

APPENDIX A: Technical Information

1 FISH HABITAT ASSESSMENT REPORT REQUIREMENTS

Where the property owner is able to comply with the setbacks established by the Streamside Protection Bylaw (SPB), the City requires just a Basic Fish Habitat Assessment Report. If the property owner cannot comply with the setbacks required by the SPB, a Detailed Fish Habitat Assessment Report will be required.

1.1 Basic Fish Habitat Assessment Report Requirements

A Basic Fish Habitat Assessment Report must be submitted whenever work is proposed adjacent to a SPEA. The report must contain the following information:

- An Executive Summary that includes the following information:
 - A basic description of the proposed development
 - A summary of the fish habitat and required setbacks under the SPB
 - A summary of the recommendations to permanently protect the SPEA
 - The security cost estimate, if applicable.
- A statement of qualification by the QEP;
- A description of the proposed development, including a proposed work schedule and all works related to site preparation, construction and post construction monitoring or maintenance, and decommissioning;
- A description of existing fish and fish habitat of any stream or ditch within and adjacent to the proposed development area;
- A determination of the SPEA in accordance with Sections 4 or 5 of the SPB;
- Recommendations for permanent SPEA protection measures, including:
 - Fencing, both temporary and permanent
 - Signage
 - Section 219 restrictive covenant over the SPEA and applicable buffers and/or dedication to the City
- Recommendations for any restoration measures that should occur in the SPEA such as garbage removal, invasive species management, hazard tree mitigation, replanting, etc.
- Recommendation for an additional buffer adjacent to the SPEA boundary in order to ensure adequate space for construction activities, tree retention/establishment, a formal yard area, access for building maintenance, etc. This buffer must not contain permanent structures such as buildings, roads, parking lots, etc. The City typically recommends a 5m buffer, but will consider reductions in this buffer only if it can be demonstrated that the long-term health of the SPEA will not be impacted by the reduction.
- Recommendation as to how activities related to the proposed development will be monitored, including identification of a class of appropriately qualified professionals for monitoring those activities;
- If fish sampling was undertaken, electronic copies of the fish collection permit report;
- Site photographs;
- A survey drawing of the proposed development area indicating the top of bank of any stream or ditch within and adjacent to the development area, the location of any trees >20cm DBH within 10m of the edge of the SPEA, the relevant SPEA(s), and the location of the permanent fencing;
- Recommendation as to whether or not any further assessment is required; and
- If applicable, recommendation as to whether or not the proposed development meets the criteria of a DP exemption under 'Additional Natural Environment Development Permit Exemptions' found on page Part V-0-5 of the OCP.
- The professional seal(s) of the QEP(s) that authored the report.

DISCLAIMER: Both the Fisheries Act and the Riparian Areas Regulation (now called Riparian Areas Protection Regulation) have been amended since the creation of this document. City staff will be updating this document in the near future to reflect the changes in legislation. If you have any questions regarding the impact of the legislative changes to your proposed development, please contact an Environmental Coordinator at 604-864-5510 or env-info@abbotsford.ca.

1.2 Detailed Fish Habitat Assessment Report Requirements

A Detailed Fish Habitat Assessment Report must be submitted as part of the DP or DVP application.

The report requirements are as follows:

- All of the requirements of the Basic Fish Habitat Assessment Report (see Appendix A, Section 1.1);
- An Executive Summary that includes the following information:
 - A basic description of the proposed development
 - A summary of the fish habitat and required setbacks under the SPB
 - A brief description of the permanent and temporary impacts and the proposed compensation plan, along with the total areas for each
 - An overview of how the Mitigation Hierarchy has been applied
 - A summary of the recommendations to permanently protect the SPEA
 - The security cost estimate
- A determination of the RAR Detailed Assessment setback in accordance with the RAR Assessment Methods, including the measures to protect and maintain the SPEA (Note: the RAR assessment forms (Forms 1 to 5) must be submitted to the RAR Notification System (RARNS));
- A table summarizing the SPB and RAR setbacks for each watercourse (see the example table in Appendix B);
- A summary of all mitigation measures to avoid and minimize the potential for harmful impacts to fish and fish habitat, in accordance with the mitigation hierarchy (e.g., timing, location, extent, methods of construction);
- A description of any temporary impacts associated with construction activities (e.g. re-grading, construction impacts associated with development outside of the SPEA, etc.), along with detailed information on how these impacts will be mitigated;
- A detailed habitat compensation plan that demonstrates how no net loss of habitat will be achieved. This plan must include a timeline of when the works will be undertaken and a plan for accessing the area to undertake the compensation, maintenance and monitoring during and after development;

