Hydraulic Creek

Segment(s): 1 - 2

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Natural		288	Riffle/Pool	7.0	>90%	Potential	Flows higher than expected - perhaps additional volumes being released from McCulloch Lake by SEKID; Riffle-pool-cascade
2.0	Natural		434	Falls	25.0	>90%	Unknown	Step-pool-falls through canyon; Series of upstream migration barriers (falls) throughout

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	0	2	8	65	25	0	3.25	4.50	0.18	0.48	
2.0	0	1	2	22	50	25	3.25	5.00	0.18	0.48	Large boulder / block

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	10	90	10	0	0	0	0	0	
2.0	10	20	80	0	0	0	0	0	Deep pool cover associated with boulders and bedrock - fish moving downstream may use this habitat

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

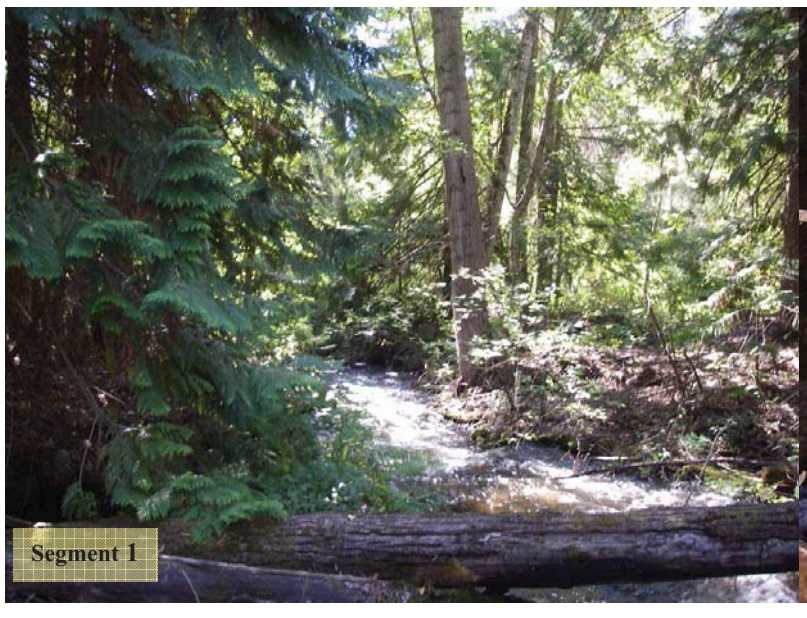
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Natural	mature forest	67-100%	>=5	<5	Medium	Cottonwood - cedar riparian
2.0	Mixed forest	Natural	mature forest	67-100%	>=5	<5	High	Canyon

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Natural	mature forest	67-100%	>=5	<5	Medium	Cottonwood-cedar riparian
2.0	Mixed forest	Natural	mature forest	67-100%	>=5	<5	High	Canyon

Segment	Comment - Flora	Comment - Fauna
1.0	Cottonwood, cedar, Douglas fir, water birch, red-osier dogwood, alder	
2.0	Cottonwood, cedar, Douglas fir, water birch, red-osier dogwood, alder	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Nil		Nil	
2.0	Nil	Although there is garbage collecting in areas where dumped over the bank from cliff (road above)	Nil	

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

KLO Creek

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Natural	Braided	260	Riffle	6.0	21-40%	Resident	Floodplain area along left bank
2.0	Natural		588	Riffle	7.0	41-70%	Resident	More confined, more frequent bank erosion along both banks
3.0	Natural		290	Riffle/Pool	7.0	41-70%	Resident	Bedrock becomes prevalent substrate
4.0	Natural		118	Cascade/Pool	12.0	41-70%	Resident	Confined by bedrock gulch/ravine

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	0	1	4	65	30	0	3.90	12.00	0.08	0.38	Channel widens to 16m in sections
2.0	0	1	4	65	30	0	3.00	8.00	0.10	0.40	More confined with bank erosion
3.0	0	1	4	55	35	5	3.00	7.50	0.15	0.40	Bedrock more prevalent
4.0	0	1	4	45	35	15	3.00	7.50	0.15	0.40	Waterfalls abundant with residual pools, spawning pockets, as well as upstream migration barriers

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	15	85	15	0	0	0	0	0	Predominantly boulder/cobble cover for fry and juvenile fish with infrequent residual pools
2.0	15	90	7	0	0	3	0	0	Predominantly boulder/cobble cover for fry and juvenile fish with infrequent pools and overstrm vegetation
3.0	15	83	15	0	0	2	0	0	Predominantly boulder/cobble cover for fry and juvenile fish with resid. pools become more abundant
4.0	20	50	40	0	10	0	0	0	Residual and deep pool habitat abundant

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

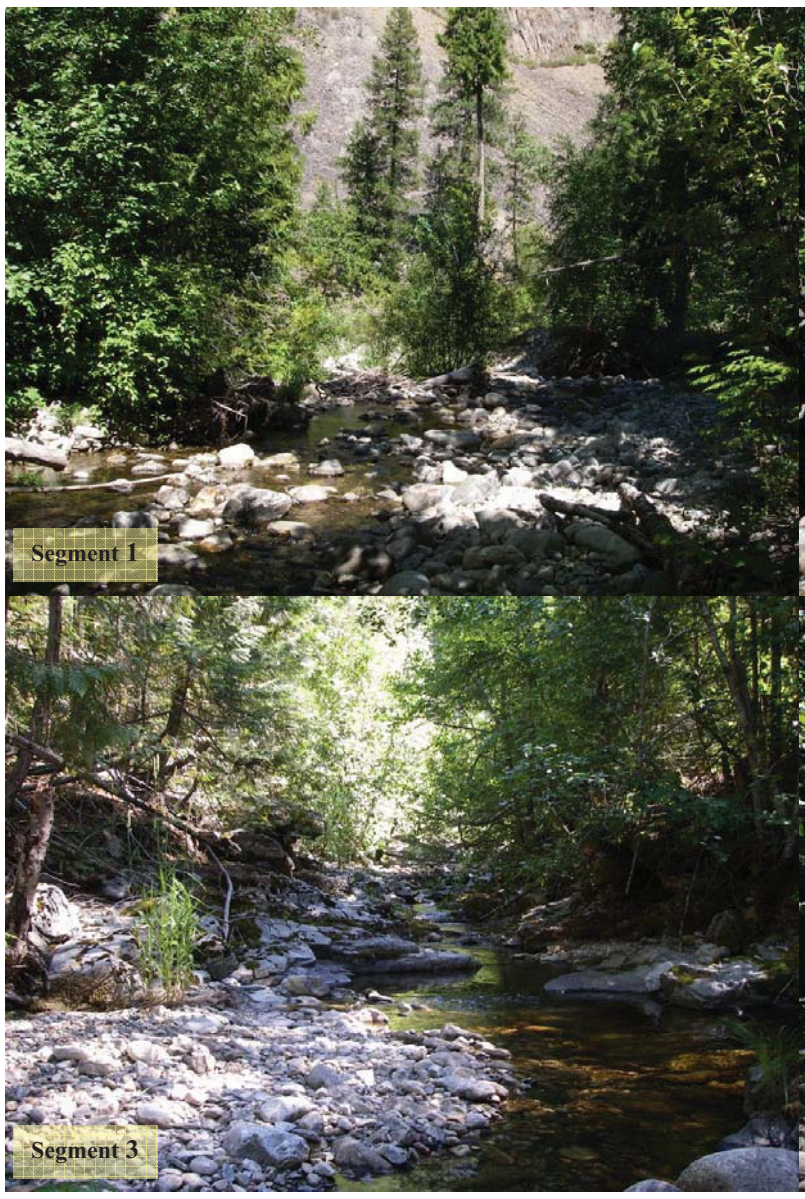
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Low	Floodplain area along left bank-flood channels
2.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Low	More confined left bank with high instability and erosion
3.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Low	
4.0	Coniferous forest	Natural	mature forest	34-66%	<5	<5	High	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Natural	mature forest	34-66%	No	No	Low	Steeper more defined right bank - floodplain more limited by topography. Intermittent erosion
2.0	Mixed forest	Natural	mature forest	34-66%	No	No	Low	More confined left bank with high instability and erosion
3.0	Mixed forest	Natural	mature forest	34-66%	No	No	Low	
4.0	Coniferous forest	Natural	mature forest	34-66%	<5	<5	High	

