SENSITIVE HABITAT INVENTORY AND MAPPING (SHIM)

Mill Creek and Bellevue Creek
Kelowna, British Columbia

Inventory Summary Report

Prepared For:
THE CITY OF KELOWNA

Prepared By:
ECOSCAPE
Environmental Consultants

February, 2006

File No. K05003

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Kyle Hawes, R.P.Bio.
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1.0 INTRODUCTION

Ecoscape Environmental Consultants (Ecoscape) was retained by the City of Kelowna (CoK) to complete Sensitive Habitat Inventory and Mapping (SHIM) on Mill Creek and Bellevue Creek occurring within the city limits. The following report summarizes the inventory findings, which have been provided to the CoK 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. Thus, there is an urgent need to develop better methods to conserve and 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 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 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, and 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 Mill Creek and Bellevue Creek within the Kelowna city limit, their associated riparian habitats, and watercourse and important 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 long it) for improving integrated resource management and planning within the City of Kelowna.

2.0 SCOPE OF WORK

The primary scope of work was based on the Request for Proposal (City of Kelowna, September 30, 2005) and further built upon and supported by Ecoscape's extensive experience with SHIM and its primary objectives, and included the following:

- Pre-field interpretation (using digital orthophotos) of subject watercourses;
- Field inventory (conforming to SHIM Standards and Methodology) on Bellevue Creek and Mill Creek beginning at their confluence with Okanagan Lake, extending upstream to the City Limit. The approximate SHIM stream length of Bellevue Creek and Mill Creek was 6.6km and 23.3km respectively.
- Process field data as per SHIM standards; and,
- Provide standard SHIM deliverables to the City of Kelowna and subsequently to the Community Mapping Network (CMN) for publication in the SHIM atlas.

3.0 METHODOLOGY

Field inventory and 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 Centreline Survey

Kyle Hawes, R.P.Bio. was the principle surveyor and completed all field survey elements with the assistance of a field technician (Walter Hawes).

The stream centerline was mapped along the center of the bankfull (not floodplain) width. The creeks were 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/coarse woody debris measure etc.).

The field inventory was completed during Kokanee-egg incubation periods. Therefore measurements and GPS logging of suitable spawning habitat occurred adjacent to these areas using offset points to mitigate the potential disturbance to Kokanee spawning redds, which may have been present in suitable substrates.

The section of Mill Creek from the upstream end of the Kelowna International Airport to the city limits was surveyed in 2002 by the Regional District of Central Okanagan, conforming to SHIM standards. This data was shared by the Regional District for incorporation in to the CoK SHIM streamline.

The data dictionary (SHIM_2002) was updated to include a Level of Impact Rating (Appendix A). A zero (0) to six (6) scoring 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). A rationale was then provided explaining the score assigned each segment.

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
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.
	Level of Impairment	Score 0 (natural) – 6 (severely impaired); Rationale
	Enhancement Opportunity Rating	0 (Nil) – 4 (Very High); Rationale

3.2 Top of Bank Survey

Watercourse (lake, pond, stream and wetland) location and extent are critical for providing information to help determine the extent of protection to which a water course 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, 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.

3.4 Quality Assurance 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 inventory data base. Bellevue Creek and Mill Creek are discussed separately in respective subsections. Refer to the attached figures (maps) and corresponding summary pages for segment attributes and representative photos. The processed data from the centreline survey (Stream_line) and feature data has been included in Appendix B. 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).

4.1 Bellevue Creek

Within the City of Kelowna, Bellevue Creek extends about 6.62 km from its terminus at Okanagan Lake upstream to the Kelowna city limits. The creek was divided into 25 segments (Figures 1-7). Components of stream segment attributes are discussed in Section 4.1.1 and watercourse and habitat features are analyzed and summarized in Section 4.1.2.

4.1.1 Stream Centreline Survey

The following subsection summarizes components of the centreline survey, which can be found in Appendix B (Stream_line data).

4.1.1.1 Stream Primary Character

Over 4.2 km (64%) of Bellevue Creek has been channelized and modified within the Kelowna city limit (Table 2). Natural stream segments account for about 36% of the SHIM stream length. With the exception of Segment 8, all natural segments occur within and upstream of the Bellevue Creek Canyon adjacent Crawford Estates. Despite being involved in the Okanagan Mountain Park forest fires (August 2003), these segments have still been classified as 'natural' where salvage logging has not occurred. The exceptions were Segments 20 and 23, where intense salvage logging rendered these segments as 'modified'.

Table 2. Bellevue Creek summary of Primary stream character. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

Segments	Primary Character	Length (m)	Percentage of stream
1,2,3,4,5,10,11,12,13,14,15,16,17	Modified – Channelized	2927	44%
6,7,9,20,23	Modified – non channelized	1301	20%
8,18,19,21,22,24,25	Natural	2391	36%

4.1.1.2 Stream Channel and Hydraulic Character

Stream segments within the Kelowna city limit can be clustered into three (3) groups based on stream channel character, hydraulic class, geomorphic setting, and anthropogenic setting:

1. Urban/channelized (Segments 1-17),
2. Bedrock canyon/cascade (Segments 18-22), and
3. Natural floodplain (Segments 23-25) (Table 3).

Collectively, the urban/channelized group of segments represents about 54% of the SHIM stream length. Approximately 81% of the this lower 3.6 km of creek has been channelized. The average stream gradient was about 4% with an average constructed channel width, at normal highwater level, of about 9.7m.

The bedrock canyon/cascade group of segments represents about 21% of the SHIM stream length. Moving upstream, the gradient rises from 7% to greater than 45%. Two (2) waterfalls (Crawford Falls), each over 9-m in height, occur in Segment 21 representing a natural barrier to fish migration (Table 4).

A natural floodplain setting remains upstream of Crawford Falls. Occurring over 1.6km, nearly ¼ of Bellevue Creek, within the City of Kelowna, remains as natural floodplain. Despite the catastrophic fires and salvage logging, these areas have a high capability of regenerating to the late seral and climax Red-listed riparian/floodplain associations that existed before the fires. The average channel width in floodplain areas was over 15m. The well defined floodplain valley, averaging 90-m in width, does not appear to be recently active. However, numerous relic channels and boulder and cobble debris were observed across the broad valley, which continues upstream of the city limit. Any of these channels could again become active in the event of a log jam and subsequent channel avulsion.

Table 3. Bellevue Creek stream channel summary. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

		Gradient (%)				Stream Channel			Floodplain Width [a]			
Segments	Segment Group	Ave.	Min	Max	Percent Channelized	Mean Bankfull Width (m)	Min (m)	Max (m)	Left [b]	Right [b]	Length (m)	Percent of Stream
1-17	Urban/ Channelized	4.4	2.0	7.0	81.46%	9.66	6.50	17.5	0.00	0.00	3594	54.29%
18-22	Bedrock Canyon	15.0	7.0	45.0	0%	8.08	7.40	9.00	0.00	0.00	1407	21.25%
23-25	Natural floodplain	6.0	5.0	7.0	0%	15.50	10.00	20.00	65.00	16.00	1619	24.46%

a. The average width of the natural floodplain valley above Crawford Falls (Segments 21 and 22) is approximately 90-m.
b. Respective left and right bank floodplain widths were approximated from the SHIM top of bank of current stream channel.

Table 4. Bellevue Creek summary of hydraulic character. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

Segment	Segment Group	Hydraulic	Length (m)	Percent of Creek
1-12	Urban/Channelized	Riffle	2133	32%
13-17	Urban/Channelized	Cascade	1461	22%
18-20 and 22	Natural Bedrock Canyon	Cascade/Pool	1166	18%
21	Natural Bedrock Canyon	Falls	241	4%
23-25	Natural floodplain	Riffle/Pool	1619	24%

4.1.1.3 Instream Habitat Cover/Complexity

Total and relative instream cover is a field estimate of the type and amount of in-channel cover available to fish. Total cover represents the total percentage of the wetted area of respective segments occupied by cover. The relative abundance (%) of cover types (e.g., deep pool, large woody debris etc.) is an estimate of the distribution (of respective cover types) within the total cover estimate.

Total cover through the urban/channelized group of segments averaged about 28% over the 3.6 km combined segment length (Table 5). Boulders were the predominant cover, accounting for 87% of total cover. Deep pools, generally associated with large boulders, accounted for 10% of total cover. The quality of boulder cover is limited by severe channelization and aggrading and extreme low flow events and scarcity of residual pools. Based on field observations and previous inventories (EBA, 2002)[1], the coarse streambed substrates are primarily providing cover for prickly sculpin (*Cottus asper*) and small resident and juvenile rainbow trout (*Oncorhynchus mykiss*).

Total cover increases to about 48% in the canyon where natural stream channel character remains. Boulder cover is predominant comprising 69% of the total cover. However, deep pool cover, and large and small woody debris are more prevalent accounting for 16%, 10%, and 5% of the total cover respectively. Total cover was less in natural floodplain areas estimated at 34% of the total wetted area. Boulder cover still accounts for the majority of instream cover (78%) with a slightly reduced relative abundance of residual pools (12%). The relative abundance if coarse woody debris was generally unchanged from that observed in the canyon. However, as fire induced snags continue to fall into the creek, the relative abundance of coarse woody debris is likely to increase.

[1] EBA Engineering Consultants Ltd. 2002. Instream and riparian restoration of Bellevue Creek at Stonybrook Road.

Table 5. Bellevue Creek summary of instream habitat/cover. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

Segments	Setting	Combined Segment Length (m)	% Total Cover (Average of combined segments)	Percentage of Total cover by Cover Type [a]						
				B	DP	IV	LWD	OV	SWD	UC
1-17	Urban/Channelized	3594	28%	87%	10%	0%	1%	1%	2%	0%
18-22[b]	Natural Bedrock Canyon	1407	48%	69%	16%	0%	10%	0%	5%	0%
23-25	Natural floodplain	1619	34%	73%	12%	0%	10%	0%	5%	0%
		6620	34%	78%	12%	0%	6%	0%	3%	0%

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

b. Segment 21 consists of two water falls and steep cascade (>30%) and is therefore not considered frequented by fish and is a barrier to upstream fish migrations.

4.1.2 Watercourse and Habitat Features

The following section summarizes feature data collected and nested within the line segments. All features were measured and recorded individually and provide a more robust and quantitative measure of watercourse impairment and habitat quality.

4.1.2.1 Modifications

Nearly all (>99%) recorded modifications (artificial structures/features) occurred in the urban/channelized group of segments (Table 7). Channelization involving channel straightening and excavation accounted for over 90% (2.93km) of recorded modifications. Constructed retaining walls and riprap accounted for over 5% of combined left bank modifications and nearly 8% of combined right bank modifications. The balance of modifications, being less than 1%, included bridges and water withdrawals.

Table 6. Summary of artificial features/modification occurring along Bellevue Creek. Features and values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

Segment Group	Combined Segment Length (m)	Type	Left Bank						Right Bank					
			Length (m)	Percent of length	Total (m)	% of total length of modifications	% of combined segment length by section	% of SHIM stream length	Length (m)	Percent of length	Total (m)	% of total length of modifications	% of combined segment length by section	% of SHIM stream length
Urban/ Channelized	3594	Bridge	43	1.37%	3135	99.96%	87.23%	47.36%	43	1.33%	3235	99.74%	90.01%	48.87%
		Garbage/Pollution		0.00%					10	0.31%				
		Channelization	2927	93.37%					2927	90.48%				
		Bank Stability	165	5.26%					255	7.88%				
Bedrock Canyon	1407	Water Withdrawal	0	0.00%	0	0.00%	0.00%	0.00%	7	100.00%	7	0.22%	0.50%	0.11%
Natural Floodplain	1619	Bridge	1	100.00%	1	0.04%	0.08%	0.02%	1	100.00%	1	0.04%	0.08%	0.02%
Total	6620		3136					47%	3243					49%

4.1.2.2 Discharges

Ten discharges from permanent structures were identified. Three (3) of these were flowing during the field inventory despite no measurable precipitation occurring in at least three (3)

days prior to the field inventory. The clear, cool, colourless flows observed from each of these pipes may indicate interaction of the piping with groundwater flows or intercepted tributaries.

4.1.2.3 Erosion

Bank stability has been largely mitigated by the extensive channelization and diking using the coarse boulder/cobble alluvium. Within the Kelowna city limit, approximately 3% of the streambank (by length) is subject to instability and erosion. On the right bank, the cumulative severity of erosion is roughly 300m^2. On the left bank two (2) large landslides have elevated the cumulative severity to over 2800m^2 of bank erosion. The most prominent of landslides occurs at the downstream end of the canyon below Crawford Estates. A groundwater discharge, possibly originating at Jacksmith Lake, occurs near the top of the ravine slope, day-lighting from a more porous layer in the stratum. This discharge is likely the underlying cause of instability, which may have been exacerbated by the loss of vegetation during the Okanagan Mountain Park Fire.

4.1.2.4 Fish Habitat

The predominance of boulders in the majority of segments precludes a reliable cumulative measure of boulder habitat by individual feature. The reader should thus refer to Section 4.1.1.3 for an estimate of relative instream boulder cover. Table 7 summarizes important fish habitat features (excluding boulders) with respect to quantity and relative abundance within the three (3) segment groups. The reader should be advised that when considering spawning habitat, only visually prominent gravel deposits were recorded as important potential spawning habitat features. This measure does not consider the relative abundance of gravel in respective stream segments. Although not recorded as features, the small and patchy distribution of gravel, generally associated with large boulders, may be providing spawning habitat for small resident rainbow trout.

Table 7. Summary of significant habitat features/structures. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits. Segment 21 was excluded from this analysis since it represents a barrier to upstream fish migration (waterfalls). Fish presence-non detection upstream of Segment 21 was not ascertained.

Segment Group	Combined Segment Length (m)	Type	Length (m)	Percent of total length of Segment Group
Urban/Channelized	3594	Deep Pool	27.0	0.75%
		Small Woody Debris	9.5	0.26%
		Spawning Habitat	3.0	0.08%
Natural/Ravine	994	Deep Pool	27.9	2.81%
		Large Woody Debris	45.4	4.57%
		Small Woody Debris	18.5	1.86%
		Spawning Habitat	31.0	3.12%
Natural/Floodplain	1791	Large Woody Debris	21.5	1.20%
		Small Woody Debris	2.5	0.14%

4.1.2.5 Obstructions/ barriers

Table 8 presents the current obstructions that occur on Bellevue Creek within the City limit relative to their distance from Okanagan Lake. The two (2) waterfalls (Crawford Falls) and associated steep cascade and debris comprising Segment 21 are permanent natural fish migration barriers. Rainbow trout were visually observed to the bottom of Segment 21 over 4.5km upstream of Okanagan Lake. However, no fish were visually observed upstream of the waterfalls and, unless introduced by humans, upstream segments are not likely frequented by fish.

Table 8. Bellevue Creek summary of obstructions/barriers to upstream fish migration. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

Type	Barrier	Length (m)	Width (m)	Depth (m)	Height (m)	Slope (m)	Distance upstream from Okanagan Lake (km)
Log Jam	Yes	2.50	7.10	0.30	1.30	90	4.20
Falls	Yes	0.00	0.00	0.00	9.00	90	4.57
Persistent Debris	Potential	0.00	4.50	0.30	1.20	0	4.62
Falls	Yes	0.00	0.00	0.00	18.00	90	4.78
Velocity Barrier	unknown	7.50	3.00	0.01	0.00	30	4.95
Dam	Yes	0.00	5.50	0.25	1.15	0	5.90
Falls	Yes	3.50	5.00	0.70	3.00	0	6.08

4.1.2.6 Restoration/Enhancement Features

Fifteen enhancement features were documented on Bellevue Creek consisting of 12 rock wiers, two (2) upstream log deflectors, and one (1) boulder cluster. Seven (7) of the rock wiers were partially collapsed. The remaining features appeared to be satisfying their intended functional objectives, primarily in the creation/maintenance of residual pools. Section 4.1.4 provides a brief discussion with respect to potential enhancement opportunities and constraints, based on SHIM field inventory.

4.1.3 Stream Impact Summary

Ecoscape developed and appended a Level of Impact rating to the data dictionary (Appendix A). This simple rating system was designed with the intent on providing a more measurable parameter in monitoring and evaluating habitat restoration and future conservation efforts on Bellevue Creek and associated riparian and floodplain communities. The raw data and rationale for respective segment scores can be found in Appendix B 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. The sum of weighted scores was then divided by the maximum attainable score (6)[2] and transformed into a percentage value.

The sum of the weighted scores (Table 9) for Bellevue was 2.99, nearly 50%. This near failing grade reflects the degree of channelization and loss on riparian habitat that has occurred over Bellevue Creek within the City limits (See also Tables 2 and 3).

Table 9. Bellevue Creek impact summary. Values shown below are based on SHIM field inventory and analysis of 6.62 linear km of creek within the Kelowna city limits.

Segments	SHIM Impact Rating	SHIM Score	Combined Segment Length (m)	Percentage of Stream	Weighted Score
19,21,22,24	Nil	6	1366	20.64%	1.24
8,9,18,25	1_bank_low	5	1138	17.19%	0.86
7.0	1_bank_mod	4	210	3.18%	0.13
4,6	1_bank_high	3	373	5.64%	0.17
10,14,16,23	Both_banks_low	2	1481	22.38%	0.45
2,3,5,11,12,20	Both_banks_mod	1	993	15.00%	0.15
1,13,15,17	Both_banks_high	0	1057	15.97%	0.00
				Weighted Score	3.0
				Stream Grade	50%

4.1.4 Opportunities and Constraints – Overview

Opportunities to restore instream habitats through the urban/channelized group of segments are limited by the degree of channelization and, furthermore by extremely low mid to late summer flows. Surface flows often cease during this period with very few residual pools available to provide refuge for fish. However, resident rainbow trout were observed nearly to the base of Crawford Falls (Segment 21) approximately 4.5 km upstream from Okanagan Lake.

Several groundwater discharges and springs were identified during the field inventory. These contributions of cool water may be critical in sustaining residual pools for resident fish when much of the creekbed is dry. Recognizing the lack of residual pools, due to channelization and persistent aggrading, viable enhancement opportunities may include the strategic placement of boulder wiers, proximal to groundwater discharge areas, to help mitigate aggrading and to maintain additional residual pools.

Climate change and the continued watershed level impairments such as increased imperviousness and loss of floodplain areas may further impact on groundwater recharge in turn further reducing base flows during dry summer months. Despite the catastrophic fires and salvage logging, the floodplain that exists upstream of Crawford Falls has a high capability of regenerating to the late seral and climax riparian/floodplain associations that

[2] A combined weighted score of 6 would be attained if all segments were natural with no measurable human disturbance on either the right or left bank.

existed before the fires. This cottonwood ecosystem is Red-listed within the British Columbia and furthermore, is considered one of the most important native habitat types in North America. These floodplains soak up and retain water creating enormous underground reserves, which supplement stream flows with cool water during the summer months. Therefore to help sustain the long-term viability of Bellevue Creek, key management strategies should focus on the conservation of remaining floodplain areas. Not only will this benefit aquatic organisms, but also the rich diversity of wildlife that depend on these ecosystems during part or all of their life histories.

4.2 Mill Creek

Within the City of Kelowna, Mill Creek extends about 23.3 km from its terminus at Okanagan Lake upstream to the city limits to the north of Old Vernon Road. The creek was divided into 74 segments (Figures 8-26). Components of stream segment attributes are discussed in Section 4.2.1 and watercourse and habitat features are analyzed and summarized in Section 4.2.2.

4.2.1 Stream Centreline Survey

The following subsection summarizes components of the centreline survey, which can be found in Appendix B (Stream_line data).

4.2.1.1 Stream Primary Character

Within the Kelowna city limits, nearly 21 km (89%) of Mill Creek has been modified to some degree (Table 10), with the balance (11%) remaining natural, not having been recently disturbed. The combined length of modified, non channelized segments totaled over 13 km, while that of segments more severely altered (channelized, ditched, and culverted) totaled nearly 7.5km.

Table 10. Mill Creek summary of Primary stream character. Values shown below are based on SHIM field inventory and analysis of 23.3 linear km of Creek within the Kelowna city limits.

Segments	Primary Character	Length (m)	Percentage of Stream
1,2,4,6,8,11,12,26,29,39,41,43,44,48,50,52,54,56,64,67,68	Channelized	5502	24%
63,74	Culvert	217	1%
61,62,65,66	Ditch	1679	7%
3,5,7,9,10,13,14,15,16,17,18,19,20,21,23,25,27,28,30,31,32,33,34,35,36,38, 42,45,46,47,49,53,55,57,58,59,60,72,73	Modified	13438	58%
22,24,37,40,51,69,70,71	Natural	2486	11%

4.2.1.2 Stream Channel and Hydraulic Character

The existing channel character and substrate composition has been influenced by anthropogenic factors such as channelization and removal of instream structures, such as large woody debris. In addition, beaver are playing a significant role in stream-channel character, with over 3 km of the SHIM streamlength documented as physically altered by beaver in the form of dams and ponds. A run/glide hydraulic character predominates Mill Creek accounting for nearly 40% of the SHIM streamlength. Riffle-pool character accounts for about 31%, while very slow moving slough / pond, influenced by beaver together account for about 29% of the SHIM streamlength. The average channel gradient was just over 1% with a maximum observed segment gradient of 3%.

4.2.1.3 Instream Habitat Cover/Complexity

Total and relative instream cover is defined in section 4.1.1.3. Within the Kelowna city limit, about 57% of Mill Creek had an estimated total percentage of the wetted area occupied by cover of less than 20% (Table 11). About 30% of the SHIM stream length had an estimated percent total cover of less than 11% of the wetted area. Deep pools were the predominant cover type estimated to account for 50% of all instream cover followed by over stream vegetation and large woody debris accounting for about 15% and 13% respectively. A more quantitative assessment of important fish habitat features can be found in Section 4.2.2.4.

Table 11. Mill Creek summary and distribution of instream cover/habitat complexity. Values shown below are based on SHIM field inventory (fall, 2005) and analysis of 23.3 linear km of Creek within the Kelowna city limits.

% Total Cover	Combined Segment Length (m)	Percentage of SHIM Stream Length	Percentage of Total cover by Cover Type [a]						
			B	DP	IV	LWD	OV	SWD	UC
0-10%	6981	30%	6%	43%	11%	9%	13%	7%	11%
11-20%	6255	27%	9%	39%	2%	8%	21%	17%	3%
21-30%	2815	12%	2%	26%	5%	22%	27%	9%	10%
31-40%	1676	7%	12%	49%	0%	14%	13%	5%	7%
41-50%	329	1%	15%	70%	0%	0%	10%	0%	5%
51-60%	1085	5%	1%	60%	0%	7%	21%	8%	4%
61-70%	328	1%	1%	15%	0%	49%	15%	15%	5%
71-80%	1560	7%	0%	52%	10%	7%	17%	6%	8%
81-90%	1776	8%	2%	67%	0%	17%	5%	6%	3%
>90%	517	2%	1%	69%	0%	20%	5%	5%	0%
	23322		4%	50%	3%	13%	15%	8%	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

4.2.2 Watercourse and Habitat Features

The following section summarizes feature data collected and nested within the line segments. All features are measured and recorded individually and provide a more robust and quantitative measure of watercourse impairment and habitat quality.

4.2.2.1 Modifications

Artificial features (modifications) along Mill Creek had a cumulative linear measure of over 7.5 km on the left bank and 7.4 km on the right bank (Table 12). Thus modifications occur over about 32% of the SHIM streamlength. Channelization and retaining walls together accounted for about 91% of all artificial features, occurring over 6.9 km on the left bank and 6.7 km on the right bank.

Table 12. Mill Creek Summary of artificial features/modifications. Features and values shown below are based on SHIM field inventory (fall, 2005) and analysis of 23.3 linear km of creek within the Kelowna city limits.

	Left Bank			Right		
Type	Length (m)	% of total length of modifications	% of SHIM stream length	Length (m)	% of total length of modifications	% of SHIM stream length
Bridge	558	7.36%	2.39%	558	7.53%	2.39%
Channelization	4144	54.68%	17.77%	4144	55.95%	17.77%
Dam/floodgate	21	0.28%	0.09%	21	0.28%	0.09%
Livestock crossing	0	0.00%	0.00%	9	0.12%	0.04%
Other	53	0.70%	0.23%	63	0.85%	0.27%
Pipe Crossing	12	0.16%	0.05%	12	0.16%	0.05%
Retaining Wall/Rip Rap	2791	36.82%	11.97%	2599	35.10%	11.15%
	7578		32.49%	7406		31.76%

4.2.2.2 Discharges

A discharge includes any substance that enters a watercourse via an artificial structure (i.e., pipe), whether it is a contribution of clean cold water from a spring, or pollution from a sewage outlet or storm drain.

A total of 97 discharges were documented along Mill Creek during the field inventory (Table 13). Seventy storm drains were recorded with an average diameter of 320mm and a maximum observed discharge pipe diameter of 1360mm. Several outlets were discharging high turbidity flows during the inventory period. Furthermore, on one occasion, an outlet (about 100-m downstream of Dilworth Drive) began discharging very turbid flows while that feature was being measured and recorded by the field crew, despite the absence of precipitation.

Table 13. Summary of discharges identified on Mill Creek. Features shown below are based on SHIM field inventory (fall, 2005) and analysis of 23.3 linear km of Creek within the Kelowna city limits.

Type	Count	Mean Diameter (m)	Min Diameter (m)	Max diameter (m)	Number flowing during survey
Agricultural Runoff	2	0.15	0.10	0.20	1
Other	9	0.34	0.01	0.80	6
Pollutant	1	0.40	0.40	0.40	1
Septic Effluent	1	0.40	0.40	0.40	1
Storm Drain	70	0.32	0.06	1.36	13
Tile Drain	14	0.13	0.03	0.30	6
	97	0.30	0.03	1.36	28

4.2.2.3 Erosion

Within the Kelowna city limit, approximately 11% of both the left and right bank are unstable and subject to erosion (Table 14). Removal and/or lack of riparian vegetation were observed as the primary factor contributing to bank erosion with channelization and encroachment as secondary associated factors. Mass wasting was most prevalent in stream segments occurring through rural (in particular the Marshall Feedlot) and industrial/commercial properties where little has been done to mitigate for encroachment, removal of riparian vegetation, and subsequent erosion.

Table 14. Summary of bank erosion recorded along Mill Creek. Values shown below are based on SHIM field inventory (fall, 2005) and analysis of 23.3 linear km of Creek within the Kelowna city limits.

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
2664.30	1.08	2586.74	11.42%	2558.80	1.01	2355.89	10.97%

4.2.2.4 Fish Habitat

Deep pools were the predominant habitat feature type observed and recorded on Mill Creek (Table 15). Deep pool features were those that had an assessed residual pool depth[3] of about 0.25 m. Deep pools occurred over 2.6 km (11.3%) of Mill Creek within the Kelowna city limit, accounting for 67% (area abundance) of all habitat features recorded. Greater than 45% of all deep pool features were attributed to beaver activity. The combined length of segments physically influenced by beaver was roughly 3 km. Over this combined segment length, the average of total instream cover was 83%. Deep pools, created upstream of the dams, accounted for about 70% of the total cover (in these segments).

Spawning habitat, identified by the presence of suitable gravel, occurred over 745 linear metres (3.2%) of the SHIM stream length. The relative abundance of suitable spawning habitat, accounting for nearly 11% of the combined measured area of habitat features, is

[3] Residual pool depth is the depth that the pool would have if the stream stopped flowing.

largely attributed to past habitat enhancement initiatives involving the addition of such gravel.

Table 15. Summary of habitat features. Values shown below are based on SHIM field inventory (fall, 2005) and analysis of 23.3 linear km of Mill Creek within the Kelowna city limits.

Type	Combined Length (m)	Mean Width (m)	Combined Area (m2)	Mean wetted Depth (m)	Percent of SHIM stream length	Relative area Distribution
Deep Pool	2634.4	3.4	12236.2	1.0	11.30%	67.0%
Spawning Habitat	745.8	2.3	1954.3	0.1	3.20%	10.7%
Over Stream Vegetation	355.7	3.4	1315.2	0.6	1.53%	7.2%
Small Woody Debris	259.3	4.1	1090.8	0.5	1.11%	6.0%
Large Woody Debris	229.6	4.4	1041.7	0.6	0.98%	5.7%
Undercut Bank	116.6	0.9	148.9	0.5	0.50%	0.8%
Instream Vegetation	66.0	1.9	124.5	0.1	0.28%	0.68%
Other	49.0	6.0	356.5	9.1	0.21%	1.95%
	4456.4		18267.9		19%	

4.2.2.5 Obstructions/Barriers

Obstructions included all features that had the potential to prevent the normal passage of fish during all or part of the year. In addition, for the purpose of this assessment, obstructions may also represent features that have the potential to become a flood hazard.

Within the Kelowna city limit, 32 beaver dams, one (1) natural debris jam, and one (1) concrete wier/dam were recorded on Mill Creek. Fifteen of the beaver dams were identified as fish barriers fish during all or part of the year, with the remainder having the potential to become an obstruction (depending on the intensity of beaver activity).

4.2.2.6 Restoration/Enhancement Features

Over 130 enhancement features or complexes of features (i.e., wiers, LWD, spawning gravel) were recorded on Mill Creek with a combined linear measure of over 1000m. Table 16 provides a summary of recorded restoration/enhancement features. Upon reviewing Table 16, the reader should appreciate that enhancement work, if done well, will over time become less noticeable. Therefore, it is possible that some features, becoming naturalized, may not have been recorded during the inventory. Although not indicated in Table 16, spawning habitat enhancements (imported gravel) occurred over 200m (linear measure) of Mill Creek. All occurrences of suitable spawning gravel were recorded as a habitat feature (Section 4.2.2.4) rather than an enhancement feature. Comments were included in the data base identifying, where possible, whether respective spawning habitat features were naturally occurring or part of an enhancement.

Table 16. Summary of stream restoration/enhancements on Mill Creek. Values shown below are based on SHIM field inventory (fall, 2005) and analysis of 23.3 linear km of Mill Creek within the Kelowna city limits.

Type	Count	Length (m)	Average Width (m)	Area (m^2)	Percent of Enhancement Count	Percent of Enhancements by Area	Percent of SHIM streamlength
Log/Rock Wiers	54	96	4	382	41.54%	16.19%	0.41%
LWD Placement	13	199	2	572	10.00%	24.21%	0.85%
Other	1	6.00	0.40	2.40	0.77%	0.10%	0.03%
Rock/Boulder Placement	33	70	2	213	25.38%	9.03%	0.30%
Side Channel/Pools	9	91	6	562	6.92%	23.78%	0.39%
Bank revetments (bioengineering)	20	393	1	630	15.38%	26.69%	1.68%
	130	854.00	3.09	2360.99			

4.2.3 Stream Impact Summary

Within the Kelowna city limit, only about 11% of Mill Creek remains natural. Overall, the cumulative severity of stream channel and riparian alteration, disruption, and destruction is defined by the SHIM impact Rating criteria as low to moderate severity on both banks. The sum of weighted SHIM scores equaled 1.8 (out of 6) receiving a stream grade of 30%. The naturalization of highly modified stream segments, over time, in conjunction with intensive restoration and enhancement initiatives over much of the SHIM streamlength has lessened the impact rating. Nevertheless, 22 segments, accounting for 25% of the SHIM streamlength, still received an impact score of 0 being highly modified on both banks. Nine (9) of these segments occur through the Kelowna International Airport.

Table 17. Mill Creek level of impact summary. Values shown below are based on SHIM field inventory and analysis of 23.3 linear km of Creek within the Kelowna city limits.

Segments	SHIM Impact Rating	SHIM Score	Length (m)	Percentage of Stream	Weighted Score
24,40,70,71	Nil	6	1140	4.89%	0.29
15,20,22,35,37,51,69	1_bank_low	5	2027	8.69%	0.44
13,17,21,23,46,59	1_bank_mod	4	1659	7.11%	0.29
9,19,25,27,28,30,33,36,38,42,45,47,53,55,57,58	Both_banks_low	2	5566	23.87%	0.48
3,5,7,10,14,16,18,26,29,31,32,34,43,44,49,50,52,54,73	Both_banks_mod	1	7121	30.53%	0.31
1,2,4,6,8,11,12,39,41,48,56,60,61,62,63,64,65,66,67,68,72,74	Both_banks_high	0	5808	24.91%	0.00
				Weighted Score	1.8
				Stream Grade	30%

4.2.4 Opportunities and Constraints – Overview

Considerable efforts have been invested into restoring and enhancing the function and productive capacity of Mill Creek. Over 130 habitat feature enhancements (i.e., wiers, backwaters, spawning habitat) were documented. However, during the field inventory it became apparent that water quality problems may be a primary factor encumbering efforts to restore productive capacity.

Ninety seven discharges, including 70 storm drains were recorded over the 23 km SHIM streamlength. Many of these pipes were observed discharging high turbidity flows during minor rain or snow events. In addition, some were observed discharging literally muddy flows when no precipitation had occurred in at least 24hrs prior. These persistent sources of sediment and potential non-point-source pollution may be negating efforts to restore the proper functioning condition of Mill Creek including that of spawning habitat capacity. For instance, persistent turbid streamflows lead to siltation of suitable spawning gravel, which may result in suffocation and entombment of spawning redds.

Many of the disturbed and modified stream segments, riverine wetlands, and riparian associations have a high capability to regenerate in conjunction with remedial efforts such as bank stabilization and riparian planting. For instance, riverine communities and functionally connected marshes occurring adjacent the Marshall Feedlot, despite their current impairments, have high capability to regenerate and be conserved as a rich and diverse riverine and wetland complex.

Beaver play an integral role in the dynamics of natural aquatic and riparian ecosystems. Dams can provide critical habitat for fish and hold back water during dry summer months. However, the displacement / extirpation of natural predators from the urban landscape may favoured beaver populations and upset the natural ecosystem balance resulting in a proliferation of dams. Furthermore, mitigated freshet flows (Mill Creek Diversion) may have reduced the stream's seasonal ability to temporarily blow-out beaver dams and flush streambed substrates. More intensive management of beaver populations within Mill Creek should be investigated.

5.0 CONCLUSION

The preceding report has summarized detailed field inventory data collected on Bellevue Creek and Mill Creek within the Kelowna City Limits. The collection and management of data was in conformance with the SHIM methodology, which is a standard for fish and aquatic habitat mapping in urban and rural watersheds in British Columbia.

The 2005 inventory has resulted in the development of an up-to-date and robust catalogue of watercourse and habitat features occurring on Bellevue Creek and Mill Creek, which has numerous applications and can be used by community, stewardship groups, individuals, regional districts and municipalities, and 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.

6.0 CLOSURE

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 (attached within Appendix B) has 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

Prepared by:

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Aquatic Biologist
Phone: 250.469.3474

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FIGURES AND STREAMLINE SUMMARY PAGES

Bellevue Creek

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

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

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

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

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

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

Segment: 1

Segment: 2

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

Segment: 3

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

Segment: 4

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

Segment: 5

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

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

30 0 30 60 90 Meters

N
W E
S

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

LEGEND

- Stream Centreline
- Top of Bank
- Segment break

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

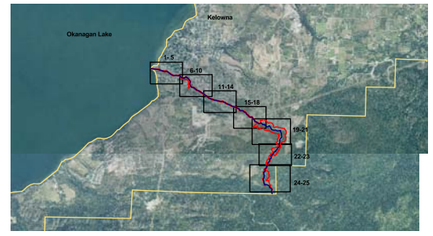
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge

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

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

- Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE

City of Kelowna

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

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

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

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

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

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

Segment: 6

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

Segment: 7

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

Segment: 8

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

Segment: 9

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

Segment: 10

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

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

30 0 30 60 90 Meters

N W E S

Map:	2 of 7
Title:	Segments 6-10 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream Centreline
- Top of Bank
- Segment break

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

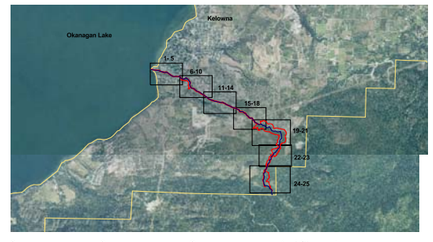
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge

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

- Enhancement

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 11-14

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
11.0	Channelized	132	Riffle	5.0	21-40%	Unknown	None	0	1	4	45	50	0	5.00	8.00	0.07	0.95	30	100	0	0	0	0	0	0
12.0	Channelized	143	Riffle	4.0	0	Potential	Mid-channel	0	1	4	50	45	0	4.00	17.50	0.06	0.60	25	95	0	0	0	0	5	0
13.0	Channelized	224	Cascade	5.0	0	Unknown	Mid-channel	0	0	0	45	55	0	4.70	10.50	0.08	0.85	25	95	5	0	0	0	0	0
14.0	Channelized	418	Cascade	5.0	1-20%	Potential	None	0	1	1	33	65	0	3.30	8.80	0.08	0.90	40	90	10	0	0	0	0	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability		
11.0	Broadleaf forest	Urban Residential	young forest	5-33%	Medium	Broadleaf forest	Urban Residential	young forest	34-66%	Medium	5	Low
12.0	Mixed forest	Urban Residential	young forest	5-33%	High	Mixed forest	Urban Residential	young forest	5-33%	High	5	Low
13.0	Mixed forest	Urban Residential	sapling >10m	<5%	Medium	Mixed forest	Urban Residential	sapling >10m	<5%	Medium	6	High
14.0	Mixed forest	Urban Residential	young forest	5-33%	High	Mixed forest	Urban Residential	young forest	5-33%	High	4	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: 11

Higher gradient; riffle-cascade; boulders predominant. Sections of high bank instability attributed to over-steepening and removal of riparian vegetation.

Segment: 12

Diking more setback permitting wider channel and allowing development of mid channel bars. A spring occurs on left bank. Therefore deep pool development may provide refuge during low flows.

Segment: 13

Deep-cut channelization and poor riparian quality. Stream bed instability.

Segment: 14

Narrow riparian band naturalizing. Intermittent sections of bank instability from channelization. Boulder-pool complexes providing cover and associated shallow pools and small pockets of suitable spawning substrates.

Bellevue Creek
Sensitive Habitat Inventory and Mapping (SHIM) Segments 11-14

30 0 30 60 90 Meters

N W E S

Map:	3 of 7
Title:	Segments 11-14 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream Centreline
- Top of Bank
- Segment break

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

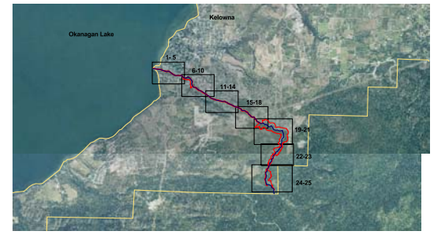
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

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

- Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 15-18

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
15.0	Channelized	177	Cascade	6.0	0	Unknown	None	0	1	1	23	75	0	3.00	7.00	0.09	0.95	40	90	10	0	0	0	0	0
16.0	Channelized	217	Cascade	7.0	0	Unknown	None	0	1	1	33	65	0	4.00	9.00	0.08	0.85	35	90	10	0	0	0	0	0
17.0	Channelized	425	Cascade	7.0	1-20%	Potential	Diagonal	0	1	4	25	70	0	4.00	9.00	0.08	0.85	35	90	10	0	0	0	0	0
18.0	Natural	142	Cascade/Pool	7.0	21-40%	Resident		0	1	4	20	45	30	3.70	7.40	0.09	0.95	40	90	10	0	0	0	0	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability		
15.0	Mixed forest	Disturbed	sapling >10m	5-33%	Medium	Mixed forest	Urban Residential	low shrubs <2m	<5%	Low	6	High
16.0	Mixed forest	Disturbed	young forest	5-33%	High	Mixed forest	Disturbed	mature forest	<5%	High	4	Low
17.0	Mixed forest	Agriculture	tall shrubs 2-10m	5-33%	Low	Mixed forest	Agriculture	sapling >10m	<5%	Medium	6	Very higH
18.0	Coniferous forest	Disturbed	young forest	<5%	High	Mixed forest	Disturbed	mature forest	34-66%	Medium	1	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: 15

Higher gradient; steep, unstable boulder banks; Recent enhancement works. Right bank nearly devoid of vegetation.

Segment: 16

Deep-cut channelization but with some meandering maintained. More stable bank sloping. Despite channelization diking is becoming naturalized with less overall encroachment to top of bank.

Segment: 17

Combined impacts from channelization, agriculture and lack of riparian vegetation, and 2003 forest fire. Siltation occurs over a ~40-m length at the top of the segment, from small tributary and landslide.

Segment: 18

Ravine slope (left bank) small bench below ravine slope (right bank). Boulder cascade with numerous shallow pools. Regular small pockets of gravels among boulders amounting ~4% representing potential spawning habitat for resident rainbow trout (observed).

Bellevue Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 15-18

30 0 30 60 90 Meters

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Map:	4 of 7
Title:	Segments 15-18 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream Centreline
- Top of Bank
- Segment break

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

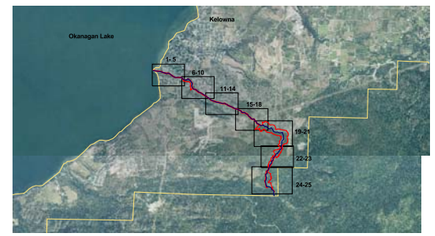
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge

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

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

- Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 19-21

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
19.0	Natural	610	Cascade/Pool	8.0	1-20%	Resident	Side	0	2	8	30	50	10	4.50	8.00	0.07	0.85	60	65	15	0	15	0	5	0
20.0	Modified	244	Cascade/Pool	7.0	0	Resident	Side	0	2	13	15	65	5	3.60	9.00	0.08	0.85	55	65	15	0	10	0	10	0
21.0	Natural	241	Falls	45.0	1-20%	Unknown	None	0	0	5	10	45	40	3.20	8.00	0.07	0.70	20	80	20	0	0	0	0	0

a. Substrate codes: O=organics; F=silt/sand; G=gravel; C=cobble; B=boulder; R=bedrock
b. Cover codes: B=boulder; DP=deep pool; IV=instream vegetation; LWD=large woody debris; OV=overstream vegetation; SWD=small woody debris; UC=undercut bank

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability		
19.0	Mixed forest	Disturbed	young forest	<5%	High	Mixed forest	Disturbed	young forest	5-33%	Medium	0	Nil
20.0	Rock	Disturbed	low shrubs <2m	34-66%	High	Herbs/grasses	Disturbed	low shrubs <2m	<5%	High	5	Nil
21.0	Coniferous forest	Disturbed	mature forest	5-33%	High	Coniferous forest	Disturbed	mature forest	5-33%	High	0	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: 19

Creek meanders through bedrock ravine. Small alluvial floodplain communities occur on inside bends. Suitable pockets of spawning substrates associated with instream structures (LWD and Boulders). Forest fire disturbance.

Segment: 20

Modified canyon/ ravine by forest fire with subsequent salvage logging. Rainbow trout (juveniles) observed to Crawford Falls.

Segment: 21

Steep cascade and waterfall complex through canyon.

Bellevue Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 19-21

30 0 30 60 90 Meters

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Map:	5 of 7
Title:	Segments 19-21 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream Centreline
- Top of Bank
- Segment break

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

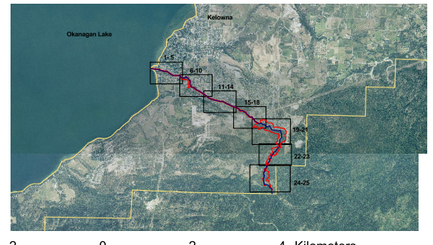
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

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

- Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 22-23

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
22.0	Natural	172	Cascade/Pool	8.0	1-20%	Unknown	None	0	1	4	15	30	50	3.20	8.00	0.07	0.80	40	70	30	0	0	0	0	0
23.0	Modified	583	Riffle/Pool	5.0	1-20%	Unknown	Mid-channel	1	1	3	25	45	10	4.50	16.50	0.07	0.85	30	80	10	0	5	0	5	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability		
22.0	Coniferous forest	Disturbed	mature forest	5-33%	High	Coniferous forest	Disturbed	mature forest	5-33%	High	0	Nil
23.0	Mixed forest	Disturbed	low shrubs <2m	5-33%	Medium	Mixed forest	Disturbed	mature forest	5-33%	Medium	4	Very high

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: 22

Predominant bedrock substrate over cascade-pool with regular bedrock outcrops within the stream channel.

Segment: 23

Wide floodplain (cottonwood riparian/floodplain association) area flanked by ravine slope and bedrock. Salvage logged to current stream channel. Prominent active floodplain (up to ~50-m wide) with numerous relic and active side channels (some still wetted).

Bellevue Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 22-23

30 0 30 60 90 Meters

N W E S

Map:	6 of 7
Title:	Segments 22-23 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

Stream Centreline
Top of Bank
Segment break

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

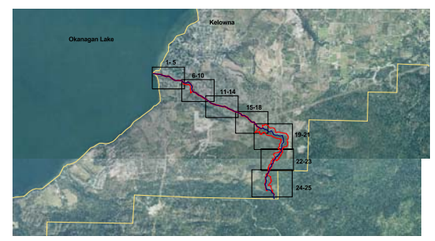
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Erosion
Discharge

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

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

Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Bellevue Creek Inventory Summary — Segments 24-25

								Substrates (%) [a]						Channel (m)				Cover (%) [b]							
Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
24.0	Natural	344	Riffle/Pool	6.0	21-40%	Unknown	Mid-channel	1	1	3	20	75	0	4.50	10.00	0.08	0.85	30	80	10	0	5	0	5	0
25.0	Natural	692	Riffle/Pool	7.0	1-20%	Unknown	Mid-channel	1	1	3	10	83	2	4.50	20.00	0.08	0.85	40	65	15	0	15	0	5	0

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

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

	Left Bank Riparian					Right Bank Riparian						
Segment	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Class	Qualifier	Stage	Shrub Cover	Bank Stability	Level of Impact [c]	Enhancement Opportunity
24.0	Mixed forest	Disturbed	mature forest	5-33%	Medium	Mixed forest	Disturbed	mature forest	5-33%	Low	0	Nil
25.0	Mixed forest	Disturbed	mature forest	5-33%	Low	Mixed forest	Disturbed	mature forest	5-33%	Low	1	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: 24

Wide floodplain area flanked by ravine slope and bedrock. No salvage logging has occurred. Mid channel bars/ islands; side channels; very dynamic/unstable character over floodplain.

Segment: 25

Some historic channelization to maintain alignment to dam and withdrawal. Occasionally flows adjacent ravine slope toe then meanders to centre of wide floodplain. Entire ravine valley is broad floodplain with predominance of boulders and cobble substrates.

Bellevue Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 24-25

30 0 30 60 90 Meters

N
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Map:	7 of 7
Title:	Segments 24-25 of 25
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

Stream Centreline
Top of Bank
Segment break

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

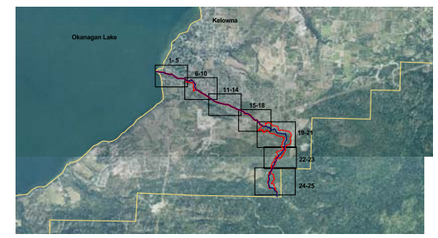
Waterbody
- Natural Springs
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Erosion
Discharge

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

Obstruction
- Dam
- Falls
- Persistent Debris
- Velocity Barrier

Enhancement



2 0 2 4 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Mill Creek

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

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
1.0	Channelized	378	Slough	0.0	1-20%	Unknown	99	1	0	0	0	0	5.00	8.00	0.50	1.00	10	0	50	0	0	50	0	0
2.0	Channelized	162	Run	0.5	1-20%	Unknown	15	35	25	25	0	0	3.50	8.00	0.40	1.00	10	0	35	0	0	65	0	0
3.0	Modified	280	Run	1.0	41-70%	Unknown	15	35	25	24	1	0	4.10	7.00	0.40	0.75	15	1	74	0	0	0	25	0
4.0	Channelized	383	Run	1.0	41-70%	Unknown	20	64	10	5	1	0	4.10	7.00	0.40	0.75	5	1	74	0	0	0	25	0
5.0	Modified	707	Run	1.0	41-70%	Resident	20	64	10	5	1	0	5.50	7.50	0.20	0.75	10	0	60	0	0	0	0	40

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
1.0	Broadleaf forest	Urban residential	mature forest	<5%	High	Herbs/grasses	Urban residential	young forest	<5%	High	6	Low
2.0	Broadleaf forest	Urban residential	mature forest	<5%	High	High Impervious	Urban residential	young forest	<5%	High	6	Low
3.0	Broadleaf forest	Urban residential	mature forest	<5%	High	High Impervious	Urban residential	young forest	<5%	High	5	Low
4.0	Broadleaf forest	Urban residential	mature forest	<5%	High	High Impervious	Urban residential	young forest	<5%	High	6	Low
5.0	Broadleaf forest	Urban residential	mature forest	<5%	High	Broadleaf forest	Urban residential	mature forest	<5%	High	5	Moderate

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

Segment: 1

Stonework and retaining walls both banks. Within highwater level of Okanagan Lake.

Segment: 2

Retaining wall and stonework both banks.

Segment: 3

Heavily urban-ized with discontinuous retaining walls. Not completely channelized.

Segment: 4

Continuous retaining walls both banks.

Segment: 5

Discontinuous retaining walls on outside bends where naturally prone to bank ero-sion.

Mill Creek

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

30 0 30 60 90 Meters

N W E S

Map:	1 of 19
Title:	Segments 1-5 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 6-9

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
6.0	Channelized	110	Run	1.0	1-20%	Resident	15	35	35	15	0	0	4.00	7.00	0.35	0.75	20	0	40	0	0	30	30	0
7.0	Modified	593	Run	1.0	41-70%	Unknown	15	35	35	15	0	0	4.20	6.50	0.30	0.75	15	0	40	0	0	30	30	0
8.0	Channelized	139	Run	1.0	1-20%	Unknown	15	40	30	15	0	0	3.50	4.50	0.40	1.00	25	25	75	0	0	0	0	0
9.0	Modified	563	Run	1.5	41-70%	Resident	5	10	50	34	1	0	4.50	6.20	0.30	0.75	40	25	65	0	0	0	0	10

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
6.0	Broadleaf forest	Urban residential	tall shrubs 2-10m	5-33%	Medium	Broadleaf forest	Urban residential	young forest	5-33%	Medium	6	Low
7.0	Broadleaf forest	Urban residential	young forest	5-33%	Medium	Broadleaf forest	Urban residential	young forest	5-33%	Medium	5	Low
8.0	Broadleaf forest	Urban residential	young forest	5-33%	Medium	Broadleaf forest	Urban residential	young forest	5-33%	Medium	6	Low
9.0	Broadleaf forest	Disturbed	mature forest	<5%	Medium	Mixed forest	Urban residential	mature forest	5-33%	High	4	Moderate

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

Segment: 6

Continuous retaining walls on both banks.

Segment: 7

Discontinuous retaining walls along both banks.

Segment: 8

Continuous retaining walls and stonework on both banks.

Segment: 9

Predominantly run with weak riffle-pool development.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 6-9

30 0 30 60 90 Meters

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Map:	2 of 19
Title:	Segments 6-9 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 10-13

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
10.0	Modified	557	Run	1.0	1-20%	Resident	40	15	25	24	1	0	4.60	7.00	0.35	0.75	15	5	70	0	5	20	0	0
11.0	Channelized	104	Run	1.5	1-20%	Resident	1	4	75	24	1	0	4.50	5.00	0.20	0.90	10	10	90	0	0	0	0	0
12.0	Channelized	335	Run	2.0	41-70%	Resident	1	4	30	60	5	0	4.00	6.50	0.28	0.75	15	15	65	0	0	15	0	5
13.0	Modified	329	Riffle/Pool	1.5	>90%	Resident	5	0	55	35	5	0	3.50	8.00	0.25	0.75	50	15	70	0	0	10	0	5

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
10.0	Broadleaf forest	Urban residential	young forest	34-66%	Medium	Broadleaf forest	Urban residential	sapling >10m	34-66%	Medium	5	Moderate
11.0	Herbs/grasses	Urban residential	young forest	<5%	High	Herbs/grasses	Urban residential	young forest	<5%	High	6	Moderate
12.0	Mixed forest	Urban residential	mature forest	5-33%	High	Broadleaf forest	Urban residential	mature forest	<5%	High	6	Moderate
13.0	Broadleaf forest	Urban residential	mature forest	5-33%	High	Broadleaf forest	Urban residential	mature forest	<5%	High	2	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: 10

Discontinuous stonework and retaining walls on both banks. More urbanized than Segment 9.

Segment: 11

Retaining walls along both banks with instream enhancements occurring over entire segment length.