- Details of any potential loss of SPEA resulting from the proposed development, including a summary table of the habitat balance that provides the habitat losses and gains, similar to the one shown below:

AREA	RIPARIAN		INSTREAM		NET	NET
	LOSS	GAIN	LOSS	GAIN	RIPARIAN	INSTREAM
Tributary 1	454	486	16	16	32	0
Tributary 2	138	122	0	0	-16	0
TOTAL					16	0

- Information on how the applicant will obtain access to the planting area during the monitoring period;
- Information on how the planting area will be watered (note that a Hydrant Use Permit can be obtained from the City's Engineering department to facilitate watering);
- Invasive plant assessment and removal strategy, if necessary;
- Recommendation as to whether or not the proposed development should proceed based on the assessment results;
- An estimate of the environmental securities for mitigation and compensation works (including the cost of planting, monitoring, maintenance, fencing, etc.), in the format prescribed in Appendix D;
- Copies of Forms 1 to 5 that will be submitted to RARNS (as an appendix to the report); and,
- A plan(s) prepared at an easily readable scale showing:
 - a) The location of the proposed site.
 - b) The relationship of the site to surrounding topographic and built features.
 - c) Any existing and proposed improvements on the parcel(s) including locations and dimensions of buildings, driveways, parking areas, utilities, retaining walls and landscaping.
 - d) All required cuts and fills associated with the proposed development, using intervals that easily convey the magnitude of the cuts/fills (e.g. 0-0.5, 0.5-1, 1-3, 3-5, >5).
 - e) the location and details of proposed retaining walls

1.2 Detailed Fish Habitat Assessment Report Requirements - continued

- f) various cross-sections through the site at key locations, in various directions, to clearly demonstrate the extent of grading, land clearing and height of retaining walls or slopes and how this interfaces with the SPEA or other retained environmentally valuable resource;
- g) Natural features including streams, wetlands, and any other environmentally valuable resource as identified in the Wildlife Habitat Assessment Report (if it was required).
- h) All trees and vegetation within the SPEA, highlighting vegetation and trees that will be affected or removed by the proposed development.
- i) Legal survey of the top of bank, top of ravine bank, high water mark and any trees potentially impacted by the proposed development or within 10m of the proposed SPEA boundary.
- j) Location of the SPEA in full compliance with the SPB and location of the RAR Detailed Assessment setback.
- k) The portion of the SPEA that is permanently impacted, in both size (square meters) and location. If flexing is proposed, show the maximum widths the setback is being modified and also indicate where the 5m reduction and 10 m increase would be along the entire SPEA (see section 4.3.1 for an example of how to visually display this information).
- l) The portion of the SPEA that is temporarily impacted due to clearing, grading, and other construction-related activities, in both size (square meters) and location.
- m) The site of the proposed habitat compensation, in both size (square meters) and location.
- n) The location of the temporary and permanent fencing, along with the location of any gates to provide access to compensation areas during the maintenance period.
- o) A legend which includes:
 - A complete and accurate legal description
 - Title, scale bar and north arrow
 - Date

In addition to the requirements listed above, one or more of the following supplementary reports may be requested to support the flexing/variance request:

1. **A geotechnical slope stability report** undertaken and certified by a qualified professional engineer or geoscientist that shall determine appropriate setbacks from the top of bank, assess the potential for natural hazards, and analyze and assess the impact of the proposed development on or by the natural hazard based on 'Hazard Acceptability Thresholds for Development Approvals by Local Government (Caves, 1993). An Appendix D: Landslide Assessment Assurance Statement must also be provided by the qualified professional along with their assessment report.
2. **A Hydrologic and Hydrogeologic Impact Assessment Report** undertaken and certified by a qualified professional to assess impacts to site hydrology and groundwater, and provide recommendations on how to mitigate these impacts.
3. **A Fluvial Geomorphology Report** undertaken and certified by a qualified professional to assess impacts to watercourses from development and/or assess the design of proposed compensation works.
4. **Flood Assessment Report** undertaken and certified by a qualified professional, and in accordance with the 'Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC'. An Appendix J: Flood Hazard and Risk Assurance Statement must also be provided by the qualified professional along with their assessment report.
5. **A Wildlife Habitat Assessment Report**, including species at risk, undertaken and certified by a QEP, as per the City's Wildlife Assessment Report Guidelines.
6. **Invasive Species Assessment Report**, including a management plan if invasive species are identified on-site which are included on the BC Weed Control Act.