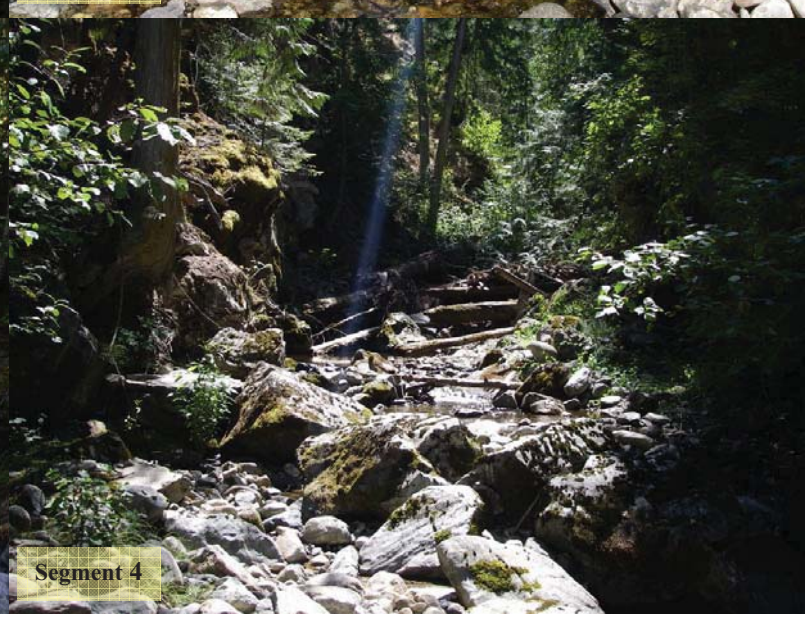
Segment	Comment - Flora	Comment - Fauna
1.0	Cedar, cottonwood, water birch, Douglas fir, ponderosa pine, dogwood, willow sp., thimbleberry	B-STJA, B-AMDI, B-SPSA, B-WWPE, B-AMRO; common garter snake, western terr. garter snake, black bear
2.0	Cedar, cottonwood, water birch, Douglas fir, ponderosa pine, dogwood, willow sp., thimbleberry	B-STJA, B-AMDI, B-SPSA, B-WWPE, B-AMRO
3.0	Cedar, cottonwood, water birch, Douglas fir, ponderosa pine, dogwood, willow sp., thimbleberry	
4.0	Predominantly cedar through gulch. Pine and fir along steep slopes and along top of bank	Rainbow trout, American Dipper

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	1_bank_low	Past modifaction/channalization associated with irrigation works	Moderate	Reclaim broad riparian area recognizing high fish values and floodplain concerns
2.0	1_bank_low	Past modifaction/channalization associated with irrigation works - not recently disturbed	Low	
3.0	1_bank_low	Old field along left bank. Riparian band still intact and not recently disturbed	Nil	
4.0	Nil		Nil	

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







KLO Creek

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Natural		254	Riffle/Pool	6.5	41-70%	Resident	Segment 5 similar in character to Segment 3
6.0	Natural		108	Cascade/Pool	17.0	41-70%	Resident	Falls/upstream migration barrier at top of shirt segment
7.0	Natural		384	Riffle/Pool	4.5	41-70%	Resident	
8.0	Modified		152	Riffle/Pool	5.0	21-40%	Resident	Quarry along right bank

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
5.0	0	1	8	59	30	2	3.00	8.00	0.15	0.40	
6.0	0	0	2	8	25	65	3.00	6.50	0.15	0.40	Canyon/gulch
7.0	0	2	20	68	10	0	3.50	10.50	0.10	0.35	
8.0	0	1	9	70	20	0	3.50	8.50	0.10	0.45	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
5.0	12	90	10	0	0	0	0	0	
6.0	25	40	60	0	0	0	0	0	Despite obstructions, deep pool habitat abundant in this lake headed fish stream
7.0	8	95	5	0	0	0	0	0	Aggrading and low pool cover
8.0	10	90	10	0	0	0	0	0	Residual pool cover associated with boulder substrates

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Mixed forest	Natural	mature forest	34-66%	<5	<5	High	
6.0	Mixed forest	Natural	mature forest	34-66%	<5	<5	High	
7.0	Mixed forest	Natural	mature forest	34-66%	<5	<5	High	
8.0	Mixed forest	Natural	mature forest	67-100%	<5	<5	Low	Ravine slope - erosion persistent along bank

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Mixed forest	Natural	mature forest	34-66%	<5	<5	Medium	Intermittent instability and erosion
6.0	Mixed forest	Natural	mature forest	34-66%	<5	<5	High	
7.0	Mixed forest	Natural	mature forest	34-66%	<5	<5	Medium	
8.0	Mixed forest	Disturbed	young forest	67-100%	<5	No	Low	Quarry beyond riparian band

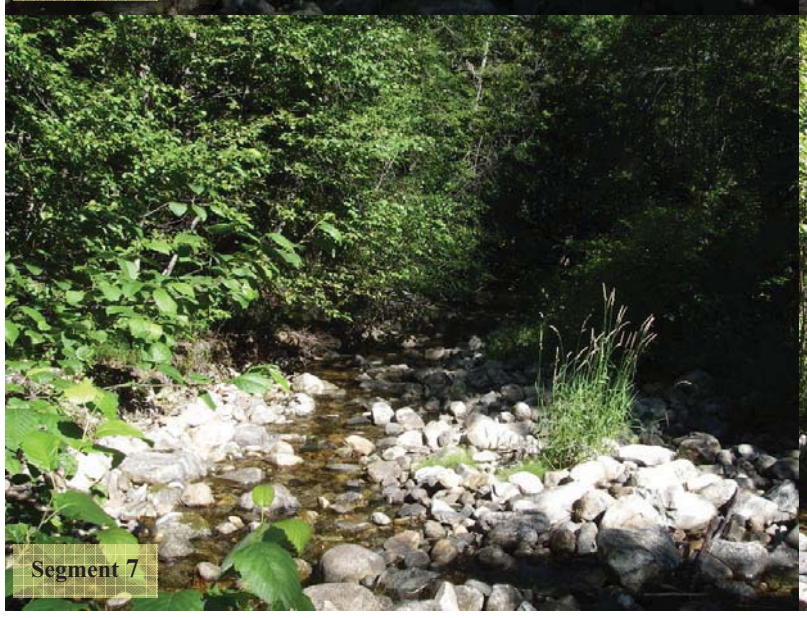
Segment	Comment - Flora	Comment - Fauna
5.0		Rainbow trout
6.0		Rainbow trout
7.0		Rainbow trout
8.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow sp.	Rainbow trout

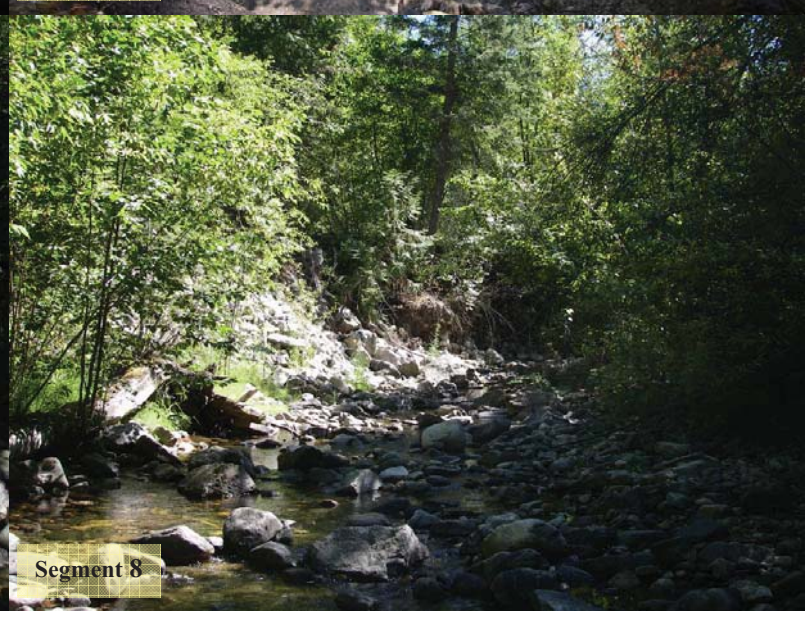
	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Nil	Relic irrigation flume and abutments	Nil	
6.0	Nil		Nil	
7.0	Nil		Nil	
8.0	1_bank_mod	Quarry beyond left bank riparian band	Nil	

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 5


Segment 6


Segment 7


Segment 8

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ECOSCAPE
Environmental Consultants Ltd.