Segment: 12

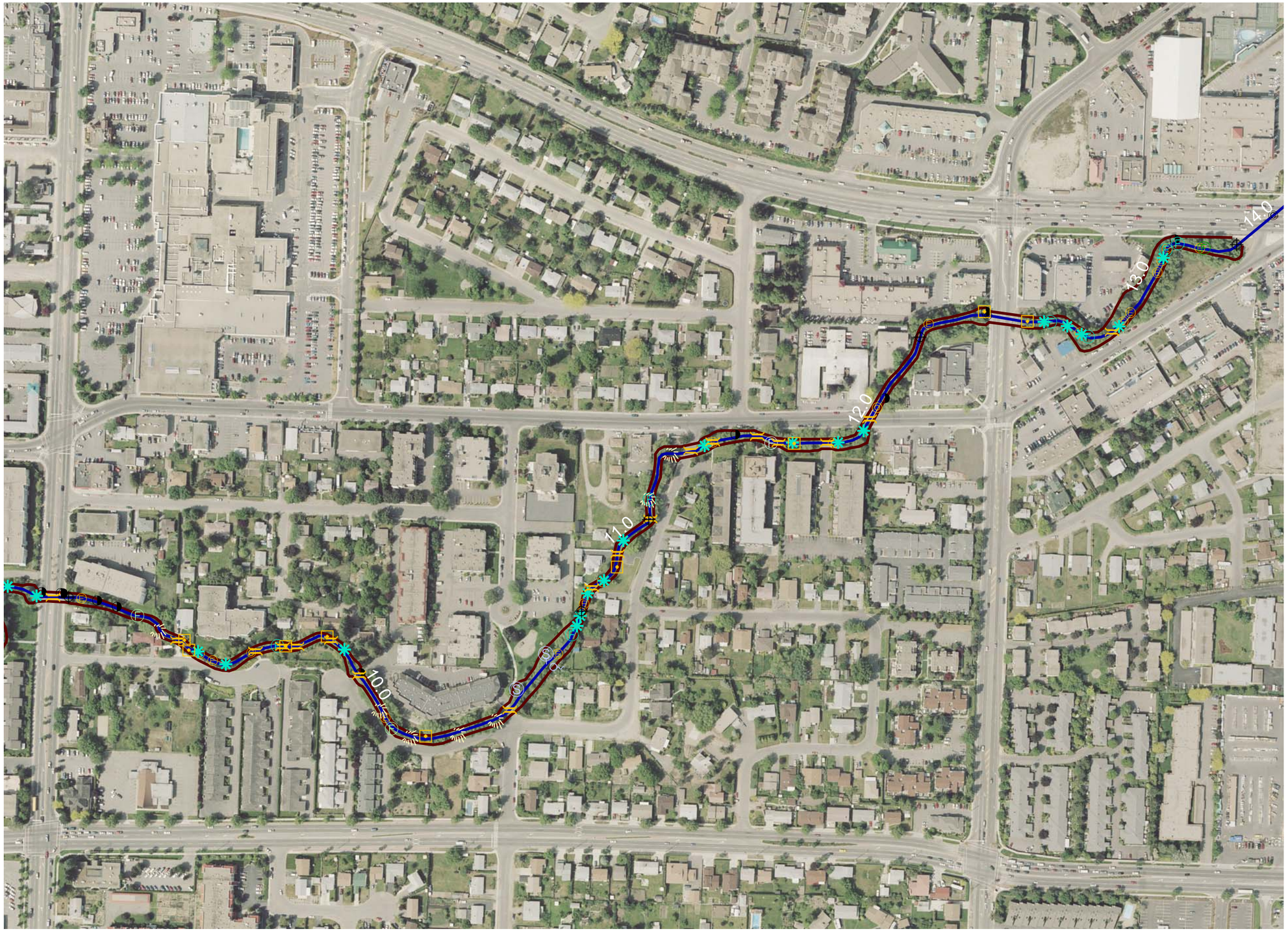
Retaining walls along both banks with the exception of 60-m at bottom of segment.

Segment: 13

Instream enhancements adding considerable structural complexity and cover.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 10-13



30 0 30 60 90 Meters

N
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Map:	3 of 19
Title:	Segments 10-13 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

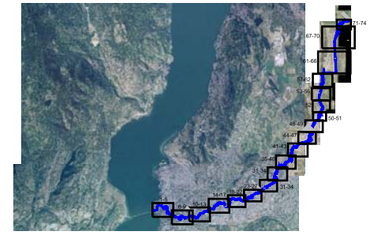
Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

- Enhancement



2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 14-17

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
14.0	Modified	763	Riffle/Pool	1.5	1-20%	Resident	5	0	20	50	25	0	4.50	6.50	0.20	0.75	20	45	40	0	0	10	0	5
15.0	Modified	262	Run	1.0	41-70%	Unknown	85	5	4	5	1	0	5.50	6.50	0.40	0.80	40	1	49	0	5	30	5	10
16.0	Modified	249	Run	1.0	1-20%	Unknown	45	25	15	15	0	0	4.50	6.00	0.25	0.70	20	0	65	0	5	15	5	10
17.0	Modified	233	Riffle/Pool	2.0	71-90%	Potential	5	15	25	55	0	0	4.00	5.80	0.20	0.65	10	0	65	0	5	15	5	10

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

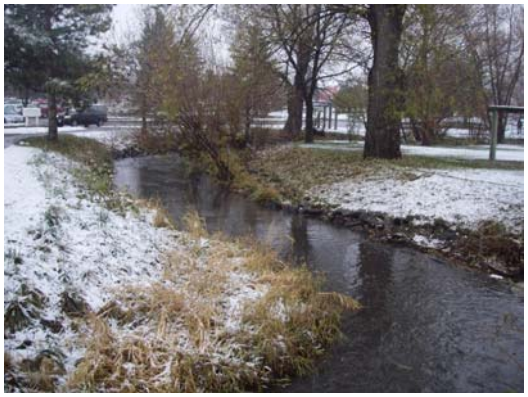
b. Cover codes: B=boulder; DP=deep pool; IV=instream vegetation; LWD=large woody debris; OV=overstream vegetation; SWD=small woody debris; UC=undercut bank

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
14.0	Mixed forest	Recreation	young forest	<5%	High	Broadleaf forest	Recreation	mature forest	<5%	High	5	Moderate
15.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Disturbed	young forest	67-100%	Medium	1	Low
16.0	Herbs/grasses	Urban residential	low shrubs <2m	5-33%	Low	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	5	Very_high
17.0	Broadleaf forest	Urban residential	sapling >10m	67-100%	Medium	Broadleaf forest	Urban residential	young forest	67-100%	Medium	2	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: 14

Parkland. Retaining walls and rip rap along majority of segment length on both banks.



Segment: 15

Deep run-slough hydraulic character influenced by beaver activity.

Segment: 16

Weak riffle-pool at bottom of segment. Considerable riparian disturbance and bank instability.

Segment: 17

Riffle-pool-run

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 14-17

30 0 30 60 90 Meters

N W E S

Map:	4 of 19
Title:	Segments 14-17 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 18-22

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
18.0	Modified		211	Run	1.0	0	Unknown	10	45	15	25	5	0	3.50	6.50	0.28	0.65	15	15	80	0	1	2	2	0
19.0	Modified		522	Riffle/Pool	1.5	21-40%	Unknown	10	30	20	35	5	0	4.00	6.00	0.20	0.65	10	0	55	0	5	10	25	5
20.0	Modified	Beaver Pond	142	Beaver Pond	0.0	71-90%	Unknown	80	5	5	10	0	0	12.00	6.00	1.60	1.00	80	0	90	0	8	1	1	0
21.0	Modified	Beaver Pond	157	Slough	1.0	>90%	Unknown	25	10	25	39	1	0	5.00	9.00	0.65	0.65	90	1	64	0	10	15	10	0
22.0	Natural		353	Riffle/Pool	1.5	71-90%	Potential	1	29	25	45	0	0	5.00	6.50	0.21	0.60	10	5	40	0	35	5	10	5

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
18.0	High Impervious	Disturbed	low shrubs <2m	5-33%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	Medium	5	High
19.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Disturbed	young forest	67-100%	Medium	4	High
20.0	Broadleaf forest	Natural	young forest	67-100%	Medium	Broadleaf forest	Disturbed	young forest	67-100%	Medium	1	Low
21.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	Shrubs	Natural	tall shrubs 2-10m	67-100%	Medium	2	Nil
22.0	Broadleaf forest	Natural	mature forest	34-66%	High	Broadleaf forest	Natural	mature forest	67-100%	Medium	1	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

Steep left bank fill slope.

Segment: 19

Riffle-pool-run. Intermittent Industrial/ municipal encroachment to top of bank.

Segment: 20

Natural with railway encroachment near top of segment along left bank.

Segment: 21

Railway confinement along left bank and cliff-bluff along right bank.

Segment: 22

Not recently disturbed, although a portion of the left bank was previously diked.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 18-22

30 0 30 60 90 Meters

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Map:	5 of 19
Title:	Segments 18-22 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Erosion

Discharge

Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 23-27

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
23.0	Modified		253	Riffle/Pool	2.0	41-70%	Unknown	1	24	25	50	0	0	5.50	7.00	0.20	0.60	10	0	45	0	35	5	10	5
24.0	Natural	Beaver Pond	176	Slough	1.0	1-20%	Unknown	1	24	25	50	0	0	10.00	10.00	1.20	0.75	90	0	45	0	35	1	14	5
25.0	Modified		355	Run	1.5	1-20%	Potential	20	10	30	39	1	0	4.00	6.00	0.45	0.65	30	5	30	0	20	15	20	10
26.0	Channelized		150	Run	1.5	71-90%	Unknown	5	20	20	45	10	0	5.00	6.00	0.30	0.65	35	20	80	0	0	0	0	0
27.0	Modified	Beaver Pond	572	Slough	0.5	1-20%	Unknown	55	15	15	10	5	0	8.50	5.50	1.00	0.90	90	5	70	0	15	0	5	5

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
23.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Natural	young forest	67-100%	Medium	2	Low
24.0	Broadleaf forest	Natural	mature forest	67-100%	Medium	Broadleaf forest	Natural	young forest	67-100%	Medium	0	Low
25.0	Herbs/grasses	Disturbed	tall shrubs 2-10m	5-33%	Medium	Herbs/grasses	Unknown	tall shrubs 2-10m	5-33%	Medium	4	Moderate
26.0	Broadleaf forest	Disturbed	young forest	34-66%	Medium	Broadleaf forest	Disturbed	young forest	34-66%	Medium	5	Low
27.0	Herbs/grasses	Disturbed	tall shrubs 2-10m	5-33%	High	Herbs/grasses	Disturbed	young forest	67-100%	Medium	4	Moderate

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

Segment: 23

Riffle-pool-run.

Segment: 24

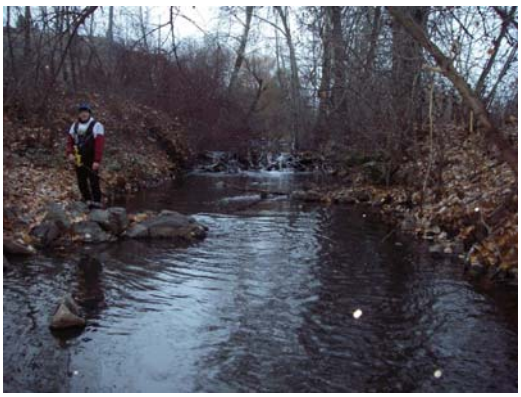
Abundant instream woody debris and span logs mostly attrib-uted to beaver activity.

Segment: 25

Central Park. Predominantly run with inter-mittent weak riffle-pool character. Numerous enhancements

Segment: 26

Diking along both banks with railway along right bank and channelization to Flood diver-sion.



Segment: 27

Numerous log and rock bank revetments to mitigate ero-sion and enhance aquatic habitat complexity.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 23-27

30 0 30 60 90 Meters

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Map:	6 of 19
Title:	Segments 23-27 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Erosion

Discharge

Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 28-30

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
28.0	Modified		328	Riffle/Pool	1.5	71-90%	Unknown	1	32	33	33	1	0	4.60	8.30	0.22	0.75	65	1	15	0	49	15	15	5
29.0	Channelized		577	Riffle/Pool	1.5	71-90%	Unknown	10	20	25	40	5	0	5.00	6.50	0.17	0.65	10	5	20	0	40	15	15	5
30.0	Modified	Beaver Pond	147	Run	1.0	1-20%	Unknown	25	60	10	5	0	0	5.00	8.00	0.45	1.00	60	0	75	0	10	5	0	10

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
28.0	Broadleaf forest	Disturbed	mature forest	67-100%	Medium	Broadleaf forest	Disturbed	mature forest	67-100%	Medium	4	Moderate
29.0	Broadleaf forest	Disturbed	young forest	34-66%	Medium	Broadleaf forest	Disturbed	young forest	67-100%	Medium	5	Moderate
30.0	Broadleaf forest	Disturbed	tall shrubs 2-10m	34-66%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	Medium	4	Very_high

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: 28

Riffle-pool-run.

Segment: 29

Riffle-pool-run. Channelized along right bank by rail-way and armoured over much of left bank.

Segment: 30

Evidence of riffle pool morphology prior to beaver activity. This area is now slow moving (slough).

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 28-30

30 0 30 60 90 Meters

N W E S

Map:	7 of 19
Title:	Segments 28-30 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 31-34

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
									O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
31.0	Modified	Wetland	262	Slough	0.5	21-40%	Unknown	None	60	38	1	1	0	0	5.00	8.00	0.50	1.00	75	0	80	0	5	5	5	5
32.0	Modified	Other	148	Run	0.5	21-40%	Unknown	None	60	38	1	1	0	0	5.00	8.00	0.50	1.00	60	0	80	0	5	5	5	5
33.0	Modified	Beaver Pond	153	Slough	0.5	1-20%	Unknown	Mid-channel	30	60	9	1	0	0	12.00	12.00	0.35	0.45	25	0	50	0	25	0	25	0
34.0	Modified		266	Riffle/Pool	2.0	0	Unknown	Mid-channel	25	25	25	25	0	0	9.00	14.00	0.13	0.45	10	5	85	0	0	5	0	5

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
31.0	Disturbed wetland	Disturbed	tall shrubs 2-10m	67-100%	High	Broadleaf forest	Disturbed	tall shrubs 2-10m	34-66%	Medium	5	Very_high
32.0	Broadleaf forest	Disturbed	tall shrubs 2-10m	5-33%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	Medium	5	Very_high
33.0	Disturbed wetland	Disturbed	tall shrubs 2-10m	5-33%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	<5%	Medium	4	Very_high
34.0	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	Low	Herbs/grasses	Disturbed	low shrubs <2m	<5%	Low	5	Very_high

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: 31

Riverine slough/ wetland com-plex. High beaver activ-ity/influence.

Segment: 32

Confined on left bank by back fill (garbage).

Segment: 33

Segment: 34

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 31-34

30 0 30 60 90 Meters

N
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Map:	8 of 19
Title:	Segments 31-34 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 35-40

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
35.0	Modified		277	Riffle/Pool	2.0	71-90%	Potential	1	14	25	60	5	0	5.30	6.50	0.15	0.65	15	0	20	0	50	15	10	5
36.0	Modified		293	Riffle/Pool	2.0	21-40%	Potential	1	14	20	64	1	0	5.30	6.50	0.15	0.65	17	0	15	0	40	20	20	5
37.0	Natural	Beaver Pond	263	Slough	0.5	21-40%	Unknown	10	75	5	10	0	0	6.50	6.50	1.00	1.00	90	0	70	0	5	15	5	5
38.0	Modified		165	Run	1.5	21-40%	Potential	1	24	25	49	1	0	5.50	6.50	0.35	0.75	15	5	55	0	5	5	5	25
39.0	Channelized		172	Slough	0.0	0	Unknown	50	35	5	10	0	0	6.50	8.00	0.50	1.10	30	0	100	0	0	0	0	0
40.0	Natural		485	Slough	0.3	41-70%	Unknown	0	100	0	0	0	0	5.60	5.60	0.40	1.40	30	0	20	0	75	0	5	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
35.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Disturbed	young forest	67-100%	Medium	1	Low
36.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	4	Moderate
37.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Shrubs	Natural	sapling >10m	67-100%	Medium	1	Low
38.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Disturbed	young forest	67-100%	Medium	4	Low
39.0	Mixed forest	Disturbed	young forest	5-33%	Medium	Mixed forest	Disturbed	young forest	5-33%	Medium	6	Moderate
40.0	Broadleaf forest	Natural	mature forest	67-100%	Low	Broadleaf forest	Natural	mature forest	67-100%	Low	0	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: 35

Intermittent field encroachment to top of bank. Invasive plants.

Segment: 36

Lack of treed forest canopy; predominated by tall shrubs (hawthorn).

Segment: 37

Segment: 38

Segment: 39

Segment: 40

Torturous meander through mature cottonwood forest down-cutting in clay substrates.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 35-40

30 0 30 60 90 Meters

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Map:	9 of 19
Title:	Segments 35-40 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 41-43

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
41.0	Channelized	591	Slough	0.3	0	Unknown	0	100	0	0	0	0	5.60	5.60	0.55	1.30	15	0	30	10	0	40	20	0
42.0	Modified	297	Slough	0.3	21-40%	Unknown	38	60	0	1	1	0	5.50	6.50	0.36	1.20	20	1	65	0	9	10	15	0
43.0	Channelized	116	Run	0.2	0	Unknown	10	90	0	0	0	0	3.50	6.00	0.60	1.50	8	0	85	0	0	5	10	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
41.0	Shrubs	Disturbed	low shrubs <2m	67-100%	Low	Shrubs	Disturbed	low shrubs <2m	67-100%	Low	6	High
42.0	Broadleaf forest	Disturbed	young forest	34-66%	Low	Broadleaf forest	Disturbed	young forest	34-66%	Medium	4	High
43.0	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	Low	Shrubs	Disturbed	low shrubs <2m	34-66%	Medium	5	High

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: 41

Channelized during railway development. Creating large impoundment to west of railway.

Segment: 42

Predominantly slough with occasional run. Industrial on left bank and open, disturbed right bank.

Segment: 43

Channelized by diking. Open grass-herb-low shrub riparian. Low impervious industrial both banks.

Mill Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 41-43

30 0 30 60 90 Meters

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Map:	10 of 19
Title:	Segments 41-43 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 44-47

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
44.0	Channelized		152	Run	0.2	21-40%	Unknown	10	90	0	0	0	0	3.50	6.50	0.27	1.00	5	0	85	0	0	5	10	0
45.0	Modified	Beaver Pond	607	Slough	0.5	41-70%	Unknown	20	75	0	5	0	0	5.00	6.50	1.00	1.50	85	1	69	0	20	5	5	0
46.0	Modified	Beaver Pond	517	Slough	0.0	41-70%	Unknown	20	75	0	0	0	0	5.50	6.50	1.30	1.60	95	1	69	0	20	5	5	0
47.0	Modified		384	Slough	0.0	21-40%	Unknown	50	50	0	0	0	0	5.50	6.50	0.40	1.00	75	0	70	0	20	5	5	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
44.0	Shrubs	Disturbed	low shrubs <2m	34-66%	Low	Broadleaf forest	Disturbed	mature forest	34-66%	High	5	Moderate
45.0	Broadleaf forest	Disturbed	young forest	67-100%	Low	Broadleaf forest	Disturbed	young forest	67-100%	Low	4	Low
46.0	Broadleaf forest	Disturbed	mature forest	67-100%	Low	Broadleaf forest	Disturbed	mature forest	67-100%	Low	2	Low
47.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Disturbed	mature forest	67-100%	Medium	4	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: 44

Channelized through industrial property.

Segment: 45

Natural channel down-cutting through fine silt/clay substrates. Commercial/ industrial encroachment.

Segment: 46

Very deep beaver ponding. Floodplain association along right bank and encroachment on left bank.

Segment: 47

Industrial encroachment on outside stream bends with steep, unstable banks. Reduced beaver activity

Mill Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 44-47

30 0 30 60 90 Meters

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Map:	11 of 19
Title:	Segments 44-47 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 48-49

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
48.0	Channelized	223	Slough	0.0	1-20%	Unknown	25	75	0	0	0	0	3.80	5.60	0.40	1.30	15	0	40	0	0	50	10	0
49.0	Modified	665	Slough	0.5	21-40%	Unknown	24	74	1	0	1	0	4.50	6.00	0.59	1.40	60	1	59	0		30	10	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
48.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Low	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	6	Moderate
49.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Low	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	5	Moderate

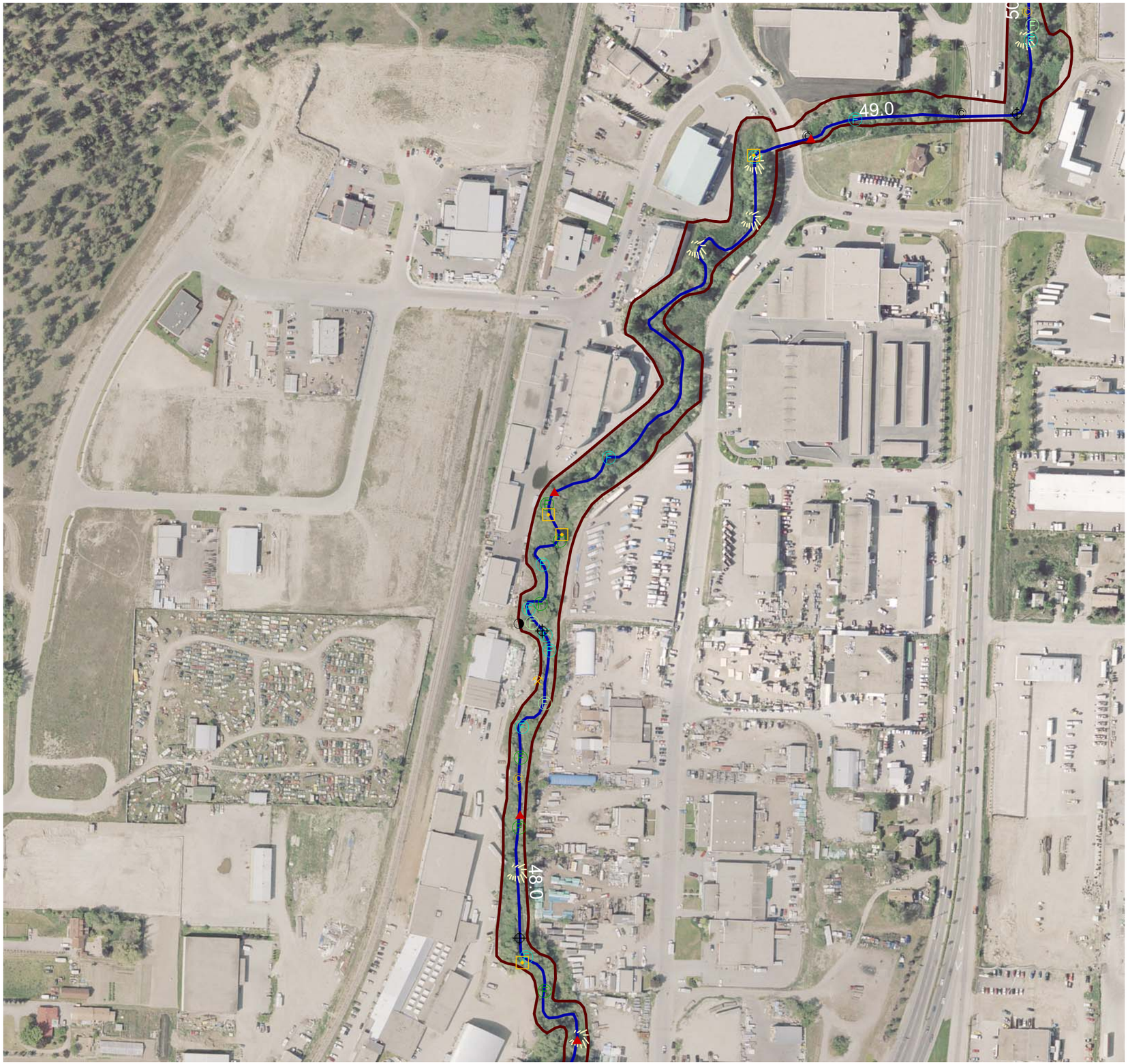
c. Impact rating: 0=nil; 1 = 1-bank low; 2 = 1-bank moderate; 3 = 1-bank high; 4 = both banks low; 5 = both banks moderate; 6 = both banks high

Segment: 48

Channelized/ diked both banks. Intermittent armouring on both banks where erosion more prevalent.

Segment: 49

Diking is setback allowing stream channel to meander naturally within. Beaver activity occurs.



Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 48-49

30 0 30 60 90 Meters

N
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S

Map:	12 of 19
Title:	Segments 48-49 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 50-51

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
50.0	Channelized	163	Run	0.5	1-20%	Unknown	15	75	5	5	0	0	5.00	6.50	0.26	0.95	5	0	50	0	5	10	35	0
51.0	Natural	324	Slough	0.5	41-70%	Unknown	15	75	5	5	0	0	5.00	6.50	0.50	1.30	80	0	60	0	5	15	20	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
50.0	Broadleaf forest	Disturbed	young forest	34-66%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	<5%	Low	5	Moderate
51.0	Natural wetland	Disturbed	young forest	67-100%	High	Natural wetland	Disturbed	young forest	67-100%	High	1	Nil

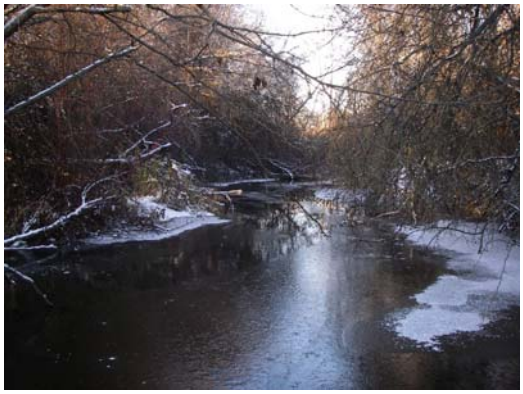
c. Impact rating: 0=nil; 1 = 1-bank low; 2 = 1-bank moderate; 3 = 1-bank high; 4 = both banks low; 5 = both banks moderate; 6 = both banks high

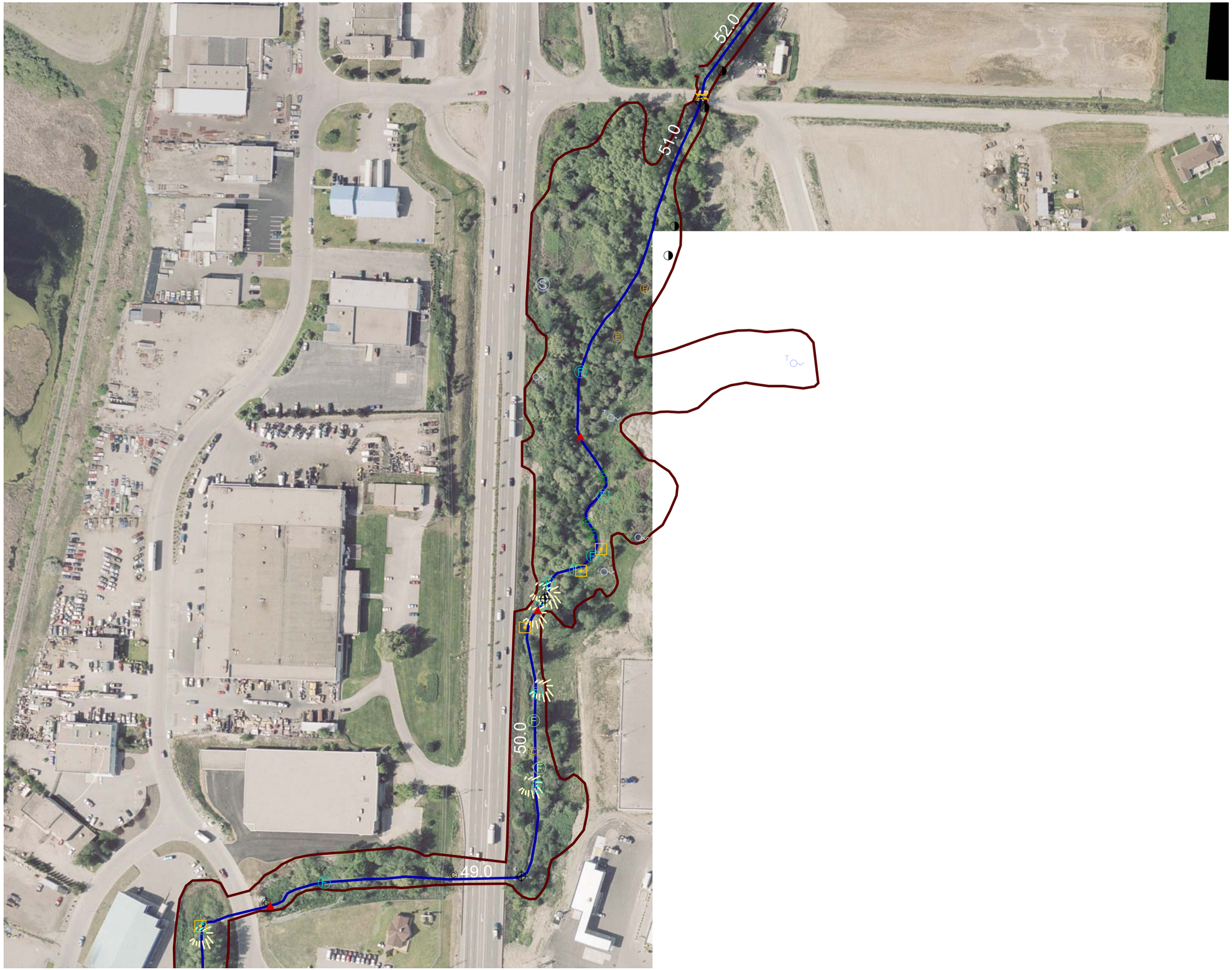
Segment: 50

Channelized by Highway 97 (to west) and to lesser extent by commercial development to east.

Segment: 51

Riparian floodplain/ riverine swamp asso-ciation. Deep slough attrib-uted to beaver activity.





Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 50-51

30 0 30 60 90 Meters

N
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Map:	13 of 19
Title:	Segments 50-51 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segment 52

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
52.0	Channelized	749	Run	0.5	1-20%	Resident	13	75	5	1	1	0	3.70	5.00	0.38	1.20	20	0	10	0	10	25	50	5

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
52.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Medium	5	Moderate

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

Segment: 52

Ditched through field. Run with intermittent riffle-pool development.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segment 52

30 0 30 60 90 Meters

N
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S

Map:	14 of 19
Title:	Segments 52 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal
- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank
- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 53-56

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
53.0	Modified	159	Riffle/Pool	2.0	1-20%	Resident	Side	5	35	45	15	0	0	5.00	6.20	0.20	0.85	10	0	70	0	0	25	5	0
54.0	Channelized	165	Run	1.0	21-40%	Unknown	Side	10	35	35	15	0	0	4.00	6.50	0.17	0.80	25	0	0	0	0	50	50	0
55.0	Modified	270	Riffle/Pool	2.0	41-70%	Resident	None	1	15	74	10	0	0	4.00	5.50	0.10	0.65	3	0	40	0	0	0	20	40
56.0	Channelized	111	Run	1.5	0	Unknown	None	0	5	5	30	60	0	3.00	3.00	0.25	0.70	5	100	0	0	0	0	0	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
53.0	Broadleaf forest	Disturbed	sapling >10m	34-66%	Medium	Broadleaf forest	Disturbed	young forest	34-66%	Medium	4	Low
54.0	Shrubs	Disturbed	tall shrubs 2-10m	67-100%	Low	Broadleaf forest	Disturbed	young forest	34-66%	Medium	5	Moderate
55.0	Broadleaf forest	Disturbed	young forest	67-100%	Medium	Broadleaf forest	Disturbed	mature forest	34-66%	Medium	4	Moderate
56.0	Herbs/grasses	Urban residential	low shrubs <2m	<5%	High	Herbs/grasses	Urban residential	low shrubs <2m	<5%	High	6	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: 53

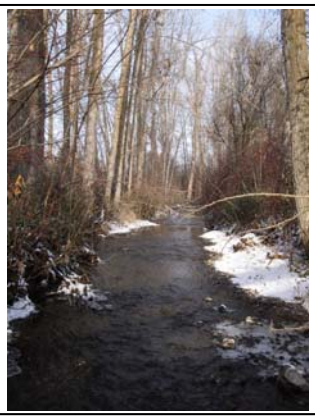
More natural at bottom of segment becoming more channel-ized at the top with revet-ments.

Segment: 54

Considerable left bank erosion.

Segment: 55

Large berm along right bank (naturalized) and Bulman Road along left bank (just set back).



Segment: 56

Channelized through retain-ing walls with series of rock lines.

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 53-56

30 0 30 60 90 Meters

N W E S

Map:	15 of 19
Title:	Segments 53-56 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 57-62

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
								O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
57.0	Modified	Side channel	527	Slough	0.2	1-20%	Potential	10	80	8	2	0	0	3.20	6.00	0.30	1.00	30	0	20	9	1	65	0	5
58.0	Modified		224	Riffle/Pool	1.5	1-20%	Potential	1	59	30	10	0	0	1.60	2.20	0.20	0.60	30	0	5	20	1	74	0	0
59.0	Modified		171	Riffle/Pool	1.5	41-70%	Potential	1	59	30	10	0	0	1.80	5.60	0.15	0.60	15	0	0	0	0	75	25	0
60.0	Modified		188	Riffle/Pool	1.5	0	Potential	5	60	24	10	1	0	3.00	6.10	0.18	0.60	30	0	30	30	0	30	10	0
61.0	Ditch		309	Run	1.0	0	Unknown	0	35	5	60	0	0	1.40	3.00	0.11	0.60	75	0	0	35	0	40	0	25
62.0	Ditch		139	Run	1.0	0	Unknown	2	95	2	1	0	0	0.80	4.80	0.35	0.50	75	0	0	35	0	40	0	25

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
57.0	Herbs/grasses	Recreation	tall shrubs 2-10m	5-33%	Medium	Herbs/grasses	Recreation	tall shrubs 2-10m	5-33%	Medium	4	Low
58.0	Herbs/grasses	Recreation	low shrubs <2m	5-33%	Medium	Herbs/grasses	Recreation	low shrubs <2m	5-33%	Medium	4	Low
59.0	Herbs/grasses	Recreation	low shrubs <2m	<5%	Medium	Broadleaf forest	Natural	mature forest	67-100%	High	2	Low
60.0	Herbs/grasses	Agriculture	low shrubs <2m	<5%	Low	Herbs/grasses	Disturbed	low shrubs <2m	<5%	Low	6	Moderate
61.0	Herbs/grasses	Disturbed	low shrubs <2m	<5%	High	Herbs/grasses	Disturbed	low shrubs <2m	<5%	High	6	Low
62.0	Herbs/grasses	Disturbed	low shrubs <2m	<5%	High	Herbs/grasses	Disturbed	low shrubs <2m	<5%	High	6	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: 57

Slough with portions of riffle-pool-run. Side channels and islands.

Segment: 58

Riffle-pool-run. Narrower and shallower channel.

Segment: 59

Riffle-pool-run.

Segment: 60

Riffle-pool-run below bridge, run-slough upstream of bridge. Old bank diking evident.

Segment: 61

Segment: 62

Ditch less confined and predominated by cattail marsh.

Mill Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 57-62

30 0 30 60 90 Meters

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Map:	16 of 19
Title:	Segments 57-62 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Erosion

Discharge

Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 63-66

Segment	Primary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
							O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
61.0	Ditch	309	Run	1.0	0	Unknown	0	35	5	60	0	0	1.40	3.00	0.11	0.60	75	0	0	35	0	40	0	25
62.0	Ditch	139	Run	1.0	0	Unknown	2	95	2	1	0	0	0.80	4.80	0.35	0.50	75	0	0	35	0	40	0	25
63.0	Culvert	175	Slough	0.3	0	Unknown	5	1	0	0	0	0	3.20	3.20	0.50		0	0	0	0	0	0	0	0
64.0	Channelized	96	Riffle	1.0	0	Unknown	0	5	5	10	80	0	3.00	6.00	0.11	0.70	15	95	2	0	0	3	0	0
65.0	Ditch	112	Slough	0.3	0	Unknown	25	50	20	5	0	0	2.50	6.00	0.37	0.80	10	0	80	10	0	5	0	5
66.0	Ditch	1118	Run	1.5	0	Potential	0	5	50	45	0	0	3.50	4.00	0.06	0.50	5	0	0	80	0	10	0	10

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
63.0	High Impervious	Culvert				High Impervious	Culvert				6	Nil
64.0	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	High	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	High	6	Nil
65.0	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	High	Herbs/grasses	Disturbed	low shrubs <2m	34-66%	High	6	Nil
66.0	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	Medium	6	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: 63

Segment: 64

Bottom of segment armoured with rip rap.

Segment: 65

Segment: 66

Weak riffle-pool inhibited by channeliza-tion.

Mill Creek
Sensitive Habitat Inventory and Mapping (SHIM)
Segments 61-66

30 0 30 60 90 Meters

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Map:	17 of 19
Title:	Segments 61-66 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Erosion

Discharge

Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 67-70

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
									O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
67.0	Channelized		424	Riffle/Pool	2.0	0	Potential	Side	0	5	35	60	0	0	4.00	9.00	0.05	0.50	8	25	0	25	0	25	0	25
68.0	Channelized		201	Riffle	3.0	0	Unknown	None	0	5	25	45	25	0	5.00	7.00	0.05	0.55	10	50	10	40	0	0	0	0
69.0	Natural	Non-channelized	406	Riffle/Pool	1.0	1-20%	Unknown	Side	0	10	40	50	0	0	1.50	4.50	0.00	0.00	30	0	0	0	30	10	10	50
70.0	Natural	Braided	124	Riffle/Pool	1.0	21-40%	Unknown	Side	0	30	50	20	0	0	0.00	4.00	0.00	0.00	60	0	20	0	40	10	10	20

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
67.0	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	Medium	Herbs/grasses	Disturbed	low shrubs <2m	5-33%	Medium	6	Nil
68.0	Rock	Disturbed	low shrubs <2m	5-33%	High	Rock	Disturbed	low shrubs <2m	5-33%	High	6	Nil
69.0	Broadleaf forest	Natural	mature forest	5-33%	Medium	Broadleaf forest	Natural	mature forest	5-33%	Medium	1	Nil
70.0	Mixed forest	Natural	mature forest	5-33%	Medium	Mixed forest	Natural	mature forest	5-33%	Medium	0	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

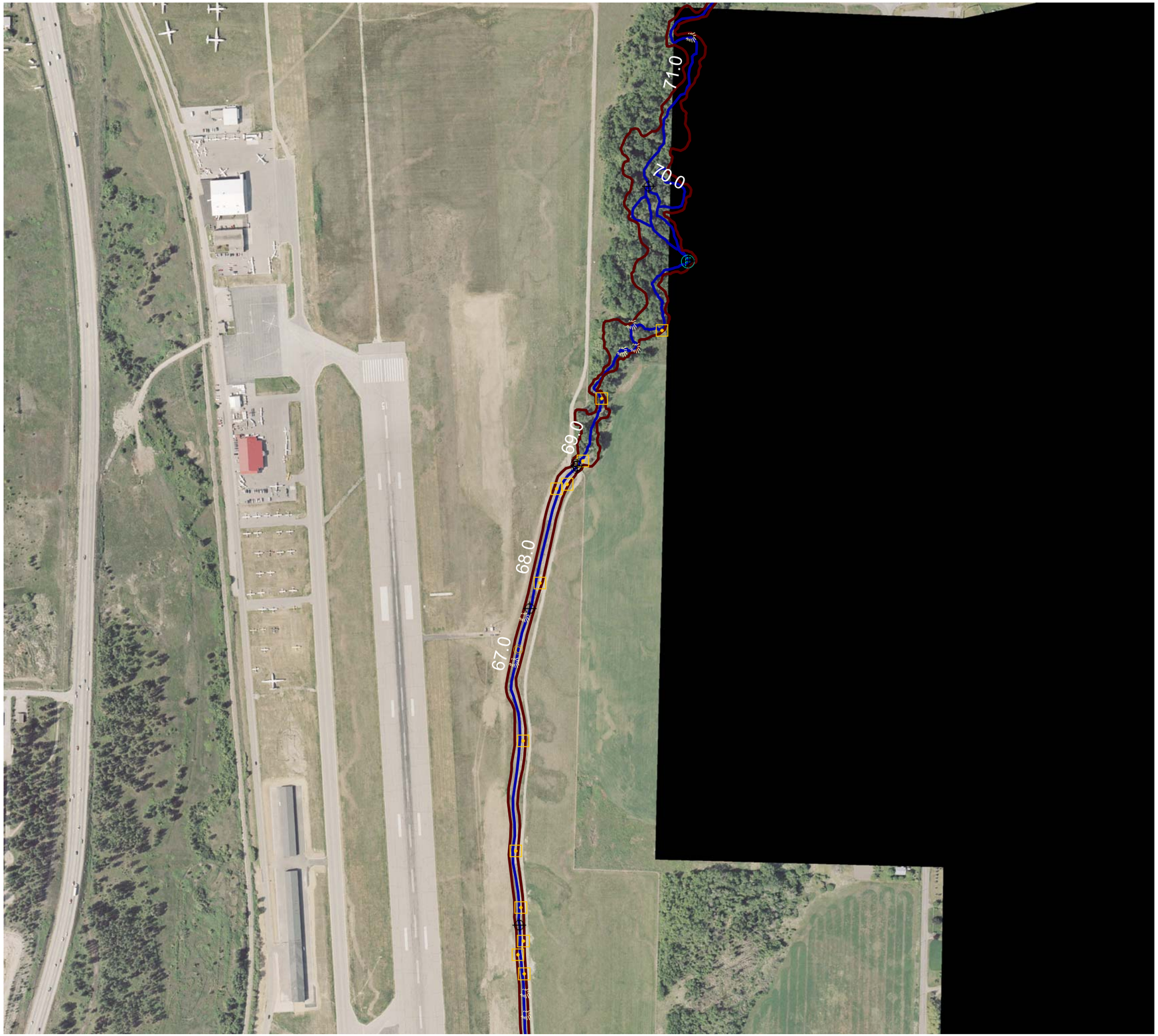
Segment: 67

Wider channel allowing meandering and more prominent riffle-pool character.

Segment: 68

Segment: 69

Segment: 70



Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 67-70

30 0 30 60 90 Meters

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Map:	18 of 19
Title:	Segments 67-70 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

- Erosion
- Discharge
- Culvert

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

- Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

Sensitive Habitat Inventory and Mapping (SHIM)
Inventory Summary — Segments 71-74

Segment	Primary	Secondary	Length (m)	Hydraulic	Gradient (%)	Crown Closure	Spawning Habitat	Bars	Substrates (%) [a]						Channel (m)				Cover (%) [b]							
									O	F	G	C	B	R	Wetted Width	Bankfull Width	Wetted Depth	Bankfull Depth	Total Cover	B	DP	IV	LWD	OV	SWD	UC
71.0	Natural	Intermittent	354	Riffle/Pool	2.0	1-20%	Unknown	Side	0	10	60	35	5	0	0.00	7.00	0.00	0.00	40	0	30	0	40	10	10	10
72.0	Modified	Side Channel	295	Riffle/Pool	2.0	21-40%	Unknown	Mid-channel	0	10	30	40	20	0	3.50	7.90	0.00	0.00	40	10	30	0	20	30	10	0
73.0	Modified	Side Channel	346	Riffle/Pool	2.0	21-40%	Unknown	Mid-channel	0	10	30	40	20	0	3.50	7.90	0.00	0.00	40	10	30	0	20	30	10	0
74.0	Culvert		42	Riffle	3.0	0	Unknown	None	0	0	0	0	0	0	0.00	1.60	0.00	0.00	0	0	0	0	0	0	0	0

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

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

Segment	Left Bank Riparian					Right Bank Riparian					Level of Impact [c]	Enhancement Opportunity
	Class	Qualifier	Stage	Shrub cover	Bank stability	Class	Qualifier	Stage	Shrub cover	Bank stability		
71.0	Mixed forest	Natural	mature forest	34-66%	High	Mixed forest	Natural	mature forest	34-66%	High	0	Nil
72.0	Herbs/grasses	Disturbed	Herbs/grasses	<5%	Medium	Herbs\grasses	Disturbed			Medium	6	Mod
73.0	Broadleaf forest	Disturbed	young forest	<5%	Medium	Broadleaf forest	Disturbed	young forest	<5%	Medium	5	Mod
74.0	High Impervious					High Impervious					6	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: 71

Segment: 72

Segment: 73

Segment: 74

Mill Creek

Sensitive Habitat Inventory and Mapping (SHIM) Segments 71-74

30 0 30 60 90 Meters

N
W E
S

Map:	19 of 19
Title:	Segments 71-74 of 74
Projection:	NAD 83, 11 North
Prepared for:	City of Kelowna
Prepared by:	Ecoscape Environmental Consultants
Drawn by:	KH
Date:	December, 2005

LEGEND

- Stream centreline
- Top of bank
- Segment break

Modification
- Bridge
- Channelization
- Dam/floodgate
- Fences
- Garbage/Pollution
- Livestock crossing
- PipeCrossing
- Retain Wall/Bank stability
- Water Withdrawal

Erosion

Discharge

Culvert

Obstruction
- Beaver Dam
- Dam
- Persistent Debris

Waterbody
- Discontinued
- Ditch
- Natural Springs
- Other
- Side Channel
- Tributary
- Wetland
- Wetland (polygon)

Fish habitat
- Deep Pool
- Instream Vegetation
- Instream woody debris
- Other
- Over Stream Vegetn.
- Spawning Habitat
- Undercut Bank

Enhancement

2 0 2 4 6 8 Kilometers

Inset Map

Source Information

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

ECOSCAPE Environmental Consultants

City of Kelowna

APPENDIX A. SHIM_2005 Data Dictionary

SHIM 2005, Data Dictionary

Exported from Trimble Pathfinder Office 3.10

"STREAM", line, "Stream centre line dynamic line segments", 1, seconds, Code
"STREAM_REFERENCE ", caption
"StreamName", text, 50, required, required, Label1
"LocalName", text, 50, normal, normal
"Organization", text, 50, required, required
"WtrshedCde", numeric, 0, 0, 50, 0, normal, "watershed code", normal
"TributaryCde", text, 35, normal, "Tributary Code", normal
"ILP", text, 35, normal, "Interim Locator Point (Tributary Code)", normal
"Date", date, auto, ymd, manual, required, required
"Time ", time, auto, 24, manual, normal, normal
"Crew", text, 50, required, required
"Weather", menu, normal, normal
"Light Rain",[L]
"Heavy Rain",[H]
"Snow/Sleet",[N]
"Over cast",[OV]
"Clear",[S]
"Partly Cloudy",[PC]
"Other",[O]
"AirTemp ", numeric, 1, -25.0, 45.0, 0.0, normal, "degrees centigrade", normal
"Water_Temp", numeric, 1, -2.0, 29.0, 0.0, normal, "degrees celsius", normal
"Stage", menu, normal, normal
"dry"
"low"
"moderate"
"high"
"flood"
"other"
"Line_Type", menu, normal, normal
"Trimble", default
"Garmin"
"Photointerp"
"Chain_Compass"
"Other"
"Line_Src", menu, normal, normal, Label2
"shim2002"
"shim4"
"shim3"
"shim2"
"shim1"
"trim"
"DFO"
"other"
"PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
"_____", caption
"SEGMENT_CLASS", caption
"Seg_Number", numeric, 1, 0.0, 99999.0, 0.0, required, "Unique Identification number for segment", required

"Primary", menu, required, "State of stream section", required
"Channelized",[CH]
"Culvert",[CV]
"Ditch",[FRT]
"Modified",[Md]
"Natural",[N]
"Other",[O]
"Secondary", menu, normal, "State of stream section", normal
"Beaver Pond",[BP]
"Ephemeral",[EP]
"Flumed",[F]
"Intermittent",[IN]
"Side channel",[SC]
"Wetland",[HMW]
"Braided",[BC]
"Non-channelized",[NC]
"Other",[O]
"Hydraulic", menu, normal, "Dominant hydraulic type", normal
"Beaver Pond",[BP]
"Cascade",[C]
"Cascade/Pool",[CP]
"Falls",[F]
"Pool",[P]
"Run",[RN]
"Riffle",[RF]
"Riffle/Pool",[RP]
"Slough",[S]
"Standing",[S]
"Wetland",[HMW]
"Other",[O]
"Comt_Class", text, 100, normal, "Comments for Segment", normal
"_____", caption
"SEGMENT_CHARACTER", caption
"Gradient", numeric, 1, 0.0, 90.0, 0.0, normal, "Gradient to last point for chain survey", normal
"Crown_Closure", menu, normal, normal
"0",[0]
"1-20%",[1]
"21-40%",[2]
"41-70%",[3]
"71-90%",[4]
">90%",[5]
"Spawning_Habitat", menu, normal, "Good spawning habitat", normal
"Anadromous"
"Resident"
"Unknown", default
"Potential"
"Livestock_access", menu, normal, "Stream segmnet accessible to live-stock", normal
"Yes"
"Bars", menu, normal, normal
"None"
"Side"
"Diagonal"

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   "Mid-channel"
   "Spanning"
   "Braided"
"Comt_SChar", text, 100, normal, "Comments for Segment", normal
"_____", caption
"SUBSTRATE", caption
"Sub_Organic", numeric, 0, 0, 100, 0, normal, normal
"Sub_Fines", numeric, 0, 0, 100, 0, normal, normal
"Sub_Gravel", numeric, 0, 0, 100, 0, normal, normal
"Sub_Cobble", numeric, 0, 0, 100, 0, normal, normal
"Sub_Blder", numeric, 0, 0, 100, 0, normal, "substrate boulder", normal
"Sub_BedRk", numeric, 0, 0, 100, 0, normal, normal
"Compaction", menu, normal, "Level of substrate compaction", normal
   "Low",[L]
   "Medium",[M]
   "High",[H]
"Comt_Sub", text, 100, normal, "Comment for Substrates", normal
"_____", caption
"CHANNEL ", caption
"Width_W", numeric, 2, 0.00, 100.00, 0.00, normal, "wetted width", normal
"Width_BF", numeric, 2, 0.00, 100.00, 0.00, normal, "Bank full width", normal
"Width_LFP", numeric, 2, 0.00, 1000.00, 0.00, normal, "left flood plain width", normal
"Width_RFP", numeric, 2, 0.00, 1000.00, 0.00, normal, "right flood plain width", normal
"Depth_W", numeric, 2, 0.00, 10.00, 0.00, normal, "Wetted depth", normal
"Depth_BF", numeric, 2, 0.00, 10.00, 0.00, normal, "Bankfull depth", normal
"Depth_FP", numeric, 2, 0.00, 10.00, 0.00, normal, "Flood plain depth", normal
"Comt_Chan", text, 100, normal, "Comment for Channel", normal
"_____", caption
"INSTREAM_COVER", caption
"Total_Cover", numeric, 0, 0, 1000, 0, required, "Percentage of Segment With Cover", required
"B", numeric, 0, 0, 100, 0, normal, "percent boulder", normal
"DP", numeric, 0, 0, 100, 0, normal, "percent deep pools", normal
"IV", numeric, 0, 0, 100, 0, normal, "percent instream vegetation", normal
"LWD", numeric, 0, 0, 100, 0, normal, "percent", normal
"OV", numeric, 0, 0, 100, 0, normal, "percent overstream vegetation", normal
"SWD", numeric, 0, 0, 100, 0, normal, "small woody debris", normal
"UC", numeric, 0, 0, 100, 0, normal, "percent undercut bank", normal
"LWD_Count", numeric, 0, 0, 999, 0, normal, "Number of LWD in Segment", normal
"Spanlog_Count", numeric, 0, 0, 999, 0, normal, "Number of LWD in Segment", normal
"DP_Count", numeric, 0, 0, 999, 0, normal, "Number of Deep Pools in Segment", normal
"Comt_Cov", text, 100, normal, "Comment for Channel", normal
"_____", caption
"LEFT_BANK_RIPARIAN ", caption
"L_RipClass", menu, required, "Riparian Class", required
   "Row Crops",[NAG]
   "Broadleaf forest",[VBF]
   "Bryophytes",[VCR]
   "Coniferous forest",[VNF]
   "Planted Tree Farm",[NTF]
   "Disturbed wetland",[DWN]
   "Dug out pond ",[DOP]
   "Exposed soil",[NEL]
```

"Flood plain",[VFP]
"Herbs/grasses",[VHB]
"High Impervious ",[NHR]
"Medium Impervious",[NMR]
"Low Impervious",[NLR]
"Mixed forest",[VMF]
"Natural wetland",[WN]
"Rock",[NNB]
"Shrubs",[VSH]
"L_Qualifier", menu, normal, "Riparian Class Qualifier", normal
"Agriculture",[ag]
"Natural",[n]
"Urban_Residential",[ur]
"Recreation",[r]
"Disturbed",[d]
"Unknown",[u]
"L_BandWidth", numeric, 2, 0.00, 9999.00, 0.00, normal, normal
"L_BankSlope", numeric, 0, -100, 100, 0, normal, normal
"L_Stage", menu, normal, "Structural Stage", normal
"low shrubs <2m",[3a]
"tall shrubs 2-10m",[3b]
"sapling >10m",[4]
"young forest",[5]
"mature forest",[6]
"old forest",[7]
"L_Shrubs", menu, normal, "Density of shrubs ", normal
"<5%",[VL]
"5-33%",[L]
"34-66%",[M]
"67-100%",[H]
"L_Snag", menu, normal, "Presence of Snags", normal
"No"
"<5"
">=5"
"L_Veteran ", menu, normal, "Veteran trees", normal
"No"
"<5"
">=5"
"L_BkStbility", menu, normal, "Bank Stability", normal
"High",[H]
"Medium",[M]
"Low",[L]
"L_Bank_Material", menu, normal, normal
"Concrete",[C]
"Gabions",[GB]
"Pilings",[P]
"Stonework",[S]
"RipRap",[RR]
"Retain Wall/Bank Stb",[EHB]
"Sandbags",[SB]
"Wood",[W]
"Bark_Mulch",[BM]

"Asphalt",[AS]
"Dyke",[DY]
"Fines",[F]
"Gravel",[G]
"Cobble",[CB]
"Boulder",[B]
"Bed_Rock",[BR]
"Other",[O]
"L_Top_Bank", menu, normal, "Estimated top of bank", normal
"Yes"
"No"
"L_Comment", text, 100, normal, "Comment Left bank riparian", normal
"_____", caption
"RIGHT_BANK_RIPARIAN ", caption
"R_RipClass", menu, required, "Riparian Class", required
"Row Crops",[NAG]
"Broadleaf forest",[VBF]
"Bryophytes",[VCR]
"Coniferous forest",[VNF]
"Planted Tree Farm",[NTF]
"Disturbed wetland",[DWN]
"Dug out pond ",[DOP]
"Exposed soil",[NEL]
"Flood plain",[VFP]
"Herbs/grasses",[VHB]
"High Impervious ",[NHR]
"Medium Impervious",[NMR]
"Low Impervious",[NLR]
"Mixed forest",[VMF]
"Natural wetland",[WN]
"Rock",[NNB]
"Shrubs",[VSH]
"R_Qualifier", menu, normal, "Riparian Class Qualifier", normal
"Agriculture",[ag]
"Natural",[n]
"Urban_Residential",[ur]
"Recreation",[r]
"Disturbed",[d]
"Unknown",[u]
"R_BandWidth", numeric, 2, 0.00, 9999.00, 0.00, normal, normal
"R_BankSlope", numeric, 0, -100, 100, 0, normal, normal
"R_Stage", menu, normal, "Structural Stage", normal
"low shrubs <2m",[3a]
"tall shrubs 2-10m",[3b]
"sapling >10m",[4]
"young forest",[5]
"mature forest",[6]
"old forest",[7]
"R_Shrubs", menu, normal, "Density of shrubs ", normal
"<5%",[VL]
"5-33%",[L]
"34-66%",[M]

