

## Appendix B CUMULATIVE IMPACTS

### B.01 Introduction

The Shoreline Management Act guidelines require local shoreline master programs to regulate new development to maintain no net loss of shoreline ecological functions. While some impacts are immediate and can be directly addressed through avoidance and mitigation, other impacts are cumulative in nature. Individually, the action may not result in a significant impact, but the composite of many similar actions over time may lead to a significant cumulative impact to the ecosystem. For example, the creation of a small area of impervious surface may have only a negligible impact on the environment. The creation of numerous impervious surfaces that in total result in a significant change in the amount of such surface throughout a watershed over time could lead to significant impacts, such as: water quality degradation, increased peak storm flows, channel erosion, decreased vegetation and habitat areas, increased local temperatures, and other potential impacts.

The guidelines state that, "To ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts.

Evaluation of such cumulative impacts should consider:

- (i) current circumstances affecting the shorelines and relevant natural processes;
- (ii) reasonably foreseeable future development and use of the shoreline; and
- (iii) beneficial effects of any established regulatory programs under other local, state, and federal laws."

In addition to the Shoreline Master Program under Shoreline Management Act (SMA), developments in the City of Lynden are also regulated under the City's Comprehensive Plan and the City's Critical Areas Regulations, both required under the Growth Management Act (GMA).

Other state and federal regulations also apply to the City's shoreline jurisdiction when local developments will affect critical areas or large areas adjacent to shorelines. Some of these state and federal regulations include, but are not limited to: the Endangered Species Act (ESA) to protect and recover federally listed species; the Clean Water Act (CWA) to protect water quality and regulate excavation and dredging; Hydraulic Project Approval (HPA) regulates projects that change waters of the state and affect fish habitat; and the National Pollution Discharge and Elimination System (NPDES) which regulates discharges into surface waters.

## **B.02 Reasonably Foreseeable Future Development**

This analysis is looking at foreseeable impacts over time. These impacts are being looked at reach by reach, as done in the Shoreline Characterization. Site specific impacts are also expected to be addressed on a case-by-case basis during individual project reviews. The reaches used in this analysis are pre-determined areas based on water body and land uses that have previously been analyzed for alterations to key processes.

Cumulative impacts to the shoreline environment may result from a wide range of possible actions. Consistent with the guidelines, an appropriate evaluation of cumulative impacts on ecological functions will consider reasonably foreseeable future development and use of the shoreline that is regulated by the Shoreline Master Program, as well as actions that are caused by unregulated activities and development exempt from permitting. The guidelines, "recognize that methods of determining reasonably foreseeable future development may vary according to local circumstances, including demographic and economic characteristics and the nature and extent of local shorelines." The focus of foreseeable development is on those actions that have been identified as potential impacts to the shoreline environment and that are or would be foreseeable based on past development patterns, dependent on shoreline regulations.

The Lynden shoreline is unlikely to experience much more development, as much of the property is currently built out. The few vacant parcels that do remain are limited by environmental features such as wetlands, floodways or habitat. The most likely development or re-development in the Lynden shoreline jurisdiction will be infill on the few remaining buildable lots in the shoreline jurisdiction. Infill is unlikely to cause a need for additional utilities and streets in the shoreline. Therefore, a different pattern of development is unlikely to be created that will result in additional cumulative impacts.

## **B.03 Reaches of the Shoreline Inventory**

The City of Lynden is located just upstream of the confluence of the Fishtrap Creek and the Nooksack River. The majority of the land within the shoreline jurisdiction around Fishtrap Creek is zoned residential although Reach 1 is dominated by commercial development and zoning. Several public properties also abuts the jurisdiction including schools and the Northwest Washington Fairgrounds. The Nooksack River and Fishtrap Creek are both designated as "shorelines of the state" and the Nooksack River is designated as a "shoreline of statewide significance."

The Shoreline Characterization provides a comprehensive description of shoreline conditions by reach. The shoreline is divided into five reaches, 1 through 4 along Fishtrap Creek and the short Nooksack River reach. The reaches were determined primarily by water body and current land use. Reaches are described below by location, land use, shoreline environment, at risk areas, and potential for future development. More detailed analysis of the reaches is located in the Detailed Reach Analysis Tables at the end of this section.

**Reach 1** extends from the southern Lynden UGA boundary to the confluence of Double Ditch with Fishtrap Creek. Although the reach runs through or near major commercial

properties, the jurisdiction is almost wholly contained within the creek bed. The creek bed is dominated by category I and II wetlands in this reach. Environmental designations in the reach include Urban, Shoreline Residential and Conservancy. At risk areas include shoreline vegetation and habitat protection as this reach is, in general, functioning well.