KLO Creek

Segment(s): 9 - 10

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Natural		304	Riffle/Pool	10.0	71-90%	Resident	A single island channel split at bottom of segment
10.0	Natural		293	Riffle/Pool	7.0	>90%	Resident	

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
9.0	0	1	9	30	58	2	3.50	7.00	0.10	0.45	More confined boulder/bedrock
10.0	0	1	9	45	40	5	3.50	9.50	0.10	0.45	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
9.0	12	70	30	0	0	0	0	0	Increased pool and resid. pool cover with larger, more stable substrates maintaining deeper pools
10.0	8	90	10	0	0	0	0	0	Predominantly boulder associated cover

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	mature forest	67-100%	<5	<5	Low	Ravine slope erosion persistent along bank
10.0	Mixed forest	Natural	mature forest	67-100%	<5	<5	High	Cliff

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Low	
10.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Medium	Cliff just beyond right bank separated by old road

Segment	Comment - Flora	Comment - Fauna
9.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow sp.	Rainbow trout
10.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow sp.	Rainbow trout

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
9.0	1_bank_low	Old road along right bank	Nil	
10.0	1_bank_low	Old road along right bank	Nil	

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 9


Segment 10

Michaelbrook
Segment(s): 1

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Ditch	Wetland	3369	Slough	0.0	1-20%	Unknown	Ditching and tile drains result in stream origin

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	60	40	0	0	0	0	2.60	3.20	0.10	0.20	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	90	0	0	100	0	0	0	0	Cattail, bulrush, and northern watercress

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Agriculture	low shrubs <2m	5-33%	No	No	Medium	Wetland boundary forms channel

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Disturbed	Grass / Herb	34-66%	>=5	No	Medium	Mixed Mission Creek riparian adjacent to north then predom. grass-herb and low shrub along ditching

Segment	Comment - Flora	Comment - Fauna
1.0		B-KIDE; B-GBHE; B-MADU; B-AMGO

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_mod	Ditching	Very_high	High wetland creation enhancement opportunities

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

North Fork Bellevue Creek

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Culvert		243	Other	1.0	0	Unknown	82 metres not culverted. Daylight about 15m from Okanagan Lake
2.0	Ditch	Intermittent	270	Other	1.0	21-40%	Unknown	Stream flows intercepted by storm system
3.0	Modified	Ephemeral	687	Riffle/Pool	2.0	71-90%	Unknown	Surface flows emerge from springs at upstream end of segment and continue through to Segment 2
4.0	Other	Intermittent	219	Other	2.0	71-90%	Unknown	Dry riparian gully - not creek

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0											Culvert
2.0	0	95	3	2	0	0	0.00	1.50	0.00	0.10	
3.0	34	65	0	1	0	0	0.45	0.55	0.02	0.05	Soil and fines
4.0	40	60	0	0	0	0					Soil, leaf litter, fines; No stream

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
2.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
3.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
4.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

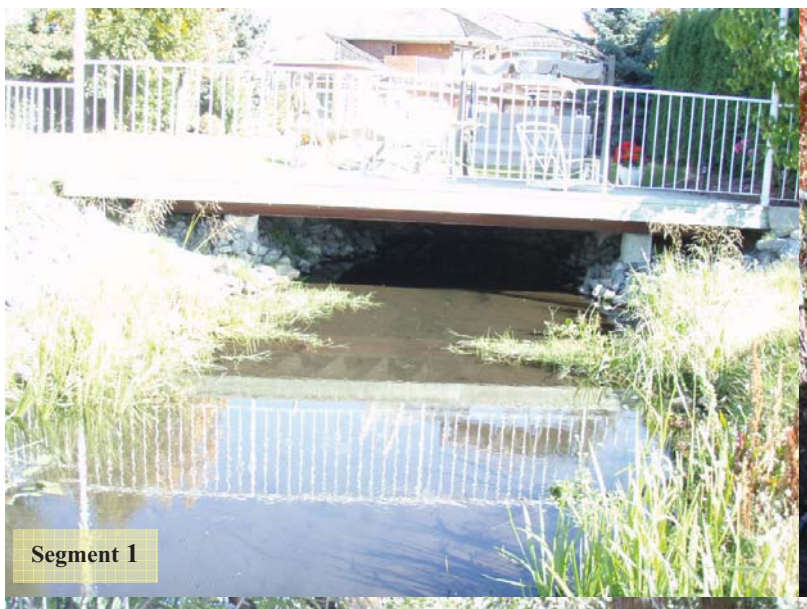
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Medium_impervious	Urban_Residential						Culverted
2.0	Mixed forest	Urban_Residential	mature forest	5-33%	No	<5	High	
3.0	Mixed forest	Urban_Residential	mature forest	34-66%	No	No	High	
4.0	Mixed forest	Urban_Residential	mature forest	34-66%	No	No	High	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Medium_impervious	Urban_Residential						Culverted
2.0	Mixed forest	Urban_Residential	mature forest	5-33%	No	<5	High	
3.0	Mixed forest	Urban_Residential	young forest	34-66%	No	No	High	
4.0	Mixed forest	Urban_Residential	mature forest	34-66%	No	No	High	

Segment	Comment - Flora	Comment - Fauna
1.0		
2.0		
3.0	Cedar, Douglas fir, Douglas maple, water birch, horsetail, red-osier dogwood	
4.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_high		Low	
2.0	Both_banks_high		Low	Stream flows from segment 3 intercepted by storm system
3.0	Both_banks_mod		Low	
4.0	Both_banks_low		Nil	

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









North Fork Bellevue Creek

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Culvert	Intermittent	443					Alignment not confirmed by SHIM; Intermittently day-lighted. Daylights in moist riparian gully - not creek
6.0	Modified	Ephemeral	437	Riffle/Pool	2.0	41-70%	Unknown	
7.0	Culvert	Intermittent	126					Alignment not confirmed by SHIM
8.0	Modified	Ephemeral	372	Riffle/Pool	2.0	41-70%	Unknown	

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
5.0											Culvert
6.0	0	25	25	40	10	0	0.00	1.40	0.00	0.15	
7.0											Culvert
8.0	0	25	25	40	10	0	0.00	1.40	0.00	0.15	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
5.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
6.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
7.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
8.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

	Left Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0								Culverted
6.0	Coniferous forest	Urban_Residential	young forest	34-66%	No	No	High	
7.0								Culverted
8.0	Coniferous forest	Urban_Residential	young forest	34-66%	No	No	High	

	Right Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0								Culverted
6.0	Coniferous forest	Urban_Residential	young forest	5-33%	No	No	High	
7.0								Culverted
8.0	Coniferous forest	Urban_Residential	young forest	5-33%	No	No	High	

