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CAS08-42

SENSITIVE HABITAT INVENTORY AND MAPPING (SHIM) – 2008 Survey Period

Inventory Summary Report - Volume 3

A Comprehensive Watercourse Catalogue

ECOSCAPE
Environmental Consultants Ltd.

City of Kelowna

Okanagan Basin
WATER BOARD

Prepared For:
City of Kelowna

Prepared By:
Ecoscape Environmental Consultants Ltd.

File No.:08-293
February, 2009

SENSITIVE HABITAT INVENTORY AND MAPPING (SHIM) - 2008

Bauer Brook, Campbell Brook, Industry Brook, Vernon Creek (Upper), Gopher Creek, Bellevue Creek (North Arm), Thomson Creek (Upper reaches), Hachey Creek, Michaelbrook Creek, Rumohr Creek, KLO Creek, Hydraulic Creek, Mission Creek (top of Ravine only), Dewdney Creek

Inventory Summary Report – Volume 3

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1.0 INTRODUCTION

Ecoscape Environmental Consultants Ltd. (Ecoscape) was retained by the City of Kelowna to complete Sensitive Habitat Inventory and Mapping (SHIM) of streams occurring within the City of Kelowna. The following report summarizes the inventory findings, which have been provided to the City of Kelowna and the Community Mapping Network (www.shim.bc.ca) in digital GIS format.

1.1 Project Background

As resource development and human populations increase in British Columbia, pressures for all resources and services have accelerated. Rapid growth has often overwhelmed the ability of local planners to manage land and preserve sensitive habitats (Mason and Knight, 2001). This has resulted in the loss or degradation of aquatic and riparian habitats that are critical for fish and a diverse wildlife assemblage. Accordingly, there is an urgent need to develop stronger tools and better methods to conserve, protect and reclaim these habitats.

Sensitive Habitat Inventory and Mapping (SHIM) is a standard for fish and aquatic habitat mapping in urban and rural watersheds in British Columbia. SHIM attempts to ensure the collection and mapping of reliable, high quality, current, and spatially accurate information about local freshwater habitats, watercourses, and associated riparian communities.

SHIM is designed as a land-planning, computer-generated, interactive GIS tool that identifies sensitive aquatic and terrestrial habitats. It is intended to provide community, stewardship groups, individuals, regional districts and municipalities with an effective, low-cost delivery system for information on these local habitats and associated current land uses.

SHIM has numerous applications and can:

- Provide current information not previously available to urban planners, to allow more informed planning decisions and provide inventory information for integration into Official Community Plans;
- Assist in the design of stormwater/runoff management plans;
- Monitor for changes in habitat resulting from known disturbance;
- Identify and map potential point sources of pollution;
- Help guide management decisions and priorities with respect to habitat restoration and enhancement projects;
- Assist in determining setbacks and fish/wildlife-sensitive zones;
- Identify sensitive habitats for fish and wildlife along watercourses;

- Provide a means of highlighting areas that may have problems with channel stability or water quality that require more detailed study;
- Provide baseline mapping data for future monitoring activities; and,
- Map and identify the extent of riparian vegetation available and used by wildlife and fisheries resources.

1.2 Project Objectives

The objectives of the project were to:

- Inventory and map the extents of the identified watercourses within the City of Kelowna and associated riparian habitats, and important watercourse and fisheries habitat features;
- Provide the basis for accurately mapped baseline data that can be integrated into local mapping and planning initiatives; and,
- Augment and potentially enhance local land use planning maps and/or specific site or detailed planning surveys.

The primary functions of SHIM are to:

- Identify sensitive habitats and resources within local communities;
- Integrate property boundaries, land parcels, and road networks with locations of sensitive resources to facilitate Official Community Plans and Development Permit applications;
- Work within an interactive Geographical Information System (GIS) to provide useful map products for analysis and effective communication;
- Facilitate updating and exchange of information; and,
- Establish partnerships with provincial and municipal governments, stakeholders, and the public to protect and manage aquatic habitats and associated functions (i.e. riparian communities and linear corridors etc.).

By combining resource information from a variety of sources, the goal is that SHIM will provide a robust baseline inventory (cataloguing the stream and all natural and anthropogenic features occurring within and along it) for improving integrated resource management and planning within the City of Kelowna.

2.0 SCOPE OF WORK

The project work scope was based on the Request for Proposal (CAS08-42, June 2, 2008). The fundamental objective was to complete Sensitive Habitat Inventory and Mapping (SHIM) surveys on all creeks identified in the Request for Proposal including:

- ✓Bauer Brook
- ✓Bellevue Creek (North Arm)
- ✓Dewdney Creek
- ✓Campbell Brook
- ✓Gopher Creek
- ✓Hachey Creek
- ✓Hydraulic Creek
- ✓ Industry Brook
- ✓KLO Creek
- ✓Michaelbrook Creek
- ✓Mission Creek (top of Ravine only)
- ✓Rumohr Creek
- ✓Thomson Creek (Upper reaches)
- ✓Vernon Creek East – above Duck (Ellison) Lake

Field inventory methods and data processing and management were to conform to SHIM Standards and Methodology. At the completion of the project, standard SHIM deliverables were to be provided to the City of Kelowna and subsequently to the Community Mapping Network (CMN) for publication in the SHIM atlas.

3.0 METHODOLOGY

Field inventory, data processing and data deliverables conformed to the SHIM Standards (Mason and Knight, 2001), which can be reviewed in full at:

http://www.shim.bc.ca/methods/SHIM_Methods.html .

3.1 Centerline Survey

Kyle Hawes, R.P.Bio. was the principal surveyor and completed all field survey elements with the assistance of biologist, Tyra Zeman, B.Sc., BIT.

The stream centerline was mapped along the center of the bankfull (not floodplain) width. The creek was stratified into a series of successive sections (segments), each possessing and being characterized by different attributes or biophysical characteristics (i.e. hydraulic class, channel characteristics, substrates composition, and riparian class, etc.). The stream segmentation and associated attributes was the fundamental unit of the centerline survey with point features providing a more quantitative measure of relative disturbance/modification and aquatic habitat quality/complexity (i.e. area abundance of deep pools, spawning substrates, large woody debris, bank erosion, etc.).

During previous SHIM surveys within the Okanagan, Ecoscape developed and appended a Level of Impact rating to the data dictionary, which is included in Appendix A in the Volume 1 SHIM report. This simple rating system was designed with the intent of providing a more measurable parameter in evaluating stream condition and monitoring and evaluating habitat restoration and future conservation efforts on local watercourses and associated riparian and floodplain communities. The raw data and rationale for respective stream segment scores can be found in Appendix A within the Stream line data. Weighted scores for respective SHIM impact ratings were obtained by dividing the cumulative length of segments receiving the same SHIM impact rating by the total SHIM stream length to obtain a fractional abundance (% of SHIM stream length). This value was then multiplied by the respective SHIM Score (0-6) equaling the weighted score. A zero (0) to six (6) rating system was developed to evaluate respective stream segments in terms of their degree of disturbance, where a stream segment not being recently modified (natural) received a score of 6 (nil), and a stream segment being highly modified on both banks/channelized/ditched, etc. received a score of 0 (both banks high). The sum of weighted scores was then divided by the maximum attainable score (6)[1] and transformed into a percentage value to yield the stream condition score.

Table 1 provides a complete list of features and corresponding attributes that were recorded using the Trimble Geo Explorer (GPS) and SHIM Data Dictionary.

Table 1. Overview of watercourse and habitat attributes to be collected using the SHIM Data Dictionary (Module 3, Mason and Knight, 2001). The complete data dictionary can be found in Appendix A.

Survey Component	Main Attribute	Detailed Feature Collected
Stream Centre Line	Stream Reference Information	Name; Watershed Code; Date; Time; Survey Conditions; Surveyors
	Stream Segment Points	Start; Stop; Reach Break; Elevation; Representative Photographs
	Stream Segment Class	Stream Section; State of Section (i.e. natural/modified/channelized); Dominant Hydraulic Type
	Segment Characteristics	Section Gradient; Fish Spawning; Canopy; Access; Gravel
	Segment Substrate Attributes	Dominant Substrate Type; Compaction
	Segment Channel Attributes	Widths (wetted, bankfull), Depths (wetted, bankfull)
	Segment Instream Cover	% Total Cover; % by Feature/Cover Type (large woody debris/deep pool/over stream vegetation etc.)
	Segment Riparian Attributes	Left and Right Bank Riparian Class (vegetation association; structural stage; bank slope; material etc.)
		Segment Summary Description
	Level of Impairment	Score 0 (Severely impaired) – 6 (Natural); Rationale
	Enhancement Opportunity Rating	0 (Nil) – 4 (Very High); Rationale
Watercourse and Habitat Features	Culvert Attributes	Type-Material; Condition; Barrier; Size; Baffles
	Obstruction Attributes	Type-Material; Barrier; Size; Photo
	Stream Discharge Attributes	Point of Discharge; Type-material; Size
	Erosion Feature	Type of Erosion; severity; exposure; material
	Fish Habitat Attributes	Type of Habitat (Spawning/rearing/cover); Size; Slope; Photo
	Enhancement Areas	Type of Enhancement; Potential or existing enhancement
	Wildlife Observations	Type of Observation; Wildlife species; Photo
	Wildlife Tree Attributes	Type of Tree; Size; Location
	Near Waterbody Attributes	Type of Waterbody (spring/side channel/pond etc.); Size
	Wetland Attributes (Polygon feature)	Wetland Type-Class; Photo
	Photograph Location	Location; Direction.

[1] A combined weighted score of 6 would be attained if all segments were natural with no discernable human disturbance on either the right or left bank. Note this evaluation does not factor in impacts upstream of the Kelowna City limit, which could still impact on water quality and habitat values.

3.2 Top of Bank Survey

Watercourse (lake, pond, stream and wetland) location and extent are critical for providing information to help determine the degree of protection to which a watercourse should be entitled. Determining the correct location of a stream, functionally (hydrologically) connected watercourses and wetlands, and their associated top of banks (TOB) is a necessary prerequisite for delineating Fisheries Sensitive Zones (FSZ). FSZs are an essential planning component in defining the Streamside Protection and Enhancement Area for development adjacent to a stream.

The top of bank was defined using the following criteria, as recognized by the Ministry of Environment and Department of Fisheries and Oceans Canada:

i) The point closest to the boundary of the active floodplain of a stream where a break in the slope of the land occurs such that the grade beyond the break is flatter than 3:1 at any point for a minimum distance of 15 metres measured perpendicularly from the break;

ii) For a floodplain area not contained within a ravine, the edge of the active floodplain of a stream where the slope of the land beyond the edge is flatter than 3:1 at any point for a minimum distance of 15 metres measured perpendicularly from the edge; or,

iii) The first significant break in a ravine slope where the break occurs such that the grade beyond the break is flatter than 3:1 for a minimum distance of 15 metres measured perpendicularly from the break, and the break does not include a bench within the ravine that could be developed.

3.3 Data Logging and Processing

GPS settings were in accordance with Resource Inventory Committee Standards to ensure the collection of spatially accurate data. The coordinate system used was North American Datum 83, UTM Zone 11 North.

Field (GPS) data were post processed (differentially corrected) in the office using base stations situated both in Penticton (SOPAC, Dominion Radio Astrophysical Observatory), and Kettle Falls, Washington (USFS, Colville National Forest).

Data dictionary tools designed for ARC View 3.x were employed to process the data and to export the data into ESRI shapefiles. Final mapping deliverables were produced in ArcGIS 9.2.

3.4 Quality Assurance and Quality Control

The Resource Inventory Committee and SHIM Methodology (Mason and Knight, 2001) provide specific requirements for quality assurance and quality control. These standards such as GPS settings/precision, logging intervals, and data management and deliverables were followed throughout the project.

4.0 RESULTS

The following section summarizes the morphological and biophysical character of each of the surveyed watercourses. Summary results and discussions for individual watercourses are commensurate with their overall magnitude, habitat rating, and level of impact. Refer to the attached summary pages and corresponding figures (maps) for segment attributes and representative photos. The processed data from the centreline survey (Stream_line) and feature data has been included in Appendix A. In addition, this data can be found in digital format accompanying the complete inventory catalogue, which includes all point features, attributes, and representative photos (intended for use in a GIS platform). Furthermore, the reader is encouraged to refer to the Community Mapping Network, SHIM atlas (www.shim.bc.ca).

Additional field information was collected for Thompson Brook during the 2008 field survey to update the spatial extents of this watercourse recognizing the changes that have occurred since the 2006 survey period. Watercourse information for Thompson Brook is presented in Volume 2 (Ecoscape, 2007a).

4.1 Bauer Brook – Campbell/Industry System

Campbell Brook (through Tower Ranch golf course) and Industry Brook merge at the eastern limit of Tower Ranch in a large golf course pond along McCurdy Road. From here, Bauer Brook commences as a ditched watercourse along McCurdy Road then diverges to the north through a steep-banked, densely vegetated pacific willow – Manitoba maple gully. Downstream of the gully, Bauer Brook is again confined by ditching as it flows through fields and rural lots and then follows Moyer Road (westward) before turning northward into agricultural fields used by livestock. Through this bottom reach (Segment 1), constructed ponds and ditching continue until the flows infiltrate the level fields and enter the city storm system, connecting to the Chichester wetland and Francis Brook.

During the SHIM survey, flows were observed to increase progressively downward through the watercourse with lower segments likely being permanently wetted throughout the year.

Combined, the stream length of Bauer Brook and its two tributaries within the Kelowna city limit equals about 5.4 km. Of this length, only about 8% is natural or at least has not been recently disturbed (Table 2). Although only one segment was defined primarily as culvert (Table 2) numerous road crossings and intermittently piped sections through other modified and channelized segments result in a total culverted length of 834 m over the SHIM surveyed stream length.

Table 2. Bauer-Campbell-Industry Creeks summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 5.4 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Modified	2405	44%
Ditch	1708	31%
Channelized	644	12%
Natural	451	8%
Culvert	233	4%

There were few concerns with respect to bank stability with the exception of the Morrison Road culvert, which is too short. Because of the inadequate culvert length, severe bank and headwall erosion from the over-steepened road slope is occurring. Part of the road slope has collapsed around outlet and flows were documented discharging through soil that had collapsed over the outlet.

Extensive channelization, ditching, and hydrologic alterations to Bauer Brook and tributaries through Tower Ranch, along McCurdy Road, and through agricultural fields below have had a considerable negative impact on the integrity of this small ephemeral drainage and associated riparian communities. The result of the various alterations and disturbance results in a low stream grade (condition score) of 19% (Table 3).

Table 3. Bauer-Campbell-Industry Creeks level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 5.4 linear km of creek within the City of Kelowna and . jurisdictional boundaries.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
1,1CI,2,2CI,3,3CI,4CI,6,8,9,10,12	0.0	3545	65%	0.000
5,7,7CI	1.0	594	11%	0.109
11.0	2.0	130	2%	0.048
4.0	4.0	549	10%	0.403
5CI,6CI	5.0	625	11%	0.574
			Weighted Score	1.134
			Condition Score	19%

Although not contributing to fish habitat values, provisions for increased buffers / setbacks along this ephemeral watercourse will allow for riparian community regeneration. These expanded thickets / riparian corridors will provide increased habitat heterogeneity and cover for a diversity of wildlife present within the rural and wildland interface; encouraging greater wildlife dispersal and potentially supporting increased local species richness and diversity.

4.2 North Arm Bellevue Creek

North Arm Bellevue Creek receives water primarily from a diversion pipe situated on the right bank of Bellevue Creek at the downstream end of Crawford Canyon. Over the majority of the 3.8 km length, North Arm Bellevue is better described as a dry armoured diversion channel and ditch than a stream. From a small 200mm PVC outlet (Segment 12) the channel follows the right bank of Bellevue Creek diverging gradually to the north over remnant irrigation/diversion weirs through interior Douglas-fir and cedar forest. The channel is often poorly defined and evidence of scour is intermittent; with soil and leaf litter accumulation documented in sections where the channel is more poorly defined. Downstream of Woodhaven Regional Park, the channel becomes more confined as a ditch, being regularly culverted beneath urban subdivisions (Table 4). Although clearly defined by human alteration (e.g., ditching and channelized by retaining walls), channel scour is discontinuous and upland grasses and herbs were often observed growing through the channel.

Table 4. North Arm Bellevue summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 3.8 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Modified	2092	55%
Culvert	1244	33%
Ditch	270	7%
Natural	196	5%

Where defined, the average channel width was about 1.3 m with a gradient averaging about 1.5%. Because of the intermittent character, substrates through the defined channel segments are primarily fines consisting of sand and soil, unless armoured through channelized sections, with gravel and cobbles being more prevalent in upper reaches – likely scoured during events when the diversion gate is open.

Segment 4 is a well defined gully but lacks a defined channel or evidence of scour. The prominence of this gully suggests that Segment 4, although not a creek, may be a relic or former flood channel of Bellevue Creek before it was confined and channelized to the south. Below Segment 4 however, a natural spring occurs at the upstream end of Segment three (3), about 1200m upstream of Okanagan Lake. Downstream of this feature, North Arm Bellevue Creek has a wetted and defined channel. However, streamflows are intercepted by the city storm system through Segment 2 before again day-lighting through Segment 1 just above the confluence with Okanagan Lake.

Table 4 indicates that a mere 5% of North Arm Bellevue is natural, represented through Woodhaven Regional Park. The remainder is intensely modified. The intense urban character of North Arm Bellevue results in a very low condition score of 13% (Table 5). Recognizing that the majority of North Arm Bellevue is constructed and extensively piped (under recent subdivisions) or confined to rear lot boundaries and, furthermore has a hydrology largely supported by a diversion pipe, there is limited capability to restore aquatic or riparian values. Any emphasis on preservation or enhancement of North Arm

Bellevue should focus on the spring (Segment 3) from which natural streamflows originate about 1200 up upstream from Okanagan Lake.

Table 5. North Arm Bellevue level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 3.8 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
1,2,5,6,7,8,12	0.0	2323	61%	0.000
3	1.0	687	18%	0.181
4,10,11	2.0	596	16%	0.313
9	5.0	196	5%	0.258
			Weighted Score	0.752
			Condition Score	13%

4.3 Dewdney Creek

4.3.1 Stream Primary Character

Dewdney Creek is a small tributary to Mission Creek originating from groundwater discharges in the Hall Road area. This short (1.1km) watercourse is connected by surface flows to Mission Creek and although not sampled, upstream fish passage is possible and the lower segments of Dewdney are likely capable of supporting small populations of fish. Over 70% of the watercourse is natural (Table 6), flowing through mature cottonwood riparian communities. Numerous springs and wet seepage areas were documented along this first order watercourse. Wet red-osier dogwood – mountain alder – skunk cabbage swamp associations (WS00) were characteristic of these wet groundwater discharge zones, from which drainageway channels commence over sandy substrates flowing to the mainstem of Dewdney Creek.

Table 6. Dewdney Creek summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 1.1 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Modified	773	72%
Natural	304	28%

4.3.2 Stream Channel and Hydraulic Character

Flows were observed to progressively increase moving downstream, a factor relating to the intimate connection of Dewdney Creek with the groundwater table. The hydraulic character of Dewdney Creek is predominantly (64% of stream length) a low-gradient riffle-pool. With the exception of Segment 4, where the creek is diverted through a series of rural ponds, the average channel width was recorded to be 2.7 m. Sandy substrates predominate over segments 1-3 with organic aquatic substrates and detritus accumulation in wider slow-moving sections. The channel gradient increases through Segment 5, resulting in increased scour from higher stream velocities exposing coarser glacial tills (cobble/gravel).

4.3.3 Instream Habitat Cover/Complexity

Overstream vegetation and instream vegetation provides the greatest proportion of cover through Dewdney Creek; estimated to each be contributing about 30% of the total instream cover. The ponds occurring within Segment 4 may provide may provide refuge and general resident habitat for rainbow trout and species of coarse fish (e.g., red-side shiner), if they are able to access Segment 4 from below.

It is unlikely that if present in lower reaches of Dewdney Creek that fish would be able to ascend through segment 5 to the upper two ponds, where low base flows and higher gradients would obstruct upstream migration.

4.3.4 Modifications

Modifications along Dewdney Creek are limited to rural disturbance in Segment 1 including riparian vegetation removal, a bridge, water withdrawal and gas pipeline crossing. Segments 2 and 3 are predominantly natural with light intermittent rural disturbance. For a short distance, the creek deviates westward from the gasline Right of Way and associated riparian management zone before it crosses again at the Segment 3-4 break. It appears that Segment 4 has been diverted from its natural channel, which follows in a more westerly direction, then turning southward to join the lower pond of the Segment, instead culverted through a series of landscaped ponds. Other than tile drains, no discharges were documented along Dewdney Creek.

4.3.5 Bank Stability and Erosion

There were no concerns documented with respect to bank instability and erosion. Provided that the dense shrub and cottonwood riparian communities and associated wet seepage sites are not altered and removed, the integrity of the fine-textured stream banks should be maintained by existing vegetation.

4.3.6 Obstructions / Barriers

There were two primary barriers that may prevent upstream migration of fish from Mission Creek into Dewdney Creek. A perched 900mm culvert outlet, discharging water from Dewdney into Mission Creek, would be a complete barrier to fish. However, a secondary channel connects Dewdney with Mission Creek just downstream of the pipe; where during higher flows (in Mission Creek), fish access into Dewdney Creek is possible – especially to those fish seeking refuge when Mission Creek is in freshet.

A bridge and small gate and dam occur about 660 m upstream from the confluence of Mission Creek. This gated structure and dam may obstruct upstream fish passage into the series of ponds that occur upstream in Segment 4.

4.3.7 Stream Impact Summary

Dewdney Creek receives a moderate condition score of 67% (Table 7). However, the integrity of this watercourse may be at risk recognizing adjacent development pressures and the risks such may have on the groundwater table.

Table 7. Dewdney Creek level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 1.1 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
4.0	1	150	14%	0.140
5.0	2	181	17%	0.337
1,2,3	5	653	61%	3.030
1t	6	93	9%	0.517
			Weighted Score	4.023
			Condition Score	67%

4.4 Gopher Creek

4.4.1 Primary Character

Upstream of Springfield Road, Gopher Creek, is approximately 7.7 m in length within the Kelowna city limit. The stream originates from areas below Black Knight Mountain, crosses Highway 33 and meanders through mixed urban and agricultural areas to Springfield Road. From Springfield Road downstream, Gopher Creek is captured by the City drainage system (stormwater) and is piped for approximately 4,100 m. The creek and associated stormwater is discharged to the Chichester wetland complex and from here, now Francis Brook, flows about 2 km to Mill Creek.

The riparian and stream channel character is variable from disturbed grasslands, urban/residential, wetlands (marsh and swamp thicket), and agricultural areas (orchard and old field). During SHIM surveys, several areas of well established riparian vegetation were observed accounting for close to 30% of the watercourse length in the city (Table 8). Channelization and confinement was minimal and the majority of the watercourse and riparian communities have been impacted mostly by rural and agricultural activities.

Table 8. Gopher Creek summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 7.7 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Modified	5485	71%
Natural	2221	29%

Fish presence/absence sampling indicated that Gopher Creek is not frequented by fish upstream from where the creek is piped (Naito, 2006) and the most likely fish present, if any, are goldfish, introduced from nearby ponds. Despite being non-fish bearing, Gopher Creek and associated riparian and wetland habitats have moderate to high intrinsic ecological value providing local significant habitat areas for wildlife.

4.4.2 Stream Channel and Hydraulic Character

Gopher Creek was divided into Four (4) sections, adapting working completed previously by Ecoscape (2007b):

1. The area from Belgo Road to Springfield Road (Segments 1-3) has many sections that are still in relatively natural condition. However, rural and agricultural use, extending to the top of bank is common. In some locations, fields or homes are present near the stream and riparian vegetation has been cleared. Flows through Segments 1-3 are more regular and the stream likely flows throughout most months of the year. The stream gradients in this general area are higher and in many areas this would be considered a ravine due to the width between the left and right top of bank. The grades between the high water level and top of bank are quite steep in many areas, which has resulted in the more natural condition of segments below the top of bank.

2. The area from Belgo Road to Garner Road (Segments 4-5) is used primarily for agriculture. In most areas, fields or homes are present near the stream and riparian vegetation has largely been cleared. However, more natural sections occur through Segment 5 approaching Garner Road with mature forest present through the gully. However, trees have been cleared to a greater extent in downstream areas. Surface flows through Segments 4 and 5 appear to be permanent to semi-permanent in natural.

3. The area from Garner Road to Highway 33 (Segments 6-10) is within a moderately urbanized area, although some segments are still in relatively natural condition (e.g. some communities below Kirschner Mountain Estates). Disturbed and constructed wetlands occur in Segments 8 and 10. The stream likely maintains surface flows throughout most months of the year through these segments, with the wetted channel becoming more discontinuous moving upstream. Surface flows emerge from a disturbed cattail marsh adjacent Segment 10. Segment 10 itself, however is channelized and isolated from the wetland and was dry during the field survey. Upstream of Segment 10 (north of Highway 33), Gopher Creek becomes an ephemeral watercourse.

4. Upstream of Highway 33 (Segments 11-15) Gopher Creek flows through shallow grassland gullies and more densely vegetated riparian gullies. Disturbance through the upper section of Gopher Creek is attributed primarily to historic and current cattle grazing, which has resulted in degraded range and transitional wetland (saline meadows) condition along the ephemeral watercourse. Substrates through this section are predominantly fines over wetted reaches with more ephemeral sections having a prevalence of soils and leaf/needle litter, where the duration of flow is insufficient to scour the channel.

4.4.3 Modifications

While over 70% of Gopher Creek has been disturbed or modified, anthropogenic features (e.g. bridge, bank stabilization, discharges, etc.) occur relatively infrequently recognizing the suburban and rural character of this watercourse. The majority of alterations include general rural encroachment and riparian disturbance/alteration and vegetation removal. Channelization and retaining structures were uncommon.

As urban development has expanded to include areas around Loseth Road, stormwater management has resulted in an increase in the development and expansion of wetland and pond features intended for increased attenuation during precipitation events. However, only two (2) stowmwater discharges were documented, as the majority of the watercourse continues to be rural, with the absence of drainage infrastructure.

4.4.4 Bank Stability and Erosion

Over most of its length there were no issues of bank instability documented along Gopher Creek, which is likely a function of the ephemeral character of the upper reaches and well

vegetated riparian gully in the bottom segments below the stormwater discharges and detention ponds. However, intense and persistent cattle use in Segment 14, which is a very moist to wet water birch – red-osier dogwood riparian gully, has resulted in severe channel down-cutting and erosion of silts. Although any surface connection to downstream segments is very ephemeral, persistent livestock use and resultant erosion is severely degrading the condition of this sensitive plant community.

4.4.5 Stream Impact Summary

Persistent rural and agricultural disturbance and encroaching urban development has resulted in a condition score of 28%. While having a negligible effect on downstream fisheries resource values (being culverted for over 4000m), opportunities to restore or enhance riparian and wetland community condition and function along Gopher Creek should be realized.

Table 9. Gopher Creek level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 7.7 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
3t,7t	0	322	4%	0.00
1,3,4,5,6,7,8,9,10,11,14	1	4861	63%	0.63
1t,2t,2,5,6t,13	2	1117	14%	0.29
4t	3	139	2%	0.05
8t,15	4	842	11%	0.44
9t,10t,11t	5	424	6%	0.26
			Weighted Score	1.69
			Condition Score	28%

4.5 Hachey Creek

Hachey Creek is an ephemeral watercourse and tributary to Priest Creek. The total stream length within the Kelowna city limit is 3.6 km. Although ephemeral, channel scour and areas of significant bank erosion indicated seasonal high flows during run-off, which have likely been exacerbated by the loss of forest cover further up the watershed as a result of the 2003 wildfires and subsequent salvage logging. Road confinement and agricultural use (e.g. fields and livestock) of the area are the primary factor influencing the alteration of this watercourse. A summary of the primary character of Hachey Creek is presented in Table 10.

Table 10. Hachey Creek summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 3.6 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Natural	1473	41%
Ditch	942	26%
Modified	1155	32%

Within Kelowna this ephemeral watercourse has three distinct sections. The lower section (Segments 1-2) begins at the confluence with Priest Creek and follows a disturbed forested ravine with a channel gradient of about 6% and mean channel width of about 1.2 m. Erosion occurs along both banks in Segment 2 in the upper portion of the ravine due to encroachment and lack of riparian vegetation.

Above the ravine, Hachey Creek is ditched and intensely modified from Segments 3 to 8. The average channel gradient ranges from 1% - 2% with a mean channel width of about 1.4 m. Erosion and bank instability is prevalent along this section, attributed largely to the ditching and absence of riparian vegetation through fields and livestock access areas.

Upstream of Segment 8, the channel gradient increases to over 10% and agricultural activities end as the stream channel begins to climb through a natural forested ravine. Intermittent wetted channel sections were documented in Segment 11. The average channel width is about 1.2 m. The increased channel gradient through this section results in increased scour during flow events, exposing coarser materials (cobble/gravel).

With greater than 40% of the watercourse length within the city still being natural or not recently disturbed, Hachey Creek, despite extensive disturbance through the middle section received a condition score of 35%.

Table 11. Hachey Creek level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 3.6 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
1,2,5	4	925	26%	1.036
9,11,12	2	1473	41%	0.825
3,4,6,7,8,10	1	1172	33%	0.328
			Weighted Score	2.190
			Condition Score	36%

Although ephemeral in character adapting Best Management Practices along agricultural segments, such as exclusion fencing, may allow for some natural regeneration. In addition, greater control or partial exclusion of livestock from Hachey Creek may help to reduce the risk (e.g. sediment loading) on downstream environments in Priest Creek, which supports a healthy resident rainbow trout population and is also frequented by adfluvial rainbow during spring spawning migrations from Okanagan Lake.

4.6 Hydraulic Creek

Only the bottom 720 m of Hydraulic Creek occurs within the Kelowna city limit before its confluence with Mission Creek. Over this length, the stream drops rapidly from McCulloch Road through a steep-walled canyon down to the floodplain and natural cottonwood riparian communities along Mission Creek. From the confluence (with Mission Creek) Segment 1 is just under 290 m in length. The hydraulic character is riffle pool with an average gradient of about 7% and mean channel width of about 4.5 m. Segment 1 may provide suitable spawning substrates for rainbow trout however, the higher gradient and predominance of coarser cobble and boulder substrates likely limit the availability of spawning habitat through this segment. Instream cover through segment 1 is relatively low with only about 10% total cover, of which small boulders account for up to 90% with small pools making up the balance.

Within Segment 2, steep cascades and a series of waterfalls would prevent upstream fish passage from Mission Creek and Segment 1. The average gradient exceeds 25% over the segment with waterfalls and steep chutes occurring through the bedrock-controlled canyon. The channel width as defined by the often sheer bedrock face averages about 5m. Although unable to pass upstream through this steep segment, fish migrating or flushed downstream from fish bearing headwater lakes (Hydraulic Lake) may find temporary refuge and cover in deep pools, which are common and associated with boulders and bedrock.

The entire length (720 m) of Hydraulic Creek within the Kelowna city limit is natural. Just upstream beyond the city limit and above the high gradient and waterfall canyon, more intense activities occur including recreational pursuits and South East Kelowna Irrigation District infrastructure.

4.7 KLO Creek

4.7.1 Stream Primary Character

KLO Creek is a tributary to Mission Creek with about a 2.8 km section occurring within the Kelowna city limit. This watercourse has a high habitat rating and despite waterfall barriers in Segments 4 and 6, rainbow trout were observed throughout the 2.8 km survey length. Over 90% of the watercourse remains natural within Kelowna. Disturbance or alteration occurred primarily along the right bank in Segment 8, associated with the quarry (Table 12).

Table 12. KLO Creek summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 2.8 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Natural	2599	94%
Modified	152	6%

The majority of modifications along KLO Creek, within Kelowna, relates to historic irrigation and diversion works including relic concrete weirs/dams and armoured road fill slopes. Much of the armoured road fill slopes and channelization occurring along over 170 lineal meters of KLO Creek have naturalized to some degree. Three (3) bridges span over the creek. Of these, two are deteriorated wooden structures which should either be completely removed or replaced with smaller pedestrian-sized structures to still accommodate low impact recreational use. Due to the natural character and absence of urban development, no discharges occur along KLO creek.

4.7.2 Stream Channel Character and Habitat

Tables 13 and 14 summarize the stream channel and hydraulic character of KLO Creek.

Table 13. KLO Creek summary of hydraulic character. Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.8 linear km of creek within the City of Kelowna.

Segments	Hydraulic	Length (m)	Percent of Creek	Substrate Composition	
3,5,7,8,9,10	Riffle - Pool	1678	61%	Organic Fines Gravel Cobble Boulder Bedrock	0% 1% 11% 54% 32% 2%
1,2	Riffle	847	31%	Organic Fines Gravel Cobble Boulder Bedrock	0% 1% 4% 65% 30% 0%
4,6	Cascade - Pool	226	8%	Organic Fines Gravel Cobble Boulder Bedrock	0% 1% 3% 27% 30% 39%

Table 14. KLO Creek stream channel summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.8 linear km of creek within the City of Kelowna.

Segments	Gradient (%)			Stream Channel		
	Average	Min	Max	Mean Bankfull Width (m)	Min (m)	Max (m)
3,5,7,8,9,10	6.7	4.5	10.0	8.5	7.0	10.5
1,2	6.5	6.0	7.0	10.0	8.0	12.0
4,6	14.5	12.0	17.0	7.0	6.5	7.5

Suitable spawning substrates were observed throughout the SHIM survey length, including the cascade-pool reaches; where clean, suitably-sized gravels occur on the downward sides of deep pools. In total, 11 deep pools (*with wetted depths approaching 1m*) were recorded during field surveys, with a cumulative length of about 40 m and average width of about 3 m.

Instream cover is predominantly boulder/cobble, with documented use by small resident rainbow trout of all age classes (fry – juvenile – adult). Deep pools and overstream vegetation were infrequent over the surveyed streamlength. Total percent cover in riffle and riffle-pool segments averaged about 12% of which large cobbles and boulders were the primary cover. Associated deep pools accounted for less than 15% of the total cover. Large woody debris was nearly completely absent within riffle and riffle-pool segments and total cover was relatively low.

Instream habitat complexity and cover was greater in the steeper, bedrock controlled cascade – pool segments (Segments 4 and 6). Total cover was estimated between 20-25%, of which deep pools and boulders each accounted for nearly 50%. Often associated with pools, large woody debris was more prevalent in these higher gradient segments and accounted for up to 10% of the total cover.

4.7.3 Bank Stability and Erosion

Low bank stability was documented along nearly 60% of the SHIM-surveyed stream length (Segments 1,2,3,8,9). Marked erosion sites amounted to 80 lineal meters along the left bank and 73 lineal meters along the right bank, with average near-vertical eroding and sloughing wall heights being 2.4 m and 4.8 m respectively. Instability was attributed to the steep naturally unstable till banks. Segments with moderate to high bank and channel stability were those occurring through the bedrock-controlled canyon, along well-vegetated banks, and along Segment 10; where historic channelization and armouring have occurred (water diversion works).

4.7.4 Obstructions / Barriers

Four (4) upstream migration barriers were documented along KLO Creek within the Kelowna city limit. Table 15 presents each of these features, indicating respective distances upstream of the confluence with Mission Creek.

Table 15. KLO Creek documented upstream migration barriers. Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.8 linear km of creek within the City of Kelowna.

Type	Barrier	Length (m)	Width (m)	Residual Depth (m)	Height (m)	Distance U/S (m)	Comment
Persistent Debris	Potential	3.00	9.00	0.10	1.20	1182.00	
Falls	Yes	4.00	3.50	0.80	4.00	1249.00	Pool at top and bottom with RB observed
Falls	Yes	3.00	7.00	0.30	5.50	1573.00	Bedrock falls with associated old dam / diversion gate
Log Jam	Yes	4.00	12.00	0.60	2.00	2404.00	Gravel / fines deposited upstream of feature

4.7.5 Stream Impact Summary

The sum of the weighted scores for KLO Creek was 5.3, resulting in a high quality condition score of 88%. Considering both the high habitat rating and relatively low level of impact, conservation should be a top priority along KLO Creek. By this existing deteriorated bridges should be removed and there should be no further encroachment on riparian communities, which support high biodiversity values.

Table 16. KLO Creek level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.8 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
1,2,3,9,10	5	1734	63%	3.151
8.	4	152	6%	0.222
4,5,6,7	6	865	31%	1.886
			Weighted Score	5.259
			Condition Score	88%

4.8 Michaelbrook

Michaelbrook originates from a network of ditching and tile drains throughout fields in the vicinity of Swamp Road. The watercourse is largely a result of the ditching network constructed in an effort to draw down the water table to benefit agricultural practices. The constructed wetland that occurs at the downstream end of Segment 1 may be providing critical reproductive habitats for the Great Basin spadefoot, which were documented by Ecoscape within 100m of the Michaelbrook wetland in the summer of 2006. While draining primarily through the wetland into Mission Creek, Michaelbrook is also connected by surface hydrology to the network of ditches comprising Thompson Creek to the south.

The sum of the weighted scores for Michaelbrook was 1, resulting in a condition score of 17%. Despite wetland development and restoration (Michaelbrook Wetland), which now provide high intrinsic ecological value to the area, Michaelbrook is a highly modified watercourse. However, over time, regeneration and establishment of riparian communities should improve the overall condition of this system.

4.9 Rumohr Creek

4.9.1 Stream Primary Character

Rumohr Creek is an ephemeral watercourse. Within the city limit, this intermittent and highly modified drainage has a total length of about 7 km. During the fall 2008 survey, the Rumohr Creek channel was dry on over 70% its length. Wetted stream segments were documented from Segments 13-17, which also include two (2) wetland areas.

Rumohr Creek is ditched, channelized, or culverted over nearly 70% of its length within Kelowna (Table 17). As a result, much of Rumohr Creek has limited habitat value given the extensive ditching, and ephemeral nature.

Table 17. Rumohr Creek summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 7 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Ditch	3158	45%
Modified	1388	20%
Channelized	1207	17%
Natural	993	14%
Wetland	158	2%
Culvert	118	2%

4.9.2 Stream Channel and Hydraulic Character

The watercourse can be broken down into three primary areas based on terrain, channel character, and human use interactions:

1. Section one (Segments 1-4) follows a ravine beginning at the downstream end of the survey limit (*note: property access was not granted downstream of Segment 1. Therefore field confirmation of the channel extents and condition leading to the Mission Creek floodplain was not possible*). Extensive bank armouring, using turf stabilizing geogrid, had occurred through Section 1 – subsequent to the 2003 wildfires, which affected the upper catchment area of Rumohr Creek. As a result no concerns were identified relating to bank and channel instability.
2. Section two (Segments 5-12) is ditched and channelized along Gully Road and through rural and agricultural properties.
3. Section three (Segments 13-20) contains more natural segments and was discontinuously wetted. Rumhor Creek splits into two channels at Segment 16. The northern channel is the predominant flow channel and is ditched along Miller Road, before turning south; again connecting with the secondary channel (south western channel) at the slope toe of the mountain from which the creek descends.

4.9.3 Modifications

Forty two culverted crossings with a combined length of 625 m and five (5) bridge crossings were documented. Apart from these features and channelization and ditching, the majority of alterations are rural in character including general fence crossings, water withdrawals, and minor stonework for channel stability. Only four (4) pipe discharges were documented all of which were simply tiles drains.

4.9.4 Stream Impact Summary

The sum of the weighted scores for Rumohr Creek was 2.17, resulting in a condition score of 36% (Table 18). Enhancement opportunities in Section 1 are very limited recognizing the ephemeral nature of the watercourse through this section coupled with the road confinement and armouring works that have occurred. The greatest opportunities occur in Section 3. Existing relatively intact riparian areas in Section three (Segments 13-20) should be preserved for their habitat benefits and biodiversity values. These wetted areas have high capabilities for regeneration and net habitat gains. Efforts should be encouraged to restore or enhance existing wetland and riparian communities that occur in Segments 13-20.