1.2 Detailed Fish Habitat Assessment Report Requirements - continued

7. **An Arborist Report**, undertaken and certified by a certified arborist or Registered Professional Forester, including retention assessment, hazard tree assessment, tree protection recommendations, windthrow risk assessment, tree replacement plan, etc. The assessment can be limited to the trees within the development footprint and all trees within striking distance of the proposed development.
8. **A trail plan**, indicating the proposed routes and trail standards of all public and private trails.
9. **An Erosion and Sediment Control Plan** undertaken and certified by an erosion and sediment control supervisor, in accordance with the City's Erosion and Sediment Control Bylaw.
10. **A Construction Environmental Management Plan**, prepared by a QEP to advise the developer and contractors on how to proceed in compliance with relevant streamside and wildlife legislation, guidelines, Best Management Practices, etc. The CEMP shall address topics such as pre-construction meetings, tree clearing timing, procedures for species salvages, environmental monitoring requirements, spills, emergency contact numbers, authorities of the environmental monitor, etc.

2 IS IT A STREAM UNDER THE SPB?

The SPB applies to the same streams that the RAR applies to, and as such, the SPB applies only to streams that are connected by surface flow to fish habitat. Where a QEP suspects that a stream is not connected by surface flow, they must adequately document the site conditions that support this conclusion. This may require multiple site visits over multiple years. Please note that a single site visit conducted during a dry time of the year (i.e., summer) does not provide enough information to substantiate a lack of connection, as the RAR and SPB apply even when a stream periodically flows subsurface for part of the year. Please note that even where a watercourse is not considered a stream under the SPB, the WSA may still apply. If it is determined that the WSA applies, the City will still require a Natural Environment Development Permit (NEDP) where the subject property is in a NEDP area and is not in the ALR.

3 DETERMINING THE STREAM SETBACK

3.1 Fish Presence/Absence

To determine if fish are present, you can review online resources or contact local representatives.

Online resources include:

- Community Mapping Network (<http://www.cmnbc.ca>)
- Fisheries Information Data Queries (<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/fish/fish-and-fish-habitat-data-information/search-fish-fish-habitat-data-information/fisheries-inventory-data-queries>).

Local representatives include:

- City of Abbotsford Environmental Coordinators
- MFLNRORD and/or DFO staff in your region
- Stewardship groups (Abbotsford Ravine Park Salmonid Enhancement Society, Glenn Valley Watershed Society, etc.)
- Area residents

If fish presence cannot be determined, a quick and easy option is to assume that fish are present and use the appropriate setback for the vegetation condition. In many situations, whether a stream is fish bearing or not is overridden by the streams permanency (i.e. permanent streams have a 30m setback under Category 1 vegetation conditions, regardless of whether or not they contain fish). Alternatively, you can hire a QEP to undertake fish surveys to determine presence/absence. The QEP must adequately document that a stream does not support fish and provide the rationale in the Fish Habitat Assessment Report.

Proving fish absence is a very time consuming process as it involves multiple site visits over numerous seasons. Fish absence can be determined by hiring a QEP to undertake a fish absence study in accordance with standards for field sampling, data collection and data recording established by the RAR Assessment Methods (i.e. determining stream gradient, evaluating man-made barriers to fish passage, and/or undertaking fish sampling). Timing and location is very important. One time or single-site sampling is not considered adequate for confirming species absence without other indications, such as significant natural barriers, no flow periods, or some other water quality limiting factor. Streams must be sampled during all seasons that a species of fish is expected to be present. This may be limited to periods when the stream is accessible and/or has sufficient flows.

3.2 Permanency

A permanent stream is a stream that typically contains continuous surface waters or flows for periods more than 6 months in duration. A non-permanent stream is a stream that typically contains continuous surface waters or flows for a period less than 6 months in duration. If the permanence of a stream is unknown, the default value for the stream is permanent. In order to effectively determine stream permanence, multiple site visits are required during different seasons, and often over several years. The City may require a site visit during saturated conditions following a significant rainfall event. A QEP must thoroughly document that a stream is non-permanent and provide the rationale in their report. Hence, this investigative work should occur well in advance of development.