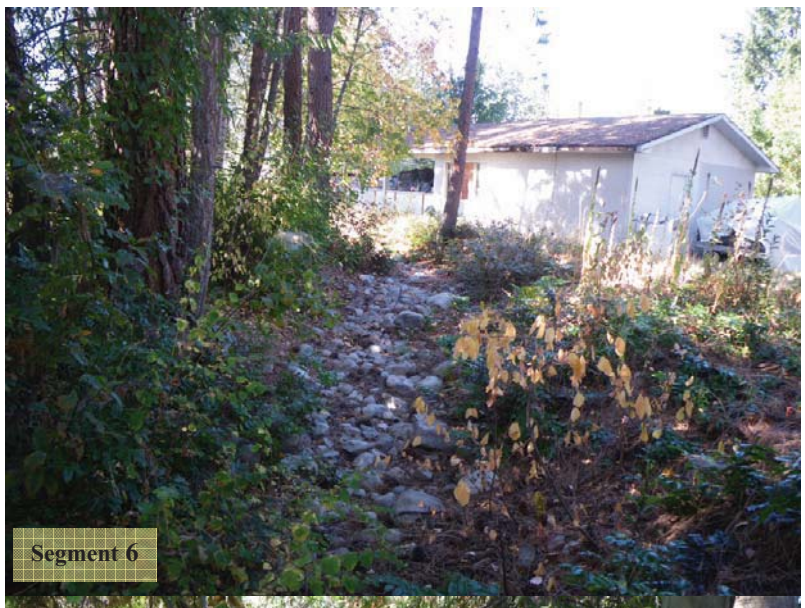
Segment	Comment - Flora	Comment - Fauna
5.0		
6.0		
7.0		
8.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_high		Low	
6.0	Both_banks_high		Low	Not natural creek and not really even ditch more a diversion channel
7.0	Both_banks_high		Low	
8.0	Both_banks_high		Low	Not natural creek and not really even ditch more a diversion channel

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

No **Photo**

Segment 5



Segment 6

No **Photo**

Segment 7



Segment 8

North Fork Bellevue Creek

Segment(s): 9 - 12

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Natural	Ephemeral	196	Riffle/Pool	2.0	>90%	Unknown	Controlled diversion from Bellevue Creek
10.0	Modified	Ephemeral	295	Riffle/Pool	1.5	>90%	Unknown	Diversion ditch from Bellevue Creek
11.0	Modified	Ephemeral	81	Riffle/Pool	1.5	>90%	Unknown	Diversion ditch from Bellevue Creek
12.0	Culvert	Ephemeral	431					Culvert

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
9.0	0	90	8	1	1	0	0.00	1.80	0.00	0.15	Coarser substrates from scour and weirs - otherwise a stream channel through upland forest
10.0	0	40	30	30	0	0	0.00	1.20	0.00	0.15	Coarser substrates associated with stonework retaining walls
11.0	0	40	30	30	0	0	0.00	1.20	0.00	0.15	Followings top of bank of Bellevue Creek
12.0	0	40	30	30	0	0					200m PVC pipe/culvert outlet

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
9.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
10.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
11.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
12.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

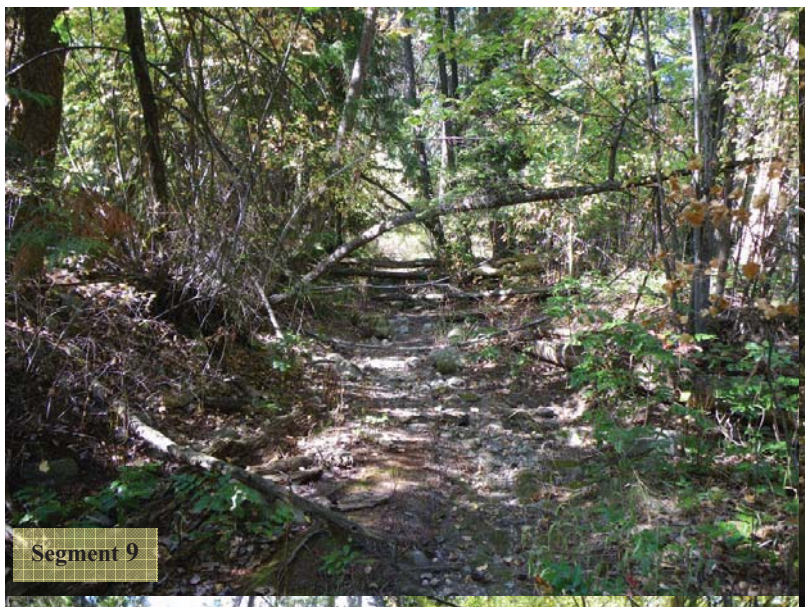
	Left Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	mature forest	34-66%	>=5	>=5	High	
10.0	Mixed forest	Disturbed	mature forest	34-66%	<5	<5	High	Residential and natural woodland
11.0	Mixed forest	Disturbed	mature forest	34-66%	<5	<5	High	Residential and natural woodland
12.0								Culverted

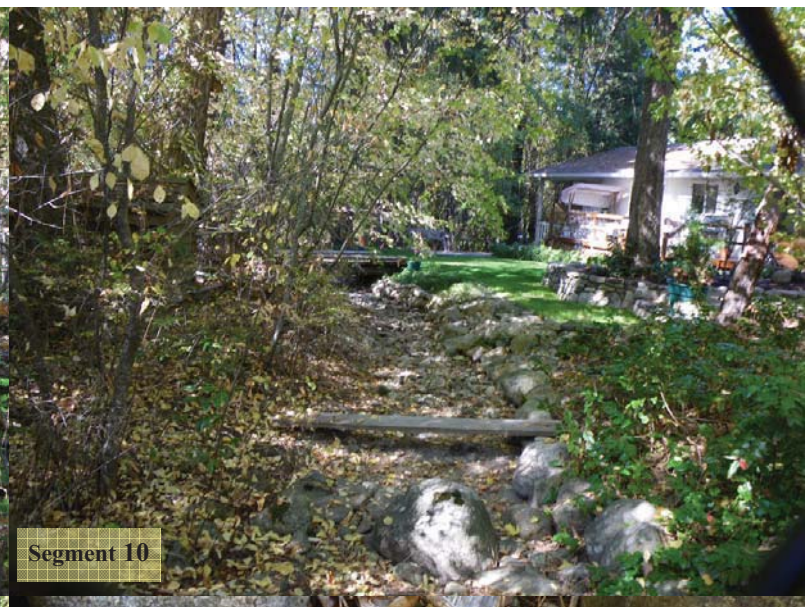
	Right Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	mature forest	34-66%	>=5	>=5	High	
10.0	Mixed forest	Disturbed	mature forest	34-66%	<5	<5	High	Residential and natural woodland
11.0	Mixed forest	Disturbed	mature forest	34-66%	<5	<5	High	Residential and natural woodland
12.0								Culverted

Segment	Comment - Flora	Comment - Fauna
9.0		
10.0	Cottonwood, Douglas fir, cedar, water birch, Douglas maple, ponderosa pine, willow sp.	
11.0	Cottonwood, Douglas fir, cedar, water birch, Douglas maple, ponderosa pine, willow sp.	
12.0		