Table 18. Rumohr Creek level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 7 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
4,5,8,9,17,18	0	1658	24%	0.000
3,13,16,18,19	2	1871	27%	0.533
1,2,6,710,11,12,14,15,17,29	3	2999	43%	1.281
16.0	4	232	3%	0.132
21.0	6	262	4%	0.224
			Weighted Score	2.170
			Stream Grade	36%

4.10 Upper Vernon Creek - Upstream of Duck (Ellison Lake)

4.10.1 Stream Primary Character

Upper Vernon Creek flows into Duck (Ellison) Lake from Beaver (Swalwell) Lake and its headwaters occurring to the east. Only about 2.4 linear km of Upper Vernon Creek occurs within the Kelowna city limits. Riparian and channel disturbance / alteration has occurred in all segments. The most significant alteration is the concrete Hyram Walker flume, which confines nearly 950 m of the watercourse (Table 19). More natural segments occur just above Duck Lake (Segment 1) and in segments 7 and 8 at the upstream end of the survey limit.

Table 19. Upper Vernon Creek summary of Primary Stream Character. Values shown below are based on SHIM field inventory and analysis of 2.4 linear km of creek within the City of Kelowna.

Primary Character	Length (m)	Percentage of stream length
Channelized	370	16%
Flumed	949	40%
Modified	1043	44%

4.10.2 Stream Channel and Hydraulic Character

Within the Kelowna city limit the hydraulic character of Upper Vernon Creek is 60% riffle-pool and 40% concrete flume (Table 20).

The flume width from the left bank top of structure to right bank top of structure was 7.5 m. The estimated bankfull width through the flume was 3.7 m. The flume was divided into two sections based on a clear gradient change, increasing from 3.5% in Segment 4 to 5% in Segment 5, and the presence of adjacent riparian vegetation along the left bank of Segment 4.

Table 20. Upper Vernon Creek stream channel summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.4 linear km of creek within the City of Kelowna.

Segment	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Bankfull Width (m)	Substrate Composition					
						Organic	Fines	Gravel	Cobble	Boulder	Bedrock
1	238	Riffle/Pool	1.0	41-70%	6.25	0	57	40	2	1	0
2	241	Riffle/Pool	2.0	71-90%	8.50	0	5	25	70	0	0
3	127	Riffle/Pool	3.0	1-20%	9.00	0	2	10	88	0	0
4 and 5	950	Flume	4.0	0	3.70	Concrete					
6	126	Riffle/Pool	4.5	21-40%	7.45	0	2	20	73	5	0
7	302	Riffle/Pool	5.0	21-40%	5.00	0	2	15	43	40	0
8	377	Riffle/Pool	3.5	41-70%	9.20	0	10	20	60	10	0

4.10.3 Instream Habitat Cover/Complexity

The total percent cover by segment and relative distributions of cover types is summarized in Table 21.

With the exception of the 950 m flume, potential opportunities for spawning may occur in all segments, although the suitability in channelized segments 2 and 3 is generally low. Segment 1 just above Duck Lake had the highest spawning suitability with gravels being

most abundant. Through this Segment, four (4) good quality gravel bars, associated with pools, were recorded as potential spawning sites.

Table 21. Upper Vernon Creek summary and distribution of instream cover/habitat complexity. Values shown below are based on SHIM field inventory (2008) and analysis of 2.4 linear km of creek within the City of Kelowna.

Segment	Segment Length (m)	Total % Cover	Percentage of Total cover by Cover Type [a]						
			B	DP	IV	LWD	OV	SWD	UC
1	238	15%	15	10	0	0	25	30	20
2	241	8%	90	0	0	0	0	10	0
3	127	8%	100	0	0	0	0	0	0
4 and 5	950	0%	0	0	0	0	0	0	0
6	126	12%	95	0	0	0	0	0	5
7	302	25%	75	20	0	0	0	0	5
8	377	20%	40	20	0	15	0	0	5

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

4.10.4 Modifications

Apart from the extensive channelization and fluming of this portion of Vernon Creek, other modifications were limited to two bridge crossings, and a large closed bottom structure crossing, a pipeline crossing, and channel armouring/rip rap placement (through the small golf course along Segment 1. Four (4) stormwater discharges were documented along the flume, ranging in diameter from 300mm to 480mm.

4.10.5 Bank Stability and Erosion

Low bank stability was documented along 18% of the SHIM-surveyed stream length (Segments 6 and 7). The stream channel was more confined and down-cut through glacial tills in these segments. Table 22 summarizes the extents of marked erosion sites that occur through Segments 6 and 7.

Table 22. Summary of bank erosion recorded along Upper Vernon Creek . Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.4 linear km of creek within the City of Kelowna.

Left Bank				Right Bank			
Length (m)	Average Height (m)	Area (m^2)	Percent of SHIM stream length	Length (m)	Average Height (m)	Area (m^2)	Percent of SHIM stream length
62	1.3	81	3%	33	1.7	55	2%

4.10.6 Obstructions / Barriers

The 950-m flume presents as almost certain velocity barrier to upstream fish migration. The bottom end of this structure begins just over 600 m upstream from the confluence of Vernon Creek with Duck (Ellison) Lake. Upstream of the flume, no barriers were documented and the stream habitat rating is moderate to high.

4.10.7 Stream Impact Summary

Recognizing that 40% of Upper Vernon Creek, through Kelowna is flumed, it is not surprising that this short length of stream receives a low condition score of 29% (Table 23).

Table 23. Upper Vernon Creek level of impact summary. Features and values shown below are based on SHIM field inventory (2008) and analysis of 2.4 linear km of creek within the City of Kelowna.

Segments	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
4,5	0	949	40%	0.00
3,6,7	2	555	23%	0.47
1,2	3	480	20%	0.61
8.0	4	377	16%	0.64
			Weighted Score	1.609
			Condition Score	29%

Upper Vernon Creek received a High Habitat Rating despite the extensive alterations to the stream channel within Kelowna. Although a significant undertaking, removal of the flume would result in a significant benefit to aquatic production. The benefits would be two-fold recognizing that channel restoration would both repatriate 950 m of stream channel (currently flumed) and restore fish passage upstream to Segment 6 and beyond. As the cost associated with such an initiative is likely prohibitive, in the short-term, restoring fish passage to upstream reaches should at a minimum be implemented. Measures to achieve this may include installation of baffles over the 950 m flume length to mitigate the probable velocity barrier this feature presents to fish.

5.0 KELOWNA SHIM AND WATERCOURSE EVALUATION SUMMARY

The following section is a stream condition and habitat rating summary for all streams surveyed during the three-year (2005, 2006, and 2008) Kelowna SHIM project initiative. Table 24 provides an overview of all surveyed streams, which is discussed at greater depth below.

Fish habitat quality scores were assigned to each watercourse within the Kelowna city limit. Respective habitat ratings were assigned based on information compiled during the various field surveys and analysis and data compilation. The following ratings were adapted from the new fish passage protocol (BC MOE, 2008) to consider potential capability based on channel morphology and hydrology - also recognizing that many of the watercourses have been altered by anthropogenic factors:

- **High** Habitat Rating was assigned to watercourses where high-value, critical spawning or rearing habitats were recorded (e.g., locations with abundance of suitably sized gravel, deep pools, undercut banks, stable large woody debris);

- **Moderate** Habitat Rating was assigned to watercourse with suitable spawning habitat and a moderate rearing potential for the fish species present. These systems typically have higher gradients (limiting the availability of higher quality spawning and production capacity) in conjunction with smaller catchment areas; and,

- **Low** Habitat Rating was assigned to ephemeral watercourses and streams without suitable spawning habitat or having low rearing potential (eg. locations without deep pools, undercut banks, or stable debris, and with little or no suitably sized spawning gravels).

The above habitat ratings are based on fish habitat values. However, while some watercourses may receive a low habitat rating, their intrinsic value should not be overlooked. Many of these small riparian gullies support or have the potential to support high biodiversity values in an urban and sub urban context. Recognizing this, efforts should continue to protect and restore associated riparian, transitional, and wetland sites along these watercourses regardless of fish habitat values.

Table 24. Summary of Kelowna streams assessed through SHIM, survey periods, stream lengths, condition, and habitat ratings.

Aquatic Habitat Rating	Stream Name	Survey Period	Stream Length (m)	Condition Score
High	Upper Vernon Creek	2008	2522	27%
	Mill Creek	2005	23300	30%
	Bellevue Creek	2005	6620	50%
	Priest Creek	2006	7100	72%
	KLO Creek	2008	2751	88%
	Hydraulic Creek	2008	721	100%
Moderate	Brandt Creek	20066	13600	8%
	Thompson Brook	2006	4800	11%
	Scotty Creek	2006	640	13%
	Wilson Creek	2006	2630	23%
	Francis Brook	2006	1400	25%
	Lebanon Creek	2006	2200	42%
	Dewdney Creek	2006	1077	67%
Low	Fascieux Creek	2006	6800	9%
	North Arm Bellevue Creek	2008	3802	13%
	Michaelbrook	2008	3369	17%
	Bauer Brook and Campbell - Industry Brook	2008	5442	19%
	Gopher Creek	2008	7706	28%
	Hachey Creek	2008	3571	36%
	Rumohr Creek	2008	7021	36%
	Rembler Creek	2006	5640	40%
	Cedar Creek	2006	1860	43%
	Leon Creek	2006	2700	43%
	Varty Creek	2008	1102	52%
	Whelan Creek	2006	810	63%
	Bertram	2008	1682	68%
	Casorso Creek	2006	1900	71%
	Bruce Creek	2008	173	83%

Streams were assigned into one of three groups based on their condition score (0-33%; 34-66%; 67-100)

Overall, the combined length of streams receiving condition scores of less than 33% accounted for 62% of the total combined length of streams within Kelowna (with the exception of Mission Creek). The combined length of streams receiving condition scores from between 34% - 66% accounted for 26% of the total combined stream length. Only 13% of the total combined streamlength received condition scores better than 66%.

Brandt Creek received the lowest condition score overall at 8% and Hydraulic and KLO Creeks had the highest condition scores, both still being largely natural and undisturbed. Of the high value streams, Mill Creek and Vernon Creek each received condition scores below 30% (Figure 1).

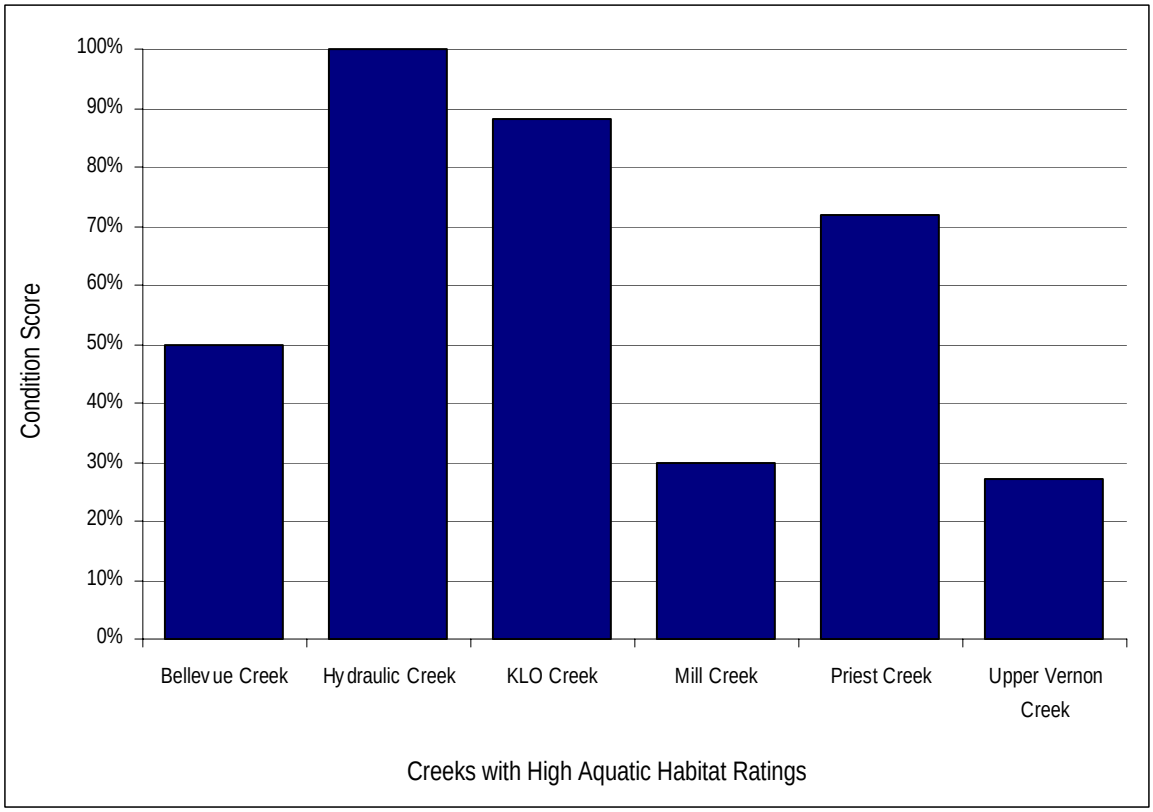

Figure 1. Stream condition scores for Kelowna watercourses (excluding Mission Creek) with High aquatic habitat ratings.

With the exception of Mission Creek, the combined length of streams with high aquatic habitat ratings amounted to about 35% of the total combined streamlength of all watercourses (123 km) within Kelowna. The combined length of moderate and low rated streams account for about 21% and 44% of the total combined streamlength respectively.

High value streams had a total combined length of just over 43 km. Of this length, 60% was represented by the combined length of watercourses receiving low condition scores of less than 33% (Figure 2). Overall, streams with moderate habitat ratings have been impacted the greatest in Kelowna with 88% of the total combined length (26.3 km) receiving condition scores of less that 33%.

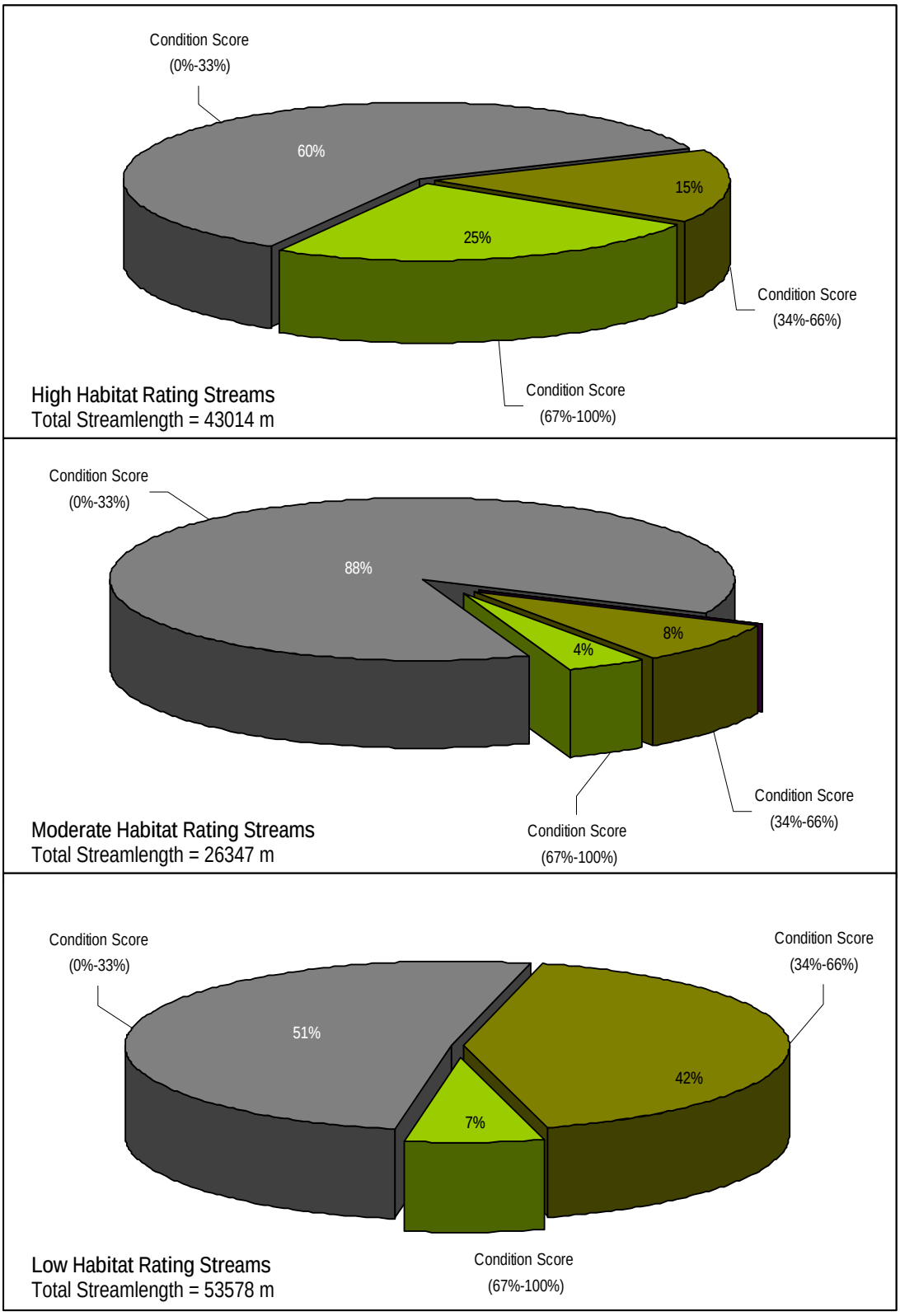

Figure 2. Condition score range distributions for the total combined streamlength in respective stream habitat rating classes (high; moderate; low). Streams within each habitat class (Table 24) were grouped according to their condition scores (0%-33%; 34%-66%; 67%-100%) and the relative condition score range distribution for the sum of stream lengths (in each habitat rating class) was then calculated.

6.0 CLOSURE

This report has summarized detailed field inventory data collected during 2008 SHIM surveys within the City of Kelowna. The collection and management of data conformed to the SHIM methodology, which is a standard for fish and aquatic habitat mapping in urban and rural watersheds in British Columbia.

The 2008 inventory has resulted in the development of an up-to-date catalogue of watercourse and habitat features occurring within respective watercourses, which has numerous applications and can be used by the community, stewardship groups, individuals, and the City, as well as senior regulatory agencies. In maintaining the integrity of this SHIM database, periodic field inspections should be carried out to update watercourse and habitat feature mapping.

The inventory that has been summarized within this report was commissioned by and prepared for the City of Kelowna. The collection, processing, and management of data have conformed to SHIM standards. No other warranty is made, either expressed or implied.

Questions or inquires pertaining to SHIM methodology, data, and this summary report should be directed to the undersigned.

Respectfully Submitted,
ECOSCAPE Environmental Consultants

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STREAM SUMMARY PLATES REPRESENTATIVE PHOTOS

Bauer Brook

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Ditch		588	Run	0.0	0	Unknown	Ditched trough fields; Bottom of Segment with Pacific willow canopy - opening up through paddock and field
2.0	Ditch		238	Run	1.5	0	Unknown	Ditched along Moyer Road
3.0	Ditch		524	Run	1.0	1-20%	Unknown	Ditched through fields; Bottom of Segment with Pacific willow canopy - opening up through paddock and field
4.0	Modified		549	Riffle/Pool	9.0	>90%	Unknown	Small stream channel through very dense willow riparian gully

	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	100	0	0	0	0	0.45	1.00	0.05	0.10	
2.0	0	90	10	0	0	0	0.40	1.10	0.06	0.15	Gravels greater than 50% embedded in fines
3.0	0	100	0	0	0	0	0.45	1.00	0.05	0.10	
4.0	0	100	0	0	0	0	0.50	1.40	0.04	0.10	

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	
2.0	100	0	0	100	0	0	0	0	Dense instream vegetation cover by Reed canary grass and northern watercress
3.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
4.0	0	0	0	0	0	0	0	0	Incapable 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	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	High	Bottom 50m treed canopy of mature pacific willow
2.0	High Impervious	Urban_Residential	Grass / Herb	<5%	No	No	Medium	
3.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	High	Bottom 50m treed canopy of mature pacific willow
4.0	Broadleaf forest	Disturbed	young forest	67-100%	<5	No	High	Pacific willow and Manitoba maple form very dense canopy with little to no understorey vegetation

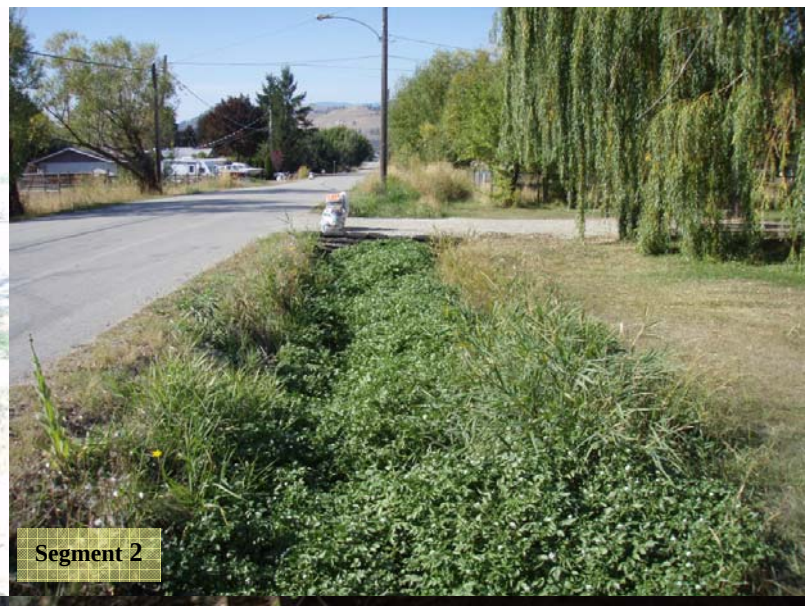
Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	High	Bottom 50m treed canopy of mature pacific willow
2.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	Medium	Ditched along road and rural properties
3.0	Herbs/grasses	Agriculture	Grass / Herb	<5%	No	No	High	Bottom 50m treed canopy of mature pacific willow
4.0	Broadleaf forest	Disturbed	young forest	67-100%	<5	No	High	Pacific willow and Manitoba maple form very dense canopy with little to no understorey vegetation

Segment	Comment - Flora	Comment - Fauna
1.0	Agronomic grasses and weedy forbs	
2.0		
3.0	Agronomic grasses and weedy forbs	
4.0	Pacific willow, Manitoba maple, red-osier dogwood	B-SOSP, B-CAQU, B-BBMA, B-DEJU

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_high	Agricultural alterations and confinement	Moderate	Riparian community restoration
2.0	Both_banks_high		Low	Riparian Restoration - opportunities limited to road associated ditching
3.0	Both_banks_high	Agricultural alterations and confinement	Moderate	Riparian community restoration
4.0	1_bank_mod	Garbage and debris through gully	Low	General clean-up of garbage and debris

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

Bauer Brook

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Modified		224	Riffle	2.0	1-20%	Unknown	Brook running through willows and grasses in rip rap armoured channel
6.0	Channelized	Other	184	Riffle/Pool	3.0	0	Unknown	Very weedy ditch, lined with riprap
7.0	Modified	Other	50	Riffle	2.0	0	Unknown	Agricultural land
8.0	Culvert		233		2.0	0	Unknown	Piped beneath orchard

	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	55	0	40	5	0	0.35	0.80	0.08	0.35	Coarse substrates associated with riprap armouring
6.0	0	10	10	70	20	0	0.25	1.10	0.05	0.50	Channel filled with riprap
7.0	10	80	5	5	0	0	1.10	2.00	0.20	0.80	Small natural wetted area through gully in field
8.0											Culvert

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	Incapable of supporting fish therefore no instream cover recorded
6.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
7.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
8.0	0	0	0	0	0	0	0	0	Incapable 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	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	
6.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	
7.0	Planted Tree Farm	Agriculture	Grass / Herb	<5%	No	No	High	Orchard land
8.0								Culverted

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Herbs/grasses	Disturbed	tall shrubs 2-10m	5-33%	No	No	High	
6.0	Herbs/grasses	Disturbed	tall shrubs 2-10m	5-33%	No	No	High	
7.0	Planted Tree Farm	Disturbed	Grass / Herb	<5%	No	No	High	Orchard land
8.0								Culverted

Segment	Comment - Flora	Comment - Fauna
5.0	Willow sp., mustard sp., tall sweet clover, curly dock and other weedy forbs	
6.0	Willow sp., mustard sp., tall sweet clover, curly dock and other weedy forbs	
7.0	Orchard	
8.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_mod	Riparian disturbance channel armouring	Low	Riparian restoration
6.0	Both_banks_high		Low	
7.0	Both_banks_mod		Low	Weed management and riparian restoration
8.0	Both_banks_high	Piped beneath orchard	Low	Daylight

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

Bauer Brook

Segment(s): 9 - 12

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Channelized	Other	151	Riffle	2.0	0	Unknown	Rural / agricultural land
10.0	Ditch	Other	88	Riffle	5.0	0	Unknown	
11.0	Modified		130	Riffle/Pool	4.0	41-70%	Unknown	
12.0	Channelized		310	Riffle	5.0	1-20%	Unknown	Channel lined with riprap; Minimal canopy closure

	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	20	65	5	0	0.50	1.20	0.06	0.40	Channel lined with riprap
10.0	0	5	15	55	25	0	0.60	1.00	0.08	0.45	Channel lined with riprap; Dense cover of northern watercress
11.0	0	55	30	15	0	0	0.40	1.20	0.10	0.60	Riprap ends
12.0	0	5	10	65	20	0	0.40	0.70	0.06	0.50	Channel lined with riprap

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	Incapable of supporting fish therefore no instream cover recorded
10.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
11.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
12.0	0	0	0	0	0	0	0	0	Incapable 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

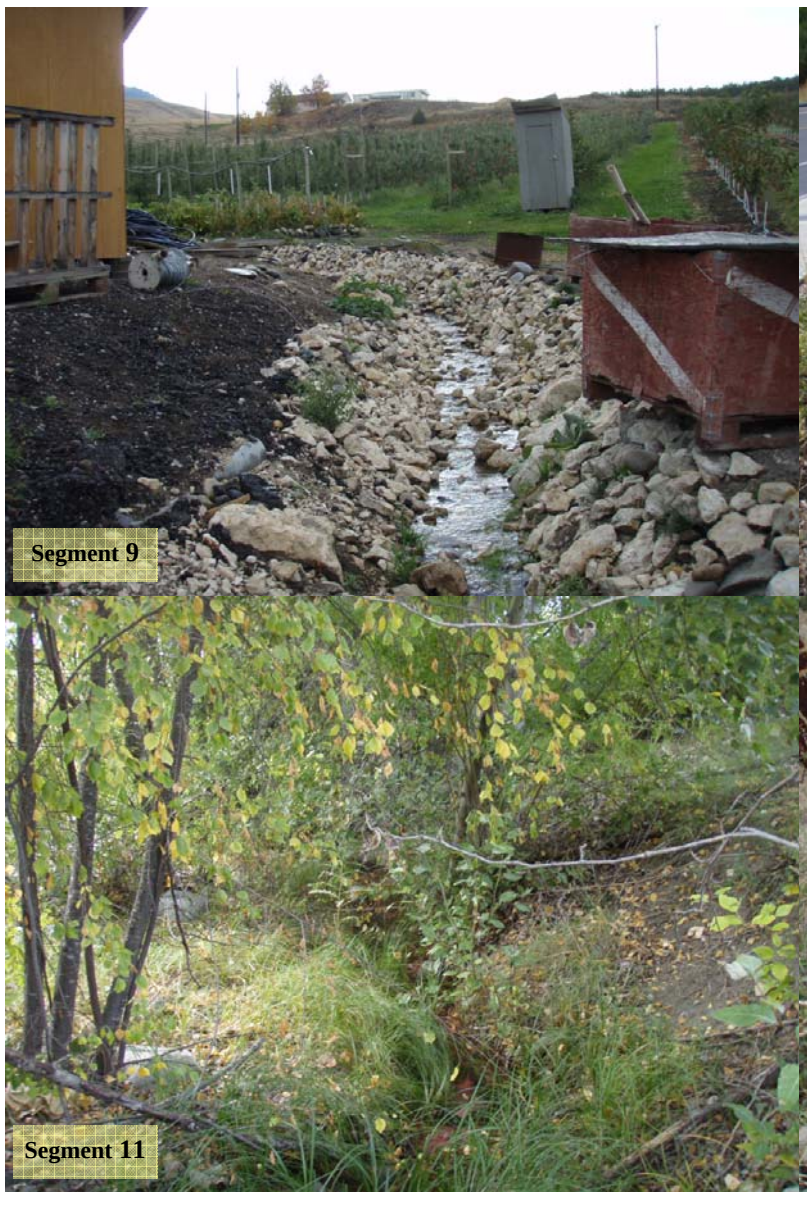
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	High	Orchard land
10.0	High Impervious	Disturbed	Grass / Herb	<5%	No	No	High	McCurdy road
11.0	Mixed forest	Disturbed	tall shrubs 2-10m	34-66%	No	No	High	Road fill slope beyond
12.0	Herbs/grasses	Disturbed	Grass / Herb	34-66%	No	No	High	

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	High	Rural yard and adjacent orchard
10.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	High	Rural residential
11.0	Mixed forest	Disturbed	tall shrubs 2-10m	34-66%	No	No	High	
12.0	High Impervious	Disturbed	tall shrubs 2-10m	<5%	No	No	High	McCurdy Rd.

Segment	Comment - Flora	Comment - Fauna
9.0	Apple orchard	
10.0		
11.0	Cottonwood , snowberry, maple	Shrew sp.
12.0		

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



Campbell Industry Brook

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Modified	Ephemeral	366	Cascade/Pool	10.0	0	Unknown	Armoured with cobble/boulder
2.0	Modified	Ephemeral	64	Cascade/Pool	15.0	0	Unknown	Natural segment
3.0	Modified	Ephemeral	529	Riffle/Pool	5.0	0	Unknown	
4.0	Ditch	Ephemeral	270	Other	5.0	0	Unknown	

	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	5	5	60	30	0	1.00	1.50	0.12	0.60	
2.0	0	92	5	2	1	0	0.00	1.50	0.00	0.60	
3.0	0	75	5	15	5	0	0.00	1.50	0.00	0.60	
4.0	0	95	5	0	0	0	0.40	1.00	0.07	0.30	

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	Incapable of supporting fish therefore no instream cover recorded
2.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
3.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
4.0	0	0	0	0	0	0	0	0	Incapable 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

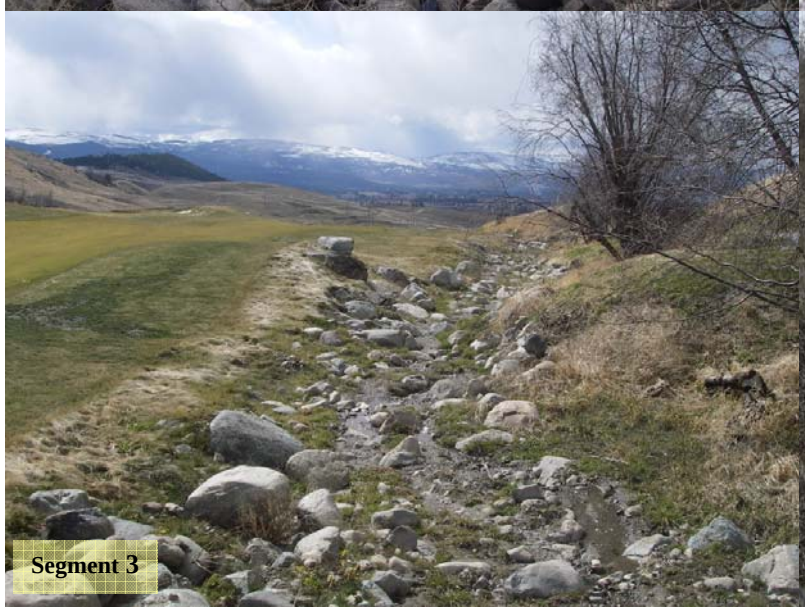
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Disturbed	low shrubs <2m	<5%	No	No	Medium	
2.0	Herbs/grasses	Disturbed	low shrubs <2m	<5%	No	No	Medium	
3.0	Herbs/grasses	Disturbed	low shrubs <2m	<5%	No	No	Medium	Golf course
4.0	Herbs/grasses	Disturbed	low shrubs <2m	<5%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	No	No	Medium	
2.0	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	No	No	Medium	
3.0	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	No	No	Medium	Golf course
4.0	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
1.0		
2.0		
3.0		
4.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_high		Moderate	Riparian planting
2.0	Both_banks_high		Moderate	Riparian planting
3.0	Both_banks_high	Flows through golf course	Moderate	Riparian planting
4.0	Both_banks_high	Ditched along gravel service road	Low	Riparian planting

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



Campbell Industry Brook

Segment(s): 5 - 7

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Modified	Ephemeral	174	Other	8.0	0	Unknown	
6.0	Natural	Ephemeral	451	Other	4.0	41-70%	Unknown	Undefined channel
7.0	Modified	Ephemeral	320	Cascade/Pool	8.0	71-90%	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	0	100	0	0	0	0	0.50	1.00	0.05	0.30	
6.0	20	80	0	0	0	0	0.00	0.00	0.00	0.00	Undefined channel
7.0	0	34	60	5	1	0	0.60	1.20	0.05	0.30	

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	Incapable of supporting fish therefore no instream cover recorded
6.0	0	0	0	0	0	0	0	0	Incapable of supporting fish therefore no instream cover recorded
7.0	0	0	0	0	0	0	0	0	Incapable 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	Herbs/grasses	Disturbed	low shrubs <2m	<5%	No	No	Medium	
6.0	Mixed forest	Natural	mature forest	67-100%	<5	No	High	Cottonwood riparian gully with wet swamp sites within
7.0	Broadleaf forest	Disturbed	Sapling >10m	67-100%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	No	No	Medium	
6.0	Mixed forest	Natural	Mature	34-66%	<5	No	Medium	Cottonwood riparian gully with wet swamp sites within
7.0	Broadleaf forest	Disturbed	Sapling >10m	67-100%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
5.0		
6.0		
7.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	1_bank_low		Moderate	Riparian planting
6.0	1_bank_low		Low	Riparian planting
7.0	Both_banks_mod		Moderate	Riparian planting

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

Dewdney Creek
Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Modified		391	Riffle/Pool	0.0	71-90%	Unknown	Confirmed surface water connection to Mission Creek; Rural residential and agricultural disturbance
2.0	Natural		97	Riffle/Pool	2.0	>90%	Unknown	Channel more narrow through very moist ACT riparian with intermittent swampy areas - skunk cabbage
3.0	Natural		114	Riffle/Pool	3.0	>90%	Unknown	More confined channel than segment 2; Confirmed surface water connection to Mission Creek
4.0	Modified		150	Slough	1.0	>90%	Unknown	Constructed ponds and rural modifications; Confirmed surface water connection to Mission 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	90	10	0	0	0	0	2.00	4.50	0.07	0.20	
2.0	10	90	0	0	0	0	2.60	3.10	0.08	0.18	
3.0	10	90	0	0	0	0	1.40	1.70	0.08	0.20	Small tribs along left bank where groundwater discharge occurs in swamp/low floodplain riparian
4.0	60	40	0	0	0	0	12.00	12.00	1.00	1.00	

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	25	0	0	45	10	35	10	0	
2.0	25	0	0	30	5	55	10	0	
3.0	10	0	0	25	0	50	25	0	Small trib with abundant woody debris and instream/overstream veg.-low pool cover-no fish observed
4.0	30	0	100	0	0	0	0	0	Ponds constitute greatest potential cover in this segment

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	tall shrubs 2-10m	67-100%	No	No	Medium	
2.0	Broadleaf forest	Natural	mature forest	67-100%	<5	<5	High	
3.0	Broadleaf forest	Natural	mature forest	67-100%	<5	No	High	
4.0	Mixed forest	Rural_Residential	mature forest	5-33%	No	No	High	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Broadleaf forest	Disturbed	tall shrubs 2-10m	67-100%	>=5	<5	Medium	
2.0	Broadleaf forest	Natural	mature forest	67-100%	<5	<5	High	
3.0	Broadleaf forest	Natural	mature forest	67-100%	<5	>=5	High	
4.0	Mixed forest	Rural_Residential	mature forest	5-33%	No	No	High	

Segment	Comment - Flora	Comment - Fauna
1.0	Cottonwood,rose,skunk cabbage, scouring rush, reed canary grass	B-BCCH,B-BBMA,B-RTHA, B-STJA, B-NOFL,B-AMGO
2.0		
3.0	Very moist to wet ACT riparian and alder - skunk cabbage swamp communities	
4.0	Mixture of native and horticultural vegetation surrounding ponds	

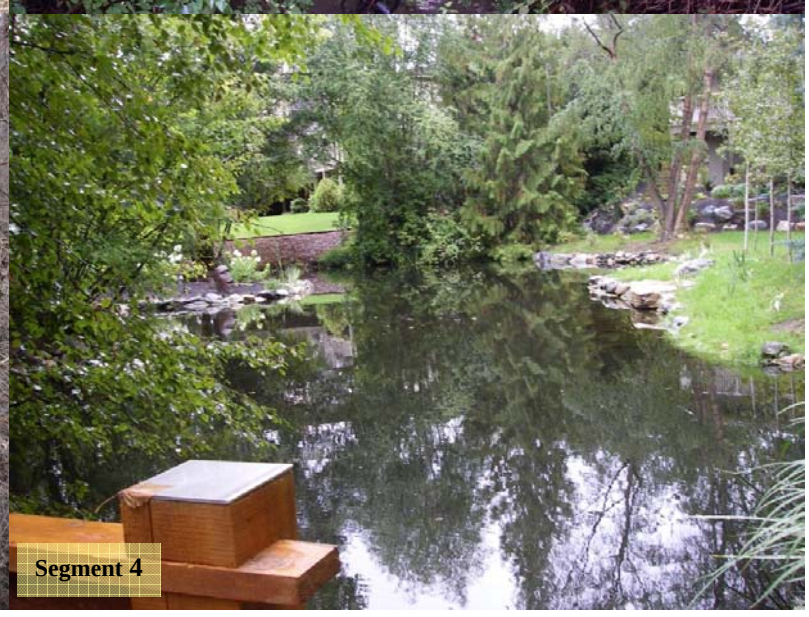
	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	1_bank_low	Riparian management and clearing in conjunction with gas pipeline that parallels stream	Nil	Preserve this area
2.0	1_bank_low	Gas Right of Way with intermittent encroachment	Nil	Leave and protect critical riparian and swamp communities and groundwater discharge zones
3.0	1_bank_low		Nil	Leave and protect critical riparian and swamp communities and groundwater discharge zones
4.0	Both_banks_mod	Rural ponds and landscaping	Low	Private property/maintain water quality and hydrology

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

Dewdney Creek
Segment(s): 5

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Modified		181	Cascade	5.0	71-90%	Unknown	Confirmed surface water connection to Mission Creek; Flows through riparian gully

	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	35	25	10	0	0	1.20	1.40	0.03	0.12	

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	

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	Broadleaf forest	Rural_Residential	young forest	67-100%	No	No	Medium	Disturbance and some debris on banks

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Broadleaf forest	Rural_Residential	young forest	67-100%	No	No	Medium	Minor downcutting and channel definition

Segment	Comment - Flora	Comment - Fauna
5.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_low		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 5

Dewdney Creek Tributary 1

Segment(s): 1

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Natural		93	Riffle/Pool	0.5	>90%	Unknown	Confirmed surface water connection to Mission Creek; Originates from groundwater discharge in very moist riparian /swamp communities

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
1.0	40	60	0	0	0	0	1.80	2.00	0.03	0.07	