```
    "67-100%",[H]
  "R_Snag", menu, normal, "Presence of Snags", normal
    "No"
    "<5"
    ">=5"
  "R_Veteran ", menu, normal, "Veteran trees", normal
    "No"
    "<5"
    ">=5"
  "R_BkStbility", menu, normal, "Bank Stability", normal
    "High",[H]
    "Medium",[M]
    "Low",[L]
  "R_Bank_Material", menu, normal, normal
    "Concrete",[C]
    "Gabions",[GB]
    "Pilings",[P]
    "Stonework",[S]
    "RipRap",[RR]
    "Retain Wall/Bank Stb",[EHB]
    "Sandbags",[SB]
    "Wood",[W]
    "Bark_Mulch",[BM]
    "Asphalt",[AS]
    "Dyke",[DY]
    "Fines",[F]
    "Gravel",[G]
    "Cobble",[CB]
    "Boulder",[B]
    "Bed_Rock",[BR]
    "Other",[O]
  "R_Top_Bank", menu, normal, "Estimated top of bank", normal
    "Yes"
    "No"
  "R_Comment", text, 100, normal, "Comment Right Bank Riparian", normal
  "_____", caption
  "FLORA_FAUNA ", caption
  "CmmntFlora", text, 100, normal, "Flora Comment", normal
  "CmmntFauna", text, 100, normal, "Fauna Comment", normal
  "_____", caption
  "LEVEL_OF_IMPACT", caption
  "Impact_rating", menu, required, required
    "Nil",[0]
    "1_bank_low",[1]
    "1_bank_mod",[2]
    "1_bank_high",[3]
    "Both_banks_low",[4]
    "Both_banks_mod",[5]
    "Both_banks_high",[6]
  "LOI_Comment", text, 100, normal, "Comment_lev_impact", normal
  "_____", caption
  "ENHANCE_OPP_RATING", caption
```

```
  "Opportunity_Rating", menu, required, "Enhancement and Restoration", required
    "Nil",[0]
    "Low",[1]
    "Moderate",[2]
    "High",[3]
    "Very_high",[4]
  "Comment", text, 100, normal, normal

"POINT", point, "Nested Point type", 5, seconds, 1, Code
  "Type_Point", menu, required, "Point Type Code", required, Label1
    "Location Point",[L]
    "Start Point",[S]
    "End Point",[E]
    "Reference Point",[RP]
    "Bench Mark",[BM]
    "Monument",[MT]
    "Map Tie Point",[MTP]
    "Reach Break",[R]
    "Riparian Band",[RB]
    "Segment Break",[SB]
    "Elevation",[Alt]
    "Left Top of Bank",[LTOB]
    "Right Top of Bank",[RTOB]
  "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label2
  "Distance", numeric, 2, 0.00, 1000.00, 0.00, normal, "Distance to last point for chain survey",
normal
  "Bearing", numeric, 0, 0, 360, 0, normal, "Compass bearing to last point", normal
  "Gradient", numeric, 0, 0, 90, 0, normal, "Gradient to last point for chain survey", normal
  "Elevation", numeric, 0, 0, 2000, 0, normal, "Altimeter elevation in meters", normal
  "Comments", text, 100, normal, normal
  "PhotoNum", text, 10, normal, "Roll and print number of photograph", normal

"Culvert", point, "", 5, seconds, 1, Code
  "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
  "Type_Culvert", menu, normal, "Type of culvert", normal, Label2
    "Box Culvert",[BC]
    "Gated Inlet",[GI]
    "Gated Outlet",[GO]
    "Gated Multiple Inlet",[GMI]
    "Gated Multiple Out",[GMO]
    "Inlet",[I]
    "Inlet Stacked",[IS]
    "Multiple Inlet",[MI]
    "Multiple Outlet",[MO]
    "Outlet",[O]
    "Outlet Stacked",[OS]
  "Owner", menu, normal, normal
    "Municipal",[MU]
    "Private",[PR]
  "Condition", menu, normal, "condition of culvert", normal
```

```
    "Good",[G]
    "Partially Collapsed",[P]
    "Collapsed/Plugged",[C]
  "Barrier", menu, required, "Obstructs fish passage", required
    "Yes",[Y]
    "No",[N]
    "Potential",[P]
    "unknown", default
  "Material", menu, required, "Culvert material", required
    "Concrete",[C]
    "Steel",[S]
    "Wood",[W]
    "Iron",[I]
    "Metal_Concrete",[MC]
    "PVC",[P]
    "Asphalt coded",[AD]
    "Corrugated Steel",[CS]
    "Other",[O]
  "Substrate", menu, normal, "substrate within culvert", normal
    "Boulders",[B]
    "Cobbles",[C]
    "Fines",[F]
    "Gravels",[G]
    "Mixed",[M]
    "Same as Culvert",[S]
  "Form", menu, normal, "Shape of culvert", normal
    "Circular",[C]
    "Rectangular",[R]
    "Arch",[A]
    "Vertical Ellipse",[V]
    "Horizontal Ellipse",[H]
    "Other",[O]
  "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
  "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
  "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height of culvert above streambed", normal
  "Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth of plunge pool", normal
  "Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter of culvert", normal
  "ScreenSize", numeric, 2, 0.00, 100.00, 0.00, normal, normal
  "StormOutlets", numeric, 0, 0, 999, 0, normal, normal
  "Headwall", menu, normal, "Does a headwall exist", normal
    "Concrete",[C]
    "Concrete Block",[CB]
    "Gabion",[G]
    "Sand bag",[SB]
    "Wood",[W]
  "Apron", menu, normal, "Does an apron exist", normal
    "Yes",[Y]
    "No",[N], default
  "Baffles", menu, normal, "Do baffles exist", normal
    "Yes",[Y]
    "No",[N], default
  "Comments", text, 100, normal, normal
```

"PhotoNum", text, 10, normal, "Roll and print number of photograph", normal

"Obstruction", point, "", 5, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
"Type_Obstruction", menu, normal, "Code for feature", normal, Label2
"Beaver Dam",[BD]
"Canyon",[CN]
"Cascade",[C]
"Dam",[D]
"Falls",[F]
"Fences",[FE]
"Hydro Dam",[HD]
"Log Jam",[X]
"Persistent Debris",[PD]
"Pump",[PU]
"Rock",[R]
"Velocity Barrier",[VB]
"Bank", menu, normal, normal
"Both",[B]
"Instream",[I]
"Left",[L]
"Right",[R]
"Barrier", menu, required, "Obstructs fish passage", required
"Yes",[Y]
"Potential",[P]
"unknown", default
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
"Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth of feature", normal
"Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter of feature", normal
"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height of feature", normal
"Slope", numeric, 0, 0, 90, 0, normal, normal
"ScreenSize", numeric, 2, 0.00, 100.00, 0.00, normal, normal
"PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
"Comments", text, 100, normal, normal

"Modification", point, "", 5, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
"Type_Modification", menu, normal, "Code for feature", normal, Label2
"Bridge",[BR]
"Catchbasin",[CB]
"Channelization",[HOC]
"Dam",[HOD]
"Detention Pond",[DP]
"Dock",[DK]
"Dredging",[HBDD]
"Fences",[HOF]
"FloodGate",[FG]
"Garbage/Pollution",[WP]
"Gravel Pit",[GP]

"Livestock crossing",[LC]
"Logging",[LG]
"PipeCrossing",[PL]
"Pump Station",[PS]
"Retain Wall/Bank Stb",[EHB]
"Rip_Rap",[RR]
"Road",[R]
"Trail",[TR]
"Water Withdrawal",[FUP]
"Other",[O]
"Bank", menu, normal, normal
"Both",[B]
"Instream",[I]
"Left",[L]
"Right",[R]
"Type_Material", menu, normal, normal
"Concrete",[C]
"Gabions",[GB]
"Pilings",[P]
"Stonework",[S]
"Sandbags",[SB]
"Wood",[W]
"Gravel",[G]
"Bark_Mulch",[BM]
"Asphalt",[AS]
"Dyke",[DY]
"Other",[O]
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
"Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height of feature", normal
"PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
"Comments", text, 100, normal, normal

"Discharge", point, "", 5, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
"Type_Discharge", menu, normal, "Code for feature", normal, Label2
"Agricultural Runoff",[WPA]
"HouseEffluent",[WE]
"Landfill Leachates",[WPML]
"Pollutant",[WP]
"Pulp Mill/Effluent",[WPP]
"Storm Drain",[WPD]
"Septic Effluent",[WPMP]
"Tile Drain",[WPI]
"Trench",[WPE]
"Other",[O]
"Bank", menu, normal, normal
"Both",[B]
"Instream",[I]
"Left",[L]
"Right",[R]

```
  "Material", menu, required, "Culvert material", required
    "Concrete",[C]
    "Steel",[S]
    "Wood",[W]
    "Iron",[I]
    "PVC",[P]
    "Asphalt coded",[AD]
    "Corrugated Steel",[CS]
    "Other",[O]
  "Headwall", menu, normal, "Does a headwall exist", normal
    "Concrete",[C]
    "Concrete Block",[CB]
    "Gabion",[G]
    "Sand bag",[SB]
    "Wood",[W]
  "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
  "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
  "Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter of feature", normal
  "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height of feature", normal
  "Temperature", numeric, 2, 0.00, 100.00, 0.00, normal, "Water temperature", normal
  "PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
  "Comments", text, 100, normal, normal

"Erosion", point, "", 5, seconds, 1, Code
  "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
  "Source_Erosion", menu, normal, "Code for feature", normal, Label2
    "Bank Erosion",[HCEB]
    "Culvert",[CV]
    "Headwall",[H]
    "Lack of Riparian Veg",[WDL]
    "Livestock Access",[WDC]
    "Streamside Grazing",[WDG]
    "Landslide "
    "Debris flow/torrent"
    "Sloughing "
    "Other",[O]
  "Bank", menu, normal, normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
  "Severity", menu, required, required
    "<5m sq",[L]
    "5-10m sq",[M]
    ">10m sq",[S]
  "Exposure", menu, normal, normal
    "Clay",[C]
    "Silt",[Si]
    "Till",[T]
    "Bedrock",[B]
    "Roots",[R]
```

```
      "Soil",[S]
      "Other",[O]
   "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
   "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
   "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height of feature", normal
   "Slope", numeric, 0, 0, 90, 0, normal, normal
   "PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
   "Comments", text, 100, normal, normal

"Fish_Habitat", point, "", 5, seconds, 1, Code
   "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
   "Type_Habitat", menu, normal, "Code for feature", normal, Label2
      "Boulder",[B]
      "Deep Pool",[DP]
      "Instream Vegetation",[IV]
      "Large Woody Debris",[LWD]
      "Over Stream Vegetn.",[OV]
      "Small Woody Debris",[SWD]
      "Spawning Habitat",[HS]
      "Undercut Bank",[UC]
      "Other",[O]
   "Bank", menu, normal, normal
      "Both",[B]
      "Instream",[I]
      "Left",[L]
      "Right",[R]
   "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
   "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
   "Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Depth of feature", normal
   "PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
   "Comments", text, 100, normal, normal

"Fish_Sample", point, "", 5, seconds, 1, Code
   "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
   "TrapNo", numeric, 0, 0, 100, 1, normal, "Minnow Trap number", normal, Label2
   "DateIn", date, manual, ymd, manual, normal, "Date Trap was set", normal
   "DateOut", date, manual, ymd, manual, normal, "Date Trap removed", normal
   "Method", menu, normal, "Method of detection", normal
      "Visual",[V]
      "Trap",[T]
      "Other",[O]
   "Species", menu, normal, "Code for fish species", normal
      "General Fish Observn",[FSH]
      "Bull trout",[BT]
      "Coho",[CO]
      "Chinook",[CH]
      "Chum",[CM]
      "Cutthroat Trout",[CT]
      "Westslope Cutthroat ",[WCT]
      "Dolly Varden",[DV]
```

```
    "Anadromous Dolly Var",[ADV]
    "Pink",[PK]
    "Rainbow",[RB]
    "Stickleback",[SB]
    "Salmonid",[SA]
    "Sculpin",[CC]
    "Sockeye",[SK]
    "Steelhead",[ST]
    "Sucker",[SU]
    "Trout",[TR]
    "Whitefish",[WF]
    "Other",[O]
  "Count_total", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
  "Redd", menu, normal, "Presence of redd", normal
    "Yes",[Y]
    "No",[N]
  "PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
  "Comments", text, 100, normal, normal
  "_____", caption
  "SPECIES 1", caption
  "Sp_1", menu, normal, "Code for fish species", normal
    "General Fish Observn",[FSH]
    "Bull trout",[BT]
    "Coho",[CO]
    "Chinook",[CH]
    "Chum",[CM]
    "Cutthroat Trout",[CT]
    "Westslope Cutthroat ",[WCT]
    "Dolly Varden",[DV]
    "Anadromous Dolly Var",[ADV]
    "Pink",[PK]
    "Rainbow",[RB]
    "Stickleback",[SB]
    "Salmonid",[SA]
    "Sculpin",[CC]
    "Sockeye",[SK]
    "Steelhead",[ST]
    "Sucker",[SU]
    "Trout",[TR]
    "Whitefish",[WF]
    "Other",[O]
  "Count_1", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
  "Age_1", menu, normal, "Life history stage of fish", normal
    "Juvenile",[J]
    "Immature",[I]
    "Mature",[M]
    "Spawning",[SPW]
    "Spent",[S]
    "Varied",[V]
    "Mort",[Mt]
  "ForkLth_1", numeric, 1, 0.0, 100.0, 0.0, normal, normal
  "_____", caption
```

```
  "SPECIES 2", caption
  "Sp_2", menu, normal, "Code for fish species", normal
    "General Fish Observn",[FSH]
    "Bull trout",[BT]
    "Coho",[CO]
    "Chinook",[CH]
    "Chum",[CM]
    "Cutthroat Trout",[CT]
    "Westslope Cutthroat ",[WCT]
    "Dolly Varden",[DV]
    "Anadromous Dolly Var",[ADV]
    "Pink",[PK]
    "Rainbow",[RB]
    "Stickleback",[SB]
    "Salmonid",[SA]
    "Sculpin",[CC]
    "Sockeye",[SK]
    "Steelhead",[ST]
    "Sucker",[SU]
    "Trout",[TR]
    "Whitefish",[WF]
    "Other",[O]
  "Count_2", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
  "Age_2", menu, normal, "Life history stage of fish", normal
    "Juvenile",[J]
    "Immature",[I]
    "Mature",[M]
    "Spawning",[SPW]
    "Spent",[S]
    "Varied",[V]
    "Mort",[Mt]
  "ForkLth_2", numeric, 1, 0.0, 100.0, 0.0, normal, normal
  "_____", caption
  "SPECIES 3", caption
  "Sp_3", menu, normal, "Code for fish species", normal
    "General Fish Observn",[FSH]
    "Bull trout",[BT]
    "Coho",[CO]
    "Chinook",[CH]
    "Chum",[CM]
    "Cutthroat Trout",[CT]
    "Westslope Cutthroat ",[WCT]
    "Dolly Varden",[DV]
    "Anadromous Dolly Var",[ADV]
    "Pink",[PK]
    "Rainbow",[RB]
    "Stickleback",[SB]
    "Salmonid",[SA]
    "Sculpin",[CC]
    "Sockeye",[SK]
    "Steelhead",[ST]
    "Sucker",[SU]
```

```
    "Trout",[TR]
    "Whitefish",[WF]
    "Other",[O]
  "Count_3", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
  "Age_3", menu, normal, "Life history stage of fish", normal
    "Juvenile",[J]
    "Immature",[I]
    "Mature",[M]
    "Spawning",[SPW]
    "Spent",[S]
    "Varied",[V]
    "Mort",[Mt]
  "ForkLth_3", numeric, 1, 0.0, 100.0, 0.0, normal, normal
  "_____", caption
  "SPECIES 4", caption
  "Sp_4", menu, normal, "Code for fish species", normal
    "General Fish Observn",[FSH]
    "Bull trout",[BT]
    "Coho",[CO]
    "Chinook",[CH]
    "Chum",[CM]
    "Cutthroat Trout",[CT]
    "Westslope Cutthroat ",[WCT]
    "Dolly Varden",[DV]
    "Anadromous Dolly Var",[ADV]
    "Pink",[PK]
    "Rainbow",[RB]
    "Stickleback",[SB]
    "Salmonid",[SA]
    "Sculpin",[CC]
    "Sockeye",[SK]
    "Steelhead",[ST]
    "Sucker",[SU]
    "Trout",[TR]
    "Whitefish",[WF]
    "Other",[O]
  "Count_4", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
  "Age_4", menu, normal, "Life history stage of fish", normal
    "Juvenile",[J]
    "Immature",[I]
    "Mature",[M]
    "Spawning",[SPW]
    "Spent",[S]
    "Varied",[V]
    "Mort",[Mt]
  "ForkLth_4", numeric, 1, 0.0, 100.0, 0.0, normal, normal
  "_____", caption
  "SPECIES 5", caption
  "Sp_5", menu, normal, "Code for fish species", normal
    "General Fish Observn",[FSH]
    "Bull trout",[BT]
    "Coho",[CO]
```

"Chinook",[CH]
"Chum",[CM]
"Cutthroat Trout",[CT]
"Westslope Cutthroat ",[WCT]
"Dolly Varden",[DV]
"Anadromous Dolly Var",[ADV]
"Pink",[PK]
"Rainbow",[RB]
"Stickleback",[SB]
"Salmonid",[SA]
"Sculpin",[CC]
"Sockeye",[SK]
"Steelhead",[ST]
"Sucker",[SU]
"Trout",[TR]
"Whitefish",[WF]
"Other",[O]
"Count_5", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
"Age_5", menu, normal, "Life history stage of fish", normal
"Juvenile",[J]
"Immature",[I]
"Mature",[M]
"Spawning",[SPW]
"Spent",[S]
"Varied",[V]
"Mort",[Mt]
"ForkLth_5", numeric, 1, 0.0, 100.0, 0.0, normal, normal
"_____", caption
"SPECIES 6", caption
"Sp_6", menu, normal, "Code for fish species", normal
"General Fish Observn",[FSH]
"Bull trout",[BT]
"Coho",[CO]
"Chinook",[CH]
"Chum",[CM]
"Cutthroat Trout",[CT]
"Westslope Cutthroat ",[WCT]
"Dolly Varden",[DV]
"Anadromous Dolly Var",[ADV]
"Pink",[PK]
"Rainbow",[RB]
"Stickleback",[SB]
"Salmonid",[SA]
"Sculpin",[CC]
"Sockeye",[SK]
"Steelhead",[ST]
"Sucker",[SU]
"Trout",[TR]
"Whitefish",[WF]
"Other",[O]
"Count_6", numeric, 0, 0, 100, 0, normal, "Number of fish sampled", normal
"Age_6", menu, normal, "Life history stage of fish", normal

```
      "Juvenile",[J]
      "Immature",[I]
      "Mature",[M]
      "Spawning",[SPW]
      "Spent",[S]
      "Varied",[V]
      "Mort",[Mt]
   "ForkLth_6", numeric, 1, 0.0, 100.0, 0.0, normal, normal

"Enhancement", point, "", 5, seconds, 1, Code
   "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
   "Type_Enhance", menu, normal, "Code for feature", normal, Label2
      "Fishways",[EOF]
      "Hatchery",[ECAH]
      "Incubation Box",[ECNX]
      "LWD Placement",[EHRL]
      "Log/Rock Wiers",[EHRI]
      "Riparian Plantings",[EHBP]
      "Riparian Zone Fence",[EHBF]
      "Rock/Boulder Placeme",[EHRR]
      "Side Channel/Pools",[EHRS]
      "Spawning Gravel",[EHSP]
      "Veg Bank Stabilize",[EHBV]
      "Other",[O]
   "Bank", menu, normal, normal
      "Both",[B]
      "Instream",[I]
      "Left",[L]
      "Right",[R]
   "Status", menu, normal, "Potential or existing enhancement", normal
      "Existing",[E]
      "Potential",[P]
   "Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal
   "Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
   "Height", numeric, 2, 0.00, 1000.00, 0.00, normal, "Height of feature", normal
   "Diameter", numeric, 2, 0.00, 1000.00, 0.00, normal, "Diameter of feature", normal
   "Comments", text, 100, normal, normal
   "PhotoNum", text, 10, normal, "Roll and print number of photograph", normal

"Wildlife", point, "", 5, seconds, 1, Code
   "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
   "Type_Evidence", menu, normal, normal, Label2
      "Calls",[Cl]
      "Egg masses",[EM]
      "Nest",[Nt]
      "Sighted",[St]
      "Scat/Droppings",[Sd]
      "Tracks",[Tk]
      "Other",[O]
   "Class_Wildlife", menu, normal, normal
```

```
    "Amphibian"
    "Large Mammal"
    "Songbird"
    "Raptor"
    "Reptile"
    "Small Mammal"
    "Waterbirds"
    "Waterfowl"
  "Bank", menu, normal, normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
  "Species_Wildlife", text, 45, normal, normal
  "CmmntFauna", text, 100, normal, "Fauna Comment", normal
  "PhotoNum", text, 10, normal, "Roll and print number", normal