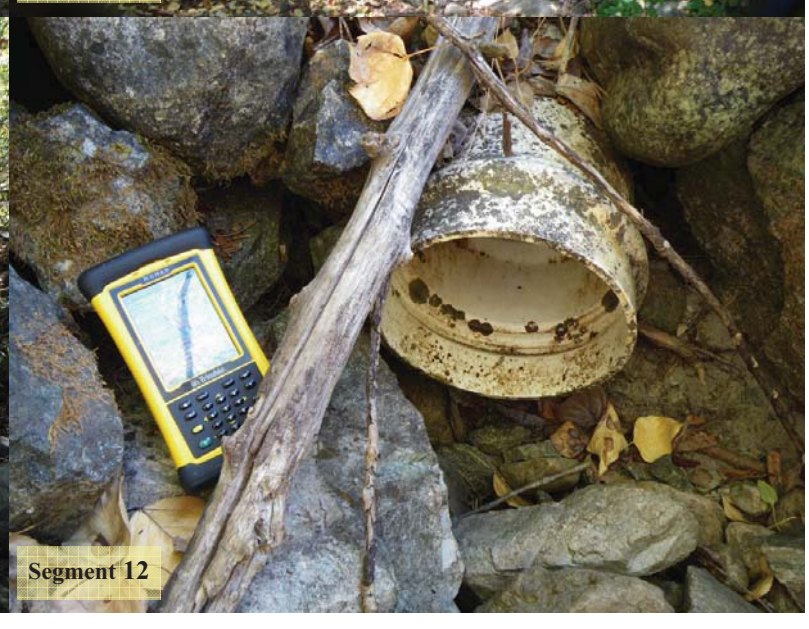
	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
9.0	1_bank_low		Nil	
10.0	Both_banks_low	Constructed diversion channel - naturalized	Low	
11.0	Both_banks_low	Constructed diversion channel - naturalized	Low	
12.0	Both_banks_high		Low	

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 9


Segment 10


Segment 11


Segment 12

Rumohr Creek

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Ditch		701	Other	5.0	0	Unknown	Segment begins at Gully and Spiers Rd. No SHIM completed downstream due to 'no access' property
2.0	Ditch		117	Other	5.0	0	Unknown	
3.0	Ditch		855	Other	5.0	0	Unknown	Gully Rd. departs the right bank and drainage way follows prominent gully/ravine
4.0	Ditch		342	Other	3.0	0	Unknown	Surface flows cease

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	10	80	5	5	0	0	0.00	1.70	0.00	0.40	Riprap aprons sometimes overlap
2.0	0	10	80	10	0	0	0.00	1.70	0.00	0.40	
3.0	10	80	5	5	0	0	0.00	2.00	0.00	0.40	Channel stabilization with erosion blanket and series of riprap rock lines
4.0	10	80	5	5	0	0	0.00	2.00	0.00	0.40	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
2.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
3.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
4.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

	Left Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	High Impervious	Rural_Residential	young forest	<5%	No	No	Medium	
2.0	Herbs/grasses	Rural_Residential	young forest	<5%	No	No	Medium	Mixed forest and disturbed grass ditch
3.0	Coniferous forest	Disturbed	young forest	5-33%	No	No	Medium	Rural residence at top of bank
4.0	Herbs/grasses	Rural_Residential	low shrubs <2m	34-66%	No	No	Medium	Ditching follows orchard and road

	Right Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
2.0	High Impervious	Rural_Residential	Grass / Herb	<5%	No	No	Medium	Gully R. follows right bank
3.0	Coniferous forest	Disturbed	young forest	5-33%	No	No	Medium	A trail follows the right channel bank
4.0	Herbs/grasses	Rural_Residential	young forest	5-33%	No	No	Medium	Ditching follows orchard and road with intermittent treed sections

Segment	Comment - Flora	Comment - Fauna
1.0		
2.0		
3.0	Ponderosa pine, snowberry. Agronomic grasses seeded through channel	
4.0	Ponderosa pine, snowberry, orchard, and agronomic grasses	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_mod		Low	
2.0	Both_banks_mod		Low	
3.0	Both_banks_low	Channel armouring using both riprap and geo grid	Low	
4.0	Both_banks_high		Low	

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


Segment 3


Segment 4

Rumohr Creek

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Ditch		411	Other	3.0	0	Unknown	Surface flows
6.0	Ditch		240	Other	3.0	0	Unknown	Ditch continues along road for 80 meters and then turns into rural residences
7.0	Channelized		186	Other	4.0	0	Unknown	
8.0	Culvert		118					Piped beneath residential subdivision

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
5.0	15	80	5	0	0	0	0.60	2.20	0.05	0.40	
6.0	0	75	20	5	0	0	0.00	2.00	0.00	0.40	Erosion matting throughout
7.0	0	75	20	5	0	0	0.00	2.00	0.00	0.40	
8.0											Culverted

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
5.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
6.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
7.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
8.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	High Impervious	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
6.0	Planted Tree Farm	Agriculture	sapling >10m	<5%	No	No	Medium	
7.0	Coniferous forest	Rural_Residential	young forest	<5%	No	No	Medium	Young disturbed pine stand
8.0								Culverted

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
6.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
7.0	Coniferous forest	Rural_Residential	young forest	<5%	No	No	Medium	
8.0								Culverted

Segment	Comment - Flora	Comment - Fauna
5.0	Aquatic northern watercress infests wetted channel	
6.0		
7.0	Disturbed pine stand	
8.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_high		Low	
6.0	Both_banks_mod		Low	
7.0	Both_banks_mod		Low	
8.0	Both_banks_high	Culverted beneath subdivision - no riparian	Low	

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





Rumohr Creek

Segment(s): 9 - 12

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Channelized		133	Other	3.5	0	Unknown	
10.0	Channelized		234	Riffle/Pool	8.5	41-70%	Unknown	
11.0	Channelized		351	Riffle/Pool	4.0	1-20%	Unknown	Segment winds through rural residences and in and out of cottonwoods and shrubs
12.0	Channelized		142	Riffle/Pool	5.0	0	Unknown	Seasonally wetted

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
9.0	0	10	50	40	0	0	0.00	2.20	0.00	0.20	Rock lines channel
10.0	0	70	20	10	0	0	0.00	1.80	0.00	0.30	
11.0	0	70	20	10	0	0	0.00	1.40	0.00	0.20	
12.0	0	90	10	0	0	0	0.00	1.10	0.00	0.25	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
9.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
10.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
11.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
12.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

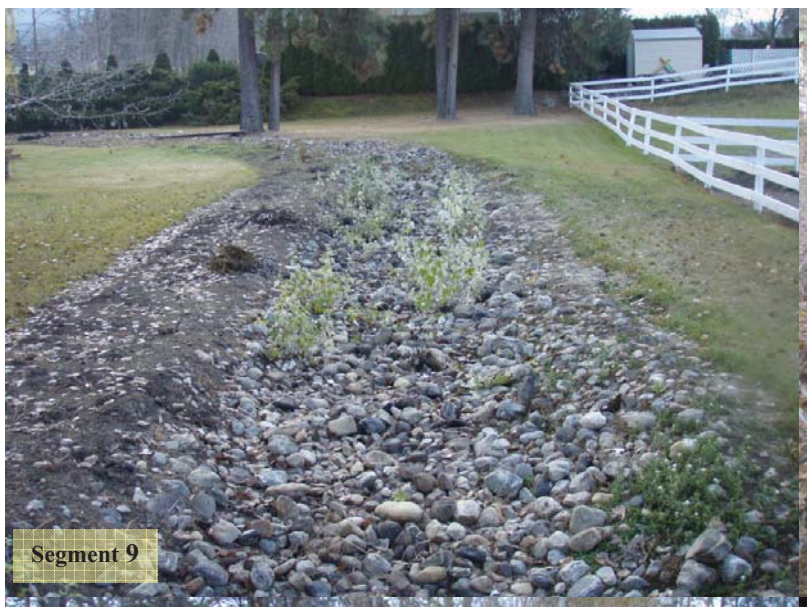
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
10.0	Shrubs	Rural_Residential	low shrubs <2m	67-100%	No	No	Medium	
11.0	Herbs/grasses	Rural_Residential	low shrubs <2m	5-33%	No	No	Medium	
12.0	Herbs/grasses	Rural_Residential	low shrubs <2m	<5%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
10.0	Shrubs	Disturbed	low shrubs <2m	67-100%	No	No	Medium	Road at top of bank
11.0	Herbs/grasses	Rural_Residential	low shrubs <2m	5-33%	No	No	Medium	
12.0	Herbs/grasses	Rural_Residential	low shrubs <2m	<5%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
9.0		
10.0	Snowberry, red-osier dogwood, ponderosa pine, birch	
11.0		
12.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
9.0	Both_banks_high		Low	
10.0	Both_banks_mod		Low	
11.0	Both_banks_mod		Low	
12.0	Both_banks_mod		Low	