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	1st order tributary

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	Natural	mature forest	67-100%	<5	No	High	Very moist to wet riparian and swamp communities

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Broadleaf forest	Natural	mature forest	67-100%	<5	No	High	

Segment	Comment - Flora	Comment - Fauna
1.0	Very moist to wet ACT riparian and alder - skunk cabbage swamp communities	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Nil		High	Priority for conservation

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

Dewdney Creek Tributary 2

Segment(s): 1

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Modified		50	Riffle/Pool	0.5	>90%	Unknown	Confirmed surface water connection to Mission 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	20	80	0	0	0	0	1.60	2.00	0.10	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	1st order tributary

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	mature forest	67-100%	<5	No	High	Encroaching rural disturbance

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Broadleaf forest	Natural	mature forest	67-100%	<5	No	High	Encroaching rural disturbance

Segment	Comment - Flora	Comment - Fauna
1.0	Very moist to wet ACT riparian and alder - skunk cabbage swamp communities	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	1_bank_low		High	Priority for conservation

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

Gopher Creek
Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Natural		404	Riffle/Pool	6.0	1-20%	Unknown	
2.0	Natural		385	Riffle/Pool	7.0	1-20%	Unknown	
3.0	Natural		578	Riffle/Pool	8.0	1-20%	Unknown	
4.0	Modified		606	Riffle/Pool	6.0	1-20%	Unknown	

	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	90	10	0	0	0	0.45	0.60	0.20	0.40	
2.0	0	80	20	0	0	0	0.50	0.80	0.10	0.30	
3.0	0	70	25	5	0	0	0.70	1.00	0.10	0.30	
4.0	0	70	25	5	0	0	0.50	0.80	0.15	0.30	

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	No instream cover recorded since confirmed non-fish stream
2.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
3.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
4.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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	Shrubs	Rural_Residential	tall shrubs 2-10m	34-66%	No	No	Medium	
2.0	Mixed forest	Natural	young forest	67-100%	No	No	Medium	
3.0	Mixed forest	Disturbed	young forest	34-66%	No	No	Medium	
4.0	Mixed forest	Rural_Residential	young forest	34-66%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Shrubs	Rural_Residential	low shrubs <2m	34-66%	No	No	Medium	
2.0	Mixed forest	Natural	young forest	67-100%	No	<5	Medium	
3.0	Mixed forest	Disturbed	young forest	34-66%	No	<5	Medium	
4.0	Mixed forest	Rural_Residential	young forest	5-33%	No	<5	Medium	

Segment	Comment - Flora	Comment - Fauna
1.0	Cottonwood, birch, snowberry, red-osier dogwood	
2.0	Ponderosa pine, birch, rose, snowberry	
3.0	Ponderosa Pine, Birch, Rose, Snowberry	
4.0	Douglas fir, birch	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_mod		Low	
2.0	Both_banks_low		Low	
3.0	Both_banks_mod		Low	
4.0	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 1


Segment 2


Segment 3


Segment 4

Gopher Creek

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Natural		360	Riffle/Pool	10.0	1-20%	Unknown	
6.0	Modified		522	Riffle/Pool			Unknown	No access to property - non SHIM line, air photo and topographic interpretation
7.0	Natural		70	Riffle/Pool	7.0	1-20%	Unknown	
8.0	Modified	Wetland	1141	Slough	3.0	1-20%	Unknown	Series of wetlands and culverts

	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	50	40	10	0	0	0.50	0.80	0.15	0.30	
6.0											No access to property - non SHIM line, air photo and topographic interpretation
7.0	0	85	15	0	0	0	0.45	0.70	0.15	0.25	
8.0	50	50	0	0	0	0	19.00	22.00	0.00	0.00	

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	No instream cover recorded since confirmed non-fish stream
6.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
7.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
8.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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	Rural_Residential	young forest	34-66%	No	No	Medium	
6.0								No access to property - non SHIM line, air photo and topographic interpretation
7.0	Coniferous forest	Rural_Residential	young forest	34-66%	No	No	Medium	
8.0	Disturbed wetland	Disturbed	tall shrubs 2-10m	34-66%	No	No	Medium	

	Right Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Mixed forest	Rural_Residential	young forest	34-66%	No	<5	Medium	
6.0								No access to property - non SHIM line, air photo and topographic interpretation
7.0	Herbs/grasses	Rural_Residential	Grass / Herb	34-66%	No	No	Medium	
8.0	Disturbed wetland	Disturbed	low shrubs <2m	34-66%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
5.0	Pond pine, birch, rose, snowberry	
6.0		
7.0		
8.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_low		Low	
6.0				
7.0	Both_banks_mod		Low	
8.0	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 5

NO PHOTO

Segment 6


Segment 7


Segment 8

Gopher Creek

Segment(s): 9 - 12

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Modified		118	Slough	6.0	21-40%	Unknown	
10.0	Modified		127	Riffle/Pool	3.0	1-20%	Unknown	Wetland area
11.0	Modified		678	Riffle/Pool	10.0	1-20%	Unknown	
12.0								No defined channel; Very moist to wet reed canary grass meadow/marsh

	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	65	25	10	0	0	0.00	1.00	0.00	0.25	
10.0											Wetland Area
11.0	0	95	5	0	0	0	0.00	1.50	0.00	0.30	
12.0											No defined channel; Very moist to wet reed canary grass meadow/marsh

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	No instream cover recorded since confirmed non-fish stream
10.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
11.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
12.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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	Broadleaf forest	Rural_Residential	Grass / Herb	34-66%	No	No	Medium	
10.0	Disturbed wetland	Disturbed	tall shrubs 2-10m	5-33%	No	No	Medium	
11.0	Shrubs	Disturbed	tall shrubs 2-10m	34-66%	No	No	Medium	
12.0								No defined channel; Very moist to wet reed canary grass meadow/marsh

	Right Bank Riparian							
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Broadleaf forest	Rural_Residential	Grass / Herb	34-66%	No	<5	Medium	
10.0	Disturbed wetland	Disturbed	tall shrubs 2-10m	5-33%	No	No	Medium	
11.0	Shrubs	Disturbed	tall shrubs 2-10m	34-66%	No	No	Medium	
12.0								No defined channel; Very moist to wet reed canary grass meadow/marsh

Segment	Comment - Flora	Comment - Fauna
9.0	Cottonwood and birch	
10.0		
11.0		
12.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
9.0	Both_banks_mod		Low	
10.0	Both_banks_mod		Low	
11.0	Both_banks_mod		Low	
12.0		No defined channel; Very moist to wet reed canary grass meadow/marsh		No defined channel; Very moist to wet reed canary grass meadow/marsh

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

No Photo

Segment 12

Gopher Creek
Segment(s): 13 - 15

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
13.0	Modified	Ephemeral	137	Other	3.0	0	Unknown	Pooling occurs in shallow grassland depressions - vernal pools for amphibian reproduction
14.0	Modified	Ephemeral	375	Other	1.5	21-40%	Unknown	Livestock impacts to channel and riparian association
15.0	Modified	Ephemeral	755	Other	2.0	0	Unknown	

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
13.0	40	60	0	0	0	0	1.10	1.50	0.05	0.15	Soil and fines
14.0	40	60	0	0	0	0	1.80	2.20	0.05	0.20	Through water birch-willow-dogwood floodplain/swamp association
15.0	40	60	0	0	0	0	0.30	0.50	0.07	0.30	Discontinuous/poorly defined ephemeral channel through modified grassland gully/low shrub

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	No instream cover recorded since confirmed non-fish stream
14.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
15.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Through modified/disturbed grassland
14.0	Shrubs	Disturbed	sapling >10m	67-100%	No	No	High	Water birch-Douglas maple riparian gully
15.0	Shrubs	Disturbed	low shrubs <2m	5-33%	No	No	High	Mixed grassland/shrub (rose)

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
13.0	Herbs/grasses	Unknown	Grass / Herb	<5%	No	No	High	Through modified/disturbed grassland
14.0	Shrubs	Disturbed	sapling >10m	67-100%	No	No	High	Water birch-Douglas maple riparian gully
15.0	Shrubs	Disturbed	low shrubs <2m	5-33%	No	No	High	Mixed grassland/shrub (rose)

Segment	Comment - Flora	Comment - Fauna
13.0	knapweed; cheat grass; thistle; mustard; rose; sulfur cinquefoil	Killdeer; Northern Flicker; Mourning Dove; Red-tailed Hawk
14.0	Water birch; Douglas maple; dogwood; rose; willow sp.; fir	Killdeer; Northern Flicker; Mourning Dove; Red-tailed Hawk
15.0	Rose; agronomic grasses; aspen	Killdeer; Northern Flicker; Mourning Dove; Red-tailed Hawk

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
13.0	Both_banks_low	Disturbed grassland	Moderate	Weed management
14.0	Both_banks_mod	Intense livestock disturbance	Moderate	Channel restoration and build up to maintain floodplain viability (raise water table)
15.0	1_bank_mod	livestock	Moderate	Weed management

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

Gopher Creek Tributary

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Natural	Ephemeral	76	Cascade	10.0	71-90%	Unknown	Aspen riparian gully/thicket
2.0	Natural	Ephemeral	88	Cascade	10.0	21-40%	Unknown	Disturbed riparian gully
3.0	Modified	Ephemeral	140	Other	3.0	0	Unknown	Vernal, shallow channel through highly disturbed grassland; Shallow drainage path
4.0	Modified	Ephemeral	139	Riffle/Pool	5.5	21-40%	Unknown	Disturbed riparian/aspen gully; Intense cattle disturbance

	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	75	23	2	0	0	0.00	2.20	0.00	0.30	Downcut channel-1.2m
2.0	4	85	10	1	0	0	0.00	2.20	0.00	0.30	Soil; Channel downcutting less severe
3.0	50	50	0	0	0	0	0.00	0.55	0.00	0.05	Topsoil and fines
4.0	29	70	0	1	0	0	0.60	1.40	0.02	0.15	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
1.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
2.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
3.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
4.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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%	<5	No	Medium	Previous encroachment into riparian gully
2.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	<5	No	Medium	Mixed shrub, grasses, and invasive forbs
3.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Highly disturbed grassland
4.0	Broadleaf forest	Disturbed	young forest	5-33%	<5	No	Medium	Intermittent areas off minor bank instability from livestock

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Broadleaf forest	Disturbed	young forest	67-100%	<5	No	Medium	Young aspen stand through gully past encroachment evident-not recently disturbed. Channel erosion
2.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	<5	No	Medium	Mixed shrub, grasses, and invasive forbs
3.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Highly disturbed grassland
4.0	Broadleaf forest	Disturbed	young forest	5-33%	<5	No	Medium	Intermittent areas off minor bank instability from livestock

Segment	Comment - Flora	Comment - Fauna
1.0	Aspen; water birch;hawthorn;rose;red-osier dogwood	Northern Flicker; Black-capped Chickadee; American Goldfinch; Crow; House Finch
2.0	Aspen; red-osier dogwood; hawthorn; rose; reed canary grass; burdock; hounds tongue	Northern Flicker; Black-capped Chickadee; American Goldfinch; Crow; House Finch; Magpie
3.0	Sow thistle; mustard sp.; dock; mullein; orchard grass; cheat grass; quack grass	Northern Flicker; Red-breasted Nuthatch; American Goldfinch; Red-tailed Hawk; House Finch; Magpie
4.0	Aspen; Douglas maple; thistle; agronomic grasses; hounds tongue; rose; mullein; red-osier dogwood	Northern Flicker; Red-breasted Nuthatch; American Goldfinch; Red-tailed Hawk; House Finch; Magpie

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	Both_banks_low	Past disturbance-not recently disturbed	Low	
2.0	Both_banks_low	Past disturbance-not recently disturbed	Low	
3.0	Both_banks_high	livestock;grazing;oldfield	Low	Weed management
4.0	1_bank_high	Livestock	Moderate	Weed control/management

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

Gopher Creek Tributary

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Modified	Wetland	243	Wetland	0.0	0	Unknown	Wetland complex with high cattle use, disturbance; Beneath Fortis power line along R.O.W.
6.0	Modified	Ephemeral	70	Riffle/Pool	1.0	41-70%	Unknown	Aspen seepage / riparian gully
7.0	Modified	Ephemeral	182	Wetland	0.0	0	Unknown	Transition association; Intense cattle use of area
8.0	Modified	Ephemeral	86	Other	3.0	71-90%	Unknown	Thicket at bottom to mixed forest with mature pine/fir overstorey-Aspen sub-canopy; No defined channel - sub surface flows

	Substrates (%) [a]						Channel (m)				
Segment	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Comment Substrates/Channel
5.0	95	5	0	0	0	0	10.00	31.00			
6.0	50	50	0	0	0	0	0.00	1.40	0.00	0.05	Soil and fines
7.0	100	0	0	0	0	0	0.00	70.00			
8.0	25	75	0	0	0	0	0.00	0.00			No defined channel

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	No instream cover recorded since confirmed non-fish stream
6.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
7.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
8.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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	Disturbed wetland	Disturbed	low shrubs <2m	5-33%	<5	No	High	
6.0	Broadleaf forest	Disturbed	young forest	5-33%	No	No	High	Cattle have removed much of shrub stratum. Mature pine along slope toe
7.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Transition association with adjacent grassland/conifer woodland steep slope
8.0	Mixed forest	Natural	mature forest	<5%	No	<5	High	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Disturbed wetland	Disturbed	mature forest	5-33%	<5	>=5	Medium	Wetland through gully with veteran fir along mid slope to slope toe adjacent wetland
6.0	Broadleaf forest	Disturbed	young forest	<5%	<5	<5	High	Cattle have removed much of shrub stratum. Mature pine along slope toe
7.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Disturbed grassland
8.0	Mixed forest	Disturbed	mature forest	5-33%	<5	<5	High	

Segment	Comment - Flora	Comment - Fauna
5.0	Cattail; smartweed; water avens; rushes; reed canary grass; willow sp.; Douglas maple; water birch	Northern Flicker; Red-breasted Nuthatch; Goldfinch; Red-tailed Hawk; House Finch; Magpie, Junco
6.0	Aspen; pine; fir; rose; hawthorn; hounds tongue	Flicker; Boreal Chickadee; squirrel; Magpie; Red-breasted Nuthatch; Red-wing Blackbird
7.0	Reed canary grass; smartweed; water avens; water hemlock; willow sp.	Flicker; Red-wing Blackbird
8.0	Fir; pine; Douglas maple; aspen; rose; hawthorn	American Robin; Varied Thrush; Red-breasted Nuthatch; Hairy Woodpecker

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Both_banks_mod	Livestock	Moderate	Potential enhancement area - increase wetted levels and maintain vernal shallow open water community
6.0	Both_banks_low	Livestock	Moderate	Weed management
7.0	Both_banks_high	Intense cattle use-power corridor maintenance	Moderate	Weed management
8.0	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 5


Segment 6


Segment 7


Segment 8

Gopher Creek Tributary

Segment(s): 9 -11

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Natural	Ephemeral	90	Cascade/Pool	45.0	71-90%	Unknown	Steep gully; Predominantly shrub/thicket cover over channel
10.0	Natural	Ephemeral	168	Other	10.0	41-70%	Unknown	More open shrub thicket at bottom becoming more closed fir canopy near top at riparian bench area
11.0	Modified		165	Slough	0.5	1-20%	Unknown	Disturbed riparian bench follows slope toe of Black Mountain, past forestry 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
9.0	25	75	0	0	0	0	0.00	1.50	0.00	0.30	
10.0	25	75	0	0	0	0	0.50	1.80	0.02	0.10	
11.0	75	25	0	0	0	0	2.50	3.50	0.02	0.10	Very moist to wet riparian bench/floodplain-swamp association

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	No instream cover recorded since confirmed non-fish stream
10.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream
11.0	0	0	0	0	0	0	0	0	No instream cover recorded since confirmed non-fish stream

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	young forest	67-100%	No	No	High	
10.0	Mixed forest	Natural	mature forest	67-100%	No	No	High	
11.0	Broadleaf forest	Natural	tall shrubs 2-10m	67-100%	No	No	High	Water birch-Douglas maple-cottonwood association

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	young forest	67-100%	<5	No	High	
10.0	Mixed forest	Natural	mature forest	67-100%	No	No	High	Tall shrub thicket (dogwood-Douglas maple) beneath fir and aspen canopy in gully
11.0	Mixed forest	Disturbed	young forest	34-66%	No	No	High	Logged - Mature cottonwood and saplings with tall shrub (dogwood, willow, water birch) understorey

Segment	Comment - Flora	Comment - Fauna
9.0	Fir; pine; Douglas maple; rose; red-osier dogwood	Robin; Black-capped Chickadee; Red-tailed Hawk
10.0	Fir; aspen; red-osier dogwood; Douglas maple	American Robin; Varied Thrush; Red-breasted Nuthatch; Hairy Woodpecker; Ruffed Grouse
11.0	Cottonwood; water birch; red-osier dogwood; fir; aspen; willow; Oregon grape	

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
9.0	1_bank_low		Low	
10.0	1_bank_low		Low	
11.0	1_bank_low		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

Hachey Creek

Segment(s): 1 - 4

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
1.0	Modified		521	Cascade	6.0	21-40%	Unknown	
2.0	Channelized		266	Riffle/Pool	5.0	21-40%	Unknown	
3.0	Ditch		186	Riffle/Pool	2.0	1-20%	Unknown	Tall 2 meter banks, erosion on both banks throughout segment
4.0	Ditch		163	Riffle/Pool	2.0	0	Unknown	Tall 2 meter banks

	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	20	55	25	0	0	0.00	0.95	0.00	0.25	
2.0	0	70	15	15	0	0	0.00	1.50	0.00	0.35	Erosion on both banks throughout segment
3.0	0	65	15	15	5	0	0.00	1.50	0.00	0.50	Erosion on both banks throughout segment
4.0	0	70	15	15	0	0	0.00	1.50	0.00	0.50	Erosion on both banks throughout segment

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	
2.0	0	0	0	0	0	0	0	0	
3.0	0	0	0	0	0	0	0	0	
4.0	0	0	0	0	0	0	0	0	

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	Disturbed	young forest	34-66%	No	No	Medium	Thinned out forest with rural residence
2.0	Herbs/grasses	Rural_Residential	Grass / Herb	34-66%	No	No	Medium	
3.0	Herbs/grasses	Rural_Residential	Grass / Herb	34-66%	No	No	Medium	Rural residences closer, ravine ended
4.0	Herbs/grasses	Rural_Residential	low shrubs <2m	34-66%	No	No	Medium	

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Disturbed	young forest	34-66%	No	No	Medium	Thinned out forest with rural residence
2.0	Shrubs	Rural_Residential	tall shrubs 2-10m	34-66%	No	No	Medium	
3.0	High Impervious	Disturbed	High_impervious	<5%	No	No	Medium	Road along right bank
4.0	Shrubs	Rural_Residential	low shrubs <2m	<5%	No	No	Medium	

Segment	Comment - Flora	Comment - Fauna
1.0	Ponderosa pine, cottonwood, Douglas fir	
2.0		
3.0	Snowberry, rose	
4.0		

	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	1_bank_mod		Low	
2.0	1_bank_mod		Low	
3.0	Both_banks_mod		Low	
4.0	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 1


Segment 2


Segment 3


Segment 4

Hachey Creek

Segment(s): 5 - 8

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
5.0	Ditch		138	Riffle/Pool	2.0	0	Unknown	Banks become less tall, erosion on both banks
6.0	Modified		30	Riffle/Pool	2.0	1-20%	Unknown	
7.0	Ditch		455	Riffle/Pool	2.0	0	Unknown	
8.0	Modified		247	Cascade	12.0	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	0	85	10	5	0	0	0.00	1.50	0.00	0.40	Erosion on both banks throughout segment
6.0	0	90	5	5	0	0	0.00	0.90	0.00	0.30	
7.0	0	85	5	5	0	0	0.00	1.50	0.00	0.50	Erosion on both banks throughout segment
8.0	0	60	15	20	5	0	0.00	1.00	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
5.0	0	0	0	0	0	0	0	0	
6.0	0	0	0	0	0	0	0	0	
7.0	0	0	0	0	0	0	0	0	
8.0	0	0	0	0	0	0	0	0	

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	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
6.0	Herbs/grasses	Rural_Residential	Grass / Herb	5-33%	No	No	Medium	
7.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
8.0	Mixed forest	Rural_Residential	young forest	5-33%	No	No	Medium	

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	5-33%	No	No	Medium	
7.0	Herbs/grasses	Rural_Residential	Grass / Herb	5-33%	No	No	Medium	
8.0	Mixed forest	Rural_Residential	young forest	5-33%	No	No	Medium	

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	1_bank_mod		Low	
6.0	Both_banks_mod		Low	
7.0	Both_banks_mod		Low	
8.0	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

Hachey Creek

Segment(s): 9 - 12

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Comment Class
9.0	Natural		238	Cascade	10.0	21-40%	Unknown	
10.0	Modified		91	Cascade	12.0	0	Unknown	Cleared through power corridor
11.0	Natural		808	Cascade	30.0	21-40%	Unknown	
12.0	Natural		427	Cascade	12.0	1-20%	Unknown	Dry again

	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	35	40	20	5	0	0.00	1.20	0.00	0.30	
10.0	0	20	40	30	10	0	0.00	1.20	0.00	0.30	
11.0	0	15	40	30	15	0	0.00	1.30	0.00	0.35	
12.0	0	25	40	30	5	0	0.00	1.30	0.00	0.35	

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	
10.0	0	0	0	0	0	0	0	0	
11.0	0	0	0	0	0	0	0	0	
12.0	0	0	0	0	0	0	0	0	

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	young forest	67-100%	No	No	Medium	
10.0	Mixed forest	Disturbed	tall shrubs 2-10m	34-66%	No	No	Medium	
11.0	Coniferous forest	Natural	young forest	34-66%	No	No	Medium	
12.0	Coniferous forest	Natural	young forest	34-66%	No	No	Medium	Forest fire burned through here in 2003

Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	young forest	67-100%	No	No	Medium	
10.0	Mixed forest	Disturbed	tall shrubs 2-10m	34-66%	No	No	Medium	
11.0	Coniferous forest	Natural	young forest	34-66%	No	No	Medium	
12.0	Coniferous forest	Natural	young forest	34-66%	No	No	Medium	Forest fire burned through here in 2003

Segment	Comment - Flora	Comment - Fauna
9.0		
10.0	Ponderosa pine, Douglas fir, snowberry, rose	
11.0	Ponderosa pine, Douglas fir, snowberry, rose	
12.0	Ponderosa pine, snowberry, rose, fireweed	

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

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

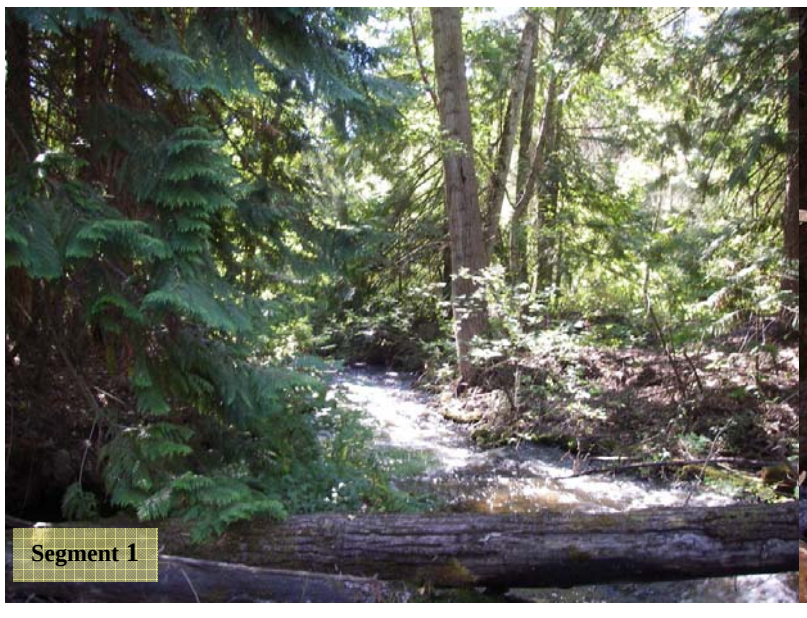
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Natural	mature forest	67-100%	>=5	<5	Medium	Cottonwood - cedar riparian
2.0	Mixed forest	Natural	mature forest	67-100%	>=5	<5	High	Canyon

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

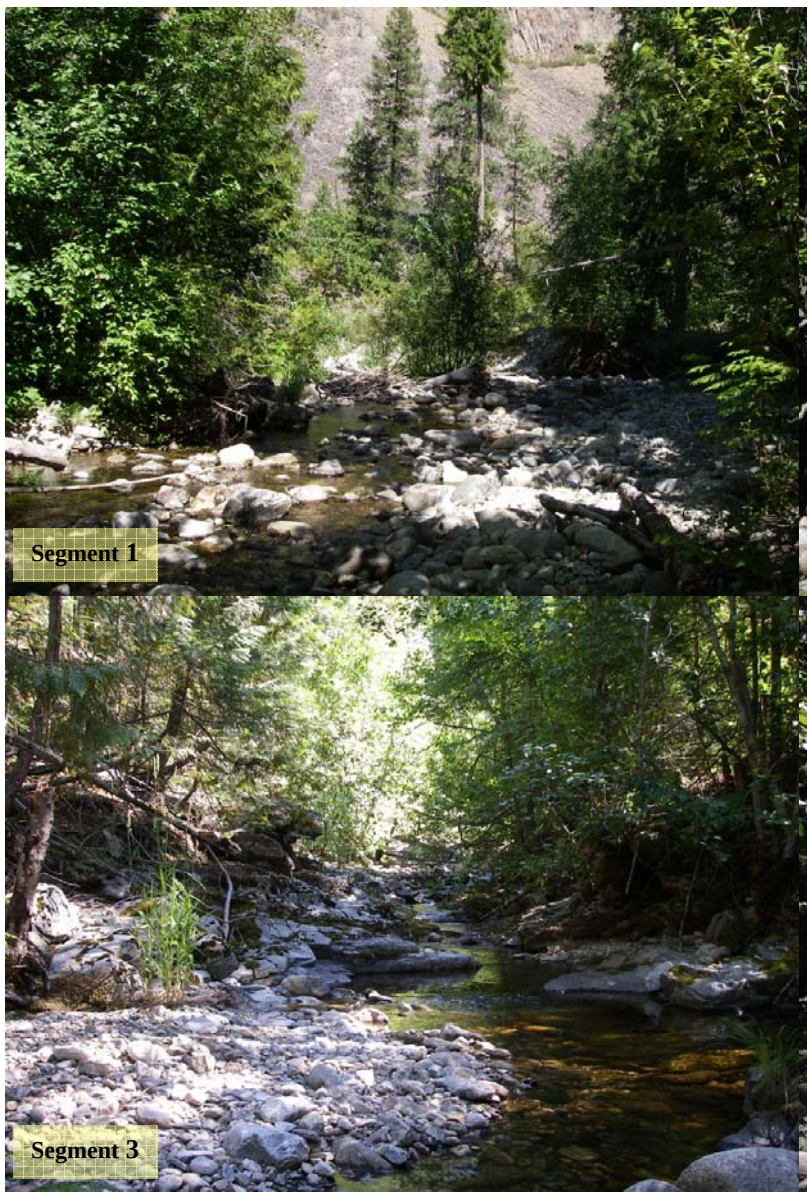
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Low	Floodplain area along left bank-flood channels
2.0	Mixed forest	Natural	mature forest	67-100%	<5	No	Low	More confined left bank with 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

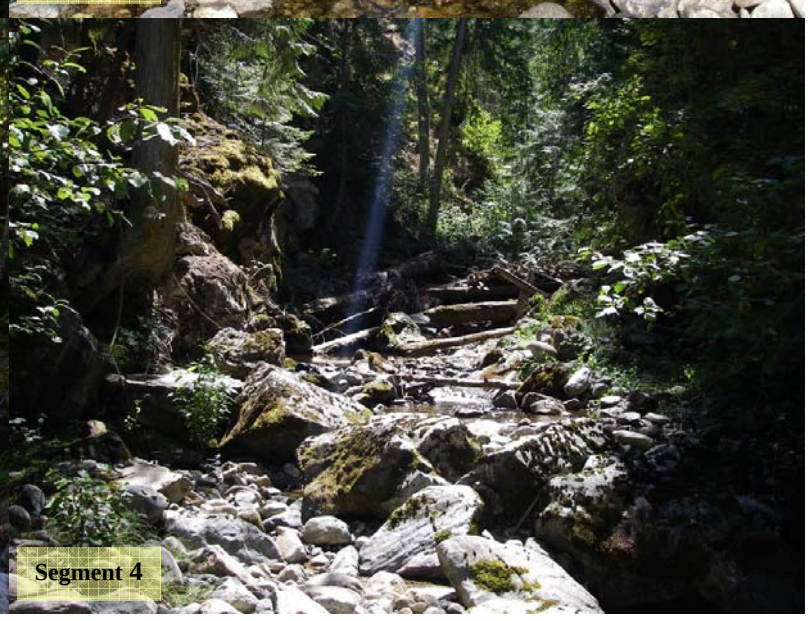
	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
1.0	1_bank_low	Past modifaction/channalization associated with irrigation works	Moderate	Reclaim broad riparian area recognizing high fish values and floodplain concerns
2.0	1_bank_low	Past modifaction/channalization 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


Segment 1


Segment 2

Segment 3


Segment 4

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

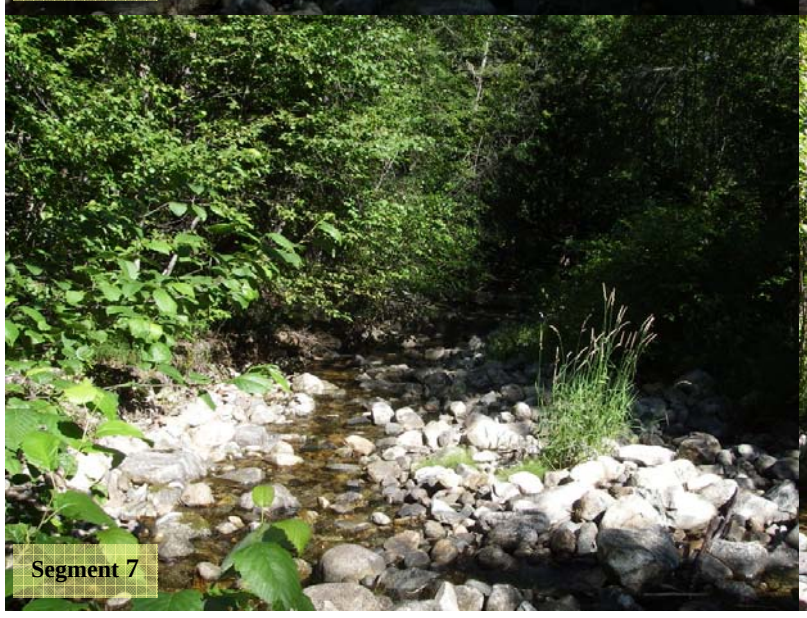
Segment	Comment - Flora	Comment - Fauna
5.0		Rainbow trout
6.0		Rainbow trout
7.0		Rainbow trout
8.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow sp.	Rainbow trout

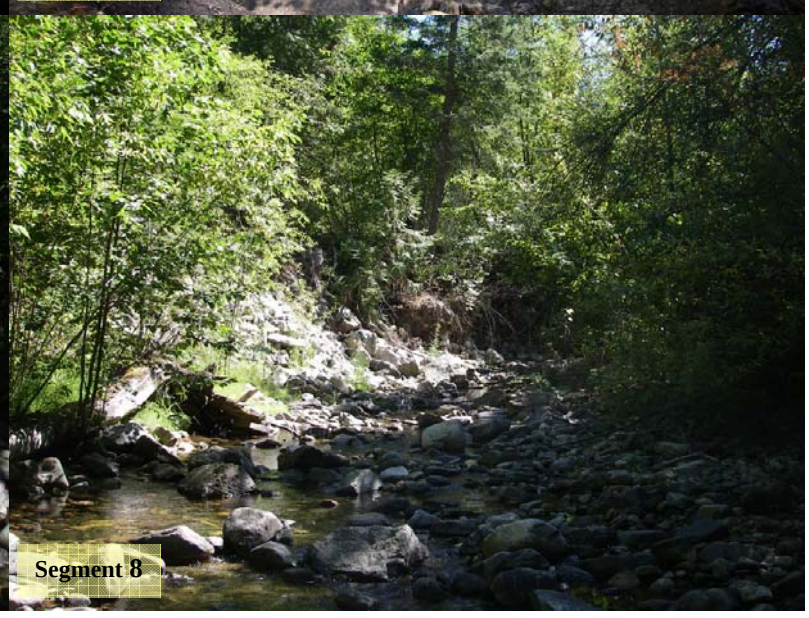
	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
5.0	Nil	Relic irrigation flume and abutments	Nil	
6.0	Nil		Nil	
7.0	Nil		Nil	
8.0	1_bank_mod	Quarry beyond left bank riparian band	Nil	

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

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

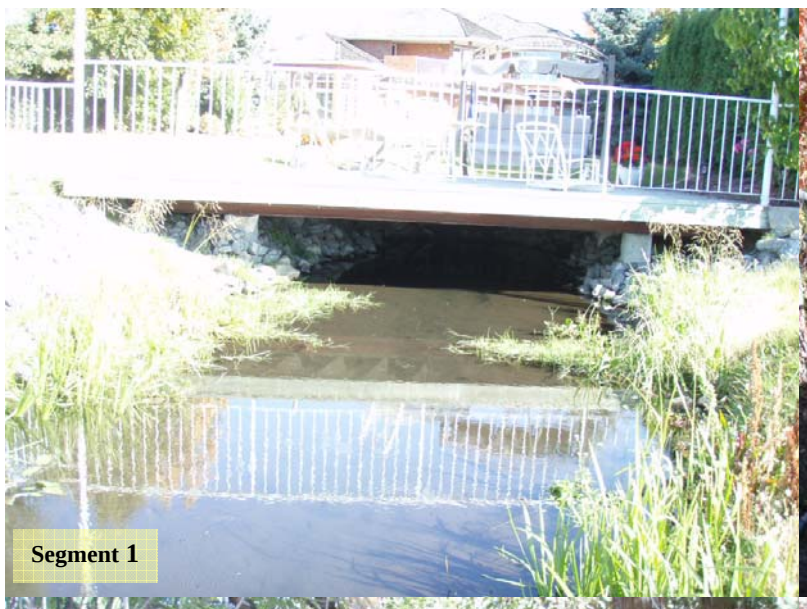
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
1.0	Medium_impervious	Urban_Residential						Culverted
2.0	Mixed forest	Urban_Residential	mature forest	5-33%	No	<5	High	
3.0	Mixed forest	Urban_Residential	mature forest	34-66%	No	No	High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

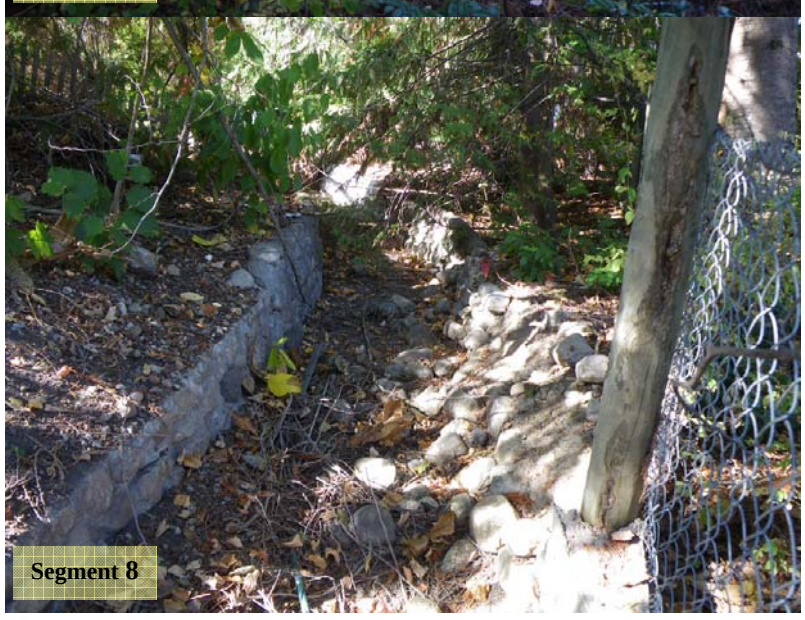
No **Photo**

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

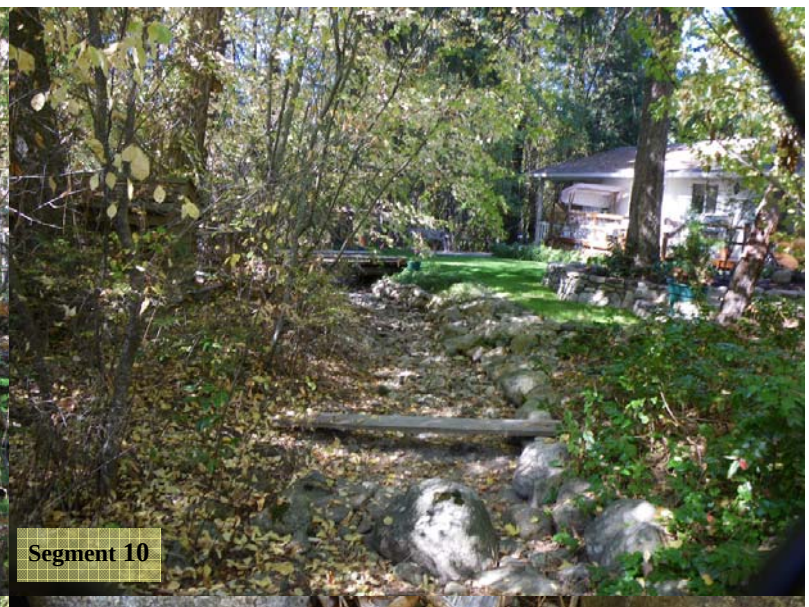
Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Mixed forest	Natural	mature forest	34-66%	>=5	>=5	High	
10.0	Mixed forest	Disturbed	mature forest	34-66%	<5	<5	High	Residential and natural woodland
11.0	Mixed forest	Disturbed	mature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

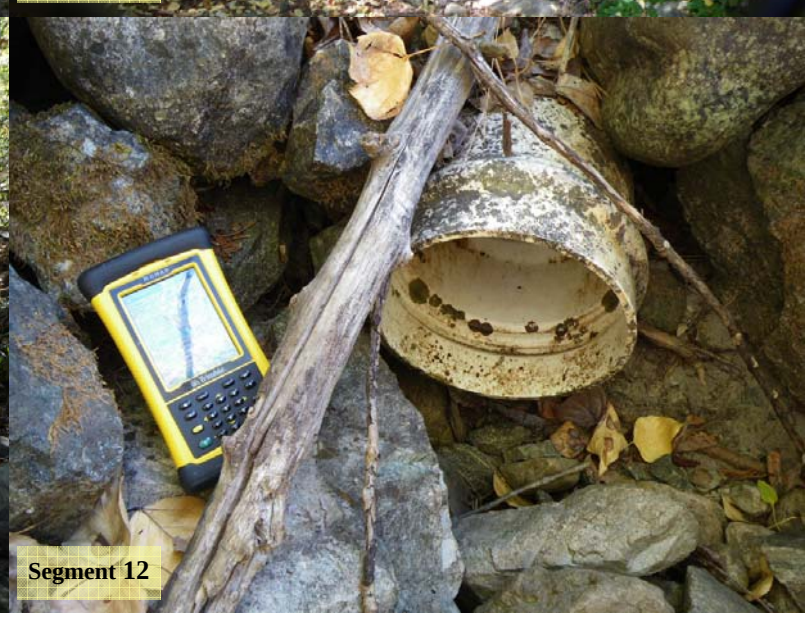
	Level of Impact [c]		Enhancement Opportunity	
Segment	Rating	Comment	Rating	Comment
9.0	1_bank_low		Nil	
10.0	Both_banks_low	Constructed diversion channel - naturalized	Low	
11.0	Both_banks_low	Constructed diversion channel - naturalized	Low	
12.0	Both_banks_high		Low	