"Tree_Wildlife", point, "", 5, seconds, 1, Code
  "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number",
required, Label1
  "Type_Tree", menu, normal, normal, Label2
    "Coniferous"
    "Deciduous"
    "Unknown"
  "Veteran_tree", menu, normal, "Point location of a veteran tree", normal
    "Yes"
  "DBH", numeric, 2, 0.00, 20.00, 0.00, normal, "Diameter Breast Height", normal
  "Mast_tree", menu, normal, normal
    "Yes"
  "Bank", menu, normal, normal
    "Both",[B]
    "Instream",[I]
    "Left",[L]
    "Right",[R]
  "Nesting", menu, normal, normal
    "Potential"
    "Large"
    "Small"
  "State", menu, normal, "state of wildlife tree", normal
    "Living"
    "Dead"
    "unknown"
  "Woodpkr_use", menu, normal, normal
    "Yes"
  "Denning", menu, normal, normal
    "Yes"
  "Perches", menu, normal, normal
    "Yes"
  "Cavities", menu, normal, normal
    "1"
    "2"
    "3"
```

"4+"
"CmmntFlora", text, 100, normal, "Flora Comment", normal
"PhotoNum", text, 10, normal, "Roll and print number", normal

"Waterbody", point, "location of an adjacent waterbody", 5, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
"Type_Waterbody", menu, normal, "Code for feature", normal, Label2
"Discontinued",[HMD]
"Ditch",[FRT]
"Natural Springs",[HMS]
"Side Channel",[SC]
"Tributary",[HMT]
"Wetland",[HMW]
"Beaver Pond",[BP]
"Other ",[HM]
"Bank", menu, normal, normal
"Both",[B]
"Instream",[I]
"Left",[L]
"Right",[R]
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Waterbody length", normal
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Bankfull Width", normal
"Depth", numeric, 2, 0.00, 1000.00, 0.00, normal, "Bankfull Depth", normal
"Temperature", numeric, 2, 0.00, 100.00, 0.00, normal, "Water temperature", normal
"PhotoNum", text, 10, normal, "Roll and print number of photograph", normal
"Comments", text, 100, normal, normal

"Wetland", line, "", 5, seconds, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
"Length", numeric, 2, 0.00, 1000.00, 0.00, normal, "Feature length", normal, Label2
"Width", numeric, 2, 0.00, 1000.00, 0.00, normal, "Width of Feature", normal
"Distance", numeric, 2, 0.00, 1000.00, 0.00, normal, "Distance to last point for chain survey", normal
"Bearing", numeric, 0, 0, 360, 0, normal, "Compass bearing to last point", normal
"Comments", text, 100, normal, normal

"Water_Sample", point, "", 5, seconds, 1, Code
"Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
"TDS", numeric, 1, 0.0, 250.0, 0.0, normal, "Total Dissolved Solids", normal, Label2
"pH", numeric, 1, 0.0, 15.0, 0.0, normal, normal
"Temp", numeric, 1, 0.0, 100.0, 0.0, normal, "Degrees Centigrade", normal
"DO", numeric, 1, 0.0, 25.0, 9.0, normal, "Dissolved Oxygen", normal
"Turbidity", menu, normal, normal
"Clear",[C], default
"Lightly Turbid",[L]
"Moderately Turbid",[M]
"Turbid",[T]
"Other"
"Comments", text, 100, normal, normal

"Photo_Location", point, "", 5, seconds, 1, Code
  "Point_number", numeric, 1, 0.0, 99999.0, 0.0, required, "unique point identification number", required, Label1
  "Photo_Roll_&_Frame", text, 30, normal, normal, Label2
  "Photo_Direction", menu, normal, normal
    "Upstream",[U]
    "Downstream",[D]
    "Accross_stream",[X]
    "Up",[UP]
    "Down",[BD]
  "Photo_Bearing", numeric, 0, 0, 360, 0, normal, normal
  "Photo_Comments", text, 100, normal, normal

"Wetland", area, "", 1, seconds, 1, Code
  "Wetland_Class", menu, normal, normal, Label1
    "Shallow open water"
    "Marsh"
    "Swamp"
    "Fen"
    "Bog"
  "Wetland_Type", menu, normal, normal, Label2
    "Floating_aquatic"
    "Submerged_aquatic"
    "Grass"
    "Sedge"
    "Forb"
    "Low_rush"
    "Reed"
    "Tall_rush"
    "Moss"
    "Non_vegetated"
    "Low_Shrub_<2-m"
    "Mixed_shrub"
    "Tall_shrub_>2-m"
    "Coniferous_treed"
    "Mixed_treed"
    "Hardwood_treed"
  "Photo_number", text, 30, normal, normal
  "Comment", text, 100, normal, normal

"Point_generic", point, "", 5, seconds, 1, Code
  "Comment", text, 100, normal, normal, Label1

"Line_generic", line, "", 5, seconds, 1, Code
  "Comment", text, 100, normal, normal, Label1

APPENDIX B. Processed Stream_line and Feature Data

Bellevue Creek

STREAMNAME	LOCALNAME	SEG_NUMBER	ORGANIZATI	WTRSHEDCDE	TRIBUTARYC	ILP	DATE	TIME_	CREW	WEATHER
Bellevue Creek	Bellevue Creek	1.0	Ecoscape Biological Consultants				22/10/2005	09:56:06am	KH	Clear
Bellevue Creek	Bellevue Creek	2.0	Ecoscape Biological Consultants	0			22/10/2005	10:26:21am	KH	Clear
Bellevue Creek	Bellevue Creek	3.0	Ecoscape Biological Consultants	0			22/10/2005	11:25:13am	KH	Clear
Bellevue Creek	Bellevue Creek	4.0	Ecoscape Biological Consultants	0			22/10/2005	11:43:37am	KH	Clear
Bellevue Creek	Bellevue Creek	5.0	Ecoscape Biological Consultants	0			22/10/2005	01:16:16pm	KH	Clear
Bellevue Creek	Bellevue Creek	6.0	Ecoscape Biological Consultants	0			22/10/2005	01:47:58pm	KH	Clear
Bellevue Creek	Bellevue Creek	7.0	Ecoscape Biological Consultants	0			23/10/2005	09:26:08am	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	8.0	Ecoscape Biological Consultants	0			23/10/2005	09:30:50am	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	9.0	Ecoscape Biological Consultants	0			23/10/2005	10:27:17am	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	10.0	Ecoscape Biological Consultants	0			23/10/2005	10:57:51am	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	11.0	Ecoscape Biological Consultants	0			23/10/2005	12:10:27pm	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	12.0	Ecoscape Biological Consultants	0			23/10/2005	12:33:35pm	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	13.0	Ecoscape Biological Consultants	0			23/10/2005	01:04:14pm	KH	Partly Cloudy
Bellevue Creek	Bellevue Creek	14.0	Ecoscape Biological Consultants	0			29/10/2005	10:13:09am	KH	Over cast
Bellevue Creek	Bellevue Creek	15.0	Ecoscape Biological Consultants	0			29/10/2005	12:04:29pm	KH	Over cast
Bellevue Creek	Bellevue Creek	16.0	Ecoscape Biological Consultants	0			29/10/2005	12:57:11pm	KH	Over cast
Bellevue Creek	Bellevue Creek	17.0	Ecoscape Biological Consultants	0			29/10/2005	01:34:10pm	KH	Over cast
Bellevue Creek	Bellevue Creek	18.0	Ecoscape Biological Consultants	0			30/10/2005	10:21:13am	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	19.0	Ecoscape Biological Consultants	0			30/10/2005	11:27:56am	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	20.0	Ecoscape Biological Consultants	0			30/10/2005	02:53:36pm	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	21.0	Ecoscape Biological Consultants	0			06/11/2005	10:09:38am	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	22.0	Ecoscape Biological Consultants	0			06/11/2005	11:30:21am	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	23.0	Ecoscape Biological Consultants	0			06/11/2005	12:01:54pm	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	24.0	Ecoscape Biological Consultants	0			06/11/2005	01:36:52pm	KH;WH	Partly Cloudy
Bellevue Creek	Bellevue Creek	25.0	Ecoscape Biological Consultants	0			06/11/2005	03:03:00pm	KH;WH	Partly Cloudy

AIRTEMP_	WATER_TEMP	STAGE	LINE_TYPE	LINE_SRC	COMMENTS	PHOTONUM
10.0	8.0	low	Trimble	shim2002	This segment occurs within the high water level of Okanagan Lake.	IMGP0076
10.0	8.0	low	Trimble	shim2002		IMGP0080
10.0	8.0	low	Trimble	shim2002		IMGP0092
10.0	8.0	low	Trimble	shim2002		IMGP0096
10.0	8.0	low	Trimble	shim2002		IMGP0098
10.0	8.0	low	Trimble	shim2002		IMGP0117
9.0	8.0	low	Trimble	shim2002		IMGP0122
9.0	8.0	low	Trimble	shim2002		IMGP0127
9.0	8.0	low	Trimble	shim2002		IMGP0138
9.0	8.0	low	Trimble	shim2002		IMGP0145
9.0	8.0	low	Trimble	shim2002		IMGP0146
9.0	8.0	low	Trimble	shim2002		IMGP0155
9.0	8.0	low	Trimble	shim2002		IMGP0158
9.0	8.0	low	Trimble	shim2002		IMGP0177
9.0	8.0	low	Trimble	shim2002		IMGP0186
9.0	8.0	low	Trimble	shim2002		IMGP0192
9.0	8.0	low	Trimble	shim2002		IMGP0202
6.0	8.0	low	Trimble	shim2002		IMGP0209
6.0	6.0	low	Trimble	shim2002		IMGP0248
6.0	6.0	low	Trimble	shim2002	Ground water (base) flows may sustain critical holding pools during dry summers for fish survival.	IMGP0260
6.0	6.0	low	Trimble	shim2002		IMGP0297
6.0	6.0	low	Trimble	shim2002		IMGP0300
6.0	6.0	low	Trimble	shim2002		IMGP0314
6.0	6.0	low	Trimble	shim2002		IMGP0323
6.0	6.0	low	Trimble	shim2002		IMGP0331

PRIMARY	SECONDARY	HYDRAULIC	COMT_CLASS	GRADIENT
Channelized		Riffle		2.0
Channelized		Riffle/Pool	Higher gradient; Above lake level influence; Instream habitat enhancements present.	3.0
Channelized	Other	Riffle	Left bank naturalizing but right bank with recent rip rap armouring.	4.0
Channelized	Other	Riffle	Historic channelization (excavation and diking) but with banks more naturalized.	3.0
Channelized	Other	Riffle	Some naturalization of banks. High imperviousness just beyond left top of bank (parking lot).	4.0
Modified	Non-channelized	Riffle/Pool	Not channelized but confined by right bank armouring.	5.0
Modified	Non-channelized	Riffle/Pool	Left bank following ravine slope toe-confined by right bank armouring. Weak riffle pool character.	3.0
Natural		Riffle	Previously modified channel but naturalized with less encroachment into riparian communities.	4.0
Modified	Side channel	Riffle/Pool	Less confined with side channels, not channelized. Right-bank riparian encroachment.	4.0
Channelized		Riffle		4.0
Channelized		Riffle	Higher gradient; riffle-cascade; boulders predominant.	5.0
Channelized		Riffle	Diking setback permitting wider channel and allowing development of mid channel bars.	4.0
Channelized		Cascade	Deep-cut channelization.	5.0
Channelized		Cascade	Narrow riparian band naturalizing.	5.0
Channelized		Cascade	Higher gradient; steep, unstable boulder banks; Recent enhancement works.	6.0
Channelized		Cascade	Deep-cut channelization but with some meandering maintained. More stable bank sloping.	7.0
Channelized		Cascade	Combined impacts from channelization, lack of riparian vegetation, and 2003 forest fire.	7.0
Natural		Cascade/Pool	Ravine slope (left bank) small bench below ravine slope (right bank).	7.0
Natural		Cascade/Pool	Creek meanders through bedrock ravine. Small alluvial floodplain communities occur on inside bends.	8.0
Modified		Cascade/Pool	Modified canyon/ravine forest fire with subsequent salvage logging.	7.0
Natural		Falls	Steep cascade and waterfall complex through canyon.	45.0
Natural		Cascade/Pool	Predominant bedrock substrate and pools and smooth bedrock velocity barriers.	8.0
Modified		Riffle/Pool	Wide floodplain area flanked by ravine slope and bedrock. Salvage logged to current channel.	5.0
Natural		Riffle/Pool	Wide floodplain area flanked by ravine slope and bedrock.	6.0
Natural		Riffle/Pool	Some historic channelization to maintain alignment to dam and withdrawal.	7.0

CROWN_CLOS	SPAWNING_H	LIVESTOCK_	BARS	COMT_SCHAR
0	Unknown		None	
1-20%	Potential		None	
1-20%	Unknown		None	
21-40%	Unknown		None	Discontinuous armouring.
41-70%	Unknown		Side	occasional side bar.
1-20%	Unknown		Side	
1-20%	Unknown		None	
1-20%	Unknown		Mid-channel	Cottonwood and shrub regeneration on mid-channel bars with high occasional side channels occurring.
1-20%	Potential		Mid-channel	Cottonwood and shrub regeneration on mid channel bars with active side channels.
1-20%	Unknown		None	
21-40%	Unknown		None	More confined channel.
0	Potential		Mid-channel	A spring occurs on left bank. Therefore deep pool development may provide refuge during low flows.
0	Unknown		Mid-channel	Stream bed instability. Annual resorting strongly evident.
1-20%	Potential		None	Boulder-pool complexes providing small pockets of suitable spawning substrates.
0	Unknown		None	Right bank nearly devoid of vegetation.
0	Unknown		None	
1-20%	Potential		Diagonal	Occasional mid and diagonal bars. bottom 75m of segment armoured with riprap.
21-40%	Resident			
1-20%	Resident		Side	Suitable pockets of spawning substrates associated with instream structures (LWD and Boulders).
0	Resident		Side	Rainbow trout (juveniles) observed nearly to Crawford Falls.
1-20%	Unknown		None	
1-20%	Unknown		None	
1-20%	Unknown		Mid-channel	Mid channel bars/islands; side channels; very dynamic/unstable character over floodplain.
21-40%	Unknown		Mid-channel	Mid channel bars/islands; side channels; very dynamic/unstable character over floodplain.
1-20%	Unknown		Mid-channel	Occasionally abuts ravine then meanders to centre of wide floodplain.

SUB_ORGANI	SUB_FINES	SUB_GRAVEL	SUB_COBBLE	SUB_BLDER	SUB_BEDRK	COMPACTION
5	5	10	70	10	0	High
1	4	15	60	20	0	High
0	5	10	80	5	0	High
0	5	5	75	15	0	High
0	5	5	75	15	0	High
0	0	5	55	40	0	High
0	1	1	73	25	0	High
0	1	5	44	50	0	High
5	10	15	50	20	0	Medium
0	1	4	55	40	0	High
0	1	4	45	50	0	High
0	1	4	50	45	0	High
0	0	0	45	55	0	High
0	1	1	33	65	0	High
0	1	1	23	75	0	High
0	1	1	33	65	0	High
0	1	4	25	70	0	High
0	1	4	20	45	30	
0	2	8	30	50	10	
0	2	13	15	65	5	High
0	0	5	10	45	40	High
0	1	4	15	30	50	High
1	1	3	25	45	10	High
1	1	3	20	75	0	High
1	1	3	10	83	2	High

COMT_SUB	WIDTH_W	WIDTH_BF	WIDTH_LFP	WIDTH_RFP	DEPTH_W
	3.50	6.50	0.00	0.00	0.05
	3.50	6.50	0.00	0.00	0.05
Predominance of small cobbles. Streambed compacted by excavator during right-bank armouring.	3.40	10.00	0.00	0.00	0.05
Predominant cobble riffle.	5.50	8.90	0.00	0.00	0.05
	5.50	8.90	0.00	0.00	0.05
Slightly higher gradient with greater proportion of small boulders.	3.60	9.00	0.00	0.00	0.08
High periphyton development on substrates from lack of canopy.	3.70	9.30	0.00	0.00	0.08
Predominance of small boulders.	5.20	10.30	0.00	0.00	0.07
Less confined channel with reduced flow intensities.	4.40	15.00	0.00	0.00	0.07
	5.10	10.00	0.00	0.00	0.07
	5.00	8.00	0.00	0.00	0.07
	4.00	17.50	0.00	0.00	0.06
	4.70	10.50	0.00	0.00	0.08
	3.30	8.80	0.00	0.00	0.08
	3.00	7.00	0.00	0.00	0.09
	4.00	9.00	0.00	0.00	0.08
Siltation occurs over a 40-m length at the top of the segment, from small tributary and landslide.	4.00	9.00	0.00	0.00	0.08
Regular small pockets of gravels among boulders amounting 4% representing potential spawning habitat	3.70	7.40	0.00	0.00	0.09
	4.50	8.00	0.00	0.00	0.07
	3.60	9.00	0.00	0.00	0.08
	3.20	8.00	0.00	0.00	0.07
	3.20	8.00	0.00	0.00	0.07
	4.50	16.50	35.00	15.00	0.07
	4.50	10.00	30.00	10.00	0.08
	4.50	20.00	0.00	0.00	0.08

DEPTH_BF	DEPTH_FP	COMT_CHAN	TOTAL_COVE	B	DP	IV	LWD	OV	SWD	UC
0.95		Straight, channelized riffle.	10	100	0	0	0	0	0	0
0.95		Channelized with rip rap and native river rock.	40	25	50	0	25	0	0	0
0.95			5	100	0	0	0	0	0	0
0.95		Cobble/boulder right bank. Left bank with greater proportion of fine material.	20	100	0	0	0	0	0	0
0.95		Both banks composed primarily of cobbles/boulders excavated during channelization.	25	80	10	0	0	0	10	0
0.85			30	90	10	0	0	0	0	0
0.85	0.00		20	100	0	0	0	0	0	0
0.80	0.00		20	99	0	0	1	0	0	0
0.70	0.00		35	50	20	0	5	5	20	0
0.85	0.00		25	85	10	0	0	5	0	0
0.95	0.00		30	100	0	0	0	0	0	0
0.60	0.00		25	95	0	0	0	0	5	0
0.85	0.00		25	95	5	0	0	0	0	0
0.90	0.00		40	90	10	0	0	0	0	0
0.95	0.00		40	90	10	0	0	0	0	0
0.85	0.00		35	90	10	0	0	0	0	0
0.85	0.00		35	90	10	0	0	0	0	0
0.95	0.00		40	90	10	0	0	0	0	0
0.85	0.00		60	65	15	0	15	0	5	0
0.85	0.00		55	65	15	0	10	0	10	0
0.70	0.00		20	80	20	0	0	0	0	0
0.80	0.00		40	70	30	0	0	0	0	0
0.85	0.00	Prominent active floodplain (up to ~50-m wide) with numerous relic channels (some still wetted).	30	80	10	0	5	0	5	0
0.85	0.00	Prominent active floodplain along this with conspicuous relic channels occurring throughout.	30	80	10	0	5	0	5	0
0.85	0.00	Entire ravine valley is broad floodplain with predominance of boulders and cobble substrates.	40	65	15	0	15	0	5	0

LWD_COUNT	SPANLOG_CO	DP_COUNT	COMT_COV	L_RIPCLASS
0	0	0	Cobbles and occasional boulders provide minor cover for coarse fish and juvenile salmonids.	Mixed forest
4	1	3	Enhancements adding considerable complexity and responsible for majority of total instream cover.	Mixed forest
0	0	0	Cobbles and occasional boulders provide minor cover for coarse fish and juvenile salmonids.	Mixed forest
0	0	0	More prominent riffle (cobble/boulder cover) yet overall still poor, with absence of pools.	Mixed forest
0	0	0		High Impervious
0	0	0	Boulders and partial functioning enhancements (weirs) providing additional cover	Mixed forest
0	0	0	Cobble/boulder riffle cover for small fish and occasional boulder cover from right bank armouring.	Mixed forest
1	0	0		Mixed forest
0	0	0	Improved habitat complexity.	Mixed forest
0	0	0	Larger boulders becoming more prevalent improving boulder associated cover.	Broadleaf forest
0	0	0		Broadleaf forest
0	0	0		Mixed forest
0	0	0	Cover primarily associated with boulder predominated segment with additional cover from enhancements	Mixed forest
0	0	2	Considerable boulder cover and associated shallow pools.	Mixed forest
0	0	2		Mixed forest
0	0	0	Higher gradient with less small fish (i.e., sculpins and juvenile rainbow trout) cover.	Mixed forest
0	1	0		Mixed forest
0	0	0	Boulder cascade with numerous shallow pools.	Coniferous forest
11	15	4	Good cover provided by complex of boulders, pools; and coarse woody debris.	Mixed forest
3	5	1		Rock
0	0	0	Boulder and deep pool features not recorded in this segment since this segment is non fish-bearing.	Coniferous forest
0	2	2		Coniferous forest
0	30	0	Abundant coarse woody debris.	Mixed forest
0	6	0		Mixed forest
0	27	2		Mixed forest

L_QUALIFIE	L_BANDWIDT	L_BANKSLOP	L_STAGE	L_SHRUBS	L_SNAG	L_VETERAN_	L_BKSTBILI	L_BANK_MAT	L_TOP_BANK
Urban_Residential	0.00	0	sapling >10m	34-66%	No	No	High	Concrete	No
Urban_Residential	0.00	0	young forest	5-33%	No	No	High	Boulder	No
Urban_Residential	0.00	0	young forest	5-33%	No	No	High	Cobble	No
Urban_Residential	0.00	0	young forest	67-100%		<5	Medium	Cobble	No
Urban_Residential	0.00	0	mature forest	34-66%		<5	High	Cobble	No
Disturbed	0.00	0	mature forest	5-33%	No	<5	Medium	Cobble	No
Natural	0.00	35	young forest	<5%	<5	>=5	Medium	Cobble	No
Natural	0.00	35	mature forest	34-66%	<5	>=5	Medium	Cobble	No
Natural	0.00	0	young forest	34-66%	No	No	Medium	Cobble	No
Urban_Residential	0.00	0	young forest	5-33%	No	No	High	Cobble	No
Urban_Residential	0.00	0	young forest	5-33%	No	No	Medium	Cobble	No
Urban_Residential	0.00	0	young forest	5-33%	No	No	High	Cobble	No
Urban_Residential	0.00	0	sapling >10m	<5%	No	No	Medium	Cobble	No
Urban_Residential	0.00	0	young forest	5-33%	No	No	High	Boulder	No
Disturbed	0.00	0	sapling >10m	5-33%	No	No	Medium	Boulder	No
Disturbed	0.00	0	young forest	5-33%	No	No	High	Cobble	No
Agriculture	0.00	0	tall shrubs 2-10m	5-33%	No	No	Low	Cobble	No
Disturbed	0.00	45	young forest	<5%	>=5	No	High	Bed_Rock	No
Disturbed	0.00	45	young forest	<5%	>=5	No	High	Bed_Rock	No
Disturbed	0.00	60	low shrubs <2m	34-66%	No	No	High	Bed_Rock	No
Disturbed		85	mature forest	5-33%	>=5	<5	High	Bed_Rock	No
Disturbed		40	mature forest	5-33%	>=5	No	High	Bed_Rock	No
Disturbed	40.00	40	low shrubs <2m	5-33%	>=5	No	Medium	Cobble	No
Disturbed	45.00	0	mature forest	5-33%	>=5	>=5	Medium	Cobble	No
Disturbed	0.00	0	mature forest	5-33%	>=5	>=5	Low	Cobble	No

L_COMMENT	R_RIPCLASS	R_QUALIFIE	R_BANDWIDT	R_BANKSLOP
Rip rap and concrete retaining wall over entire segment length with horticultural vegetation.	Broadleaf forest	Urban_Residential	0.00	0
Confined by native boulders excavated from channel (channelization) and rip rap.	Mixed forest	Urban_Residential	0.00	0
	Broadleaf forest	Urban_Residential	0.00	0
Veteran ponderosa pine; douglas fir; cottonwood.	Broadleaf forest	Urban_Residential	0.00	0
Some veteran cottonwood along bank. Parking lot (commercial) just beyond top of bank.	Broadleaf forest	Urban_Residential	0.00	0
Some armouring at downstream end of segment.	Mixed forest	Urban_Residential	0.00	0
Ravine slope. Small riparian bench at bottom of segment with cedar-fir-cottonwood veterans and snag	Mixed forest	Urban_Residential	0.00	0
Ravine slope. Intermittent points of erosion. Veteran cottonwood.	Mixed forest	Natural	0.00	0
Not recently disturbed, naturalizing.	Broadleaf forest	Natural	0.00	0
	Broadleaf forest	Urban_Residential	0.00	0
Sections of high instability attributed to over-steepening and removal of riparian vegetation.	Broadleaf forest	Urban_Residential	0.00	0
Rip rap/stonework/boulders.	Mixed forest	Urban_Residential	0.00	0
Poor riparian development.	Mixed forest	Urban_Residential	0.00	0
Intermittent sections of bank instability from over-steepening attributed to channelizing.	Mixed forest	Urban_Residential	0.00	0
	Mixed forest	Urban_Residential	0.00	0
Gordon Road turning away from channel with generally less encroachment. Becoming more rural.	Mixed forest	Disturbed	0.00	0
	Mixed forest	Agriculture	0.00	0
Forest fire disturbance. Shallow silty soils (over bedrock) eroding from ravine slope.	Mixed forest	Disturbed	0.00	0
Forest fire disturbance.	Mixed forest	Disturbed	0.00	0
Primarily bedrock/canyon with occasional, small floodplain benches. Intense salvage logging.	Herbs/grasses	Disturbed	0.00	45
Reduced fire disturbance due to extreme relief (canyon)	Coniferous forest	Disturbed	0.00	85
Partial fire disturbance.	Coniferous forest	Disturbed	0.00	40
Salvage logging throughout; abundant cottonwood regeneration, especially amid relic channels.	Mixed forest	Disturbed	0.00	0
No salvage logging considerable fire damage to riparian/floodplain communities. Width up to ~75m.	Mixed forest	Disturbed	10.00	0
No salvage logging considerable fire damage to riparian/floodplain communities.	Mixed forest	Disturbed	0.00	0

R_STAGE	R_SHRUBS	R_SNAG	R_VETERAN_	R_BKSTBILI	R_BANK_MAT	R_TOP_BANK
low shrubs <2m	5-33%	No	No	High	RipRap	No
young forest	5-33%	No	No	High	RipRap	No
young forest	5-33%	No	No	High	RipRap	No
young forest	5-33%		<5	High	RipRap	No
mature forest	5-33%		<5	High	Cobble	No
young forest	5-33%		<5	High	Stonework	No
young forest	5-33%		<5	High	Boulder	No
mature forest	34-66%	No	>=5	High	Boulder	No
young forest	34-66%	No	No	High	Cobble	No
young forest	34-66%	No	No	High	Stonework	No
young forest	34-66%	No	No	Medium	Cobble	No
young forest	5-33%	No	No	High	Cobble	No
sapling >10m	<5%	No	No	Medium	Cobble	No
young forest	5-33%	No	No	High	Boulder	No
low shrubs <2m	<5%	No	No	Low	Cobble	No
mature forest	<5%	No	No	High	Cobble	No
sapling >10m	<5%	No	No	Medium	Cobble	No
mature forest	34-66%	>=5	No	Medium	Boulder	No
young forest	5-33%	>=5	No	Medium	Boulder	No
low shrubs <2m	<5%	No	No	High	Bed_Rock	No
mature forest	5-33%	>=5	<5	High	Bed_Rock	No
mature forest	5-33%	>=5	No	High	Bed_Rock	No
mature forest	5-33%	>=5	No	Medium	Cobble	No
mature forest	5-33%	>=5	No	Low	Cobble	No
mature forest	5-33%	>=5	No	Low	Cobble	No

R_COMMENT
Channelized and armoured with rip rap. Recent riparian restoration efforts with limited success.
Channelized by rip rap and native river rock.
Armoured/channelized with rip rap.
Occasional veteran cottonwood.
Veteran cottonwood along bank. Urban residential.
Mix of boulder/rip rap armouring and mortar-stone retaining walls.
Mix of boulder and stonework armouring. Occasional cottonwood and fir veterans.
Veteran fir,cedar, and cottonwood.
Urban encroachment with some bank armouring.
Some stonework and riprap placement.
Rip rap/stonework/boulders.
Poor riparian development
Intermittent sections of bank instability from over-steepening attributed to channelizing.
Devoid of native vegetation.
Naturalizing dike with more rural-like disturbance regimes.
Forest fire disturbance; livestock and light rural disturbance; intermittent bank instability.
Forest fire disturbance.
Mix of bedrock and till. Intense post fire salvage logging.
Reduced fire disturbance due to extreme relief (canyon)
Partial fire disturbance.
Salvage logging throughout; abundant cottonwood regeneration, more confined by bedrock.
No salvage logging considerable fire damage to riparian/floodplain communities. Width up to ~45m.
No salvage logging considerable fire damage to riparian/floodplain communities.

CMMNTFLORA	CMMNTFAUNA	IMPACT_RAT
Cottonwood regeneration;rose sp.;red-osier dogwood;Oregon grape.		Both_banks_high
Cedar; cottonwood regeneration;rose sp;Oregon grape;red-osier dogwood;various exotic plants.		Both_banks_mod
Cottonwood; Siberian elm ; rose sp; Oregon grape; red-osier dogwood; various exotic plants.		Both_banks_mod
Cottonwood; douglas fir; Siberian elm; red-osier dogwood; Oregon grape; beaked hazel; mtn. ash.		1_bank_high
Cottonwood; douglas fir; Siberian elm; red-osier dogwood; Oregon grape; beaked hazel; mtn. ash.		Both_banks_mod
Spruce; cedar; cottonwood; red maple; red-osier dogwood; Oregon grape; common snowberry.		1_bank_high
Cottonwood; douglas fir; ponderosa pine;alder;red-osier dogwood;water birch;various horticultural sp		1_bank_mod
Cottonwood; douglas fir; ponderosa pine; cedar; alder; red-osier dogwood; water birch; douglas maple		1_bank_low
Cottonwood; water birch; douglas fir; ponderosa pine; alder; red-osier dogwood.		1_bank_low
Ponderosa pine regeneration; cottonwood; willow sp.; alder; red-osier dogwood.		Both_banks_low
Cottonwood; douglas maple; red-osier dogwood.		Both_banks_mod
Cottonwood; willow sp; alder; red-osier dogwood; various exotic/horticultural species.		Both_banks_mod
Cottonwood regeneration; ponderosa pine sapling; willow sp.		Both_banks_high
		Both_banks_low
Cottonwood regeneration; willow sp; douglas fir;	American dipper; rainbow trout	Both_banks_high
Douglas fir; cottonwood; alder; red-osier dogwood.		Both_banks_low
Cottonwood; douglas fir; alder.	Rainbow trout.	Both_banks_high
Water birch; cottonwood; cedar; douglas fir; red-osier dogwood; alder; willow.	Rainbow trout.	1_bank_low
Cedar; water birch; cottonwood; douglas fir; red-osier dogwood; willow; elderberry; Canada thistle	Rainbow trout.	Nil
Cottonwood regeneration; water birch; red-osier dogwood; mullein; graminoids.		Both_banks_mod
Cedar; douglas fir; cottonwood; currant sp.		Nil
Predominantly cedar; douglas fir; cottonwood regeneration; alder.		Nil
Cedar; douglas fir; cottonwood; alder; red-osier dogwood; fireweed.		Both_banks_low
Mature cedar and cottonwood floodplain/riparian association (Red-listed within IDFxh1 BEC zone).		Nil
Cottonwood; Cedar; hybrid white spruce; alder; red-osier dogwood; fire weed; water birch.		1_bank_low

LOI_COMMEN	OPPORTUNIT
Although some restoration works on right bank, severe left bank impairments from retaining wall.	Moderate
Channelized riprap both banks however some naturalization occurring, in-part reduced by enhancements	Moderate
Left bank with less severe armouring but right bank heavily armoured impairing riparian function.	High
left bank not armoured but stream confined. Right bank armoured. Riparian vegetation still intact	Moderate
Despite historic channelization, naturalization of diking is providing moderate canopy closure.	Moderate
Considerable right bank modifications and left bank disturbance. However, enhancements do occur.	High
Natural left bank. Range of low to high right bank disturbance.	Moderate
Left bank has been modified but not recently.	High
Left bank has been modified in past but not recently.	Low
Channelized but naturalizing riparian association.	Moderate
Channelized but with some riparian naturalization.	Low
Channel less confined (allowing some) meandering. High bank modifications with 0% canopy closure.	Low
High due to deep channelized character and poor riparian quality.	High
Channelized, with road encroachment (Gordon Rd) but enhancements and riparian regeneration occur.	Low
Recent efforts to remediate left bank may improve condition over time.	High
Despite channelization diking is becoming naturalized with less overall encroachment to top of bank.	Low
Riparian vegetation occurs solely within channelized banks. Agriculture (livestock) to top of bank.	Very_high
Fire considered natural disturbance regime.	Nil
Fire considered natural disturbance regime.	Nil
Intense riparian modifications channel morphology remains mostly natural (not channelized).	Nil
Reduced fire impacts.	Nil
Natural fire disturbance, no salvage logging.	Nil
Intermittent logging straight over stream channel with other areas unburned and retained.	Very_high
Fire considered natural disturbance.	Nil
Short section with historic diking on left bank, but naturalized.	Nil

COMMENT	MAX_PDOP	CORR_TYPE	RCVR_TYPE	GPS_DATE	GPS_TIME
Since within lake inundation level possible maintenance required to mitigate bedload deposition.	3.8	Uncorrected	GeoXM	22/10/2005	09:56:09am
Potential for additional riparian planting and maintenance of holding pools.	4.8	Postprocessed Code	GeoXM	22/10/2005	10:26:19am
Poor instream cover and canopy closure.	4.6	Uncorrected	GeoXM	22/10/2005	11:25:17am
More low profile structures to retain gravels good potential for spawning enhancement.	5.9	Uncorrected	GeoXM	22/10/2005	11:44:02am
Low instream habitat complexity. However, regular, extreme (dry) summer low flow conditions.	6.6	Uncorrected	GeoXM	22/10/2005	01:16:15pm
Left bank access . A spring in segment 7 may sustain wetted deep holding pools in enhancements.	6.7	Postprocessed Code	GeoXM	22/10/2005	01:47:57pm
Right bank riparian enhancement and left bank stabilization at bottom of segment.	5.9	Uncorrected	GeoXM	23/10/2005	08:58:59am
Repair existing enhancements.	6.2	Uncorrected	GeoXM	23/10/2005	09:30:46am
Leave it alone.	6.4	Postprocessed Code	GeoXM	23/10/2005	10:27:31am
Overall lack of holding pools.	6.1	Uncorrected	GeoXM	23/10/2005	10:57:49am
	6.1	Uncorrected	GeoXM	23/10/2005	12:10:26pm
Riparian restoration. Mitigate high bedload transport and instability.	6.0	Uncorrected	GeoXM	23/10/2005	12:33:34pm
Repair existing weirs to mitigate aggradations and to maintain holding pools. Riparian restoration.	5.4	Postprocessed Code	GeoXM	23/10/2005	01:04:12pm
Avoid further alteration. Allow regeneration to continue and focus enhancement efforts elsewhere.	6.8	Uncorrected	GeoXM	29/10/2005	10:13:13am
Repair existing enhancements and continue and additional riparian planting.	6.8	Uncorrected	GeoXM	29/10/2005	12:04:28pm
Allow to regenerate naturally.	5.9	Uncorrected	GeoXM	29/10/2005	12:57:12pm
Re-slope banks; restore riparian vegetation; instream enhancements.	5.9	Uncorrected	GeoXM	29/10/2005	01:34:24pm
	6.5	Uncorrected	GeoXM	30/10/2005	10:21:18am
	7.8	Uncorrected	GeoXM	30/10/2005	11:27:58am
Allow natural regeneration (already occurring).	4.7	Uncorrected	GeoXM	30/10/2005	02:53:38pm
	8.0	Uncorrected	GeoXM	06/11/2005	10:09:45am
	7.1	Uncorrected	GeoXM	06/11/2005	11:30:21am
Restore/conserve this floodplain; high capability of regenerating to cedar/cottonwood association.	7.9	Uncorrected	GeoXM	06/11/2005	12:02:05pm
Segments 23 to 25 should be designated as conservation areas and allowed to regenerate.	7.4	Uncorrected	GeoXM	06/11/2005	01:36:53pm
Leave it alone and let it regenerate.	7.0	Uncorrected	GeoXM	06/11/2005	03:05:10pm

DATAFILE	UNFILT_POS	FILT_POS	DATA_DICTI	AVG_HORZ_P	WORST_HORZ	LENGTH	SOURCETHM	KEY_ID
BCR-1_1.cor	286	286	SHIM_2005_KH	1.5	6.6	231.885	Stream_line.shp	082E.073.Bellevue Creek
BCR-1_1.cor	380	380	SHIM_2005_KH	1.5	4.0	120.974	Stream_line.shp	082E.073.Bellevue Creek
BCR-1_1.cor	68	68	SHIM_2005_KH	2.1	5.9	111.988	Stream_line.shp	082E.073.Bellevue Creek
BCR-1_1.cor	499	499	SHIM_2005_KH	2.2	7.0	222.152	Stream_line.shp	082E.073.Bellevue Creek
BCR-1_1.cor	198	198	SHIM_2005_KH	1.9	6.1	241.381	Stream_line.shp	082E.073.Bellevue Creek
BCR-1_1.cor	244	244	SHIM_2005_KH	1.7	5.7	151.204	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	225	225	SHIM_2005_KH	2.2	6.2	210.316	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	282	282	SHIM_2005_KH	1.9	6.7	191.961	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	49	49	SHIM_2005_KH	1.8	4.1	112.853	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	501	501	SHIM_2005_KH	2.4	6.4	263.164	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	141	141	SHIM_2005_KH	1.6	5.7	131.763	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	188	188	SHIM_2005_KH	1.7	5.9	143.322	Stream_line.shp	082E.073.Bellevue Creek
EC102308A.cor	258	258	SHIM_2005_KH	1.7	3.4	224.332	Stream_line.shp	082E.073.Bellevue Creek
BC-3.cor	522	522	SHIM_2005_KH	2.1	6.3	418.120	Stream_line.shp	082E.073.Bellevue Creek
BC-3.cor	143	143	SHIM_2005_KH	1.8	5.9	176.668	Stream_line.shp	082E.073.Bellevue Creek
BC-3.cor	345	345	SHIM_2005_KH	1.6	5.7	217.096	Stream_line.shp	082E.073.Bellevue Creek
BC-3.cor	813	813	SHIM_2005_KH	1.6	5.7	424.520	Stream_line.shp	082E.073.Bellevue Creek
BC-4.cor	302	302	SHIM_2005_KH	2.0	6.5	141.003	Stream_line.shp	082E.073.Bellevue Creek
BC-4.cor	935	935	SHIM_2005_KH	3.4	7.6	609.598	Stream_line.shp	082E.073.Bellevue Creek
BC-4.cor	367	367	SHIM_2005_KH	1.7	6.2	243.785	Stream_line.shp	082E.073.Bellevue Creek
BELLEVUE CREEK 5.cor	309	309	SHIM_2005_KH	3.5	7.9	240.772	Stream_line.shp	082E.073.Bellevue Creek
BELLEVUE CREEK 5.cor	263	263	SHIM_2005_KH	1.6	5.7	171.913	Stream_line.shp	082E.073.Bellevue Creek
BELLEVUE CREEK 5.cor	710	710	SHIM_2005_KH	2.1	7.9	583.025	Stream_line.shp	082E.073.Bellevue Creek
BELLEVUE CREEK 5.cor	391	391	SHIM_2005_KH	2.4	6.2	343.816	Stream_line.shp	082E.073.Bellevue Creek
BELLEVUE CREEK 5.cor	722	722	SHIM_2005_KH	1.7	6.1	692.402	Stream_line.shp	082E.073.Bellevue Creek

TYPE_DISCH	BANK	MATERIAL	HEADWALL	LENGTH	WIDTH	DIAMETER	HEIGHT	TEMPERATUR	PHOTONUM	COMMENTS	GPS_DATE
Storm Drain	Right	Concrete	Concrete	0.00	0.00	1.00	0.00	5.00	IMGP0290	Presumed groundwater flows since upslope of Crawford Estates.	06/11/2005
Storm Drain	Right	Corrugated Steel		0.00	0.00	0.60	0.80	0.00	IMGP0208	Rip rap headwall.	30/10/2005
Tile Drain	Right	PVC		0.00	0.00	0.10	0.00	0.00	IMGP0214	Possible tile drain from adjacent field and potential source of pollution (from paddock).	30/10/2005
Trench	Right	Other		0.00	0.00	0.00	0.00	0.00	IMGP0215	Armoured channel from storm drain situated upslope near top of ravine slope.	30/10/2005
Storm Drain	Right	PVC		0.00	0.00	0.20	0.00	12.00	IMGP0254	From Crawford estates.	30/10/2005
Storm Drain	Left	Concrete		0.00	0.00	0.25	0.00	7.00	IMGP0170	Minor flows present.	29/10/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.30	0.00	8.00	IMGP0143	Possible groundwater flow intercepted by storm drain.	23/10/2005
Storm Drain	Left	Concrete	Concrete Block	0.00	0.00	0.60	0.00	0.00	IMGP0100	No flows present during survey. Presumed to come from Laughing Moon Parking lot.	22/10/2005
Storm Drain	Right	Concrete		0.00	0.00	0.45	0.00	0.00	IMGP0101	No flows present during survey. Opposite (bank) storm drain from Laughing Moon parking lot.	22/10/2005
Storm Drain	Left	Other		0.00	0.00	0.00	0.00	0.00	IMGP0383	Defined channel/ditch from culvert on street. Surface flows evident.	11/11/2005

TYPE_ENHAN	BANK	STATUS	LENGTH	WIDTH	HEIGHT	DIAMETER	COMMENTS	PHOTONUM	GPS_DATE
Log/Rock Wiers	Instream	Existing	2.00	5.00	0.00	0.45	Partially collapsed. Needs repair.	IMGP0187	29/10/2005
Log/Rock Wiers	Instream	Existing	1.80	8.00	0.00	0.00	Limited function; more like rock line. Partially collapsed and needs repair using larger rocks.	IMGP0128	23/10/2005
Log/Rock Wiers	Instream	Existing	2.00	8.50	0.00	0.00	Collapsed and needs repair.	IMGP0131	23/10/2005
Rock/Boulder Placeme	Instream		3.00	3.00	0.00	0.00	Possible collapsed weir. Consider repair.		23/10/2005
Log/Rock Wiers	Instream	Existing	5.00	5.00	0.00	0.00	Collapsed but riffle built up below and maintaining deep pool cover. Rainbow trout (~8cm) observed.	IMGP0159	23/10/2005
Log/Rock Wiers	Instream	Existing	2.00	6.00	0.00	0.00	Collapsed and filled in below. Non-functioning. Needs repair.	IMGP0160	23/10/2005
Log/Rock Wiers	Instream	Existing	3.00	5.50	0.00	0.00	Partially collapsed. Needs repair.	IMGP0161	23/10/2005
Log/Rock Wiers	Instream	Existing	2.20	7.00	0.60	0.00	Partially collapsed. Continues to provide some complexity. Needs repair.	IMGP0162	23/10/2005
Log/Rock Wiers	Instream	Existing	7.00	7.80	1.00	0.00	Concrete apron at top of feature, which may be a velocity barrier.	IMGP0165	23/10/2005
Log/Rock Wiers	Right	Existing	3.00	0.00	0.00	0.45	Upstream log deflector. Small pool formation downstream.	IMGP0078	22/10/2005
Log/Rock Wiers	Right	Existing	3.00	0.50	0.00	0.60	Associated deep pool downstream.	IMGP0079	22/10/2005
Rock/Boulder Placeme	Instream	Existing	3.00	4.00	0.40	0.00	Small pool formation upstream and increased organic material adding complexity to aquatic habitat.	IMGP0080	22/10/2005
Log/Rock Wiers	Instream	Existing	2.00	5.00	0.35	0.00	Functioning well.	IMGP0082	22/10/2005
Log/Rock Wiers	Instream	Existing	2.50	6.50	0.40	0.00	New gravel deposits upstream retained by the weir and associated hydraulic lift.	IMGP0085	22/10/2005
Log/Rock Wiers	Right	Potential	0.00	0.00	0.00	0.00	High opportunity rating (point location). Deflector structures and restore riparian community.	IMGP0105	22/10/2005
Log/Rock Wiers	Instream	Existing	2.00	6.00	0.00	0.00	Satisfactory function. Poor downstream pool development.	IMGP0115	22/10/2005

SOURCE_ERO	BANK	SEVERITY	EXPOSURE	LENGTH	WIDTH	HEIGHT	SLOPE	PHOTONUM	COMMENTS	GPS_DATE
Bank Erosion	Right	>10m sq	Till	25.00	0.00	2.50	85	IMGP0322		06/11/2005
Bank Erosion	Right	5-10m sq	Till	29.00	0.00	1.80	0	IMGP0326		06/11/2005
Culvert	Right	>10m sq	Till	32.00	0.00	2.50	85	IMGP0327		06/11/2005
Bank Erosion	Right	>10m sq	Till	12.80	0.00	1.20	80	IMGP0213		30/10/2005
Lack of Riparian Veg	Right	>10m sq	Till	80.00	0.00	0.90	80	IMGP0230	Erosion possibly exacerbated from fire (loss of riparian vegetation).	30/10/2005
Lack of Riparian Veg	Right	>10m sq	Till	11.00	0.00	1.80	90	IMGP0241		30/10/2005
Bank Erosion	Left	>10m sq	Till	15.00	0.00	2.00	90	IMGP0190	Caused by channelization (down-cutting with excavation.).	29/10/2005
Lack of Riparian Veg	Left	5-10m sq	Till	10.00	0.00	1.30	80	IMGP0197	Combination of channelization and lack of riparian vegetation (in part due to 2003 forest fire).	29/10/2005
Lack of Riparian Veg	Left	5-10m sq	Till	10.00	0.00	1.50	85	IMGP0198	Combination of channelization and lack of riparian vegetation. Re-slope and restore.	29/10/2005
Landslide	Left	>10m sq	Silt	80.00	100.00	30.00	0	IMGP0205		29/10/2005
Bank Erosion	Left	>10m sq	Till	35.00	0.00	1.80	80	IMGP0126	Some cottonwood regeneration but very unstable.	23/10/2005
Bank Erosion	Left	>10m sq	Till	15.00	0.00	2.00	75	IMGP0108		22/10/2005
Bank Erosion	Left	>10m sq	Till	30.00	0.00	1.00	90	IMGP0118	Good access therefore good opportunity for restoration.	22/10/2005
Landslide	Left	>10m sq	Clay	20.00	50.00	0.00	0	IMGP0382		11/11/2005

TYPE_HABIT	BANK	LENGTH	WIDTH	DEPTH	PHOTONUM	COMMENTS	GPS_DATE
Deep Pool	Instream	4.00	3.70	1.10	IMGP0291	Large bedrock and boulder. Fish can't ascend much further upstream.	06/11/2005
Deep Pool	Instream	4.00	2.00	0.80	IMGP0301	Bedrock channel.	06/11/2005
Deep Pool	Instream	4.00	4.00	1.30	IMGP0302		06/11/2005
Deep Pool	Instream	2.00	2.00	1.00	IMGP0308	Good habitats exist upstream of waterfalls, but fish presence questionable (not observed).	06/11/2005
Large Woody Debris	Instream	2.50	6.50	0.15	IMGP0311	Features like this could jam further and cause avulsion, creating a new channel in the floodplain.	06/11/2005
Small Woody Debris	Instream	2.50	5.50	0.20	IMGP0312	Occurs on left side channel.	06/11/2005
Large Woody Debris	Instream	2.00	7.00	0.45	IMGP0317	Potential for complete jam and subsequent avulsion.	06/11/2005
Large Woody Debris	Instream	3.50	4.70	0.20	IMGP0318		06/11/2005
Deep Pool	Instream	4.00	4.00	1.00	IMGP0321	Associated boulder and large woody debris.	06/11/2005
Large Woody Debris	Instream	4.50	14.50	0.00	IMGP0324	Spanning jam may further build and cause avulsion.	06/11/2005
Large Woody Debris	Instream	6.00	6.50	0.20	IMGP0325		06/11/2005
Large Woody Debris	Instream	3.00	8.00	0.25	IMGP0328		06/11/2005
Deep Pool	Instream	4.50	4.50	1.10	IMGP0333		06/11/2005
Deep Pool	Instream	4.00	3.50	1.20	IMGP0335		06/11/2005
Boulder	Instream	2.50	5.00	0.54	IMGP0209	Bedrock/boulder maintaining good downstream holding pool.	30/10/2005
Spawning Habitat	Instream	1.50	1.50	0.06	IMGP0212	Small gravel pocket below bedrock. Small resident rainbow observed in segment.	30/10/2005
Spawning Habitat	Instream	2.50	2.50	0.05	IMGP0217	Gravel substrates retained among boulders.	30/10/2005
Small Woody Debris	Instream	8.00	1.50	0.00	IMGP0222		30/10/2005
Large Woody Debris	Instream	13.00	8.00	0.20	IMGP0223		30/10/2005
Large Woody Debris	Instream	3.00	2.00	0.15	IMGP0224		30/10/2005
Deep Pool	Instream	3.50	2.20	1.00	IMGP0229	Good, stable adult holding pool adjacent bedrock.	30/10/2005
Large Woody Debris	Instream	8.40	5.00	0.30	IMGP0231	Large woody debris/boulder complex with suitable spawning habitat associated with structure.	30/10/2005
Deep Pool	Instream	5.00	2.00	1.00	IMGP0232	Associated with upstream boulder/bedrock channel constriction.	30/10/2005
Large Woody Debris	Instream	9.50	9.00	0.25	IMGP0233		30/10/2005
Boulder	Instream	3.00	4.50	0.25	IMGP0234	Associated shallow pool/organic debris/gravel (suitable spawning substrates).	30/10/2005
Boulder	Instream	2.50	4.50	0.30	IMGP0236	Boulder cluster (weir-like in function) with downstream scour pool.	30/10/2005
Large Woody Debris	Instream	7.00	7.00	0.15	IMGP0237	Boulder/large woody debris/gravel association.	30/10/2005
Large Woody Debris	Instream	3.00	1.50	0.20	IMGP0242		30/10/2005
Deep Pool	Instream	4.00	3.50	0.60	IMGP0243	Associated with debris jam. Fines and organic debris within pool. Fish observed upstream.	30/10/2005
Spawning Habitat	Instream	4.00	3.00	0.07	IMGP0245		30/10/2005
Large Woody Debris	Instream	1.50	5.20	0.15	IMGP0246		30/10/2005
Deep Pool	Instream	3.40	2.20	0.70	IMGP0247	Gravel deposits at tail-out of pool.	30/10/2005
Spawning Habitat	Instream	3.00	2.00	0.20	IMGP0250	Juvenile rainbow (3) observed.	30/10/2005
Small Woody Debris	Instream	8.00	4.10	0.15	IMGP0252		30/10/2005
Deep Pool	Instream	5.00	3.50	1.00	IMGP0255	Modified/armoured pool.	30/10/2005
Spawning Habitat	Instream	8.00	0.50	0.10	IMGP0256		30/10/2005
Small Woody Debris	Instream	2.50	4.00	0.40	IMGP0257		30/10/2005
Spawning Habitat	Instream	12.00	5.30	0.10	IMGP0259	Complex meandering riffle-pool/coarse woody debris/boulder/spawning habitat.	30/10/2005
Deep Pool	Instream	3.00	3.00	1.00	IMGP0261	Associated boulder cluster and spawning substrates.	30/10/2005
Boulder	Instream	8.00	4.50	0.50	IMGP0175	Good boulder/pool complex.	29/10/2005
Deep Pool	Instream	11.00	6.00	0.70	IMGP0176	Good boulder/pool association.	29/10/2005
Boulder	Instream	2.50	3.00	0.35	IMGP0178	Boulder cluster with associated pool development.	29/10/2005
Boulder	Instream	8.00	4.00	0.35	IMGP0181	Large boulder-pool complex.	29/10/2005
Boulder	Instream	2.50	2.00	0.00	IMGP0188	Associated pool and eddy.	29/10/2005
Boulder	Instream	2.50	0.00	0.35	IMGP0189	Associated with partially collapsed weir.	29/10/2005
Boulder	Instream	7.00	3.00	0.25	IMGP0193	Large boulders and associated shallow pools.	29/10/2005
Large Woody Debris	Instream	5.00	0.60	0.25	IMGP0123	Along left bank with small scour pool development immediately downstream.	23/10/2005
Boulder	Instream	1.20	1.40	0.00	IMGP0129	Significant boulder with small scour-pool.	23/10/2005
Boulder	Instream	2.00	2.50	0.30	IMGP0141	Significant instream boulder and associated habitats (eddy-pool).	23/10/2005
Boulder	Instream	1.00	1.20	0.30	IMGP0144	More significant structure with associated shallow pool-eddy.	23/10/2005
Deep Pool	Instream	4.00	4.00	0.40	IMGP0159	Although less than1-m deep, important holding pool especially during low flow periods.	23/10/2005
Deep Pool	Instream	4.00	4.00	1.00	IMGP0082	Associated with rock weir installation. Enhanced habitat complexity.	22/10/2005
Deep Pool	Instream	4.00	4.00	1.00	IMGP0085	Associated with rock weir installation.	22/10/2005
Spawning Habitat	Instream	3.00	2.00	0.08	IMGP0086	Potential spawning substrates, which are very scarce in lower segments.	22/10/2005
Deep Pool	Instream	4.00	4.00	1.00	IMGP0087	Associated with log-rock weir enhancement. Associated instream coarse woody debris.	22/10/2005
Small Woody Debris	Instream	4.50	3.50	0.10	IMGP0106	Small woody debris.	22/10/2005

TYPE_MODIF	BANK	TYPE_MATER	LENGTH	WIDTH	HEIGHT	PHOTONUM	COMMENTS	GPS_DATE
Bridge	Both	Wood	1.30	6.00	2.00	IMGP0313	Over narrow bedrock fault.	06/11/2005
Water Withdrawal	Left	Other	0.00	0.00	0.00	IMGP0329	Two (2) pvc pipes to Jacksmith Lake and Crawford Slough.	06/11/2005
Water Withdrawal	Instream	Other	7.00	3.00	0.50	IMGP0220	Irrigation outflow/North Bellevue Creek.	30/10/2005
Bridge	Both	Wood	2.50	24.00	3.00	IMGP0169	Creosote-treated wood pedestrian bridge.	29/10/2005
Garbage/Pollution	Right	Other	5.00	0.00	1.40	IMGP0174	Yard waste.	29/10/2005
Bridge	Both	Wood	5.00	16.00	3.00	IMGP0179	Abutment constructed of stonework and mortar 15-m in length.	29/10/2005
Rip_Rap	Right	Stonework	80.00	0.00	3.00	IMGP0196		29/10/2005
Bridge	Both	Other	4.00	12.00	2.60	IMGP0200		29/10/2005
PipeCrossing	Both		0.00	0.00	0.00	IMGP0121	Gas pipeline.	23/10/2005
Retain Wall/Bank Stb	Right	Other	14.00	0.00	1.60	IMGP0140	Tire retaining wall.	23/10/2005
Bridge	Both	Concrete	15.00	11.00	3.00	IMGP0147	Gordon Road bridge.	23/10/2005
Garbage/Pollution	Right	Other	5.00	0.00	2.50	IMGP0151	Yard waste/top soil.	23/10/2005
Retain Wall/Bank Stb	Left	Concrete	100.00	0.00	1.50	IMGP0076		22/10/2005
Bridge	Both	Concrete	3.40	10.50	2.20	IMGP0083	Pedestrian bridge.	22/10/2005
Retain Wall/Bank Stb	Left	Concrete	55.00	0.00	1.10	IMGP0095		22/10/2005
Rip_Rap	Right	Stonework	20.00	0.00	1.60	IMGP0099	Understory vegetation removed and further armoured.	22/10/2005
Rip_Rap	Both	Concrete	10.00	0.00	0.00	IMGP0102	Concrete debris armouring Lakeshore Road bridge abutments.	22/10/2005
Bridge	Both	Concrete	13.10	10.50	1.90	IMGP0103	Lakeshore Road bridge.	22/10/2005
Retain Wall/Bank Stb	Right	Concrete	20.00	0.00	1.00	IMGP0105	Concrete debris on bank to armour cut-bank. Good enhancement opportunity.	22/10/2005
Retain Wall/Bank Stb	Right	Stonework	65.00	0.00	0.90	IMGP0109	Mortar and stonework.	22/10/2005
Retain Wall/Bank Stb	Right	Stonework	12.00	0.00	1.10	IMGP0114	Mortar and stonework.	22/10/2005
Retain Wall/Bank Stb	Right	Stonework	34.00	2.50	1.20	IMGP0116	Associated fish habitat (pool-cover) with boulders.	22/10/2005
PipeCrossing	Both		0.00	0.00	0.00	IMGP0393	Gas pipeline.	12/11/2005
Channelization	Both		928.00	0.00	0.00		Combined length of Segments 1 to 6	19000100
Channelization	Both		1999.00	0.00	0.00		Combined length of Segments 10 to 17	19000100

TYPE_OBSTR	BANK	BARRIER	LENGTH	WIDTH	DEPTH	DIAMETER	HEIGHT	SLOPE	SCREENSIZE	PHOTONUM	COMMENTS	GPS_DATE
Persistent Debris	Instream	Potential	0.00	4.50	0.30	0.00	1.20	0	0.00	IMGP0292	Boulders catching coarse woody debris.	06/11/2005
Falls	Instream	Yes	0.00	0.00	0.00	0.00	9.00	90	0.00	IMGP0293		06/11/2005
Falls	Instream	Yes	0.00	0.00	0.00	0.00	18.00	90	0.00	IMGP0298		06/11/2005
Velocity Barrier	Instream	unknown	7.50	3.00	0.01	0.00	0.00	30	0.00	IMGP0303	Smooth bedrock.	06/11/2005
Dam	Instream	Yes	0.00	5.50	0.25	0.00	1.15	0	0.00	IMGP0330		06/11/2005
Falls	Instream	Yes	3.50	5.00	0.70	0.00	3.00	0	0.00	IMGP0334	Dam also constructed at this point for old water withdrawal.	06/11/2005
Log Jam	Instream	Yes	2.50	7.10	0.30	0.00	1.30	90	0.00	IMGP0244	Pool creation above.	30/10/2005

TYPE_WATER	BANK	LENGTH	WIDTH	DEPTH	TEMPERATUR	PHOTONUM	COMMENTS	GPS_DATE