3.3 Vegetation category

Potential vegetation is considered to exist if there is a reasonable ability for regeneration either naturally or with assistance through enhancement, and is considered to not exist on part of an area covered by a permanent structure. A permanent structure is any building or structure that was lawfully constructed, placed or erected on a secure and long lasting foundation on land in accordance with any local government bylaw or approval condition in effect at the time of construction placement or erection. These structures are grandfathered until the site is redeveloped. Vegetation category is to be determined using Section 2.2 of the RAR Assessment Methodology and MFLNRO's Information Bulletin 'Permanent Structures and the Simple Assessment'.

4 DELINEATING THE BOUNDARY OF A WETLAND

Wetlands must be assessed by a QEP that has expertise delineating and classifying wetlands. The delineation and classification must adhere to the following guidelines:

- US ACE (Army Corps of Engineers). 1987. Corps of Engineers Wetlands Delineation Manual. Available at: <http://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf>.
- NWWG (National Wetlands Working Group). 1997. The Canadian Wetland Classification System, 2nd Edition. Wetlands Research Centre, University of Waterloo. 76 pp.
- MacKenzie, W.H. and J.R. Moran. 2004. Wetlands of British Columbia: A Guide to Identification. Available at: <https://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh52.htm>.

The QEP must assess the vegetation, soil and hydrological characteristics of the site, and use the data collected to make a determination on whether or not a wetland exists and if it does exist, what the classification is and where the wetland boundary is.

5 DEVELOPMENT WITHIN THE SPEA

5.1 Constructing trails

Any construction of trails within a SPEA must be reviewed by the City, and may require mitigation along with a DP or DVP. All trails must be constructed in accordance with this document: <http://www.stewardshipcentrebc.ca/portfolio/access-near-aquatic-areas/>. Public trails may require fencing in order to limit disturbance to the SPEA.

Trails within the environmental setbacks are generally supportable from an environmental perspective if:

1. Trails are combined with service access facilities where wherever possible, to minimize incursions into the SPEA.
2. The trail follows existing trail networks wherever possible.
3. All new portions of the trail are located outside of the Riparian Area Regulation Detailed Assessment setback, with the exception of trail crossings from one side of the creek to the other.
4. A vegetated buffer exists between the houses and the trail.
5. The trail does not require removal of trees >20cm DBH, and avoids major tree and shrub groupings.
6. The trail avoids hazard areas such as steep ravines, cliffs, undercut banks, etc.
7. The trail meets the City's Recreation or Nature trail standard, as determined by the City.
8. The trail is of a permeable material (gravel, wood mulch, native soil). Where the trail crosses over damp areas such as wetlands/floodplains, a boardwalk shall be constructed.
9. Compensation is provided at a 2:1 ratio for any habitat losses associated with the trail, or alternatively, the equivalent area of the trail width and the maintenance area adjacent to it shall be added to the outside edge of the SPEA so that there is no net loss in SPEA area.
10. Where crossings cannot be avoided, SPEA crossings are designed such that they:
 - are perpendicular to the SPEA, as narrow as practically possible, and elevated where possible;
 - provide passage for fish and wildlife;
 - are sited so as to minimize impacts on the vegetation, and where applicable, the stream channel;
 - are sited so as to conform to the natural topography as much as possible; and
 - are constructed and maintained so as to prevent erosion and allow the natural movement of surface water and groundwater.

5.2 Constructing stormwater facilities

Stormwater detention/retention facilities are not typically permitted within SPEAs.

5.3 Constructing stormwater outfalls

All stormwater outfalls require senior government approvals, in accordance with the federal Fisheries Act, administered by Fisheries and Oceans Canada (DFO), and the provincial Water Sustainability Act, administered by MFLNRORD. If works are proposed on City property, a letter of consent will need to be obtained from the City as part of your provincial notification. The applicant shall submit copies of all correspondence with these senior agencies to the City. The construction of a stormwater outfall triggers the requirement for a DP, as per the SPB.