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

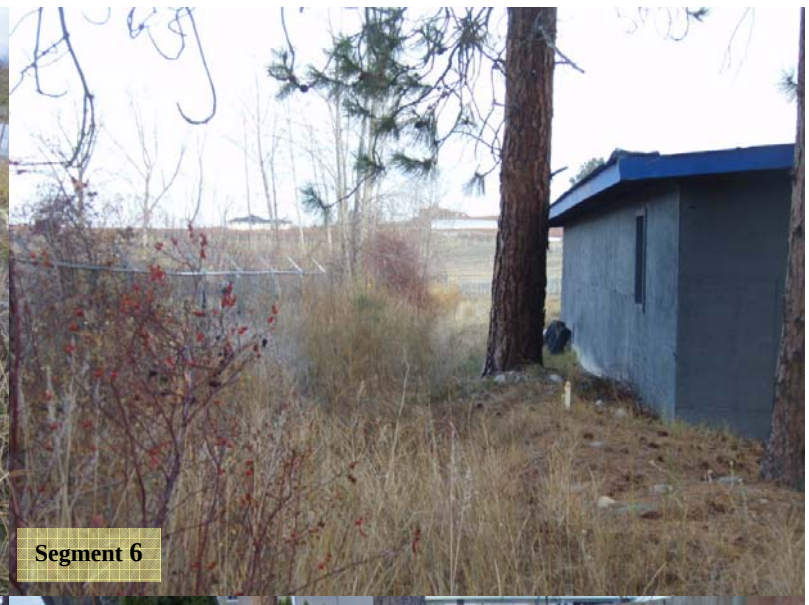
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	High Impervious	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
6.0	Planted Tree Farm	Agriculture	sapling >10m	<5%	No	No	Medium	
7.0	Coniferous forest	Rural_Residential	young forest	<5%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

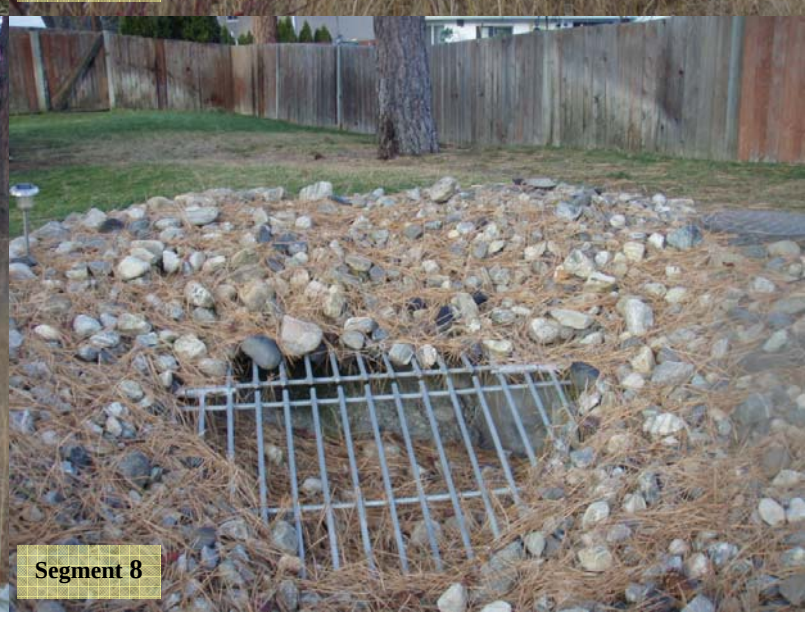
Right Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
5.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
6.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
7.0	Coniferous forest	Rural_Residential	young forest	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

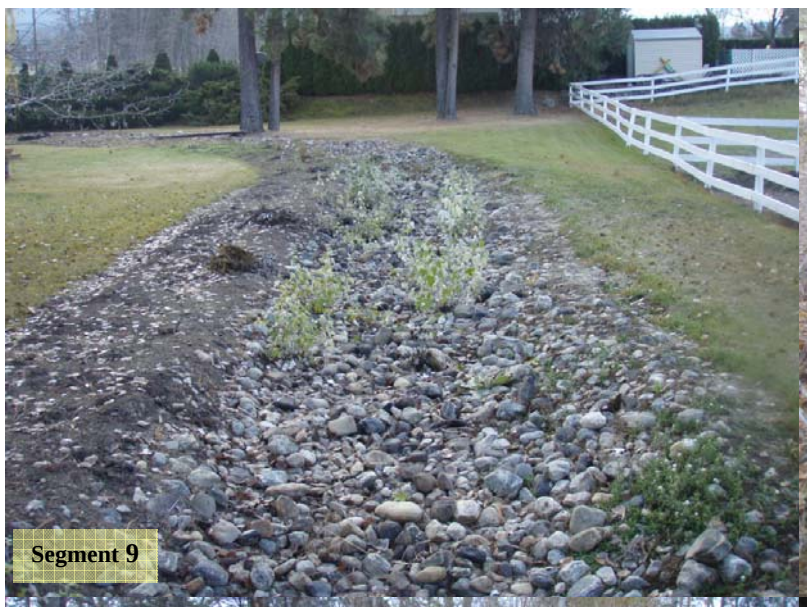
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
9.0	Herbs/grasses	Rural_Residential	Grass / Herb	<5%	No	No	Medium	
10.0	Shrubs	Rural_Residential	low shrubs <2m	67-100%	No	No	Medium	
11.0	Herbs/grasses	Rural_Residential	low shrubs <2m	5-33%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

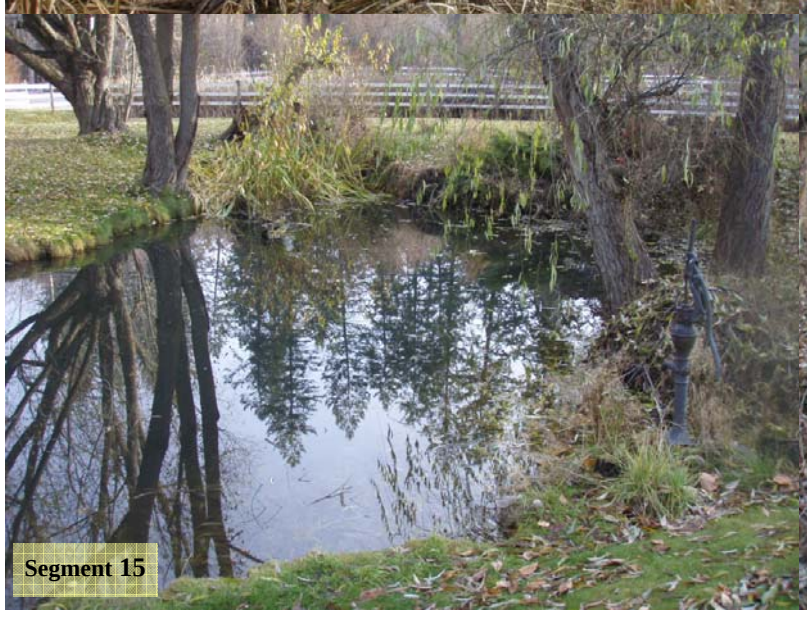
Segment	Comment - Flora	Comment - Fauna
13.0		
14.0	Water birch, snowberry, rose sp.	
15.0	Pacific willow, water birch, snowberry, rose sp.	
16.0		

	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	Agricultue	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

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

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

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

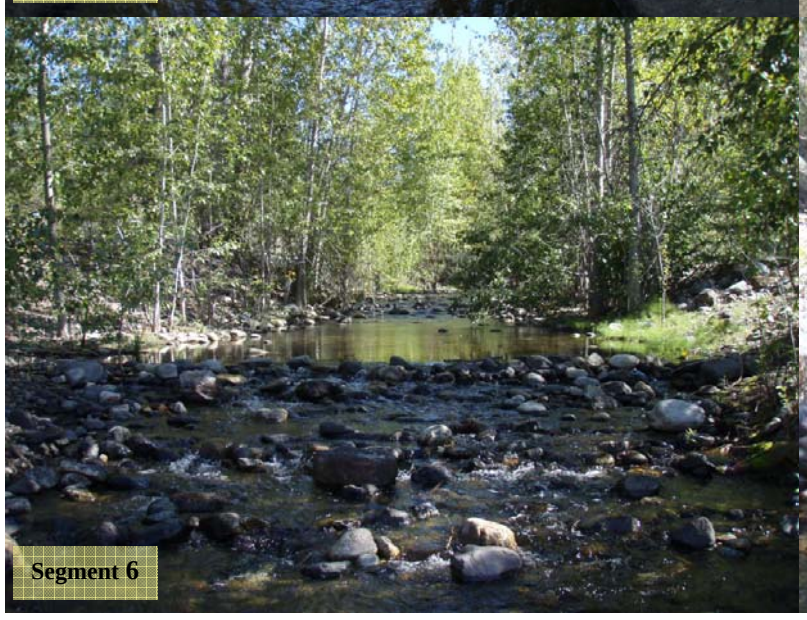
Left Bank Riparian								
Segment	Class	Qualifier	Stage	Shrub cover	Snags	Veteran Trees	Bank stability	Comment
4.0	Broadleaf forest	Disturbed	mature forest	34-66%	No	No	High	
5.0	Herbs/grasses	Disturbed	Grass / Herb	<5%	No	No	High	Left bank is grass herb, gradient up to 5%
6.0	Broadleaf forest	Disturbed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

Segment 8

MAP FIGURES

SENSITIVE HABITAT AND INVENTORY MAPPING (SHIM)

Overview Map

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

LEGEND

- Watercourse
- Transportation
- Lake

1 0.5 0 1 2 3 Kilometers

1:75,000

N W E S

City of Kelowna

ECOSCAPE Environmental Consultants Ltd.

Okanagan Basin Water Board

Regional District Central Okanagan

Tsinstikeptumn 10

Okanagan Lake

Upper Vernon Creek

Whelan Creek

Scotty Creek

Mill Creek

Campbell-Industry Creek

Bauer Brook

Francis Brook

Brandt Creek

Glenmore Road

Harvey Avenue

Gopher Creek

Gordon Drive

Benvoulin Road

Fascieux Creek

Dewdney Creek

KLO Road

Wilson Creek

Michaelbrook Creek

Lakeshore Road

Rumohr Creek

Priest Creek

Hydraulic Creek

KLO Creek

Thompson Creek

Hatchery Creek

North Fork Bellevue Creek

Bellevue Creek

Rembler Creek

Leon Creek

Bertram Creek

Bruce Creek

Lebanon Creek

Varty Creek

Simpson's Spring

Cedar Creek

Regional District Central Okanagan

314000 316000 318000 320000 322000 324000 326000 328000 330000 332000

5542000 5540000 5538000 5536000 5534000 5532000 5530000 5528000 5526000 5524000 5522000 5520000 5518000 5516000 5514000

BAUER BROOK

Segments 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
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Prepared for:	City of Kelowna
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Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction
Beaver Dam
Dam
Persistent Debris
Rock

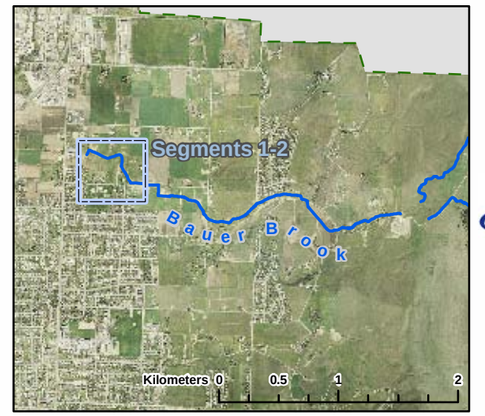
Modification
Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat
Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody
Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

328800 328850 328900 328950 329000 329050 329100 329150 329200 329250 329300 329350 329400 329450 329500 329550

5531600 5531550 5531500 5531450 5531400 5531350 5531300 5531250 5531200 5531150 5531100

BAUER BROOK

Segments 2-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
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Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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BAUER BROOK

Segment 4

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

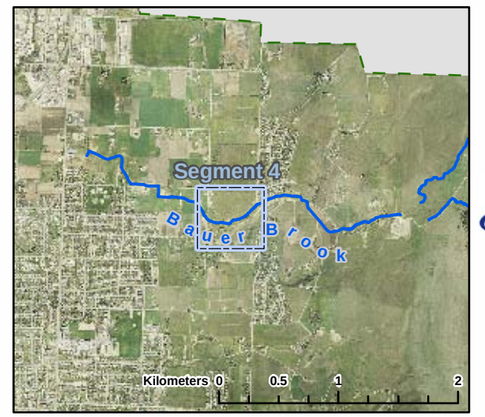
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

329800 329850 329900 329950 330000 330050 330100 330150 330200 330250 330300 330350 330400 330450 330500 330550

5531200 5531150 5531100 5531050 5531000 5530950 5530900 5530850 5530800 5530750

BAUER BROOK

Segments 5-7

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
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Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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BAUER BROOK

Segments 8-11

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

BERTRAM CREEK

Segments 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

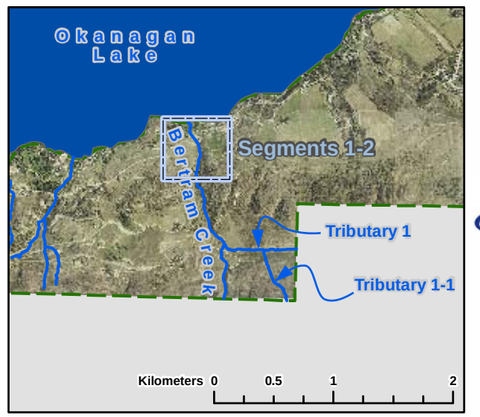
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

BERTRAM CREEK

Segments 2-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

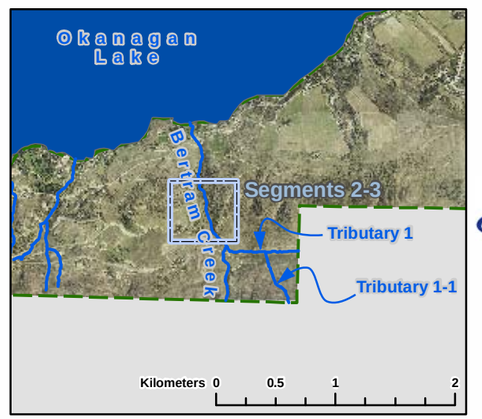
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

315800 315850 315900 315950 316000 316050 316100 316150 316200 316250 316300 316350 316400 316450 316500 316550

5517550 5517500 5517450 5517400 5517350 5517300 5517250 5517200 5517150 5517100

BERTRAM CREEK TRIBUTARY 1 AND 1-1

Bertram Creek Tributary 1 (East) and Tributary 1-1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

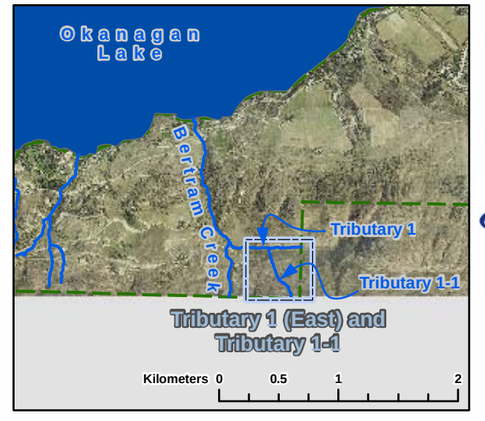
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

BERTRAM CREEK AND TRIBUTARY 1

Bertram Creek Segment 3 and Tributary 1 (West)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

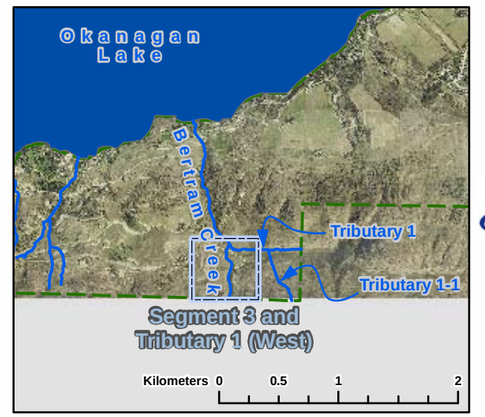
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

BRUCE CREEK

Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction

Beaver Dam
Dam
Persistent Debris
Rock

Modification

Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat

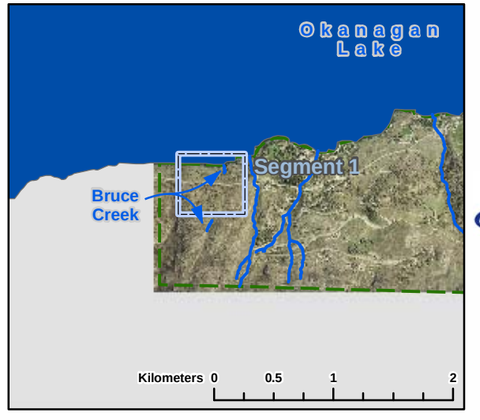
Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody

Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

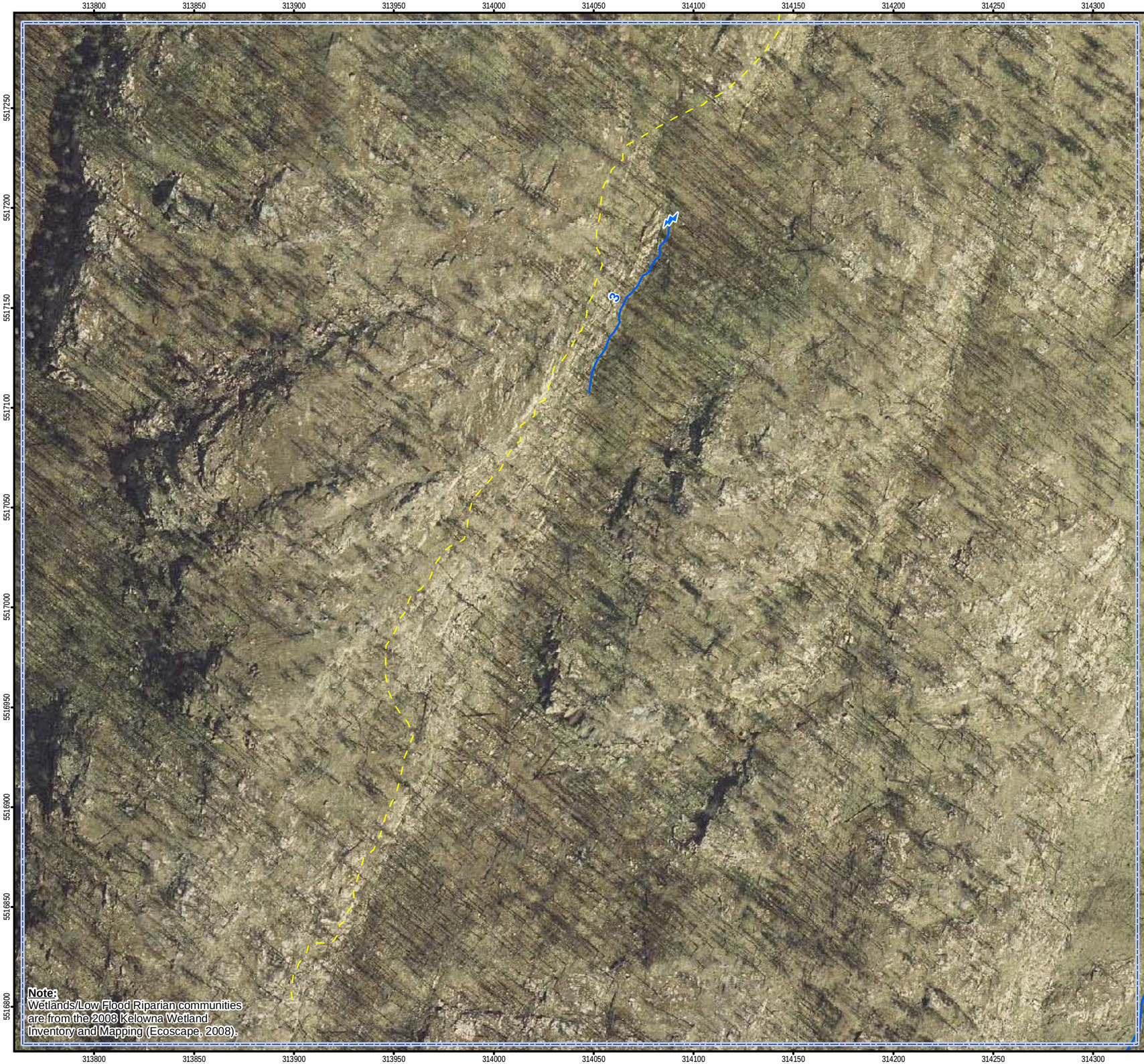
Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.



BRUCE CREEK

Segment 3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

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N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

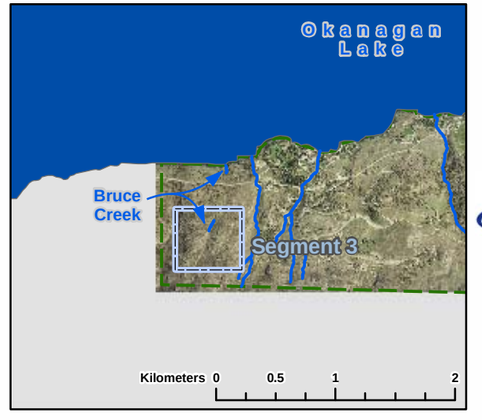
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

CAMPBELL-INDUSTRY BROOK

Segments 1-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction

Beaver Dam
Dam
Persistent Debris
Rock

Modification

Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat

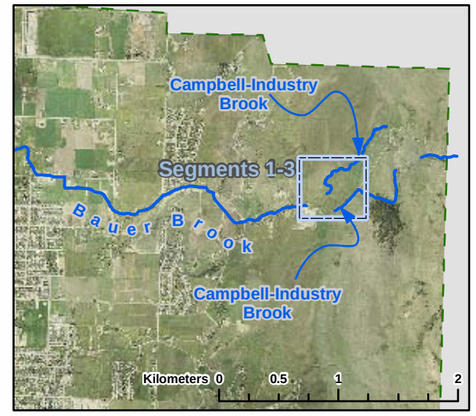
Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody

Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Bauer Brook

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

CAMPBELL-INDUSTRY BROOK

Segment 3 (North)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

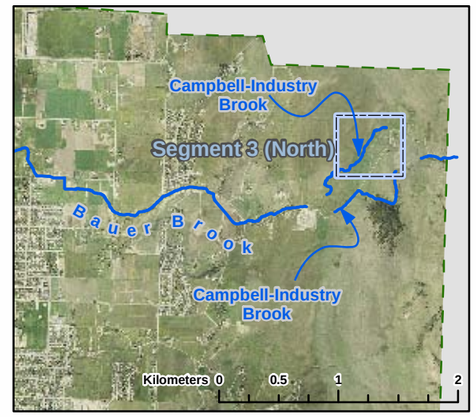
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

CAMPBELL-INDUSTRY BROOK

Segments 4-5

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

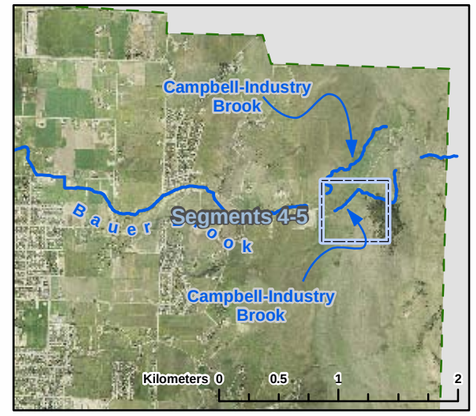
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

331600 331650 331700 331750 331800 331850 331900 331950 332000 332050 332100 332150 332200 332250 332300 332350

5531200 5531150 5531100 5531050 5531000 5530950 5530900 5530850 5530800 5530750 5530700

CAMPBELL-INDUSTRY BROOK

Segment 6

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

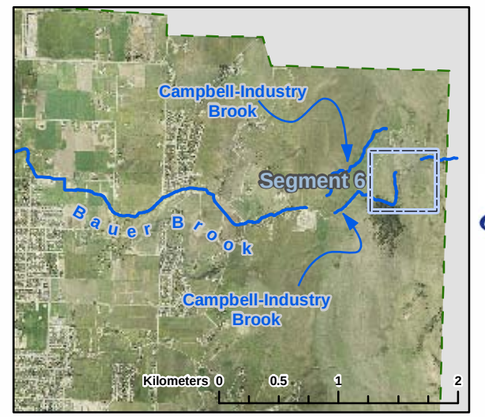
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

332000 332050 332100 332150 332200 332250 332300 332350 332400 332450 332500 332550 332600 332650 332700 332750

5531450 5531400 5531350 5531300 5531250 5531200 5531150 5531100 5531050 5531000

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

CAMPBELL-INDUSTRY BROOK

Segment 7

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

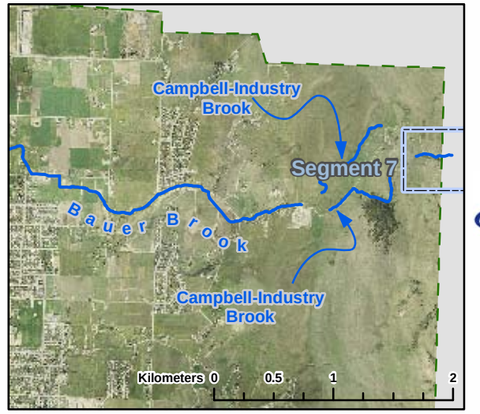
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.094 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

DEWDNEY CREEK AND TRIBUTARIES

Segments 1-4 and Dewdney Creek Tributaries 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

DEWDNEY CREEK AND TRIBUTARIES

Segments 2-5 and Dewdney Creek Tributaries 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Dewdney Creek Tributary 1

Dewdney Creek Tributary 2

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

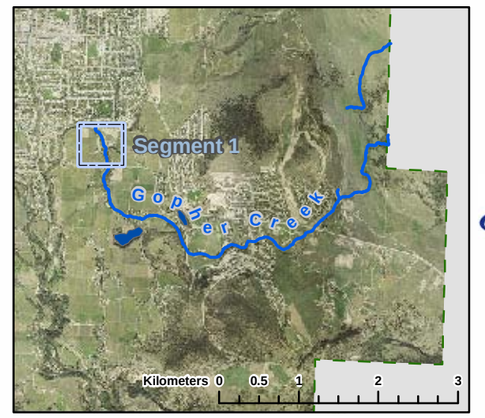
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segment 2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Fences
- Garbage/Pollution
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- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

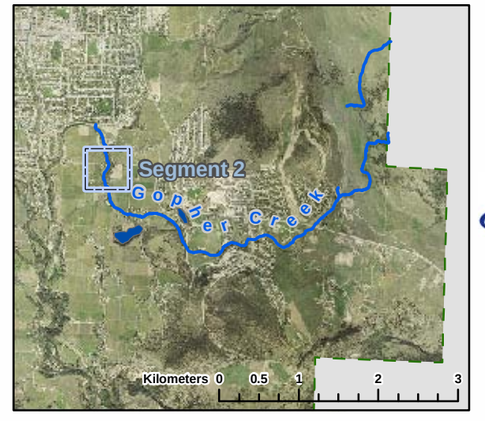
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

328750 328800 328850 328900 328950 329000 329050 329100 329150 329200 329250 329300 329350 329400 329450 329500

5527500 5527450 5527400 5527350 5527300 5527250 5527200 5527150 5527100 5527050

GOPHER CREEK

Segment 3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

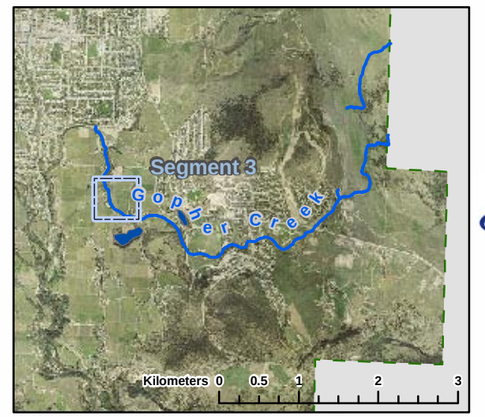
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segment 4

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

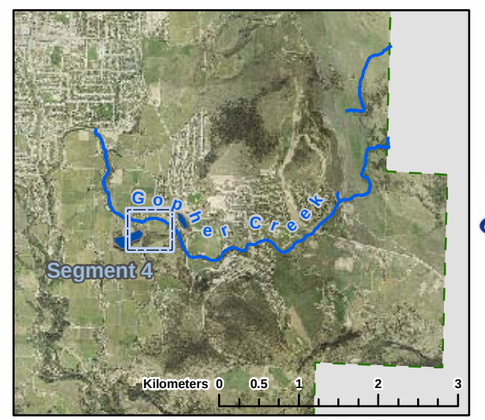
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

329300 329350 329400 329450 329500 329550 329600 329650 329700 329750 329800 329850 329900 329950 330000 330050

5526800 5526750 5526700 5526650 5526600 5526550 5526500 5526450 5526400 5526350

GOPHER CREEK

Segments 5-6

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
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Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

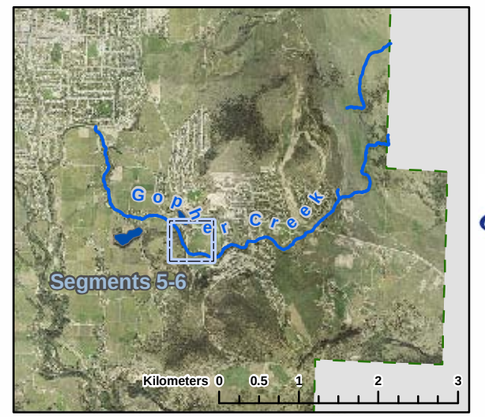
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segments 6-8

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

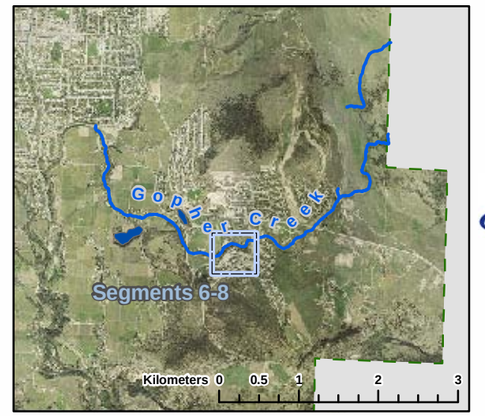
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segment 8 (East)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

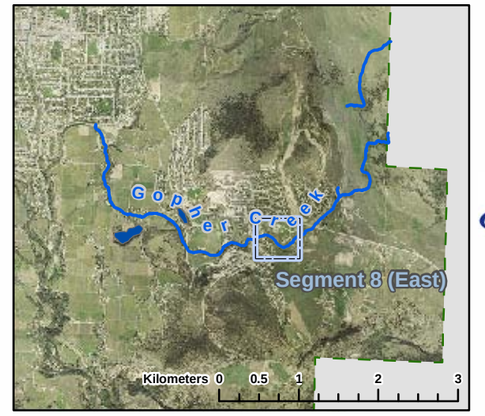
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segments 13-15

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
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- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
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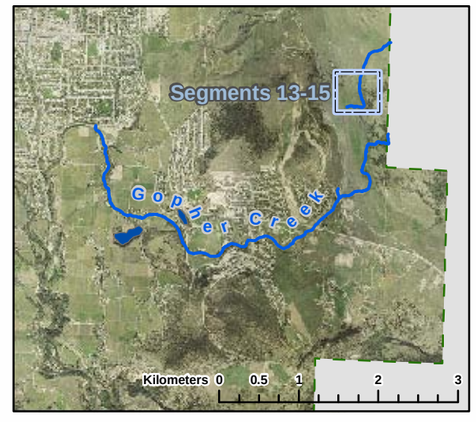
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

GOPHER CREEK

Segments 9-11

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

Last 120 Metres of Gopher Creek Segment 11 is shown in Gopher Creek Tributary Segments 1-6.

11

10

8

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Fences
- Garbage/Pollution
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Fish Habitat

- Deep Pool
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- Overstream Vegetation
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- Undercut Bank

Waterbody

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- Ditch
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- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
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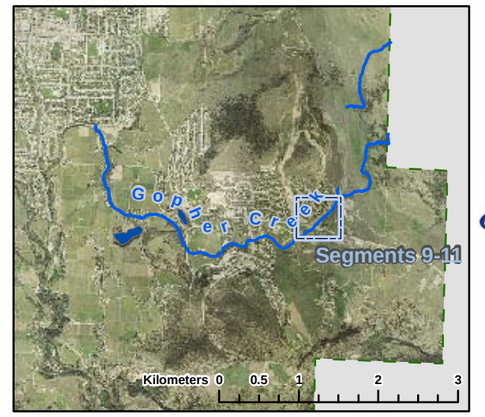

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

331400 331450 331500 331550 331600 331650 331700 331750 331800 331850 331900 331950 332000 332050 332100 332150

5526900 5526850 5526800 5526750 5526700 5526650 5526600 5526550 5526500 5526450

GOPHER CREEK

Segment 15 (North)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
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Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Fences
- Garbage/Pollution
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- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
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- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
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Feature Information:	Field Inventory
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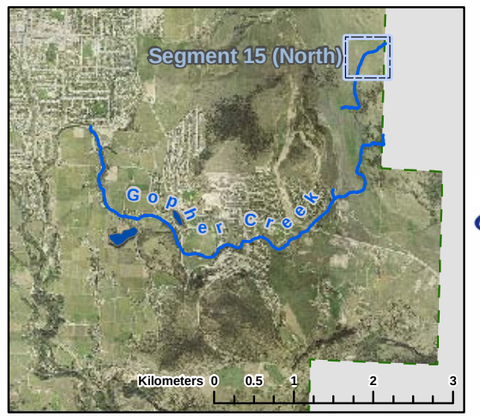
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

332100 332150 332200 332250 332300 332350 332400 332450 332500 332550 332600 332650 332700 332750 332800 332850

5528950 5528900 5528850 5528800 5528750 5528700 5528650 5528600 5528550 5528500 5528450

GOPHER CREEK TRIBUTARY

Segments 1-6

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
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Obstruction

- Beaver Dam
- Dam
- Persistent Debris
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Modification

- Bridge
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Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
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- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
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- Wetland

SOURCE INFORMATION

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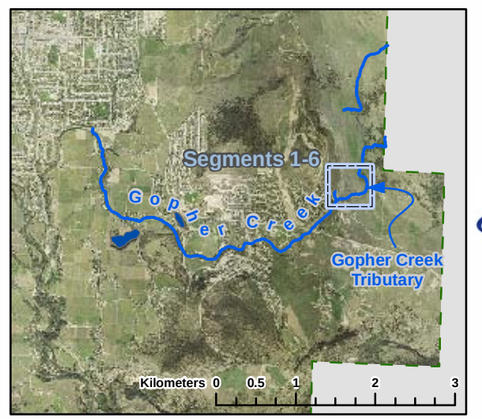
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

331850 331900 331950 332000 332050 332100 332150 332200 332250 332300 332350 332400 332450 332500 332550 332600

5527350 5527300 5527250 5527200 5527150 5527100 5527050 5527000 5526950 5526900

GOPHER CREEK TRIBUTARY

Segments 7-11

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

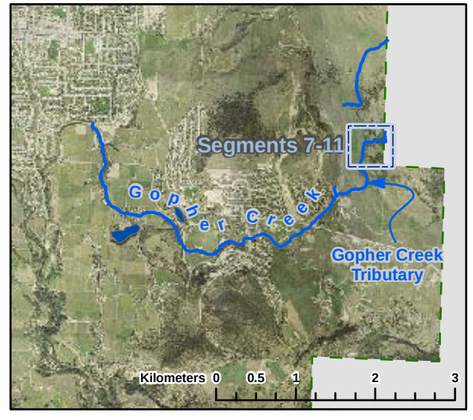
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

HACHEY CREEK

Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

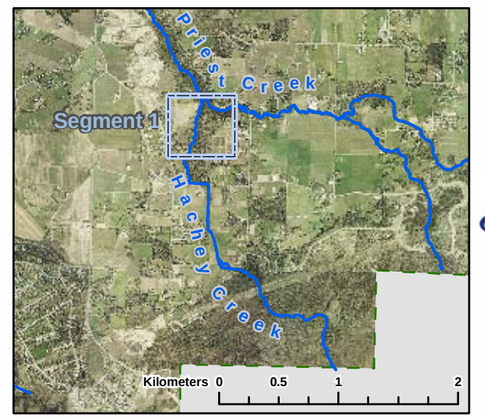
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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HACHEY CREEK

Segments 11-12

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

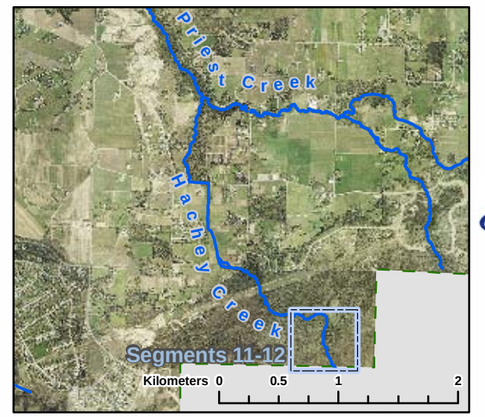
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

HACHEY CREEK

Segments 2-5

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

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1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

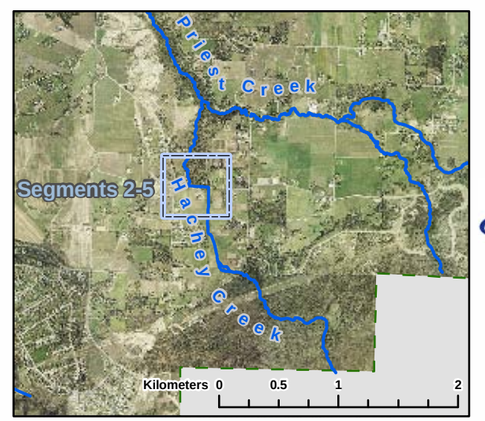
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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HACHEY CREEK

Segments 5-8

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
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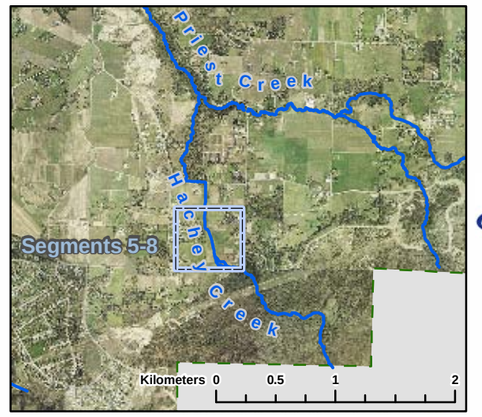
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



Note:
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City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

HACHEY CREEK

Segments 9-11

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

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N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction

Beaver Dam
Dam
Persistent Debris
Rock

Modification

Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat

Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody

Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
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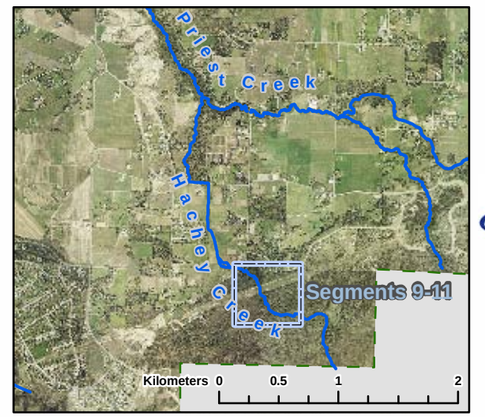
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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HYDRAULIC CREEK

Segments 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
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- City of Kelowna
- Culvert
- Discharge
- Enhancement
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Obstruction