Side Channel	Left	0.00	0.00	0.00	0.00	IMGP0306	Groundwater flows emerging in relic channel.	06/11/2005
Side Channel	Left	0.00	0.00	0.00	0.00	IMGP0306	Groundwater flows emerging in relic channel.	06/11/2005
Side Channel	Left	0.00	0.00	0.00	0.00	IMGP0315	Well defined relic channel with intermittent wetted sections. Possibly active during freshet.	06/11/2005
Tributary	Left	0.00	0.00	0.00	6.00	IMGP0211	Seepage/spring day-lighting from left bank scarp and following deep-cut gully.	30/10/2005
Tributary	Left	0.00	0.00	0.00	7.00	IMGP0227	Flowing over fine textured fan unstable upslope (landslide). See also photo IMGP0225.	30/10/2005
Tributary	Left	0.00	0.00	0.00	9.00	IMGP0204	Source of fines eroded from landslide.	29/10/2005
Tributary	Left	0.00	0.00	0.00	8.00	IMGP0143	Culvert outflow (possible spring since no recent rainfalls and cool temperatures).	23/10/2005
Natural Springs	Left	0.00	0.00	0.00	5.00	IMGP0168	About 1L/second flow. Good candidate location for instream enhancements (i.e., weir-pool complex).	23/10/2005
Natural Springs	Right	0.00	0.00	0.00	0.00	IMGP0392	Spring-tributary.	22/10/2005
Tributary	Right	0.00	0.00	0.00	0.00	IMGP0390	North Bellevue channel.	12/11/2005
Natural Springs	Left	0.00	0.00	0.00	0.00	IMGP0384	Spring from Mair pond. Daylights from silt/clay-till interface about 6-m below top of bank.	11/11/2005
Wetland	Right	0.00	0.00	0.00	0.00	IMGP0389	Horsetail moist seepage area in broad floodplain.	11/11/2005

WATERBODY_	WETLAND_TY	PHOTONUM	COMMENTS	GPS_DATE
Wetland	Marsh	IMGP0386	Oxbow water-wetted/saturated with minor base flow. High-water-relic channel of Bellevue.	11/11/2005
Wetland	Swamp	IMGP0387	Minor base flow through relic channel. Remnant shrubs thicket remains (post fire) broadleaf regener	11/11/2005

Mill Creek

STREAMNAME	LOCALNAME	SEG_NUMBER	ORGANIZATI	WTRSHEDCDE	TRIBUTARYC	DATE	TIME_	CREW	WEATHER	AIRTEMP_
Mill Creek	Kelowna Creek	1.0	Ecoscape Biological Consultants	31	0808200	23/11/2005	08:12:00am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	2.0	Ecoscape Biological Consultants	31	0808200	23/11/2005	09:07:58am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	3.0	Ecoscape Biological Consultants	31	0808200	23/11/2005	09:30:33am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	4.0	Ecoscape Biological Consultants	31	0808200	23/11/2005	10:39:35am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	5.0	Ecoscape Biological Consultants	31	0808200	23/11/2005	11:34:36am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	6.0	Ecoscape Biological Consultants	31	0808200	24/11/2005	10:00:49am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	7.0	Ecoscape Biological Consultants	31	0808200	24/11/2005	10:10:57am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	8.0	Ecoscape Biological Consultants	31	0808200	24/11/2005	01:11:59pm	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	9.0	Ecoscape Biological Consultants	31	0808200	24/11/2005	01:32:34pm	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	10.0	Ecoscape Biological Consultants	31	0808200	25/11/2005	08:17:43am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	11.0	Ecoscape Biological Consultants	31	0808200	25/11/2005	10:45:57am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	12.0	Ecoscape Biological Consultants	31	0808200	25/11/2005	11:23:50am	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	13.0	Ecoscape Biological Consultants	31	0808200	25/11/2005	12:36:37pm	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	14.0	Ecoscape Biological Consultants	31	0808200	25/11/2005	02:45:51pm	KH;WH	Over cast	2.0
Mill Creek	Kelowna Creek	15.0	Ecoscape Biological Consultants	31	0808200	28/11/2005	09:55:07am	KH;WH	Clear	-4.0
Mill Creek	Kelowna Creek	16.0	Ecoscape Biological Consultants	31	0808200	28/11/2005	11:13:17am	KH;WH	Clear	0.0
Mill Creek	Kelowna Creek	17.0	Ecoscape Biological Consultants	31	0808200	28/11/2005	12:00:41pm	KH;WH	Clear	0.0
Mill Creek	Kelowna Creek	18.0	Ecoscape Biological Consultants	31	0808200	28/11/2005	12:37:14pm	KH;WH	Clear	0.0
Mill Creek	Kelowna Creek	19.0	Ecoscape Biological Consultants	31	0808200	28/11/2005	01:39:02pm	KH;WH	Clear	0.0
Mill Creek	Kelowna Creek	20.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	08:35:59am	KH;WH	Snow/Sleet	-1.0
Mill Creek	Kelowna Creek	21.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	09:13:04am	KH;WH	Snow/Sleet	-1.0
Mill Creek	Kelowna Creek	22.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	10:00:08am	KH;WH	Snow/Sleet	-1.0
Mill Creek	Kelowna Creek	23.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	11:20:58am	KH;WH	Over cast	-1.0
Mill Creek	Kelowna Creek	24.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	12:37:58pm	KH;WH	Over cast	-1.0
Mill Creek	Kelowna Creek	25.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	01:05:20pm	KH;WH	Over cast	-1.0
Mill Creek	Kelowna Creek	26.0	Ecoscape Biological Consultants	31	0808200	29/11/2005	03:18:53pm	KH;WH	Over cast	0.0
Mill Creek	Kelowna Creek	27.0	Ecoscape Biological Consultants	31	0808200	30/11/2005	08:27:59am	KH;WH	Over cast	-1.0
Mill Creek	Kelowna Creek	28.0	Ecoscape Biological Consultants	31	0808200	30/11/2005	10:59:45am	KH;WH	Over cast	-1.0
Mill Creek	Kelowna Creek	29.0	Ecoscape Biological Consultants	31	0808200	30/11/2005	01:02:04pm	KH;WH	Over cast	-1.0
Mill Creek	Kelowna Creek	30.0	Ecoscape Biological Consultants	31	0808200	21/11/2005	10:20:24am	KH;WH	Over cast	3.0
Mill Creek	Kelowna Creek	31.0	Ecoscape Biological Consultants	31	0808200	21/11/2005	11:39:30am	KH;WH	Over cast	3.0
Mill Creek	Kelowna Creek	32.0	Ecoscape Biological Consultants	31	0808200	21/11/2005	01:28:49pm	KH;WH	Over cast	3.0
Mill Creek	Kelowna Creek	33.0	Ecoscape Biological Consultants	31	0808200	21/11/2005	02:57:01pm	KH;WH	Over cast	3.0
Mill Creek	Kelowna Creek	34.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	03:46:14pm	KH;WH	Over cast	4.0
Mill Creek	Kelowna Creek	35.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	08:51:47am	KH;WH	Clear	0.4
Mill Creek	Kelowna Creek	36.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	10:22:18am	KH;WH	Clear	0.4
Mill Creek	Kelowna Creek	37.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	11:35:05am	KH;WH	Clear	-4.0
Mill Creek	Kelowna Creek	38.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	12:42:48pm	KH;WH	Clear	-4.0
Mill Creek	Kelowna Creek	39.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	01:57:56pm	KH;WH	Clear	-4.0
Mill Creek	Kelowna Creek	40.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	02:25:10pm	KH;WH	Clear	-4.0
Mill Creek	Kelowna Creek	41.0	Ecoscape Biological Consultants	31	0808200	01/12/2005	03:42:15pm	KH;WH	Clear	-4.0
Mill Creek	Kelowna Creek	42.0	Ecoscape Biological Consultants	31	0808200	05/12/2005	10:40:59am	KH;WH	Over cast	-3.0
Mill Creek	Kelowna Creek	43.0	Ecoscape Biological Consultants	31	0808200	05/12/2005	12:16:34pm	KH;WH	Over cast	-3.0
Mill Creek	Kelowna Creek	44.0	Ecoscape Biological Consultants	31	0808200	05/12/2005	12:34:54pm	KH;WH	Over cast	-3.0
Mill Creek	Kelowna Creek	45.0	Ecoscape Biological Consultants	31	0808200	05/12/2005	01:42:52pm	KH;WH	Over cast	-3.0
Mill Creek	Kelowna Creek	46.0	Ecoscape Biological Consultants	31	0808200	05/12/2005	03:38:49pm	KH;WH	Over cast	-3.0
Mill Creek	Kelowna Creek	47.0	Ecoscape Biological Consultants	31	0808200	06/12/2005	09:22:13am	KH;WH	Partly Cloudy	-5.0
Mill Creek	Kelowna Creek	48.0	Ecoscape Biological Consultants	31	0808200	06/12/2005	10:08:40am	KH;WH	Partly Cloudy	-5.0
Mill Creek	Kelowna Creek	49.0	Ecoscape Biological Consultants	31	0808200	06/12/2005	12:11:41pm	KH;WH	Partly Cloudy	-5.0
Mill Creek	Kelowna Creek	50.0	Ecoscape Biological Consultants	31	0808200	06/12/2005	01:28:02pm	KH;WH	Partly Cloudy	-5.0
Mill Creek	Kelowna Creek	51.0	Ecoscape Biological Consultants	31	0808200	06/12/2005	01:56:28pm	KH;WH	Partly Cloudy	-5.0
Mill Creek	Kelowna Creek	52.0	Ecoscape Biological Consultants	31	0808200	06/12/2005	03:14:43pm	KH;WH	Partly Cloudy	-5.0
Mill Creek	Kelowna Creek	53.0	Ecoscape Biological Consultants	31	0808200	07/12/2005	10:47:09am	KH;WH	Partly Cloudy	0.7
Mill Creek	Kelowna Creek	54.0	Ecoscape Biological Consultants	31	0808200	07/12/2005	11:49:53am	KH;WH	Partly Cloudy	0.7
Mill Creek	Kelowna Creek	55.0	Ecoscape Biological Consultants	31	0808200	07/12/2005	12:23:04pm	KH;WH	Partly Cloudy	0.7
Mill Creek	Kelowna Creek	56.0	Ecoscape Biological Consultants	31	0808200	07/12/2005	01:10:31pm	KH;WH	Partly Cloudy	0.7
Mill Creek	Kelowna Creek	57.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	12:23:01pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	57.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	12:23:01pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	57.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	12:23:01pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	57.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	12:23:01pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	57.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	12:23:01pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	58.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	01:04:19pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	59.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	01:36:46pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	60.0	Ecoscape Biological Consultants	31	0808200	14/12/2005	02:11:45pm	KH;WH	Over cast	-2.0
Mill Creek	Kelowna Creek	61.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	08:44:15am	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	62.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	09:03:46am	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	63.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	09:24:28am	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	64.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	09:43:18am	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	65.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	10:14:00am	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	66.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	10:41:57am	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	67.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	12:39:54pm	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	68.0	Ecoscape Biological Consultants	31	0808200	22/11/2005	01:21:15pm	KH;WH	Over cast	5.0
Mill Creek	Kelowna Creek	69.0	Regional District of Central Okanagan	31	0808200	19000100	12:11:35am	bm	Over cast	-6.0
Mill Creek	Kelowna Creek	70.0	Regional District of Central Okanagan	31	0808200	19000100	10:51:48pm	bm	Over cast	-12.0
Mill Creek	Kelowna Creek	70.0	Regional District of Central Okanagan	31	0808200	19000100	11:06:02pm	bm	Over cast	-12.0
Mill Creek	Kelowna Creek	70.0	Regional District of Central Okanagan	31	0808200	19000100	11:11:08pm	bm	Over cast	-12.0
Mill Creek	Kelowna Creek	70.0	Regional District of Central Okanagan	31	0808200	19000100	11:18:33pm	bm	Over cast	-12.0
Mill Creek	Kelowna Creek	71.0	Regional District of Central Okanagan	31	0808200	19000100	10:27:19pm	bm	Over cast	-12.0
Mill Creek	Kelowna Creek	72.0	Regional District of Central Okanagan	31	0808200	19000100	09:33:03am	bm	Clear	23.0
Mill Creek	Kelowna Creek	72.0	Regional District of Central Okanagan	31	0808200	19000100	09:33:03am	bm	Clear	23.0
Mill Creek	Kelowna Creek	73.0	Regional District of Central Okanagan	31	0808200	19000100	09:33:03am	bm	Clear	23.0
Mill Creek	Kelowna Creek	73.0	Regional District of Central Okanagan	31	0808200	19000100	09:33:03am	bm	Clear	23.0
Mill Creek	Kelowna Creek	74.0	Regional District of Central Okanagan	31	0808200	19000100	10:39:48am	bm	Clear	23.0

WATER_TEMP	STAGE	LINE_TYPE	LINE_SRC	COMMENTS	PHOTONUM	PRIMARY	SECONDARY
5.0	moderate	Trimble	shim2002	Reed canary grass completely overtaking wall in areas	IMGP0544	Channelized	
5.0	moderate	Trimble	shim2002		IMGP0549	Channelized	
5.0	moderate	Trimble	shim2002		IMGP0550	Modified	
5.0	moderate	Trimble	shim2002		IMGP0564	Channelized	
5.0	moderate	Trimble	shim2002		IMGP0596	Modified	
6.0	moderate	Trimble	shim2002	Channelized over entire length by retaining wall on both banks.	IMGP0645	Channelized	
6.0	moderate	Trimble	shim2002		IMGP0655	Modified	
6.0	moderate	Trimble	shim2002		IMGP0693	Channelized	
6.0	moderate	Trimble	shim2002		IMGP0709	Modified	
6.0	moderate	Trimble	shim2002		IMGP0743	Modified	
6.0	moderate	Trimble	shim2002		IMGP0775	Channelized	
6.0	moderate	Trimble	shim2002		IMGP0791	Channelized	
6.0	moderate	Trimble	shim2002		IMGP0817	Modified	
6.0	moderate	Trimble	shim2002		IMGP0843	Modified	
5.0	moderate	Trimble	shim2002		IMGP0863	Modified	
5.0	moderate	Trimble	shim2002		IMGP0881	Modified	
5.0	moderate	Trimble	shim2002		IMGP0885	Modified	
5.0	moderate	Trimble	shim2002		IMGP0895	Modified	
5.0	moderate	Trimble			IMGP0909	Modified	
5.0	moderate	Trimble	shim2002		IMGP0933	Modified	Beaver Pond
5.0	moderate	Trimble	shim2002		IMGP0936	Modified	Beaver Pond
5.0	moderate	Trimble	shim2002		IMGP0944	Natural	
5.0	moderate	Trimble	shim2002		IMGP0960	Modified	
5.0	moderate	Trimble	shim2002		IMGP0967	Natural	Beaver Pond
5.0	moderate	Trimble	shim2002		IMGP0998	Modified	
5.0	moderate	Trimble	shim2002		IMGP1007	Channelized	
5.0	moderate	Trimble	shim2002	Entire segment deep with series of beaver dams.	IMGP1031	Modified	Beaver Pond
5.0	moderate	Trimble	shim2002		IMGP1065	Modified	
5.0	moderate	Trimble	shim2002		IMGP1099	Channelized	
5.0	moderate	Trimble	shim2002		IMGP0402	Modified	Beaver Pond
5.0	moderate	Trimble	shim2002		IMGP0411	Modified	Wetland
5.0	moderate	Trimble	shim2002		IMGP0429	Modified	Other
5.0	moderate	Trimble	shim2002		IMGP0453	Modified	Beaver Pond
5.0	moderate	Trimble	shim2002		IMGP0461	Modified	
4.0	low	Trimble	shim2002		IMGP1149	Modified	
4.0	low	Trimble	shim2002		IMGP1165	Modified	
4.0	low	Trimble	shim2002		IMGP1190	Natural	Beaver Pond
4.0	low	Trimble	shim2002		IMGP1203	Modified	
4.0	low	Trimble	shim2002		IMGP1212	Channelized	
4.0	low	Trimble	shim2002		IMGP1222	Natural	
4.0	low	Trimble	shim2002		IMGP1240	Channelized	
4.0	low	Trimble	shim2002		IMGP1292	Modified	
4.0	low	Trimble	shim2002		IMGP1298	Channelized	
4.0	low	Trimble	shim2002		IMGP1304	Channelized	
4.0	low	Trimble	shim2002		IMGP1315	Modified	Beaver Pond
4.0	low	Trimble	shim2002		IMGP1350	Modified	Beaver Pond
4.0	low	Trimble	shim2002		IMGP1371	Modified	
4.0	low	Trimble	shim2002		IMGP1378	Channelized	
4.0	low	Trimble	shim2002		IMGP1401	Modified	
4.0	low	Trimble	shim2002		IMGP1404	Channelized	
4.0	low	Trimble	shim2002		IMGP1419	Natural	
4.0	low	Trimble	shim2002		IMGP1448	Channelized	
3.0	low	Trimble	shim2002		IMGP1478	Modified	
3.0	low	Trimble	shim2002		IMGP1499	Channelized	
3.0	low	Trimble	shim2002		IMGP1504	Modified	
3.0	low	Trimble	shim2002		IMGP1519	Channelized	
3.0	low	Trimble	shim2002		IMGP1601	Modified	Side channel
3.0	low	Trimble	shim2002		IMGP1601	Modified	Side channel
3.0	low	Trimble	shim2002		IMGP1601	Modified	Side channel
3.0	low	Trimble	shim2002		IMGP1601	Modified	Side channel
3.0	low	Trimble	shim2002		IMGP1601	Modified	Side channel
3.0	low	Trimble	shim2002		IMGP1634	Modified	
3.0	low	Trimble	shim2002		IMGP1637	Modified	
3.0	low	Trimble	shim2002		IMGP1647	Modified	
5.0	low	Trimble	shim2002		IMGP0465	Ditch	
5.0	low	Trimble	shim2002		IMGP0469	Ditch	
5.0	low	Trimble	shim2002		IMGP0471	Culvert	
5.0	low	Trimble	shim2002		IMGP0480	Channelized	
5.0	low	Trimble	shim2002		IMGP0482	Ditch	
5.0	low	Trimble	shim2002		IMGP0490	Ditch	
5.0	low	Trimble	shim2002		IMGP0515	Channelized	
5.0	low	Trimble	shim2002		IMGP0521	Channelized	
0.0	low				DCP_1085	Natural	Non-channelized
0.0	dry			Braided channel # 1	DCP_1076	Natural	Braided
0.0	dry			braided channel no 2	DCP_1077	Natural	Braided
0.0	dry			braided channel no 3	DCP_1078	Natural	Braided
0.0	dry			braided channel no 4 not connected at us end but evidence of standing water	DCP_1079	Natural	Braided
0.0	dry			dewatered	DCP_1073	Natural	Intermittent
14.5	low			Frequently dewaters	DCP_2531	Modified	
14.5	low				DCP_2534	Modified	Side Channel
14.5	low				DCP_2534	Modified	Side Channel
14.5	low				DCP_2534	Modified	Braided
14.5	low				DCP_2544	Culvert	

HYDRAULIC	COMT_CLASS	GRADIENT	CROWN_CLOS	SPAWNING_H	LIVESTOCK_
Slough	Stonework and retaining walls both banks. Within highwater level of Okanagan Lake.	0.0	1-20%	Unknown	
Run	Retaining wall and stonework both banks.	0.5	1-20%	Unknown	
Run	Heavily urbanized with discontinuous retaining walls. Not completely channelized.	1.0	41-70%	Unknown	
Run	Continuous retaining walls both banks.	1.0	41-70%	Unknown	
Run	Discontinuous retaining walls on outside bends where naturally prone to bank erosion.	1.0	41-70%	Resident	
Run	Continuous retaining walls on both banks.	1.0	1-20%	Resident	
Run	Discontinuous retaining walls along both banks.	1.0	41-70%	Unknown	
Run	Continuous retaining walls and stonework on both banks.	1.0	1-20%	Unknown	
Run	Predominantly run with weak riffle-pool development.	1.5	41-70%	Resident	
Run	Discontinuous stonework and retaining walls on both banks. More urbanized than Segment 9.	1.0	1-20%	Resident	
Run	Retaining walls along both banks with instream enhancements occurring over entire segment length.	1.5	1-20%	Resident	
Run	Retaining walls along both banks with the exception of 60-m at bottom of segment.	2.0	41-70%	Resident	
Riffle/Pool	Instream enhancements adding considerable structural complexity and cover.	1.5	>90%	Resident	
Riffle/Pool	Parkland. Retaining walls and rip rap along majority of segment length on both banks.	1.5	1-20%	Resident	
Run	Deep run-slough hydraulic character influenced by beaver activity.	1.0	41-70%	Unknown	
Run	Weak riffle-pool at bottom of segment. Considerable riparian disturbance and bank instability.	1.0	1-20%	Unknown	
Riffle/Pool	Riffle-pool-run	2.0	71-90%	Potential	
Run	Steep left bank fill slope.	1.0	0	Unknown	
Riffle/Pool	Riffle-pool-run. Intermittent Industrial/municipal encroachment to top of bank.	1.5	21-40%	Unknown	
Beaver Pond	Natural with railway encroachment near top of segment along left bank.	0.0	71-90%	Unknown	
Slough	Railway confinement along left bank and cliff-bluff along right bank.	1.0	>90%	Unknown	
Riffle/Pool	Not recently disturbed, although a portion of the left bank was previously diked.	1.5	71-90%	Potential	
Riffle/Pool	Riffle-pool-run.	2.0	41-70%	Unknown	Yes
Slough	Abundant instream woody debris and span logs mostly attributed to beaver activity.	1.0	1-20%	Unknown	
Run	Central Park. Predominantly run with intermittent weak riffle-pool character. Numerous enhancements	1.5	1-20%	Potential	
Run	Diking along both banks with railway along right bank and channelization to Flood diversion.	1.5	71-90%	Unknown	
Slough	Numerous log and rock bank revetments to mitigate erosion and enhance aquatic habitat complexity.	0.5	1-20%	Unknown	
Riffle/Pool	Riffle-pool-run.	1.5	71-90%	Unknown	
Riffle/Pool	Riffle-pool-run. Channelized along right bank by railway and armoured over much of left bank.	1.5	71-90%	Unknown	
Run	Evidence of riffle pool morphology prior to beaver activity. This area is now slow moving (slough).	1.0	1-20%	Unknown	
Slough	Riverine slough/wetland complex. High beaver activity/influence.	0.5	21-40%	Unknown	
Run	Confined on left bank by back fill (garbage).	0.5	21-40%	Unknown	
Slough		0.5	1-20%	Unknown	
Riffle/Pool		2.0	0	Unknown	
Riffle/Pool	Intermittent field encroachment to top of bank. Invasive plants.	2.0	71-90%	Potential	
Riffle/Pool	Lack of treed forest canopy; predominated by tall shrubs (hawthorn).	2.0	21-40%	Potential	
Slough		0.5	21-40%	Unknown	
Run		1.5	21-40%	Potential	
Slough		0.0	0	Unknown	
Slough	Torturous meander through mature cottonwood forest down-cutting in clay substrates.	0.3	41-70%	Unknown	
Slough	Channelized during railway development. Creating large impoundment to west of railway.	0.3	0	Unknown	
Slough	Predominantly slough with occasional run. Industrial on left bank and open, disturbed right bank.	0.3	21-40%	Unknown	
Run	Channelized by diking. Open grass-herb-low shrub riparian. Low impervious industrial both banks.	0.2	0	Unknown	
Run	Channelized through industrial property.	0.2	21-40%	Unknown	
Slough	Natural channel down-cutting through fine silt/clay substrates. Commercial/industrial encroachment.	0.5	41-70%	Unknown	
Slough	Very deep beaver ponding. Floodplain association along right bank and encroachment on left bank.	0.0	41-70%	Unknown	
Slough	Industrial encroachment on outside stream bends with steep, unstable banks. Reduced beaver activity	0.0	21-40%	Unknown	
Slough	Channelized/diked both banks. Intermittent armouring on both banks where erosion more prevalent.	0.0	1-20%	Unknown	
Slough	Diking is setback allowing stream channel to meander naturally within. Beaver activity occurs.	0.5	21-40%	Unknown	
Run	Channelized by Highway 97 (to west) and to lesser extent by commercial development to east.	0.5	1-20%	Unknown	
Slough	Riparian floodplain/riverine swamp association. Deep slough attributed to beaver activity.	0.5	41-70%	Unknown	
Run	Ditched through field. Run with intermittent riffle-pool development.	0.5	1-20%	Resident	
Riffle/Pool	More natural at bottom of segment becoming more channelized at the top with revetments.	2.0	1-20%	Resident	
Run	Considerable left bank erosion.	1.0	21-40%	Unknown	
Riffle/Pool	Large berm along right bank (naturalized) and Bulman Road along left bank (just set back).	2.0	41-70%	Resident	
Run	Channelized through retaining walls with series of rock lines.	1.5	0	Unknown	
Slough	Slough with portions of riffle-pool-run. Side channels and islands.	0.2	1-20%	Potential	
Slough	Side channel	0.2	1-20%		
Slough	Side channel	0.2	1-20%		
Slough	Side channel	0.2	1-20%		
Slough	Side channel	0.0	1-20%		
Riffle/Pool	Riffle-pool-run. Narrower and shallower channel.	1.5	1-20%	Potential	
Riffle/Pool	Riffle-pool-run.	1.5	41-70%	Potential	
Riffle/Pool	Riffle-pool-run below bridge, run-slough upstream of bridge. Old bank diking evident.	1.5	0	Potential	Yes
Run		1.0	0	Unknown	
Run	Ditch less confined and predominated by cattail marsh.	1.0	0	Unknown	
Slough		0.3	0	Unknown	
Riffle	Bottom of segment armoured with rip rap.	1.0	0	Unknown	
Slough		0.3	0	Unknown	
Run	Weak riffle-pool inhibited by channelization.	1.5	0	Potential	
Riffle/Pool	Wider channel allowing meandering and more prominent riffle-pool character.	2.0	0	Potential	
Riffle		3.0	0	Unknown	
Riffle/Pool		1.0	1-20%	Unknown	
Riffle/Pool	Intermittent	1.0	21-40%	Unknown	
Riffle/Pool	Intermittent	1.0	21-40%	Unknown	
Riffle/Pool	Intermittent	1.0	21-40%	Unknown	
Riffle/Pool	Intermittent	1.0	21-40%	Unknown	
Riffle/Pool		2.0	1-20%	Unknown	
Riffle/Pool	Ephemeral	2.0	1-20%	Unknown	
Riffle/Pool	Ephemeral	2.0	21-40%		
Riffle/Pool		2.0	21-40%		
Riffle/Pool		2.0	21-40%		
Riffle		3.0	0		

BARS	COMT_SCHAR	SUB_ORGANI	SUB_FINES	SUB_GRAVEL	SUB_COBBLE
		99	1	0	0
None		15	35	25	25
None		15	35	25	24
None		20	64	10	5
None	Kokanee observed spawning in suitable gravels through this segment (resident).	20	64	10	5
	Spawning gravels occur as a result of enhancements.	15	35	35	15
None		15	35	35	15
None		15	40	30	15
None	A single side channel occurs.	5	10	50	34
None		40	15	25	24
None	Spawning habitat all part of enhancement initiatives.	1	4	75	24
None		1	4	30	60
None	Spawning habitat associated with enhancements and gravel addition.	5	0	55	35
None		5	0	20	50
None	Natural stream channel with occasional urban encroachment into riparian area.	85	5	4	5
None	High left bank disturbance.	45	25	15	15
None		5	15	25	55
None		10	45	15	25
None		10	30	20	35
None		80	5	5	10
None	Dense willow thicket riparian/floodplain association.	25	10	25	39
None		1	29	25	45
None		1	24	25	50
None	Cascade over beaver dams (2).	1	24	25	50
None	Spawning potential attributed to in stream habitat enhancements/modifications.	20	10	30	39
None	Stream banks are naturalizing.	5	20	20	45
None	Occasional small islands (likely caused by previous sloughing).	55	15	15	10
	Disturbed willow thicket/riverine swamp/floodplain association.	1	32	33	33
None	Predominantly cottonwood forest canopy.	10	20	25	40
None		25	60	10	5
None	Multiple flood channels through willow and cottonwood riverine swamp.	60	38	1	1
None		60	38	1	1
Mid-channel	Occasional islands. Tall rush development in backwaters and wide channel margins.	30	60	9	1
Mid-channel	Occasional islands and side bars.	25	25	25	25
None		1	14	25	60
None		1	14	20	64
None		10	75	5	10
None		1	24	25	49
None		50	35	5	10
None		0	100	0	0
None		0	100	0	0
None		38	60	0	1
None	Both banks are unstable with erosion (undercutting grass cover) along entire length.	10	90	0	0
None	Treed cover on right bank and open, low shrub/grass-herb cover on left bank.	10	90	0	0
None	Deep slough/beaver ponding (dams).	20	75	0	5
None	Beaver activity has resulted in a more open forest canopy.	20	75	0	0
None	Meandering slough.	50	50	0	0
None		25	75	0	0
None	Canopy cover primarily shrubs and occasional larger willow. Erosion on outside stream bends.	24	74	1	0
None	Prominent erosion along right bank.	15	75	5	5
None	Mix of floodplain association and riverine wetland complex.	15	75	5	5
None	Recent intensive bank revetments (bioengineering) and instream enhancements along segment length.	13	75	5	1
Side		5	35	45	15
Side	Portions of segment with dense shrub cover (over stream).	10	35	35	15
None		1	15	74	10
None		0	5	5	30
None		10	80	8	2
		0	0	0	0
		0	0	0	0
		0	0	0	0
		0	0	0	0
None	Gravel riffles providing suitable spawning habitat for small resident trout (observed).	1	59	30	10
None	Natural right bank riparian community.	1	59	30	10
None	Cattle crossing.	5	60	24	10
None	Over stream vegetation (grasses) proving some cover.	0	35	5	60
None	Deep channel through cattail marsh.	2	95	2	1
None		5	1	0	0
None	Channelized/ditched.	0	5	5	10
None	Channelized/ditch.	25	50	20	5
Side		0	5	50	45
Side	Lateral gravel bars.	0	5	35	60
None	Deep channelization and rip rap banks.	0	5	25	45
Side		0	10	40	50
Side		0	30	50	20
Side		0	30	50	20
Side		0	30	50	20
Side		0	100	0	0
Side		0	10	60	35
Mid-channel		0	10	30	40
Mid-channel		0	10	30	40
Mid-channel		0	10	30	40
Mid-channel		0	10	30	40
		0	0	0	0

SUB_BLDER	SUB_BEDRK	COMPACTION	COMT_SUB	WIDTH_W	WIDTH_BF	WIDTH_LFP
0	0	Low	Deep organic muck with sand occurring over beach at Okanagan Lake.	5.00	8.00	0.00
0	0	Medium		3.50	8.00	0.00
1	0	Medium		4.10	7.00	0.00
1	0	Medium	Coarse substrates are embedded in fine sand/silt substrates.	4.10	7.00	0.00
1	0	Medium	Majority of gravel embedded in fine substrates.	5.50	7.50	0.00
0	0	Medium		4.00	7.00	0.00
0	0	Medium		4.20	6.50	0.00
0	0	Medium		3.50	4.50	0.00
1	0	Medium	Majority of spawning gravel has been added as part of enhancement initiatives.	4.50	6.20	0.00
1	0	Low		4.60	7.00	0.00
1	0	Low		4.50	5.00	0.00
5	0	Medium	Spawning gravel associated with enhancement initiatives.	4.00	6.50	0.00
5	0	Medium		3.50	8.00	0.00
25	0	Medium	Organic deposition (detritus) in pools.	4.50	6.50	0.00
1	0	Low		5.50	6.50	0.00
0	0	Low	Organic and fine substrates predominate with gravel and cobbles occurring in weak riffle sections.	4.50	6.00	0.00
0	0	Medium	Predominant cobble substrates.	4.00	5.80	0.00
5	0	Low	Predominantly fine substrates. Coarse substrates occur over riffle enhancements.	3.50	6.50	0.00
5	0	Low	Although predominant, coarse substrates are generally embedded in finer substrates.	4.00	6.00	0.00
0	0		Coarse substrates embedded and covered with organic substrates (detritus).	12.00	6.00	0.00
1	0	Medium	Coarse substrates partly embedded in silt, sand, and organic substrates.	5.00	9.00	0.00
0	0	Medium	Coarse substrates occurring in riffles are ~25-50% embedded in fine substrates.	5.00	6.50	0.00
0	0	Medium		5.50	7.00	0.00
0	0	Medium		10.00	10.00	0.00
1	0	Medium		4.00	6.00	0.00
10	0	High		5.00	6.00	0.00
5	0	Low	Coarse substrates evident but appeared embedded in fine substrates. Boulders part of enhancements.	8.50	5.50	0.00
1	0	Low	Relatively even distribution of substrate size. Boulders occur as result of railway bank armouring.	4.60	8.30	0.00
5	0	Medium	Boulders associated with bank armouring/channelization and occasional wier enhancement.	5.00	6.50	0.00
0	0	Low	More coarse substrates embedded in organic/silt/sand substrates.	5.00	8.00	0.00
0	0	Low	Coarse substrates completely embedded in organic material and mineral fines.	5.00	8.00	0.00
0	0	Low	High embeddedness of coarse substrates.	5.00	8.00	0.00
0	0	Low	High embeddedness of coarse substrates.	12.00	12.00	0.00
0	0	Medium		9.00	14.00	0.00
5	0			5.30	6.50	0.00
1	0	Medium	Gravels tend to be more embedded in fine substrates.	5.30	6.50	0.00
0	0	Low	Coarse substrates detected beneath fines.	6.50	6.50	0.00
1	0	Low		5.50	6.50	0.00
0	0	Low		6.50	8.00	0.00
0	0	Low	Clay/silt.	5.60	5.60	0.00
0	0	Low	Clay/silt.	5.60	5.60	0.00
1	0		Mix of very fine sand, silt, and clay substrates over segment length.	5.50	6.50	0.00
0	0		Mix of very fine sand, silt, and clay substrates over segment length.	3.50	6.00	0.00
0	0		Mix of very fine sand, silt, and clay substrates over segment length.	3.50	6.50	0.00
0	0	Low	Fine sand-silt-clay with organic deposition (detritus) more prevalent due to hydraulic condition.	5.00	6.50	0.00
0	0	Low	Substrate composition surmised where water depth permitted.	5.50	6.50	0.00
0	0			5.50	6.50	0.00
0	0	Low	Organic (detritus accumulation in pools)	3.80	5.60	0.00
1	0	Low	Organic substrates accumulated in pools. Boulders occur as a result of bank armouring.	4.50	6.00	0.00
0	0	Low		5.00	6.50	0.00
0	0	Low		5.00	6.50	0.00
1	0	Low	Gravels associated with instream enhancements.	3.70	5.00	0.00
0	0			5.00	6.20	0.00
0	0			4.00	6.50	0.00
0	0		Predominantly gravel.	4.00	5.50	0.00
60	0	High		3.00	3.00	0.00
0	0	Low	Small riffles composed of small gravels.	3.20	6.00	0.00
0	0			0.00	0.00	0.00
0	0			0.00	0.00	0.00
0	0			0.00	0.00	0.00
0	0			0.00	0.00	0.00
0	0	Low	Small ~1-inch gravel.	1.60	2.20	0.00
0	0	Low		1.80	5.60	0.00
1	0	Low		3.00	6.10	0.00
0	0	Medium		1.40	3.00	0.00
0	0	Medium		0.80	4.80	0.00
0	0	High	Concrete bottom with accumulation of fine sediments and organic debris below storm drains.	3.20	3.20	0.00
80	0	High		3.00	6.00	0.00
0	0	Medium	Sand and gravel covered with organic deposition.	2.50	6.00	0.00
0	0	Medium	Predominant gravels over shallow riffles.	3.50	4.00	0.00
0	0	Medium		4.00	9.00	0.00
25	0	High		5.00	7.00	0.00
0	0	Low		1.50	4.50	0.00
0	0	Low		0.00	4.00	0.00
0	0	Low		0.00	4.00	0.00
0	0	Low		0.00	4.00	0.00
0	0	Low		0.00	4.00	0.00
5	0	Low		0.00	7.00	0.00
20	0	Medium		3.50	7.90	0.00
20	0	Medium		3.50	7.90	0.00
20	0	Medium		3.50	7.90	0.00
20	0	Medium		3.50	7.90	0.00
0	0			0.00	1.60	0.00

WIDTH_RFP	DEPTH_W	DEPTH_BF	DEPTH_FP	COMT_CHAN	TOTAL_COVE	B
0.00	0.50	1.00	0.00	Accumulation of sediments along channel margins colonized by reed canary grass.	10	0
0.00	0.40	1.00	0.00	Canary grass colonizing on sediments accumulated along retaining walls.	10	0
0.00	0.40	0.75	0.00		15	1
0.00	0.40	0.75	0.00		5	1
0.00	0.20	0.75	0.00		10	0
0.00	0.35	0.75	0.00		20	0
0.00	0.30	0.75	0.00		15	0
0.00	0.40	1.00	0.00		25	25
0.00	0.30	0.75	0.00		40	25
0.00	0.35	0.75	0.00		15	5
0.00	0.20	0.90	0.00		10	10
0.00	0.28	0.75	0.00		15	15
0.00	0.25	0.75	0.00		50	15
0.00	0.20	0.75	0.00		20	45
0.00	0.40	0.80	0.00		40	1
0.00	0.25	0.70	0.00		20	0
0.00	0.20	0.65	0.00		10	0
0.00	0.28	0.65	0.00		15	15
0.00	0.20	0.65	0.00		10	0
0.00	1.60	1.00	0.00	Beaver dam has caused creek to flood into floodplain area.	80	0
0.00	0.65	0.65	0.00	Section below beaver dam is dw=25cm;db=65cm	90	1
0.00	0.21	0.60	0.00		10	5
0.00	0.20	0.60	0.00		10	0
0.00	1.20	0.75	0.00	Beaver activity causing flooding over banks into natural floodplain forest associations.	90	0
0.00	0.45	0.65	0.00	Occasional flooding over stream banks due to beaver activity (damming).	30	5
0.00	0.30	0.65	0.00		35	20
0.00	1.00	0.90	0.00	Flooding over stream banks into floodplain hence wetted width exceeding bankfull width.	90	5
0.00	0.22	0.75	0.00		65	1
0.00	0.17	0.65	0.00		10	5
0.00	0.45	1.00	0.00		60	0
0.00	0.50	1.00	0.00	Deep slough. Stream channel still well defined but with lateral riverine wetland communities.	75	0
0.00	0.50	1.00	0.00	Deep run with occasional steps over instream woody debris.	60	0
0.00	0.35	0.45	0.00		25	0
0.00	0.13	0.45	0.00	Wide floodplain. Lateral bars on inside bends with erosion occurring on opposing (outside) bends.	10	5
0.00	0.15	0.65	0.00		15	0
0.00	0.15	0.65	0.00	Similar channel character as Segment 35 with different riparian quality.	17	0
0.00	1.00	1.00	0.00		90	0
0.00	0.35	0.75	0.00		15	5
0.00	0.50	1.10	0.00	Channelized with remnant dam at bottom of segment.	30	0
0.00	0.40	1.40	0.00	Deep-cut meander with bank erosion occurring on both banks over entire segment length.	30	0
0.00	0.55	1.30	0.00	Both banks undercutting/eroding.	15	0
0.00	0.36	1.20	0.00		20	1
0.00	0.60	1.50	0.00	Predominantly slow-moving run (slough) with just 1 small woody debris jam and low plunge.	8	0
0.00	0.27	1.00	0.00		5	0
0.00	1.00	1.50	0.00	Deep pool nearly throughout segment except at very bottom just below bridge before first beaver dam.	85	1
0.00	1.30	1.60	0.00	Deep-cut channel through fine substrates. Beaver dams flooding to bankfull depths.	95	1
0.00	0.40	1.00	0.00	Abundant deep water sections on stream bends.	75	0
0.00	0.40	1.30	0.00		15	0
0.00	0.59	1.40	0.00		60	1
0.00	0.26	0.95	0.00		5	0
0.00	0.50	1.30	0.00	Stream channel measurements do not include riverine wetland complex. See top of bank line.	80	0
0.00	0.38	1.20	0.00		20	0
0.00	0.20	0.85	0.00		10	0
0.00	0.17	0.80	0.00		25	0
0.00	0.10	0.65	0.00		3	0
0.00	0.25	0.70	0.00		5	100
0.00	0.30	1.00	0.00		30	0
0.00	0.00	0.00	0.00		0	0
0.00	0.00	0.00	0.00		0	0
0.00	0.00	0.00	0.00		0	0
0.00	0.00	0.00	0.00		0	0
0.00	0.20	0.60	0.00	Small floodplain area confined by diking ~8-m wide.	30	0
0.00	0.15	0.60	0.00		15	0
0.00	0.18	0.60	0.00	Narrower wetted channel at bottom of segment.	30	0
0.00	0.11	0.60	0.00	Channel width to top of bank = 9m.	75	0
0.00	0.35	0.50	0.00	Channel width to top of bank = 10-m.	75	0
0.00	0.50		0.00		0	0
0.00	0.11	0.70	0.00	Channel depth=3-m; Channel width to top of bank=20-m.	15	95
0.00	0.37	0.80	0.00	Channel depth=2.5-m;channel width to top of bank=11-m	10	0
0.00	0.06	0.50	0.00	Channel depth=1.5m;channel width to top of bank=8m	5	0
0.00	0.05	0.50	0.00	Channel depth=1.5; channel width to top of bank=14m	8	25
0.00	0.05	0.55	0.00	Channel depth=3m;channel width to top of bank=16m	10	50
0.00	0.00	0.00	0.00	down-cutting throughout segment	30	0
0.00	0.00	0.00	0.00		60	0
0.00	0.00	0.00	0.00		60	0
0.00	0.00	0.00	0.00		60	0
0.00	0.00	0.00	0.00		60	0
0.00	0.00	0.00	0.00		40	0
0.00	0.00	0.00	0.00		20	0
0.00	0.00	0.00	0.00		40	10
0.00	0.00	0.00	0.00		40	10
0.00	0.00	0.00	0.00		40	10
0.00	0.00	0.00	0.00		0	0

DP	IV	LWD	OV	SWD	UC	LWD_COUNT	SPANLOG_CO	DP_COUNT	COMT_COV
50	0	0	50	0	0	0	0	0	Reed canary grass providing over stream vegetation. Lack of structural complexity.
35	0	0	65	0	0	0	0	1	Poor instream cover with a lack of structural complexity.
74	0	0	0	25	0	0	1	3	
74	0	0	0	25	0	0	0	3	
60	0	0	0	0	40	0	0	3	
40	0	0	30	30	0	0	0	0	
40	0	0	30	30	0	0	0	0	
75	0	0	0	0	0	0	0	0	
65	0	0	0	0	10	0	0	0	Majority of instream cover associated with enhancements.
70	0	5	20	0	0	0	0	0	
90	0	0	0	0	0	0	0	0	Low instream cover despite abundant spawning habitat.
65	0	0	15	0	5	0	0	0	
70	0	0	10	0	5	0	0	0	
40	0	0	10	0	5	0	0	0	Instream boulder cover from enhancements as well as bank armouring and channelization.
49	0	5	30	5	10	0	0	0	
65	0	5	15	5	10	0	0	0	
65	0	5	15	5	10	0	0	0	
80	0	1	2	2	0	0	0	2	
55	0	5	10	25	5	0	0	2	
90	0	8	1	1	0	0	0	0	Entire segment with wetted depth greater than 1-m.
64	0	10	15	10	0	0	0	0	Low instream cover (<5%) in short section below beaver dam. Very high cover above dam.
40	0	35	5	10	5	3	4	4	
45	0	35	5	10	5	2	2	2	
45	0	35	1	14	5	6	18	0	
30	0	20	15	20	10	0	2	3	
80	0	0	0	0	0	0	0	1	
70	0	15	0	5	5	0	0	0	
15	0	49	15	15	5	0	0	0	
20	0	40	15	15	5	0	0	0	
75	0	10	5	0	10	6	3	4	Much of the deep pool cover is associated with beaver ponds.
80	0	5	5	5	5	8	7	4	Majority of deep pool cover associated with beaver activity.
80	0	5	5	5	5	5	3	4	
50	0	25	0	25	0	3	1	1	
85	0	0	5	0	5	0	0	0	
20	0	50	15	10	5	5	2	1	Shallow pools (<0.8-m) occur but were not marked.
15	0	40	20	20	5	3	2	1	
70	0	5	15	5	5	0	0	1	Entire segment is deep slough.
55	0	5	5	5	25	0	0	1	
100	0	0	0	0	0	0	0	1	Moderately deep slough.
20	0	75	0	5	0				Clay/silt actively scoured away adjacent instream woody debris creating associated deep pool cover.
30	10	0	40	20	0				
65	0	9	10	15	0	0	0	0	
85	0	0	5	10	0	0	0	0	
85	0	0	5	10	0	0	0	0	
69	0	20	5	5	0	0	0	0	
69	0	20	5	5	0	0	0	0	
70	0	20	5	5	0	4	2	0	Majority of segment is equal to or greater than 1-m deep.
40	0	0	50	10	0	0	0	0	Shrubs and grasses occur along majority of stream bank providing much of over stream cover.
59	0		30	10	0	0	0	0	
50	0	5	10	35	0	0	0	0	
60	0	5	15	20	0	0	0	0	
10	0	10	25	50	5	0	0	0	Majority of cover attributed to enhancements.
70	0	0	25	5	0	0	0	0	Shallow pool cover.
0	0	0	50	50	0	0	0	0	
40	0	0	0	20	40	0	0	0	Very low instream cover.
0	0	0	0	0	0	0	0	0	
20	9	1	65	0	5	0	0	0	Over stream cover provided by grasses and sedges with occasional low shrubs.
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
5	20	1	74	0	0	0	0	0	Instream and over stream cover prevalent in this narrow-channel.
0	0	0	75	25	0	0	0	0	Reduced over stream cover provided by grasses.
30	30	0	30	10	0	0	0	0	Grass cover over narrow channel.
0	35	0	40	0	25	0	0	0	Abundant instream cover, despite 0% canopy, consisting of undercut banks and over stream vegetation.
0	35	0	40	0	25	0	0	0	Abundant instream cover, despite 0% canopy, consisting of undercut banks and over stream vegetation.
0	0	0	0	0	0	0	0	0	
2	0	0	3	0	0	0	0	0	Juvenile cover among boulder (rip rap) substrates.
80	10	0	5	0	5	0	0	0	Marginal cover provided by deeper sections of the slough.
0	80	0	10	0	10	0	0	0	
0	25	0	25	0	25	0	0	0	Marginal instream cover provided by rip rap, undercut banks, and instream and over stream vegetation
10	40	0	0	0	0	0	0	0	Juvenile cover among boulder (rip rap) substrates.
0	0	30	10	10	50	0	0	0	
20	0	40	10	10	20	0	0	0	
20	0	40	10	10	20	0	0	0	
20	0	40	10	10	20	0	0	0	
20	0	40	10	10	20	0	0	0	
30	0	40	10	10	10	0	0	0	
20	20	20	20	20	0	0	0	0	
30	0	20	30	10	0	0	0	0	
30	0	20	30	10	0	0	0	0	
30	0	20	30	10	0	0	0	0	
0	0	0	0	0	0	0	0	0	

L_RIPCLASS	L_QUALIFIE	L_BANDWIDT	L_BANKSLOP	L_STAGE	L_SHRUBS	L_SNAG	L_VETERAN_	L_BKSTBILI	L_BANK_MAT	L_TOP_BANK
Broadleaf forest	Urban_Residential	0.00	0	mature forest	<5%	No	<5	High	Concrete	No
Broadleaf forest	Urban_Residential	0.00	0	mature forest	<5%	No	<5	High	Concrete	No
Broadleaf forest	Urban_Residential	0.00	0	mature forest	<5%	No	<5	High	Fines	No
Broadleaf forest	Urban_Residential	0.00	0	mature forest	<5%	No	<5	High	Fines	No
Broadleaf forest	Urban_Residential	0.00	0	mature forest	<5%	No	<5	High	Fines	No
Broadleaf forest	Urban_Residential	0.00	0	tall shrubs 2-10m	5-33%	No	No	Medium	Concrete	No
Broadleaf forest	Urban_Residential	0.00	0	young forest	5-33%	No	<5	Medium	Concrete	No
Broadleaf forest	Urban_Residential	0.00	0	young forest	5-33%	No	No	Medium	Concrete	No
Broadleaf forest	Disturbed	0.00	0	mature forest	<5%	No	>=5	Medium	Fines	No
Broadleaf forest	Urban_Residential	0.00	0	young forest	34-66%	No	No	Medium	Fines	No
Herbs/grasses	Urban_Residential	0.00	0	young forest	<5%	No	No	High	Concrete	No
Mixed forest	Urban_Residential	0.00	0	mature forest	5-33%	No	No	High	Concrete	No
Broadleaf forest	Urban_Residential	0.00	0	mature forest	5-33%	No	No	High	Other	No
Mixed forest	Recreation	0.00	0	young forest	<5%	No	No	High	Other	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	>=5	No	Medium	Fines	No
Herbs/grasses	Urban_Residential	0.00	0	low shrubs <2m	5-33%	No	No	Low	Fines	No
Broadleaf forest	Urban_Residential	0.00	0	sapling >10m	67-100%	No	No	Medium	Fines	No
High Impervious	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	No	No	Medium	Fines	No
Broadleaf forest	Natural	0.00	0	young forest	67-100%	>=5	No	Medium	Fines	No
Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
Broadleaf forest	Natural	0.00	0	mature forest	34-66%	<5	No	High	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	<5	No	Medium	Fines	No
Broadleaf forest	Natural	0.00	0	mature forest	67-100%	<5	No	Medium	Fines	No
Herbs/grasses	Disturbed	0.00	0	tall shrubs 2-10m	5-33%	No	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	34-66%	No	No	Medium	Fines	No
Herbs/grasses	Disturbed	0.00	0	tall shrubs 2-10m	5-33%	No	No	High	Fines	No
Broadleaf forest	Disturbed	0.00	0	mature forest	67-100%	No	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	34-66%	<5	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	tall shrubs 2-10m	34-66%	No	No	Medium	Fines	No
Disturbed wetland	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No	High	Fines	No
Broadleaf forest	Disturbed	0.00	0	tall shrubs 2-10m	5-33%	No	No	Medium	Fines	No
Disturbed wetland	Disturbed	0.00	0	tall shrubs 2-10m	5-33%	No	No	Medium	Fines	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	Low	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	<5	<5	Medium	Fines	No
Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	No	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	No	No	Medium	Fines	No
Mixed forest	Disturbed	0.00	0	young forest	5-33%	No	No	Medium	Fines	No
Broadleaf forest	Natural	0.00	0	mature forest	67-100%	>=5	>=5	Low	Fines	No
Shrubs	Disturbed	0.00	0	low shrubs <2m	67-100%	No	No	Low	Fines	No
Broadleaf forest	Disturbed	0.00	35	young forest	34-66%	No	No	Low	Fines	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	34-66%	No	No	Low	Fines	No
Shrubs	Disturbed	0.00	0	low shrubs <2m	34-66%	No	No	Low	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	No	No	Low	Fines	No
Broadleaf forest	Disturbed	0.00	0	mature forest	67-100%	<5	<5	Low	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	<5	No	Medium	Fines	No
Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	<5	No	Low	Fines	No
Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No	Low	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	34-66%	No	No	Medium	Fines	No
Natural wetland	Disturbed	0.00	0	young forest	67-100%	<5	No	High	Fines	No
Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
Broadleaf forest	Disturbed	0.00	0	sapling >10m	34-66%	No	No	Medium	Fines	No
Shrubs	Disturbed	0.00	0	tall shrubs 2-10m	67-100%	No	No	Low	Fines	No
Broadleaf forest	Disturbed	0.00	0	young forest	67-100%	>=5	No	Medium	Fines	No
Herbs/grasses	Urban_Residential	0.00	0	low shrubs <2m	<5%	No	No	High	Concrete	Yes
Herbs/grasses	Recreation	0.00	0	tall shrubs 2-10m	5-33%	No	No	Medium	Fines	No
		0.00	0							
		0.00	0							
		0.00	0							
		0.00	0							
Herbs/grasses	Recreation	0.00	0	low shrubs <2m	5-33%	No	No	Medium	Fines	No
Herbs/grasses	Recreation	0.00	0	low shrubs <2m	<5%	No	No	Medium	Fines	No
Herbs/grasses	Agriculture	0.00	0	low shrubs <2m	<5%	No	No	Low	Fines	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No	High	Fines	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	<5%	No	No	High	Fines	No
High Impervious		0.00	0							
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	High	RipRap	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	High	Fines	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	Medium	Fines	No
Herbs/grasses	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	Medium	Fines	No
Rock	Disturbed	0.00	0	low shrubs <2m	5-33%	No	No	High	RipRap	No
Broadleaf forest	Natural	0.00	0	mature forest	5-33%	<5	<5	Medium	Fines	No
Mixed forest	Natural	0.00	0	mature forest	5-33%		<5	Medium	Gravel	No
Mixed forest	Natural	0.00	0	mature forest	5-33%		<5	Medium	Gravel	No
Mixed forest	Natural	0.00	0	mature forest	5-33%		<5	Medium	Gravel	No
Mixed forest	Natural	0.00	0	mature forest	5-33%		<5	Medium	Gravel	No
Mixed forest	Natural	0.00	0	mature forest	34-66%		<5	High	Fines	
Herbs/grasses	Disturbed	0.00	3	Herbs/grasses	<5%	No	No	Medium	Gravel	
Broadleaf forest	Disturbed	0.00	3	young forest	<5%	No	No	Medium	Gravel	
Broadleaf forest	Disturbed	0.00	3	young forest	<5%	No	No	Medium	Gravel	
Broadleaf forest	Disturbed	0.00	3	young forest	<5%	No	No	Medium	Gravel	
High Impervious		0.00	0							

L_COMMENT	R_RIPCLASS	R_QUALIFIE	R_BANDWIDT	R_BANKSLOP
Predominantly grass/turf understory beneath open canopy of mature willows and cottonwood.	Herbs/grasses	Urban_Residential	0.00	0
Predominantly grass/turf understory beneath open canopy of mature willows and cottonwood.	High Impervious	Urban_Residential	0.00	0
	High Impervious	Urban_Residential	0.00	0
	High Impervious	Urban_Residential	0.00	0
	Broadleaf forest	Urban_Residential	0.00	0
Retaining wall along entire length.	Broadleaf forest	Urban_Residential	0.00	0
	Broadleaf forest	Urban_Residential	0.00	0
Highly urbanized.	Broadleaf forest	Urban_Residential	0.00	0
Veteran willows. Understory cleared with occasional erosion due to lack of riparian vegetation.	Mixed forest	Urban_Residential	0.00	0
Intermittent retaining walls and stoneworks and road encroachment.	Broadleaf forest	Urban_Residential	0.00	0
Turf grass (lawn) to top of bank/retaining wall.	Herbs/grasses	Urban_Residential	0.00	0
Channelized with stonework and retaining walls.	Broadleaf forest	Urban_Residential	0.00	0
High bank stability from willow roots.	Broadleaf forest	Urban_Residential	0.00	0
Left bank composed of mix of stonework, concrete, and fines.	Broadleaf forest	Recreation	0.00	0
Intermittent natural and disturbed sections.	Broadleaf forest	Disturbed	0.00	0
Predominantly open field with high bank instability/erosion due to lack of riparian vegetation.	Shrubs	Disturbed	0.00	0
	Broadleaf forest	Urban_Residential	0.00	0
Narrow, predominantly open grass-forb ground cover with parking lot encroachment to top of bank.	Herbs/grasses	Disturbed	0.00	0
Intermittent encroachment to top of bank.	Broadleaf forest	Disturbed	0.00	0
Cottonwood riparian community not recently disturbed. Instability may occur below wetted level.	Broadleaf forest	Disturbed	0.00	0
Tall shrub (willow) riverine swamp/floodplain association confined by railway.	Shrubs	Natural	0.00	45
Cottonwood forest not recently disturbed except for large storm drain near the top of the segment.	Broadleaf forest	Natural	0.00	0
Encroachment to top of bank and placement of structural fill (commercial development).	Broadleaf forest	Natural	0.00	0
Short section where encroachment occurs at bottom of segment. Considerable beaver disturbance.	Broadleaf forest	Natural	0.00	0
Scattered distribution of willow and with various exotic tree and shrub species (former golf course)	Herbs/grasses	Unknown	0.00	0
Unstable bank armoured/channelized with rip rap.	Broadleaf forest	Disturbed	0.00	0
Log and rock revetments. Predominantly grass and low shrubs with occasional mature willow.	Herbs/grasses	Disturbed	0.00	0
Intermittent industrial encroachment. Predominantly mature willow canopy.	Broadleaf forest	Disturbed	0.00	0
Severity of erosion reduced by regeneration of cottonwood and subsequent root development.	Broadleaf forest	Disturbed	0.00	0
Modified floodplain association, predominant grass-forb and high weed invasion ratio.	Herbs/grasses	Disturbed	0.00	0
Riverine swamp-floodplain association with rich assemblage of invasive plants.	Broadleaf forest	Disturbed	0.00	0
