Environmental Best Management Practices for Urban and Rural Land Development



5

June 2004

Section Five
ENVIRONMENTALLY SENSITIVE AREAS

Summary

Environmentally sensitive areas need to be protected from development. Best management practices include:

DETAILED SITE INVENTORY
- Determine if there are environmentally sensitive areas on or near the proposed development site

SITE PLANNING AND DESIGN
- Design the development to retain environmentally sensitive areas
- Create buffers around environmentally sensitive areas
- Link environmentally sensitive areas to nearby greenspaces using wildlife corridors
- Design carefully for recreational use

PROTECTION DURING DEVELOPMENT
- Avoid disturbing the environmentally sensitive area during development

PROTECTION AFTER DEVELOPMENT
- Limit access to environmentally sensitive areas
- Use environmentally-friendly landscaping
- Retain natural ecological processes

RESTORATION OF DISTURBED ENVIRONMENTALLY SENSITIVE AREAS
- Develop and implement a restoration plan

BRITISH COLUMBIA
Ministry of Water, Land and Air Protection
Ecosystem Standards and Planning
Biodiversity Branch

Environmentally Sensitive Areas

Over one-third of B.C.'s at-risk species rely on grasslands for their survival. (*Grasslands Conservation Council*).

Environmentally sensitive areas[1] are places that have special environmental attributes worthy of retention or special care. These areas are critical to the maintenance of productive and diverse plant and wildlife populations. Examples include rare ecosystems (such as the Garry oak and associated ecosystems found in southwestern British Columbia), habitats for species at risk (such as sagebrush grasslands) and areas that are easily disturbed by human activities (such as moss-covered rocky outcrops). Some of these environmentally sensitive areas are home to species which are nationally or provincially significant, others are important in a more local context. They range in size from small patches to extensive landscape features, and can include rare and common habitats, plants and animals. For more information on ecosystems at risk see the Species and Ecosystems at Risk website.

This section focuses on terrestrial (land-based) environmentally sensitive areas. Most aquatic and riparian ecosystems, and any areas providing habitat for special wildlife and species at risk are also considered to be environmentally sensitive areas. For additional information on these areas see Sections 6 and 7. See also Section 3: Environmental Planning at the Community Level and Section 4: Environmental Planning and Development at the Site Level for information applying to other, less sensitive, terrestrial ecosystems.

5.1 Benefits of Environmentally Sensitive Areas

Natural open space and walking/biking paths are among the four most important features for potential homebuyers (*Curran 2001*).

Environmentally sensitive areas can enhance the quality of places where people live, work and play.

Development proposals that demonstrate good environmental stewardship including the protection of environmentally sensitive areas help to create unique developments that have the community support to move efficiently though the planning and approvals process, and that sell quickly at premium prices. For more information, see Appendix A: Benefits of Environmental Protection.

Building Outstanding Value

- **Improved value:** Properties adjacent to greenspace are worth 5 –15% more. This provides greater returns for the developer, and higher property taxes for the local government (*Quayle and Hamilton 1999, Curran 2001*).
- **Improved quality of life:** Residents enjoy living near greenspace, having a greater variety of birds at their feeders and having a quiet place to walk (*Habitat Acquisition Trust 2004)*.
- **Reduced development costs:** Where buildings are clustered to preserve greenspace, this translates into lower costs for land clearance and infrastructure (roads, sewers, etc.) (*Habitat Acquisition Trust 2004*).
- **Free services:** Ecological services such as stormwater management, production of oxygen, absorption of atmospheric pollutants and plant pollination are provided by healthy ecosystems— free of charge! (*McPhee et al 2000*)
- **Greater biodiversity:** Environmentally sensitive areas provide homes for a wide variety of plants and animals, including many species at risk (*McPhee et al 2000*).

For more information, see Appendix A: Benefits of Environmental Protection.