5.4 Removing hazard trees

Hazard trees include standing dead trees that are vertical or lean towards the development area, as well as some live trees with large dead branches or tops. It is recognized that hazard trees within a SPEA may pose an unacceptable risk to human life and/or property and require treatment or removal. In this respect, if you are concerned that a tree poses a hazard to people or property, we recommend the following:

- The property owner is to retain the services of an ISA Certified Arborist with a Tree Risk Assessment Qualification or a Registered Professional Forester to undertake a Tree Risk Assessment Report. The assessment report is to include recommendations for the minimum treatment necessary to reduce the hazard to an acceptable level, the number, size and species of trees necessary to be removed, and the number, size and species of appropriate native species replacements according to the Ministry of Environment's Tree Replacement Criteria and Riparian Planting Criteria, available online at:
http://www.env.gov.bc.ca/lower-mainland/ecosystems/restrictive_covenants/management_hazard_trees.htm;
- The course of action recommended by the qualified professional to remove the hazard is to be undertaken by the property owner or their contractor according to the following best practices:
- All work shall be undertaken in such a manner so as to minimize the disturbance to surrounding vegetation;
 - Good pruning practices, as recognized by organizations of professional arborists, instead of complete removal, whenever possible;
 - If complete removal is prescribed, maintain trees as wildlife tree snags for all trees >40cm DBH and retention of large woody debris (i.e. stem and/or branches > 20cm diameter) within the SPEA as course woody debris whenever possible,
 - When trees must be removed, replacement with similar or appropriate alternative native species as per the Ministry of Environment's Tree Replacement Criteria and Riparian Planting Criteria; and
 - Tree removal should occur outside of the bird breeding period. If clearing cannot be avoided during this period, a nest survey by a QEP should be conducted to identify active bird nests, and apply appropriate site and species specific buffers and/or timing windows.
- If the Arborist/Forester identifies the tree as being hazardous but not in imminent danger of falling, the property owner must get the following approvals from the City prior to taking any action:
 - Tree Permit exemption from Parks, Recreation and Culture; and
 - If the tree is within a Development Permit Area, an exemption from the Natural Environment (and possibly Steep Slope) Development Permit from Planning and Development Services.
- If the tree is identified as being hazardous and is in imminent danger of falling, cutting may be carried out without City approval on an emergency basis where all of the following apply:
 - The tree is a hazard tree or has been severely damaged by natural causes;
 - Emergency cutting is necessary because the tree poses an imminent danger of falling and injuring persons or property; and
 - The owner of the property on which the tree is located has reported the action to the City by the end of the next business day after the cutting, providing written reasons showing how the tree was a hazard or was damaged and how it posed an imminent danger to persons or property. Upon receipt of this information and confirmation by staff that the tree was hazardous, the City will provide written exemptions under the Tree Protection Bylaw and applicable DP.

5.5 Remediating a non-compliance

Where unauthorized development occurred in the SPEA, the property owner will be required to obtain a Development Permit in order to restore the site in accordance with Section 8(f) of the SPB.

6 MITIGATION, COMPENSATION, MONITORING, AND MAINTENANCE

6.1 Is mitigation required when a flex is proposed?

Where an applicant is proposing to flex the boundary of the SPEA, the QEP must demonstrate that there will be no net loss to fish habitat. As such, if the habitat values of the area being gained are poorer than the area being lost, a restoration plan must be prepared as part of the Development Permit.

6.2 Does the outward flex need to be on the same side of the stream as the inward flex?

No, it can be on the opposite bank as long as no net loss is demonstrated.

6.3 What compensation ratio is required?

In accordance with Natural Environment Development Permit policy NE3, compensation should achieve a ratio of 2:1 (area of restoration to area of impact) in order to address time lags and uncertainty. However, Council and/or staff may consider/require a variation to the compensation ratio (i.e. from 1:1 to 3:1) depending on the quality of habitat being impacted and the level of mitigation being employed.

6.4 What must be included in a Riparian Restoration Plan?

Riparian Restoration Plans must be prepared and supervised by an appropriately qualified professional. The plan should follow senior government riparian restoration guidelines (e.g. Ministry of Environment's 2008 Riparian Restoration Guidelines, DFO's 2006 Riparian Areas and Revegetation Operational Statement). The plan must include the following information:

- Planting areas identified on a drawing with associated tables for each area that specify the species names (both common and latin), quantities, and pot sizes
- Site preparation and planting instructions
- Maintenance instructions (e.g. invasive plant removal, irrigation, etc.)