Left bank fill/diking.	Herbs/grasses	Disturbed	0.00	0
Predominantly reed canary grass and cattail marsh occasional mature willow along stream bank.	Herbs/grasses	Disturbed	0.00	0
	Herbs/grasses	Disturbed	0.00	0
Occasional mature and veteran cottonwoods.	Broadleaf forest	Disturbed	0.00	0
Predominantly hawthorn with occasional cottonwood sapling. Bank erosion intermittent.	Shrubs	Disturbed	0.00	0
Tall shrubs are more prevalent at bottom of segment; Mature cottonwood predominate further upstream.	Shrubs	Natural	0.00	0
	Broadleaf forest	Disturbed	0.00	0
Mix of native and exotic vegetation along left bank berm. Erosion along entire segment length.	Mixed forest	Disturbed	0.00	0
Mature cottonwood riparian association. Erosion along entire segment length.	Broadleaf forest	Natural	0.00	0
	Shrubs	Disturbed	0.00	0
Channelizing/backfill (concrete debris/garbage). Willow sp.; Siberian elm.	Broadleaf forest	Disturbed	0.00	0
Channelized with predominantly grass-herb groundcover and moderate shrub development.	Shrubs	Disturbed	0.00	0
Channelized (diked), open, low shrub/grass-herb ground cover with low bank stability.	Broadleaf forest	Disturbed	0.00	0
Open forest due to beaver activity; Occasional mature and veteran cottonwood; erosion prevalent.	Broadleaf forest	Disturbed	0.00	0
Open forest canopy due to beaver activity and encroachment.	Broadleaf forest	Disturbed	0.00	0
Industrial encroachment to top of bank on outside stream bends, where erosion also prevalent.	Broadleaf forest	Disturbed	0.00	0
Diked. Predominantly shrub-grass-herb cover with occasional young cottonwood and snags.	Shrubs	Disturbed	0.00	0
Predominantly shrub-grass-herb with occasional cottonwood sapling and mature Pacific willow.	Shrubs	Disturbed	0.00	0
Cottonwood regeneration.	Herbs/grasses	Disturbed	0.00	0
Riverine wetland complex and floodplain association with encroachment along outer margins.	Natural wetland	Disturbed	0.00	0
Grass-herb-shrub. Woody debris and rock revetments occur at intervals along entire length.	Shrubs	Disturbed	0.00	0
Open canopy with well developed shrubs and grass-herb ground cover. Intermittent bank erosion.	Broadleaf forest	Disturbed	0.00	0
Channelized with prominent erosion along majority of length.	Broadleaf forest	Disturbed	0.00	0
Channelized with cottonwood riparian association regenerating.	Broadleaf forest	Disturbed	0.00	0
	Herbs/grasses	Urban_Residential	0.00	0
Areas of instability and erosion due primarily to diking and lack of riparian vegetation.	Herbs/grasses	Recreation	0.00	0
			0.00	0
			0.00	0
			0.00	0
			0.00	0
Occasional tall shrubs and saplings occur within floodplain area.	Herbs/grasses	Recreation	0.00	0
	Broadleaf forest	Natural	0.00	0
	Herbs/grasses	Disturbed	0.00	0
	Herbs/grasses	Disturbed	0.00	0
	Herbs/grasses	Disturbed	0.00	0
	High Impervious		0.00	0
Red-osier dogwood; willow sp. regeneration and bulrush in channel.	Herbs/grasses	Disturbed	0.00	0
	Herbs/grasses	Disturbed	0.00	0
Continual maintenance of erosion with rip rap placement.	Herbs/grasses	Disturbed	0.00	0
Mix of eroding fines and rip rap armouring.	Herbs/grasses	Disturbed	0.00	0
	Rock	Disturbed	0.00	0
	Broadleaf forest	Natural	0.00	0
	Mixed forest	Natural	0.00	0
	Mixed forest	Natural	0.00	0
	Mixed forest	Natural	0.00	0
	Mixed forest	Natural	0.00	0
	Mixed forest	Natural	0.00	0
	Herbs\grasses	Disturbed	0.00	2
Riparian vegetation sparse but re-establishing	Broadleaf forest	Disturbed	0.00	2
Riparian vegetation sparse but re-establishing	Broadleaf forest	Disturbed	0.00	2
Riparian vegetation sparse but re-establishing	Broadleaf forest	Disturbed	0.00	2
	High Impervious		0.00	0

R_STAGE	R_SHRUBS	R_SNAG	R_VETERAN_	R_BKSTBILI	R_BANK_MAT	R_TOP_BANK
young forest	<5%	No	No	High	Concrete	No
young forest	<5%	No	No	High	Concrete	No
young forest	<5%	No	No	High	Concrete	No
young forest	<5%	<5	No	High	Concrete	No
mature forest	<5%	No	No	High	Concrete	No
young forest	5-33%	No	No	Medium	Concrete	No
young forest	5-33%	No	<5	Medium	Concrete	No
young forest	5-33%	No	No	Medium	Concrete	No
mature forest	5-33%	No	>=5	High	Fines	No
sapling >10m	34-66%	No	No	Medium	Fines	No
young forest	<5%	No	No	High	Concrete	Yes
mature forest	<5%	No	No	High	Concrete	No
mature forest	<5%	No	No	High	Other	No
mature forest	<5%	No	No	High	Other	No
young forest	67-100%	>=5	<5	Medium	Fines	No
tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
young forest	67-100%	No	No	Medium	Fines	No
low shrubs <2m	5-33%	No	No	Medium	Fines	No
young forest	67-100%	No	No	Medium	Fines	No
young forest	67-100%	>=5	No	Medium	Fines	No
tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
mature forest	67-100%	<5	No	Medium	Fines	No
young forest	67-100%	<5	No	Medium	Fines	No
young forest	67-100%	<5	No	Medium	Fines	No
tall shrubs 2-10m	5-33%	No	No	Medium	Fines	No
young forest	34-66%	No	No	Medium	Fines	No
young forest	67-100%	No	No	Medium	Fines	No
mature forest	67-100%	No	No	Medium	Fines	No
young forest	67-100%	<5	No	Medium	Fines	No
low shrubs <2m	34-66%	No	No	Medium	Fines	No
tall shrubs 2-10m	34-66%	No	No	Medium	Fines	No
low shrubs <2m	34-66%	No	No	Medium	Fines	No
low shrubs <2m	<5%	No	No	Medium	Fines	No
low shrubs <2m	<5%	No	No	Low	Fines	No
young forest	67-100%	<5	<5	Medium	Fines	No
tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
sapling >10m	67-100%	No	No	Medium	Fines	No
young forest	67-100%	No	No	Medium	Fines	No
young forest	5-33%	No	No	Medium	Fines	No
mature forest	67-100%	>=5	>=5	Low	Fines	No
low shrubs <2m	67-100%	No	No	Low	Fines	No
young forest	34-66%	No	No	Medium	Fines	No
low shrubs <2m	34-66%	No	No	Medium	Fines	No
mature forest	34-66%	No	No	High	Fines	No
young forest	67-100%	No	No	Low	Fines	No
mature forest	67-100%	No	No	Low	Fines	No
mature forest	67-100%	<5	No	Medium	Fines	No
tall shrubs 2-10m	67-100%	<5	No	Medium	Fines	No
tall shrubs 2-10m	67-100%	<5	No	Medium	Fines	No
low shrubs <2m	<5%	No	No	Low	Fines	No
young forest	67-100%	<5	No	High	Fines	No
tall shrubs 2-10m	67-100%	No	No	Medium	Fines	No
young forest	34-66%	No	No	Medium	Fines	No
young forest	34-66%	No	No	Medium	Fines	No
mature forest	34-66%	>=5	<5	Medium	Fines	No
low shrubs <2m	<5%	No	No	High	Concrete	Yes
tall shrubs 2-10m	5-33%	No	No	Medium	Fines	No
low shrubs <2m	5-33%	No	No	Medium	Fines	No
mature forest	67-100%	<5	<5	High	Fines	No
low shrubs <2m	<5%	No	No	Low	Fines	No
low shrubs <2m	<5%	No	No	High	Fines	No
low shrubs <2m	<5%	No	No	High	Fines	No
low shrubs <2m	5-33%	No	No	High	RipRap	No
low shrubs <2m	34-66%	No	No	High	Fines	No
low shrubs <2m	5-33%	No	No	Medium	Fines	No
low shrubs <2m	5-33%	No	No	Medium	Fines	No
low shrubs <2m	5-33%	No	No	High	RipRap	No
mature forest	5-33%	<5	<5	Medium	Fines	No
mature forest	5-33%	No	<5	Medium	Gravel	No
mature forest	5-33%	No	<5	Medium	Gravel	No
mature forest	5-33%	No	<5	Medium	Gravel	No
mature forest	5-33%	No	<5	Medium	Gravel	No
mature forest	34-66%	<5	<5	High	Gravel	No
		No	No	Medium	Gravel	
young forest	<5%	No	No	Medium	Gravel	
young forest	<5%	No	No	Medium	Gravel	
young forest	<5%	No	No	Medium	Gravel	

R_COMMENT
Highway 97 adjacent.
Hwy 97 (Harvey Ave.), parking lot, and building adjacent to top of bank.
Parking lot and commercial buildings to top of bank.
Parking lot and multifamily buildings. Trees along top of bank.
Retaining wall along entire length.
Highly urbanized.
Primarily un-channelized with small portion consisting of old stone-concrete retaining wall.
Intermittent retaining walls.
Turf grass (lawn) to top of bank/retaining wall.
Channelized with stonework and retaining walls.
Narrow riparian band with highway and parking lot occurring adjacent to top of bank.
Left bank composed of mix of stonework, concrete, and fines.
Intermittent natural and disturbed sections.
Industrial encroachment and disturbance.
Narrow riparian band, not recently disturbed, with retaining wall and multi-family development.
Parking lot setback from open graminoid riparian area with occasional horticultural trees.
Intermittent encroachment to top of bank.
Industrial yard setback from right bank riparian area.
Tall shrub (willow) riverine swamp/floodplain association confined by steep slope and silt bluff.
Willow more prevalent. Previous rural disturbance and invasive plants occur.
Predominantly natural riparian community with single point of access for horses.
High beaver disturbance. Gas pipeline runs at a tangent to outside creek bend.
Scattered distribution of willow and with various exotic tree and shrub species (former golf course)
Channelized with rock.
Occasional railway encroachment. Predominantly grass and low shrubs with occasional mature willow.
Intermittent railway encroachment/willow riparian/floodplain association.
Railway encroachment/channelization.
Modified floodplain association, predominant grass-forb and high weed invasion ratio.
Narrow flood association/swamp intermittent bank erosion. Rich assemblage of invasive plants.
Occasional erosion.
Reduced wetland character.
Occasional mature and veteran cottonwoods.
Predominantly hawthorn with occasional cottonwood sapling. Intermittent bank erosion.
Hawthorn thicket adjacent stream giving way to aspen sapling and dense invasive plant understory.
Mix of native and exotic vegetation along left bank berm. Erosion along entire segment length.
Mature cottonwood riparian association. Erosion along entire segment length.
Narrow, disturbed riparian band with adjacent, open, low-lying industrial-use property.
Channelized with increased shrub development over well developed grass-herb cover.
Narrow band of mature willow along stream bank. Fibrous root mat forming stable stream bank.
Open forest due to beaver activity; Occasional mature and veteran cottonwood; erosion prevalent.
Open mature cottonwood canopy with previous anthropogenic and current beaver disturbance.
Industrial encroachment to top of bank on outside stream bends, where erosion also prevalent.
Diked. Predominantly shrubs-grass-herb cover with occasional young cottonwood and snags.
Predominantly shrub-grass-herb with occasional cottonwood sapling and mature Pacific willow.
Erosion along entire bank.
Riverine wetland complex and floodplain association with highway encroachment along out limits.
Grass-herb-shrub. Woody debris and rock revetments occur at intervals along entire length.
Open canopy with well developed shrubs and grass-herb ground cover. Intermittent bank erosion.
Channelized by Bulman Road; Occasional erosion with severity reduced by cottonwood root development.
Occasional veteran cottonwoods. Large berm along right bank has naturalized.
Areas of instability and erosion due primarily to diking and lack of riparian vegetation.
Occasional tall shrubs and saplings occur within floodplain area.
Cottonwood riparian association.
Partial channelization during railway construction.
Red-osier dogwood; willow sp. regeneration and bulrush in channel.
Continual maintenance of erosion with rip rap placement.
Mix of eroding fines and rip rap armouring.
Riparian vegetation all stages but patchy
Riparian vegetation all stages but patchy
Riparian vegetation all stages but patchy

CMMNTFLORA
Weeping willow;cottonwood;reed canary grass;various exotic (horticultural) trees.
Weeping willow;cottonwood;reed canary grass;various exotic (horticultural) trees.
Weeping willow;cottonwood;various exotic (horticultural) trees.
Willow sp., cottonwood, various exotic species.
Willow sp., cottonwood, various exotic species.
Cottonwood;willow sp.;spruce and various other exotic horticultural species.
Cottonwood;willow sp.; and various horticultural species.
Cottonwood;willow sp.; and various exotic horticultural species.
Pacific willow; red maple; spruce sp; red-osier dogwood; reed canary grass.
Willow sp; red-osier dogwood; reed canary grass, and various horticultural species.
Grass;spruce sp.;pacific willow.
Pacific willow;spruce sp.;reed canary grass; red-osier dogwood;juniper.
Pacific willow; red-osier dogwood; burdock; Siberian elm;various invassive species.
Pacific willow; cottonwood; spruce sp.; pine sp.;red-osier dogwood; reed canary grass.
Cottonwood;willow sp.;red-osier dogwood;snowberry;rose sp.;hawthorn.
Willow sp.;red-osier dogwood;hawthorn;snowberry;reed canary grass.
Cottonwood;willow sp.;hawthorn;red-osier dogwood;snowberry.
Reed canary grass; pine sp.;rose sp.;hemp dogbane;nightshade.
Willow sp.;cottonwood;rose sp.;nighshade;snowberry.
Young to mature cottonwood riparian association. Oregon grape;red-osier dogwood;snowberry.
Pacific willow;red-osier dogwood;snowberry;Oregon grape;rose sp.
Cottonwood;pacific willow;alder;red-osier dogwood;snowberry;Oregon grape;various invassive plants.
Cottonwood;willow sp.;red-osier dogwood;snowberry.
Cottonwood;willow sp.;red-osier dogwood;common snowberry;rose sp.
Cottonwood;willow sp.;aldre;red-osier dogwood;snowberry;nettle; various invassive plants.
Cottonwood;willow sp.;red-osier dowgwood;snowberry;Oregon grape;rose sp.
Willow sp.;cottonwood;red-osier dogwood;rose sp.;reed canary grass;various invassive plants.
Willow sp.;cottonwood;red-osier dogwood;rose sp.;reed canary grass;various invassive plants.
Cottonwood;willow sp.;rose sp.;red-osier dogwood;snowberry.
Pacific willow;cottonwood;red-osier dogwood;canary grass;sow thistle; hemp nettle; burdock.
Pacific willow;Cottonwood;red-osier dogwood;canary grass;cattail;sow thistle;nettle;night shade.
Pacific willow;Cottonwood;red-osier dogwood;canary grass;cattail;sow thistle;nettle;night shade.
Reed canary grass;cattail;burdock;sedge sp.;willow sp.;hemp nettle.
Cottonwood;willow sp.;hawthorn;red-osier dogwood;snowberry;rose sp.;invassive plants (i.e. burdock)
Hawthorn;cottonwood;red-osier dogwood;alder;reed cnary grass.
Hawthorn; cottonwood;aspen;red-osier dogwood;alder;reed canary grass;burdock.
Cottonwood;hawthorn;snowberry;rose sp.;saskatoon.
Cottonwood;juniper;cedar;red-osier dogwood.
Cottonwood;red-osier dogwood;rose sp.;snowberry;saskatoon.
Rose sp.;hawthorn;red-osier dogwood;snowberry;reed canary grass.
Willow sp., cottonwood;exotic trees;invassive plants;red-osier dogwood;snowberry.
Willow sp.;red-osier dogwood;rose sp.;reed canary grass.
Willow sp.;snowberry;reed canary grass;rose sp.; various invassive plants.
Cottonwood;willow sp.;Chinese sumac;red-osier dogwood;snowberry;rose sp.;reed canary grass.
Cottonwood;willow sp.;snowberry;rose sp.;red-osier dogwood;reed canary grass.
Cottonwood;willow sp.;rose sp.;red-osier dogwood;reed canary grass; various invassive species.
Cottonwood;willow sp.;red-osier dogwood;burdock;reed canary grass;nettle;nightshade.
Cottowood;willow sp.;red-osier dogwood;snowberry;rose sp.;reed canary grass;burdock;nettle.
Reed canary grass;cottonwood;Siberian elm;willow sp.
Cottonwood;red-osier dogwood;snowberry;alder;reed canary grass.
Reed canary grass;willow sp.;alder;red-osier dogwood;hawthorn.
Cottonwood;willow sp.;alder;red-osier dogwood;reed canary grass.
Cottonwood;willow sp.;alder;hawthorn;red-osier dogwood;reed canary grass.
Cottonwood;horsetail sp.;red-osier dogwood;hawthorn;willow sp.
Mix of native and horticultural plants.
Cottonwood;willow sp.;cattail;reed canary grass;red-osier dogwood.
Cottonwood;willow sp.;cattail;reed canary grass;red-osier dogwood.
Cottonwood;willow sp.;cattail;reed canary grass;red-osier dogwood; snowberry;hawthorn;rose sp.
Spirea;red-osier dogwood;hawthorn;sedge;bulrush;reed canary grass;willow sp.
Reed canary grass;cattail;softstem bulrush;willow sp.; instream vegetation (pondweed sp.).
Cattail;reed canary grass;willow sp.;red-osier dogwood;instream vegetation (pondweed sp.).
Cattail; bulrush;willow sp. regeneration; reed-canary grass; ocean spray; red-osier dogwood.
Cattail; bulrush;willow sp. regeneration; reed-canary grass; ocean spray; red-osier dogwood.
Willow sp. regeneration; reed-canary grass; ocean spray; red-osier dogwood;pondweed.
Willow sp. regeneration; reed-canary grass; ocean spray; red-osier dogwood;pondweed.
Willow sp.;red-osier dogwood.

CMMNTFAUNA	IMPACT_RAT
Muskrat;Mallard duck.	Both_banks_high
Mallard duck.	Both_banks_high
	Both_banks_mod
	Both_banks_high
	Both_banks_mod
	Both_banks_high
	Both_banks_mod
	Both_banks_high
Great-horned owl; Mallard duck.	Both_banks_low
	Both_banks_mod
Mallard duck.	Both_banks_high
Mallard duck	Both_banks_high
Mallard duck; racoon	1_bank_mod
Mallard duck.	Both_banks_mod
Beaver; muskrat; Song sparrow; Mallard duck.	1_bank_low
Song sparrow.	Both_banks_mod
	1_bank_mod
Ferel rabbits.	Both_banks_mod
	Both_banks_low
Beaver;Black-capped chickadee.	1_bank_low
Beaver;Black-capped chickadee.	1_bank_mod
Black-capped chickadee;Mallard duck;Magpie.	1_bank_low
Common carp.	1_bank_mod
Beaver.	Nil
Beaver; Mallard duck.	Both_banks_low
	Both_banks_mod
Beaver.	Both_banks_low
Beaver; Red-tailed hawk.	Both_banks_low
Varied thrush.	Both_banks_mod
Beaver;muskrat;Black-capped Chickadee;American Goldfinch;California Quail;Ring-Neck Pheasant.	Both_banks_low
Beaver;Black-capped Chickadee;American Goldfinch;California Quial;Cooper's Hawk.	Both_banks_mod
Beaver;Dark-eyed Junco.	Both_banks_mod
	Both_banks_low
	Both_banks_mod
Red-tailed hawk;Mouring dove.	1_bank_low
Red-tailed hawk;Black-capped chickadee;Mourning dove;Magpie.	Both_banks_low
Beaver	1_bank_low
	Both_banks_low
	Both_banks_high
Great blue heron;American goldfinch.	Nil
	Both_banks_high
Muskrat;Mallard duck;Ring-neck pheasant;House wren;Black-capped chickadee.	Both_banks_low
Dark-eyed junco;Ring neck pheasant;House wren;American goldfinch;House sparrow;Song sparrow.	Both_banks_mod
Darked-eyed junco;Black-capped chickadee.	Both_banks_mod
Beaver;American goldfinch.	Both_banks_low
Beaver;Black-capped chackadee;American goldfinch;Great-horned owl.	1_bank_mod
	Both_banks_low
Dark-eyed junco;Mouring dove;Black-capped chickadee.	Both_banks_high
Beaver;Dark-eyed junco;Mourning dove.	Both_banks_mod
	Both_banks_mod
Beaver;Dark-eyed junco.	1_bank_low
Great blue heron;Belted kingfisher.	Both_banks_mod
Belted kingfisher;rainbow trout;American goldfinch.	Both_banks_low
	Both_banks_mod
Great blue heron.	Both_banks_low
Belted kingfisher.	Both_banks_high
Ring-neck pheasant;American dipper;Great blue heron.	Both_banks_low
American dipper;Red-tailed hawk;Dark-eyed junco.	Both_banks_low
	1_bank_mod
	Both_banks_high
Coyote.	Both_banks_high
Coyote	Both_banks_high
	Both_banks_high
Mallard duck;coyote;Dark-eyed junco;brook trout.	Both_banks_high
	Both_banks_high
Mallard duck;brook trout; trout (general).	Both_banks_high
	Both_banks_high
Mourning dove;Common snipe;brook trout.	Both_banks_high
	1_bank_low
	Nil
	Nil
	Nil
	Nil
	Nil
	Both_banks_high
	Both_banks_high
	Both_banks_mod
	Both_banks_mod
	Both_banks_high

LOI_COMMEN	OPPORTUNIT
	Low
	Low
Some bank restoration works.	Low
	Low
Intermittent retaining walls.	Moderate
	Low
Discontinuous channelization.	Low
	Low
Low urban disturbance/park land.	Moderate
	Moderate
However considerable efforts invested at enhancing instream habitat (spawning gravel).	Moderate
	Moderate
Majority of left bank not recently disturbed with exception of car wash at bottom of segment.	Low
	Moderate
Although narrow, both banks are relatively natural with intermittent disturbance on the left bank.	Low
High left bank impacts and low to moderate on the right (not being recently disturbed).	Very_high
	Low
Open riparian area. Left bank with higher impact rating due to parking lot encroachment.	High
Intermittent encroachment to top of bank with industrial/municipal use on both banks.	High
Small encroachment near bottom of segment (right bank) by and at top on left bank by railway.	Low
Railway encroachment and channelization.	Nil
Previous rural disturbance within right bank riparian community. Storm drain occurs on left bank.	Low
Intermittent encroachment to top of bank along left bank.	Low
Beaver management.	Low
Naturalizing. Gas pipeline adjacent to creek results in persistent riparian disturbance/removal.	Moderate
Channelized with streambanks beginning to naturalize. Large flood diversion (concrete structure).	Low
Naturalizing. Previous riparian modification/disturbance mitigated by numerous enhancements.	Moderate
Intermittent encroachment however much of riparian area not recently disturbed.	Moderate
Channelized, however naturalizing.	Moderate
Persistent encroachment on both banks. However natural dynamics still occur.	Very_high
Persistent encroachment and pollution on both banks but high intrinsic value of riparian communities	Very_high
Persistent encroachment, garbage, and suspect pollution source.	Very_high
Naturalizing with reduced streambank disturbance.	Very_high
Channel not confined with natural meander. Serious erosion problems due to lack of vegetation.	Very_high
Not recently disturbed but with occasional field encroachment to top of bank.	Low
Increased riparian modification on both banks with field encroachment more prevalent.	Moderate
Field encroachment and disturbance along portion of left bank.	Low
Evidence of channelization/armouring from old bridge crossings.	Low
Channelized with stream channel modified to resemble canal.	Moderate
Natural bank erosion.	Nil
Diked.	High
	High
	High
	Moderate
Encroachment generally more set back from creek with occasional encroachment to top of bank.	Low
Highway and commercial/industrial encroachment and disturbance.	Low
	Low
Channelized with industrial encroachment on both banks.	Moderate
	Moderate
High impact/modification along left bank and low modification along left bank.	Moderate
Disturbance on left bank at bottom of segment attributed to mitigation (bank armouring)	Nil
Channelized/ditched through field.	Moderate
Rural disturbance and partial road encroachment.	Low
Channelized on right bank by road and rural disturbance/channelization on right bank.	Moderate
Not recently disturbed but channelized.	Moderate
	Low
Golf course. Minimal bank armouring with side channels and natural meander.	Low
Golf course. Minimal bank armouring with side channels and natural meander.	Low
Mowed left bank devoid of shrubs.	Low
Open, grazed banks, over-steepened with sections of rip rap armouring.	Moderate
Ditched.	Low
Ditch. Intensive airport management.	Low
Extreme impact rating.	Nil
Channelized/ditch.	Nil
Channelized/ditch.	Nil
Channelized/ditch.	Nil
Channelized/ditch.	Nil
Rip rap channelized.	Nil
Field encroachment and disturbance along portion of left bank.	Nil
Natural floodplain/riparian association.	Nil
Natural floodplain/riparian association.	Nil
Natural floodplain/riparian association.	Nil
Natural floodplain/riparian association.	Nil
Natural floodplain/riparian association.	Nil
Intense use livestock impacts.	Moderate
Intense use livestock impacts.	Moderate
Intense use livestock impacts.	Moderate
Intense use livestock impacts.	Moderate
Culverted.	Nil

COMMENT	MAX_PDOP	CORR_TYPE	RCVR_TYPE	GPS_DATE	GPS_TIME
	4.8	Uncorrected	GeoXM	23/11/2005	08:12:03am
	5.9	Uncorrected	GeoXM	23/11/2005	09:07:56am
Instream structural complexity is lacking.	7.1	Uncorrected	GeoXM	23/11/2005	09:30:32am
Instream structural complexity is lacking.	4.9	Uncorrected	GeoXM	23/11/2005	10:39:34am
Lacking instream structural complexity.	6.6	Uncorrected	GeoXM	23/11/2005	11:34:34am
	3.7	Uncorrected	GeoXM	24/11/2005	10:00:53am
	5.8	Uncorrected	GeoXM	24/11/2005	10:10:55am
	4.8	Postprocessed Code	GeoXM	24/11/2005	01:11:57pm
Already considerable enhancements. Further stabilization/revetment works required on left bank.	7.7	Uncorrected	GeoXM	24/11/2005	01:32:32pm
More instream complexity and left bank stability work.	7.2	Uncorrected	GeoXM	25/11/2005	08:17:46am
Low instream habitat complexity/cover.	6.0	Postprocessed Code	GeoXM	25/11/2005	10:45:55am
Low instream cover and habitat complexity.	7.0	Uncorrected	GeoXM	25/11/2005	11:23:48am
Reclaim broad left bank riparian band.	7.9	Uncorrected	GeoXM	25/11/2005	12:36:35pm
	4.9	Postprocessed Code	GeoXM	25/11/2005	02:45:52pm
	3.7	Uncorrected	GeoXM	28/11/2005	09:55:09am
Stabilize banks and reclaim riparian area.	5.6	Uncorrected	GeoXM	28/11/2005	11:13:17am
Maintain as no disturbance.	6.2	Postprocessed Code	GeoXM	28/11/2005	12:00:43pm
More over stream and riparian cover would be beneficial.	7.4	Postprocessed Code	GeoXM	28/11/2005	12:37:16pm
Stabilize/mitigate unstable and eroding banks.	5.4	Uncorrected	GeoXM	28/11/2005	01:39:04pm
Manage beaver to prevent complete loss of cottonwood forest canopy.	5.1	Postprocessed Code	GeoXM	29/11/2005	08:36:04am
Unless railway were removed, minimal opportunity.	7.1	Postprocessed Code	GeoXM	29/11/2005	09:13:04am
Reclaim additional right bank cottonwood riparian association.	6.7	Postprocessed Code	GeoXM	29/11/2005	10:00:10am
	4.6	Postprocessed Code	GeoXM	29/11/2005	11:20:59am
	3.5	Postprocessed Code	GeoXM	29/11/2005	12:38:00pm
More canopy closure. Beaver management plan.	7.4	Postprocessed Code	GeoXM	29/11/2005	01:05:21pm
	4.6	Postprocessed Code	GeoXM	29/11/2005	03:18:54pm
More riparian cover. Maintain a beaver management plan in conjunction with riparian restoration.	5.1	Uncorrected	GeoXM	30/11/2005	08:28:06am
A large debris jam/fish barrier occurs. Partial removal of debris may benefit fish migrations.	5.2	Uncorrected	GeoXM	30/11/2005	10:59:47am
Reclaim broader left bank riparian area and re-slope banks where possible.	7.8	Uncorrected	GeoXM	30/11/2005	01:02:10pm
Restore broad-band wetland and floodplain associations.	4.0	Postprocessed Code	GeoXM	21/11/2005	10:20:27am
Site clean-up (contamination) and restore broad wetland and floodplain associations.	7.8	Uncorrected	GeoXM	21/11/2005	11:39:29am
Site clean-up (contamination) and restore broad wetland and floodplain associations.	7.8	Uncorrected	GeoXM	21/11/2005	01:28:48pm
Site clean-up (contamination) and restore broad wetland and floodplain associations.	4.1	Uncorrected	GeoXM	21/11/2005	02:57:00pm
Restore streambanks (stability) and riparian communities.	4.3	Postprocessed Code	GeoXM	22/11/2005	03:46:38pm
Weed control;broaden riparian forest association (good capability / riparian vegetation potential)	7.3	Uncorrected	GeoXM	01/12/2005	08:51:58am
Reclaim a broader riparian area. Build up stream channel (riffles) to reduce channel down-cutting.	7.4	Postprocessed Code	GeoXM	01/12/2005	10:22:23am
	3.8	Postprocessed Code	GeoXM	01/12/2005	11:35:11am
	7.3	Postprocessed Code	GeoXM	01/12/2005	12:42:55pm
Remove dam.	4.5	Postprocessed Code	GeoXM	01/12/2005	01:58:02pm
	5.9	Postprocessed Code	GeoXM	01/12/2005	02:25:16pm
Partially remove diking and create meandering channel (See segment 39 as ideal template).	2.3	Postprocessed Code	GeoXM	01/12/2005	03:42:22pm
Reclaim/restore healthy riparian band.	3.7	Postprocessed Code	GeoXM	05/12/2005	10:41:06am
Reclaim/restore healthy riparian band.	4.0	Postprocessed Code	GeoXM	05/12/2005	12:16:39pm
Reclaim/restore healthy riparian band. Add instream structural complexity.	5.2	Postprocessed Code	GeoXM	05/12/2005	12:34:59pm
Beaver management.	6.2	Postprocessed Code	GeoXM	05/12/2005	01:42:58pm
Beaver management.	6.7	Uncorrected	GeoXM	05/12/2005	03:38:55pm
	2.9	Postprocessed Code	GeoXM	06/12/2005	09:22:11am
Limited opportunity despite high impact rating due to diking and industrial encroachment.	3.7	Uncorrected	GeoXM	06/12/2005	10:08:39am
	6.7	Postprocessed Code	GeoXM	06/12/2005	12:11:39pm
Right bank revegetation/stabilization.	3.4	Postprocessed Code	GeoXM	06/12/2005	01:28:00pm
Preserve.	4.1	Postprocessed Code	GeoXM	06/12/2005	01:56:27pm
More riparian re-vegetative efforts.	4.0	Postprocessed Code	GeoXM	06/12/2005	03:14:42pm
Mitigate bank erosion.	3.5	Uncorrected	GeoXM	07/12/2005	10:47:11am
Mitigate bank instability.	5.8	Postprocessed Code	GeoXM	07/12/2005	11:49:52am
Instream cover/structural complexity.	5.6	Postprocessed Code	GeoXM	07/12/2005	12:23:02pm
Unless retaining walls are removed little opportunity.	4.4	Postprocessed Code	GeoXM	07/12/2005	01:10:30pm
Mitigate erosion.	7.1	Uncorrected	GeoXM	14/12/2005	12:23:51pm
	0.0			19000100	
	0.0			19000100	
	0.0			19000100	
	0.0			19000100	
	5.5	Postprocessed Code	GeoXM	14/12/2005	01:04:25pm
	6.7	Postprocessed Code	GeoXM	14/12/2005	01:36:53pm
Mitigate bank erosion (bioengineering) and restore riparian communities.	4.4	Uncorrected	GeoXM	14/12/2005	02:11:58pm
	2.2	Uncorrected	GeoXM	22/11/2005	08:44:20am
Intensive airport management.	4.3	Uncorrected	GeoXM	22/11/2005	09:03:45am
Culvert beneath runway.	5.1	Postprocessed Code	GeoXM	22/11/2005	09:24:27am
Due to airport restrictions.	6.3	Uncorrected	GeoXM	22/11/2005	09:43:17am
	2.9	Uncorrected	GeoXM	22/11/2005	10:13:58am
	3.8	Uncorrected	GeoXM	22/11/2005	10:41:55am
	6.1	Uncorrected	GeoXM	22/11/2005	12:39:53pm
	4.5	Uncorrected	GeoXM	22/11/2005	01:21:12pm
	6.7	Differential	Pro XR	06/03/2002	01:11:35pm
	5.8	Differential	Pro XR	06/03/2002	11:51:48am
	5.3	Differential	Pro XR	06/03/2002	12:06:00pm
	5.0	Differential	Pro XR	06/03/2002	12:11:06pm
	4.5	Differential	Pro XR	06/03/2002	12:18:31pm
	4.3	Differential	Pro XR	06/03/2002	11:27:22am
Exclude livestock and riparian restoration.	7.7	Differential	Pro XR	23/08/2002	09:33:01am
Exclude livestock and riparian restoration.	7.7	Differential	Pro XR	23/08/2002	09:33:01am
Exclude livestock and riparian restoration.	7.7	Differential	Pro XR	23/08/2002	09:33:01am
Exclude livestock and riparian restoration.	7.7	Differential	Pro XR	23/08/2002	09:33:01am
	4.3	Differential	Pro XR	23/08/2002	10:39:45am

DATAFILE	UNFILT_POS	FILT_POS	DATA_DICTI	AVG_HORZ_P	WORST_HORZ	LENGTH	SOURCETHM	KEY_ID
MILL CK-4.cor	313	313	SHIM_2005_KH	1.4	6.0	378.195	Stream_line.shp	082E.083.Mill Creek
MILL CK-4.cor	125	125	SHIM_2005_KH	2.5	6.4	162.291	Stream_line.shp	082E.083.Mill Creek
MILL CK-4.cor	345	345	SHIM_2005_KH	2.8	8.0	279.842	Stream_line.shp	082E.083.Mill Creek
MILL CK-4.cor	188	188	SHIM_2005_KH	1.8	6.0	383.099	Stream_line.shp	082E.083.Mill Creek
MILL CK-4.cor	537	537	SHIM_2005_KH	2.0	6.6	706.924	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-5.cor	15	15	SHIM_2005_KH	1.7	5.7	110.048	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-5.cor	607	607	SHIM_2005_KH	1.6	7.6	593.458	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-5.cor	75	75	SHIM_2005_KH	1.8	3.3	139.495	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-5.cor	687	687	SHIM_2005_KH	1.8	6.3	563.418	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-6.cor	663	663	SHIM_2005_KH	2.0	5.8	557.171	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-6.cor	133	133	SHIM_2005_KH	1.7	3.3	103.628	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-6.cor	178	178	SHIM_2005_KH	2.0	6.3	334.792	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-6.cor	263	263	SHIM_2005_KH	1.8	5.8	328.800	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-6.cor	173	173	SHIM_2005_KH	1.5	3.1	763.459	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-7.cor	296	296	SHIM_2005_KH	1.4	5.9	262.489	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-7.cor	209	209	SHIM_2005_KH	1.4	5.9	249.202	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-7.cor	269	269	SHIM_2005_KH	1.9	4.8	232.593	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-7.cor	202	202	SHIM_2005_KH	2.0	2.9	210.999	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-7.cor	445	445	SHIM_2005_KH	1.6	5.8	521.999	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	95	95	SHIM_2005_KH	1.8	3.6	141.818	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	197	197	SHIM_2005_KH	3.0	4.3	157.315	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	496	496	SHIM_2005_KH	1.7	4.7	352.771	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	252	252	SHIM_2005_KH	1.5	3.5	252.582	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	46	46	SHIM_2005_KH	1.8	2.4	176.330	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	320	320	SHIM_2005_KH	1.7	3.2	354.520	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-8.cor	139	139	SHIM_2005_KH	2.0	3.8	149.572	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-9.cor	268	268	SHIM_2005_KH	1.5	5.7	571.708	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-9.cor	196	196	SHIM_2005_KH	1.7	6.0	328.239	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-9.cor	440	440	SHIM_2005_KH	1.5	5.8	576.932	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-1.cor	245	245	SHIM_2005_KH	1.5	2.3	147.428	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-1.cor	185	185	SHIM_2005_KH	2.0	5.8	261.985	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-1.cor	197	197	SHIM_2005_KH	1.6	5.8	148.481	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-1.cor	165	165	SHIM_2005_KH	1.6	6.3	152.504	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-3.cor	195	195	SHIM_2005_KH	2.2	3.9	266.184	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	385	385	SHIM_2005_KH	5.4	8.2	276.531	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	192	192	SHIM_2005_KH	1.7	3.0	292.842	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	91	91	SHIM_2005_KH	1.6	2.3	263.448	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	225	225	SHIM_2005_KH	1.6	3.2	164.604	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	173	173	SHIM_2005_KH	1.5	1.8	172.051	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	428	428	SHIM_2005_KH	2.1	5.0	485.255	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-10.cor	113	113	SHIM_2005_KH	1.5	1.5	590.658	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-11.cor	224	224	SHIM_2005_KH	1.8	2.4	297.264	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-11.cor	108	108	SHIM_2005_KH	1.6	2.5	116.330	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-11.cor	264	264	SHIM_2005_KH	1.5	2.2	152.111	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-11.cor	224	224	SHIM_2005_KH	1.8	4.6	606.700	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-11.cor	254	254	SHIM_2005_KH	1.8	5.9	516.711	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-12.cor	109	109	SHIM_2005_KH	1.4	2.0	384.150	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-12.cor	399	399	SHIM_2005_KH	3.3	6.1	223.400	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-12.cor	229	229	SHIM_2005_KH	1.8	3.0	665.077	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-12.cor	55	55	SHIM_2005_KH	1.5	1.6	163.208	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-12.cor	97	97	SHIM_2005_KH	1.9	3.5	323.807	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-12.cor	95	95	SHIM_2005_KH	1.6	2.9	748.572	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-13.cor	51	51	SHIM_2005_KH	3.3	5.8	159.277	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-13.cor	121	121	SHIM_2005_KH	2.1	3.6	165.330	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-13.cor	191	191	SHIM_2005_KH	1.6	2.8	269.991	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-13.cor	40	40	SHIM_2005_KH	1.6	1.9	110.840	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-16.cor	18	18	SHIM_2005_KH	1.8	5.9	527.481	Stream_line.shp	082E.083.Mill Creek
	0	0		0.0	0.0	55.717	Stream_line.shp	082E.083.Mill Creek
	0	0		0.0	0.0	138.670	Stream_line.shp	082E.083.Mill Creek
	0	0		0.0	0.0	26.849	Stream_line.shp	082E.083.Mill Creek
	0	0		0.0	0.0	0.000	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-16.cor	73	73	SHIM_2005_KH	1.4	2.2	224.081	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-16.cor	90	90	SHIM_2005_KH	2.2	4.6	171.059	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-16.cor	38	38	SHIM_2005_KH	2.9	6.7	187.854	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	338	338	SHIM_2005_KH	1.1	5.6	309.224	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	45	45	SHIM_2005_KH	1.6	6.4	139.162	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	8	8	SHIM_2005_KH	2.7	2.9	174.660	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	106	106	SHIM_2005_KH	2.8	5.7	96.410	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	138	138	SHIM_2005_KH	1.3	5.7	112.174	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	841	841	SHIM_2005_KH	1.4	5.9	1118.375	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	393	393	SHIM_2005_KH	2.1	6.2	423.864	Stream_line.shp	082E.083.Mill Creek
MILL CREEK-2.cor	118	118	SHIM_2005_KH	1.5	6.0	201.292	Stream_line.shp	082E.083.Mill Creek
MILL2.cor	465	465		0.9	0.0	406.264	Stream_line.shp	082E.083.Mill Creek
MILL1.cor	250	250		0.8	0.0	123.989	Stream_line.shp	082E.083.Mill Creek
MILL1.cor	193	193		0.7	0.0	116.827	Stream_line.shp	082E.083.Mill Creek
MILL1.cor	125	125		0.7	0.0	64.970	Stream_line.shp	082E.083.Mill Creek
MILL1.cor	145	145		0.7	0.0	113.876	Stream_line.shp	082E.083.Mill Creek
MILL1.cor	179	179		0.7	0.0	354.254	Stream_line.shp	082E.083.Mill Creek
MILL	0	0		0.0	0.0	294.804	Stream_line.shp	082E.083.Mill Creek
MILL	0	0		0.0	0.0	35.633	Stream_line.shp	082E.083.Mill Creek
MILL	0	0		0.0	0.0	36.461	Stream_line.shp	082E.083.Mill Creek
	0	0		0.0	0.0	346.263	Stream_line.shp	082E.083.Mill Creek
MILL	0	0		0.0	0.0	42.079	Stream_line.shp	082E.083.Mill Creek

TYPE_CULVE	OWNER	CONDITION	BARRIER	MATERIAL	SUBSTRATE	FORM	LENGTH	WIDTH	HEIGHT	DEPTH	DIAMETER	SCREENSIZE	STORMOUTLE	HEADWALL	APRON	BAFFLES	COMMENTS	PHOTONUM	GPS_DATE
Multiple Inlet	Municipal	Good	unknown	Corrugated Steel	Mixed	Circular	27.00	0.00	0.00	0.36	3.20	0.00	0		No	No		IMGP1399	06/12/2005
Multiple Outlet	Municipal	Good	unknown	Corrugated Steel	Mixed	Horizontal Ellipse	40.00	3.90	0.00	0.34	0.00	0.00	0		No	No	Each culvert 3.9-m across. Right culvert with accumulation of sediments.	IMGP1402	06/12/2005
Multiple Outlet	Municipal	Good	unknown	Corrugated Steel	Fines	Horizontal Ellipse	33.00	4.80	0.00	1.00	0.00	0.00	0		No	No	Two (2) culverts each 3.4m across.	IMGP1359	05/12/2005
Outlet	Private	Good	No	Steel	Same as Culvert	Circular	6.50	2.25	2.25	0.82	2.25	0.00	0		No	No		IMGP1138	01/12/2005
Multiple Outlet	Municipal	Good	unknown	Corrugated Steel	Same as Culvert	Horizontal Ellipse	33.00	3.00	0.00	0.00	3.00	0.00	1	Gabion	Yes	No	Dual culverts each with above dimensions.	IMGP0807	25/11/2005
Multiple Inlet	Municipal	Good	No	Corrugated Steel	Fines	Arch	70.00	0.00	0.00	0.30	3.40	0.00	0	Concrete	No	No	Three culverts.	IMGP0834	25/11/2005
Gated Inlet	Municipal	Good	unknown	Corrugated Steel	Same as Culvert	Horizontal Ellipse	6.00	2.40	0.00	0.00	0.00	0.00	0	Concrete	No	No		IMGP0463	22/11/2005
Multiple Outlet	Municipal	Good	No	Corrugated Steel	Mixed	Circular	5.70	0.00	0.00	0.00	1.82	0.00	0	Concrete	Yes	No	Three (3) culverts. Mixed gravel-cobble substrates.	IMGP0495	22/11/2005
Gated Multiple Out	Municipal	Good	No	Corrugated Steel	Same as Culvert	Horizontal Ellipse	11.00	2.60	0.30	0.00	2.60	0.00	0		No	No	Dual outlet. Rip rap headwall.	IMGP0524	22/11/2005
Outlet	Private	Good	unknown	Steel	Gravels	Circular	4.50	0.00	0.00	0.00	2.50	0.00	0		No	No	Remove culvert and restore stream channel.	IMGP0439	21/11/2005
Outlet	Municipal	Good	No	Concrete	Same as Culvert	Box	170.00	0.00	0.00	0.00	0.00	0.00	0						19000100
Multiple Outlet	Municipal	Collapsed/Plugged	Potential	Corrugated Steel	Same as Culvert	Circular	0.00	0.00	0.00	0.00	16.00	0.00	0		No	No	3 Culverts - 1 plugged with LWD all perched 0.25 m	DCP_2542	23/08/2002
Gated Multiple Inlet	Municipal	Good	No	Corrugated Steel	Same as Culvert	Horizontal Ellipse	10.00	0.00	0.00	0.00	2.00	0.14	0	Concrete	No	No		DCP_1093	06/03/2002
Gated Multiple Inlet	Municipal	Good	No	Corrugated Steel	Same as Culvert	Horizontal Ellipse	10.00	0.00	0.00	0.00	2.00	0.14	0	Concrete	No	No		DCP_1093	06/03/2002

TYPE_DISCH	BANK	MATERIAL	HEADWALL	LENGTH	WIDTH	DIAMETER	HEIGHT	TEMPERATUR	PHOTONUM	COMMENTS	GPS_DATE
Tile Drain	Right	PVC		0.00	0.00	0.15	0.00	8.00	IMGP1468	Ground water inflow.	07/12/2005
Tile Drain	Left	PVC		0.00	0.00	0.10	0.00	0.00	IMGP1470		07/12/2005
Storm Drain	Left	Corrugated Steel	Concrete	0.00	0.00	0.76	0.00	0.00	IMGP1516		07/12/2005
Septic Effluent	Right	PVC	Concrete	0.00	0.00	0.40	0.00	10.00	IMGP1520	Unpleasant odour.	07/12/2005
Other	Right	PVC		0.00	0.00	0.10	0.00	12.00	IMGP1365	Smells chlorinated	06/12/2005
Other	Right	PVC	Concrete	0.00	0.00	0.45	0.00	15.00	IMGP1382	Warm discharge.	06/12/2005
Tile Drain	Left	PVC		0.00	0.00	0.10	0.00	0.00	IMGP1422	Excavated swale to constructed backwater.	06/12/2005
Tile Drain	Left	Other		0.00	0.00	0.00	0.00	8.00	IMGP1423	Seep from beneath rip rap and structural fill.	06/12/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.30	0.00	10.00	IMGP1425	Clear and colourless but with strong hydrogen sulfide odour.	06/12/2005
Tile Drain	Left	PVC		0.00	0.00	0.05	0.00	6.00	IMGP1427	Presumed to be tile drain.	06/12/2005
Storm Drain	Left	PVC		0.00	0.00	0.20	0.00		IMGP1265		05/12/2005
Tile Drain	Right	Corrugated Steel		0.00	0.00	0.13	0.00	0.00	IMGP1273	Aluminum irrigation pipe running though culvert beneath railway	05/12/2005
Storm Drain	Right	PVC	Concrete	0.00	0.00	0.37	0.00	4.00	IMGP1277	Flows through small cattail marsh/swale and into Mill Creek.	05/12/2005
Other	Right	PVC		0.00	0.00	0.01	0.00	15.00	IMGP1310	Discharge from garden hose embedded in roots. Warm outflow.	05/12/2005
Storm Drain	Right	PVC		0.00	0.00	0.15	0.00	0.00	IMGP1313	Possible roof drain.	05/12/2005
Storm Drain	Left	Other		0.00	0.00	0.14	0.00	0.00	IMGP1316	Aluminum pipe with eroding headwall.	05/12/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.10	0.00	0.00	IMGP1320	Beneath bridge at downstream end on left abutment.	05/12/2005
Tile Drain	Left	PVC		0.00	0.00	0.05	0.00	0.00	IMGP1327		05/12/2005
Storm Drain	Right	Other		0.00	0.00	0.20	0.00	0.00	IMGP1335	Asbestos pipe.	05/12/2005
Storm Drain	Left	PVC		0.00	0.00	0.20	0.00	8.00	IMGP1347		05/12/2005
Other	Right	Other		0.00	0.00	0.00	0.00	7.00	IMGP1202	Possible groundwater seep. However situated below residence.	01/12/2005
Tile Drain	Right	Iron		0.00	0.00	0.15	0.00	12.00	IMGP1206		01/12/2005
Other	Right	Concrete	Concrete	0.00	0.00	0.80	0.00	0.00	IMGP1207	Does not appear recently active.	01/12/2005
Storm Drain	Left	Corrugated Steel		0.00	0.00	0.60	0.00	0.00	IMGP1211	No flows apparent.	01/12/2005
Other	Left	Corrugated Steel		0.00	0.00	0.70	0.00	0.00	IMGP1219	No evidence of recent flows.	01/12/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.35	0.00	7.00	IMGP1051	Small swale excavated to creek.	30/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.90	0.00	0.00	IMGP1067		30/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.90	0.00	10.00	IMGP1123	Clear, colourless flows possibly groundwater flows or culverted tributary.	30/11/2005
Storm Drain	Right	Corrugated Steel	Concrete	0.00	0.00	0.46	0.00	0.00	IMGP0940	Follows armoured channel to Mill Creek through willow thicket.	29/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.68	0.00	9.00	IMGP0948	High turbidity discharge with odour despite no precipitation (rain-snow).	29/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.40	0.00	0.00	IMGP0955	Abundant instream sediment deposition.	29/11/2005
Storm Drain	Left	Corrugated Steel	Concrete	0.00	0.00	0.17	0.00	0.00	IMGP0956	Beneath bridge at downstream end (left bank).	29/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.30	0.00	7.00	IMGP0978	Flows from detention pond.	29/11/2005
Storm Drain	Left	Corrugated Steel	Concrete	0.00	0.00	0.73	0.00	8.00	IMGP0858	Clear, colourless during survey.	28/11/2005
Storm Drain	Right	PVC		0.00	0.00	0.25	0.00	0.00	IMGP0870	Drains into small detention pond then through gravel berm into creek (see also photo IMGP 0872).	28/11/2005
Storm Drain	Right	PVC		0.00	0.00	0.15	0.00	0.00	IMGP0871	Drains into small detention pond then through gravel berm into creek (see previous adjacent feature)	28/11/2005
Storm Drain	Left	Corrugated Steel		0.00	0.00	1.36	0.00	8.00	IMGP0890	Stonework headwall. School of redside shiners observed in culvert.	28/11/2005
Storm Drain	Left	Other		0.00	0.00	0.00	0.00	0.00		Swale from parking lot (asphalt) to creek.	28/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.75	0.00	0.00	IMGP0902		28/11/2005
Storm Drain	Right	Other		0.00	0.00	0.00	0.00	0.00	IMGP0908	Storm drain and swale from City transit site.	28/11/2005
Storm Drain	Left	PVC		0.00	0.00	0.15	0.00	0.00	IMGP0915	Scour/erosion below outfall.	28/11/2005
Storm Drain	Left	Other		0.00	0.00	0.33	0.00	0.00	IMGP0918	Two pipes. The second is 200mm diameter. Both pipes are asbestos.	28/11/2005
Storm Drain	Right	Other	Concrete	0.00	0.00	0.40	0.00	0.00	IMGP0754	Two capped pipes under bridge on both banks.	25/11/2005
Storm Drain	Right	Other	Concrete	0.00	0.00	0.30	0.00	0.00	IMGP0790	Asbestos	25/11/2005
Storm Drain	Left	Other	Concrete	0.00	0.00	0.40	0.00	0.00	IMGP0803	Turbid runoff flows.	25/11/2005
Storm Drain	Right	PVC	Gabion	0.00	0.00	0.60	0.00	8.00	IMGP0810	Discharge with high total suspended solids and turbidity.	25/11/2005
Storm Drain	Right	PVC	Concrete Block	0.00	0.00	0.21	0.00	0.00	IMGP0819		25/11/2005
Storm Drain	Right	Corrugated Steel	Concrete	0.00	0.00	0.30	0.00	0.00	IMGP0835		25/11/2005
Storm Drain	Left	Other		0.00	0.00	0.39	0.00	0.00	IMGP0842	Asbestos pipe.	25/11/2005
Storm Drain	Right	Other	Concrete	0.00	0.00	0.16	0.00	0.00	IMGP0642	Clay ceramic pipe.	24/11/2005
Storm Drain	Left	Other	Concrete	0.00	0.00	0.16	0.00	0.00		Clay ceramic.	24/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.53	0.00	0.00	IMGP0650		24/11/2005
Storm Drain	Left	PVC		0.00	0.00	0.10	0.00	0.00	IMGP0653	Roof drain.	24/11/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.10	0.00	0.00		Roof drain.	24/11/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.10	0.00	0.00		Roof drain.	24/11/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.10	0.00	0.00		Roof drain	24/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.70	0.00	0.00	IMGP0674		24/11/2005
Storm Drain	Right	Other	Concrete	0.00	0.00	0.20	0.00	0.00	IMGP0699	Asbestos pipe.	24/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.30	0.00	0.00	IMGP0728		24/11/2005
Pollutant	Right	Other	Concrete	0.00	0.00	0.40	0.00	14.00	IMGP0729	Warm with odour.	24/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.30	0.00	0.00	IMGP0731	Move point under bridge upstream of pollutant pt. 2m.	24/11/2005
Storm Drain	Right	Steel	Concrete	0.00	0.00	0.15	0.00	0.00	IMGP0736	Roof drain.	24/11/2005
Tile Drain	Right	Steel		0.00	0.00	0.09	0.00	0.00	IMGP0468		22/11/2005
Storm Drain	Right	PVC		0.00	0.00	0.30	0.00	7.00	IMGP0470	Minor inflow.	22/11/2005
Storm Drain	Both	PVC	Concrete	0.00	0.00	0.30	0.00	8.00	IMGP0474	Two (2) opposing storm drains approximately mid-way through culvert.	22/11/2005
Storm Drain	Right	PVC	Concrete	0.00	0.00	0.30	0.00	8.00	IMGP0479		22/11/2005
Other	Left	Corrugated Steel		0.00	0.00	0.60	0.00	7.00	IMGP0489	Possible tributary.	22/11/2005
Storm Drain	Right	Corrugated Steel	Concrete	0.00	0.00	0.25	0.00	0.00	IMGP0542		23/11/2005
Storm Drain	Right	Corrugated Steel	Concrete	0.00	0.00	0.25	0.00	0.00	IMGP0545		23/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.25	0.00	0.00	IMGP0547		23/11/2005
Other	Left	Steel	Concrete	0.00	0.00	0.20	0.00	0.00	IMGP0562	From City lift station.	23/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.30	0.00	0.00	IMGP0563	Smaller (200mm) adjacent pipe.	23/11/2005
Tile Drain	Left	Other	Concrete	0.00	0.00	0.10	0.00	0.00	IMGP0564		23/11/2005
Storm Drain	Right	PVC	Concrete	0.00	0.00	0.20	0.00	0.00	IMGP0566		23/11/2005