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 9


Segment 10


Segment 11


Segment 12

Rumohr Creek

Segment(s): 13 - 16

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
13.0	Modified		270	Riffle/Pool	1.0	21-40%	Unknown	
14.0	Natural		530	Riffle/Pool	6.0	21-40%	Unknown	
15.0	Modified		181	Slough	0.5	21-40%	Unknown	Series of constructed ponds
16.0	Modified		232	Riffle/Pool	10.0	21-40%	Unknown	Altered hydrologic patterns upstream - majority of flows follow north channel

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
13.0	0	90	10	0	0	0	0.00	0.80	0.00	0.35	Wetted substrates through channel with cattails
14.0	0	20	40	35	5	0	0.60	1.00	0.10	0.35	
15.0	0	80	15	5	0	0	8.50	9.00	0.10	0.35	Wetted sections up to 20m wide
16.0	0	15	75	10	0	0	0.00	0.90	0.00	0.25	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
13.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
14.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
15.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
16.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
13.0	Shrubs	Natural	low shrubs <2m	34-66%	No	No	Medium	
14.0	Mixed forest	Natural	sapling >10m	34-66%	No	No	Medium	Well developed riparian community Steep slope through ravine section of segment
15.0	Disturbed wetland	Rural_Residential	sapling >10m	34-66%	No	No	Medium	
16.0	Mixed forest	Rural_Residential	young forest	67-100%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
13.0	Herbs/grasses	Natural	low shrubs <2m	34-66%	No	No	Medium	
14.0	Mixed forest	Natural	sapling >10m	34-66%	No	No	Medium	Well developed riparian community Steep slope through ravine section of segment
15.0	Disturbed wetland	Rural_Residential	sapling >10m	34-66%	No	No	Medium	
16.0	Mixed forest	Rural_Residential	young forest	67-100%	No	No	Medium	

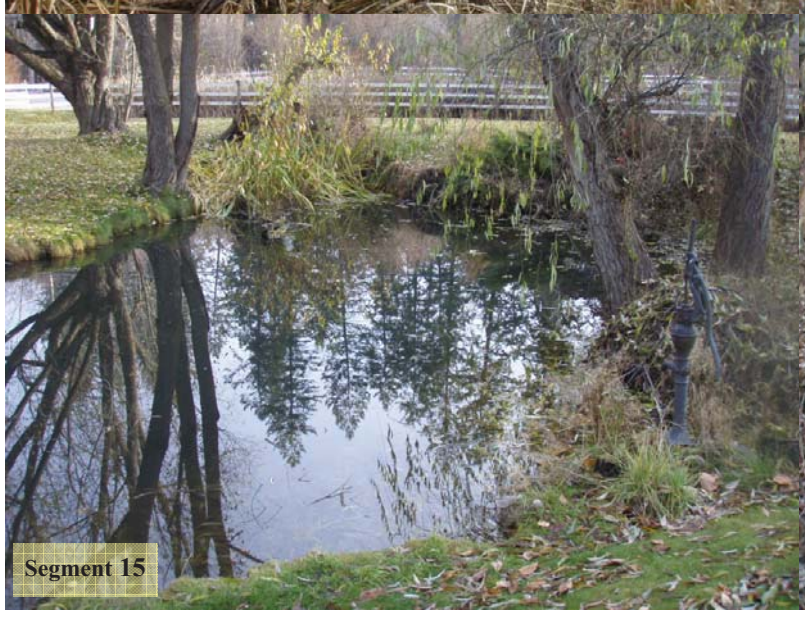
Segment	Comment - Flora	Comment - Fauna
13.0		
14.0	Water birch, snowberry, rose sp.	
15.0	Pacific willow, water birch, snowberry, rose sp.	
16.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
13.0	Both_banks_low		Low	
14.0	Both_banks_mod		Low	
15.0	Both_banks_mod	Constructed and landscaped ponds	Low	
16.0	1_bank_mod		Low	

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 13


Segment 14


Segment 15


Segment 16

Rumohr Creek

Segment(s): 16.1 - 18

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
16.1	Modified		187	Slough	5.0	21-40%	Unknown	Segment consists of a series of wetlands on residential properties
17.0	Wetland		158	Wetland	0.0	1-20%	Unknown	
17.1	Ditch		493	Slough	0.5	0	Unknown	Ditched along Miller Road
18.0	Channelized		161	Other	7.0	0	Unknown	Horse paddock area

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
16.1	0	80	15	5	0	0	6.00	1.00	0.50	1.00	Wetted sections up to 15m wide - ponds and stream channel combination
17.0	20	60	15	5	0	0	0.70	1.10	0.10	0.15	
17.1	25	70	5	0	0	0	0.40	1.20	0.00	0.35	
18.0	0	40	50	10	0	0	0.00	0.90	0.00	0.15	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
16.1	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
17.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
17.1	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
18.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
16.1	Disturbed wetland	Rural_Residential	young forest	67-100%	No	No	Medium	
17.0	Broadleaf forest	Rural_Residential	young forest	67-100%	No	No	Medium	
17.1	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	High	
18.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
16.1	Disturbed wetland	Rural_Residential	young forest	67-100%	No	No	Medium	
17.0	Broadleaf forest	Rural_Residential	young forest	67-100%	No	No	Medium	
17.1	High Impervious	Rural_Residential	Grass / Herb	<5%	No	No	High	Miller Road Follows ditch right bank
18.0	Herbs/grasses	Agricultue	Grass / Herb	<5%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
16.1	Cottonwood, water birch, red-osier dogwood, snowberry	
17.0	Cattail marsh surrounded by tall shrub (willow) swamp thicket and low flood bench riparian	
17.1		
18.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
16.1	Both_banks_low		Low	
17.0	Both_banks_mod		Low	
17.1	Both_banks_high		Low	
18.0	Both_banks_high		Low	

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 16.1


Segment 17


Segment 17.1


Segment 18

#102 – 450 Neave Court Kelowna BC V1V 2M2 Tel: 250.491.7337 Fax: 250.491.7772 ecoscape@ecoscapeltd.com

ECOSCAPE
Environmental Consultants Ltd.

Rumohr Creek

Segment(s): 18.1 - 21

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
18.1	Modified		358	Other	5.0	21-40%	Unknown	Segment 18.1 flows north to Miller Rd. from 21 and Segment 20 flows west from 21
19.0	Natural		201	Riffle/Pool	6.0	21-40%	Unknown	
20.0	Modified		160	Riffle/Pool	6.0	21-40%	Unknown	
21.0	Natural		262	Riffle/Pool	25.0	21-40%	Unknown	Channel splits at segment 20-21 break

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
18.1	0	65	30	5	0	0	0.00	0.75	0.00	0.30	
19.0	0	40	50	10	0	0	0.00	1.10	0.00	0.20	
20.0	0	60	25	10	5	0	0.00	1.10	0.00	0.20	
21.0	0	5	35	35	25	0	0.00	1.10	0.00	0.20	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
18.1	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
19.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
20.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded
21.0	0	0	0	0	0	0	0	0	Not capable of supporting fish. Therefore no instream cover recorded

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

	Left Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
18.1	Mixed forest	Natural	young forest	67-100%	No	No	Medium	
19.0	Mixed forest	Rural_Residential	young forest	67-100%	No	No	Medium	
20.0	Mixed forest	Disturbed	young forest	34-66%	No	No	Medium	
21.0	Mixed forest	Natural	young forest	34-66%	No	No	Medium	

	Right Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
18.1	Mixed forest	Rural_Residential	young forest	67-100%	No	No	Medium	
19.0	Mixed forest	Rural_Residential	young forest	67-100%	No	No	Medium	
20.0	Mixed forest	Disturbed	young forest	34-66%	No	No	Medium	
21.0	Mixed forest	Natural	young forest	34-66%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
18.1		
19.0	Cottonwood, water birch, red-osier dogwood, snowberry	
20.0		
21.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
18.1	Both_banks_low		Low	
19.0	Both_banks_low		Low	
20.0	Both_banks_mod		Low	
21.0	Nil		Low	