- Beaver Dam
- Dam
- Persistent Debris
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Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Fences
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- Rip Rap
- Water Withdrawal

Fish Habitat

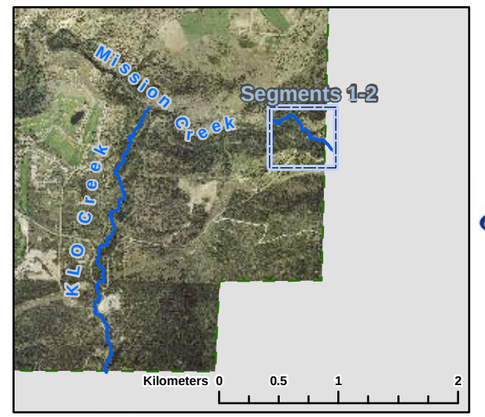
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

331150 331200 331250 331300 331350 331400 331450 331500 331550 331600 331650 331700 331750 331800 331850 331900

5523950 5523900 5523850 5523800 5523750 5523700 5523650 5523600 5523550 5523500

KLO CREEK

Segments 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
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- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
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Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Fences
- Garbage/Pollution
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- Rip Rap
- Water Withdrawal

Fish Habitat

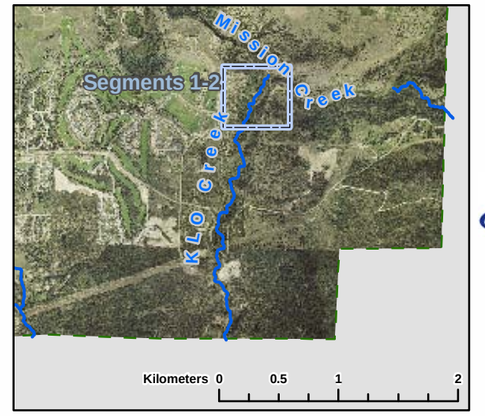
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

KLO CREEK

Segments 2-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

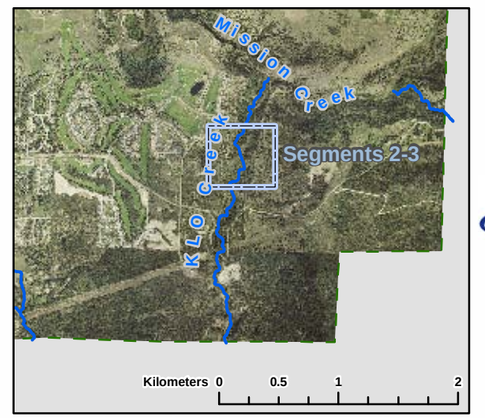
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

329650 329700 329750 329800 329850 329900 329950 330000 330050 330100 330150 330200 330250 330300 330350 330400

5523550 5523500 5523450 5523400 5523350 5523300 5523250 5523200 5523150 5523100

KLO CREEK

Segments 4-7

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
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- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

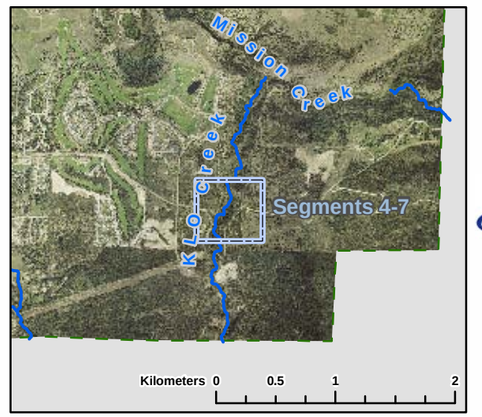
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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KLO CREEK

Segments 7-9

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
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- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
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- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
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Feature Information:	Field Inventory
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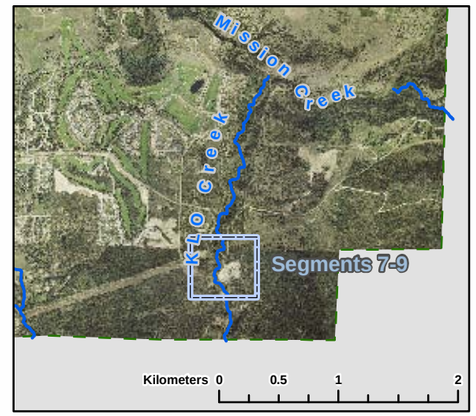

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
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KLO CREEK

Segments 9-10

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

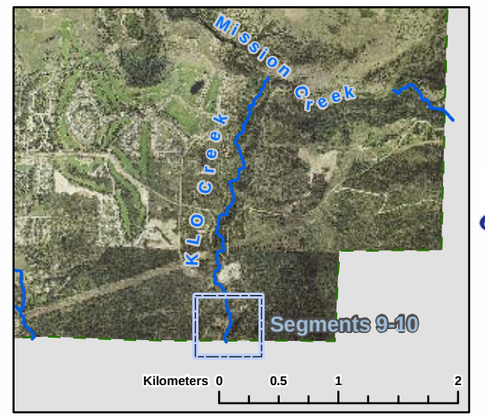
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

MICHAELBROOK CREEK

Segment 1 (West)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

Mission Creek

Thompson Brook - Segment 5

321500 321550 321600 321650 321700 321750 321800 321850 321900 321950 322000 322050 322100 322150 322200 322250

5524050 5524000 5523950 5523900 5523850 5523800 5523750 5523700 5523650 5523600 5523550

MICHAELBROOK CREEK

Segment 1 (Centre)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Mission Creek

1

Thompson Brook - Segment 5

5

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

322000 322050 322100 322150 322200 322250 322300 322350 322400 322450 322500 322550 322600 322650 322700 322750

5524250 5524200 5524150 5524100 5524050 5524000 5523950 5523900 5523850 5523800 5523750

MICHAELBROOK CREEK

Segment 1 (East)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

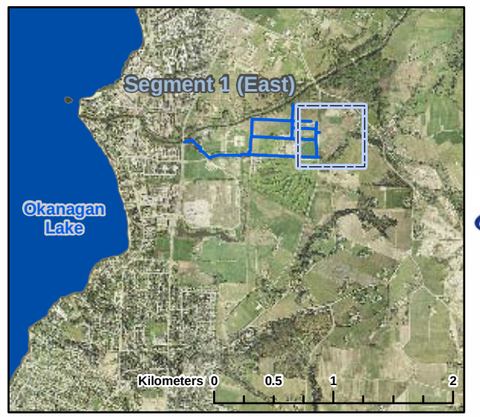
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

322550 322600 322650 322700 322750 322800 322850 322900 322950 323000 323050 323100 323150 323200 323250 323300

5524200 5524150 5524100 5524050 5524000 5523950 5523900 5523850 5523800 5523750

NORTH FORK BELLEVUE CREEK

Segments 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

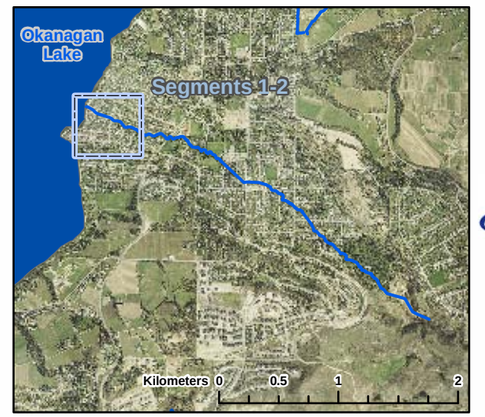
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

NORTH FORK BELLEVUE CREEK

Segment 3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

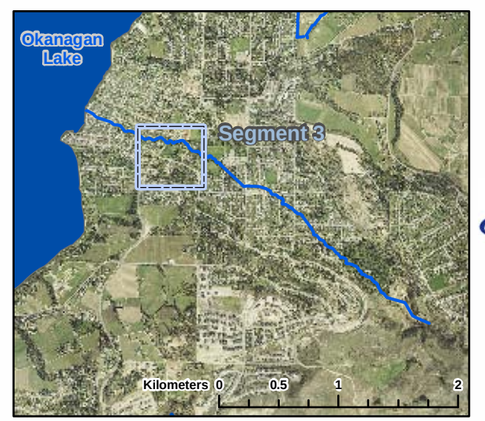
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

NORTH FORK BELLEVUE CREEK

Segments 11-12

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

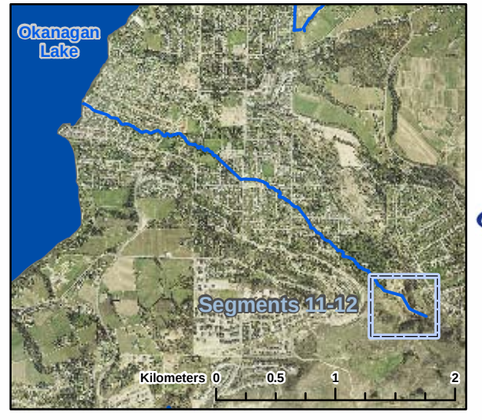
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

NORTH FORK BELLEVUE CREEK

Segments 4-5

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction

Beaver Dam
Dam
Persistent Debris
Rock

Modification

Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat

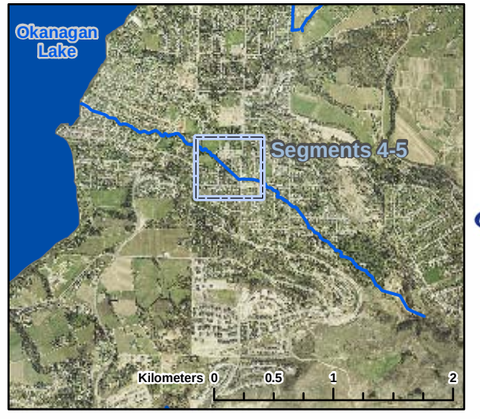
Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody

Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

NORTH FORK BELLEVUE CREEK

Segments 6-8

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

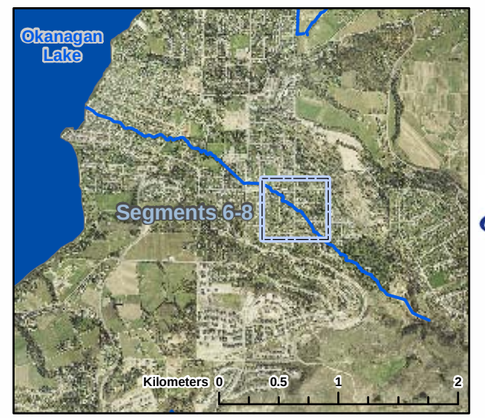
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

321550 321600 321650 321700 321750 321800 321850 321900 321950 322000 322050 322100 322150 322200 322250 322300

5521150 5521100 5521050 5521000 5520950 5520900 5520850 5520800 5520750 5520700

NORTH FORK BELLEVUE CREEK

Segments 8-10

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

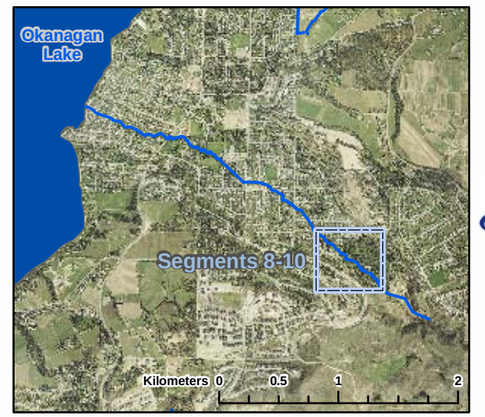
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

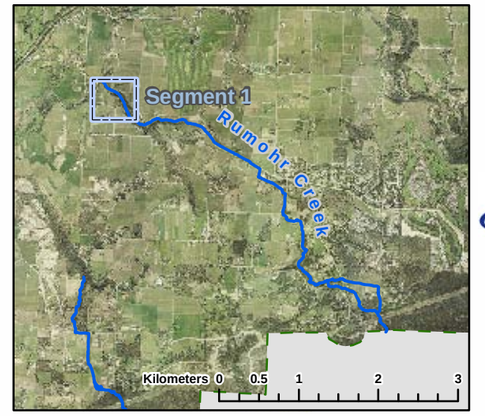
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segments 10-12

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

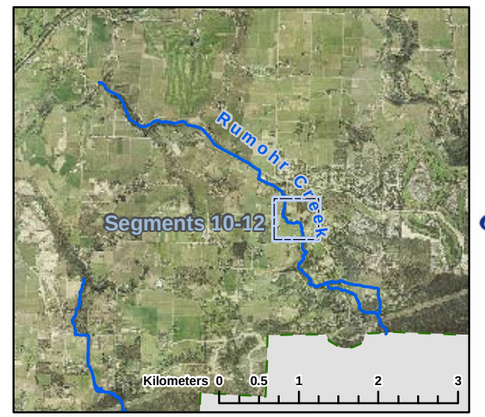
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

326750 326800 326850 326900 326950 327000 327050 327100 327150 327200 327250 327300 327350 327400 327450 327500

5523450 5523400 5523350 5523300 5523250 5523200 5523150 5523100 5523050 5523000

RUMOHR CREEK

Segments 13-14

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

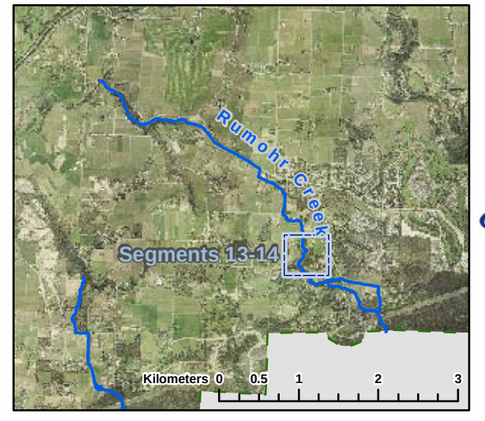
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segments 14-16

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

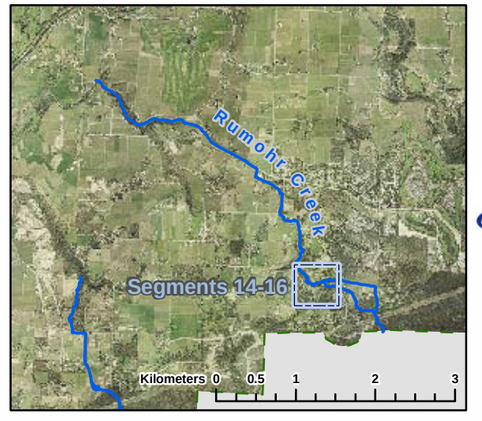
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083/82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segments 17-20

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction
- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification
- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody
- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segments 20-21

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

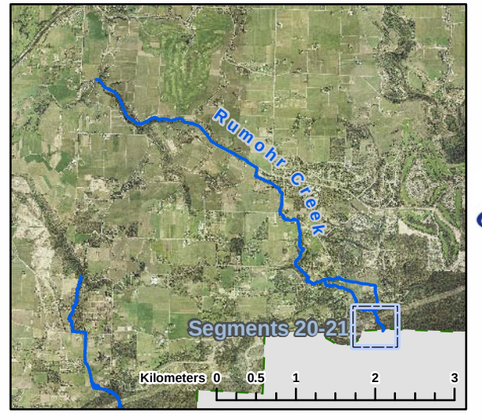
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.084 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

RUMOHR CREEK

Segments 2-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction

Beaver Dam
Dam
Persistent Debris
Rock

Modification

Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat

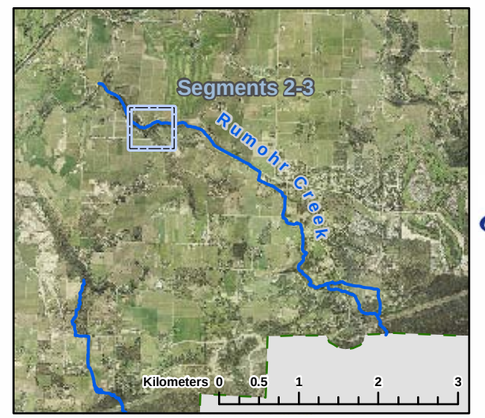
Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody

Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segments 3-4

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

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N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

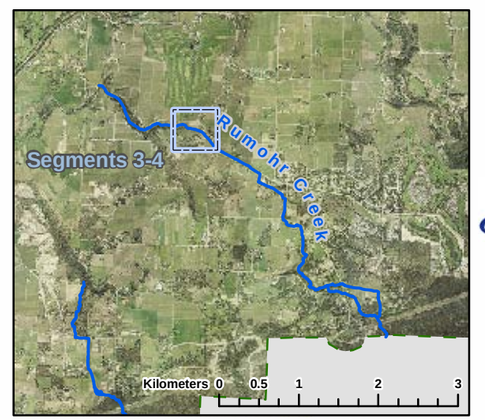
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

325500 325550 325600 325650 325700 325750 325800 325850 325900 325950 326000 326050 326100 326150 326200 326250

5524600 5524550 5524500 5524450 5524400 5524350 5524300 5524250 5524200 5524150

RUMOHR CREEK

Segments 4-5

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

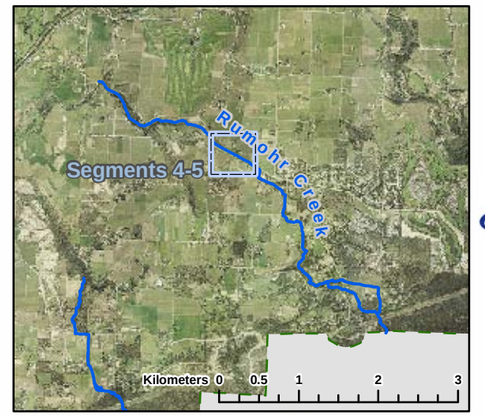
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

RUMOHR CREEK

Segments 6-9

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

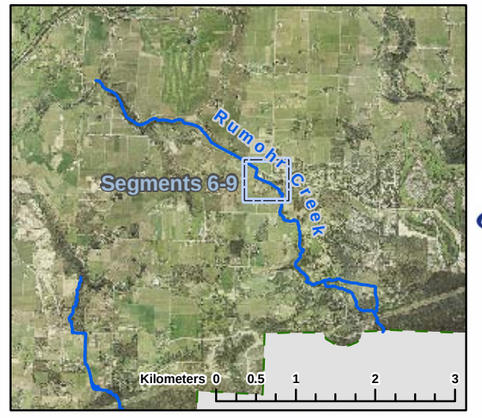
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

SIMPSON'S SPRING

Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

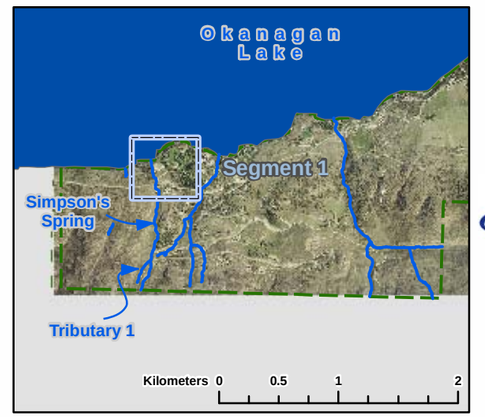
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

SIMPSON'S SPRING

Segments 2-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

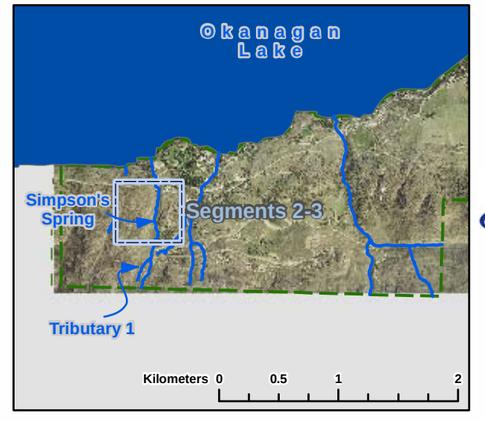
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

SIMPSON'S SPRING AND TRIBUTARY 1

Simpson's Spring Segments 3-6 and Tributary 1 Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
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- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
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Modification

- Bridge
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- Pipe Crossing
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- Rip Rap
- Water Withdrawal

Fish Habitat

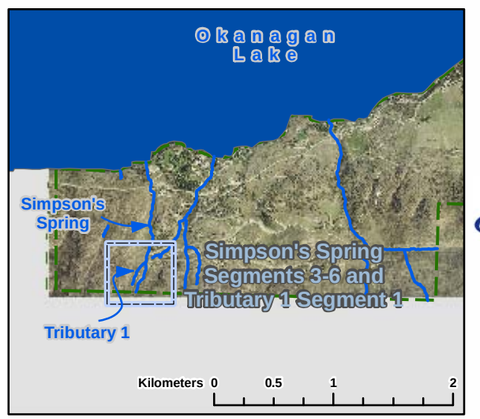
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

THOMPSON BROOK

Segments 1-4

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

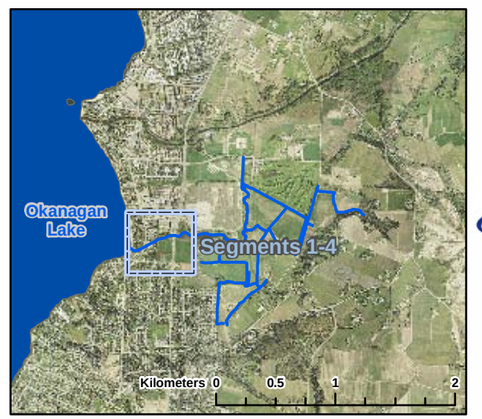
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

THOMPSON BROOK

Segment 4 (North) and 5 (North)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

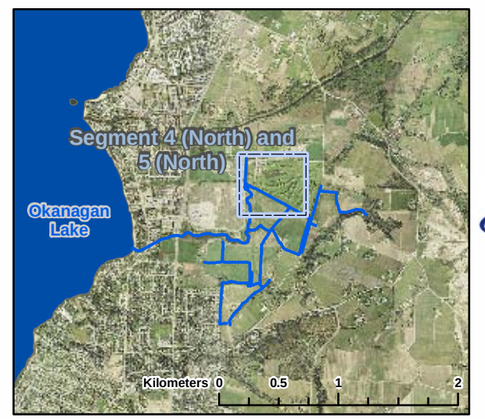
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

THOMPSON BROOK

Segment 5 (Centre)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

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N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

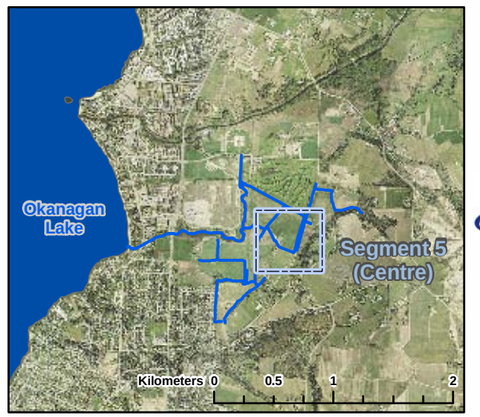
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

THOMPSON BROOK

Segment 5 (East) and 6

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

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N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

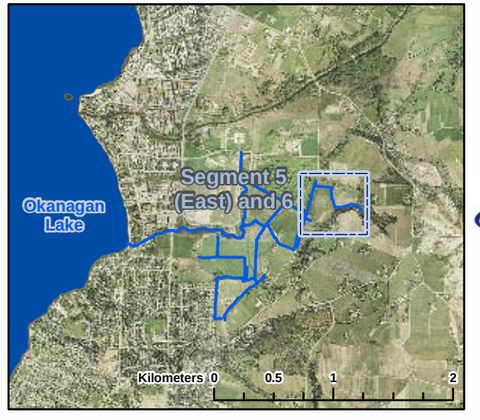
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

322550 322600 322650 322700 322750 322800 322850 322900 322950 323000 323050 323100 323150 323200 323250 323300

5523600 5523550 5523500 5523450 5523400 5523350 5523300 5523250 5523200 5523150

THOMPSON BROOK

Segments 4, 5 (West), and 8 (North)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

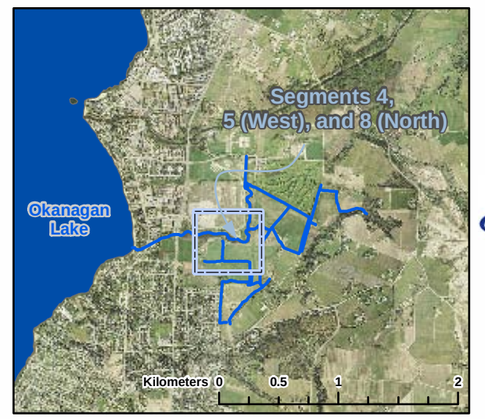
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

THOMPSON BROOK

Segment 8 (South)

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

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N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

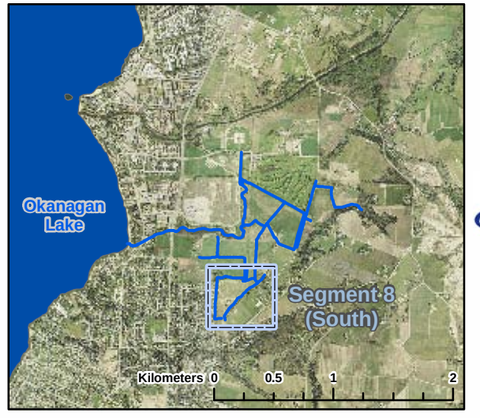
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.083 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

UPPER VERNON CREEK

Segments 1-3

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

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N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

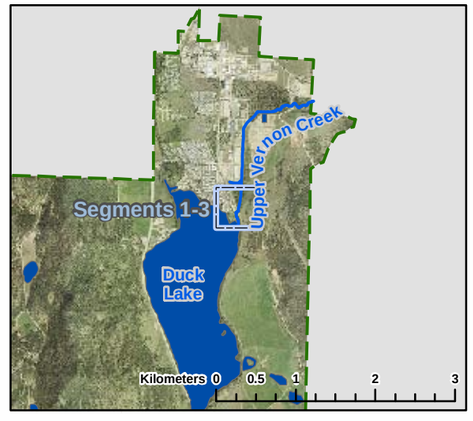
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82L.004 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

Duck Lake

328650 328700 328750 328800 328850 328900 328950 329000 329050 329100 329150 329200 329250 329300 329350 329400

5541900 5541850 5541800 5541750 5541700 5541650 5541600 5541550 5541500 5541450

UPPER VERNON CREEK - REMNANT FLUME

Segments 3-4 and Remnant Flume Segment 1.1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

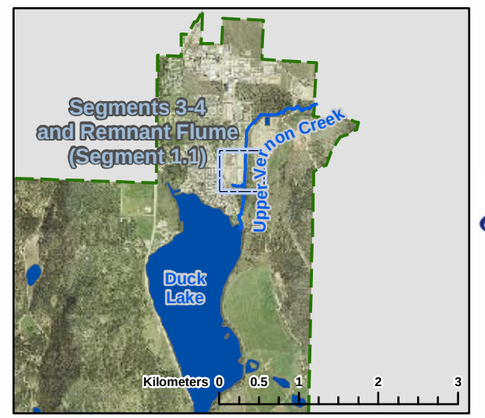
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

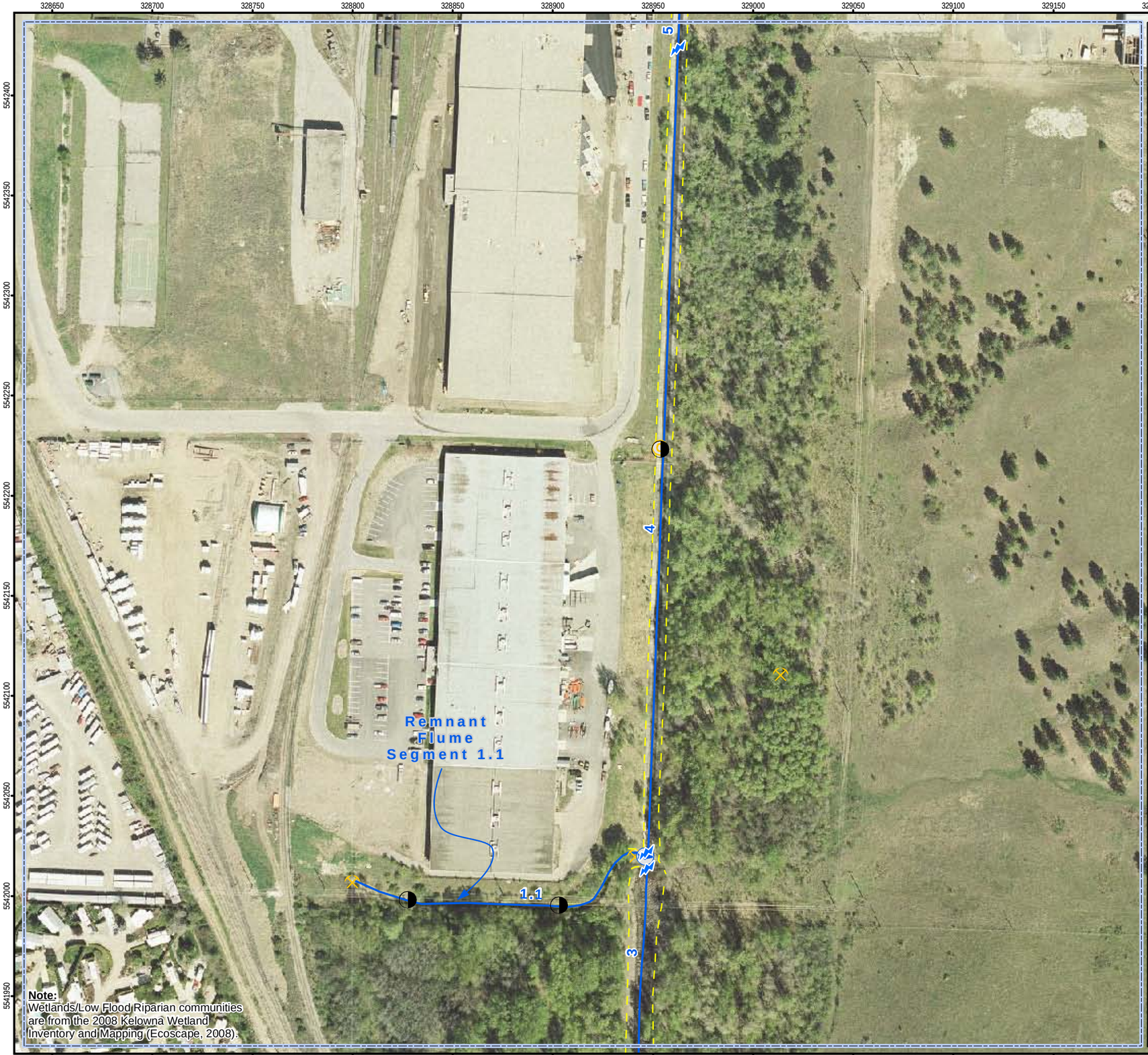
Base Map:	82L.004 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.



UPPER VERNON CREEK

Segments 5-6

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

99 Segment Number
Segment Break
Stream Centreline
Top of Bank
Wetland/Low Flood Riparian
City of Kelowna
Culvert
Discharge
Enhancement
Erosion

Obstruction

Beaver Dam
Dam
Persistent Debris
Rock

Modification

Bridge
Channelization
Dam/Flood Gate
Ditch
Dock
Fences
Garbage/Pollution
Livestock Crossing
Other
Pipe Crossing
Retain Wall/Bank Stability
Rip Rap
Water Withdrawal

Fish Habitat

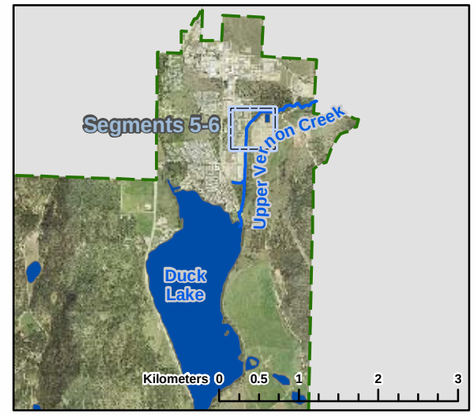
Deep Pool
Instream Vegetation
Large Woody Debris
Overstream Vegetation
Small Woody Debris
Spawning Habitat
Undercut Bank

Waterbody

Discontinued
Ditch
Tributary
Wetland

SOURCE INFORMATION

Base Map:	82L.004 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

328800 328850 328900 328950 329000 329050 329100 329150 329200 329250 329300 329350 329400 329450 329500 329550

5542900 5542850 5542800 5542750 5542700 5542650 5542600 5542550 5542500 5542450

UPPER VERNON CREEK

Segment 7

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

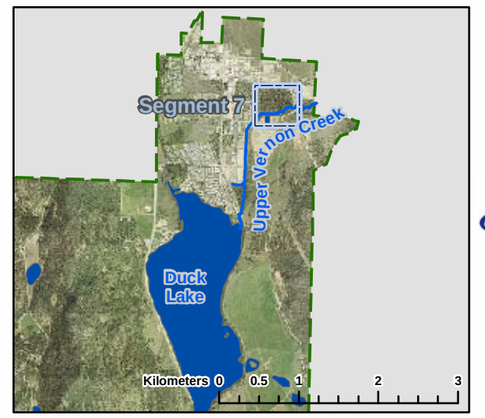
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82L.004 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin WATER BOARD

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

UPPER VERNON CREEK

Segment 8

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

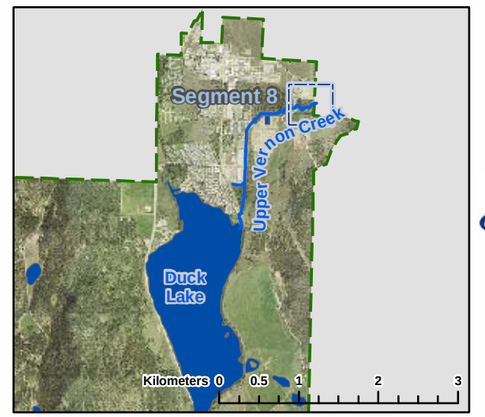
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82L.004 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

VARTY CREEK

Segments 1-2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

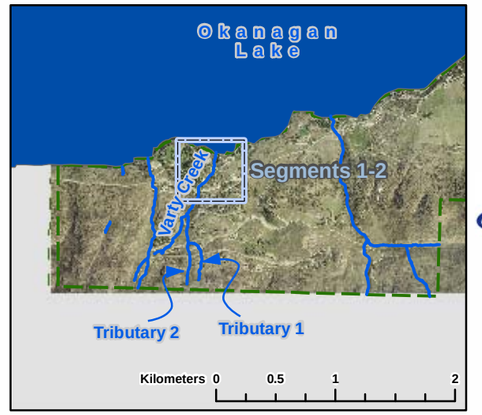
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

VARTY CREEK

Varty Creek Segments 3-4 and Tributary 1 Segment 1

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

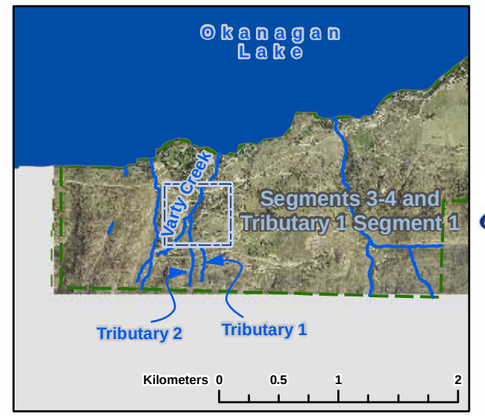
- Deep Pool
- Instream Vegetation
- Large Woody Debris
- Overstream Vegetation
- Small Woody Debris
- Spawning Habitat
- Undercut Bank

Waterbody

- Discontinued
- Ditch
- Tributary
- Wetland

SOURCE INFORMATION

Base Map:	82E.073 Kelowna
Orthophoto:	2006, provided by City of Kelowna
Stream Information:	Field Inventory
Location Information:	Field, GPS (Trimble GEO XM & XT)
Feature Information:	Field Inventory
Date of Inventory:	2008
Inventory Management:	Kyle Hawes, R.P.Bio.



City of Kelowna

Okanagan Basin Water Board

ECOSCAPE Environmental Consultants Ltd.

Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

VARTY CREEK AND TRIBUTARIES 1-2

Varty Creek Segment 5, Tributary 1 Segment 2 and Tributary 2

Project:	Sensitive Habitat Inventory and Mapping (SHIM)
Location:	Kelowna, BC
Project No.:	08-293
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants Ltd.
Drawn by:	Robert Wagner
Checked by:	Kyle Hawes
Projection:	NAD83-UTM Zone 11
Date:	February, 2009

40 20 0 40 80 Meters

1:2,000

N W E S

LEGEND

- 99 Segment Number
- Segment Break
- Stream Centreline
- Top of Bank
- Wetland/Low Flood Riparian
- City of Kelowna
- Culvert
- Discharge
- Enhancement
- Erosion

Obstruction

- Beaver Dam
- Dam
- Persistent Debris
- Rock

Modification

- Bridge
- Channelization
- Dam/Flood Gate
- Ditch
- Dock
- Fences
- Garbage/Pollution
- Livestock Crossing
- Other
- Pipe Crossing
- Retain Wall/Bank Stability
- Rip Rap
- Water Withdrawal

Fish Habitat

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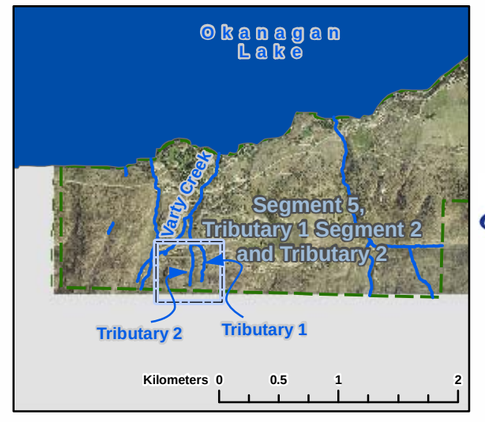
Inventory Management:	Kyle Hawes, R.P.Bio.



Note:
Wetlands/Low Flood Riparian communities are from the 2008 Kelowna Wetland Inventory and Mapping (Ecoscape, 2008).