Storm Drain	Right	Other	Concrete	0.00	0.00	0.23	0.00	0.00	IMGP0569	Asbestos pipe partly embedded in muck.	23/11/2005
Storm Drain	Left	Other	Concrete	0.00	0.00	0.25	0.00	0.00	IMGP0571		23/11/2005
Storm Drain	Right	Other	Concrete	0.00	0.00	0.15	0.00	0.00	IMGP0572		23/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.60	0.00	0.00	IMGP0574		23/11/2005
Storm Drain	Right	PVC	Concrete	0.00	0.00	0.10	0.00	0.00	IMGP0577	Two (2) pipes draining from parking lot.	23/11/2005
Storm Drain	Left	PVC		0.00	0.00	0.07	0.00	0.00	IMGP0578		23/11/2005
Storm Drain	Right	Concrete	Concrete	0.00	0.00	0.45	0.00	0.00	IMGP0581	Two (2) pipes. The second is 250mm (dia).	23/11/2005
Storm Drain	Right	PVC	Concrete	0.00	0.00	0.10	0.00	0.00	IMGP0582		23/11/2005
Storm Drain	Left	PVC	Concrete Block	0.00	0.00	0.10	0.00	0.00	IMGP0591	From parking lot.	23/11/2005
Storm Drain	Left	Concrete	Concrete	0.00	0.00	0.00	0.00	0.00	IMGP0592	Concrete swale from parking lot.	23/11/2005
Tile Drain	Right	PVC		0.00	0.00	0.03	0.00	0.00	IMGP0595	Erosion beneath outlet suggests significant flows.	23/11/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.20	0.00	0.00	IMGP0600		23/11/2005
Storm Drain	Left	PVC	Concrete	0.00	0.00	0.20	0.00	0.00	IMGP0602		23/11/2005
Storm Drain	Left	Other	Concrete	0.00	0.00	0.60	0.00	0.00	IMGP0603	Large asbestos storm drain.	23/11/2005
Storm Drain	Left	PVC		0.00	0.00	0.06	0.00	0.00	IMGP0614	From parking lot.	23/11/2005
Storm Drain	Left	Other	Concrete	0.00	0.00	0.20	0.00	0.00	IMGP0619		23/11/2005
Other	Right	PVC		0.00	0.00	0.20	0.00	12.00	IMGP0620	Warm inflow. Clear and colourless. Possible groundwater.	23/11/2005
Agricultural Runoff	Left	Other		0.00	0.00	0.00	0.00	0.00	IMGP0436	Possible groundwater discharge from beneath garbage/debris/possible contaminant source.	21/11/2005
Agricultural Runoff	Left	Other		0.00	0.00	0.20	0.00	7.00	IMGP0446	Aluminum tile drain from beneath feedlot. Possible contaminant (nutrient) source.	21/11/2005
Tile Drain	Left	Corrugated Steel		0.00	0.00	0.30	0.00	7.00	IMGP1617	Presumed to be groundwater flows.	14/12/2005
Tile Drain	Right	PVC		0.00	0.00	0.20	0.00	7.00	IMGP1621		14/12/2005
Tile Drain	Right	PVC		0.00	0.00	0.20	0.00	0.00	IMGP1623		14/12/2005
Storm Drain	Right	Steel	Concrete	0.00	0.00	0.15	0.00	0.00		Roof drain.	19000100

TYPE_ENHAN	BANK	STATUS	LENGTH	WIDTH	HEIGHT	DIAMETER	COMMENTS	PHOTONUM	GPS_DATE
Side Channel/Pools	Right	Existing	8.00	7.00	0.00	0.00	Constructed backwater.	IMGP1640	14/12/2005
Rock/Boulder Placeme	Both	Existing	0.00	0.00	0.00	0.00	City of Kelowna / Naito Environmental Restoration site	DCP_2532	23/08/2002
Veg Bank Stabilize	Right	Existing	19.00	0.00	1.00	0.00	Rock and small woody debris revetment.	IMGP1436	07/12/2005
Veg Bank Stabilize	Left	Existing	8.50	0.00	1.00	0.00	Small woody debris revetment.	IMGP1437	07/12/2005
Veg Bank Stabilize	Left	Existing	21.00	2.00	1.20	0.00	Coarse woody debris revetment.	IMGP1439	07/12/2005
Rock/Boulder Placeme	Instream	Existing	4.00	4.70	0.00	0.00	Riffle enhancement.	IMGP1441	07/12/2005
Veg Bank Stabilize	Left	Existing	22.00	1.50	1.20	0.00	Coarse woody debris revetment.	IMGP1442	07/12/2005
Veg Bank Stabilize	Left	Existing	25.00	2.30	1.00	0.00	Coarse woody debris/rock revetment.	IMGP1443	07/12/2005
Veg Bank Stabilize	Right	Existing	14.00	2.00	1.10	0.00	Coarse woody debris/rock revetment.	IMGP1444	07/12/2005
Veg Bank Stabilize	Left	Existing	36.00	2.50	1.40	0.00	Root wads, and coarse woody debris revetment.	IMGP1447	07/12/2005
Veg Bank Stabilize	Right	Existing	6.00	1.00	1.00	0.00	Root wads.		07/12/2005
Veg Bank Stabilize	Left	Existing	18.00	2.00	1.20	0.00	Unsuccessful live staking.	IMGP1449	07/12/2005
Veg Bank Stabilize	Left	Existing	16.00	2.50	1.00	0.00	Coarse woody debris revetment.	IMGP1451	07/12/2005
Veg Bank Stabilize	Right	Existing	21.00	2.00	0.90	0.00	Coarse woody debris revetment.	IMGP1452	07/12/2005
Rock/Boulder Placeme	Instream	Existing	3.50	4.00	0.00	0.00	Riffle enhancement.	IMGP1454	07/12/2005
Veg Bank Stabilize	Left	Existing	35.00	1.00	1.00	0.00	Coarse woody debris revetment.		07/12/2005
Rock/Boulder Placeme	Instream	Existing	2.00	1.50	0.00	0.00	Boulder clusters and associated spawning gravel		07/12/2005
Veg Bank Stabilize	Right	Existing	20.00	3.00	1.20	0.00	Coarse woody debris revetment.		07/12/2005
Veg Bank Stabilize	Left	Existing	15.00	2.00	0.80	0.00	Coarse woody debris revetment.	IMGP1462	07/12/2005
Rock/Boulder Placeme	Instream	Existing	5.00	4.50	0.00	0.00	Riffle construction.	IMGP1489	07/12/2005
Veg Bank Stabilize	Left	Existing	53.00	2.00	1.00	0.00	Root wads and series of upstream oriented log revetments.	IMGP1491	07/12/2005
Log/Rock Wiers	Instream	Existing	1.00	4.70	0.00	0.00	Series of rock wiers through channelized Segment.	IMGP1517	07/12/2005
Log/Rock Wiers	Instream	Existing	0.00	0.00	0.00	0.00	Series of rock wiers through channelized Segment.	IMGP1517	07/12/2005
Log/Rock Wiers	Instream	Existing	1.00	3.00	0.00	0.00	Series of rock wiers through channelized Segment.		07/12/2005
Log/Rock Wiers	Instream	Existing	1.00	3.00	0.00	0.00	Series of rock wiers through channelized Segment.		07/12/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	Series of rock wiers through channelized Segment.		07/12/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	Riffle creation.	IMGP1519	07/12/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	Riffle.		07/12/2005
Side Channel/Pools	Left	Existing	5.00	10.00	0.00	0.00	Backwater creation.	IMGP1421	06/12/2005
Side Channel/Pools	Left	Existing	2.00	12.00	0.00	0.00	Backwater creation.	IMGP1421	06/12/2005
Veg Bank Stabilize	Left	Existing	8.00	0.00	1.00	0.00	Log revetment.	IMGP1431	06/12/2005
Log/Rock Wiers	Instream	Existing	2.00	4.50	0.00	0.00	Wier with associated over stream vegetation and small woody debris cover.	IMGP1270	05/12/2005
Log/Rock Wiers	Instream	Existing	1.50	3.40	0.00	0.00	Trapping coarse woody debris	IMGP1272	05/12/2005
Side Channel/Pools	Left	Existing	0.00	0.00	0.00	0.00	Backwater creation.	IMGP1279	05/12/2005
Rock/Boulder Placeme	Instream	Existing	4.00	2.00	0.00	0.00	Riffle installation.	IMGP1291	05/12/2005
Rock/Boulder Placeme	Instream	Existing	4.00	2.25	0.00	0.00	Riffle	IMGP1293	05/12/2005
Rock/Boulder Placeme	Instream	Existing	1.50	3.50	0.00	0.00	Riffle	IMGP1307	05/12/2005
Rock/Boulder Placeme	Instream	Existing	2.00	3.00	0.00	0.00	Riffle	IMGP1318	05/12/2005
Rock/Boulder Placeme	Instream	Existing	3.00	3.00	0.00	0.00	Riffle.	IMGP1321	05/12/2005
Veg Bank Stabilize	Right	Existing	12.30	2.00	0.00	0.00	Log revetments to stabilize banks. Associated undercut bank and deep pool cover.	IMGP1036	30/11/2005
Veg Bank Stabilize	Left	Existing	16.00	0.00	2.50	0.80	Log and rock revetment to stabilize banks.	IMGP1038	30/11/2005
LWD Placement	Left	Existing	3.00	2.00	0.00	0.00	Log and rock revetment to stabilize banks.	IMGP1040	30/11/2005
LWD Placement	Instream	Existing	10.00	3.00	0.00	0.00	Rock and log revetment to stabilize bank.	IMGP1040	30/11/2005
LWD Placement	Left	Existing	10.00	1.00	0.00	0.00	Undercut bank.	IMGP1042	30/11/2005
LWD Placement	Instream	Existing	36.00	5.00	0.00	0.00		IMGP1044	30/11/2005
LWD Placement	Instream	Existing	28.00	3.00	0.00	0.00	Rock and log revetment to stabilize bank. Associated deep pool cover.	IMGP1046	30/11/2005
LWD Placement	Left	Existing	35.00	3.00	0.00	0.00	Log, root wad, and rock revetment. Some erosion still occurring around these works.	IMGP1050	30/11/2005
LWD Placement	Instream	Existing	28.00	3.00	0.00	0.00	Log and rock revetment with associated deep pool cover.	IMGP1054	30/11/2005
LWD Placement	Right	Existing	21.00	2.50	0.00	0.00	Log revetment and associated undercut bank (cover).	IMGP1057	30/11/2005
Log/Rock Wiers	Instream	Existing	1.50	5.00	0.00	0.00	Shallow scour pool.	IMGP1093	30/11/2005
Rock/Boulder Placeme	Instream	Existing	1.00	2.00	0.00	0.00	Deflector.	IMGP1094	30/11/2005
Rock/Boulder Placeme	Instream	Existing	2.00	2.50	0.00	0.00	Deflector.		30/11/2005
Rock/Boulder Placeme	Instream	Existing	2.00	2.50	0.00	0.00	Partial bank stabilization requires more work.	IMGP1096	30/11/2005
Side Channel/Pools	Left	Existing	20.00	2.50	0.00	0.00	Backwater.	IMGP1097	30/11/2005
Log/Rock Wiers	Instream	Existing	1.00	5.00	0.00	0.00	Partly collapsed.	IMGP1107	30/11/2005
Veg Bank Stabilize	Left	Existing	27.00	0.00	0.00	0.00	Log and rock revetment. Some localized erosion is still occurring.	IMGP1110	30/11/2005
Rock/Boulder Placeme	Instream	Existing	2.00	4.00	0.00	0.00	Riffle enhancement.	IMGP1114	30/11/2005
LWD Placement	Instream	Existing	4.00	0.00	0.75	0.75	Anchored log revetment.	IMGP1122	30/11/2005
Side Channel/Pools	Right	Existing	27.00	3.00	0.00	0.00	Backwater creation with island.	IMGP0969	29/11/2005
LWD Placement	Right	Existing	9.00	1.20	0.00	0.00	Undercut bank.	IMGP0974	29/11/2005
Log/Rock Wiers	Instream	Existing	2.50	4.50	0.00	0.00	Spawning gravel upstream with 0.6-m scour pool below.	IMGP0976	29/11/2005
Side Channel/Pools	Left	Existing	17.00	15.00	0.00	0.00	Backwater. Depth in backwater = 0.7-m.	IMGP0980	29/11/2005
LWD Placement	Left	Existing	7.00	1.00	0.00	0.00	Undercut bank with 0.6-m depth.	IMGP0983	29/11/2005
Rock/Boulder Placeme	Instream	Existing	5.00	3.50	0.00	0.00	Riffle enhancement.	IMGP0988	29/11/2005
Side Channel/Pools	Left	Existing	7.00	4.00	0.00	0.00	Limited function.	IMGP0989	29/11/2005
Log/Rock Wiers	Instream	Existing	2.20	4.50	0.00	0.00	Rock wier.	IMGP0995	29/11/2005
LWD Placement	Left	Existing	6.30	0.00	1.20	0.00	Undercut bank.	IMGP0996	29/11/2005
Side Channel/Pools	Right	Existing	5.00	3.50	0.00	0.00	Backwater.	IMGP0997	29/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	At downstream end of armouring.	IMGP1001	29/11/2005
Log/Rock Wiers	Instream	Existing	1.00	5.00	0.00	0.00		IMGP1004	29/11/2005
Log/Rock Wiers	Instream	Existing	2.00	5.30	0.00	0.00	Associated scour pool.	IMGP1006	29/11/2005
Rock/Boulder Placeme	Right	Existing	1.40	1.50	0.00	0.00	Deflector.	IMGP1008	29/11/2005
Rock/Boulder Placeme	Left	Existing	1.50	2.00	0.00	0.00	Left bank deflector.	IMGP1009	29/11/2005
Log/Rock Wiers	Instream	Existing	1.50	3.40	0.00	0.00	Spawning gravel upstream.	IMGP0851	28/11/2005
Log/Rock Wiers	Instream	Existing	2.00	4.00	0.00	0.00		IMGP0851	28/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.20	0.00	0.00	Spawning gravel above.	IMGP0854	28/11/2005
Log/Rock Wiers	Instream	Existing	2.50	4.60	0.00	0.00	Associated shallow scour pool.	IMGP0856	28/11/2005
Log/Rock Wiers	Instream	Existing	3.00	4.40	0.00	0.00	Scour pool below.	IMGP0863	28/11/2005
Rock/Boulder Placeme	Instream	Existing	0.60	0.50	0.00	0.00	Boulder cluster		28/11/2005
Rock/Boulder Placeme	Instream	Existing	0.60	0.50	0.00	0.00			28/11/2005
Rock/Boulder Placeme	Instream	Existing	3.00	4.50	0.00	0.00	Partial wier/deflector.	IMGP0893	28/11/2005
Rock/Boulder Placeme	Instream	Existing	2.00	2.00	0.00	0.00	Opposing deflectors.	IMGP0893	28/11/2005
Rock/Boulder Placeme	Instream	Existing	3.00	4.50	0.00	0.00	Riffle enhancement.	IMGP0896	28/11/2005
Rock/Boulder Placeme	Instream	Existing	3.50	3.00	0.00	0.00	Riffle enhancement. No photo available.		28/11/2005
Rock/Boulder Placeme	Instream	Existing	0.60	0.60	0.00	0.00	Boulder cluster.		28/11/2005
Rock/Boulder Placeme	Instream	Existing	1.00	1.00	0.00	0.00	Boulder clusters.	IMGP0899	28/11/2005
Rock/Boulder Placeme	Instream	Existing	1.00	1.00	0.00	0.00	Boulder clusters.	IMGP0899	28/11/2005
Rock/Boulder Placeme	Instream	Existing	0.60	0.60	0.00	0.00	Boulder clusters.	IMGP0899	28/11/2005
Rock/Boulder Placeme	Instream	Existing	0.70	0.60	0.00	0.00	Boulder clusters.	IMGP0899	28/11/2005
Log/Rock Wiers	Instream	Existing	2.00	4.00	0.00	0.00	Associated scour pool below.	IMGP0901	28/11/2005
Log/Rock Wiers	Instream	Existing	3.00	6.00	0.00	0.00	Log v-notch wier. Associated spawning habitat upstream and downstream feature.	IMGP0903	28/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	Associated sour pool.	IMGP0744	25/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	Shallow pool associated with wier.	IMGP0745	25/11/2005
Other	Left	Existing	6.00	0.40	0.00	0.00	Log undercut bank.	IMGP0757	25/11/2005
Log/Rock Wiers	Instream	Existing	1.50	3.50	0.00	0.00	Partly collapsed and needs repair.	IMGP0767	25/11/2005
Log/Rock Wiers	Instream	Existing	1.50	3.00	0.00	0.00		IMGP0770	25/11/2005

Log/Rock Wiers	Instream	Existing	1.00	3.00	0.00	0.00		IMGP0771	25/11/2005
Log/Rock Wiers	Instream	Existing	1.50	4.20	0.00	0.00	Beneath bridge.	IMGP0772	25/11/2005
Log/Rock Wiers	Instream	Existing	1.50	4.30	0.00	0.00			25/11/2005
Log/Rock Wiers	Instream	Existing	1.50	4.00	0.00	0.00		IMGP0787	25/11/2005
Log/Rock Wiers	Instream	Existing	1.00	4.00	0.00	0.00		IMGP0797	25/11/2005
LWD Placement	Instream	Existing	1.50	1.50	0.00	0.00	Cabled root wad with associated undercut bank.	IMGP0805	25/11/2005
Log/Rock Wiers	Instream	Existing	2.50	4.00	0.00	0.00	Associated shallow scour pool and root wad anchored adjacent to pool.	IMGP0812	25/11/2005
Log/Rock Wiers	Instream	Existing	1.00	3.50	0.00	0.00			25/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.00	0.00	0.00	Associated shallow scour pool.	IMGP0816	25/11/2005
Log/Rock Wiers	Instream	Existing	2.50	4.00	0.00	0.00	Associated scour pool.	IMGP0818	25/11/2005
Log/Rock Wiers	Instream	Existing	4.00	4.00	0.00	0.00	Upper wier in shown in photo. Deep pool included in feature measurements.	IMGP0818	25/11/2005
Log/Rock Wiers	Instream	Existing	1.00	4.00	0.00	0.00	Appears partly collapsed (undermined) (no photo).		25/11/2005
Log/Rock Wiers	Instream	Existing	2.00	4.00	0.00	0.00	Deep scout pool development and good upwelling through enhanced gravel bed.	IMGP0821	25/11/2005
Log/Rock Wiers	Instream	Existing	3.00	4.00	0.15	0.00	Associated pool (depth = 0.7m) downstream.	IMGP0638	24/11/2005
Log/Rock Wiers	Instream	Existing	1.50	2.50	0.00	0.00	Part collapsed and in need of repair.	IMGP0664	24/11/2005
Rock/Boulder Placeme	Instream	Existing	1.00	1.00	0.00	0.00	No photo		24/11/2005
Log/Rock Wiers	Instream	Existing	1.00	3.50	0.00	0.00	Associated spawning gravel added.	IMGP0667	24/11/2005
Log/Rock Wiers	Instream	Existing	1.00	4.00	0.00	0.00	Associated spawning gravel.	IMGP0668	24/11/2005
Log/Rock Wiers	Instream	Existing	1.00	4.00	0.00	0.00	Associated placement of spawning gravel.	IMGP0683	24/11/2005
Rock/Boulder Placeme	Instream	Existing	1.50	4.00	0.00	0.00	Submerged rock line/boulder cluster. No photo due to poor instream visibility.		24/11/2005
Log/Rock Wiers	Instream	Existing	1.00	3.50	0.00	0.00	Shallow pool downstream of feature.	IMGP0691	24/11/2005
Log/Rock Wiers	Instream	Existing	1.20	4.00	0.00	0.00	Partially collapsed and in need of repair (top wier in photo).	IMGP0691	24/11/2005
Log/Rock Wiers	Instream	Existing	1.00	4.00	0.00	0.00	Unstable/poor construction (use of round river rock, thus collapsing).		24/11/2005
Rock/Boulder Placeme	Instream	Existing	1.50	4.50	0.00	0.00	Opposing deflectors.	IMGP0703	24/11/2005
Log/Rock Wiers	Instream	Existing	2.50	4.50	0.00	0.00	Functioning well.	IMGP0704	24/11/2005
Log/Rock Wiers	Instream	Existing	3.00	5.00	0.00	0.00	In conjunction with gravel placement (spawning habitat).	IMGP0707	24/11/2005
Rock/Boulder Placeme	Instream	Existing	2.00	5.00	0.00	0.00	Rock line trapping small woody debris.	IMGP0716	24/11/2005
Rock/Boulder Placeme	Right	Existing	3.00	2.00	0.00	0.00	Deflector	IMGP0717	24/11/2005
Log/Rock Wiers	Instream	Existing	1.50	6.50	0.00	0.00		IMGP0718	24/11/2005
Log/Rock Wiers	Instream	Existing	2.00	5.00	0.00	0.00	Shallow scour pool below (downstream) feature.	IMGP0719	24/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.50	0.00	0.00	No scour pool.	IMGP0733	24/11/2005
Veg Bank Stabilize	Left	Potential	0.00	0.00	0.00	0.00	Remove collapsing retaining wall and re-slope/restore bank.	IMGP0590	23/11/2005
Log/Rock Wiers	Instream	Existing	3.00	3.30	0.00	0.00	Associated scour pool. Wier is part collapsed.	IMGP0601	23/11/2005
Log/Rock Wiers	Instream	Existing	2.00	3.30	0.00	0.00	Partially collapsed.		23/11/2005

SOURCE_ERO	BANK	SEVERITY	EXPOSURE	LENGTH	WIDTH	HEIGHT	SLOPE	PHOTONUM	COMMENTS	GPS_DATE
Lack of Riparian Veg	Right	5-10m sq	Soil	9.00	0.00	0.50	90	IMGP1438	Unsuccessful live staking efforts.	07/12/2005
Lack of Riparian Veg	Right	5-10m sq	Soil	22.00	0.00	0.50	90	IMGP1465	Rip rap armouring along slope toe.	07/12/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	10.00	0.00	0.50	90	IMGP1469		07/12/2005
Lack of Riparian Veg	Both	5-10m sq	Soil	7.00	0.00	0.60	85	IMGP1476		07/12/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	10.40	0.00	0.70	90	IMGP1480	Overhanging grasses.	07/12/2005
Bank Erosion	Right	5-10m sq	Roots	22.00	0.00	0.60	85	IMGP1484		07/12/2005
Bank Erosion	Both	5-10m sq	Roots	15.00	0.00	0.70	90	IMGP1486		07/12/2005
Bank Erosion	Both	>10m sq	Silt	21.00	0.00	0.90	90	IMGP1488		07/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	14.50	0.00	1.30	90	IMGP1494		07/12/2005
Bank Erosion	Left	>10m sq	Silt	30.00	0.00	1.20	90	IMGP1498		07/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	20.00	0.00	1.10	90	IMGP1500		07/12/2005
Bank Erosion	Left	>10m sq	Till	19.00	0.00	1.00	90	IMGP1514	Along Bulman Road.	07/12/2005
Lack of Riparian Veg	Right	<5m sq	Silt	3.00	0.00	1.00	85	IMGP1523		07/12/2005
Bank Erosion	Left	>10m sq	Silt	30.00	0.00	2.20	80	IMGP1361		06/12/2005
Bank Erosion	Right	>10m sq	Silt	30.00	0.00	1.60	65	IMGP1366	Erosion and concrete debris.	06/12/2005
Bank Erosion	Left	>10m sq	Silt	11.00	0.00	2.00	80	IMGP1367		06/12/2005
Bank Erosion	Left	>10m sq	Silt	26.00	0.00	1.30	80	IMGP1369	Concrete debris placed in section to help slow erosion.	06/12/2005
Bank Erosion	Both	>10m sq	Silt	50.00	0.00	1.00	80	IMGP1375	Both banks confined/diked and eroding.	06/12/2005
Lack of Riparian Veg	Right	>10m sq	Silt	20.00	0.00	1.20	90	IMGP1392		06/12/2005
Lack of Riparian Veg	Right	>10m sq	Silt	20.00	0.00	1.20	90	IMGP1393	Overhanging reed canary grass and low shrubs.	06/12/2005
Bank Erosion	Right	5-10m sq	Silt	8.00	0.00	0.70	90	IMGP1395		06/12/2005
Bank Erosion	Right	>10m sq	Clay	0.00	0.00	0.80	90	IMGP1405	Undercutting along entire right bank of Segment (Highway 97 slope toe).	06/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	5.50	0.00	1.00	90	IMGP1408	Portion of bank sloughed into creek.	06/12/2005
Bank Erosion	Left	5-10m sq	Till	14.00	0.00	1.00	80			06/12/2005
Bank Erosion	Left	<5m sq	Till	4.50	0.00	0.60	90	IMGP1411		06/12/2005
Lack of Riparian Veg	Right	5-10m sq	Till	8.00	0.00	0.50	90	IMGP1412		06/12/2005
Bank Erosion	Left	>10m sq	Silt	45.00	0.00	0.90	90	IMGP1282		05/12/2005
Bank Erosion	Right	>10m sq	Silt	10.00	0.00	1.00	70	IMGP1281	Active sloughing into creek. Reed canary grass overhanging bank.	05/12/2005
Bank Erosion	Right	5-10m sq	Roots	15.00	0.00	0.80	90	IMGP1287		05/12/2005
Bank Erosion	Left	>10m sq	Clay	7.00	0.00	4.00	65	IMGP1289	Clay substrates within channel also.	05/12/2005
Lack of Riparian Veg	Both	>10m sq	Silt	0.00	0.00	1.70	70	IMGP1300	Occurs to varying degrees along both banks over entire segment length.	05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	40.00	0.00	1.40	80	IMGP1305		05/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	13.00	0.00	1.40	80		Mix of grass and roots overhanging bank.	05/12/2005
Bank Erosion	Right	5-10m sq	Roots	15.00	0.00	7.00	90	IMGP1312		05/12/2005
Bank Erosion	Right	>10m sq	Silt	35.00	0.00	2.00	85	IMGP1314		05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	11.00	0.00	1.70	80	IMGP1317		05/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	13.00	0.00	2.00	45	IMGP1322	Partly vegetated.	05/12/2005
Bank Erosion	Left	>10m sq	Clay	21.00	0.00	1.20	80	IMGP1328		05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	11.00	0.00	1.00	90	IMGP1330		05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	20.00	0.00	1.00	90	IMGP1331	Overhanging low shrubs.	05/12/2005
Lack of Riparian Veg	Right	>10m sq	Silt	14.00	0.00	2.00	90	IMGP1332		05/12/2005
Bank Erosion	Right	5-10m sq	Silt	5.00	0.00	1.00	90	IMGP1336		05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	50.00	0.00	1.10	90	IMGP1337		05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	10.00	0.00	1.00	90	IMGP1341		05/12/2005
Bank Erosion	Right	>10m sq	Silt	38.00	0.00	1.30	90	IMGP1344		05/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	15.00	0.00	1.20	90	IMGP1352		05/12/2005
Bank Erosion	Left	>10m sq	Silt	33.00	0.00	2.30	85	IMGP1356		05/12/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	9.20	0.00	0.80	90	IMGP1140		01/12/2005
Lack of Riparian Veg	Right	<5m sq	Roots	5.00	0.00	1.20	80	IMGP1142		01/12/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	14.00	0.00	0.90	70	IMGP1148	Field encroachment to top of bank.	01/12/2005
Lack of Riparian Veg	Left	<5m sq	Soil	10.00	0.00	0.80	80	IMGP1150	Field encroachment to top of bank. Grass and low shrubs overhanging unstable and eroding bank.	01/12/2005
Bank Erosion	Left	5-10m sq	Roots	12.50	0.00	1.10	90	IMGP1159		01/12/2005
Lack of Riparian Veg	Right	5-10m sq	Soil	24.00	0.00	1.10	85	IMGP1164	Hawthorn roots not providing adequate bank stability.	01/12/2005
Bank Erosion	Right	5-10m sq	Soil	15.00	0.00	0.80	80	IMGP1166		01/12/2005
Lack of Riparian Veg	Right	<5m sq	Soil	5.00	0.00	0.70	90	IMGP1172	Field encroachment.	01/12/2005
Lack of Riparian Veg	Right	5-10m sq	Soil	9.00	0.00	1.30	90	IMGP1173		01/12/2005
Lack of Riparian Veg	Left	5-10m sq	Roots	13.00	0.00	1.50	90	IMGP1176		01/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	12.00	0.00	1.30	85	IMGP1177		01/12/2005
Lack of Riparian Veg	Right	>10m sq	Soil	14.50	0.00	1.00	90	IMGP1180		01/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	23.00	0.00	1.10	90	IMGP1182		01/12/2005
Lack of Riparian Veg	Right	>10m sq	Roots	27.00	0.00	0.50	90	IMGP1184	Overhanging reed canary grass.	01/12/2005
Bank Erosion	Left	<5m sq	Till	3.00	0.00	1.10	90	IMGP1210		01/12/2005
Bank Erosion	Both	>10m sq	Roots	140.00	0.00	0.60	90	IMGP1213	Occurs on both banks over entire segment length.	01/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	40.00	0.00	1.00	90	IMGP1216		01/12/2005
Bank Erosion	Right	>10m sq	Soil	50.00	0.00	0.70	90	IMGP1218		01/12/2005
Bank Erosion	Left	>10m sq	Silt	20.00	0.00	0.80	70	IMGP1221	Low shrubs overhanging eroding bank.	01/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	10.50		0.80	90	IMGP1049		30/11/2005
Bank Erosion	Left	<5m sq	Silt	4.00	0.00	1.00	85	IMGP1052	Deep undercut.	30/11/2005
Bank Erosion	Right	<5m sq	Silt	6.00	0.00	0.70	80	IMGP1053		30/11/2005
Bank Erosion	Left	5-10m sq	Silt	12.70	0.00	1.00	85	IMGP1055		30/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	25.00	0.00	0.60	90	IMGP1061	Overhanging reed canary grass.	30/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	16.00	0.00	0.90	85	IMGP1062		30/11/2005
Lack of Riparian Veg	Right	<5m sq	Soil	8.00	0.00	0.60	90	IMGP1066		30/11/2005
Bank Erosion	Left	>10m sq	Silt	36.00	0.00	0.60	85	IMGP1069		30/11/2005
Bank Erosion	Right	5-10m sq	Silt	18.00	0.00	0.60	85	IMGP1076	Overhanging grass/herbs.	30/11/2005
Bank Erosion	Left	5-10m sq	Till	18.00	0.00	1.00	80	IMGP1078	Attributed to channelization/fill.	30/11/2005
Bank Erosion	Right	<5m sq	Till	8.50	0.00	0.60	80	IMGP1082	Railway encroachment.	30/11/2005
Bank Erosion	Left	5-10m sq	Silt	10.50	0.00	1.00	50	IMGP1086		30/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	33.00	0.00	0.60	90	IMGP1095	Partial overhang.	30/11/2005
Bank Erosion	Right	<5m sq	Silt	3.80	0.00	1.30	85	IMGP1098		30/11/2005
Bank Erosion	Left	<5m sq	Roots	5.00	0.00	1.10	90	IMGP1100		30/11/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	16.00	0.00	1.00	85	IMGP1101	Partial armouring along toe.	30/11/2005
Bank Erosion	Left	5-10m sq	Silt	13.00	0.00	1.50	90	IMGP1104	Due to channelization.	30/11/2005
Bank Erosion	Right	5-10m sq	Roots	16.00	0.00	1.40	90	IMGP1105		30/11/2005
Bank Erosion	Right	5-10m sq	Roots	18.00	0.00	1.50	80	IMGP1113		30/11/2005
Bank Erosion	Right	5-10m sq	Roots	16.00	0.00	1.20	80	IMGP1116		30/11/2005
Bank Erosion	Left	<5m sq	Roots	4.00	0.00	1.40	90	IMGP1117		30/11/2005
Bank Erosion	Right	>10m sq	Silt	26.00	0.00	1.50	90	IMGP1124	Overhanging rose, snowberry, and Oregon grape.	30/11/2005
Bank Erosion	Left	>10m sq	Roots	25.00	0.00	1.60	90	IMGP1127	Associated undercut bank. Note parking lot at top of bank.	30/11/2005
Bank Erosion	Left	<5m sq	Silt	4.00	0.00	0.80	90	IMGP0934		29/11/2005
Bank Erosion	Right	<5m sq	Roots	6.50	0.00	0.60	90	IMGP0950	Adjacent deep pool and undercut bank.	29/11/2005
Bank Erosion	Left	<5m sq	Roots	6.00	0.00	0.60	90	IMGP0952	Moderately stable from roots.	29/11/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	12.00	0.00	0.40	85	IMGP0957		29/11/2005
Bank Erosion	Right	<5m sq	Soil	14.00	0.00	1.00	85	IMGP0985	Unsuccessful bioengineering.	29/11/2005
Lack of Riparian Veg	Left	<5m sq	Silt	3.00	0.00	0.90	85	IMGP0994	Parallel to gas pipeline.	29/11/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	11.00	0.00	0.50	85	IMGP0878		28/11/2005
Lack of Riparian Veg	Left	>10m sq	Soil	13.50	0.00	1.00	85	IMGP0879		28/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	13.00	0.00	0.90	90	IMGP0882	Mix of soil-gravel-fill material.	28/11/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	20.00	0.00	0.75	85	IMGP0884	Root and soil exposure.	28/11/2005
Bank Erosion	Left	<5m sq	Roots	20.00	0.00	0.30	80	IMGP0886	Not severe.	28/11/2005
Bank Erosion	Right	>10m sq	Soil	12.50	0.00	1.00	85	IMGP0888		28/11/2005
Bank Erosion	Right	5-10m sq	Soil	16.00	0.00	0.60	85	IMGP0889	Partly vegetated with root exposure.	28/11/2005
Bank Erosion	Left	5-10m sq	Soil	9.50	0.00	1.20	90	IMGP0898	Undercutting and slumping.	28/11/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	15.00	0.00	0.90	85	IMGP0910		28/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	6.00	0.00	1.20	85	IMGP0911		28/11/2005
Lack of Riparian Veg	Right	<5m sq	Silt	9.00	0.00	0.90	90	IMGP0913	Intermittent rock armouring.	28/11/2005

Lack of Riparian Veg	Right	5-10m sq	Soil	11.00	0.00	1.00	80	IMGP0916		28/11/2005
Bank Erosion	Left	>10m sq	Silt	23.00	0.00	1.40	85	IMGP0919		28/11/2005
Bank Erosion	Left	5-10m sq	Silt	13.50	0.00	1.00	80	IMGP0922		28/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	17.50	0.00	1.50	90	IMGP0923		28/11/2005
Bank Erosion	Right	5-10m sq	Soil	16.50	0.00	1.00	85	IMGP0926		28/11/2005
Bank Erosion	Left	5-10m sq	Roots	28.00	0.00	1.00	90	IMGP0927		28/11/2005
Bank Erosion	Right	5-10m sq	Silt	7.50	0.00	0.80	90	IMGP0929		28/11/2005
Bank Erosion	Left	5-10m sq	Soil	7.00	0.00	0.70	60	IMGP0738	Concrete debris placed on bank to mitigate erosion.	25/11/2005
Bank Erosion	Left	<5m sq	Soil	3.50	0.00	1.20	85	IMGP0756		25/11/2005
Bank Erosion	Left	5-10m sq	Roots	19.00	0.00	1.00	90	IMGP0759		25/11/2005
Bank Erosion	Left	5-10m sq	Roots	16.00	0.00	1.00	90	IMGP0761		25/11/2005
Bank Erosion	Left	5-10m sq	Roots	14.00	0.00	1.40	90	IMGP0762		25/11/2005
Bank Erosion	Right	<5m sq	Soil	8.00	0.00	0.50	80	IMGP0780	Concrete debris placed at slope to mitigate erosion.	25/11/2005
Bank Erosion	Left	<5m sq	Soil	14.00	0.00	0.30	90	IMGP0783	Partly vegetated but persistent undercutting is evident.	25/11/2005
Bank Erosion	Left	5-10m sq	Soil	9.00	0.00	1.30	80	IMGP0633	Bank instability with wood and rock work to mitigate erosion.	24/11/2005
Bank Erosion	Right	<5m sq	Soil	4.50	0.00	0.80	85	IMGP0634	Rip rap placed along slope toe, which continues to erode.	24/11/2005
Bank Erosion	Right	<5m sq	Soil	21.00	0.00	1.00	70	IMGP0661	Discontinuous along length with some concrete debris dumped along slope toe.	24/11/2005
Lack of Riparian Veg	Right	5-10m sq	Soil	17.00	0.00	0.70	80	IMGP0671		24/11/2005
Bank Erosion	Left	<5m sq	Soil	4.00	0.00	0.80	80	IMGP0675		24/11/2005
Bank Erosion	Right	<5m sq	Soil	11.00	0.00	0.40	0	IMGP0680	Garbage and misc. debris applied to bank to mitigate erosion.	24/11/2005
Bank Erosion	Right	5-10m sq	Soil	14.00	0.00	1.10	85	IMGP0688	Some concrete debris along bank.	24/11/2005
Lack of Riparian Veg	Left	>10m sq	Silt	20.00	0.00	0.90	80	IMGP0705	Excellent enhancement opportunity.	24/11/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	5.00	0.00	1.10	80	IMGP0497		22/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	6.00	0.00	1.00	80	IMGP0499		22/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	6.50	0.00	1.00	90	IMGP0503		22/11/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	7.50	0.00	1.00	80	IMGP0508		22/11/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	8.00	0.00	1.40	80	IMGP0509		22/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	50.00	0.00	1.20	80	IMGP0517		22/11/2005
Lack of Riparian Veg	Right	>10m sq	Soil	55.00	0.00	1.10	75	IMGP0518	Mix of silt, soil, and gavel-cobble-sand fill.	22/11/2005
Bank Erosion	Left	5-10m sq	Soil	9.50	0.00	1.50	0	IMGP0555	Associated with gas pipeline crossing.	23/11/2005
Lack of Riparian Veg	Left	>10m sq	Soil	14.00	0.00	1.40	80	IMGP0560		23/11/2005
Lack of Riparian Veg	Left	>10m sq	Soil	20.00	0.00	1.30	75	IMGP0587	Previous enhancement efforts have failed to mitigate erosion.	23/11/2005
Bank Erosion	Right	5-10m sq	Silt	15.00	0.00	0.60	75	IMGP0594		23/11/2005
Bank Erosion	Left	>10m sq	Soil	15.00	0.00	0.60	70	IMGP0598		23/11/2005
Other	Right	<5m sq	Soil	15.00	0.00	0.50	90	IMGP0599	Loss of riparian vegetation and undercutting with subsequent stone/wood works to mitigate erosion.	23/11/2005
Bank Erosion	Left	<5m sq	Soil	4.50	0.00	1.40	90	IMGP0604		23/11/2005
Bank Erosion	Left	5-10m sq	Soil	12.00	0.00	0.75	80	IMGP0611		23/11/2005
Lack of Riparian Veg	Instream	5-10m sq	Soil	9.50	0.00	0.90	90	IMGP0622		23/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	11.00	0.00	1.00	90	IMGP0403	Some sloughing and colonization by reed-canary grass.	21/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	8.00	0.00	0.50	85	IMGP0410	Sloughing likely occurred prior to construction of beaver dam (downstream).	21/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	14.00	0.00	0.80	80	IMGP0428		21/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	14.00	0.00	1.00	85	IMGP0437		21/11/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	15.00	0.00	1.50	85	IMGP0441	Partially vegetated with hemp nettle. Still unstable (fill material).	21/11/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	10.00	0.00	0.70	90	IMGP0442		21/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	25.00	0.00	0.45	90	IMGP0448		21/11/2005
Lack of Riparian Veg	Left	5-10m sq	Soil	5.00	0.00	0.80	80	IMGP0455		21/11/2005
Lack of Riparian Veg	Right	>10m sq	Silt	65.00	0.00	1.20	90	IMGP0457	High priority enhancement area.	21/11/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	15.00	0.00	0.90	90	IMGP0458		21/11/2005
Lack of Riparian Veg	Right	>10m sq	Soil	26.00	0.00	0.85	90	IMGP0527		22/11/2005
Lack of Riparian Veg	Left	>10m sq	Soil	12.00	0.00	0.90	90	IMGP0529		22/11/2005
Lack of Riparian Veg	Left	>10m sq	Soil	46.00	0.00	1.40	85	IMGP0532		22/11/2005
Lack of Riparian Veg	Right	>10m sq	Soil	21.00	0.00	1.00	90	IMGP0534		22/11/2005
Lack of Riparian Veg	Right	>10m sq	Soil	45.00	0.00	1.00	90	IMGO0535		22/11/2005
Lack of Riparian Veg	Left	>10m sq	Soil	17.00	0.00	0.80	90	IMGP0536		22/11/2005
Lack of Riparian Veg	Left	<5m sq	Silt	5.00	0.00	0.65	80	IMGP1599		14/12/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	15.50	0.00	1.10	80	IMGP1600		14/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	15.00	0.00	0.70	0	IMGP1610		14/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	10.00	0.00	1.10	80	IMGP1614		14/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	7.00	0.00	1.10	90	IMGP1616		14/12/2005
Bank Erosion	Right	>10m sq	Silt	35.00	0.00	1.40	90	IMGP1620		14/12/2005
Lack of Riparian Veg	Right	>10m sq	Silt	14.00	0.00	0.60	60	IMGP1622	Partial undercutting and sloughing.	14/12/2005
Lack of Riparian Veg	Left	<5m sq	Silt	6.50	0.00	0.80	80	IMGP1627	Partly stabilized by fibrous roots of cottonwood.	14/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	11.00	0.00	0.80	60	IMGP1643	Partly sloughed.	14/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	9.50	0.00	1.10	80	IMGP1646		14/12/2005
Lack of Riparian Veg	Right	5-10m sq	Silt	9.00	0.00	1.00	75	IMGP1650	Some till and fill material.	14/12/2005
Lack of Riparian Veg	Both	>10m sq	Silt	16.00	0.00	0.80	90	IMGP1652		14/12/2005
Lack of Riparian Veg	Left	5-10m sq	Silt	13.50	0.00	0.80	85	IMGP1656		14/12/2005
Lack of Riparian Veg	Left	>10m sq	Silt	12.50	0.00	1.00	90	IMGP1658		14/12/2005
Bank Erosion	Right	>10m sq	Till	30.00	0.00	0.40	90	DCP_2530	Active at high flow only.	23/08/2002
Bank Erosion	Right	5-10m sq	Clay	10.00	0.00	0.40	90	DCP_2536		23/08/2002
Bank Erosion	Left	5-10m sq	Till	6.00	0.00	1.00	82	DCP_2537		23/08/2002
Bank Erosion	Left	5-10m sq	Clay	9.00	0.00	0.60	80	DCP_2538		23/08/2002
Bank Erosion	Left	>10m sq	Clay	25.00	0.00	1.50	90	DCP_1072		06/03/2002
Bank Erosion	Right	>10m sq	Till	12.00	0.00	2.00	90	DCP_1087		06/03/2002
Bank Erosion	Left	>10m sq	Clay	25.00	0.00	2.20	90	DCP_1088		06/03/2002
Bank Erosion	Right	>10m sq	Clay	10.00	0.00	2.00	90	DCP_1089		06/03/2002
Bank Erosion	Both	>10m sq	Silt	590.00	0.00	0.50	0	IMGP1269	Persistent instability, undercutting and erosion along entire segment length.	19000100
Bank Erosion	Both	>10m sq	Clay	375.00	0.00	1.20	0	IMGP1222	Natural channel down-cutting through clay substrates.	19000100

TYPE_HABIT	BANK	LENGTH	WIDTH	DEPTH	PHOTONUM	COMMENTS	GPS_DATE
Over Stream Vegetn.	Instream	9.00	2.50	1.00	IMGP1435	Associated pool cover.	07/12/2005
Spawning Habitat	Instream	5.80	1.50	0.10	IMGP1440		07/12/2005
Deep Pool	Instream	3.00	2.50	1.00	IMGP1445	Associated over stream cover.	07/12/2005
Over Stream Vegetn.	Right	7.50	3.50	0.50	IMGP1450		07/12/2005
Over Stream Vegetn.	Right	2.00	2.00	0.60			07/12/2005
Spawning Habitat	Instream	1.00	1.00	0.15	IMGP1453		07/12/2005
Spawning Habitat	Instream	2.00	1.00	0.15	IMGP1458		07/12/2005
Spawning Habitat	Instream	1.00	1.00	0.15	IMGP1460	Downstream of beaver dam.	07/12/2005
Over Stream Vegetn.	Right	4.00	3.00	0.80	IMGP1463		07/12/2005
Small Woody Debris	Instream	2.00	1.50	0.80	IMGP1464	Associated deep pool.	07/12/2005
Spawning Habitat	Instream	2.00	1.00	0.12	IMGP1471		07/12/2005
Spawning Habitat	Instream	15.00	1.50	0.10	IMGP1472		07/12/2005
Over Stream Vegetn.	Left	4.10	2.40	0.80	IMGP1474		07/12/2005
Spawning Habitat	Instream	2.00	0.60	0.10	IMGP1481		07/12/2005
Spawning Habitat	Instream	3.00	1.00	0.15	IMGP1482		07/12/2005
Spawning Habitat	Instream	5.00	1.00	0.10	IMGP1485		07/12/2005
Small Woody Debris	Instream	3.50	3.00	0.40	IMGP1492	Associated over stream cover.	07/12/2005
Over Stream Vegetn.	Both	10.00	4.50	0.60	IMGP1495		07/12/2005
Small Woody Debris	Instream	1.60	5.20	0.30	IMGP1496		07/12/2005
Small Woody Debris	Instream	20.00	4.30	0.40	IMGP1497	Associated over stream cover.	07/12/2005
Small Woody Debris	Instream	3.00	2.00	0.20		Associated over stream cover.	07/12/2005
Undercut Bank	Right	3.50	1.00	0.40	IMGP1505	Undercut bank/roots of cottonwood.	07/12/2005
Deep Pool	Instream	2.10	2.00	0.80	IMGP1506	Instream cover is very limited in this segment and therefore this shallow pool was recorded.	07/12/2005
Deep Pool	Instream	3.00	2.00	0.80	IMGP1511	Associated undercut bank.	07/12/2005
Other	Right	4.00	4.00	0.60	IMGP1512	Mix of undercut bank, over stream cover, and instream woody debris.	07/12/2005
Over Stream Vegetn.	Left	4.50	3.20	0.60	IMGP1513		07/12/2005
Deep Pool	Instream	6.00	3.00	1.00			07/12/2005
Large Woody Debris	Instream	3.00	5.00	1.50	IMGP1368	Associated with deep pool cover, which extends over the entire segment.	06/12/2005
Over Stream Vegetn.	Instream	5.50	4.30	0.80	IMGP1372		06/12/2005
Deep Pool	Instream	8.00	3.00	1.20			06/12/2005
Over Stream Vegetn.	Instream	25.00	4.00	0.90	IMGP1377	Associated deep pool cover.	06/12/2005
Over Stream Vegetn.	Instream	9.00	5.20	0.80	IMGP1379		06/12/2005
Deep Pool	Instream	6.00	3.30	1.20	IMGP1380	Associated over stream cover.	06/12/2005
Small Woody Debris	Instream	4.50	4.30	0.40	IMGP1381	Associated over stream cover.	06/12/2005
Deep Pool	Instream	5.00	2.00	1.00			06/12/2005
Deep Pool	Instream	4.00	2.00	1.20			06/12/2005
Large Woody Debris	Instream	3.20	2.80	0.75	IMGP1383		06/12/2005
Deep Pool	Instream	4.50	2.00	1.00		Associated over stream cover.	06/12/2005
Over Stream Vegetn.	Instream	21.00	3.00	0.50	IMGP1384		06/12/2005
Deep Pool	Instream	17.00	3.00	1.20	IMGP1385	Associated instream woody debris and over stream cover.	06/12/2005
Over Stream Vegetn.	Left	4.30	2.00	0.70	IMGP1386	Erosion occurring on bank.	06/12/2005
Over Stream Vegetn.	Instream	9.50	4.00	5.00	IMGP1388		06/12/2005
Deep Pool	Instream	250.00	4.00	1.20		Beaver pond.	06/12/2005
Deep Pool	Instream	4.70	24.00	1.10		Associated boulder and over stream cover.	06/12/2005
Deep Pool	Instream	70.00	2.50	1.10	IMGP1400	Beaver pond.	06/12/2005
Deep Pool	Instream	6.00	3.00	1.20	IMGP1405	Erosion along right bank.	06/12/2005
Small Woody Debris	Instream	2.00	3.80	0.50	IMGP1406	Associated over stream cover.	06/12/2005
Small Woody Debris	Instream	2.00	2.00	0.30	IMGP1407		06/12/2005
Deep Pool	Instream	5.50	2.20	1.10	IMGP1408		06/12/2005
Deep Pool	Instream	3.00	2.00	1.10		Associated with beaver dam.	06/12/2005
Deep Pool	Instream	2.00	1.80	1.00			06/12/2005
Deep Pool	Instream	9.00	3.00	1.00		Associated over stream cover.	06/12/2005
Deep Pool	Instream	4.50	4.50	1.00			06/12/2005
Over Stream Vegetn.	Instream	4.00	1.70	0.70	IMGP1414		06/12/2005
Over Stream Vegetn.	Instream	3.80	2.70	0.70	IMGP1415		06/12/2005
Deep Pool	Instream	5.00	2.00	1.00		Associated over stream, undercut bank, and instream woody debris.	06/12/2005
Over Stream Vegetn.	Instream	10.00	5.00	0.50	IMGP1416		06/12/2005
Large Woody Debris	Instream	5.00	5.70	0.80	IMGP1260	Associated scour pool.	05/12/2005
Small Woody Debris	Instream	23.00	4.00	0.80	IMGP1262	Associated over stream vegetation and undercut bank.	05/12/2005
Over Stream Vegetn.	Left	4.50	2.00	0.40	IMGP1263		05/12/2005
Small Woody Debris	Instream	1.20	2.70	0.40	IMGP1264	Beaver activity.	05/12/2005
Small Woody Debris	Instream	3.50	3.30	0.60	IMGP1268	Associated over stream vegetation cover.	05/12/2005
Deep Pool	Instream	2.00	2.00	1.00		Associated with wier and instream woody debris	05/12/2005
Other	Instream	12.00	6.00	0.00	IMGP1275	Complex of over stream cover, and instream coarse woody debris.	05/12/2005
Deep Pool	Instream	3.00	3.00	1.00			05/12/2005
Deep Pool	Instream	13.00	2.25	1.00	IMGP1280	Associated over stream vegetation.	05/12/2005
Deep Pool	Instream	12.00	3.00	0.90	IMGP1283	Associated instream woody debris. Erosion along left bank.	05/12/2005
Small Woody Debris	Instream	6.00	4.50	0.60	IMGP1286	Associated shallow pool.	05/12/2005
Over Stream Vegetn.	Instream	3.00	3.40	0.40	IMGP1288		05/12/2005
Deep Pool	Instream	3.50	3.50	1.00			05/12/2005
Deep Pool	Instream	6.00	4.00	1.20	IMGP1292		05/12/2005
Small Woody Debris	Instream	11.00	4.50	0.80	IMGP1294	Associated deep pool cover.	05/12/2005
Deep Pool	Instream	15.00	4.00	1.00		Clay substrates.	05/12/2005
Large Woody Debris	Instream	1.00	3.50	1.20	IMGP1296		05/12/2005
Small Woody Debris	Instream	8.00	1.00	0.65		Partially on left bank.	05/12/2005
Deep Pool	Instream	12.00	4.20	1.20			05/12/2005
Small Woody Debris	Instream	5.00	3.80	0.80	IMGP1299	Associated deep pool and over stream vegetation cover.	05/12/2005
Over Stream Vegetn.	Instream	3.50	1.00	0.80	IMGP1301		05/12/2005
Deep Pool	Instream	13.00	4.00	1.40	IMGP1306		05/12/2005
Over Stream Vegetn.	Instream	6.00	2.00	0.70			05/12/2005
Deep Pool	Instream	10.00	2.10	1.00		Associated undercut bank.	05/12/2005
Deep Pool	Instream	8.00	3.00	1.00			05/12/2005
Deep Pool	Instream	5.80	2.20	1.10		Associated undercut bank and instream woody debris.	05/12/2005
Large Woody Debris	Instream	1.00	4.00	0.90	IMGP1323		05/12/2005
Small Woody Debris	Instream	12.00	4.50	0.70	IMGP1325		05/12/2005
Deep Pool	Instream	120.00	4.00	1.50			05/12/2005
Large Woody Debris	Instream	8.00	3.50	1.20	IMGP1333	Associated deep pool and undercut bank.	05/12/2005
Large Woody Debris	Instream	4.00	2.50	1.00	IMGP1334		05/12/2005
Large Woody Debris	Instream	4.00	7.50	1.30	IMGP1354	Associated deep pool (deep pool over entire segment due to beaver activity).	05/12/2005
Large Woody Debris	Instream	2.00	4.80	1.60	IMGP1355		05/12/2005
Undercut Bank	Left	2.00	1.00	0.70	IMGP1139	Associated over stream cover and instream woody debris.	01/12/2005
Large Woody Debris	Instream	4.00	0.50	0.15	IMGP1143		01/12/2005

Deep Pool	Instream	2.00	2.00	0.90	IMGP1144	Associated undercut bank.	01/12/2005
Over Stream Vegetn.	Instream	5.00	2.50	0.10	IMGP1145		01/12/2005
Small Woody Debris	Instream	1.50	4.50	0.20	IMGP1146	Beaver activity.	01/12/2005
Undercut Bank	Instream	3.00	1.00	0.60	IMGP1147		01/12/2005
Deep Pool	Instream	2.00	1.50	0.90			01/12/2005
Large Woody Debris	Instream	3.00	4.00	0.30	IMGP1151		01/12/2005
Spawning Habitat	Instream	2.50	2.50	0.10	IMGP1152		01/12/2005
Undercut Bank	Right	4.00	0.60	0.50	IMGP1153		01/12/2005
Small Woody Debris	Instream	4.00	2.60	0.15	IMGP1154		01/12/2005
Over Stream Vegetn.	Instream	7.00	3.50	0.70	IMGP1155	Associated undercut bank and shallow pool cover.	01/12/2005
Spawning Habitat	Instream	1.50	1.50	0.15	IMGP1156	Occurs over portion of riffle.	01/12/2005
Undercut Bank	Right	1.50	1.00	0.60	IMGP1157	Veteran cottonwood.	01/12/2005
Over Stream Vegetn.	Instream	3.50	5.00	0.70	IMGP1158	Associated undercut bank and shallow pool.	01/12/2005
Large Woody Debris	Instream	5.00	5.30	0.30	IMGP1160	Influence development of mid-channel gravel bar with small pockets of suitable spawning gravel.	01/12/2005
Undercut Bank	Right	5.30	0.50	0.50	IMGP1161		01/12/2005
Large Woody Debris	Instream	5.00	2.50	0.20	IMGP1162	Associated spawning gravels.	01/12/2005
Small Woody Debris	Instream	2.50	5.00	0.30	IMGP1163		01/12/2005
Large Woody Debris	Instream	0.50	5.00	0.30		Instream span log. No photo available.	01/12/2005
Undercut Bank	Right	2.00	1.00	0.70	IMGP1167	Associated shallow pool and over stream vegetation.	01/12/2005
Over Stream Vegetn.	Instream	5.00	5.50	0.25	IMGP1168	Associated over stream vegetation cover.	01/12/2005
Small Woody Debris	Instream	2.00	4.50	0.20	IMGP1169		01/12/2005
Deep Pool	Instream	9.00	5.00	0.90	IMGP1170	Associated over stream vegetation and small woody debris cover.	01/12/2005
Small Woody Debris	Instream	4.00	5.00	0.15	IMGP1171		01/12/2005
Small Woody Debris	Instream	6.50	1.50	0.25	IMGP1174	Associated over stream vegetation cover.	01/12/2005
Large Woody Debris	Instream	3.00	5.00	0.40	IMGP1175	Small pockets of spawning gravel occur.	01/12/2005
Large Woody Debris	Instream	8.00	6.00	0.50	IMGP1179	Small woody debris also accumulated with over stream vegetation cover also present.	01/12/2005
Small Woody Debris	Instream	3.50	3.00	0.40	IMGP1181		01/12/2005
Over Stream Vegetn.	Instream	13.00	3.50	0.40	IMGP1183	Associated small woody debris.	01/12/2005
Over Stream Vegetn.	Instream	5.00	5.00	0.50	IMGP1185	Hawthorn undercut by bank erosion and partially fallen into creek.	01/12/2005
Undercut Bank	Instream	1.50	0.70	0.65	IMGP1186	Associated shallow pool.	01/12/2005
Large Woody Debris	Instream	4.00	2.80	0.60	IMGP1196	Associated undercut bank.	01/12/2005
Spawning Habitat	Instream	2.00	2.00	0.16	IMGP1200		01/12/2005
Deep Pool	Instream	9.00	4.00	1.10	IMGP1201	Beneath bridge.	01/12/2005
Undercut Bank	Right	2.00	1.00	0.50	IMGP1204		01/12/2005
Deep Pool	Instream	4.50	2.50	0.90	IMGP1208	Under bridge.	01/12/2005
Large Woody Debris	Instream	1.50	5.10	0.90	IMGP1223		01/12/2005
Large Woody Debris	Instream	4.00	3.00	0.50	IMGP1224		01/12/2005
Deep Pool	Instream	4.00	3.00	1.00		Occurs on 180 degree stream bend.	01/12/2005
Small Woody Debris	Instream	3.50	3.00	0.40	IMGP1225	Associated garbage.	01/12/2005
Large Woody Debris	Instream	4.50	6.00	1.00	IMGP1227	Deep pool scoured in fine (clay) substrates beneath.	01/12/2005
Large Woody Debris	Instream	3.00	4.50	1.00		Deep pool scoured in fine (clay) substrates beneath.	01/12/2005
Deep Pool	Instream	3.00	2.00	1.00		Associated undercut bank.	01/12/2005
Large Woody Debris	Instream	4.50	5.50	0.70	IMGP1228	Pool scoured in fine (clay) substrates beneath.	01/12/2005
Large Woody Debris	Instream	3.70	0.60	0.35			01/12/2005
Large Woody Debris	Instream	6.00	3.50	0.50	IMGP1229		01/12/2005
Deep Pool	Both	4.50	1.50	0.90		Adjacent eroding bank.	01/12/2005
Large Woody Debris	Instream	3.60	5.60	0.60	IMGP1230	Tires trapped in debris.	01/12/2005
Large Woody Debris	Instream	5.00	4.50	0.65	IMGP1231		01/12/2005
Large Woody Debris	Instream	9.00	3.00	0.35	IMGP1232		01/12/2005
Large Woody Debris	Instream	6.50	6.50	0.50	IMGP1233		01/12/2005
Large Woody Debris	Instream	4.00	3.50	1.00	IMGP1234		01/12/2005
Large Woody Debris	Instream	6.00	3.00	0.55	IMGP1236	Scattered debris and associated scour pool.	01/12/2005
Large Woody Debris	Instream	4.60	4.50	0.55	IMGP1237		01/12/2005
Deep Pool	Instream	4.00	2.50	1.00			01/12/2005
Deep Pool	Instream	4.00	3.00	1.00		Associated over stream vegetation.	01/12/2005
Over Stream Vegetn.	Instream	3.50	3.50	0.50	IMGP1241		01/12/2005
Deep Pool	Instream	56.00	4.00	1.00	IMGP1031	Entire segment is deep pool with beaver influence, instream woody debris, and over stream vegetation	30/11/2005
Deep Pool	Instream	10.00	2.40	1.00	IMGP1035	Associated instream large woody debris.	30/11/2005
Large Woody Debris	Instream	8.00	2.00	0.52	IMGP1037		30/11/2005
Deep Pool	Instream	11.50	3.00	1.10	IMGP1037		30/11/2005
Deep Pool	Instream	27.00	3.50	1.00		Upstream of beaver dam.	30/11/2005
Deep Pool	Instream	39.00	4.00	1.10	IMGP1041	Associated over stream vegetation cover and instream woody debris.	30/11/2005
Small Woody Debris	Instream	2.00	8.00	0.60	IMGP1045	Beaver activity and organic debris.	30/11/2005
Small Woody Debris	Instream	1.70	9.20	0.50	IMGP1047	Beaver activity over existing rock wier.	30/11/2005
Deep Pool	Instream	30.00	3.00	1.20	IMGP1058	Associated log revetment.	30/11/2005
Small Woody Debris	Instream	3.00	6.10	0.60	IMGP1059		30/11/2005
Large Woody Debris	Instream	2.20	7.50	0.60	IMGP1068		30/11/2005
Over Stream Vegetn.	Instream	5.00	4.50	0.50	IMGP1070		30/11/2005
Small Woody Debris	Instream	12.00	5.50	0.45	IMGP1071	Associated with span logs, undercut bank and over stream vegetation cover.	30/11/2005
Small Woody Debris	Instream	1.30	4.50	0.50			30/11/2005
Small Woody Debris	Instream	1.50	3.80	0.50	IMGP1077		30/11/2005
Small Woody Debris	Instream	10.00	7.00	0.25	IMGP1080	Dense over stream cover.	30/11/2005
Small Woody Debris	Instream	3.50	3.50	0.20	IMGP1081	Associated over stream cover.	30/11/2005
Large Woody Debris	Instream	30.00	5.50	0.40	IMGP1083	Abundant instream woody debris and span logs associated with deep pool cover.	30/11/2005
Deep Pool	Instream	35.00	5.50	1.30	IMGP1088	Upstream of debris barrier.	30/11/2005
Small Woody Debris	Instream	5.00	9.00	0.50	IMGP1089		30/11/2005
Large Woody Debris	Instream	1.70	2.50	0.25	IMGP1091	Only partially instream.	30/11/2005
Deep Pool	Instream	2.00	25.00	0.90		Associated with wier.	30/11/2005
Over Stream Vegetn.	Instream	5.00	4.50	0.50	IMGP1102	Associated instream woody debris cover.	30/11/2005
Small Woody Debris	Instream	3.00	1.50	0.50		Hawthorn undercut and falling into creek. No photo available.	30/11/2005