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 18.1


Segment 19


Segment 20


Segment 21

#102 – 450 Neave Court Kelowna BC V1V 2M2 Tel: 250.491.7337 Fax: 250.491.7772 ecoscape@ecoscapeltd.com

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Thompson Brook

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Modified		102	Run	0.0	41-70%	Potential	
2.0	Culvert		149	Slough			Unknown	Flume over 40-m at upstream end of segment
3.0	Channelized		180	Slough	0.0	41-70%	Unknown	Naturalized channelized stream segment - Cottonwood - red-osier dogwood riparian association
4.0	Wetland		1272	Slough			Unknown	Constructed wetland complex

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	0	40	50	10	0	0	1.70	3.80	0.17	0.70	
2.0	0	0	0	0	0	0	0.00	2.50	0.00	0.00	Concrete box culvert
3.0	80	20	0	0	0	0	2.20	2.80	0.45	0.85	Deep detrital material - fibric organic and muck
4.0	70	30	0	0	0	0	60.00	65.00	0.00	1.00	Fibric organic/detritus and muck

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	4	0	0	0	0	50	50	0	
2.0	0	0	0	0	0	0	0	0	Culverted
3.0	75	0	20	0	0	60	20	0	
4.0	70	0	80	20	0	0	0	0	Deep water and cattails

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Broadleaf forest	Urban_Residential	young forest	34-66%	No	No	Medium	
2.0	High impervious	Urban_Residential						Culverted
3.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	Medium	
4.0	Herbs/grasses	Agriculture	low shrubs	34-66%	No	No	High	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Shrubs	Urban_Residential	tall shrubs 2-10m	34-66%	No	No	High	
2.0	High impervious	Urban_Residential						Culverted
3.0	Broadleaf forest	Urban_Residential	young forest	67-100%	No	No	Medium	Cottonwood - red-osier dogwood riparian association
4.0	Herbs/grasses	Recreational	low shrubs	34-66%	No	No	Low	Walking paths and park

Segment	Comment - Flora	Comment - Fauna
1.0		
2.0		
3.0	Cottonwood; red-osier dogwood; rose; reed canary grass	
4.0	Red-osier dogwood; graminoids; various exotic trees; cottonwood; rose; cattail	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_mod		Moderate	Good base flow affords good opportunities for fish habitat (spawning) enhancements
2.0	Both_banks_high	Box culvert	Low	
3.0	1_bank_high	Field along left bank to top of bank	Moderate	Left bank riparian restoration
4.0	Both_banks_low	Naturalizing - enhanced wetland	low	

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


Segment 3


Segment 4

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Thompson Brook

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Ditch		3287	Slough	0.0	0	Unknown	Surface water connection to lower segments and Okanagan Lake; Ingrowth/infestation of yellow iris; Areas of livestock access
6.0	Ditch		196	Slough	2.0	0	Unknown	
7.0	Modified	Intermittent	55	Riffle/Pool	10.0	1-20%	Unknown	Lower portion of ravine - forks into dry gullies with intermittent instability; Drainage way/Discontinuous upper limit - ephemeral
8.0	Ditch		2165	Slough	1.0	1-20%	Unknown	Surface water connection to lower segments and Okanagan Lake

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
5.0	30	70	0	0	0	0	2.70	3.30	0.00	0.30	Fibric organic/detritus and silt/clay
6.0	10	90	0	0	0	0	0.80	2.00	0.00	0.35	
7.0	0	90	5	5	0	0	0.00	1.00	0.00	0.30	
8.0	30	70	0	0	0	0	0.00	1.00	0.00	0.20	Soil and fines

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
5.0	0	0	0	0	0	0	0	0	Instream cover not recorded
6.0	0	0	0	0	0	0	0	0	Instream cover not recorded
7.0	0	0	0	0	0	0	0	0	Presently dry intermittent. Therefore instream cover not recorded
8.0	0	0	0	0	0	0	0	0	Instream cover not recorded

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	Low	
6.0	Mixed forest	Rural_Residential	sapling >10m	67-100%	No	No	Medium	
7.0	Coniferous forest	Rural_Residential	young forest	5-33%	No	No	Medium	
8.0	Herbs/grasses	Agriculture	Grass / Herb	5-33%	No	>=5	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	Low	Golf course and field
6.0	Herbs/grasses	Agriculture	Grass / Herb	5-33%	No	No	Medium	
7.0	Coniferous forest	Rural_Residential	young forest	5-33%	No	No	Medium	Lower limit of ravine
8.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
5.0	Graminoids and invasive forbs	
6.0		
7.0	Ponderosa pine , snowberry	
8.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_high	Ditched throughout - collecting groundwater from tile drains	High	Riparian and channel restoration and enhancement. Add sinuosity to channel - structural complexity
6.0	Both_banks_mod		Low	
7.0	Both_banks_mod		Low	
8.0	Both_banks_high	Excavated drainage ditches	Nil	

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 5


Segment 6


Segment 7


Segment 8

Upper Vernon Creek

Segment(s): 1 - 3

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Modified		238	Riffle/Pool	1.0	41-70%	Potential	Intermittent floodplain areas on right and left banks, Constructed side channel through golf course
1.1	Channelized	Flumed	161	Stagnant	0.0	21-40%	Unknown	Connected to Vernon Creek; Backwatered from Vernon Creek - no flows
2.0	Channelized		241	Riffle/Pool	2.0	71-90%	Potential	
3.0	Channelized		127	Riffle/Pool	3.0	1-20%	Potential	More open, higher gradient, more defined thalweg than Segment 2

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	0	57	40	2	1	0	5.25	6.25	0.15	0.55	Boulder substrates associated with rip rap armouring and channelization
1.1	0	0	0	0	0	0	0.00	4.00	0.00	1.00	Concrete
2.0	0	5	25	70	0	0	7.50	8.50	0.15	0.45	
3.0	0	2	10	88	0	0	4.00	9.00	0.15	0.45	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
1.0	15	15	10	0	0	25	30	20	Boulder cover associated with riprap
1.1	0	0	0	0	0	0	0	0	
2.0	8	90	0	0	0	0	10	0	Cobble substrates provide juvenile cover - poor cover overall
3.0	8	100	0	0	0	0	0	0	Cobble substrates provide juvenile cover - poor cover overall though. Deeper, more defined thalweg

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Broadleaf forest	Disturbed	young forest	67-100%	No	No	Medium	Intermittent instability
1.1	Shrub	Disturbed	low shrubs <2m	34-66%	No	No	High	
2.0	Broadleaf forest	Disturbed	young forest	67-100%	No	No	Medium	Channelized and steep banks with instability but Cottonwood regen. increasing integrity
3.0	Broadleaf forest	Disturbed	young forest	67-100%	No	No	Medium	Channelized and steep banks with instability but Cottonwood regen. increasing integrity

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Disturbed	young forest	67-100%	No	No	Medium	Bottom of segment a young riparian forest (Duck Lake) - intermittent instability
1.1	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	No	No	High	
2.0	Broadleaf forest	Disturbed	young forest	67-100%	No	No	Medium	Channelized and steep banks with instability but Cottonwood regen. increasing integrity
3.0	Broadleaf forest	Disturbed	young forest	67-100%	No	No	Medium	Channelized and steep banks with instability but Cottonwood regen. increasing integrity