[1]**Definitions** are provided in Appendix 5-1 and in the Glossary

5.2 Objectives

The Ministry's goals are to:

- Maintain and restore the ecological diversity of fish and wildlife species and their habitats; and
- Protect the environment and human health and safety by ensuring clean and safe water, land and air.

Environmentally sensitive areas need to be protected from development. Local governments and the development community should meet the following environmental objectives during urban and rural land development:

Protect ecological values during and after development.
Photo: Conservation Data Centre

- Identify environmentally sensitive areas in community and site plans prior to development planning and design;
- Direct development away from environmentally sensitive areas;
- Protect the ecological values of environmentally sensitive areas during and after development;
- Provide buffers and protection measures for environmentally sensitive areas, including the management of recreational access;
- Connect environmentally sensitive areas to nearby habitats using **wildlife corridors**[1];
- Design developments to allow for the continuation of ecological processes that are essential for ecosystem sustainability (flooding, fire, etc.);
- Prevent the spread of **invasive**, **alien** species in environmentally sensitive areas; and
- Identify and implement restoration opportunities for disturbed environmentally sensitive areas.

Local governments should address these issues within their Official Community Plan and other planning and public consultation processes. Developers should be able to demonstrate to local governments and the public how they have addressed these concerns and incorporated them into their development before, during and after the construction process.

5.3 Legal Requirements

Environmentally sensitive areas should be protected from adverse impacts, such as the destruction of birds and their nests as described in the B.C. *Wildlife Act* (s. 34).

Under the federal *Species at Risk Act*, some areas will be designated as **critical habitat** for specified species at risk. The *Species at Risk Act* provides for the protection of these critical habitats.

5.4 Best Management Practices

Best management practices for environmentally sensitive areas focus on protection of these sites before, during and after construction. Best management practices for the protection of these sites at the community or landscape level are provided in Section 3: Environmental Planning at the Community Level. Best management practices for the

[1] **Definitions** are provided in Appendix 5-1 and in the Glossary

planning and development of less sensitive sites is provided in Section 4: Environmental Planning and Development at the Site Level.

5.4.1 Detailed Site Inventory

"The Comox-Strathcona Regional District Sensitive Habitat Atlas incorporates data from the Sensitive Ecosystem Inventory, along with the coastal shoreline and watercourses. The atlas is used as a basis for land use decisions in the Regional District." (http://www.rdcs.bc.ca/environmentalplanning/index.html)

DETERMINE IF THERE ARE ENVIRONMENTALLY SENSITIVE AREAS ON OR NEAR THE PROPOSED DEVELOPMENT SITE

☑ Gather available information from community or regional level mapping and inventories. Many local governments have environmental atlases that identify environmentally sensitive areas. Some of these are partial inventories (e.g. wetlands only), while other record many different types of ecosystems (such as the Sensitive Ecosystems Inventories). This information may be available in the Official Community Plan or from the local government office. See Appendix B: Sources for Environmental Mapping and Inventory for sources of information.

☑ Ensure that all environmentally sensitive areas on the site and in adjacent properties are identified.

☑ If the available information is inadequate, have a detailed bio-inventory of the site prepared by an **appropriately qualified professional**. See Section 4.4.2: Detailed Site Inventory, and Appendix C: Terms of Reference for Bio-Inventory.

☑ Provide the results of the bio-inventory to the local government, and any findings of species at risk to the Conservation Data Centre and regional Ministry of Water, Land and Air Protection species at risk staff.

5.4.2 Site Planning and Design

DESIGN THE DEVELOPMENT TO RETAIN ENVIRONMENTALLY SENSITIVE AREAS

☑ Work with an appropriately qualified professional when planning or designing developments near environmentally sensitive areas.

☑ Use information from the mapping and inventories, community environmental plan and the site inventory to support planning and design at the site level.

☑ Ensure that site level planning for protection of identified environmentally sensitive areas meets or exceeds the community level objectives (see Section 3: Environmental Planning at the Community Level).

☑ Locate development away from environmentally sensitive areas. This may mean creating a higher density development on one part of a site, in order to provide for the protection of an environmentally sensitive area on another part of the site.