Note: the planting plan does not need to identify a specific location for each individual plant as is typical on landscaping plans.

6.5 Is compensation required where the stream is not connected by surface flow to downstream fish habitat?

Where a property owner proposes to infill/pipe a stream that is disconnected from downstream fish habitat (and therefore not protected by the City's SPB), but the stream is protected by the Water Sustainability Act, the City still requires compensation at a 2:1 ratio of the riparian habitat associated with the stream, as per Natural Environment Development Permit policy NE3. The City generally expects that the Riparian Area Regulation setbacks would be utilized to determine the amount of riparian area requiring compensation.

6.6 What are the relative values of the different compensation options?

The City has developed a weighting system to evaluate various common compensation scenarios in order to address the relative benefits of each scenario and provide incentives to applicants to develop compensation plans that will result in the best fish habitat improvements. For example, in order to encourage the removal of permanent structures from within the SPEA, the City will consider each square meter of permanent structure replaced with habitat as being worth two square meters (i.e. have a relative weighting factor of 2). The applicant will be able to combine different restoration scenarios to reach the total required compensation area (see the example below).

Compensation Table

COMPENSATION SCENARIO		HABITAT WEIGHTING FACTOR
1. RESTORATION WITHIN THE SPEA, OR WITHIN 10M OF THE SPEA BOUNDARY	a) Removing permanent structures (as defined by the RAR Assessment Methods) and replant at a density of 1 plant/m ²	2x the area of the permanent structure
	b) Restoration of areas that were primarily vegetated with invasive and/or ornamental plants (e.g. invasive plant removal and replanting with native plants at a density of 1 plant/m ²)	1x the area that is restored
	c) Understory/supplemental planting in areas that are poor quality habitat (e.g. existing forest with poor quality understory is planted with additional trees and shrubs at a density of 0.5 plants/m ²)	0.5x the area that is restored
2. RESTORATION BEYOND 10M OF THE SPEA BOUNDARY	Undertaking any restoration further than 10m outside of the boundary of the SPEA as determined by the SPB (e.g. restoring an area >40m from top of bank for a fish bearing stream)	0.5x the area that is being restored
3. FLEXING	Restoration required only if the habitat to be included in the SPEA is of poorer quality than the habitat to be removed from the SPEA	Weighting factor will vary, depending on the difference in habitat quality. The applicant needs to demonstrate No Net Loss is achieved.

Example of utilizing Habitat Weighting Factors:

A 1000m² area is proposed to be removed from the SPEA in order to develop the site. In order to achieve the 2:1 compensation ratio as per the Natural Environment Development Permit guidelines, the area of compensation must be 2000m². The compensation plan proposes the removal of a shed (i.e. a permanent structure), the replanting of an area that is currently part of the lawn, and supplemental understory planting within the poor quality forest on their property. The physical area of each of these components is multiplied by the habitat weighting factor to give the equivalent value of the component. These are all added up to reach the required 2000m² compensation area.

	Area of habitat loss (m ²)	Area of habitat gain (m ²)	Habitat weighting factor	Equivalent area of weighted habitat (m ²)
<i>DVP area</i>	1000	n/a	n/a	n/a
<i>Removal of shed and replanting</i>	n/a	200	2	400
<i>Replanting lawn within 10m of the SPEA boundary</i>	n/a	400	1	400
<i>Replanting lawn beyond 10m of the SPEA boundary</i>		400	0.5	200
<i>Supplemental understory planting</i>	n/a	2000	0.5	1000
TOTAL AREA	1000	2800	n/a	2000

6.7 Can compensation occur offsite?

All efforts should be made to undertake compensation on-site, but where the City agrees this is not possible or reasonable, then off-site compensation may also be accepted.

6.8 Does the City have a list of potential off-site restoration sites?

While staff do not keep a formal list of potential sites, they may be able to provide some suggestions for further exploration by the QEP.

6.9 Does the City allow off-site compensation in their parks or other City owned property?

Yes, the City allows for off-site compensation on their property but requires payment for the use of the property. At the time of application, staff will confirm what the payment requirements are. Where the work is proposed in a City Park, a Parks Access Agreement may be required.