APPENDIX A

Stream-line Data

STREAMNAME	SEG_NUMBER	WTRSHD_CDE	STAGE	FISH_BEARI	COMMENTS	PHOTONUM	LENGTH	PRIMARY	SECONDARY	HYDRAULIC
Bauer Brook	1.0	0	low	No		PA013879.jpg	587.891	Ditch		Run
Bauer Brook	2.0	0	low	No		PA013873.jpg	238.273	Ditch		Run
Bauer Brook	3.0	0	low	No		PA013883.jpg	523.791	Ditch		Run
Bauer Brook	4.0	0	low	No		PA013842.jpg	548.532	Modified		Riffle/Pool
Bauer Brook	5.0	0	low	No		PA023893.jpg	223.513	Modified		Riffle
Bauer Brook	6.0	0	low	No		PA023897.jpg	183.673	Channelized	Other	Riffle/Pool
Bauer Brook	7.0	0	low	No		PA023906.jpg	49.618	Modified	Other	Riffle
Bauer Brook	8.0	0	low	No		PA023907.jpg	233.007	Culvert		
Bauer Brook	9.0	0	low	No		PA023909.jpg	150.882	Channelized	Other	Riffle
Bauer Brook	10.0	0	low	No		PA023918.jpg	87.808	Ditch	Other	Riffle
Bauer Brook	11.0	0	low	No		PA023923.jpg	129.521	Modified		Riffle/Pool
Bauer Brook	12.0	0	low	No		PA023924.jpg	309.731	Channelized		Riffle
Campbell_Industry Brook	1.0	0	low	No		IMGP1908.jpg	366.000	Modified	Ephemeral	Cascade/Pool
Campbell_Industry Brook	2.0	0	low	No		PA023956.jpg	64.041	Modified	Ephemeral	Cascade/Pool
Campbell_Industry Brook	3.0	0	low	No		IMGP1909.jpg	529.488	Modified	Ephemeral	Riffle/Pool
Campbell_Industry Brook	4.0	0	low	No		IMGP1932.jpg	270.364	Ditch	Ephemeral	Other
Campbell_Industry Brook	5.0	0	low	No		PA034001.jpg	173.534	Modified	Ephemeral	Other
Campbell_Industry Brook	6.0	0	low	No		PA033988.jpg	451.377	Natural	Ephemeral	Other
Campbell_Industry Brook	7.0	0	low	No		PA033974.jpg	320.462	Modified	Ephemeral	Cascade/Pool
Dewdney Creek	1.0	0	moderate	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP2023.jpg	390.967	Modified		Riffle/Pool
Dewdney Creek	2.0	0	low	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP4332.jpg	97.283	Natural		Riffle/Pool
Dewdney Creek	3.0	0	low	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP4345.jpg	113.920	Natural		Riffle/Pool
Dewdney Creek	4.0	0	low	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP4367.jpg	150.306	Modified		Slough
Dewdney Creek	5.0	0	low	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP4382.jpg	181.298	Modified		Cascade
Dewdney Creek - Tributary 1	1.0	0	low	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP4340.jpg	92.747			Riffle/Pool
Dewdney Creek - Tributary 2	1.0	0	low	Unconfirmed	Confirmed surface water connection to Mission Creek	IMGP4343.jpg	50.411			Riffle/Pool
Gopher Creek	1.0	310-808200-22881	low	No		PB264843.jpg	404.062	Natural		Riffle/Pool
Gopher Creek	2.0	310-808200-22881	low	No		PB264850.jpg	385.356	Natural		Riffle/Pool
Gopher Creek	3.0	310-808200-22881	low	No		PB264858.jpg	578.192	Natural		Riffle/Pool
Gopher Creek	4.0	310-808200-22881	low	No		PB264871.jpg	605.533	Modified		Riffle/Pool
Gopher Creek	5.0	310-808200-22881	low	No		PB264885.jpg	360.354	Natural		Riffle/Pool
Gopher Creek	6.0	310-808200-22881	low	No	No access to property - non SHIM line, air photo and topographic interpretation		521.824	Modified		Riffle/Pool
Gopher Creek	7.0	310-808200-22881	low	No		PB264895.jpg	69.969	Natural		Riffle/Pool
Gopher Creek	8.0	310-808200-22881	low	No		PB130633.jpg	1140.778	Modified	Wetland	Slough
Gopher Creek	9.0	310-808200-22881	low	No		P5222432.jpg	117.904	Modified		Slough
Gopher Creek	10.0	310-808200-22881	dry	No		Pan1.jpg	126.960	Modified		Riffle/Pool
Gopher Creek	11.0	310-808200-22881	dry	No		PB274953.jpg	677.990	Modified		Riffle/Pool
Gopher Creek	13.0	310-808200-22881	low	No	Segment fans out over grassland just above flume - defined channel discontinuous	DSC00234.jpg	137.289	Modified	Ephemeral	Other
Gopher Creek	14.0	310-808200-22881	low	No		DSC00235.jpg	375.031	Modified	Ephemeral	Other
Gopher Creek	15.0	310-808200-22881	low	No		IMG_0612.jpg	755.477	Modified	Ephemeral	Other
Gopher Creek Tributary	1.0	310-808200-22881	dry	No		DSC00204.jpg	76.143	Natural	Ephemeral	Cascade
Gopher Creek Tributary	2.0	310-808200-22881	dry	No		DSC00206.jpg	88.300	Natural	Ephemeral	Cascade
Gopher Creek Tributary	3.0	310-808200-22881	dry	No		DSC00208.jpg	140.248	Modified	Ephemeral	Other
Gopher Creek Tributary	4.0	310-808200-22881	low	No		DSC00210.jpg	138.747	Modified	Ephemeral	Riffle/Pool
Gopher Creek Tributary	5.0	310-808200-22881	low	No		DSC0214_16.jpg	243.239	Modified	Wetland	Wetland
Gopher Creek Tributary	6.0	310-808200-22881	dry	No		DSC00219.jpg	69.643	Modified	Ephemeral	Riffle/Pool
Gopher Creek Tributary	7.0	310-808200-22881	dry	No		DSC00221.jpg	182.215	Modified	Ephemeral	Wetland
Gopher Creek Tributary	8.0	310-808200-22881	dry	No		DSC00222.jpg	86.490	Modified	Ephemeral	Other
Gopher Creek Tributary	9.0	310-808200-22881	dry	No		DSC00224.jpg	90.221	Natural	Ephemeral	Cascade/Pool
Gopher Creek Tributary	10.0	310-808200-22881	low	No		DSC00226.jpg	168.387	Natural	Ephemeral	Other
Gopher Creek Tributary	11.0	310-808200-22881	low	No		DSC00228.jpg	165.281	Modified		Slough
Hachey Creek	1.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1343.jpg	520.705	Modified		Cascade
Hachey Creek	2.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1356.jpg	266.354	Channelized		Riffle/Pool
Hachey Creek	3.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1362.jpg	186.060	Ditch		Riffle/Pool
Hachey Creek	4.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1368.jpg	162.939	Ditch		Riffle/Pool
Hachey Creek	5.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1372.jpg	138.100	Ditch		Riffle/Pool
Hachey Creek	6.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1381.jpg	30.184	Modified		Riffle/Pool
Hachey Creek	7.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1387.jpg	455.056	Ditch		Riffle/Pool
Hachey Creek	8.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1401.jpg	247.156	Modified		Cascade
Hachey Creek	9.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1416.jpg	237.548	Natural		Cascade
Hachey Creek	10.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1421.jpg	90.973	Modified		Cascade
Hachey Creek	11.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1430.jpg	808.156	Natural		Cascade
Hachey Creek	12.0	310-794400-02900-21900	dry	Unconfirmed		IMGP1436.jpg	427.457	Natural		Cascade
Hydraulic Creek	1.0	310-794400-22400	moderate	Yes	Flows higher than expected - perhaps additional volumes being released from McCulloch Lake by SEKID	IMGP4273.jpg	287.604	Natural		Riffle/Pool
Hydraulic Creek	2.0	310-794400-22400	moderate	Yes		IMGP4261.jpg	433.504	Natural		Falls

STREAMNAME	SEG_NUMBER	WTRSHD_CDE	STAGE	FISH_BEARI	COMMENTS	PHOTONUM	LENGTH	PRIMARY	SECONDARY	HYDRAULIC
KLO Creek	1.0	310-794400-20500	low	Yes		IMGP3965.jpg	259.659	Natural	Braided	Riffle
KLO Creek	2.0	310-794400-20500	low	Yes		IMGP3971.jpg	587.826	Natural		Riffle
KLO Creek	3.0	310-794400-20500	low	Yes		IMGP3974.jpg	289.767	Natural		Riffle/Pool
KLO Creek	4.0	310-794400-20500	low	Yes		IMGP3943.jpg	118.147	Natural		Cascade/Pool
KLO Creek	5.0	310-794400-20500	low	Yes	Segment 5 similar in character to Segment 3	IMGP3930.jpg	254.347	Natural		Riffle/Pool
KLO Creek	6.0	310-794400-20500	low	Yes		IMGP3927.jpg	107.617	Natural		Cascade/Pool
KLO Creek	7.0	310-794400-20500	low	Yes		IMGP3915.jpg	384.486	Natural		Riffle/Pool
KLO Creek	8.0	310-794400-20500	low	Yes		IMGP4238.jpg	152.455	Modified		Riffle/Pool
KLO Creek	9.0	310-794400-20500	low	Yes		IMGP4244.jpg	303.793	Natural		Riffle/Pool
KLO Creek	10.0	310-794400-20500	low	Yes		IMGP4254.jpg	292.866	Natural		Riffle/Pool
Michaelbrook	1.0	0	moderate	Unconfirmed		PC091103.jpg	3369.162	Ditch	Wetland	Slough
North Arm Bellevue Creek	1.0	310-789400	low	No	82 metres not culverted. Daylight about 15m from Okanagan Lake	P9283826.jpg	243.362	Culvert		Other
North Arm Bellevue Creek	2.0	310-789400	dry	No	Stream flows intercepted by storm system	P9283818.jpg	269.801	Ditch	Intermittent	Other
North Arm Bellevue Creek	3.0	310-789400	low	No	Surface flows emerge from springs at upstream end of segment and continue through to Segment 2	P9283808.jpg	686.627	Modified	Ephemeral	Riffle/Pool
North Arm Bellevue Creek	4.0	310-789400	dry	No	Dry riparian gully - not creek	P9283788.jpg	219.357	Other	Intermittent	Other
North Arm Bellevue Creek	5.0	310-789400	dry	No	Alignment not confirmed by SHIM		443.208	Culvert	Intermittent	Other
North Arm Bellevue Creek	6.0	310-789400	dry	No		IMGP0548.jpg	437.362	Modified	Ephemeral	Riffle/Pool
North Arm Bellevue Creek	7.0	310-789400	dry	No	Alignment not confirmed by SHIM		125.789	Culvert	Intermittent	
North Arm Bellevue Creek	8.0	310-789400	dry	No		IMGP0540.jpg	372.428	Modified	Ephemeral	Riffle/Pool
North Arm Bellevue Creek	9.0	310-789400	dry	No		IMGP0522.jpg	195.882	Natural	Ephemeral	Riffle/Pool
North Arm Bellevue Creek	10.0	310-789400	dry	No		IMGP0506.jpg	295.395	Modified	Ephemeral	Riffle/Pool
North Arm Bellevue Creek	11.0	310-789400	dry	No		IMGP0517.jpg	81.113	Modified	Ephemeral	Riffle/Pool
North Arm Bellevue Creek	12.0	310-789400	dry	No		IMGP0519.jpg	431.420	Culvert	Ephemeral	Riffle/Pool
Rumohr Creek	1.0	310-794400-05300	dry	No	Segment begins at Gully and Spiers Rd. No SHIM completed downstream due to 'no access' property	IMGP1600.jpg	700.719	Ditch		Other
Rumohr Creek	2.0	310-794400-05300	dry	No		IMGP1604.jpg	116.540	Ditch		Other
Rumohr Creek	3.0	310-794400-05300	dry	No	Gully Rd. departs the right bank and drainage way follows prominent gully/ravine	IMGP1612.jpg	855.338	Ditch		Other
Rumohr Creek	4.0	310-794400-05300	dry	No	Surface flows cease	IMGP1617.jpg	341.582	Ditch		Other
Rumohr Creek	5.0	310-794400-05300	low	No	Surface flows	IMGP1621.jpg	411.106	Ditch		Other
Rumohr Creek	6.0	310-794400-05300	dry	No		PB174446.jpg	239.609	Ditch		Other
Rumohr Creek	7.0	310-794400-05300	dry	No		PB174452.jpg	186.487	Channelized		Other
Rumohr Creek	8.0	310-794400-05300	dry	No		PB174454.jpg	117.941	Culvert		
Rumohr Creek	9.0	310-794400-05300	dry	No		PB174457.jpg	132.741	Channelized		Other
Rumohr Creek	10.0	310-794400-05300	dry	No		PB174459.jpg	233.546	Channelized		Riffle/Pool
Rumohr Creek	11.0	310-794400-05300	dry	No		PB174469.jpg	350.508	Channelized		Riffle/Pool
Rumohr Creek	12.0	310-794400-05300	dry	No		PB174480.jpg	142.362	Channelized		Riffle/Pool
Rumohr Creek	13.0	310-794400-05300	low	No		PB174483.jpg	270.271	Modified		Riffle/Pool
Rumohr Creek	14.0	310-794400-05300	low	No		PB174496.jpg	529.851	Natural		Riffle/Pool
Rumohr Creek	15.0	310-794400-05300	low	No		PB174507_pan.jpg	181.395	Modified		Slough
Rumohr Creek	16.0	310-794400-05300	dry	No		PB184523.jpg	231.710	Modified		Riffle/Pool
Rumohr Creek	16.1	310-794400-05300	low	No	Segment consists of a series of wetlands on residential properties	PB174513_Pan.jpg	187.167	Modified		Slough
Rumohr Creek	17.0	310-794400-05300	dry	No		PB184535.jpg	157.828	Wetland		Wetland
Rumohr Creek	17.1	310-794400-05300	low	No	Ditched along Miller Road	PCO45005.jpg	493.137	Ditch		Slough
Rumohr Creek	18.0	310-794400-05300	dry	No		PB184539.jpg	160.993	Channelized		Other
Rumohr Creek	18.1	310-794400-05300	dry	No	Segment 18.1 flows north to Miller Rd. from 21 and Segment 20 flows west from 21	PC044984.jpg	357.788	Modified		Other
Rumohr Creek	19.0	310-794400-05300	dry	No		PB184541.jpg	200.579	Natural		Riffle/Pool
Rumohr creek	20.0	310-794400-05300	dry	No		PB184547.jpg	159.751	Modified		Riffle/Pool
Rumohr Creek	21.0	310-794400-05300	dry	No		PB184561.jpg	262.120	Natural		Riffle/Pool
Thompson Brook	1.0	0	moderate	Yes		IMGP5650.jpg	102.155	Modified		Run
Thompson Brook	2.0	0	moderate	Yes		IMGP5652.jpg	148.926	Culvert		Slough
Thompson Brook	3.0	0	moderate	Yes		IMGP5657.jpg	179.568	Channelized		Slough
Thompson Brook	4.0	0	moderate	Yes		IMGP5703.jpg	1271.991	Wetland		Slough
Thompson Brook - eastern drainage ditches	5.0	0	moderate	Yes	Surface water connection to lower segments and Okanagan Lake	IMGP5697.jpg	3286.912	Ditch		Slough
Thompson Brook	6.0	0	low	Unconfirmed		PB204713.jpg	195.881	Ditch		Slough
Thompson Brook	7.0	0	low	Unconfirmed	Lower portion of ravine - forks into dry gullies with intermittent instability	PB204718.jpg	55.146	Modified	Intermittent	Riffle/Pool
Thompson Brook - southern drainage ditches	8.0	0	moderate	Unconfirmed	Surface water connection to lower segments and Okanagan Lake	PB194615.jpg	2164.826	Ditch		Slough
Upper Vernon Creek	1.0	310-939400	low	Yes	Sand/gravel bar at bottom of segment in inundation zone of Duck Lake - constructed side channel	P9093499.jpg	238.202	Modified		Riffle/Pool
Upper Vernon Creek	1a	0	low	Yes	Connected to Vernon Creek, Therefore special considerations should be made if decommissioned	P9103530.jpg	160.800	Channelized	Flumed	Stagnant
Upper Vernon Creek	2.0	310-939400	low	Yes		P9093520.jpg	241.477	Channelized		Riffle/Pool
Upper Vernon Creek	3.0	310-939400	low	Yes		P9093522.jpg	126.845	Channelized		Riffle/Pool
Upper Vernon Creek	4.0	310-939400	low	Yes		P9103538.jpg	410.053	Channelized	Flumed	Other
Upper Vernon Creek	5.0	310-939400	low	Yes	Left bank is grass herb, gradient up to 5%	P9103540.jpg	539.729	Channelized	Flumed	Other
Upper Vernon Creek	6.0	310-939400	low	Yes		P9103548.jpg	125.588	Modified		Riffle/Pool
Upper Vernon Creek	7.0	310-939400	low	Yes		P9103557.jpg	302.222	Modified		Riffle/Pool
Upper Vernon Creek	8.0	310-939400	low	Yes		P9103568.jpg	377.352	Modified		Riffle/Pool

STREAMNAME	SEG_NUMBER	COMT_CLASS	PERCENT_GR	CROWN_CLOS	SPAWNING_H	LIVESTOCK_	BARS	ISLANDS
Bauer Brook	1.0	Ditched trough fields (drainage ditch)	0.0	0	Unknown	Yes	None	None
Bauer Brook	2.0		1.5	0	Unknown		None	None
Bauer Brook	3.0	Ditched through fields and horse paddock	1.0	1-20%	Unknown	Yes	None	None
Bauer Brook	4.0	Small stream channel through very dense willow riparian gully	9.0	>90%	Unknown		None	None
Bauer Brook	5.0	Brook running through willows and grasses in rip rap armoured channel	2.0	1-20%	Unknown		None	None
Bauer Brook	6.0	Very weedy ditch, lined with riprap	3.0	0	Unknown		None	None
Bauer Brook	7.0	Agricultural land	2.0	0	Unknown		None	None
Bauer Brook	8.0	Piped beneath orchard	2.0	0	Unknown			
Bauer Brook	9.0	Rural / agricultural land	2.0	0	Unknown		None	None
Bauer Brook	10.0		5.0	0	Unknown		None	None
Bauer Brook	11.0		4.0	41-70%	Unknown		None	None
Bauer Brook	12.0	Channel lined with riprap	5.0	1-20%	Unknown		None	None
Campbell_Industry Brook	1.0	Armoured with cobble/boulder	10.0	0	Unknown		None	None
Campbell_Industry Brook	2.0	Natural segment	15.0	0	Unknown		None	None
Campbell_Industry Brook	3.0		5.0	0	Unknown		None	None
Campbell_Industry Brook	4.0		5.0	0	Unknown		None	None
Campbell_Industry Brook	5.0		8.0	0	Unknown		None	None
Campbell_Industry Brook	6.0		4.0	41-70%	Unknown		None	None
Campbell_Industry Brook	7.0		8.0	71-90%	Unknown		None	None
Dewdney Creek	1.0		0.0	71-90%	Unknown		None	None
Dewdney Creek	2.0		2.0	>90%	Unknown		None	None
Dewdney Creek	3.0	More confined channel than segment 2.	3.0	>90%	Unknown		None	None
Dewdney Creek	4.0	Constructed ponds and rural modifications	1.0	>90%	Unknown		None	None
Dewdney Creek	5.0	Flows through riparian gully	5.0	71-90%	Unknown		None	None
Dewdney Creek - Tributary 1	1.0	Originates from groundwater discharge in very moist to wet riparian and swamp communities	0.5	>90%	Unknown		None	None
Dewdney Creek - Tributary 2	1.0		0.5	>90%	Unknown		None	None
Gopher Creek	1.0		6.0	1-20%	Unknown		None	None
Gopher Creek	2.0		7.0	1-20%	Unknown		None	None
Gopher Creek	3.0		8.0	1-20%	Unknown		None	None
Gopher Creek	4.0		6.0	1-20%	Unknown		None	None
Gopher Creek	5.0		10.0	1-20%	Unknown		None	None
Gopher Creek	6.0		0.0					
Gopher Creek	7.0		7.0	1-20%	Unknown		None	None
Gopher Creek	8.0	Series of wetlands and culverts	3.0	1-20%	Unknown		None	None
Gopher Creek	9.0		6.0	21-40%	Unknown		None	None
Gopher Creek	10.0		3.0	1-20%	Unknown		None	None
Gopher Creek	11.0		10.0	1-20%	Unknown		None	None
Gopher Creek	13.0	Pooling occurs in shallow grassland depressions - vernal pools for amphibian reproduction	3.0	0	Unknown	Yes	None	None
Gopher Creek	14.0	Livestock impacts to channel and riparian association	1.5	21-40%	Unknown	Yes	None	None
Gopher Creek	15.0		2.0	0	Unknown	Yes	None	None
Gopher Creek Tributary	1.0	Aspen riparian gully/thicket	10.0	71-90%	Unknown		None	None
Gopher Creek Tributary	2.0	Disturbed riparian gully	10.0	21-40%	Unknown	Yes	None	None
Gopher Creek Tributary	3.0	Vernal, shallow channel through highly disturbed grassland	3.0	0	Unknown	Yes	None	None
Gopher Creek Tributary	4.0	Disturbed riparian/aspen gully	5.5	21-40%	Unknown	Yes	None	None
Gopher Creek Tributary	5.0	Wetland complex with high cattle use, disturbance	0.0	0	Unknown	Yes	None	None
Gopher Creek Tributary	6.0	Aspen seepage / riparian gully	1.0	41-70%	Unknown	Yes	None	None
Gopher Creek Tributary	7.0	Transition association	0.0	0	Unknown	Yes	None	None
Gopher Creek Tributary	8.0	Thicket at bottom to mixed forest with mature pine/fir overstorey-Aspen sub-canopy	3.0	71-90%	Unknown	Yes	None	None
Gopher Creek Tributary	9.0	Steep gully	45.0	71-90%	Unknown	Yes	None	None
Gopher Creek Tributary	10.0	Mixed wood riparian gully	10.0	41-70%	Unknown	Yes	None	None
Gopher Creek Tributary	11.0	Disturbed riparian bench follows slope toe of Black Mountain, past forestry along right bank	0.5	1-20%	Unknown	Yes	None	None
Hachey Creek	1.0		6.0	21-40%	Unknown		None	None
Hachey Creek	2.0		5.0	21-40%	Unknown		None	None
Hachey Creek	3.0	Tall 2 meter banks, erosion on both banks throughout segment	2.0	1-20%	Unknown		None	None
Hachey Creek	4.0	Tall 2 meter banks	2.0	0	Unknown		None	None
Hachey Creek	5.0	Banks become less tall, erosion on both banks	2.0	0	Unknown	Yes	None	None
Hachey Creek	6.0		2.0	1-20%	Unknown		None	None
Hachey Creek	7.0		2.0	0	Unknown	Yes	None	None
Hachey Creek	8.0		12.0	41-70%	Unknown		None	None
Hachey Creek	9.0		10.0	21-40%	Unknown		None	None
Hachey Creek	10.0		12.0	0	Unknown		None	None
Hachey Creek	11.0		30.0	21-40%	Unknown		None	None
Hachey Creek	12.0	Dry again	12.0	1-20%	Unknown		None	None
Hydraulic Creek	1.0	Riffle-pool-cascade	7.0	>90%	Potential		None	None
Hydraulic Creek	2.0	Step-pool-falls through canyon. Series of upstream migration barriers (falls) throughout	25.0	>90%	Unknown		None	None

STREAMNAME	SEG_NUMBER	COMT_CLASS	PERCENT_GR	CROWN_CLOS	SPAWNING_H	LIVESTOCK_	BARS	ISLANDS
KLO Creek	1.0	Floodplain along left bank	6.0	21-40%	Resident		Mid-channel	None
KLO Creek	2.0	More confined, more frequent bank erosion along both banks	7.0	41-70%	Resident		None	None
KLO Creek	3.0	Bedrock becomes prevalent substrate	7.0	41-70%	Resident		Side	None
KLO Creek	4.0	Confined by bedrock gulch/ravine	12.0	41-70%	Resident		None	None
KLO Creek	5.0		6.5	41-70%	Resident		None	None
KLO Creek	6.0		17.0	41-70%	Resident		None	None
KLO Creek	7.0		4.5	41-70%	Resident		Side	None
KLO Creek	8.0	Quarry along right bank	5.0	21-40%	Resident		Mid-channel	None
KLO Creek	9.0		10.0	71-90%	Resident		Mid-channel	Split
KLO Creek	10.0		7.0	>90%	Resident		Side	None
Michaelbrook	1.0	Ditching and tile drains result in stream origin	0.0	1-20%	Unknown	Yes	None	None
North Arm Bellevue Creek	1.0		1.0	0	Unknown		None	None
North Arm Bellevue Creek	2.0		1.0	21-40%	Unknown		None	None
North Arm Bellevue Creek	3.0	Wetted stream channel - intermittently channelized	2.0	71-90%	Unknown		None	None
North Arm Bellevue Creek	4.0		2.0	71-90%	Unknown		None	None
North Arm Bellevue Creek	5.0	Intermittently day-lighted. Daylights in moist riparian gully - not creek	0.0					
North Arm Bellevue Creek	6.0	Segment 5 is culverted	2.0	41-70%	Unknown		None	None
North Arm Bellevue Creek	7.0		0.0					
North Arm Bellevue Creek	8.0		2.0	41-70%	Unknown		None	None
North Arm Bellevue Creek	9.0	Controlled diversion from Bellevue Creek	2.0	>90%	Unknown		None	None
North Arm Bellevue Creek	10.0	Diversion ditch from Bellevue Creek	1.5	>90%	Unknown		None	None
North Arm Bellevue Creek	11.0	Diversion ditch from Bellevue Creek	1.5	>90%	Unknown		None	None
North Arm Bellevue Creek	12.0	Piped from Bellevue Creek - underground alignment not confirmed	1.5	>90%	Unknown		None	None
Rumohr Creek	1.0	Dry ditch - not a stream	5.0	0	Unknown		None	None
Rumohr Creek	2.0		5.0	0	Unknown		None	None
Rumohr Creek	3.0		5.0	0	Unknown		None	None
Rumohr Creek	4.0		3.0	0	Unknown		None	None
Rumohr Creek	5.0		3.0	0	Unknown		None	None
Rumohr Creek	6.0	Ditch continues along road for 80 meters and then turns into rural residences	3.0	0	Unknown		None	None
Rumohr Creek	7.0		4.0	0	Unknown		None	None
Rumohr Creek	8.0	Piped beneath residential subdivision	0.0	0	Unknown		None	None
Rumohr Creek	9.0		3.5	0	Unknown		None	None
Rumohr Creek	10.0		8.5	41-70%	Unknown		None	None
Rumohr Creek	11.0		4.0	1-20%	Unknown		None	None
Rumohr Creek	12.0		5.0	0	Unknown	Yes	None	None
Rumohr Creek	13.0		1.0	21-40%	Unknown		None	None
Rumohr Creek	14.0		6.0	21-40%	Unknown		None	None
Rumohr Creek	15.0	Series of constructed ponds	0.5	21-40%	Unknown		None	None
Rumohr Creek	16.0	Altered hydrologic patterns upstream - majority of flows follow north channel	10.0	21-40%	Unknown		None	None
Rumohr Creek	16.1		5.0	21-40%	Unknown		None	None
Rumohr Creek	17.0		0.0	1-20%	Unknown		None	None
Rumohr Creek	17.1		0.5	0	Unknown		None	None
Rumohr Creek	18.0		7.0	0	Unknown	Yes	None	None
Rumohr Creek	18.1		5.0	21-40%	Unknown		None	None
Rumohr Creek	19.0		6.0	21-40%	Unknown		None	None
Rumohr creek	20.0		6.0	21-40%	Unknown		None	None
Rumohr Creek	21.0	Channel splits at segment 20-21 break	25.0	21-40%	Unknown		None	None
Thompson Brook	1.0		0.0	41-70%	Potential		None	None
Thompson Brook	2.0	Flume over 40-m at upstream end of segment	0.0		Unknown		None	None
Thompson Brook	3.0	Naturalized channelized stream segment - Cottonwood - red-osier dogwood riparian association	0.0	41-70%	Unknown		None	None
Thompson Brook	4.0	Constructed wetland complex	0.0	0	Unknown		None	None
Thompson Brook - eastern drainage ditches	5.0	Ingrowth/infestation of yellow iris	0.0	0	Unknown	Yes	None	None
Thompson Brook	6.0		2.0	0	Unknown		None	None
Thompson Brook	7.0	Drainage way/Discontinuous upper limit - ephemeral	10.0	1-20%	Unknown		None	None
Thompson Brook - southern drainage ditches	8.0		1.0	1-20%	Unknown	Yes	None	None
Upper Vernon Creek	1.0	Confluence with lake. Partially backwatered during high water level	1.0	41-70%	Potential		Side	None
Upper Vernon Creek	1a	Backwatered from Vernon Creek - no flows.	0.0	21-40%	Unknown		None	None
Upper Vernon Creek	2.0		2.0	71-90%	Potential		None	None
Upper Vernon Creek	3.0		3.0	1-20%	Potential		Side	None
Upper Vernon Creek	4.0		3.5	0			None	None
Upper Vernon Creek	5.0		5.0	0			None	None
Upper Vernon Creek	6.0		4.5	21-40%	Potential		None	None
Upper Vernon Creek	7.0	Riffle-pool-cascade	5.0	21-40%	Potential		None	None
Upper Vernon Creek	8.0		3.5	41-70%	Potential	Yes	Side	None

STREAMNAME	SEG_NUMBER	COMT_SCHAR	SUB_ORGANI	SUB_FINES	SUB_GRAVEL	SUB_COBBLE	SUB_BLDER	SUB_BEDRK	COMPACTION
Bauer Brook	1.0	Bottom of Segment with Pacific willow canopy - opening up through paddock and field	0	100	0	0	0	0	Low
Bauer Brook	2.0	Ditched along Moyer Road	0	90	10	0	0	0	Low
Bauer Brook	3.0	Bottom of Segment with Pacific willow canopy - opening up through paddock and field	0	100	0	0	0	0	Low
Bauer Brook	4.0	Riparian gully	0	100	0	0	0	0	Low
Bauer Brook	5.0		0	55	0	40	5	0	Medium
Bauer Brook	6.0		0	10	10	70	20	0	Medium
Bauer Brook	7.0		10	80	5	5	0	0	Medium
Bauer Brook	8.0		0	0	0	0	0	0	
Bauer Brook	9.0		0	10	20	65	5	0	Medium
Bauer Brook	10.0		0	5	15	55	25	0	Medium
Bauer Brook	11.0		0	55	30	15	0	0	Medium
Bauer Brook	12.0	Minimal canopy closure	0	5	10	65	20	0	Medium
Campbell_Industry Brook	1.0		0	5	5	60	30	0	High
Campbell_Industry Brook	2.0		0	92	5	2	1	0	Low
Campbell_Industry Brook	3.0		0	75	5	15	5	0	Moderate
Campbell_Industry Brook	4.0		0	95	5	0	0	0	Low
Campbell_Industry Brook	5.0		0	100	0	2	1	0	
Campbell_Industry Brook	6.0		20	80	0	2	1	0	Low
Campbell_Industry Brook	7.0		0	34	60	5	1	0	Low
Dewdney Creek	1.0	Rural residential and agricultural disturbance	90	10	0	0	0	0	Low
Dewdney Creek	2.0	Channel more narrow through very moist ACT riparian with intermittent swampy areas - skunk cabbage	10	90	0	0	0	0	Low
Dewdney Creek	3.0		10	90	0	0	0	0	Low
Dewdney Creek	4.0		60	40	0	0	0	0	Low
Dewdney Creek	5.0		30	35	25	10	0	0	Low
Dewdney Creek - Tributary 1	1.0		40	60	0	0	0	0	Low
Dewdney Creek - Tributary 2	1.0		20	80	0	0	0	0	Low
Gopher Creek	1.0		0	90	10	0	0	0	
Gopher Creek	2.0		0	80	20	0	0	0	
Gopher Creek	3.0		0	70	25	5	0	0	
Gopher Creek	4.0		0	70	25	5	0	0	
Gopher Creek	5.0		0	50	40	10	0	0	
Gopher Creek	6.0		0	0	0	0	0	0	
Gopher Creek	7.0		0	85	15	0	0	0	
Gopher Creek	8.0		50	50	0	0	0	0	
Gopher Creek	9.0		0	65	25	10	0	0	Medium
Gopher Creek	10.0		0	0	0	0	0	0	
Gopher Creek	11.0		0	95	5	0	0	0	
Gopher Creek	13.0		40	60	0	0	0	0	
Gopher Creek	14.0		40	60	0	0	0	0	
Gopher Creek	15.0		40	60	0	0	0	0	
Gopher Creek Tributary	1.0		0	75	23	2	0	0	Low
Gopher Creek Tributary	2.0		4	85	10	1	0	0	Low
Gopher Creek Tributary	3.0	Shallow drainage path.	50	50	0	0	0	0	Low
Gopher Creek Tributary	4.0	Ravine/gully. Intense cattle disturbance	29	70	0	1	0	0	Low
Gopher Creek Tributary	5.0	Beneath Fortis power line along R.O.W.	95	5	0	0	0	0	Low
Gopher Creek Tributary	6.0		50	50	0	0	0	0	Low
Gopher Creek Tributary	7.0	Intense cattle use of area	100	0	0	0	0	0	Low
Gopher Creek Tributary	8.0	No defined channel - sub surface flows	25	75	0	0	0	0	Low
Gopher Creek Tributary	9.0	Predominantly shrub/thicket cover over channel	25	75	0	0	0	0	Low
Gopher Creek Tributary	10.0	More open shrub thicket at bottom becoming more closed fir canopy near top at riparian bench area	25	75	0	0	0	0	Low
Gopher Creek Tributary	11.0		75	25	0	0	0	0	Low
Hachey Creek	1.0		0	20	65	25	0	0	Medium
Hachey Creek	2.0		0	70	15	15	0	0	Medium
Hachey Creek	3.0		0	65	15	15	5	0	Medium
Hachey Creek	4.0		0	70	15	15	0	0	Medium
Hachey Creek	5.0		0	85	5	5	0	0	Medium
Hachey Creek	6.0		0	90	5	5	0	0	Medium
Hachey Creek	7.0		0	85	5	5	0	0	Medium
Hachey Creek	8.0		0	60	15	20	5	0	Medium
Hachey Creek	9.0		0	35	40	20	5	0	
Hachey Creek	10.0	Cleared through power corridor	0	20	40	30	10	0	Medium
Hachey Creek	11.0		0	15	40	30	15	0	Medium
Hachey Creek	12.0		0	25	40	30	5	0	Medium
Hydraulic Creek	1.0		0	2	8	65	25	0	Medium
Hydraulic Creek	2.0	Series of step-pool and falls through canyon	0	1	2	22	50	25	Medium

STREAMNAME	SEG_NUMBER	COMT_SCHAR	SUB_ORGANI	SUB_FINES	SUB_GRAVEL	SUB_COBBLE	SUB_BLDER	SUB_BEDRK	COMPACTION
KLO Creek	1.0	Floodplain area along left bank	0	1	4	65	30	0	Medium
KLO Creek	2.0		0	1	4	65	30	0	Medium
KLO Creek	3.0		0	1	4	55	35	5	Medium
KLO Creek	4.0		0	1	4	45	35	15	High
KLO Creek	5.0		0	1	8	59	30	2	Medium
KLO Creek	6.0	Falls/upstream migration barrier at top of shirt segment	0	0	2	8	25	65	High
KLO Creek	7.0		0	2	20	68	10	0	Medium
KLO Creek	8.0		0	1	9	70	20	0	Medium
KLO Creek	9.0	A single island channel split at bottom of segment	0	1	9	30	58	2	High
KLO Creek	10.0		0	1	9	45	40	5	High
Michaelbrook	1.0		60	40	0	0	0	0	
North Arm Bellevue Creek	1.0		0	0	0	0	0	0	High
North Arm Bellevue Creek	2.0		0	95	3	2	0	0	Low
North Arm Bellevue Creek	3.0		34	65	0	1	0	0	Low
North Arm Bellevue Creek	4.0		40	60	0	0	0	0	
North Arm Bellevue Creek	5.0		0	0	0	0	0	0	
North Arm Bellevue Creek	6.0		0	25	25	40	10	0	Medium
North Arm Bellevue Creek	7.0		0	0	0	0	0	0	
North Arm Bellevue Creek	8.0		0	25	25	40	10	0	Medium
North Arm Bellevue Creek	9.0		0	90	8	1	1	0	Low
North Arm Bellevue Creek	10.0		0	40	30	30	0	0	Medium
North Arm Bellevue Creek	11.0		0	40	30	30	0	0	Medium
North Arm Bellevue Creek	12.0		0	40	30	30	0	0	Medium
Rumohr Creek	1.0		10	80	5	5	0	0	Medium
Rumohr Creek	2.0		0	10	80	10	0	0	High
Rumohr Creek	3.0		10	80	5	5	0	0	Medium
Rumohr Creek	4.0		10	80	5	5	0	0	Medium
Rumohr Creek	5.0		15	80	5	0	0	0	
Rumohr Creek	6.0		0	75	20	5	0	0	Medium
Rumohr Creek	7.0		0	75	20	5	0	0	Medium
Rumohr Creek	8.0		0	0	0	0	0	0	High
Rumohr Creek	9.0		0	10	50	40	0	0	Medium
Rumohr Creek	10.0		0	70	20	10	0	0	Medium
Rumohr Creek	11.0	Segment winds through rural residences and in and out of cottonwoods and shrubs	0	70	20	10	0	0	Medium
Rumohr Creek	12.0	Seasonally wetted	0	90	10	0	0	0	Medium
Rumohr Creek	13.0		0	90	10	0	0	0	Medium
Rumohr Creek	14.0		0	20	40	35	5	0	Medium
Rumohr Creek	15.0		0	80	15	5	0	0	Medium
Rumohr Creek	16.0		0	15	75	10	0	0	Medium
Rumohr Creek	16.1		0	80	15	5	0	0	Medium
Rumohr Creek	17.0		20	60	15	5	0	0	Medium
Rumohr Creek	17.1		25	70	5	0	0	0	
Rumohr Creek	18.0	Horse paddock area	0	40	50	10	0	0	Medium
Rumohr Creek	18.1		0	65	30	5	0	0	
Rumohr Creek	19.0		0	40	50	10	0	0	Medium
Rumohr creek	20.0		0	60	25	10	5	0	Medium
Rumohr Creek	21.0		0	5	35	35	25	0	Medium
Thompson Brook	1.0		0	40	50	10	0	0	Low
Thompson Brook	2.0		0	0	0	0	0	0	High
Thompson Brook	3.0		80	20	0	0	0	0	Low
Thompson Brook	4.0		70	30	0	0	0	0	Low
Thompson Brook - eastern drainage ditches	5.0	Areas of livestock access	30	70	0	0	0	0	Low
Thompson Brook	6.0		10	90	0	0	0	0	Medium
Thompson Brook	7.0		0	90	5	5	0	0	Medium
Thompson Brook - southern drainage ditches	8.0		30	70	0	0	0	0	Low
Upper Vernon Creek	1.0	Intermittent floodplain areas on right and left banks, Constructed side channel through golf course	0	57	40	2	1	0	Low
Upper Vernon Creek	1a		0	0	0	0	0	0	High
Upper Vernon Creek	2.0		0	5	25	70	0	0	Medium
Upper Vernon Creek	3.0	More open, higher gradient, more defined thalweg than Segment 2	0	2	10	88	0	0	Medium
Upper Vernon Creek	4.0		0	0	0	0	0	0	High
Upper Vernon Creek	5.0		0	0	0	0	0	0	High
Upper Vernon Creek	6.0		0	2	20	73	5	0	Medium
Upper Vernon Creek	7.0		0	2	15	43	40	0	High
Upper Vernon Creek	8.0	1 small mid-channel vegetated bar/small island near bottom of segment u/s of road	0	10	20	60	10	0	Medium