☑ Avoid or mitigate any impacts your planned development may have on neighbouring environmentally sensitive areas. For example, use stormwater management techniques to avoid impacts on downslope wetlands, waterways, protected nest sites or reptile **hibernacula**.

☑ For developments in coastal areas, see *Coastal Shore Stewardship: A Guide for Planners, Builders and Developers*.

Avoid impacts on neighbouring ecosystems
SUSAN LATIMER

Buffers help to protect the environmentally sensitive area from encroachment by invasive species, impacts from domestic pets, and encroachment by human activities. Make the buffer as wide as possible to protect the environmentally sensitive area.

Create buffer areas around environmentally sensitive areas

☑ Establish buffer areas around environmentally sensitive areas. Buffers should be wide enough to protect the ecological integrity of the environmentally sensitive area—both the habitats and the plants and animals living there. Buffers should be on public land where possible, to provide the best long term protection. Where buffers are on private land, they should be protected by a conservation covenant that has enforcement clauses. For suggested buffer widths, see Section 4, Table 4.1.

Link environmentally sensitive areas to nearby greenspaces using wildlife corridors

☑ Retain pre-existing wildlife corridors by identifying and designing to avoid them (see Section 3: Environmental Planning at the Community Level). This will help maintain biodiversity and reduce wildlife conflicts.

☑ Provide 'green corridors' that facilitate wildlife movement (such as buffers along riparian corridors).

Design carefully for recreational use

Design trails to minimise impacts
PHOTO: MARGARET HENIGMAN

Often, environmentally sensitive areas are designated as 'park' land, and trails and other recreational facilities may be constructed. Recreational access may damage the features important to the environmentally sensitive area. Some species are not tolerant of human presence and in some cases it could be dangerous, for example if a trail is built next to a hibernaculum for rattlesnakes.

☒ Avoid or minimise trail construction in environmentally sensitive areas. Species such as herons may abandon their nests if trails and disturbances are too close.

☑ Design any trails to avoid fragmentation of the environmentally sensitive area.

☑ Where trails are required, design the trail system to minimise impacts on the environmentally sensitive area, for example by using boardwalks over wet areas, or by placing natural barriers that restrict people to the main trail.

☑ Restrict access to environmentally sensitive areas and buffer areas by people and their pets, for example through the use of **coarse woody debris**, plantings, signs and fencing.

Simple cedar split rail fencing can define environmentally sensitive areas and keep dogs out, while allowing small animals to pass through.

☑ Use signage and other educational tools to inform people about the ecological importance of environmentally sensitive areas.

☑ Recognise the potential for increased invasive species occurrences associated with recreational activities and plan for their effective management.

☑ Refer to *Access Near Aquatic Areas* for information on the design of trails in riparian, wetland or aquatic areas.

☑ See *Best Management Practices for Recreational Activities on Grasslands* for additional information on protecting sensitive grasslands.

5.4.3 Protection During Development

Protection is cheaper than restoration

Avoid disturbing the environmentally sensitive area during development

Protection of existing ecosystems is MUCH cheaper than ecosystem enhancement and restoration. And, in many cases it is not technically possible to restore ecosystems to their original functioning state.

- ☑ Identify environmentally sensitive areas and buffers in the field by clearly marking these areas with high visibility protection fencing (such as snow fences or similar material).
- ☑ Post a site map of environmentally sensitive areas at the entrance to the worksite where workers are sure to see it.
- ☑ Use informational signage and other means to explain the importance of protection measures and the need to avoid any activity in environmentally sensitive areas, including clearing, disturbing, or storing construction materials in this area.
- ☑ Schedule construction activities to avoid sensitive periods such as bird nesting. Check timeframes with an appropriately qualified professional.
- ☑ Maintain snags and woody debris in buffer areas and environmentally sensitive areas to provide habitat for a diversity of wildlife.
- ☑ Prevent movement of silt laden waters into environmentally sensitive areas by using sediment control techniques (see Section 4.4.8: Erosion and Sediment Control).
- ☑ Maintain effective fuelling facilities well away from environmentally sensitive areas to prevent contamination (see Section 8.2: Spill Containment and Reporting).