6.10 Does the compensation work have to be like-for-like?

The City prefers a “like-for-like” approach to compensation, where the habitat that is lost is replaced by the same type of habitat (i.e. riparian losses are compensated for by riparian gains, instream losses with instream gains). However, where a net benefit to fish habitat can be demonstrated, the City will accept an alternative compensation plan that is not based on “like-for-like”. This alternative plan will utilize the monetary value of a typical “like-for-like” compensation plan to establish the minimum monetary value of the alternative compensation plan. Following is an example of this option:

A development site experiences a 75m² loss of SPEA due to the road required to access the site. SPEA flexing does not work at this site as the lots would be too small. A portion of the watercourse within the site flows through an old 15m long culvert which is no longer used. The SPEA contains healthy mature forest which requires only minimal supplemental planting. As such there is not enough opportunity to develop an on-site “like-for-like” compensation plan that would address the entire 150m² compensation requirement. The total cost of undertaking 150m² of riparian compensation was estimated at \$5,000. The applicant proposes to remove the old culvert and rehabilitate the stream, which would result in an instream habitat gain of 30m². The applicant will also rehabilitate the riparian vegetation disturbed during the culvert removal. The total cost of this work is very similar at \$5,000. While this achieves only 30m² of habitat gain, there is a net benefit to fish habitat as the new channel provides more usable habitat to fish.

6.11 Can restoration of an area impacted since 2005 count towards compensation?

If areas on the property have been impacted (without approval) since the adoption of the SPB in 2005, their restoration cannot be counted towards compensation. Restoration of these areas will be required as a condition of any approval.

6.12 Is there an option to provide cash-in-lieu for the compensation works?

If the compensation area is relatively small and on-site compensation is challenging, then the City will entertain requests to provide cash in lieu to the City to be used for a larger City-led restoration project. Cash-in-lieu is calculated by determining the cost of onsite compensation (including 5 years of monitoring and maintenance).

6.13 What information is required for the compensation plan?

The compensation plan must address the following (as applicable):

- Site preparation requirements, including removal of structures, garbage, invasive plants, and topsoil placement;
- Area where the planting will occur
- List of suitable species, broken into microsites
- Quantity and pot size of all plants
- Planting density
- Mulching requirements
- Seeding specifications
- Pest barriers
- Placement of large/coarse woody debris
- Timing of the planting and fence installation (e.g. prior to lot release, prior to building final, etc.)
- Other pertinent information, as applicable

Please note that the planting plan does not need to include the specific location of each plant to be planted but can instead show specific microsites with lists of plants suitable for that microsite.

6.14 When does the compensation need to occur?

If the compensation is associated with a development involving a subdivision, the compensation should occur prior to substantial completion of the subdivision (i.e. lot release). If the compensation is not associated with subdivision (e.g. a multi-family residential building, industrial development, etc.), then the compensation should occur prior to occupancy of the building.

6.15 How long is the monitoring period for compensation works?

The City requires 5 years of monitoring post-construction in order to ensure that the plants become well established and are more capable of withstanding limited competition from invasive plants. The City will consider requests for reductions in this monitoring period only if it can be demonstrated that the long-term health of the SPEA will not be impacted by the reduction.

6.16 What monitoring reports are required?

The City requires the following types of reports:

- Post-construction Monitoring Report: submitted upon completion of all of the works associated with construction and undertaking of the compensation.
- Annual Monitoring Reports: reports must be submitted at the end of every year of the monitoring program, where the first year monitoring period is considered to start on the date of the City's acceptance of the post-construction monitoring report;
- Final Monitoring Report: submitted upon completion of the annual monitoring program or upon reaching the survivorship and/or functionality requirements if these weren't met during the monitoring program.

Example Five Year Monitoring Schedule:

Report Type	Date
Post-construction Monitoring Report	City acceptance on October 23, 2018
First Annual Monitoring Report	October 23, 2019
Second Annual Monitoring Report	October 23, 2020
Third Annual Monitoring Report	October 23, 2021
Fourth Annual Monitoring Report	October 23, 2022
Final Monitoring Report	October 23, 2023

6.17 What information is required in the Post-Construction Monitoring Report?

The Post-Construction Monitoring Report must include the following:

- Summary of the applicable permits received for the project, including information on all senior government approvals/notifications, and all permit numbers;
- Where senior government approvals were obtained, a copy of all approvals should be included in the appendix;
- Summary of the mitigation and compensation requirements, including specific information on the numbers of trees/shrubs planted, fencing, instream enhancements, wildlife culverts, bird boxes, maintenance, monitoring, plant survival, etc.;
- A copy of the cost estimates that were submitted to the City as part of the Development Permit/Development Variance Permit;
- A list of the species planted, along with total quantities of each species and details on any plant substitutions made from the original planting plan;
- As-built plans of the compensation works, such as a planting plan that shows the planting location(s), cross-sections and plan view of all instream enhancements, surveyed location of permanent fencing, etc.;
- Summary of how the work proceeded, along with any lessons learned, timing of the plantings, issues encountered, minor deviations from the original plan, recommendations for the future, fish/wildlife species salvage information, etc.;
- Photos of all aspects of the site, including during and after the construction; and
- Requested security release and rationale.