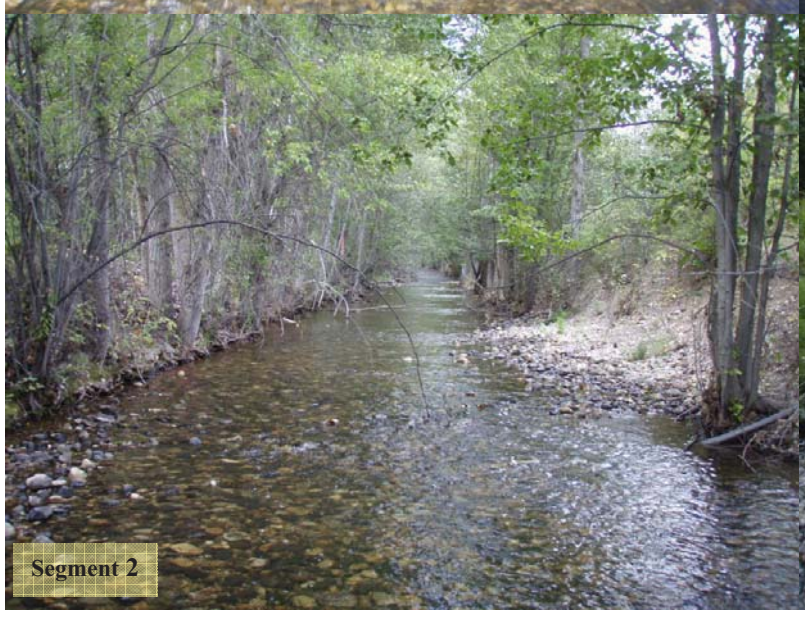
Segment	Comment - Flora	Comment - Fauna
1.0	Alder, sandbar willow, red-osier dogwood, cottonwood, pacific willow	B-MALL, B-COME, B-BCCH, B-SPTO, B-SOSP; sculpin sp.
1.1		
2.0	Cottonwood, alder, water birch, red-osier dogwood, sandbar willow, pacific willow	B-NOFL, B-BCCH; Red squirrel
3.0	Cottonwood, alder, water birch, red-osier dogwood, sandbar willow, pacific willow	B-NOFL, B-BCCH; Red squirrel

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	1_bank_high	Historic channelization - naturalizing golf course	Low	Riparian revegetation for bank stability and over stream cover though golf course
1.1	Both_banks_high	Constructed diversion flume	Low	If decommissioned take measures to protect connected fisheries values of Vernon Creek
2.0	1_bank_high	Historic channelization - riparian in better overall condition than seg 1	High	Improve instream habitat complexity/structures. Weirs, LWD etc.
3.0	Both_banks_low	Historic channelization	High	Improve instream habitat complexity/structures. Weirs, LWD etc.

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 1.1


Segment 2


Segment 3

Upper Vernon Creek

Segment(s): 4 - 7

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
4.0	Channelized	Flumed	410	Other	3.5	0		
5.0	Channelized	Flumed	540	Other	5.0	0		
6.0	Modified		126	Riffle/Pool	4.5	21-40%	Potential	Riffle-pool-cascade
7.0	Modified		302	Riffle/Pool	5.0	21-40%	Potential	1 small mid-channel vegetated bar/small island near bottom of segment u/s of road

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
4.0	0	0	0	0	0	0	2.45	3.70	0.05	0.55	Flume width is 7.5m from top of bank to top of bank; Concrete
5.0	0	0	0	0	0	0	2.45	3.70	0.05	0.55	Flume width is 7.5m from top of bank to top of bank; Concrete
6.0	0	2	20	73	5	0	5.90	7.45	0.10	0.45	
7.0	0	2	15	43	40	0	4.50	5.00	0.15	0.50	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
4.0	0	0	0	0	0	0	0	0	Nil cover
5.0	0	0	0	0	0	0	0	0	Nil cover
6.0	12	95	0	0	0	0	0	5	Cobble-boulder cover suitable primarily for juvenile fish, sculpins, and cyprinids - generally poor
7.0	25	75	20	0	0	0	0	5	Although many pools not >1-m, provide good residual pool and cover in this watercourse

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
4.0	Broadleaf forest	Disturbed	mature forest	34-66%	No	No	High	
5.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Left bank is grass herb, gradient up to 5%
6.0	Broadleaf forest	Disturbed	young forest	5-33%	No	No	Low	
7.0	Broadleaf forest	Disturbed	young forest	5-33%	No	No	Low	Instability and erosion along bank

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
4.0	Herbs/grasses	Disturbed	Grass / Herb	5-33%	No	No	High	
5.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	
6.0	Broadleaf forest	Disturbed	young forest	5-33%	No	No	Low	
7.0	Broadleaf forest	Disturbed	young forest	5-33%	No	No	Low	Instability and erosion along bank

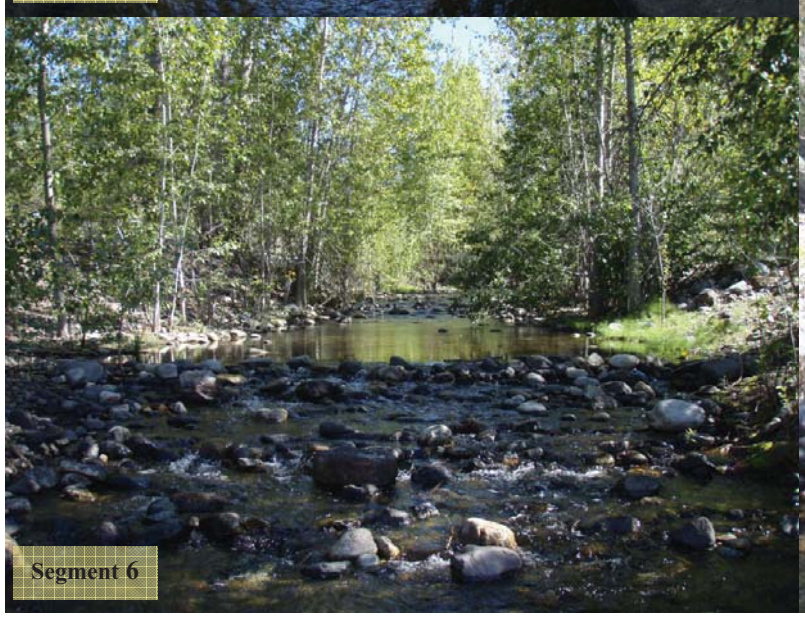
Segment	Comment - Flora	Comment - Fauna
4.0		
5.0		B-OSPR, B-AMRO
6.0	Cottonwood regeneration, willow sp, Douglas-fir, Pine regen., horsetail	
7.0	Cottonwood regeneration, willow sp, Douglas-fir, Pine regen., horsetail	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
4.0	Both_banks_high		Very_high	Restore stream channel, remove flume - at least install baffles for fish passage
5.0	Both_banks_high		Very_high	Restore stream channel, remove flume - at least install baffles for fish passage
6.0	Both_banks_low	Naturalizing - historically altered/channelized/confined	Low	Cottonwood regeneration is beginning to increase bank integrity
7.0	Both_banks_low	Naturalizing - historically altered/channelized/confined	Low	Cottonwood regeneration is beginning to increase bank integrity

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









Upper Vernon Creek

Segment(s): 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
8.0	Modified		377	Riffle/Pool	3.5	41-70%	Potential	1 small mid-channel vegetated bar/small island near bottom of segment u/s of road

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
8.0	0	10	20	60	10	0	5.50	9.20	0.13	0.45	

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

	Cover (%) [b]								
Segment	Total Cover	B	DP	IV	LWD	OV	SWD	UC	Comment Cover
8.0	20	40	20	0	15	0	0	5	

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

Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
8.0	Mixed forest	Disturbed	mature forest	5-33%	<5	No	Medium	Floodplain area at bottom of segment upstream of the culvert - captured with top of bank delineation

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
8.0	Mixed forest	Disturbed	mature forest	5-33%	<5	No	Medium	

Segment	Comment - Flora	Comment - Fauna
8.0	Douglas fir, cottonwood, ponderosa pine, Douglas maple, alder	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
8.0	1_bank_mod	Cattle ranging throughout segment and within creek; Old irrigation works at top of segment	Low	Remove old bridge debris which is currently a potential obstruction

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