Schedule construction to avoid nesting season
PHOTO: MARK KAARREMAA

5.4.4 Protection After Development

Limit access to environmentally sensitive areas

- ☑ Erect permanent fencing around environmentally sensitive areas to limit access.

Douglas College's Institute of Urban Ecology in Vancouver has created a "Green Links" program to encourage the linking of fragmented urban habitats through backyards. For more information see http://www.douglas.bc.ca/iue/about.htm

Use environmentally-friendly landscaping

- ☑ Use native plants in landscaping. This avoids the use of alien species that might spread into neighbouring environmentally sensitive areas, and leaves less open ground that might be colonised by alien plants. As well, many native plants are adapted to local climates (such as hot, dry summers) and once established, will need less maintenance and watering. For more information see the Naturescape website and Alien Species website.
- ☑ Encourage local residents to become knowledgeable stewards of environmentally sensitive areas, for example by removing invasive alien species (such as knapweed, Scotch broom or American bullfrogs) before they become well-established. Training courses led by an appropriately qualified professional can assist in the development of effective stewardship groups.

☑ Encourage local residents to use naturescaping techniques such as incorporating nest boxes, bat boxes and other habitat features on their lands. Backyard habitats can provide useful corridors between environmentally sensitive areas for some wildlife.

Garry oak woodland.
PHOTO: MARK KAAREMMA

RETAIN NATURAL ECOLOGICAL PROCESSES

Some ecosystems are dependant on natural processes such as frequent or infrequent fires, or flooding.

☑ If the environmentally sensitive area is fire-dependant, plan for frequent controlled burns. **Controlled burns must only be carried out by an appropriately qualified professional.** Frequent controlled burns will not be as hot as wildfires, posing considerably less risk to nearby homes. Controlled burning should be conducted as part of a well planned ecological restoration program within the context of the site being treated.

☑ For flood-dependant ecosystems, see Section 7: Aquatic and Riparian Ecosystems.

5.4.5 RESTORATION OF DISTURBED ENVIRONMENTALLY SENSITIVE AREAS

DEVELOP AND IMPLEMENT A RESTORATION PLAN

☑ If an environmentally sensitive area is already disturbed, hire an appropriately qualified professional to prepare a restoration plan.

5.5 Useful Sources

For complete references and a more extensive reading list, see the Bibliography.

Legislation:

For a full listing of **provincial government legislation,** see http://www.qp.gov.bc.ca/statreg/list_statreg_l.htm

B.C. Wildlife Act: http://www.qp.gov.bc.ca/statreg/stat/W/96488_01.htm

For a full listing of **federal government legislation**, see: http://laws.justice.gc.ca/en/

Canada Species at Risk Act: http://www.sararegistry.gc.ca/ (general information) or http://laws.justice.gc.ca/en/S-15.3/index.html (copy of the Act)

Inventory Information:

Conservation Data Centre: http://srmwww.gov.bc.ca/cdc/index.html

Conservation Data Centre known rare element occurrences: http://srmwww.gov.bc.ca/cdc/access.html

Conservation Data Centre data requests: http://srmwww.gov.bc.ca/cdc/request.html

Conservation Data Centre report of findings: http://srmwww.gov.bc.ca/cdc/contribute.html

Sensitive Ecosystems Inventories (http://srmwww.gov.bc.ca/sei/index.html) are currently available for East Vancouver Island and Gulf Islands; Sunshine Coast; Bowen and Gambier Islands; Central Okanagan; and Bella Vista–Goose Lake Range (North Okanagan).

