0	Natural	192	Riffle	4.0	1-20%	Unknown	Mid-channel	0	1	5	44	50	0	5.20	10.30	0.07	0.80	20	99	0	0	1	0	0	0
9.0	Modified	113	Riffle/Pool	4.0	1-20%	Potential	Mid-channel	5	10	15	50	20	0	4.40	15.00	0.07	0.70	35	50	20	0	5	5	20	0
10.0	Channelized	263	Riffle	4.0	1-20%	Unknown	None	0	1	4	55	40	0	5.10	10.00	0.07	0.85	25	85	10	0	0	5	0	0

a. Substrate codes: O=organics; F=silt/sand; G=gravel; C=cobble; B=boulder; R=bedrock

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Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability		
6.0	Mixed forest	Disturbed	mature forest	5-33%	Medium	Mixed forest	Urban Residential	young forest	5-33%	High	3	High
7.0	Mixed forest	Natural	young forest	<5%	Medium	Mixed forest	Urban Residential	young forest	5-33%	High	2	Moderate
8.0	Mixed forest	Natural	mature forest	34-66%	Medium	Mixed forest	Natural	mature forest	34-66%	High	1	High
9.0	Mixed forest	Natural	young forest	34-66%	Medium	Broadleaf forest	Natural	young forest	34-66%	High	1	Low
10.0	Broadleaf forest	Urban Residential	young forest	5-33%	High	Broadleaf forest	Urban Residential	young forest	34-66%	High	4	Moderate

c. Impact rating: 0=nil; 1 = 1-bank low; 2 = 1-bank moderate; 3 = 1-bank high; 4 = both banks low; 5 = both banks moderate; 6 = both banks high

Segment: 6

Not channelized but confined by right bank armouring. Boulders and partial functioning enhancements (weirs) providing additional cover. A spring in segment 7 may sustain wetted deep holding pools in enhancements.



Segment: 7

Left bank following natural ravine slope toe. Confined by right bank armouring. Small left bank riparian bench at bottom of segment with cedar-fir-cottonwood veterans.



Segment: 8

Previously modified channel but naturalized with less encroachment into riparian communities. Cottonwood and shrub regeneration on mid-channel bars with high occasional side channels occurring. Veteran fir, cedar, and cottonwood.



Segment: 9

Less confined with side channels, not channelized. Right-bank riparian encroachment. Cottonwood and shrub regeneration on mid channel bars with active side channels.



Segment: 10

Channelized but naturalizing riparian association. Larger boulders becoming more prevalent improving boulder associated cover.



Bellevue Creek
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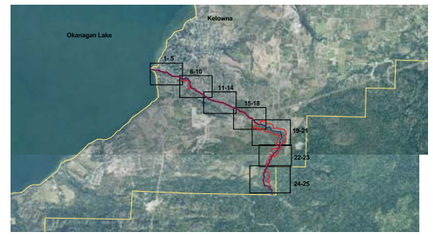
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