6.18 What information is required in the Annual Monitoring Report?

The Annual Monitoring Report must include the following:

- A summary of the current condition of the site, including the survivorship of the plants broken out into trees and shrubs, the stability/function of any instream works, any natural plant establishment, etc.;
- Any recommendations for future maintenance, including invasive plant removal, native plant replacements to address mortalities, repair of any slopes, etc.

6.19 What information is required in the Final Monitoring Report?

The Final Monitoring Report must include the following:

- A summary of the current condition of the site, including the survivorship of the plants broken out into trees and shrubs;
- Any recommendations for future maintenance;
- A confirmation that all erosion and sediment control measures associated with the construction phase are removed;
- A conclusion on whether or not the maintenance and monitoring period should be extended to achieve the project's goals.

6.20 Will the City inspect the compensation works?

The City typically conducts two inspections with the QEP. The first is after receipt of the post-construction monitoring report in advance of the release of any security associated with the construction works. The second is at the end of the project upon receipt of the final monitoring report. Please note that the final inspection will only be scheduled during the growing season to ensure that vegetation is inspected when it is in leaf.

6.21 What are the survivorship requirements for plants associated with compensation works?

The City requires 100% of the trees and 80% of the shrubs to survive every year of the monitoring period. If in the final year of the monitoring period this survivorship is not achieved, re-planting is required and the monitoring period may be extended.

7 ENVIRONMENTAL SECURITY

The property owner shall deposit and maintain with the City environmental security in the form of either cash or an irrevocable, auto-renewing letter of credit until all the requirements of the permit have been met. Environmental security for mitigation and compensation works (including the cost of planting, monitoring, fencing, etc.) must be sufficient to cover the costs of the following:

- **110% of the cost of carrying out the physical works, including:**
 - Site preparation;
 - Invasive plant removal;
 - Topsoil, and its placement;
 - Native plants, and their installation;
 - Pest barriers, and their installation;
 - Fencing and signage, and their installation; and
 - Undertaking any other mitigation measures recommended in supporting documentation, technical studies and recommendations, etc.
- **110% of the monitoring costs, including:**
 - Environmental monitoring during construction;
 - Completing a post-construction monitoring report;
 - Annual inspection of the physical works, including plant survivorship;
 - Inspections with the City upon request of any security reduction/release; and
 - Preparing associated annual monitoring reports.

7 Environmental Security - continued

- **110% of the maintenance costs, including:**
 - Watering;
 - Conducting invasive plant removal;
 - Repairing or replacing fencing and signage.

Upon acceptance of the applicable monitoring reports and implementation of all recommendations in the report, the security will be released in the following two stages:

- **Upon 100% completion of the compensation works, the costs of:**
 - Site preparation;
 - Invasive plant removal;
 - Topsoil and its placement;
 - Fencing and signage, and their installation;
 - Undertaking any other mitigation measures recommended in supporting documentation, technical studies and recommendations, etc.;
 - Environmental monitoring during construction;
 - Post-construction monitoring report; and
 - Inspection with the City upon request of security reduction/release.
- **At the end of the final year of the maintenance and monitoring period, the costs of:**
 - All maintenance for the duration of the maintenance period;
 - Annual site inspections for the duration of the monitoring period;
 - Annual and final monitoring reports;
 - Cost of native plant and pest barriers, including installation; and
 - Inspection with the City upon request of security reduction/release.

If the maintenance and monitoring program is not undertaken, the City reserves the right to extend the maintenance and monitoring program or withdraw from held funds such that the maintenance and monitoring is undertaken for the specified duration or otherwise meets the City's expectations as functioning as intended.

Please see Appendix D for an example of a costing sheet that can be utilized by QEPs in determining Environmental Securities.