STREAMNAME	SEG_NUMBER	COMT_SUB	WIDTH_W	WIDTH_BF	WIDTH_LFP	WIDTH_RFP	DEPTH_W	DEPTH_BF	DEPTH_FP
Bauer Brook	1.0		0.45	1.00	0.00	0.00	0.05	0.10	0.00
Bauer Brook	2.0	Gravels greater than 50% embedded in fines	0.40	1.10	0.00	0.00	0.06	0.15	0.00
Bauer Brook	3.0		0.45	1.00	0.00	0.00	0.05	0.10	0.00
Bauer Brook	4.0		0.50	1.40	0.00	0.00	0.04	0.10	0.00
Bauer Brook	5.0	Coarse substrates associated with riprap armouring	0.35	0.80	0.00	0.00	0.08	0.35	0.00
Bauer Brook	6.0	Channel filled with riprap	0.25	1.10	0.00	0.00	0.05	0.50	0.00
Bauer Brook	7.0		1.10	2.00	0.00	0.00	0.20	0.80	0.00
Bauer Brook	8.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bauer Brook	9.0	Channel lined with riprap	0.50	1.20	0.00	0.00	0.06	0.40	0.00
Bauer Brook	10.0	Channel lined with riprap	0.60	1.00	0.00	0.00	0.08	0.45	0.00
Bauer Brook	11.0	Riprap ends	0.40	1.20	0.00	0.00	0.10	0.60	0.00
Bauer Brook	12.0	Channel lined with riprap	0.40	0.70	0.00	0.00	0.06	0.50	0.00
Campbell_Industry Brook	1.0		1.00	1.50	0.00	0.00	0.00	0.00	0.00
Campbell_Industry Brook	2.0		0.00	1.50	0.00	0.00	0.00	0.00	0.00
Campbell_Industry Brook	3.0		0.00	1.50	0.00	0.00	0.00	0.00	0.00
Campbell_Industry Brook	4.0		0.40	1.00	0.00	0.00	0.00	0.00	0.00
Campbell_Industry Brook	5.0		0.50	1.00	0.00	0.00	0.00	0.00	0.00
Campbell_Industry Brook	6.0		0.70	1.20	0.00	0.00	0.00	0.00	0.00
Campbell_Industry Brook	7.0		0.60	1.20	0.00	0.00	0.00	0.00	0.00
Dewdney Creek	1.0		2.00	4.50	0.00	0.00	0.07	0.20	0.00
Dewdney Creek	2.0		2.60	3.10	0.00	0.00	0.08	0.18	0.00
Dewdney Creek	3.0		1.40	1.70	0.00	0.00	0.08	0.20	0.00
Dewdney Creek	4.0		12.00	12.00	0.00	0.00	1.00	1.00	0.00
Dewdney Creek	5.0		1.20	1.40	0.00	0.00	0.03	0.12	0.00
Dewdney Creek - Tributary 1	1.0		1.80	2.00	0.00	0.00	0.03	0.07	0.00
Dewdney Creek - Tributary 2	1.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek	1.0		0.45	0.60	0.00	0.00	0.20	0.40	0.00
Gopher Creek	2.0		0.50	0.80	0.00	0.00	0.10	0.30	0.00
Gopher Creek	3.0		0.70	1.00	0.00	0.00	0.10	0.30	0.00
Gopher Creek	4.0		0.50	0.80	0.00	0.00	0.15	0.30	0.00
Gopher Creek	5.0		0.50	0.80	0.00	0.00	0.15	0.30	0.00
Gopher Creek	6.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek	7.0		0.45	0.70	0.00	0.00	0.15	0.25	0.00
Gopher Creek	8.0		19.00	22.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek	9.0		0.00	1.00	0.00	0.00	0.00	0.25	0.00
Gopher Creek	10.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek	11.0		0.00	1.50	0.00	0.00	0.00	0.30	0.00
Gopher Creek	13.0	Soil and fines	1.10	1.50	0.00	0.00	0.00	0.00	0.00
Gopher Creek	14.0	Soils with areas of exposed clay from channel erosion	1.80	2.20	0.00	0.00	0.00	0.00	0.00
Gopher Creek	15.0	Soil and fines clay beneath	0.00	0.50	0.00	0.00	0.00	0.00	0.00
Gopher Creek Tributary	1.0		0.00	2.20	0.00	0.00	0.00	0.30	0.00
Gopher Creek Tributary	2.0	Soil	0.00	2.20	0.00	0.00	0.00	0.30	0.00
Gopher Creek Tributary	3.0	Topsoil and fines	0.00	0.55	0.00	0.00	0.00	0.05	0.00
Gopher Creek Tributary	4.0	Soil and fines	0.60	1.40	0.00	0.00	0.02	0.15	0.00
Gopher Creek Tributary	5.0		10.00	31.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek Tributary	6.0	Soil and fines	0.00	1.40	0.00	0.00	0.00	0.05	0.00
Gopher Creek Tributary	7.0		0.00	70.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek Tributary	8.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gopher Creek Tributary	9.0		0.00	1.50	0.00	0.00	0.00	0.00	0.00
Gopher Creek Tributary	10.0		0.50	1.80	0.00	0.00	0.02	0.10	0.00
Gopher Creek Tributary	11.0		2.50	3.50	0.00	0.00	0.02	0.10	0.00
Hachey Creek	1.0		0.00	0.95	0.00	0.00	0.00	0.25	0.00
Hachey Creek	2.0		0.00	1.50	0.00	0.00	0.00	0.35	0.00
Hachey Creek	3.0		0.00	1.50	0.00	0.00	0.00	0.50	0.00
Hachey Creek	4.0		0.00	1.50	0.00	0.00	0.00	0.50	0.00
Hachey Creek	5.0		0.00	1.50	0.00	0.00	0.00	0.40	0.00
Hachey Creek	6.0		0.00	0.90	0.00	0.00	0.00	0.30	0.00
Hachey Creek	7.0		0.00	1.50	0.00	0.00	0.00	0.50	0.00
Hachey Creek	8.0		0.00	1.00	0.00	0.00	0.00	0.20	0.00
Hachey Creek	9.0		0.00	1.20	0.00	0.00	0.00	0.30	0.00
Hachey Creek	10.0		0.00	1.20	0.00	0.00	0.00	0.30	0.00
Hachey Creek	11.0		0.00	1.30	0.00	0.00	0.00	0.35	0.00
Hachey Creek	12.0		0.00	1.30	0.00	0.00	0.00	0.35	0.00
Hydraulic Creek	1.0		3.25	4.50	0.00	0.00	0.18	0.48	0.00
Hydraulic Creek	2.0	Large boulder / block	3.25	5.00	0.00	0.00	0.18	0.48	0.00

STREAMNAME	SEG_NUMBER	COMT_SUB	WIDTH_W	WIDTH_BF	WIDTH_LFP	WIDTH_RFP	DEPTH_W	DEPTH_BF	DEPTH_FP
KLO Creek	1.0		3.90	12.00	0.00	0.00	0.08	0.38	0.00
KLO Creek	2.0		3.00	8.00	0.00	0.00	0.10	0.40	0.00
KLO Creek	3.0		3.00	7.50	0.00	0.00	0.15	0.40	0.00
KLO Creek	4.0		3.00	7.50	0.00	0.00	0.15	0.40	0.00
KLO Creek	5.0		3.00	8.00	0.00	0.00	0.15	0.40	0.00
KLO Creek	6.0	Canyon/gulch	3.00	6.50	0.00	0.00	0.15	0.40	0.00
KLO Creek	7.0		3.50	10.50	0.00	0.00	0.10	0.35	0.00
KLO Creek	8.0		3.50	8.50	0.00	0.00	0.10	0.45	0.00
KLO Creek	9.0	More confined boulder/bedrock	3.50	7.00	0.00	0.00	0.10	0.45	0.00
KLO Creek	10.0		3.50	9.50	0.00	0.00	0.10	0.45	0.00
Michaelbrook	1.0		2.60	3.20	0.00	0.00	0.10	0.20	0.00
North Arm Bellevue Creek	1.0	Substrates unknown	0.00	1.50	0.00	0.00	0.00	0.00	0.00
North Arm Bellevue Creek	2.0		0.00	1.50	0.00	0.00	0.00	0.00	0.00
North Arm Bellevue Creek	3.0	Soil and fines	0.45	0.55	0.00	0.00	0.02	0.05	0.00
North Arm Bellevue Creek	4.0	Soil, leaf litter, fines	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North Arm Bellevue Creek	5.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
North Arm Bellevue Creek	6.0		0.00	1.40	0.00	0.00	0.00	0.15	0.00
North Arm Bellevue Creek	7.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
North Arm Bellevue Creek	8.0		0.00	1.40	0.00	0.00	0.00	0.15	0.00
North Arm Bellevue Creek	9.0	Coarser substrates from scour and weirs - otherwise a stream channel through upland forest	0.00	1.80	0.00	0.00	0.00	0.15	0.00
North Arm Bellevue Creek	10.0	Coarser substrates associated with stonework retaining walls	0.00	1.20	0.00	0.00	0.00	0.15	0.00
North Arm Bellevue Creek	11.0	Followings top of bank of Bellevue Creek	0.00	1.20	0.00	0.00	0.00	0.15	0.00
North Arm Bellevue Creek	12.0		0.00	0.20	0.00	0.00	0.00	0.00	0.00
Rumohr Creek	1.0	Riprap aprons sometimes overlap	0.00	1.70	0.00	0.00	0.00	0.40	0.00
Rumohr Creek	2.0		0.00	1.70	0.00	0.00	0.00	0.40	0.00
Rumohr Creek	3.0	Channel stabilization with erosion blanket and series of riprap rock lines	0.00	2.00	0.00	0.00	0.00	0.40	0.00
Rumohr Creek	4.0		0.00	2.00	0.00	0.00	0.00	0.40	0.00
Rumohr Creek	5.0		0.60	2.20	0.00	0.00	0.05	0.40	0.00
Rumohr Creek	6.0	Erosion matting throughout	0.00	2.00	0.00	0.00	0.00	0.40	0.00
Rumohr Creek	7.0		0.00	2.00	0.00	0.00	0.00	0.40	0.00
Rumohr Creek	8.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumohr Creek	9.0	Rock lines channel	0.00	2.20	0.00	0.00	0.00	0.20	0.00
Rumohr Creek	10.0		0.00	1.80	0.00	0.00	0.00	0.30	0.00
Rumohr Creek	11.0		0.00	1.40	0.00	0.00	0.00	0.20	0.00
Rumohr Creek	12.0		0.00	1.10	0.00	0.00	0.00	0.25	0.00
Rumohr Creek	13.0		0.00	0.80	0.00	0.00	0.00	0.35	0.00
Rumohr Creek	14.0		0.60	1.00	0.00	0.00	0.10	0.35	0.00
Rumohr Creek	15.0		8.50	9.00	0.00	0.00	0.10	0.35	0.00
Rumohr Creek	16.0		0.00	0.90	0.00	0.00	0.00	0.25	0.00
Rumohr Creek	16.1		6.00	1.00	0.00	0.00	0.50	1.00	0.00
Rumohr Creek	17.0		0.70	1.10	0.00	0.00	0.10	0.15	0.00
Rumohr Creek	17.1		0.40	1.20	0.00	0.00	0.00	0.35	0.00
Rumohr Creek	18.0		0.00	0.90	0.00	0.00	0.00	0.15	0.00
Rumohr Creek	18.1		0.00	0.75	0.00	0.00	0.00	0.30	0.00
Rumohr Creek	19.0		0.00	1.10	0.00	0.00	0.00	0.20	0.00
Rumohr creek	20.0		0.00	1.10	0.00	0.00	0.00	0.20	0.00
Rumohr Creek	21.0		0.00	1.10	0.00	0.00	0.00	0.20	0.00
Thompson Brook	1.0		1.70	3.80	0.00	0.00	0.17	0.70	0.00
Thompson Brook	2.0	Concrete box culvert	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Thompson Brook	3.0	Deep detrital material - fibric organic and muck	2.20	2.80	0.00	0.00	0.45	0.85	0.00
Thompson Brook	4.0	Fibric organic/detritus and muck	60.00	65.00	0.00	0.00	0.00	1.00	2.00
Thompson Brook - eastern drainage ditches	5.0	Fibric organic/detritus and silt/clay	2.70	3.30	0.00	0.00	0.00	0.30	0.50
Thompson Brook	6.0		0.80	2.00	0.00	0.00	0.00	0.00	0.00
Thompson Brook	7.0		0.00	1.00	0.00	0.00	0.00	0.00	0.00
Thompson Brook - southern drainage ditches	8.0	Soil and fines	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Vernon Creek	1.0	Boulder substrates associated with rip rap armouring and channelization	5.25	6.25	0.00	0.00	0.15	0.55	0.00
Upper Vernon Creek	1a	Concrete	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Upper Vernon Creek	2.0		7.50	8.50	0.00	0.00	0.15	0.45	0.00
Upper Vernon Creek	3.0		4.00	9.00	0.00	0.00	0.15	0.45	0.00
Upper Vernon Creek	4.0	Concrete	2.45	3.70	0.00	0.00	0.05	0.55	0.00
Upper Vernon Creek	5.0	Concrete	2.45	3.70	0.00	0.00	0.05	0.55	0.00
Upper Vernon Creek	6.0		5.90	7.45	0.00	0.00	0.10	0.45	0.00
Upper Vernon Creek	7.0		4.50	5.00	0.00	0.00	0.15	0.50	0.00
Upper Vernon Creek	8.0		5.50	9.20	0.00	0.00	0.13	0.45	0.00

STREAMNAME	SEG_NUMBER	COMT_CHAN	TOTAL_COVE	B	DP	IV	LWD	OV	SWD	UC	LWD_COUNT	SPANLOG_CO	DP_COUNT
Bauer Brook	1.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	2.0		100	0	0	100	0	0	0	0	0	0	0
Bauer Brook	3.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	4.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	5.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	6.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	7.0	Small natural wetted area through gully in field	0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	8.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	9.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	10.0	Dense cover of northern watercress	0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	11.0		0	0	0	0	0	0	0	0	0	0	0
Bauer Brook	12.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	1.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	2.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	3.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	4.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	5.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	6.0		0	0	0	0	0	0	0	0	0	0	0
Campbell_Industry Brook	7.0		0	0	0	0	0	0	0	0	0	0	0
Dewdney Creek	1.0		25	0	0	45	10	35	10	0	0	0	0
Dewdney Creek	2.0		25	0	0	30	5	55	10	0	0	0	0
Dewdney Creek	3.0	Small tribs along left bank where groundwater discharge occurs in swamp/low floodplain riparian	10	0	0	25	0	50	25	0	0	0	0
Dewdney Creek	4.0		30	0	100	0	0	0	0	0	0	0	0
Dewdney Creek	5.0		0	0	0	0	0	0	0	0	0	0	0
Dewdney Creek - Tributary 1	1.0		0	0	0	0	0	0	0	0	0	0	0
Dewdney Creek - Tributary 2	1.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	1.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	2.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	3.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	4.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	5.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	6.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	7.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	8.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	9.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	10.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	11.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	13.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	14.0	Through water birch-willow-dogwood floodplain/swamp association	0	0	0	0	0	0	0	0	0	0	0
Gopher Creek	15.0	Discontinuous/poorly defined ephemeral channel through modified grassland gully/low shrub	0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	1.0	Downcut channel-1.2m	0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	2.0	Channel downcutting less severe	0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	3.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	4.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	5.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	6.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	7.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	8.0	No defined channel	0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	9.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	10.0		0	0	0	0	0	0	0	0	0	0	0
Gopher Creek Tributary	11.0	Very moist to wet riparian bench/floodplain-swamp association	0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	1.0		0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	2.0	Erosion on both banks throughout segment	0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	3.0	Erosion on both banks throughout segment	0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	4.0	Erosion on both banks throughout segment	0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	5.0	Erosion on both banks throughout segment	0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	6.0		0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	7.0	Erosion on both banks throughout segment	0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	8.0		0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	9.0		0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	10.0		0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	11.0		0	0	0	0	0	0	0	0	0	0	0
Hachey Creek	12.0		0	0	0	0	0	0	0	0	0	0	0
Hydraulic Creek	1.0		10	90	10	0	0	0	0	0	0	0	0
Hydraulic Creek	2.0		10	20	80	0	0	0	0	0	0	0	0

STREAMNAME	SEG_NUMBER	COMT_CHAN	TOTAL_COVE	B	DP	IV	LWD	OV	SWD	UC	LWD_COUNT	SPANLOG_CO	DP_COUNT
KLO Creek	1.0	Channel widens to 16m in sections	15	85	15	0	0	0	0	0	0	0	0
KLO Creek	2.0	More confined with bank erosion	15	90	7	0	0	3	0	0	0	0	0
KLO Creek	3.0	Bedrock more prevalent	15	83	15	0	0	2	0	0	0	0	0
KLO Creek	4.0	Waterfalls abundant with residual pools, spawning pockets, as well as upstream migration barriers	20	50	40	0	10	0	0	0	0	0	0
KLO Creek	5.0		12	90	10	0	0	0	0	0	0	0	0
KLO Creek	6.0		25	40	60	0	0	0	0	0	0	0	0
KLO Creek	7.0		8	95	5	0	0	0	0	0	0	0	0
KLO Creek	8.0		10	90	10	0	0	0	0	0	0	0	0
KLO Creek	9.0		12	70	30	0	0	0	0	0	0	0	0
KLO Creek	10.0		8	90	10	0	0	0	0	0	0	0	0
Michaelbrook	1.0		90	0	0	100	0	0	0	0	0	0	0
North Arm Bellevue Creek	1.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	2.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	3.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	4.0	No stream	0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	5.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	6.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	7.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	8.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	9.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	10.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	11.0		0	0	0	0	0	0	0	0	0	0	0
North Arm Bellevue Creek	12.0	200m PVC pipe/culvert outlet	0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	1.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	2.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	3.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	4.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	5.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	6.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	7.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	8.0	Culverted	0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	9.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	10.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	11.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	12.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	13.0	Wetted substrates through channel with cattails	0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	14.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	15.0	Wetted sections up to 20m wide	0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	16.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	16.1	Wetted sections up to 15m wide - ponds and stream channel combination	0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	17.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	17.1		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	18.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	18.1		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	19.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr creek	20.0		0	0	0	0	0	0	0	0	0	0	0
Rumohr Creek	21.0		0	0	0	0	0	0	0	0	0	0	0
Thompson Brook	1.0		4	0	0	0	0	50	50	0	0	0	0
Thompson Brook	2.0		0	0	0	0	0	0	0	0	0	0	0
Thompson Brook	3.0		75	0	20	0	0	60	20	0	0	0	0
Thompson Brook	4.0		70	0	80	20	0	0	0	0	0	0	0
Thompson Brook - eastern drainage ditches	5.0		0	0	0	0	0	0	0	0	0	0	0
Thompson Brook	6.0		0	0	0	0	0	0	0	0	0	0	0
Thompson Brook	7.0		0	0	0	0	0	0	0	0	0	0	0
Thompson Brook - southern drainage ditches	8.0		0	0	0	0	0	0	0	0	0	0	0
Upper Vernon Creek	1.0		15	15	10	0	0	25	30	20	0	0	0
Upper Vernon Creek	1a		0	0	0	0	0	0	0	0	0	0	0
Upper Vernon Creek	2.0		8	90	0	0	0	0	10	0	0	0	0
Upper Vernon Creek	3.0		8	100	0	0	0	0	0	0	0	0	0
Upper Vernon Creek	4.0	Flume width is 7.5m from top of bank to top of bank	0	0	0	0	0	0	0	0	0	0	0
Upper Vernon Creek	5.0	Flume width is 7.5m from top of bank to top of bank	0	0	0	0	0	0	0	0	0	0	0
Upper Vernon Creek	6.0		12	95	0	0	0	0	0	5	0	0	0
Upper Vernon Creek	7.0		25	75	20	0	0	0	0	5	0	3	0
Upper Vernon Creek	8.0		20	40	20	0	15	0	0	5	0	5	0

STREAMNAME	SEG_NUMBER	COMT_COV	L_RIPCLASS	L_QUALIFIE	L_BANDWIDT	L_BANKSLOP	L_STAGE	L_SHRUBS	L_SNAG	L_VETERAN_
Bauer Brook	1.0		Herbs/grasses	Agriculture	0.00	0	Grass / Herb	<5%	No	No
Bauer Brook	2.0	Dense instream vegetation cover by Reed canary grass and northern watercress.	High Impervious	Urban_Residential	0.00	0	Grass / Herb	<5%	No	No
Bauer Brook	3.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Agriculture	0.00	0	Grass / Herb	<5%	No	No
Bauer Brook	4.0	Incapable of supporting fish therefore no instream cover recorded	Broadleaf forest	Disturbed	0.00	30	young forest	67-100%	<5	No
Bauer Brook	5.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	15.00	0	Grass / Herb	<5%	No	No
Bauer Brook	6.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	15.00	0	Grass / Herb	<5%	No	No
Bauer Brook	7.0	Incapable of supporting fish therefore no instream cover recorded	Planted Tree Farm	Agriculture	5.00	0	Grass / Herb	<5%	No	No
Bauer Brook	8.0	Incapable of supporting fish therefore no instream cover recorded			0.00	0				
Bauer Brook	9.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Rural_Residential	0.00	0	Grass / Herb	<5%	No	No
Bauer Brook	10.0	Incapable of supporting fish therefore no instream cover recorded	High Impervious	Disturbed	0.00	45	Grass / Herb	<5%	No	No
Bauer Brook	11.0	Incapable of supporting fish therefore no instream cover recorded	Mixed forest	Disturbed	7.00	0	tall shrubs 2-10m	34-66%	No	No
Bauer Brook	12.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	0.00	45	Grass / Herb	34-66%	No	No
Campbell_Industry Brook	1.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No
Campbell_Industry Brook	2.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No
Campbell_Industry Brook	3.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No
Campbell_Industry Brook	4.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No
Campbell_Industry Brook	5.0	Incapable of supporting fish therefore no instream cover recorded	Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No
Campbell_Industry Brook	6.0	Incapable of supporting fish therefore no instream cover recorded	Mixed forest	Natural	0.00	0	mature forest	67-100%	<5	No
Campbell_Industry Brook	7.0	Incapable of supporting fish therefore no instream cover recorded	Broadleaf forest	Disturbed	0.00	0	Sapling >10m	67-100%	No	No
Dewdney Creek	1.0		Broadleaf forest	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No
Dewdney Creek	2.0		Broadleaf forest	Natural	0.00	0	mature forest	67-100%	<5	<5
Dewdney Creek	3.0	Small trib with abundant woody debris and instream/overstream veg.-low pool cover-no fish observed.	Broadleaf forest	Natural	0.00	0	mature forest	67-100%	<5	No
Dewdney Creek	4.0	Ponds constitute greatest potential cover in this segment.	Mixed forest	Rural_Residential	0.00	0	mature forest	5-33%	No	No
Dewdney Creek	5.0		Broadleaf forest	Rural_Residential	0.00	0	young forest	67-100%	No	No
Dewdney Creek - Tributary 1	1.0	1st order tributary	Broadleaf forest	Natural	0.00	0	mature forest	67-100%	<5	No
Dewdney Creek - Tributary 2	1.0	1st order tributary	Broadleaf forest	Disturbed	0.00	0	mature forest	67-100%	<5	No
Gopher Creek	1.0	No instream cover recorded since confirmed non-fish stream	Shrubs	Rural_Residential	5.00	25	tall shrubs 2-10m	34-66%	No	No
Gopher Creek	2.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Natural	10.00	45	young forest	67-100%	No	No
Gopher Creek	3.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Disturbed	5.00	30	young forest	34-66%	No	No
Gopher Creek	4.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Rural_Residential	5.00	30	young forest	34-66%	No	No
Gopher Creek	5.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Rural_Residential	5.00	30	young forest	34-66%	No	No
Gopher Creek	6.0	No instream cover recorded since confirmed non-fish stream			0.00	0				
Gopher Creek	7.0	No instream cover recorded since confirmed non-fish stream	Coniferous forest	Rural_Residential	10.00	15	young forest	34-66%	No	No
Gopher Creek	8.0	No instream cover recorded since confirmed non-fish stream	Disturbed wetland	Disturbed	0.00	0	tall shrubs 2-10m	34-66%		
Gopher Creek	9.0	No instream cover recorded since confirmed non-fish stream	Broadleaf forest	Rural_Residential	10.00	15	Grass / Herb	34-66%	No	No
Gopher Creek	10.0	No instream cover recorded since confirmed non-fish stream	Disturbed wetland	Disturbed	10.00	15	tall shrubs 2-10m	5-33%	No	No
Gopher Creek	11.0	No instream cover recorded since confirmed non-fish stream	Shrubs	Disturbed	5.00	30	tall shrubs 2-10m	34-66%	No	No
Gopher Creek	13.0	No instream cover recorded since confirmed non-fish stream	Herbs/grasses	Disturbed	0.00	0	Grass / Herb	<5%	No	No
Gopher Creek	14.0	No instream cover recorded since confirmed non-fish stream	Shrubs	Disturbed	0.00	0	sapling >10m	67-100%	<5	<5
Gopher Creek	15.0	No instream cover recorded since confirmed non-fish stream	Shrubs	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No
Gopher Creek Tributary	1.0	No instream cover recorded since confirmed non-fish stream	Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	<5	No
Gopher Creek Tributary	2.0	No instream cover recorded since confirmed non-fish stream	Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	<5	No
Gopher Creek Tributary	3.0	No instream cover recorded since confirmed non-fish stream	Herbs/grasses	Disturbed	0.00	0		<5%	No	No
Gopher Creek Tributary	4.0	No instream cover recorded since confirmed non-fish stream	Broadleaf forest	Disturbed	0.00	0	young forest	5-33%	<5	No
Gopher Creek Tributary	5.0	No instream cover recorded since confirmed non-fish stream	Disturbed wetland	Disturbed	0.00	0	low shrubs <2m	5-33%	<5	No
Gopher Creek Tributary	6.0	No instream cover recorded since confirmed non-fish stream	Broadleaf forest	Disturbed	0.00	0	young forest	5-33%	No	No
Gopher Creek Tributary	7.0	No instream cover recorded since confirmed non-fish stream	Herbs/grasses	Disturbed	0.00	0		<5%	No	No
Gopher Creek Tributary	8.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Natural	0.00	0	mature forest	<5%	No	<5
Gopher Creek Tributary	9.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Natural	0.00	0	young forest	67-100%	No	No
Gopher Creek Tributary	10.0	No instream cover recorded since confirmed non-fish stream	Mixed forest	Natural	0.00	0	mature forest	67-100%	No	No
Gopher Creek Tributary	11.0	No instream cover recorded since confirmed non-fish stream	Broadleaf forest	Natural	0.00	0	tall shrubs 2-10m	67-100%	No	No
Hachey Creek	1.0		Mixed forest	Disturbed	10.00	45	young forest	34-66%	No	No
Hachey Creek	2.0		Herbs/grasses	Rural_Residential	5.00	20	Grass / Herb	34-66%	No	No
Hachey Creek	3.0		Herbs/grasses	Agriculture	5.00	20	Grass / Herb	34-66%	No	No
Hachey Creek	4.0	0	Herbs/grasses	Agriculture	5.00	20	low shrubs <2m	34-66%	No	No
Hachey Creek	5.0		Herbs/grasses	Agriculture	2.00	20	Grass / Herb	<5%	No	No
Hachey Creek	6.0		Herbs/grasses	Agriculture	5.00	20	Grass / Herb	5-33%	No	No
Hachey Creek	7.0		Herbs/grasses	Agriculture	1.00	20	Grass / Herb	<5%	No	No
Hachey Creek	8.0		Mixed forest	Agriculture	5.00	20	young forest	5-33%	No	No
Hachey Creek	9.0		Mixed forest	Natural	5.00	10	young forest	67-100%	No	No
Hachey Creek	10.0		Mixed forest	Disturbed	0.00	10	tall shrubs 2-10m	34-66%	No	No
Hachey Creek	11.0		Coniferous forest	Natural	5.00	10	young forest	34-66%	No	No
Hachey Creek	12.0		Coniferous forest	Natural	5.00	10	young forest	34-66%	No	No
Hydraulic Creek	1.0		Mixed forest	Natural	0.00	0	mature forest	67-100%	>=5	<5
Hydraulic Creek	2.0	Deep pool cover associated with boulders and bedrock - fish moving downstream may use this habitat.	Mixed forest	Natural	0.00	0	mature forest	67-100%	>=5	<5

STREAMNAME	SEG_NUMBER	COMT_COV	L_RIPCLASS	L_QUALIFIE	L_BANDWIDT	L_BANKSLOP	L_STAGE	L_SHRUBS	L_SNAG	L_VETERAN_
KLO Creek	1.0	Predominantly boulder/cobble cover for fry and juvenile fish with infrequent residual pools.	Mixed forest	Natural	0.00	0	mature forest	67-100%	<5	No
KLO Creek	2.0	Predominantly boulder/cobble cover for fry and juvenile fish with infrequent pools and overstrm veg.	Mixed forest	Natural	0.00	0	mature forest	67-100%	<5	No
KLO Creek	3.0	Predominantly boulder/cobble cover for fry and juvenile fish with resid. pools become more abundant.	Mixed forest	Natural	0.00	0	mature forest	67-100%	<5	No
KLO Creek	4.0	Residual and deep pool habitat abundant	Coniferous forest	Natural	0.00	0	mature forest	34-66%	<5	<5
KLO Creek	5.0		Mixed forest	Natural	0.00	0	mature forest	34-66%	<5	<5
KLO Creek	6.0	Despite obstructions, deep pool habitat abundant in this lake headed fish stream.	Mixed forest	Natural	0.00	0	mature forest	34-66%	<5	<5
KLO Creek	7.0	Aggrading and low pool cover.	Mixed forest	Natural	0.00	0	mature forest	34-66%	<5	<5
KLO Creek	8.0	Residual pool cover associated with boulder substrates.	Mixed forest	Natural	0.00	70	mature forest	67-100%	<5	<5
KLO Creek	9.0	Increased pool and resid. pool cover with larger, more stable substrates maintaining deeper pools.	Mixed forest	Natural	0.00	70	mature forest	67-100%	<5	<5
KLO Creek	10.0	Predominantly boulder associated cover	Mixed forest	Natural	0.00	70	mature forest	67-100%	<5	<5
Michaelbrook	1.0	Cattail, bulrush, and northern watercress	Herbs/grasses	Agriculture	0.00	0	low shrubs <2m	5-33%	No	No
North Arm Bellevue Creek	1.0	Not capable of supporting fish. Therefore no instream cover recorded.	Medium_impervious	Urban_Residential	0.00	0				
North Arm Bellevue Creek	2.0	Not capable of supporting fish. Therefore no instream cover recorded.	Mixed forest	Urban_Residential	0.00	0	mature forest	5-33%	No	<5
North Arm Bellevue Creek	3.0	Not capable of supporting fish. Therefore no instream cover recorded.	Mixed forest	Urban_Residential	0.00	0	mature forest	34-66%	No	No
North Arm Bellevue Creek	4.0	Not capable of supporting fish. Therefore no instream cover recorded.	Mixed forest	Urban_Residential	0.00	0	mature forest	34-66%	No	No
North Arm Bellevue Creek	5.0				0.00	0				
North Arm Bellevue Creek	6.0	Not capable of supporting fish. Therefore no instream cover recorded.	Coniferous forest	Urban_Residential	0.00	0	young forest	34-66%	No	No
North Arm Bellevue Creek	7.0				0.00	0				
North Arm Bellevue Creek	8.0	Not capable of supporting fish. Therefore no instream cover recorded.	Coniferous forest	Urban_Residential	0.00	0	young forest	34-66%	No	No
North Arm Bellevue Creek	9.0	Not capable of supporting fish. Therefore no instream cover recorded.	Mixed forest	Natural	0.00	0	mature forest	34-66%	>=5	>=5
North Arm Bellevue Creek	10.0	Not capable of supporting fish. Therefore no instream cover recorded.	Mixed forest	Disturbed	0.00	0	mature forest	34-66%	<5	<5
North Arm Bellevue Creek	11.0	Not capable of supporting fish. Therefore no instream cover recorded.	Mixed forest	Disturbed	0.00	0	mature forest	34-66%	<5	<5
North Arm Bellevue Creek	12.0	Not capable of supporting fish. Therefore no instream cover recorded.			0.00	0				
Rumohr Creek	1.0	Not capable of supporting fish. Therefore no instream cover recorded	High Impervious	Rural_Residential	5.00	40	young forest	<5%	No	No
Rumohr Creek	2.0	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Rural_Residential	5.00	40	young forest	<5%	No	No
Rumohr Creek	3.0	Not capable of supporting fish. Therefore no instream cover recorded	Coniferous forest	Disturbed	10.00	45	young forest	5-33%	No	No
Rumohr Creek	4.0	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Rural_Residential	10.00	10	low shrubs <2m	34-66%	No	No
Rumohr Creek	5.0	Not capable of supporting fish. Therefore no instream cover recorded	High Impervious	Rural_Residential	10.00	0	Grass / Herb	<5%	No	No
Rumohr Creek	6.0	Not capable of supporting fish. Therefore no instream cover recorded	Planted Tree Farm	Agriculture	5.00	15	sapling >10m	<5%	No	No
Rumohr Creek	7.0	Not capable of supporting fish. Therefore no instream cover recorded	Coniferous forest	Rural_Residential	5.00	15	young forest	<5%	No	No
Rumohr Creek	8.0	Not capable of supporting fish. Therefore no instream cover recorded			0.00	0				
Rumohr Creek	9.0	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Rural_Residential	0.00	0	Grass / Herb	<5%	No	No
Rumohr Creek	10.0	Not capable of supporting fish. Therefore no instream cover recorded	Shrubs	Rural_Residential	5.00	0	low shrubs <2m	67-100%	No	No
Rumohr Creek	11.0	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Rural_Residential	5.00	0	low shrubs <2m	5-33%	No	No
Rumohr Creek	12.0	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Rural_Residential	0.00	0	low shrubs <2m	<5%	No	No
Rumohr Creek	13.0	Not capable of supporting fish. Therefore no instream cover recorded	Shrubs	Natural	5.00	0	low shrubs <2m	34-66%	No	No
Rumohr Creek	14.0	Not capable of supporting fish. Therefore no instream cover recorded	Mixed forest	Natural	10.00	45	sapling >10m	34-66%	No	No
Rumohr Creek	15.0	Not capable of supporting fish. Therefore no instream cover recorded	Disturbed wetland	Rural_Residential	10.00	0	sapling >10m	34-66%	No	No
Rumohr Creek	16.0	Not capable of supporting fish. Therefore no instream cover recorded	Mixed forest	Rural_Residential	4.00	0	young forest	67-100%	No	No
Rumohr Creek	16.1	Not capable of supporting fish. Therefore no instream cover recorded	Disturbed wetland	Rural_Residential	10.00	0	young forest	67-100%	No	No
Rumohr Creek	17.0	Not capable of supporting fish. Therefore no instream cover recorded	Broadleaf forest	Rural_Residential	20.00	0	young forest	67-100%	No	No
Rumohr Creek	17.1	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Rural_Residential	0.00	0	Grass / Herb	<5%	No	No
Rumohr Creek	18.0	Not capable of supporting fish. Therefore no instream cover recorded	Herbs/grasses	Agriculture	0.00	0	Grass / Herb	<5%	No	No
Rumohr Creek	18.1	Not capable of supporting fish. Therefore no instream cover recorded	Mixed forest	Natural	10.00	0	young forest	67-100%	No	No
Rumohr Creek	19.0	Not capable of supporting fish. Therefore no instream cover recorded	Mixed forest	Rural_Residential	5.00	0	young forest	67-100%	No	No
Rumohr creek	20.0	Not capable of supporting fish. Therefore no instream cover recorded	Mixed forest	Disturbed	5.00	0	young forest	34-66%	No	No
Rumohr Creek	21.0		Mixed forest	Natural	10.00	80	young forest	34-66%	No	No
Thompson Brook	1.0		Broadleaf forest	Urban_Residential	3.00	0	young forest	34-66%	No	No
Thompson Brook	2.0		High impervious	Urban_Residential	0.00	0			No	No
Thompson Brook	3.0		Herbs/grasses	Agriculture	0.00	0	Grass / Herb	<5%	No	No
Thompson Brook	4.0	Deep water and cattails	Herbs/grasses	Agriculture	0.00	0	low shrubs	34-66%	No	No
Thompson Brook - eastern drainage ditches	5.0	Instream cover not recorded	Herbs/grasses	Agriculture	0.00	0	Grass / Herb	<5%	No	No
Thompson Brook	6.0	Instream cover not recorded	Mixed forest	Rural_Residential	0.00	0	sapling >10m	67-100%	No	No
Thompson Brook	7.0	Presently dry intermittent. Therefore instream cover not recorded	Coniferous forest	Rural_Residential	0.00	0	young forest	5-33%	No	No
Thompson Brook - southern drainage ditches	8.0	Instream cover not recorded	Herbs/grasses	Agriculture	0.00	0	Grass / Herb	5-33%	No	>=5
Upper Vernon Creek	1.0	Boulder cover associated with riprap	Broadleaf forest	Disturbed	7.00	0	young forest	67-100%	No	No
Upper Vernon Creek	1a		Shrub	Disturbed	0.00	0	low shrubs <2m	34-66%	No	No
Upper Vernon Creek	2.0	Cobble substrates provide juvenile cover - poor cover overall	Broadleaf forest	Disturbed	20.00	0	young forest	67-100%	No	No
Upper Vernon Creek	3.0	Cobble substrates provide juvenile cover - poor cover overall though. Deeper, more defined thalweg.	Broadleaf forest	Disturbed	30.00	0	young forest	67-100%	No	No
Upper Vernon Creek	4.0	nil cover	Broadleaf forest	Disturbed	0.00	0	mature forest	34-66%	No	No
Upper Vernon Creek	5.0	nil cover	Herbs/grasses	Disturbed	0.00	0	Grass / Herb	<5%	No	No
Upper Vernon Creek	6.0	Cobble-boulder cover suitable primarily for juvenile fish, sculpins, and cyprinids - generally poor.	Broadleaf forest	Disturbed	5.00	0	young forest	5-33%	No	No
Upper Vernon Creek	7.0	Although many pools not >1-m, provide good residual pool and cover in this watercourse.	Broadleaf forest	Disturbed	5.00	0	young forest	5-33%	No	No
Upper Vernon Creek	8.0		Mixed forest	Disturbed	15.00	0	mature forest	5-33%	<5	No