Sensitive Habitat Inventory and Mapping (part of the Community Mapping Network): http://www.shim.bc.ca/maps2.html

See also Appendix B: Sources for Environmental Mapping and Inventory

Other Best Management Practices:

These Best Management Practices documents will be posted on the Ministry of Water, Land and Air Protection website (http://wlapwww.gov.bc.ca/wld/BMP/bmpintro.html) in the near future. Some drafts are available for review on other websites. To obtain a copy for review or to comment on these drafts, contact Marlene Caskey (Marlene.Caskey@gems7.gov.bc.ca) or Dr. Grant Bracher (Grant.Bracher@gems2.gov.bc.ca) unless otherwise noted.

Best Management Practices for Recreational Activities on Grasslands. For a copy to review, contact Bob Cox, Bob.Cox@gems5.gov.bc.ca

Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia: http://www3.telus.net/public/leahmalk/BMP.pdf

To contact regional Ministry of Water, Land and Air Protection offices see http://wlapwww.gov.bc.ca/main/prgs/regions.htm

STEWARDSHIP PUBLICATIONS:

All of the publications in the Stewardship Series are available at http://www.stewardshipcentre.bc.ca/sc_bc/stew_series/bc_stewseries.asp. Titles include:

Access Near Aquatic Areas; A Guide to Sensitive Planning, Design and Management

Coastal Shore Stewardship: A Guide for Planners, Builders and Developers

Naturescape: British Columbia: Caring for Wildlife Habitat at Home

RESTORATION AND ECOSYSTEMS AT RISK:

Naturescape website: http://www.hctf.ca/naturescape/about.htm

Alien Species website: http://wlapwww.gov.bc.ca/wld/aliensp/index.html

Institute of Urban Ecology: http://www.douglas.bc.ca/iue/about.htm

B.C. Chapter of the Society for Ecological Restoration: www.serbc.info

Species and Ecosystems at Risk website: http://wlapwww.gov.bc.ca/wld/serisk.htm

APPENDIX 5-1: DEFINITIONS

See also Glossary

Alien species: Plants, animals and micro-organisms from one part of the world that are transported beyond their natural range and become established in a new area. They are sometimes also called "exotic," "introduced," "non-native," or "non-indigenous" species. Some alien species are also **invasive**.

Appropriately qualified professional: A scientist or technologist specialising in a relevant applied science or technology including, but not necessarily limited to, agrology, forestry, biology, engineering, geomorphology, geology, hydrology, hydrogeology or landscape architecture, and who is registered in British Columbia with their appropriate professional organisation, and acting under that association's Code of Ethics and subject to disciplinary action by that association, and who, through demonstrated suitable education, experience, accreditation and knowledge relevant to the particular matter, may be reasonably relied on to provide advice within their area of expertise.

Coarse woody debris: Sound or rotting logs, stumps or large branches that have fallen or been cut and left in the woods; or trees and branches that have died but remain standing or leaning.

Critical habitat: The habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species (*Species at Risk Act*, 2(1)).

Environmentally sensitive area: A term often used loosely to mean a site or area that has environmental attributes worthy of retention or special care. A more exacting definition is: any parcel of land that already has, or with remedial action could achieve, desirable environmental attributes. These attributes contribute to the retention and/or creation of wildlife habitat, soil stability, water retention or recharge, vegetative cover and similar vital ecological functions. Environmentally sensitive areas range in size from small patches to extensive landscape features. They can include rare or common habitats, plants and animals.

Hibernaculum (Plural: hibernacula): Sheltered place where an overwintering animal rests, or a den where snakes hibernate.

Invasive species: Plants, animals and micro-organisms that colonise and take over the habitats of native species. Most invasive species are also alien (non-native) to the area, and can become predominant because the natural controls (predators, disease, etc.) that kept populations in check in their native environment are not found in their new location.

Wildlife corridor: A travel corridor for wildlife. This ranges from very wide, natural corridors for large mammals, to 'sky corridors' that offer a safe flight path between feeding and resting places for birds, to smaller man-made corridors (such as urban trails) that provide safe passage for smaller creatures. These corridors also provide year-round habitat for less mobile species.