Small Woody Debris	Instream	4.50	3.00	0.45	IMGP1106	Associated over stream cover.	30/11/2005
Small Woody Debris	Instream	6.00	4.00	0.70	IMGP1112		30/11/2005
Large Woody Debris	Instream	6.50	3.50	0.60	IMGP1118		30/11/2005
Undercut Bank	Left	2.00	1.80	0.80	IMGP1119		30/11/2005
Undercut Bank	Left	10.00	1.00	0.90	IMGP1127		30/11/2005
Large Woody Debris	Instream	3.00	2.00	0.90	IMGP0942	Coarse woody debris jam against right bank armouring.	29/11/2005
Large Woody Debris	Instream	1.50	7.00	0.45	IMGP0945	Instream span log with associated scour pool with small patch of spawning gravel.	29/11/2005
Over Stream Vegetn.	Instream	3.50	3.50	0.30	IMGP0945		29/11/2005
Large Woody Debris	Instream	3.00	7.00	0.40	IMGP0946		29/11/2005
Deep Pool	Instream	5.00	2.00	0.90	IMGP0949		29/11/2005
Deep Pool	Instream	6.50	3.00	0.90	IMGP0950	Associated undercut bank.	29/11/2005
Small Woody Debris	Instream	2.50	3.50	0.40	IMGP0951	Associated span log.	29/11/2005
Large Woody Debris	Instream	2.50	5.00	0.40	IMGP0953		29/11/2005

Small Woody Debris	Right	2.50	4.00	0.15		Horizontal willow (partial span) trapping woody debris and creating flow deflection.	29/11/2005
Deep Pool	Instream	4.00	2.00	0.80	IMGP0962	Large fish observed in turbid water.	29/11/2005
Deep Pool	Instream	4.00	1.30	0.80		Associated instream coarse woody debris.	29/11/2005
Small Woody Debris	Instream	2.50	6.00	0.40	IMGP0963		29/11/2005
Deep Pool	Instream	3.00	3.00	1.00			29/11/2005
Spawning Habitat	Instream	2.00	3.00	0.10	IMGP0964	Situated below large woody debris jam.	29/11/2005
Large Woody Debris	Instream	8.00	9.00	0.20	IMGP0964	Beaver dam occurrence adjacent upstream.	29/11/2005
Deep Pool	Instream	13.00	4.50	1.10	IMGP0966	Associated with beaver dam and instream woody debris jam.	29/11/2005
Small Woody Debris	Instream	3.00	10.00	0.70	IMGP0967	Centre of beaver dam removed.	29/11/2005
Undercut Bank	Left	4.00	0.60	0.25	IMGP0968	Seven span logs (felled by beaver) over stream channel.	29/11/2005
Undercut Bank	Left	3.50	0.40	0.40		Cottonwood root mats.	29/11/2005
Large Woody Debris	Instream	5.00	3.20	0.50	IMGP0973		29/11/2005
Deep Pool	Instream	4.00	1.50	1.00	IMGP0974	Associated with undercut enhancement.	29/11/2005
Over Stream Vegetn.	Instream	3.00	2.00	0.20	IMGP0975	Red-osier dogwood.	29/11/2005
Spawning Habitat	Instream	5.00	3.50	0.15			29/11/2005
Small Woody Debris	Instream	1.50	0.20	0.50		Associated with beaver activity.	29/11/2005
Deep Pool	Instream	4.00	1.50	1.00		Adjacent storm drain.	29/11/2005
Small Woody Debris	Instream	1.00	4.50	0.45		Associated with beaver activity.	29/11/2005
Over Stream Vegetn.	Instream	12.00	6.00	0.30	IMGP0981	Reed canary grass, willow, and small island with side channel.	29/11/2005
Small Woody Debris	Instream	2.50	4.00	0.30	IMGP0984	Wier enhancement adopted by beaver.	29/11/2005
Deep Pool	Instream	7.50	3.00	1.00		Associated undercut bank.	29/11/2005
Undercut Bank	Right	3.00	1.50	0.80	IMGP0991	Associated pool and instream woody debris.	29/11/2005
Deep Pool	Instream	2.50	1.50	0.90	IMGP0995	Scour pool below rock wier.	29/11/2005
Deep Pool	Instream	20.00	4.50	1.00		Upstream of beaver dam.	29/11/2005
Spawning Habitat	Instream	3.00	1.50	0.10	IMGP0850		28/11/2005
Spawning Habitat	Instream	6.00	1.70	0.18	IMGP0853		28/11/2005
Spawning Habitat	Instream	3.00	1.30	0.20			28/11/2005
Spawning Habitat	Instream	7.00	3.00	0.20		Amongst boulders.	28/11/2005
Spawning Habitat	Instream	10.00	2.80	0.10	IMGP0855		28/11/2005
Spawning Habitat	Instream	5.50	2.60	0.18		Upstream of rock wier.	28/11/2005
Deep Pool	Instream	3.00	3.00	0.90			28/11/2005
Other	Instream	29.00	8.50	35.00	IMGP0860	Complex of side channel, over stream vegetation, and deep pool associated with debris jam/beaver dam	28/11/2005
Deep Pool	Instream	6.00	3.50	1.00			28/11/2005
Spawning Habitat	Instream	14.00	3.00	0.15	IMGP0862		28/11/2005
Small Woody Debris	Instream	2.50	2.00	0.30	IMGP0864	Partial spanning willow (live).	28/11/2005
Large Woody Debris	Instream	11.00	5.00	0.35	IMGP0866	Spanning willow / debris catcher. Associated beaver activity and over stream vegetation cover.	28/11/2005
Undercut Bank	Right	3.00	0.35	0.25		Cottonwood root mat.	28/11/2005
Spawning Habitat	Instream	3.00	1.00	0.15		Downstream of beaver dam and shallow pool.	28/11/2005
Deep Pool	Instream	13.00	2.00	1.10	IMGP0868	Associated with beaver activity (dam) and excavation for rock-toe key / bank stabilization.	28/11/2005
Over Stream Vegetn.	Instream	18.00	5.00	0.50	IMGP0869	Over stream willow from both banks.	28/11/2005
Deep Pool	Instream	4.80	3.00	1.00			28/11/2005
Deep Pool	Instream	5.50	2.00	0.90	IMGP0873	Associated instream vegetation and instream coarse woody debris.	28/11/2005
Over Stream Vegetn.	Left	10.50	6.20	0.70	IMGP0874	Associated undercut bank and deep pool.	28/11/2005
Over Stream Vegetn.	Right	6.00	1.00	0.70		Associated shallow pool downstream of riffle.	28/11/2005
Deep Pool	Instream	3.00	2.00	0.90		Associated instream coarse woody debris.	28/11/2005
Deep Pool	Instream	11.00	4.50	1.20	IMGP0880.	Downstream of beaver dam/debris jam.	28/11/2005
Over Stream Vegetn.	Instream	9.00	5.00	0.60	IMGP0883		28/11/2005
Spawning Habitat	Instream	3.00	1.50	0.15		No photo available.	28/11/2005
Deep Pool	Instream	3.00	2.00	1.00		No photo available.	28/11/2005
Spawning Habitat	Instream	2.00	2.00	0.15	IMGP0893	Associated with upstream boulder placement.	28/11/2005
Deep Pool	Instream	10.00	2.50	1.10	IMGP0897	Associated instream coarse woody debris.	28/11/2005
Spawning Habitat	Instream	4.00	3.00	0.15	IMGP0903	Associated with v-notch wier (upstream and downstream).	28/11/2005
Deep Pool	Instream	2.00	1.50	1.10			28/11/2005
Small Woody Debris	Instream	4.00	3.50	0.75		Associated shallow pool.	28/11/2005
Spawning Habitat	Instream	8.00	2.50	0.10		Larger gravels.	28/11/2005
Spawning Habitat	Instream	5.00	1.20	0.15			28/11/2005
Deep Pool	Instream	7.50	2.70	1.00	IMGP0930		28/11/2005
Spawning Habitat	Instream	3.00	1.00	0.15	IMGP0744	Associated with wier-deep pool (enhancement).	25/11/2005
Spawning Habitat	Instream	17.00	1.00	0.20	IMGP0746	Narrow band of gravel along run.	25/11/2005
Deep Pool	Instream	2.00	2.00	0.90		No photo.	25/11/2005
Spawning Habitat	Instream	14.00	2.50	0.10	IMGP0752		25/11/2005
Small Woody Debris	Instream	4.00	4.00	0.25	IMGP0758	Over stream willow from left bank. Debris catcher.	25/11/2005
Deep Pool	Instream	2.50	2.00	0.90	IMGP0768	Associated with boulder placement and subsequent scour.	25/11/2005
Spawning Habitat	Instream	11.00	3.00	0.10	IMGP0769	Sequence of enhancements.	25/11/2005
Spawning Habitat	Instream	5.00	3.00	0.20			25/11/2005
Spawning Habitat	Instream	5.00	3.00	0.20	IMGP0773		25/11/2005
Spawning Habitat	Instream	26.00	2.50	0.12			25/11/2005
Spawning Habitat	Instream	7.50	3.50	0.18			25/11/2005
Deep Pool	Instream	8.00	3.00	1.20	IMGP0778		25/11/2005
Spawning Habitat	Instream	25.00	2.50	0.15			25/11/2005
Undercut Bank	Instream	2.00	0.60	0.30	IMGP0793	Associated with root wad.	25/11/2005
Spawning Habitat	Instream	13.00	2.50	0.16	IMGP0795		25/11/2005
Spawning Habitat	Instream	14.00	3.00	0.20	IMGP0797		25/11/2005
Spawning Habitat	Instream	6.00	2.00	0.10	IMGP0800		25/11/2005
Spawning Habitat	Instream	11.00	1.80	0.18		No photo.	25/11/2005
Deep Pool	Instream	6.00	2.50	1.00	IMGP0811	Associated undercut bank.	25/11/2005
Spawning Habitat	Instream	6.00	3.00	0.30			25/11/2005
Spawning Habitat	Instream	5.00	2.00	0.20	IMGP0812		25/11/2005
Deep Pool	Instream	5.00	2.50	0.90			25/11/2005
Spawning Habitat	Instream	28.00	3.00	0.20	IMGP0816		25/11/2005
Spawning Habitat	Instream	8.00	3.50	0.20	IMGP0818		25/11/2005
Deep Pool	Instream	3.00	2.40	0.90		Associated with opposing wing deflectors.	25/11/2005
Deep Pool	Instream	21.00	4.00	1.10		Associated undercut bank and over stream vegetation.	25/11/2005
Over Stream Vegetn.	Both	17.00	4.00	0.80	IMGP0822	Willows over deep pool.	25/11/2005
Spawning Habitat	Instream	11.00	4.00	0.26		No photo.	25/11/2005
Small Woody Debris	Instream	15.00	4.50	0.65	IMGP0837		25/11/2005
Over Stream Vegetn.	Instream	11.50	4.00	0.40	IMGP0840	Associated undercut bank/roots.	25/11/2005
Spawning Habitat	Instream	5.00	2.50	0.28		Associated wier.	25/11/2005
Spawning Habitat	Instream	9.00	1.50	0.35		Appears to be more marginal due to partial embeddedness of gravel in fine substrates.	25/11/2005
Spawning Habitat	Instream	5.00	2.00	0.25	IMGP0630		24/11/2005
Spawning Habitat	Instream	1.50	2.00	0.15	IMGP0630	Small gravel deposit with adjacent upstream pool.	24/11/2005
Spawning Habitat	Instream	9.00	1.50	0.20		On inside stream bend (no photo).	24/11/2005
Spawning Habitat	Instream	22.00	2.50	0.20	IMGP0636	Downstream and in conjunction with weir installation.	24/11/2005

Spawning Habitat	Instream	11.00	2.50	0.15		No photo.	24/11/2005
Spawning Habitat	Instream	8.00	2.00	0.20	IMGP0644		24/11/2005
Deep Pool	Instream	4.00	3.00	0.90	IMGP0646		24/11/2005
Over Stream Vegetn.	Left	14.00	2.00	0.15	IMGP0647		24/11/2005
Spawning Habitat	Instream	17.00	3.00	0.10	IMGP0652		24/11/2005
Deep Pool	Instream	3.00	2.50	1.00			24/11/2005
Spawning Habitat	Instream	11.00	3.00	0.20	IMGP0667	Associated with weir construction (shown in photo).	24/11/2005
Spawning Habitat	Instream	7.00	2.00	0.20	IMGP0668	Both upstream of weir and downstream of shallow scour pool.	24/11/2005
Spawning Habitat	Instream	15.00	2.50	0.15		No photo.	24/11/2005
Undercut Bank	Left	2.00	1.50	0.45	IMGP0678	Base of veteran willow.	24/11/2005
Undercut Bank	Left	5.00	0.50	0.60	IMGP0679		24/11/2005
Spawning Habitat	Instream	9.00	3.00	0.15	IMGP0685		24/11/2005
Deep Pool	Instream	4.00	2.00	0.90		No photo.	24/11/2005
Spawning Habitat	Instream	12.00	4.00	0.15	IMGP0686		24/11/2005
Deep Pool	Instream	5.00	3.00	1.00			24/11/2005
Deep Pool	Instream	2.00	1.50	0.90			24/11/2005
Deep Pool	Instream	6.00	3.00	1.00	IMGP0694	Adjacent stonework along wall.	24/11/2005
Spawning Habitat	Instream	6.00	4.50	0.10		Gravel placement.	24/11/2005
Spawning Habitat	Instream	7.00	3.50	0.10	IMGP0702		24/11/2005
Deep Pool	Instream	3.50	2.00	1.00	IMGP0704	Associated with instream wier construction.	24/11/2005
Deep Pool	Instream	3.00	2.00	0.90			24/11/2005
Spawning Habitat	Instream	6.00	3.00	0.20		Downstream of opposing wing deflectors.	24/11/2005
Deep Pool	Instream	2.50	2.50	1.00	IMGP0708	Scour around root wad.	24/11/2005
Spawning Habitat	Instream	15.00	3.80	0.08			24/11/2005
Deep Pool	Instream	9.00	3.00	1.10	IMGP0711	Undercut associated with mature willows.	24/11/2005
Spawning Habitat	Instream	19.00	3.50	0.10	IMGP0712		24/11/2005
Spawning Habitat	Instream	21.00	5.00	0.10	IMGP0715		24/11/2005
Spawning Habitat	Instream	15.00	4.00	0.15		No photo due to poor visibility.	24/11/2005
Spawning Habitat	Instream	8.00	3.50	0.20			24/11/2005
Deep Pool	Instream	6.00	2.00	1.00	IMGP0721	associated undercut bank (roots).	24/11/2005
Undercut Bank	Instream	2.30	2.00	0.80	IMGP0722		24/11/2005
Deep Pool	Instream	3.00	2.00	1.00	IMGP0723	Associated undercut bank.	24/11/2005
Spawning Habitat	Instream	9.00	3.50	0.15			24/11/2005
Deep Pool	Instream	3.00	3.00	1.00	IMGP0725	Associated with wier.	24/11/2005
Spawning Habitat	Instream	10.00	3.60	0.15	IMGP0725	Upstream of wier.	24/11/2005
Spawning Habitat	Instream	4.00	2.50	0.15			24/11/2005
Spawning Habitat	Instream	3.00	3.00	0.10	IMGP0726		24/11/2005
Spawning Habitat	Instream	8.00	3.50	0.15		Partly beneath Gordon Road bridge.	24/11/2005
Large Woody Debris	Instream	3.00	4.50	0.55	IMGP0737	Debris catcher.	24/11/2005
Instream Vegetation	Instream	6.00	2.00	0.25	IMGP0483	Instream bulrush.	22/11/2005
Instream Vegetation	Instream	15.00	2.50	0.10	IMGP0484	Small pockets of gravels suitable for spawning.	22/11/2005
Undercut Bank	Right	4.00	0.40	0.20	IMGP0491	Trout spooked from beneath bank.	22/11/2005
Over Stream Vegetn.	Both	6.00	3.50	0.15	IMGP0493		22/11/2005
Over Stream Vegetn.	Left	2.00	2.00	0.20	IMGP0496	Associated minor undercut.	22/11/2005
Instream Vegetation	Instream	15.00	1.00	0.12	IMGP0498	Pondweed sp.	22/11/2005
Undercut Bank	Left	4.00	0.20	0.15	IMGP0501	Brook trout observed.	22/11/2005
Instream Vegetation	Instream	30.00	2.00	0.12	IMGP0502	Patches of pondweed sp. along 30-m length.	22/11/2005
Undercut Bank	Left	9.50	0.25	0.10	IMGP0504	Associated over stream vegetation.	22/11/2005
Undercut Bank	Right	2.50	0.50	0.35	IMGP0504	Associated over stream vegetation and shallow pool cover. Trout sp. observed.	22/11/2005
Deep Pool	Instream	3.00	3.50	1.00	IMGP0546	Scour around instream small woody debris. Garbage accumulation.	23/11/2005
Small Woody Debris	Instream	0.00	3.00	0.70	IMGP0551	Woody debris captured by large cottonwood. Associated undercut habitat.	23/11/2005
Deep Pool	Instream	4.00	2.50	1.00			23/11/2005
Deep Pool	Instream	2.00	2.00	1.00	IMGP0561		23/11/2005
Spawning Habitat	Instream	3.00	1.60	0.20	IMGP0576	Some partial embeddedness.	23/11/2005
Spawning Habitat	Instream	10.00	1.00	0.20	IMGP0584		23/11/2005
Deep Pool	Instream	5.00	2.00	1.00	IMGP0593	Associated undercut bank.	23/11/2005
Undercut Bank	Right	5.00	0.70	0.80	IMGP0607	Deep undercut beneath willow roots.	23/11/2005
Small Woody Debris	Instream	1.50	4.00	0.80	IMGP0608	Associated with partially collapsed weir. Shallow pools occur both upstream and downstream.	23/11/2005
Deep Pool	Instream	10.00	1.50	1.00	IMGP0609		23/11/2005
Spawning Habitat	Instream	45.00	2.30	0.15	IMGP0613	Kokanee observed spawning in fall 2005.	23/11/2005
Spawning Habitat	Instream	20.00	2.50	0.15	IMGP0616	Associated weir/deep pool enhancement works. Kokanee observed spawning in fall 2005.	23/11/2005
Spawning Habitat	Instream	12.00	3.00	0.15	IMGP0621	Some embedded but suitable.	23/11/2005
Undercut Bank	Instream	22.00	3.50	0.10	IMGP0626		23/11/2005
Deep Pool	Instream	13.00	5.00	1.20	IMGP0399	Beaver pond.	21/11/2005
Over Stream Vegetn.	Right	5.00	3.00	0.80	IMGP0401	Associated undercut bank and pool.	21/11/2005
Deep Pool	Instream	17.00	5.60	1.20	IMGP0402	Beaver pond associated structural cover (undercut bank; over stream vegetation; woody debris).	21/11/2005
Large Woody Debris	Instream	1.00	3.50	0.60	IMGP0404		21/11/2005
Large Woody Debris	Instream	9.00	5.00	0.40	IMGP0405		21/11/2005
Undercut Bank	Left	8.00	1.00	0.90	IMGP0406	Associated with root wad of willow and cottonwood.	21/11/2005
Deep Pool	Instream	17.00	2.50	1.20	IMGP0409	Associated woody debris and small undercut vegetated islands.	21/11/2005
Small Woody Debris	Instream	5.00	4.00	0.40	IMGP0414		21/11/2005
Small Woody Debris	Instream	3.00	2.00	0.70	IMGP0416		21/11/2005
Deep Pool	Instream	101.00	9.50	1.50	IMGP0418	Abundant coarse woody debris associated with feature.	21/11/2005
Large Woody Debris	Instream	3.00	5.00	0.80	IMGP0419	Garbage (empty fuel drum) and other debris trapped in jam.	21/11/2005
Deep Pool	Instream	4.00	3.00	1.10	IMGP0421		21/11/2005
Small Woody Debris	Instream	1.50	4.00	0.35	IMGP0422		21/11/2005
Deep Pool	Instream	4.00	4.00	1.00	IMGP0427		21/11/2005
Spawning Habitat	Instream	8.00	5.00	0.10	IMGP0431	Small gravel riffle maintained by instream woody debris.	21/11/2005
Deep Pool	Instream	10.00	2.50	1.20	IMGP0429		21/11/2005
Small Woody Debris	Instream	15.00	4.00	0.35	IMGP0433		21/11/2005
Small Woody Debris	Instream	3.00	5.50	0.30	IMGP0435		21/11/2005
Other	Instream	4.00	5.50	0.90	IMGP0444	Complex of deep pool, undercut bank, and instream woody debris.	21/11/2005
Large Woody Debris	Instream	1.60	4.50	0.75	IMGP0449		21/11/2005
Deep Pool	Instream	101.00	9.50	1.50	IMGP0418	Upstream end of 101-m long deep pool.	19000100
Deep Pool	Instream	10.00	3.50	0.90	IMGP0528	Associated undercut bank.	22/11/2005
Over Stream Vegetn.	Right	4.00	5.00	0.50	IMGP0530	Associated undercut bank and pool.	22/11/2005
Deep Pool	Instream	4.00	3.00	0.80	IMGP0533		22/11/2005
Deep Pool	Instream	150.00	4.00	1.20		Associated with beaver dam.	19000100
Deep Pool	Instream	200.00	4.00	1.10		Associated instream woody debris.	19000100
Deep Pool	Instream	320.00	5.50	1.30	IMGP1349	Associated instream woody debris.	19000100
Deep Pool	Instream	135.00	5.00	1.00		Associated with beaver dam.	19000100
Deep Pool	Instream	160.00	6.00	1.00	IMGP1190		19000100
Deep Pool	Instream	100.00	6.00	1.50			19000100

Deep Pool	Instream	55.00	5.00	1.20		Above beaver dam.	19000100
Deep Pool	Instream	5.00	4.00	1.30		Ascertained from hole in ice.	14/12/2005
Over Stream Vegetn.	Right	13.00	3.50	0.00	IMGP1608	Occurs in side channel.	14/12/2005
Deep Pool	Instream	6.00	3.00	1.00	IMGP1609	Associated over stream cover.	14/12/2005
Over Stream Vegetn.	Right	3.50	2.00	0.00	IMGP1612		14/12/2005
Deep Pool	Instream	6.50	2.50	1.10			14/12/2005
Deep Pool	Instream	5.00	2.00	1.00			14/12/2005
Spawning Habitat	Instream	2.00	0.00	0.05	IMGP1626		14/12/2005
Spawning Habitat	Instream	3.00	0.70	0.07			14/12/2005
Spawning Habitat	Instream	4.00	0.60	0.10	IMGP1629		14/12/2005
Spawning Habitat	Instream	3.00	1.00	0.05	IMGP1630		14/12/2005
Deep Pool	Instream	4.50	2.00	0.60	IMGP1631	Although not over 1-m deep, represents significant pool cover in this section of creek.	14/12/2005
Deep Pool	Instream	3.00	3.00	0.50	IMGP1632	Associated instream and over stream vegetation.	14/12/2005
Deep Pool	Instream	5.00	4.50	0.60	IMGP1635		14/12/2005
Spawning Habitat	Instream	7.00	1.00	0.05	IMGP1636	Part of gravel bar exposed due to low flows.	14/12/2005
Over Stream Vegetn.	Right	13.00	2.50	0.60	IMGP1639		14/12/2005
Spawning Habitat	Instream	3.50	1.60	0.07	IMGP1642		14/12/2005
Deep Pool	Instream	4.50	2.50	1.00	IMGP1644		14/12/2005
Deep Pool	Instream	10.00	2.20	1.00			14/12/2005
Over Stream Vegetn.	Instream	2.50	2.50	0.60	IMGP1645	Associated instream woody debris.	14/12/2005
Spawning Habitat	Instream	4.00	1.00	0.05	IMGP1648		14/12/2005
Spawning Habitat	Instream	10.00	0.60	0.07	IMGP1649		14/12/2005
Deep Pool	Instream	4.00	3.00	0.70	IMGP1650		14/12/2005
Deep Pool	Instream	9.00	4.00	1.00			14/12/2005
Deep Pool	Instream	5.00	4.50	0.00	DCP_1084		06/03/2002

TYPE_MODIF	BANK	TYPE_MATER	LENGTH	WIDTH	HEIGHT	PHOTONUM	COMMENTS	GPS_DATE
PipeCrossing	Both	Other	0.00	4.70	0.00	IMGP1446	Steel pipe.	07/12/2005
PipeCrossing	Both	Other	0.20	5.00	0.00	IMGP1466		07/12/2005
Water Withdrawal	Instream		0.00	0.00	0.00	IMGP1467	Two (2) intakes with 3mm screening.	07/12/2005
Rip_Rap	Both	Stonework	0.00	0.00	0.00	IMGP1466	Associated with bridge and pipe crossing.	07/12/2005
Bridge	Both	Wood	5.30	6.00	2.30	IMGP1466		07/12/2005
Rip_Rap	Right	Stonework	15.00	0.00	1.10	IMGP1473		07/12/2005
Rip_Rap	Right	Stonework	18.00	0.00	1.30	IMGP1477		07/12/2005
Fences	Both	Other	0.00	0.00	0.00	IMGP1479		07/12/2005
Bridge	Both	Other	5.80	7.60	1.30	IMGP1487		07/12/2005
Bridge	Both	Wood	4.00	6.00	0.90	IMGP1493		07/12/2005
Rip_Rap	Right	Stonework	4.50	0.00	1.80	IMGP1502	Associated with bridge abutment armouring.	07/12/2005
Bridge	Both	Concrete	12.00	6.00	1.55	IMGP1503		07/12/2005
Rip_Rap	Left	Stonework	4.50	0.00	1.80		Associated with bridge abutment armouring.	07/12/2005
Rip_Rap	Left	Stonework	18.00	0.00	1.40	IMGP1510	Bulman Road encroachment.	07/12/2005
Rip_Rap	Left	Stonework	3.50	0.00	1.00	IMGP1515	Erosion mitigation.	07/12/2005
Bridge	Both	Concrete	3.50	2.50	1.30	IMGP1518		07/12/2005
Bridge	Both	Wood	1.45	3.50	1.25	IMGP1519		07/12/2005
Bridge	Both	Concrete	9.00	7.00	0.90	IMGP1522		07/12/2005
Garbage/Pollution	Instream	Other	0.00	0.00	0.00	IMGP1362	Fuel drum, tires, garbage.	06/12/2005
Garbage/Pollution	Instream	Other	2.00	2.00	0.00		Several large truck tires in creek. No photo due to poor instream visibility.	06/12/2005
Rip_Rap	Right	Stonework	4.00	0.00	1.10	IMGP1373	Some erosion still occurring.	06/12/2005
Retain Wall/Bank Stb	Left	Stonework	6.00	0.00	1.00			06/12/2005
Retain Wall/Bank Stb	Right	Stonework	6.00	0.00	1.60	IMGP1387		06/12/2005
Rip_Rap	Right	Stonework	4.80	0.00	1.70	IMGP1396	Adjacent bank erosion.	06/12/2005
Rip_Rap	Right	Stonework	8.00	0.00	1.00	IMGP1409		06/12/2005
Rip_Rap	Left	Stonework	8.00	0.00	1.00		Bank armouring. Overtopped and concealed by reed canary grass.	06/12/2005
Rip_Rap	Left	Stonework	20.00	0.00	1.00		Bank armouring. Overtopped and concealed by reed canary grass.	06/12/2005
Bridge	Both	Wood	7.00	5.60	1.40	IMGP1426	Creosote timber abutments.	06/12/2005
Water Withdrawal	Left	Wood	0.00	0.00	0.00	IMGP1255		05/12/2005
Rip_Rap	Right	Stonework	8.00	0.00	2.00	IMGP1267	Railway encroachment/channelization and stabilization.	05/12/2005
Bridge	Both	Other	5.20	22.00	2.00	IMGP1274	Vertical, un-vegetated bank beneath bridge has high potential for erosion.	05/12/2005
Retain Wall/Bank Stb	Left	Concrete	56.00	0.00	0.50	IMGP1290	Concrete debris.	05/12/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00		Auto parts, steel, concrete debris/bank armouring.	05/12/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP1297	Fuel drums, bed springs, appliances, etc.	05/12/2005
Bridge	Both	Wood	3.80	9.00	2.20	IMGP1303		05/12/2005
Bridge	Both	Concrete	11.00	7.00	1.80	IMGP1319		05/12/2005
Water Withdrawal	Right	Concrete	0.00	0.00	0.00	IMGP1342	Old, non functioning well.	05/12/2005
Water Withdrawal	Left	Wood	0.00	0.00	0.00	IMGP1187		01/12/2005
Other	Left	Concrete	2.50	5.50	0.00	IMGP1192	Concrete debris placed in channel to create pool for water withdrawal.	01/12/2005
Other	Right	Concrete	38.00	0.00	1.70	IMGP1195	Eroding bank with concrete debris armouring.	01/12/2005
Water Withdrawal	Right	Wood	0.00	0.00	0.00	IMGP1193		01/12/2005
Other	Left	Concrete	18.00	0.00	1.50	IMGP1197	Concrete debris armouring associated with bank erosion.	01/12/2005
PipeCrossing	Both	Other	0.00	0.00	0.00	IMGP1199	Attached to bridge.	01/12/2005
Bridge	Both	Concrete	4.70	4.70	1.10	IMGP1198	Concrete debris instream below bridge.	01/12/2005
Bridge	Both	Concrete	5.00	11.00	1.00	IMGP1201	Deep pool beneath.	01/12/2005
Other	Both	Concrete	3.50	0.00	1.40	IMGP1203	Old bridge abutments.	01/12/2005
Bridge	Both	Wood	5.00	13.50	2.30	IMGP1205	Railway bridge.	01/12/2005
Bridge	Both	Concrete	5.65	1.00	1.40	IMGP1208		01/12/2005
Dam	Instream	Concrete	1.00	6.30	0.80	IMGP1209	Deteriorated.	01/12/2005
Bridge	Both	Concrete	1.40	8.60	1.30	IMGP1212		01/12/2005
Bridge	Both	Concrete	1.40	8.50	1.50	IMGP1214		01/12/2005
Bridge	Both	Concrete	2.50	9.40	1.20	IMGP1215		01/12/2005
Other	Right	Stonework	10.00	0.00	1.00	IMGP1030	Railway encroachment/channelization.	30/11/2005
Rip_Rap	Left	Stonework	11.00	0.00	1.00	IMGP1033	Bank armouring adjacent to wier.	30/11/2005
Rip_Rap	Left	Stonework	2.00	1.50	0.00		Bank armouring.	30/11/2005
Bridge	Both	Other	2.50	12.00	0.45	IMGP1048		30/11/2005
Retain Wall/Bank Stb	Left	Stonework	22.00	0.00	1.30		No photo available.	30/11/2005
Retain Wall/Bank Stb	Left	Stonework	24.00	0.00	1.30		Rock and asphalt armouring.	30/11/2005
Rip_Rap	Left	Stonework	30.00	0.00	1.20	IMGP1064		30/11/2005
Other	Left	Concrete	5.30	0.00	0.90	IMGP1090	Asphalt/concrete debris in creek and bank armouring.	30/11/2005
PipeCrossing	Both		10.00	85.00	0.00	IMGP1092	Gas line and associated riparian clearing.	30/11/2005
Rip_Rap	Right	Stonework	12.00	6.50	0.00	IMGP1109	Boulder armouring/channelization and associated riffle/cascade.	30/11/2005
Rip_Rap	Left	Stonework	18.00	0.00	1.00	IMGP1115		30/11/2005
Rip_Rap	Right	Stonework	5.00	1.50	0.70	IMGP1120		30/11/2005
Retain Wall/Bank Stb	Left	Stonework	22.00	1.50	3.00	IMGP1121	Leathead Road encroachment.	30/11/2005
Fences	Both	Other	0.00	0.00	0.00		Chain link fence into stream channel.	29/11/2005
Retain Wall/Bank Stb	Left	Stonework	10.00	0.00	0.80	IMGP0935		29/11/2005
Bridge	Both	Wood	5.00	21.00	2.20	IMGP0941	Railway bridge.	29/11/2005
Channelization	Both	Stonework	13.00	0.00	0.80		Armouring/channelization to bridge.	29/11/2005
Bridge	Both	Concrete	15.00	8.50	1.60	IMGP0954		29/11/2005
Other	Both	Stonework	3.00	0.00	0.80	IMGP0958	Retaining structure possibly old pipe crossing. Partly collapsed in-stream creating a riffle.	29/11/2005
Livestock crossing	Instream		9.00	2.50	0.00	IMGP0959	Single point water access (horses).	29/11/2005
Retain Wall/Bank Stb	Left	Wood	23.00	0.00	1.60	IMGP0966	Brush layers and stonework.	29/11/2005
Retain Wall/Bank Stb	Left	Concrete	20.00	0.00	1.00	IMGP0971	Concrete slabs.	29/11/2005
Rip_Rap	Left	Stonework	3.00	0.00	0.80	IMGP0977		29/11/2005
Bridge	Both	Wood	2.30	12.60	1.10	IMGP0982		29/11/2005
Rip_Rap	Right	Stonework	10.00	0.00	0.00	IMGP0986	Pipeline tangent to cut bank.	29/11/2005
Retain Wall/Bank Stb	Left	Concrete	2.00	0.00	0.80	IMGP0987	Concrete debris.	29/11/2005
Other	Both	Concrete	6.50	0.00	1.30	IMGP0990	Old bridge abutments/concrete debris.	29/11/2005
PipeCrossing	Both	Other	0.00	0.00	0.00	IMGP0993	Riffle creation (rock apron) / armouring of streambed over crossing to prevent scour.	29/11/2005
Rip_Rap	Left	Stonework	0.00	0.00	0.40		No photo available. Armouring parallel to pipeline. Partially collapsed with some erosion.	29/11/2005
Bridge	Both	Wood	2.30	13.00	1.00	IMGP0999		29/11/2005
Channelization	Right	Stonework	20.00	0.00	1.30	IMGP1000	Rip rap on both banks (24-m along right bank, 12-m along left bank).	29/11/2005
FloodGate	Instream	Concrete	20.00	6.00	0.00	IMGP1002	Flood diversion.	29/11/2005
Rip_Rap	Left	Stonework	45.00	0.00	1.10	IMGP1005	Mitigation for bank erosion.	29/11/2005
Bridge	Both	Concrete	1.50	6.80	1.10	IMGP0849		28/11/2005
Bridge	Both	Concrete	2.30	4.70	1.00	IMGP0852		28/11/2005
Bridge	Both	Concrete	1.50	6.40	1.10	IMGP0859		28/11/2005
Rip_Rap	Left	Stonework	21.00	0.00	0.50	IMGP0868	Associated riparian revegetation efforts.	28/11/2005
Bridge	Both	Other	34.00	11.50	2.00	IMGP0875	Open bottom.	28/11/2005
Retain Wall/Bank Stb	Right	Concrete	22.50	0.00	0.70	IMGP0877		28/11/2005
Bridge	Both	Concrete	11.20	12.00	2.60	IMGP0887		28/11/2005

Bridge	Both	Concrete	1.30	9.00	2.10	IMGP0895		28/11/2005
Bridge	Both	Concrete	8.00	12.00	1.60	IMGP0900		28/11/2005
Rip_Rap	Right	Stonework	11.50	0.00	1.20	IMGP0904		28/11/2005
Bridge	Both	Wood	5.00	14.50	1.60	IMGP0906	Railway bridge.	28/11/2005
Bridge	Both	Other	35.00	10.20	1.65	IMGP0907	Corrugated, open bottom.	28/11/2005
Fences	Both	Other	0.00	0.00	0.00		Across-stream fence (chain-link).	28/11/2005
Bridge	Both	Concrete	8.50	7.50	2.00	IMGP0912		28/11/2005
Rip_Rap	Right	Stonework	15.00	0.00	1.00	IMGP0914		28/11/2005
Bridge	Both	Wood	1.45	7.20	2.00	IMGP0917		28/11/2005
Retain Wall/Bank Stb	Both	Concrete	6.50	0.00	0.00	IMGP0917	Associated with bridge abutments.	28/11/2005
PipeCrossing	Both	Other	0.00	0.00	0.00	IMGP0920		28/11/2005
Retain Wall/Bank Stb	Right	Concrete	28.00	0.00	0.80	IMGP0924	Concrete debris.	28/11/2005
Bridge	Both	Wood	4.00	6.50	1.10	IMGP0739		25/11/2005
Retain Wall/Bank Stb	Right	Stonework	12.00	0.00	1.30	IMGP0741		25/11/2005
Retain Wall/Bank Stb	Left	Stonework	22.00	0.00	1.30	IMGP0742		25/11/2005
Channelization	Both	Concrete	37.00	0.00	1.20	IMGP0747		25/11/2005
Bridge	Both	Concrete	2.50	5.00	1.20	IMGP0747		25/11/2005
Retain Wall/Bank Stb	Right	Stonework	8.00	0.00	0.70	IMGP0748		25/11/2005
Bridge	Both	Wood	0.95	4.80	0.65	IMGP0749		25/11/2005
Bridge	Both	Wood	1.25	6.50	0.65	IMGP0750		25/11/2005
Retain Wall/Bank Stb	Right	Concrete	57.00	0.00	1.40	IMGP0751		25/11/2005
Bridge	Both	Wood	1.10	5.60	1.10			25/11/2005
Bridge	Both	Concrete	7.30	8.20	1.00	IMGP0753		25/11/2005
Retain Wall/Bank Stb	Right	Wood	19.00	0.00	0.35	IMGP0760		25/11/2005
Bridge	Both	Concrete	6.60	10.00	1.20	IMGP0763		25/11/2005
Bridge	Both	Wood	1.10	5.80	0.90	IMGP0772		25/11/2005
Retain Wall/Bank Stb	Both	Concrete	100.00	0.00	1.00	IMGP0775	Stonework and concrete retaining walls.	25/11/2005
Bridge	Both	Wood	4.80	5.00	0.75	IMGP0774		25/11/2005
Bridge	Both	Wood	3.00	7.80	0.90	IMGP0777	Should be removed before collapsed into stream channel.	25/11/2005
Bridge	Both	Concrete	11.00	7.80	1.50	IMGP0784		25/11/2005
Bridge	Both	Concrete	1.10	7.50	1.50	IMGP0786		25/11/2005
Bridge	Both	Concrete	1.70	7.00	1.90	IMGP0791		25/11/2005
Bridge	Both	Concrete	7.50	6.70	1.50	IMGP0792		25/11/2005
Bridge	Both	Concrete	10.00	7.00	1.90	IMGP0796		25/11/2005
Bridge	Both	Concrete	18.50	5.50	1.20	IMGP0798		25/11/2005
PipeCrossing	Both		0.00	5.50	0.80	IMGP0802	400mm corrugated steel pipe suspended beneath Sutherland Road bridge.	25/11/2005
Retain Wall/Bank Stb	Both	Gabions	13.00	0.00	2.00	IMGP0806	Gabions with rip rap armouring at slope toe. Presence obscured by cover of leaf litter.	25/11/2005
Retain Wall/Bank Stb	Both	Gabions	13.00	0.00	1.20		Gabion and rip rap armouring to culvert inlet.	25/11/2005
Bridge	Both	Concrete	6.70	5.60	1.20	IMGP0815	Two small drains exclusively draining bridge.	25/11/2005
Bridge	Instream	Concrete	1.50	7.00	1.00	IMGP0841		25/11/2005
Retain Wall/Bank Stb	Left	Concrete	29.00	0.00	1.80	IMGP0628	Eroding retaining wall.	24/11/2005
Other	Left	Other	14.00	0.00	1.20	IMGP0631	Bank instability with wood and rock work to mitigate erosion.	24/11/2005
Rip_Rap	Right	Stonework	40.00	0.00	1.00	IMGP0632		24/11/2005
Retain Wall/Bank Stb	Left	Concrete	17.00	0.00	1.00	IMGP0637	Concrete debris.	24/11/2005
PipeCrossing	Both	Other	0.31	0.00	1.20	IMGP0639		24/11/2005
PipeCrossing	Both	Other	0.00	5.50	1.10	IMGP0641		24/11/2005
Bridge	Both	Concrete	6.80	5.50	1.20	IMGP0641		24/11/2005
PipeCrossing	Both	Other	0.50	6.20	1.40	IMGP0643		24/11/2005
Bridge	Both	Wood	1.80	6.20	1.20	IMGP0643		24/11/2005
Garbage/Pollution	Right	Other	2.50	0.00	1.30	IMGP0648	Sod and soil dumped over bank and into stream channel.	24/11/2005
Bridge	Both	Concrete	19.00	7.00	1.60	IMGP0649	Several conduits suspended beneath bridge.	24/11/2005
Retain Wall/Bank Stb	Left	Concrete	30.00	0.00	1.50	IMGP0654	Deteriorating/eroding wall.	24/11/2005
Retain Wall/Bank Stb	Left	Concrete	9.50	0.00	1.00	IMGP0659	Concrete debris.	24/11/2005
Retain Wall/Bank Stb	Right	Concrete	13.50	0.00	1.30	IMGP0658	Occurs both upstream and downstream of bridge.	24/11/2005
Bridge	Both	Wood	4.40	6.00	1.10	IMGP0660	Gas line attached to bridge.	24/11/2005
Retain Wall/Bank Stb	Right	Concrete	31.00	0.00	0.90	IMGP0662		24/11/2005
Rip_Rap	Right	Stonework	74.00	0.00	1.20	IMGP0663		24/11/2005
Bridge	Both	Concrete	2.12	4.20	1.20	IMGP0665		24/11/2005
Retain Wall/Bank Stb	Both	Concrete	45.00	0.00	1.30	IMGP0666		24/11/2005
Retain Wall/Bank Stb	Right	Concrete	12.00	0.00	1.00	IMGP0669	Erosion along base of wall.	24/11/2005
Bridge	Both	Concrete	14.00	6.00	1.20	IMGP0670		24/11/2005
PipeCrossing	Both	Other	0.00	0.00	1.20	IMGP0670	Suspended beneath bridge.	24/11/2005
Retain Wall/Bank Stb	Left	Concrete	24.00	0.00	1.30	IMGP0672		24/11/2005
Retain Wall/Bank Stb	Left	Gabions	12.00	0.00	1.00	IMGP0676		24/11/2005
Retain Wall/Bank Stb	Left	Concrete	41.00	0.00	1.10	IMGP0677		24/11/2005
Bridge	Both	Concrete	10.50	6.00	1.20	IMGP0681		24/11/2005
Retain Wall/Bank Stb	Right	Stonework	13.00	0.00	1.00	IMGP0687	Rock (wing) deflector and concrete debris.	24/11/2005
Retain Wall/Bank Stb	Left	Concrete	4.00	0.00	0.30	IMGP0689		24/11/2005
Retain Wall/Bank Stb	Left	Concrete	17.00	0.00	1.40	IMGP0690		24/11/2005
Bridge	Both	Wood	1.40	3.50	1.00	IMGP0690		24/11/2005
Retain Wall/Bank Stb	Left	Concrete	14.00	0.00	1.20	IMGP0692		24/11/2005
Retain Wall/Bank Stb	Both	Stonework	9.50	0.00	0.90	IMGP0694		24/11/2005
Bridge	Instream	Concrete	1.60	5.00	92.00	IMGP0694		24/11/2005
Bridge	Both	Concrete	1.20	6.80	1.00	IMGP0695		24/11/2005
Bridge	Both	Concrete	1.30	6.70	1.00	IMGP0695		24/11/2005
Bridge	Both	Concrete	19.00	6.80	1.70	IMGP0697		24/11/2005
PipeCrossing	Both	Other	0.00	0.00	0.00	IMGP0698	Sewer force main.	24/11/2005
Water Withdrawal	Left	Concrete	0.00	0.00	0.00	IMGP0706	Non functioning.	24/11/2005
Retain Wall/Bank Stb	Right	Concrete	80.00	0.00	1.40	IMGP0709		24/11/2005
Bridge	Both	Wood	1.60	7.50	1.55	IMGP0713		24/11/2005
Bridge	Both	Wood	1.20	6.50	1.20	IMGP0724		24/11/2005
Bridge	Both	Concrete	25.00	7.30	1.80	IMGP0732		24/11/2005
Garbage/Pollution	Right	Other	0.00	0.00	0.00	IMGP1526		09/12/2005
Rip_Rap	Both	Stonework	80.00	0.00	3.00	IMGP0480	Rip rap/stonework both banks.	22/11/2005
Rip_Rap	Both	Stonework	41.00	0.00	1.60	IMGP0494	Armouring 30-m downstream of culvert and 11-m upstream of culvert.	22/11/2005
Rip_Rap	Left	Stonework	18.00	0.00	1.50	IMGP0505		22/11/2005
Rip_Rap	Right	Stonework	5.00	0.00	1.10	IMGP0506		22/11/2005
Rip_Rap	Left	Stonework	26.00	0.00	1.50	IMGP0510		22/11/2005
Rip_Rap	Right	Stonework	17.00	0.00	1.30	IMGP0511		22/11/2005
Rip_Rap	Left	Stonework	21.00	0.00	1.40		No photo	22/11/2005
Rip_Rap	Left	Stonework	23.00	0.00	1.40			22/11/2005
Rip_Rap	Left	Stonework	36.00	0.00	1.70	IMGP0514		22/11/2005
Rip_Rap	Left	Stonework	80.00	0.00	1.20	IMGP0516		22/11/2005

Rip_Rap	Left	Stonework	25.00	0.00	2.50	IMGP0520		22/11/2005
Rip_Rap	Right	Stonework	73.00	0.00	3.00	IMGP0522		22/11/2005
Rip_Rap	Left	Stonework	40.00	0.00	3.00	IMGP0523		22/11/2005
Bridge	Instream	Wood	2.12	13.00	2.40	IMGP0539	Pedestrian bridge.	23/11/2005
Bridge	Both	Concrete	12.50	5.00	1.80	IMGP0548		23/11/2005
Retain Wall/Bank Stb	Left	Stonework	13.00	0.00	1.20	IMGP0552		23/11/2005
Retain Wall/Bank Stb	Right	Stonework	100.00	0.00	2.00	IMGP0553	Rip rap placement along bank and block retaining wall.	23/11/2005
Retain Wall/Bank Stb	Left	Stonework	63.00	0.00	0.70	IMGP0554		23/11/2005
PipeCrossing	Both		0.00	0.00	0.00	IMGP0556	Gas pipeline.	23/11/2005
Bridge	Both	Concrete	7.00	5.40	1.20	IMGP0557		23/11/2005
Bridge	Both	Other	1.60	13.70	1.20	IMGP0558		23/11/2005
PipeCrossing	Both	Other	0.00	13.70	1.20	IMGP0559		23/11/2005
Bridge	Both	Wood	1.18	6.70	1.33	IMGP0567		23/11/2005
Bridge	Both	Concrete	20.00	6.00	1.45	IMGP0568	Two (2) pipes crossings beneath bridge.	23/11/2005
PipeCrossing	Both	Other	0.00	6.00	0.00	IMGP0568	200 mm pipe suspended from bridge.	23/11/2005
PipeCrossing	Both		0.27	6.00	0.00	IMGP0568	270 mm Corrugated steel pipe suspended from bridge.	23/11/2005
PipeCrossing	Both	Asphalt	0.20	6.00	0.00	IMGP0570	200mm (dia) asphalt wrapped asbestos pipe suspended from bridge.	23/11/2005
Bridge	Both	Wood	1.70	7.80	1.60	IMGP0579		23/11/2005
Bridge	Both	Concrete	24.00	9.80	1.30	IMGP0580		23/11/2005
Bridge	Both	Concrete	6.20	5.40	1.20	IMGP0585		23/11/2005
PipeCrossing	Both	Other	0.25	5.40	1.20	IMGP0585	Adjacent to bridge.	23/11/2005
Bridge	Both	Wood	1.75	7.00	1.30	IMGP0586		23/11/2005
Retain Wall/Bank Stb	Left	Concrete	80.00	0.00	1.60	IMGP0596		23/11/2005
Retain Wall/Bank Stb	Right	Stonework	15.00	0.00	1.00	IMGP0597		23/11/2005
Retain Wall/Bank Stb	Left	Concrete	60.00	0.00	1.50	IMGP0606		23/11/2005
Retain Wall/Bank Stb	Right	Concrete	8.00	0.00	0.80	IMGP0610		23/11/2005
Retain Wall/Bank Stb	Right	Concrete	110.00	0.00	1.10	IMGP0612		23/11/2005
Bridge	Both	Concrete	6.30	6.00	1.20	IMGP0617		23/11/2005
PipeCrossing	Both	Other	0.30	0.00	1.20	IMGP0618		23/11/2005
Bridge	Both	Wood	1.50	7.80	1.20	IMGP0618		23/11/2005
Retain Wall/Bank Stb	Right	Stonework	50.00	0.00	1.20	IMGP0627		23/11/2005
Bridge	Both	Wood	3.90	11.00	1.80	IMGP0395	Railway bridge. Armouring/channelization (both banks) upstream up bridge.	21/11/2005
Channelization	Both	Stonework	11.00	0.00	1.50	IMGP0396	Associated with railway bridge	21/11/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP0423	Fuel drum.	21/11/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP0424	Automobiles within riparian area/floodplain community.	21/11/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP0425	Garbage dump.	21/11/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP0426	Large dump/contaminant source (oil drums/fuel cans/steel/wood) within floodplain/wetland.	21/11/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP0430	Garbage dump.	21/11/2005
Garbage/Pollution	Both	Other	0.00	0.00	0.00	IMGP0439	Concrete and wood debris armouring headwall of culvert.	21/11/2005
Other			2.00	4.00	0.35	IMGP0440	Instream wier to direct flows into culvert and mitigate reduce bank erosion.	21/11/2005
Garbage/Pollution	Instream	Other	0.00	0.00	0.00	IMGP0454	Fuel drum.	21/11/2005
Garbage/Pollution	Left	Other	0.00	0.00	0.00	IMGP0525		22/11/2005
Bridge	Both	Wood	3.00	6.50	1.34	IMGP1596		14/12/2005
Bridge	Both	Wood	3.10	10.20	1.70	IMGP1598		14/12/2005
Bridge	Both	Wood	3.00	10.50	2.40	IMGP1601	Small beaver dam beneath.	14/12/2005
Bridge	Both	Wood	3.00	8.40	1.15	IMGP1605		14/12/2005
Bridge	Both	Wood	3.10	7.60	1.40	IMGP1611		14/12/2005
Bridge	Both	Wood	2.80	8.50	1.60	IMGP1615	Wood decking and old railway car span.	14/12/2005
Bridge	Both	Wood	3.00	9.60	1.50	IMGP1618		14/12/2005
Rip_Rap	Right	Stonework	10.00	0.00	1.00	IMGP1619		14/12/2005
Bridge	Both	Wood	1.00	4.50	0.70	IMGP1628		14/12/2005
Rip_Rap	Right	Stonework	8.00	0.00	0.70		Cobble armouring along stream bank.	14/12/2005
Bridge	Both	Wood	3.10	12.50	1.40	IMGP1633	Railway car span with wood decking.	14/12/2005
Rip_Rap	Left	Stonework	11.00	0.00	5.00	IMGP1641	Cobble bank armouring.	14/12/2005
Bridge	Both	Wood	6.10	6.50	1.60	IMGP1651		14/12/2005
Rip_Rap	Right	Stonework	18.50	0.00	1.50	IMGP1654		14/12/2005
Rip_Rap	Left	Stonework	10.00	0.00	1.50	IMGP1655		14/12/2005
Rip_Rap	Right	Stonework	32.00	0.00	1.50	IMGP1657		14/12/2005
Retain Wall/Bank Stb	Right	Stonework	20.00	0.00	2.20	DCP_2541		23/08/2002
Bridge	Both	Wood	5.00	8.00	2.10	DCP_1080	Old Vernon Road	06/03/2002
Retain Wall/Bank Stb	Left	Stonework	30.00	0.00	2.00	DCP_1086		06/03/2002
Retain Wall/Bank Stb	Left	Stonework	30.00	0.00	2.20	DCP_1091		06/03/2002
Retain Wall/Bank Stb	Left	Stonework	35.00	0.00	2.30	DCP_1092		06/03/2002
Retain Wall/Bank Stb	Both	Concrete	315.00	0.00	1.00	IMGP0544	Channelized/retaining walls along both banks.	19000100
Retain Wall/Bank Stb	Both	Concrete	160.00	0.00	1.00	IMGP0549	Channelized/retaining (stone and concrete) walls along both banks.	19000100
Retain Wall/Bank Stb	Both	Concrete	383.00	0.00	1.40	IMGP0564	Channelized/retaining walls along both banks.	19000100
Retain Wall/Bank Stb	Both	Concrete	105.00	0.00	0.80	IMGP0645	Channelized/retaining walls along both banks.	19000100
Retain Wall/Bank Stb	Both	Concrete	60.00	0.00	0.00		Mix of concrete retaining wall and stone work/rip rap armouring.	19000100
Retain Wall/Bank Stb	Both	Concrete	270.00	0.00	1.00	IMGP0788		19000100
Channelization	Both	Other	116.00	0.00	0.00		Channelized/diked on both banks (not armoured).	19000100
Channelization	Both	Other	150.00	0.00	0.00		Channelized/diked on both banks (not armoured).	19000100
Channelization	Both	Other	500.00	0.00	0.00		Channelization during railway construction. Note relic channel west of railway.	19000100
Channelization	Both	Other	220.00	0.00	0.00		Channelized/diked on both banks (not armoured).	19000100
Channelization	Right	Other	160.00	0.00	0.00		Channelized by Highway 97. Naturalizing left bank.	19000100
Channelization	Both	Other	740.00	0.00	0.00		Ditched/channelized through field. Numerous enhancement and restoration efforts.	19000100
Channelization	Both	Concrete	105.00	0.00	0.00	IMGP1518	Retaining walls along both bank.	19000100
Channelization	Both	Other	306.00	0.00	0.00	IMGP0465	Ditched through airport.	19000100
Channelization	Both	Other	130.00	0.00	0.00		Ditched through airport.	19000100
Channelization	Both	Other	112.00	0.00	0.00	IMGP0482	Ditched through airport.	19000100
Channelization	Both	Other	1100.00	0.00	0.00	IMGP0492	Ditched through airport.	19000100
Channelization	Both	Other	424.00	0.00	0.00	IMGP0513	Ditched through airport.	19000100

TYPE_OBSTR	BANK	BARRIER	LENGTH	WIDTH	DEPTH	DIAMETER	HEIGHT	SLOPE	SCREENSIZE	PHOTONUM	COMMENTS	GPS_DATE
Beaver Dam	Instream	unknown	1.50	4.70	0.20	0.00	0.50	30	0.00	IMGP1441	Built at riffle crest.	07/12/2005
Beaver Dam	Instream	unknown	1.50	3.30	0.13	0.00	0.40	25	0.00	IMGP1461		07/12/2005
Beaver Dam	Instream	unknown	1.50	5.00	0.26	0.00	0.40	30	0.00	IMGP1370		06/12/2005
Beaver Dam	Instream	unknown	2.00	4.00	0.44	0.00	0.35	35	0.00	IMGP1376		06/12/2005
Beaver Dam	Instream	Yes	2.30	4.50	0.54	0.00	0.80	60	0.00	IMGP1389		06/12/2005
Beaver Dam	Instream	Potential	1.60	3.00	0.24	0.00	0.50	30	0.00	IMGP1398		06/12/2005
Beaver Dam	Instream	unknown	1.50	3.70	0.15	0.00	0.50	30	0.00	IMGP1410		06/12/2005
Beaver Dam	Instream	Potential	2.40	5.70	0.34	0.00	0.40	30	0.00	IMGP1417		06/12/2005
Beaver Dam	Instream	unknown	1.60	4.50	0.35	0.00	0.40	30	0.00	IMGP1256		05/12/2005
Beaver Dam	Instream	Potential	2.00	5.00	0.50	0.00	0.70	40	0.00	IMGP1338		05/12/2005
Beaver Dam	Instream	Yes	2.00	10.00	1.00	0.00	1.00	40	0.00	IMGP1345		05/12/2005
Beaver Dam	Instream	Potential	2.00	6.00	0.00	1.50	1.30	45	0.00	IMGP1357		05/12/2005
Beaver Dam	Instream	Potential	1.50	7.10	0.30	0.00	0.40	45	0.00	IMGP1188	Constructed on wier/riffle.	01/12/2005
Beaver Dam	Instream	Yes	2.00	8.00	0.90	0.00	0.60	30	0.00	IMGP1191		01/12/2005
Beaver Dam	Instream	unknown	1.25	4.70	0.35	0.00	0.35	30	0.00	IMGP1238		01/12/2005
Beaver Dam	Instream	unknown	1.00	7.50	0.60	0.00	0.30	30	0.00	IMGP1032	Rock wier adopted by beaver.	30/11/2005
Beaver Dam	Instream	Potential	0.00	6.00	0.65	0.00	0.40	45	0.00	IMGP1039	Constructed on rock wier. Low flow obstruction.	30/11/2005
Beaver Dam	Instream	Potential	2.50	5.20	0.23	0.00	0.60	45	0.00	IMGP1056	Flooding over right bank through side channel.	30/11/2005
Persistent Debris	Instream	Yes	4.00	16.00	0.50	0.00	1.00	80	0.00	IMGP1087		30/11/2005
Beaver Dam	Instream	Yes	2.50	23.00	0.35	0.00	1.30	70	0.00	IMGP0932		29/11/2005
Beaver Dam	Instream	Potential	2.00	7.50	0.20	0.00	0.60	30	0.00	IMGP0937		29/11/2005
Beaver Dam	Instream	Potential	2.00	10.00	0.20	0.00	0.40	30	0.00	IMGP0965	Flooded over banks into cottonwood floodplain.	29/11/2005
Beaver Dam	Instream	Potential	1.00	4.00	0.50	0.00	0.60	45	0.00	IMGP0970	Rock wier enhancement adopted by beaver.	29/11/2005
Beaver Dam	Instream	Yes	0.00	5.70	0.38	0.00	1.10	30	0.00	IMGP1010	Beaver dam built on wier.	29/11/2005
Beaver Dam	Instream	unknown	1.50	7.00	0.45		0.40	45	0.00	IMGP0867	Not currently a fish barrier.	28/11/2005
Beaver Dam	Instream	unknown	2.20	5.50	0.90	0.00	0.50	30	0.00	IMGP0880	Intrinsic fish habitat value but may also be barrier.	28/11/2005
Beaver Dam	Instream	unknown	1.50	4.00	0.20	0.00	0.35	40	0.00	IMGP0905	Not presently barrier to fish.	28/11/2005
Beaver Dam	Instream	unknown	1.50	5.00	0.35	0.00	0.40	40	0.00	IMGP0928		28/11/2005
Beaver Dam	Instream	unknown	3.30	5.50	0.30	0.00	0.50	0	0.00	IMGP0398		21/11/2005
Beaver Dam	Instream	unknown	1.20	6.50	0.15	0.00	0.50	0	0.00	IMGP0408	Possible low flow obstruction, but moderate flows currently in floodplain and flowing around dam.	21/11/2005
Beaver Dam	Both	unknown	2.00	18.00	0.25	0.00	0.75	0	0.00	IMGP0417	Flooded over stream bank through wetland-floodplain area creating multiple side channels.	21/11/2005
Beaver Dam	Instream	unknown	2.00	12.50	0.17	0.00	0.45	30	0.00	IMGP0451	Not an obstruction.	21/11/2005
Beaver Dam	Instream	unknown	1.00	6.00	0.40	0.00	0.25	30	0.00	IMGP1604		14/12/2005
Dam	Instream	Potential	12.00	0.00	0.90	0.00	0.60	90	0.00	DCP_2540	Irrigation weir	23/08/2002

TYPE_WATER	BANK	LENGTH	WIDTH	DEPTH	TEMPERATUR	PHOTONUM	COMMENTS	GPS_DATE
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1483		07/12/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1501		07/12/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1521	Scotty Creek.	07/12/2005
Natural Springs	Left	0.00	0.00	0.00	2.00	IMGP1413	Daylights from beneath industrial park and flows through cattail marsh.	06/12/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1418	Daylights from culvert from beneath industrial park into riverine wetland complex (See photo 1420).	06/12/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1420		06/12/2005
Side Channel	Right	0.00	0.00	0.00	0.00	IMGP1433	Riverine wetland complex (Oxbow water/tall shrub swamp).	06/12/2005
Discontinued	Right	0.00	0.00	0.00	0.00	IMGP1257	Former meandering stream channel (before railway channelization) now isolated wetland complex.	05/12/2005
Wetland	Right	0.00	0.00	0.00	0.00	IMGP1278	Cattail marsh through which stormwater flows.	05/12/2005
Other	Left	0.00	0.00	0.00	1.00	IMGP1295	Small seep from bank downslope of industrial property (scrap metal facility).	05/12/2005
Tributary	Left	0.00	0.00	0.00	6.00	IMGP1217	Gopher Creek from Chichester Pond (stormwater detention pond).	01/12/2005
Tributary	Right	0.00	0.00	0.00	7.00	IMGP1085	Tributary from wetland on other side of railway line.	30/11/2005
Tributary	Left	0.00	0.00	0.00	10.00	IMGP1123	Also marked as discharge. However clear, colourless flows, with little to no sediment below outfall	30/11/2005
Side Channel	Left	50.00	1.50	0.00	0.00	IMGP0971	Concrete slab armouring along left bank.	29/11/2005
Other	Left	16.00	5.00	0.35	0.00	IMGP0972	Backwater.	29/11/2005
Side Channel	Right	25.00	1.50	0.25	0.00	IMGP0891		28/11/2005
Side Channel	Left	0.00	0.00	0.00	0.00		Through low-lying floodplain.	28/11/2005
Side Channel	Right	8.00	2.00	0.08	0.00	IMGP0764		25/11/2005
Side Channel	Right	40.00	2.00	0.15	0.00			25/11/2005
Tributary	Right	0.00	1.00	0.00	0.00	IMGP0766		25/11/2005
Side Channel	Right	35.00	1.50	0.00	0.00	IMGP0701	Within normal active creek floodplain.	24/11/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1528		10/12/2005
Natural Springs	Left	0.00	0.00	0.00	8.00	IMGP1529	Day-lighting from beneath industrial park (structural fill).	10/12/2005
Natural Springs	Left	0.00	0.00	0.00	0.00		From tile drain.	10/12/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP1530		10/12/2005
Natural Springs	Right	0.00	0.00	0.00	8.00	IMGP1525	Flows into swamp.	09/12/2005
Ditch	Right	0.00	0.00	0.00	0.00	IMGP0464	De-icing compounds flush through ditch into Mill Creek.	22/11/2005
Tributary	Left	0.00	0.00	0.00	0.00	IMGP0507	Whelan Creek ditched through airport to Mill Creek. Photo looking upstream.	22/11/2005
Side Channel	Left	0.00	0.00	0.00	0.00	IMGP0412	Flowing through floodplain. Associated with beaver activity.	21/11/2005
Tributary	Left	0.00	0.00	0.00	7.00	IMGP0445	Small ground water discharge-seep from beneath feedlot.	21/11/2005
Other	Instream	7.00	9.00	0.30	0.00	IMGP0447	Backwater.	21/11/2005
Natural Springs	Right	0.00	0.00	0.00	0.00	IMGP0462	Seepage/spring from slope toe.	21/11/2005
Tributary	Right	0.00	0.00	0.00	8.00	IMGP0526	Poorly defined channel for the observed flows. Possible dewatering from upslope (Dilworth Mtn.).	22/11/2005
Side Channel	Right	56.00	0.00	0.00	0.00	IMGP1603	Small cattail community in island depression.	14/12/2005
Side Channel	Right	139.00	0.00	0.00	0.00	IMGP1606		14/12/2005
Side Channel	Right	35.00	0.00	0.00	0.00	IMGP1613		14/12/2005
Tributary	Right	0.00	0.00	0.00	6.00	IMGP1624	Erosion/scour along headwall below culvert.	14/12/2005
Tributary	Right	0.00	0.70	0.40	0.00	IMGP1638	Originates from channel beneath railway.	14/12/2005
Other	Right	0.00	0.00	0.00	0.00	IMGP1653		14/12/2005

WETLAND_CL	WETLAND_TY	PHOTO_NUMB	COMMENT	GPS_DATE
Marsh	Tall_rush	IMGP1266	Part of mitigation for stormwater management.	05/12/2005
Marsh	Tall_rush	IMGP1060	Cattail.	30/11/2005
Marsh	Tall_rush	IMGP0460	Predominantly cattail marsh with sedge marsh occurring on periphery.	21/11/2005
Marsh	Tall_rush	IMGP0452	Groundwater seepage area. Bulrush marsh.	21/11/2005
Marsh	Tall_rush	IMGP0413	Cattail marsh. Bisected by road with garbage-debris; serious edge effects.	21/11/2005
Shallow open water	Submerged_aquatic	IMGP1607	Shallow water/tall rush (cattail) riverine wetland complex.	14/12/2005
Marsh	Tall_rush	IMGP1034	Cattail marsh.	30/11/2005
Marsh	Tall_rush	IMGP1084	Tall rush (cattail) - low shrub wetland complex. Opposite railway. Tributary to Mill Creek.	30/11/2005