STREAMNAME	SEG_NUMBER	L_BKSTBILI	L_BANK_MAT	L_TOP_BANK	L_COMMENT	R_RIPCLASS	R_QUALIFIE	R_BANDWIDT	R_BANKSLOP	R_STAGE
Bauer Brook	1.0	High	Fines	No	Bottom 50m treed canopy of mature pacific willow	Herbs/grasses	Agriculture	0.00	0	Grass / Herb
Bauer Brook	2.0	Medium	Fines	No		Herbs/grasses	Agriculture	0.00	0	Grass / Herb
Bauer Brook	3.0	High	Fines	No	Bottom 50m treed canopy of mature pacific willow	Herbs/grasses	Agriculture	0.00	0	Grass / Herb
Bauer Brook	4.0	High	Fines	No	Pacific willow and Manitoba maple form very dense canopy with little to no understorey vegetation.	Broadleaf forest	Disturbed	0.00	30	young forest
Bauer Brook	5.0	High	Fines	No		Herbs/grasses	Disturbed	15.00	3	tall shrubs 2-10m
Bauer Brook	6.0	High	Fines	No		Herbs/grasses	Disturbed	15.00	3	tall shrubs 2-10m
Bauer Brook	7.0	High	Fines	No	Orchard land	Planted Tree Farm	Disturbed	5.00	2	Grass / Herb
Bauer Brook	8.0				Culverted			0.00	0	
Bauer Brook	9.0	High	Fines	No	Orchard land	Herbs/grasses	Rural_Residential	0.00	2	Grass / Herb
Bauer Brook	10.0	High	Other	No	McCurdy road	Herbs/grasses	Rural_Residential	0.00	45	Grass / Herb
Bauer Brook	11.0	High	Fines	No	Road fill slope beyond	Mixed forest	Disturbed	10.00	45	tall shrubs 2-10m
Bauer Brook	12.0	High	Fines	No		High Impervious	Disturbed	0.00	30	tall shrubs 2-10m
Campbell_Industry Brook	1.0	Medium	Fines	No		Herbs/grasses	Disturbed	0.00	0	low shrubs <2m
Campbell_Industry Brook	2.0	Medium	Fines	No		Herbs/grasses	Disturbed	0.00	0	low shrubs <2m
Campbell_Industry Brook	3.0	Medium	Fines	No	Golf course	Herbs/grasses	Disturbed	0.00	0	low shrubs <2m
Campbell_Industry Brook	4.0	Medium	Fines	No		Herbs/grasses	Disturbed	0.00	0	low shrubs <2m
Campbell_Industry Brook	5.0	Medium	Fines	No		Herbs/grasses	Disturbed	0.00	0	low shrubs <2m
Campbell_Industry Brook	6.0	High	Fines	No	Cottonwood riparian gully with wet swamp sites within	Mixed forest	Natural	0.00	0	Mature
Campbell_Industry Brook	7.0	Medium	Fines	No		Broadleaf forest	Disturbed	0.00	0	Sapling >10m
Dewdney Creek	1.0	Medium	Fines	No		Broadleaf forest	Disturbed	0.00	0	tall shrubs 2-10m
Dewdney Creek	2.0	High	Fines	No		Broadleaf forest	Natural	0.00	0	mature forest
Dewdney Creek	3.0	High	Fines	No		Broadleaf forest	Natural	0.00	0	mature forest
Dewdney Creek	4.0	High	Cobble	No		Mixed forest	Rural_Residential	0.00	0	mature forest
Dewdney Creek	5.0	Medium	Fines	No	Disturbance and some debris on banks.	Broadleaf forest	Rural_Residential	0.00	0	young forest
Dewdney Creek - Tributary 1	1.0	High	Fines	No	very moist to wet riparian and swamp communities	Broadleaf forest	Natural	0.00	0	mature forest
Dewdney Creek - Tributary 2	1.0	High	Fines	No	Encroaching rural disturbance	Broadleaf forest	Natural	0.00	0	mature forest
Gopher Creek	1.0	Medium	Fines			Shrubs	Rural_Residential	5.00	25	low shrubs <2m
Gopher Creek	2.0	Medium	Fines			Mixed forest		10.00	0	young forest
Gopher Creek	3.0	Medium	Fines			Mixed forest	Disturbed	5.00	40	young forest
Gopher Creek	4.0	Medium	Fines			Mixed forest	Rural_Residential	5.00	20	young forest
Gopher Creek	5.0	Medium	Fines			Mixed forest	Rural_Residential	5.00	40	young forest
Gopher Creek	6.0							0.00	0	
Gopher Creek	7.0	Medium				Herbs/grasses	Rural_Residential	10.00	15	Grass / Herb
Gopher Creek	8.0	Medium	Fines			Disturbed wetland	Disturbed	0.00	0	low shrubs <2m
Gopher Creek	9.0	Medium	Fines			Broadleaf forest	Rural_Residential	10.00	15	Grass / Herb
Gopher Creek	10.0	Medium	Fines			Disturbed wetland	Disturbed	10.00	40	tall shrubs 2-10m
Gopher Creek	11.0	Medium	Fines			Shrubs	Disturbed	5.00	15	tall shrubs 2-10m
Gopher Creek	13.0	High			Through modified/disturbed grassland	Herbs/grasses	Unknown	0.00	0	Grass / Herb
Gopher Creek	14.0	Medium	Fines	No	Water birch-Douglas maple riparian gully	Shrubs	Disturbed	0.00	0	sapling >10m
Gopher Creek	15.0	High	Fines	No	Mixed grassland/shrub (rose) carr.	Shrubs	Disturbed	0.00	0	low shrubs <2m
Gopher Creek Tributary	1.0	Medium	Fines	No	Previous encroachment into riparian gully.	Broadleaf forest	Disturbed	0.00	0	young forest
Gopher Creek Tributary	2.0	Medium	Fines	No	Mixed shrub, grasses, and invasive forbs.	Shrubs	Disturbed	0.00	0	tall shrubs 2-10m
Gopher Creek Tributary	3.0	High	Fines	No	Highly disturbed grassland	Herbs/grasses	Disturbed	0.00	0	
Gopher Creek Tributary	4.0	Medium	Fines	No	Intermittent areas off minor bank instability from livestock.	Broadleaf forest	Disturbed	0.00	0	young forest
Gopher Creek Tributary	5.0	High	Fines	No		Disturbed wetland	Disturbed	0.00	0	mature forest
Gopher Creek Tributary	6.0	High	Fines	No	Cattle have removed much of shrub stratum	Broadleaf forest	Disturbed	0.00	0	young forest
Gopher Creek Tributary	7.0	High	Fines	No	Transition association with adjacent grassland/conifer woodland steep slope.	Herbs/grasses	Disturbed	0.00	0	
Gopher Creek Tributary	8.0	High	Fines	No		Mixed forest	Disturbed	0.00	0	mature forest
Gopher Creek Tributary	9.0	High	Fines	No		Mixed forest	Natural	0.00	0	young forest
Gopher Creek Tributary	10.0	High	Fines	No		Mixed forest	Natural	0.00	0	mature forest
Gopher Creek Tributary	11.0	High	Fines	No	Water birch-Douglas maple-cottonwood association	Mixed forest	Disturbed	0.00	0	young forest
Hachey Creek	1.0	Medium	Fines	Yes	Thinned out forest with rural residence	Mixed forest	Disturbed	10.00	45	young forest
Hachey Creek	2.0	Medium	Fines	Yes		Shrubs	Rural_Residential	10.00	20	tall shrubs 2-10m
Hachey Creek	3.0	Medium	Fines	Yes	rural residences closer, ravine ended	High Impervious	Disturbed	1.00	20	High_impervious
Hachey Creek	4.0	Medium	Fines	Yes		Shrubs	Agriculture	5.00	20	low shrubs <2m
Hachey Creek	5.0	Medium	Fines	Yes		Herbs/grasses	Agriculture	2.00	20	Grass / Herb
Hachey Creek	6.0	Medium	Fines	Yes		Herbs/grasses	Agriculture	5.00	20	Grass / Herb
Hachey Creek	7.0	Medium	Fines	Yes		Herbs/grasses	Agriculture	1.00	20	Grass / Herb
Hachey Creek	8.0	Medium	Fines	Yes		Mixed forest	Agriculture	5.00	20	young forest
Hachey Creek	9.0	Medium	Fines	Yes		Mixed forest	Natural	5.00	10	young forest
Hachey Creek	10.0	Medium	Fines	Yes		Mixed forest	Disturbed	0.00	10	tall shrubs 2-10m
Hachey Creek	11.0	Medium	Fines	Yes		Coniferous forest	Natural	10.00	10	young forest
Hachey Creek	12.0	Medium	Fines	Yes	Forest fire burned through here in 2003	Coniferous forest	Natural	10.00	10	young forest
Hydraulic Creek	1.0	Medium	Till	No	Cottonwood - cedar riparian.	Mixed forest	Natural	0.00	0	mature forest
Hydraulic Creek	2.0	High	Boulder	No	Canyon	Mixed forest	Natural	0.00	0	mature forest

STREAMNAME	SEG_NUMBER	L_BKSTBILI	L_BANK_MAT	L_TOP_BANK	L_COMMENT	R_RIPCLASS	R_QUALIFIE	R_BANDWIDT	R_BANKSLOP	R_STAGE
KLO Creek	1.0	Low	Till	No	Floodplain area along left bank-flood channels.	Mixed forest	Natural	0.00	0	mature forest
KLO Creek	2.0	Low	Till	No	More confined left bank with high instability and erosion.	Mixed forest	Natural	0.00	0	mature forest
KLO Creek	3.0	Low	Till	No		Mixed forest	Natural	0.00	0	mature forest
KLO Creek	4.0	High	Bed_Rock	No		Coniferous forest	Natural	0.00	0	mature forest
KLO Creek	5.0	High	Till	No		Mixed forest	Natural	0.00	0	mature forest
KLO Creek	6.0	High	Bed_Rock	No		Mixed forest	Natural	0.00	0	mature forest
KLO Creek	7.0	High	Till	No		Mixed forest	Natural	0.00	0	mature forest
KLO Creek	8.0	Low	Till	No	Ravine slope - erosion persistent along bank.	Mixed forest	Disturbed	0.00	10	young forest
KLO Creek	9.0	Low	Till	No	Ravine slope erosion persistent along bank.	Mixed forest	Natural	0.00	10	mature forest
KLO Creek	10.0	High	Bed_Rock	No	Cliff	Mixed forest	Natural	0.00	10	mature forest
Michaelbrook	1.0	Medium	Fines	No	Wetland boundary forms channel	Herbs/grasses	Disturbed	0.00	0	Grass / Herb
North Arm Bellevue Creek	1.0					Medium_impervious	Urban_Residential	0.00	0	
North Arm Bellevue Creek	2.0	High	Fines	No		Mixed forest	Urban_Residential	0.00	0	mature forest
North Arm Bellevue Creek	3.0	High	Fines	No		Mixed forest	Urban_Residential	0.00	0	young forest
North Arm Bellevue Creek	4.0	High	Fines	No		Mixed forest	Urban_Residential	0.00	0	mature forest
North Arm Bellevue Creek	5.0							0.00	0	
North Arm Bellevue Creek	6.0	High	Till	No		Coniferous forest	Urban_Residential	5.00	0	young forest
North Arm Bellevue Creek	7.0							0.00	0	
North Arm Bellevue Creek	8.0	High	Till	No		Coniferous forest	Urban_Residential	5.00	0	young forest
North Arm Bellevue Creek	9.0	High	Fines	No		Mixed forest	Natural	0.00	0	mature forest
North Arm Bellevue Creek	10.0	High	Fines	No	Residential and natural woodland	Mixed forest	Disturbed	0.00	0	mature forest
North Arm Bellevue Creek	11.0	High	Fines	No	Residential and natural woodland	Mixed forest	Disturbed	0.00	0	mature forest
North Arm Bellevue Creek	12.0			No				0.00	0	
Rumohr Creek	1.0	Medium	Fines	Yes		Herbs/grasses	Rural_Residential	5.00	40	Grass / Herb
Rumohr Creek	2.0	Medium	Fines	Yes	Mixed forest and disturbed grass ditch	High Impervious	Rural_Residential	5.00	40	Grass / Herb
Rumohr Creek	3.0	Medium	Fines	Yes	Rural residence at top of bank	Coniferous forest	Disturbed	10.00	45	young forest
Rumohr Creek	4.0	Medium	Fines	Yes	Ditching follows orchard and road.	Herbs/grasses	Rural_Residential	0.00	10	young forest
Rumohr Creek	5.0	Medium	Fines	Yes		Herbs/grasses	Rural_Residential	5.00	10	Grass / Herb
Rumohr Creek	6.0	Medium	Fines	Yes		Herbs/grasses	Rural_Residential	5.00	15	Grass / Herb
Rumohr Creek	7.0	Medium	Fines	Yes	Young disturbed pine stand	Coniferous forest	Rural_Residential	0.00	15	young forest
Rumohr Creek	8.0			Yes				0.00	0	
Rumohr Creek	9.0	Medium	Fines	Yes		Herbs/grasses	Rural_Residential	0.00	0	Grass / Herb
Rumohr Creek	10.0	Medium	Fines	Yes		Shrubs	Disturbed	5.00	0	low shrubs <2m
Rumohr Creek	11.0	Medium	Fines	Yes		Herbs/grasses	Rural_Residential	5.00	0	low shrubs <2m
Rumohr Creek	12.0	Medium	Fines	Yes		Herbs/grasses	Rural_Residential	0.00	0	low shrubs <2m
Rumohr Creek	13.0	Medium	Fines	Yes		Herbs/grasses	Natural	5.00	0	low shrubs <2m
Rumohr Creek	14.0	Medium	Fines	Yes	Well developed riparian community Steep slope through ravine section of segment	Mixed forest	Natural	10.00	40	sapling >10m
Rumohr Creek	15.0	Medium	Fines	Yes		Disturbed wetland	Rural_Residential	10.00	0	sapling >10m
Rumohr Creek	16.0	Medium	Fines	Yes		Mixed forest	Rural_Residential	5.00	0	young forest
Rumohr Creek	16.1	Medium	Fines	Yes		Disturbed wetland	Rural_Residential	10.00	0	young forest
Rumohr Creek	17.0	Medium	Fines	Yes		Broadleaf forest	Rural_Residential	22.00	0	young forest
Rumohr Creek	17.1	High	Fines	No		High Impervious	Rural_Residential	0.00	0	Grass / Herb
Rumohr Creek	18.0	Medium	Fines	Yes		Herbs/grasses	Agricultue	0.00	0	Grass / Herb
Rumohr Creek	18.1	Medium	Fines			Mixed forest	Rural_Residential	10.00	0	young forest
Rumohr Creek	19.0	Medium	Fines	Yes		Mixed forest	Rural_Residential	5.00	15	young forest
Rumohr creek	20.0	Medium	Fines	Yes		Mixed forest	Disturbed	5.00	0	young forest
Rumohr Creek	21.0	Medium	Fines	Yes		Mixed forest	Natural	10.00	80	young forest
Thompson Brook	1.0	Medium	Cobble	No		Shrubs	Urban_Residential	4.00	0	tall shrubs 2-10m
Thompson Brook	2.0	High	Concrete	No		High impervious	Urban_Residential	0.00	0	
Thompson Brook	3.0	Medium	Fines	No		Broadleaf forest	Urban_Residential	25.00	0	young forest
Thompson Brook	4.0	High	Fines	No		Herbs/grasses	Recreational	0.00	0	low shrubs
Thompson Brook - eastern drainage ditches	5.0	Low	Fines	No		Herbs/grasses	Agriculture	0.00	0	Grass / Herb
Thompson Brook	6.0	Medium	Fines	No		Herbs/grasses	Agriculture	0.00	0	Grass / Herb
Thompson Brook	7.0	Medium	Fines			Coniferous forest	Rural_Residential	0.00	0	young forest
Thompson Brook - southern drainage ditches	8.0	Medium	Fines	No		Herbs/grasses	Agriculture	0.00	0	Grass / Herb
Upper Vernon Creek	1.0	Medium	Fines	No	Intermittent instability	Herbs/grasses	Disturbed	10.00	0	young forest
Upper Vernon Creek	1a	High	Concrete	No		Shrubs	Disturbed	0.00	0	tall shrubs 2-10m
Upper Vernon Creek	2.0	Medium	Fines	No	Channelized and steep banks with instability but Cottonwood regen. increasing integrity.	Broadleaf forest	Disturbed	30.00	0	young forest
Upper Vernon Creek	3.0	Medium	Till	No	Channelized and steep banks with instability but Cottonwood regen. increasing integrity.	Broadleaf forest	Disturbed	30.00	0	young forest
Upper Vernon Creek	4.0	High	Concrete	No		Herbs/grasses	Disturbed	0.00	0	Grass / Herb
Upper Vernon Creek	5.0	High	Concrete	No		Herbs/grasses	Disturbed	0.00	0	Grass / Herb
Upper Vernon Creek	6.0	Low	Till	No		Broadleaf forest	Disturbed	10.00	0	young forest
Upper Vernon Creek	7.0	Low	Till	No	Instability and erosion along bank	Broadleaf forest	Disturbed	10.00	0	young forest
Upper Vernon Creek	8.0	Medium	Till	No	Floodplain area at bottom of segment upstream of the culvert - captured with top of bank delineation	Mixed forest	Disturbed	20.00	0	mature forest

STREAMNAME	SEG_NUMBER	R_SHRUBS	R_SNAG	R_VETERAN_	R_BKSTBILI	R_BANK_MAT	R_TOP_BANK	R_COMMENT
Bauer Brook	1.0	<5%	No	No	High	Fines	No	Bottom 50m treed canopy of mature pacific willow
Bauer Brook	2.0	<5%	No	No	Medium	Fines	No	Ditched along road and rural properties.
Bauer Brook	3.0	<5%	No	No	High	Fines	No	Bottom 50m treed canopy of mature pacific willow
Bauer Brook	4.0	67-100%	<5	No	High	Fines	No	Pacific willow and Manitoba maple form very dense canopy with little to no understorey vegetation.
Bauer Brook	5.0	5-33%	No	No	High	Fines	No	
Bauer Brook	6.0	5-33%	No	No	High	Fines	No	
Bauer Brook	7.0	<5%	No	No	High	Fines	No	Orchard land
Bauer Brook	8.0							Culverted
Bauer Brook	9.0	<5%	No	No	High	Fines	No	Rural yard and adjacent orchard.
Bauer Brook	10.0	<5%	No	No	High	Fines	No	Rural residential
Bauer Brook	11.0	34-66%	No	No	High	Fines	No	
Bauer Brook	12.0	<5%	No	No	High	Fines	No	McCurdy Rd.
Campbell_Industry Brook	1.0	34-66%	No	No	Medium	Fines	No	
Campbell_Industry Brook	2.0	34-66%	No	No	Medium	Fines	No	
Campbell_Industry Brook	3.0	34-66%	No	No	Medium	Fines	No	Golf course
Campbell_Industry Brook	4.0	34-66%	No	No	Medium	Fines	No	
Campbell_Industry Brook	5.0	34-66%	No	No	Medium	Fines	No	
Campbell_Industry Brook	6.0	34-66%	<5	No	Medium	Fines	No	Cottonwood riparian gully with wet swamp sites within
Campbell_Industry Brook	7.0	67-100%	No	No	Medium	Fines	No	
Dewdney Creek	1.0	67-100%	>=5	<5	Medium	Fines	No	
Dewdney Creek	2.0	67-100%	<5	<5	High	Fines	No	
Dewdney Creek	3.0	67-100%	<5	>=5	High	Fines	No	
Dewdney Creek	4.0	5-33%	No	No	High	Cobble	No	
Dewdney Creek	5.0	67-100%	No	No	Medium	Fines	No	Minor downcutting and channel definition.
Dewdney Creek - Tributary 1	1.0	67-100%	<5	No	High	Fines	No	
Dewdney Creek - Tributary 2	1.0	67-100%	<5	No	High	Fines	No	Encroaching rural disturbance
Gopher Creek	1.0	34-66%	No	No	Medium	Fines		
Gopher Creek	2.0	67-100%	No	<5	Medium	Fines		
Gopher Creek	3.0	34-66%	No	<5	Medium	Fines		
Gopher Creek	4.0	5-33%	No	<5	Medium	Fines		
Gopher Creek	5.0	34-66%	No	<5	Medium	Fines		
Gopher Creek	6.0							
Gopher Creek	7.0	34-66%	No	No				
Gopher Creek	8.0	34-66%	No	No	Medium			
Gopher Creek	9.0	34-66%	No	<5	Medium			
Gopher Creek	10.0	5-33%	No	No	Medium			
Gopher Creek	11.0	34-66%	No	No	Medium			
Gopher Creek	13.0	<5%	No	No	High	Fines	No	Through modified/disturbed grassland
Gopher Creek	14.0	67-100%	No	No	High	Fines	No	Water birch-Douglas maple riparian gully
Gopher Creek	15.0	5-33%	No	No	High	Fines	No	Mixed grassland/shrub (rose) carr.
Gopher Creek Tributary	1.0	67-100%	<5	No	Medium	Fines	No	Young aspen stand through gully past encroachment evident-not recently disturbed. Channel erosion.
Gopher Creek Tributary	2.0	67-100%	<5	No	Medium	Fines	No	Mixed shrub, grasses, and invasive forbs.
Gopher Creek Tributary	3.0	<5%	No	No	High	Fines	No	Highly disturbed grassland
Gopher Creek Tributary	4.0	5-33%	<5	No	Medium	Fines	No	Intermittent areas off minor bank instability from livestock.
Gopher Creek Tributary	5.0	5-33%	<5	>=5	Medium	Fines	No	Wetland through gully with veteran fir along mid slope to slope toe adjacent wetland.
Gopher Creek Tributary	6.0	<5%	<5	<5	High	Fines	No	Cattle have removed much of shrub stratum. Mature pine along slope toe.
Gopher Creek Tributary	7.0	<5%	No	No	High	Fines	No	Disturbed grassland
Gopher Creek Tributary	8.0	5-33%	<5	<5	High	Fines	No	
Gopher Creek Tributary	9.0	67-100%	<5	No	High	Fines	No	
Gopher Creek Tributary	10.0	67-100%	No	No	High	Fines	No	Tall shrub thicket (dogwood-Douglas maple) beneath fir and aspen canopy in gully.
Gopher Creek Tributary	11.0	34-66%	No	No	High	Fines	No	Logged - Mature cottonwood and saplings with tall shrub (dogwood, willow, water birch) understorey
Hachey Creek	1.0	34-66%	No	No	Medium	Fines	Yes	Thinned out forest with rural residence
Hachey Creek	2.0	34-66%	No	No	Medium	Fines	Yes	
Hachey Creek	3.0	<5%	No	No	Medium	Fines	Yes	Road along right bank
Hachey Creek	4.0	<5%	No	No	Medium	Fines	Yes	
Hachey Creek	5.0	<5%	No	No	Medium	Fines	Yes	
Hachey Creek	6.0	5-33%	No	No	Medium	Fines	Yes	
Hachey Creek	7.0		No	No	Medium	Fines	Yes	
Hachey Creek	8.0	5-33%	No	No	Medium	Fines	Yes	
Hachey Creek	9.0	67-100%	No	No	Medium	Fines	Yes	
Hachey Creek	10.0	34-66%	No	No	Medium	Fines	Yes	
Hachey Creek	11.0	34-66%	No	No	Medium	Fines	Yes	
Hachey Creek	12.0	34-66%	No	No	Medium	Fines	Yes	Forest fire burned through here in 2003
Hydraulic Creek	1.0	67-100%	>=5	<5	Medium	Dyke	No	Cottonwood-cedar riparian
Hydraulic Creek	2.0	67-100%	>=5	<5	High	Bed_Rock	No	Canyon

STREAMNAME	SEG_NUMBER	R_SHRUBS	R_SNAG	R_VETERAN_	R_BKSTBILI	R_BANK_MAT	R_TOP_BANK	R_COMMENT
KLO Creek	1.0	34-66%	No	No	Low	Till	No	Steeper more defined right bank - floodplain more limited by topography. Intermittent erosion.
KLO Creek	2.0	34-66%	No	No	Low	Till	No	More confined left bank with high instability and erosion.
KLO Creek	3.0	34-66%	No	No	Low	Till	No	
KLO Creek	4.0	34-66%	<5	<5	High	Bed_Rock	No	
KLO Creek	5.0	34-66%	<5	<5	Medium	Till	No	Intermittent instability and erosion
KLO Creek	6.0	34-66%	<5	<5	High	Bed_Rock	No	
KLO Creek	7.0	34-66%	<5	<5	Medium	Till	No	
KLO Creek	8.0	67-100%	<5	No	Low	Till	No	Quarry beyond riparian band.
KLO Creek	9.0	67-100%	<5	No	Low	Till	No	
KLO Creek	10.0	67-100%	<5	No	Medium	Till	No	Cliff just beyond right bank separated by old road.
Michaelbrook	1.0	34-66%	>=5	No	Medium	Fines	No	Mixed Mission Creek riparian adjacent to north then predom. grass-herb and low shrub along ditching.
North Arm Bellevue Creek	1.0							
North Arm Bellevue Creek	2.0	5-33%	No	<5	High	Fines	No	
North Arm Bellevue Creek	3.0	34-66%	No	No	High	Fines	No	
North Arm Bellevue Creek	4.0	34-66%	No	No	High	Fines	No	
North Arm Bellevue Creek	5.0							
North Arm Bellevue Creek	6.0	5-33%	No	No	High	Till	No	
North Arm Bellevue Creek	7.0							
North Arm Bellevue Creek	8.0	5-33%	No	No	High	Till	No	
North Arm Bellevue Creek	9.0	34-66%	>=5	>=5	High	Fines	No	
North Arm Bellevue Creek	10.0	34-66%	<5	<5	High	Fines	No	Residential and natural woodland
North Arm Bellevue Creek	11.0	34-66%	<5	<5	High	Fines	No	Residential and natural woodland
North Arm Bellevue Creek	12.0							
Rumohr Creek	1.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	2.0	<5%	No	No	Medium	Fines	Yes	Gully R. follows right bank.
Rumohr Creek	3.0	5-33%	No	No	Medium	Fines	Yes	A trail follows the right channel bank.
Rumohr Creek	4.0	5-33%	No	No	Medium	Fines	Yes	Ditching follows orchard and road with intermittent treed sections.
Rumohr Creek	5.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	6.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	7.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	8.0							
Rumohr Creek	9.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	10.0	67-100%	No	No	Medium	Fines	Yes	Road at top of bank
Rumohr Creek	11.0	5-33%	No	No	Medium	Fines	Yes	
Rumohr Creek	12.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	13.0	34-66%	No	No	Medium	Fines	Yes	
Rumohr Creek	14.0	34-66%	No	No	Medium	Fines	Yes	Well developed riparian community Steep slope through ravine section of segment
Rumohr Creek	15.0	34-66%	No	No	Medium	Fines	Yes	
Rumohr Creek	16.0	67-100%	No	No	Medium	Fines	Yes	
Rumohr Creek	16.1	67-100%	No	No	Medium	Fines	Yes	
Rumohr Creek	17.0	67-100%	No	No	Medium	Fines	Yes	
Rumohr Creek	17.1	<5%	No	No	High	Fines	No	Miller Road Follows ditch right bank
Rumohr Creek	18.0	<5%	No	No	Medium	Fines	Yes	
Rumohr Creek	18.1	67-100%	No	No	Medium	Fines		
Rumohr Creek	19.0	67-100%	No	No	Medium	Fines	Yes	
Rumohr creek	20.0	34-66%	No	No	Medium	Fines	Yes	
Rumohr Creek	21.0	34-66%	No	No	Medium	Fines	Yes	
Thompson Brook	1.0	34-66%	No	No	High	Cobble	No	
Thompson Brook	2.0		No	No		Concrete	No	
Thompson Brook	3.0	67-100%	No	No	Medium	Fines	No	Cottonwood - red-osier dogwood riparian association.
Thompson Brook	4.0	34-66%	No	No	Low	Fines	No	Walking paths and park.
Thompson Brook - eastern drainage ditches	5.0	<5%	No	No	Low	Fines	No	Golf course and field.
Thompson Brook	6.0	5-33%	No	No	Medium	Fines	No	
Thompson Brook	7.0	5-33%	No	No	Medium	Fines		Lower limit of ravine
Thompson Brook - southern drainage ditches	8.0	<5%	No	No	Medium	Fines	No	
Upper Vernon Creek	1.0	67-100%	No	No	Medium	Fines	No	Bottom of segment a young riparian forest (Duck Lake) - intermittent instability
Upper Vernon Creek	1a	67-100%	No	No	High	Concrete	No	
Upper Vernon Creek	2.0	67-100%	No	No	Medium	Fines	No	Channelized and steep banks with instability but Cottonwood regen. increasing integrity.
Upper Vernon Creek	3.0	67-100%	No	No	Medium	Till	No	Channelized and steep banks with instability but Cottonwood regen. increasing integrity.
Upper Vernon Creek	4.0	5-33%	No	No	High	Concrete	No	
Upper Vernon Creek	5.0	<5%	No	No	High	Concrete	No	
Upper Vernon Creek	6.0	5-33%	No	No	Low	Till	No	
Upper Vernon Creek	7.0	5-33%	No	No	Low	Till	No	Instability and erosion along bank
Upper Vernon Creek	8.0	5-33%	<5	No	Medium	Till	No	

STREAMNAME	SEG_NUMBER	CMMNTFLORA	CMMNTFAUNA	IMPACT_RAT
Bauer Brook	1.0	Agronomic grasses and weedy forbs.		Both_banks_high
Bauer Brook	2.0			Both_banks_high
Bauer Brook	3.0	Agronomic grasses and weedy forbs.		Both_banks_high
Bauer Brook	4.0	Pacific willow, Manitoba maple, red-osier dogwood	B-SOSP, B-CAQU, B-BBMA, B-DEJU	1_bank_mod
Bauer Brook	5.0	Willow sp., mustard sp., tall sweet clover, curly dock and other weedy forbs.		Both_banks_mod
Bauer Brook	6.0	Willow sp., mustard sp., tall sweet clover, curly dock and other weedy forbs.		Both_banks_high
Bauer Brook	7.0	Orchard		Both_banks_mod
Bauer Brook	8.0			Both_banks_high
Bauer Brook	9.0	Apple orchard		Both_banks_high
Bauer Brook	10.0			Both_banks_high
Bauer Brook	11.0	Cottonwood , snowberry, maple	Shrew sp.	Both_banks_low
Bauer Brook	12.0			Both_banks_high
Campbell_Industry Brook	1.0			Both_banks_high
Campbell_Industry Brook	2.0			Both_banks_high
Campbell_Industry Brook	3.0			Both_banks_high
Campbell_Industry Brook	4.0			Both_banks_high
Campbell_Industry Brook	5.0			1_bank_low
Campbell_Industry Brook	6.0			1_bank_low
Campbell_Industry Brook	7.0			Both_banks_mod
Dewdney Creek	1.0	Cottonwood,rose,skunk cabbage, scouring rush, reed canary grass	B-BCCH,B-BBMA,B-RTHA, B-STJA, B-NOFL,B-AMGO	1_bank_low
Dewdney Creek	2.0			1_bank_low
Dewdney Creek	3.0	Very moist to wet ACT riparian and alder - skunk cabbage swamp communities		1_bank_low
Dewdney Creek	4.0	Mixture of native and horticultural vegetation surrounding ponds.		Both_banks_mod
Dewdney Creek	5.0			Both_banks_low
Dewdney Creek - Tributary 1	1.0	Very moist to wet ACT riparian and alder - skunk cabbage swamp communities		Nil
Dewdney Creek - Tributary 2	1.0	Very moist to wet ACT riparian and alder - skunk cabbage swamp communities		1_bank_low
Gopher Creek	1.0	Cottonwood, Birch, Snowberry, Red Osier Dogwood		Both_banks_mod
Gopher Creek	2.0	Ponderosa Pine, Birch, Rose, Snowberry		Both_banks_low
Gopher Creek	3.0	Ponderosa Pine, Birch, Rose, Snowberry		Both_banks_mod
Gopher Creek	4.0	Douglas Fir, Birch		Both_banks_mod
Gopher Creek	5.0	pond pine, birch, rose, snowberry		Both_banks_low
Gopher Creek	6.0			
Gopher Creek	7.0			Both_banks_mod
Gopher Creek	8.0			Both_banks_mod
Gopher Creek	9.0	Cottonwood and Birch		Both_banks_mod
Gopher Creek	10.0			Both_banks_mod
Gopher Creek	11.0			Both_banks_mod
Gopher Creek	13.0	knapweed; cheat grass; thistle; mustard; rose; sulfur cinquefoil	Killdeer; Northern Flicker; Mourning Dove; Red-tailed Hawk.	Both_banks_low
Gopher Creek	14.0	Water birch; Douglas maple; dogwood; rose; willow sp.; fir	Killdeer; Northern Flicker; Mourning Dove; Red-tailed Hawk.	Both_banks_mod
Gopher Creek	15.0	Rose; agronomic grasses; aspen.	Killdeer; Northern Flicker; Mourning Dove; Red-tailed Hawk.	1_bank_mod
Gopher Creek Tributary	1.0	Aspen; water birch;hawthorn;rose;red-osier dogwood.	Northern Flicker; Black-capped Chickadee; American Goldfinch; Crow; House Finch	Both_banks_low
Gopher Creek Tributary	2.0	Aspen; red-osier dogwood; hawthorn; rose; reed canary grass; burdock; hounds tongue	Northern Flicker; Black-capped Chickadee; American Goldfinch; Crow; House Finch; Magpie	Both_banks_low
Gopher Creek Tributary	3.0	Sow thistle; mustard sp.; dock; mullein; orchard grass; cheat grass; quack grass.	Northern Flicker; Red-breasted Nuthatch; American Goldfinch; Red-tailed Hawk; House Finch; Magpie	Both_banks_high
Gopher Creek Tributary	4.0	Aspen; Douglas maple; thistle; agronomic grasses; hounds tongue; rose; mullein; red-osier dogwood.	Northern Flicker; Red-breasted Nuthatch; American Goldfinch; Red-tailed Hawk; House Finch; Magpie	1_bank_high
Gopher Creek Tributary	5.0	Cattail; smartweed; water avens; rushes; reed canary grass; willow sp.; Douglas maple; water birch	Northern Flicker; Red-breasted Nuthatch; Goldfinch; Red-tailed Hawk; House Finch; Magpie, Junco	Both_banks_mod
Gopher Creek Tributary	6.0	Aspen; pine; fir; rose; hawthorn; hounds tongue.	Flicker; boreal chickadee; squirrel; Magpie; red-breasted pygmy nuthatch; Red-wing blackbird	Both_banks_low
Gopher Creek Tributary	7.0	Reed canary grass; smartweed; water avens; water hemlock; willow sp.	Flicker; Red-wing Blackbird.	Both_banks_high
Gopher Creek Tributary	8.0	Fir; pine; Douglas maple; aspen; rose; hawthorn	American Robin; Varied Thrush; Red-breasted Nuthatch; Hairy Woodpecker	1_bank_mod
Gopher Creek Tributary	9.0	Fir; pine; Douglas maple; rose; red-osier dogwood	Robin; Black-capped Chickadee; Red-tailed Hawk	1_bank_low
Gopher Creek Tributary	10.0	Fir; aspen; red-osier dogwood; Douglas maple.	American Robin; Varied Thrush; Red-breasted Nuthatch; Hairy Woodpecker; Ruffed Grouse	1_bank_low
Gopher Creek Tributary	11.0	Cottonwood; water birch; red-osier dogwood; fir; aspen; willow; Oregon grape		1_bank_low
Hachey Creek	1.0	Ponderosa pine, cottonwood, Douglas fir		1_bank_mod
Hachey Creek	2.0			1_bank_mod
Hachey Creek	3.0	Snowberry, rose		Both_banks_mod
Hachey Creek	4.0			Both_banks_mod
Hachey Creek	5.0			1_bank_mod
Hachey Creek	6.0			Both_banks_mod
Hachey Creek	7.0			Both_banks_mod
Hachey Creek	8.0			Both_banks_mod
Hachey Creek	9.0			Both_banks_low
Hachey Creek	10.0	Ponderosa pine, Douglas fir, snowberry, rose		Both_banks_mod
Hachey Creek	11.0	Ponderosa pine, Douglas fir, snowberry, rose		Both_banks_low
Hachey Creek	12.0	Ponderosa pine, snowberry, rose, fireweed		Both_banks_low
Hydraulic Creek	1.0	Cottonwood, cedar, Douglas fir, water birch, red-osier dogwood, alder		Nil
Hydraulic Creek	2.0	Cottonwood, cedar, Douglas fir, water birch, red-osier dogwood, alder		Nil

STREAMNAME	SEG_NUMBER	CMMNTFLORA	CMMNTFAUNA	IMPACT_RAT
KLO Creek	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.	1_bank_low
KLO Creek	2.0	Cedar, cottonwood, water birch, Douglas fir, ponderosa pine, dogwood, willow sp., thimbleberry.	B-STJA, B-AMDI, B-SPSA, B-WWPE, B-AMRO	1_bank_low
KLO Creek	3.0	Cedar, cottonwood, water birch, Douglas fir, ponderosa pine, dogwood, willow sp., thimbleberry.		1_bank_low
KLO Creek	4.0	Predominantly cedar through gulch. Pine and fir along steep slopes and along top of bank.	Rainbow trout, American Dipper.	Nil
KLO Creek	5.0		Rainbow trout	Nil
KLO Creek	6.0		Rainbow trout	Nil
KLO Creek	7.0		Rainbow trout	Nil
KLO Creek	8.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow spp.	Rainbow trout	1_bank_mod
KLO Creek	9.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow spp.	Rainbow trout.	1_bank_low
KLO Creek	10.0	Douglas fir, cedar, cottonwood, water birch, red-osier dogwood, Douglas maple, alder, willow spp.	Rainbow trout	1_bank_low
Michaelbrook	1.0		B-KIDE; B-GBHE; B-MADU; B-AMGO	Both_banks_mod
North Arm Bellevue Creek	1.0			Both_banks_high
North Arm Bellevue Creek	2.0			Both_banks_high
North Arm Bellevue Creek	3.0	Cedar, Douglas fir, Douglas maple, water birch, horsetail, red-osier dogwood.		Both_banks_mod
North Arm Bellevue Creek	4.0			Both_banks_low
North Arm Bellevue Creek	5.0			Both_banks_high
North Arm Bellevue Creek	6.0			Both_banks_high
North Arm Bellevue Creek	7.0			Both_banks_high
North Arm Bellevue Creek	8.0			Both_banks_high
North Arm Bellevue Creek	9.0			1_bank_low
North Arm Bellevue Creek	10.0	Cottonwood, Douglas fir, cedar, water birch, Douglas maple, ponderosa pine, willow spp.		Both_banks_low
North Arm Bellevue Creek	11.0	Cottonwood, Douglas fir, cedar, water birch, Douglas maple, ponderosa pine, willow spp.		Both_banks_low
North Arm Bellevue Creek	12.0			Both_banks_high
Rumohr Creek	1.0			Both_banks_mod
Rumohr Creek	2.0			Both_banks_mod
Rumohr Creek	3.0	Ponderosa pine, snowberry. Agronomic grasses seeded through channel.		Both_banks_low
Rumohr Creek	4.0	Ponderosa pine, snowberry, orchard, and agronomic grasses.		Both_banks_high
Rumohr Creek	5.0	Aquatic northern watercress infests wetted channel		Both_banks_high
Rumohr Creek	6.0			Both_banks_mod
Rumohr Creek	7.0	Disturbed pine stand		Both_banks_mod
Rumohr Creek	8.0			Both_banks_high
Rumohr Creek	9.0			Both_banks_high
Rumohr Creek	10.0	Snowberry, red osier dogwood, ponderosa pine, birch		Both_banks_mod
Rumohr Creek	11.0			Both_banks_mod
Rumohr Creek	12.0			Both_banks_mod
Rumohr Creek	13.0			Both_banks_low
Rumohr Creek	14.0	Water birch, snowberry, rose sp.,		Both_banks_mod
Rumohr Creek	15.0	Pacific willow, water birch, snowberry, rose sp.,		Both_banks_mod
Rumohr Creek	16.0			1_bank_mod
Rumohr Creek	16.1	Cottonwood, water birch, red-osier dogwood, snowberry		Both_banks_low
Rumohr Creek	17.0	Cattail marsh surrounded by tall shrub 9willow) swam thicket and low flood bench riparian		Both_banks_mod
Rumohr Creek	17.1			Both_banks_high
Rumohr Creek	18.0			Both_banks_high
Rumohr Creek	18.1			Both_banks_low
Rumohr Creek	19.0	Cottonwood, water birch, red-osier dogwood, snowberry		Both_banks_low
Rumohr creek	20.0			Both_banks_mod
Rumohr Creek	21.0			Nil
Thompson Brook	1.0			Both_banks_mod
Thompson Brook	2.0			Both_banks_high
Thompson Brook	3.0	Cottonwood; red-osier dogwood; rose; reed canary grass		1_bank_high
Thompson Brook	4.0	Red-osier dogwood; graminoids; various exotic trees; cottonwood; rose; cattail.		Both_banks_low
Thompson Brook - eastern drainage ditches	5.0	Graminoids and invasive forbs.		Both_banks_high
Thompson Brook	6.0			Both_banks_mod
Thompson Brook	7.0	ponderosa , snowberry		Both_banks_mod
Thompson Brook - southern drainage ditches	8.0			Both_banks_high
Upper Vernon Creek	1.0	Alder, sandbar willow, red-osier dogwood, cottonwood, pacific willow.	B-MALL, B-COME, B-BCCH, B-SPTO, B-SOSP; sculpin sp.	1_bank_high
Upper Vernon Creek	1a			Both_banks_high
Upper Vernon Creek	2.0	Cottonwood, alder, water birch, red-osier dogwood, sandbar willow, pacific willow	B-NOFL, B-BCCH; Red squirrel	1_bank_high
Upper Vernon Creek	3.0	Cottonwood, alder, water birch, red-osier dogwood, sandbar willow, pacific willow	B-NOFL, B-BCCH; Red squirrel	Both_banks_low
Upper Vernon Creek	4.0			Both_banks_high
Upper Vernon Creek	5.0		B-OSPR, B-AMRO	Both_banks_high
Upper Vernon Creek	6.0	Cottonwood regeneration, willow sp, Douglas-fir, Pine regen., horsetail		Both_banks_low
Upper Vernon Creek	7.0	Cottonwood regeneration, willow sp, Douglas-fir, Pine regen., horsetail		Both_banks_low
Upper Vernon Creek	8.0	Douglas fir, cottonwood, ponderosa pine, Douglas maple, alder.		1_bank_mod