Reach 1 is unlikely to experience much development within the jurisdiction. Much of the reach is zoned commercial but since most of the jurisdiction is wetland, infill will probably be developed adjacent to the shoreline jurisdiction. In the southern part of the reach, just outside the city limits but within the UGA, there are several large parcels that are currently in agricultural use. This reach has also experienced restoration efforts including placement of LWD. Much of this reach should be targeted for preserving it in its current state.

**Reach 2** extends from the confluence of Fishtrap and Double Ditch to the confluence of Fishtrap and Benson Road Ditch. The predominant land uses along Reach 2 include single family residential, multi-family residential, and public schools. The stream channel in the lower portion of Reach 2 is broad and surrounded by steep high banks. The stream channel in the upper portion of Reach 2 is surrounded by more gently sloping uplands. In general, the meander belt of the stream in Reach 2 is broad at the southern end, narrows in the middle of the reach, and broadens again in the upper part of the reach.

Any development in this reach is likely to be residential infill. The creek bed narrows where it crosses N 17<sup>th</sup> Street and combined with the lack of wetlands in this area, additional multi-family development is likely. Except for the north end of this reach, most of the rest of the reach contains wetlands. The north end of the reach includes several large parcels that are currently used as pasture land and unencumbered by wetlands. Those parcels could be subdivided into a small single family development.

**Reach 3** extends from the confluence of Fishtrap and Benson Road Ditch to the Bender Road Bridge. Land use along Reach 3 consists of single family residences, a park area, schools (Lynden Middle School and Lynden Christian School) and a small area of industrial land use near Depot Road. Other than the schools, where the playground and ball fields are in the jurisdiction, there is little vacant land in Reach 3. The shorelands along Reach 3 are nearly completely built-out. Because of that, Reach 3 is not likely to see any additional development.

**Reach 4** extends from the Bender Road Bridge to the Badger Road Bridge at the north city limits. In general, Reach 4 is residential. Land use in this reach is either residential or parkland. Only minimal development is likely as there are only a few infill lots available in the shoreline jurisdiction. The surrounding areas are also built out.

**Nooksack River Reach** includes a small number of properties in southern Lynden that are located in the shoreline jurisdiction because they are in the floodway or within 200 feet of the floodway even though Whatcom County land lies between the subject properties and the Nooksack River. Land uses in this area is mostly residential with some commercial and agriculture. The reach also includes the Lynden sewage treatment plant.

Some development in this reach is likely but may be limited by proximity to the floodway and/or the floodplain.

**B.04 Detailed Reach Analysis Tables**

The following tables discuss existing conditions, foreseeable development, functions at risk, parts of the SMP that affect development, non-regulatory measures and the net effects of development in smaller sections of the reaches.

<b>REACH 1</b>					
<b>Existing Conditions</b>	<b>Foreseeable Development</b>	<b>Function or Processes At Risk</b>	<b>SMP Environmental Designations, Policies &amp; Regulations</b>	<b>Non-Regulatory Measures</b>	<b>Net Effect</b>
<p>The area east of the channelized Fishtrap Creek at the city's southern boundary includes the northern tip of a 40 acre agricultural parcel. Just north of the agricultural land is a small residential development. North of there, the creek meanders through wetlands to Kok Road. The west bank is entirely commercial with two vacant parcels of approximately 6.5 acres, adjacent to the creek, just south of Kok Road.</p>	<p>The agricultural area is outside the city boundary, in the UGA and it is not likely to be developed in the foreseeable future, while the rest of the residential area is built out and the part of the creek north of the residential area is encumbered with wetlands and is unlikely to be developed.</p> <p>Approximately half of the vacant commercial parcel may be buildable and is likely to be developed.</p>	<p>If the commercial property is developed, habitat, water quality and water quantity could all be impacted since the only way to develop this area would be to fill the wetlands causing flooding and loss of water storage, loss of habitat from clearing and increased run off from more impervious surface adjacent to the jurisdiction.</p>	<p><b>Urban Environment Designation:</b> Designation Criteria - The purpose of the "urban" environment is to provide for high-intensity and water-oriented commercial, industrial and transportation uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded.</p> <p><b>Management Policies -</b></p> <p><b>4.02.02.1.</b> Uses should be water-oriented</p> <p><b>4.02.02.4.</b> Full utilization of existing urban areas should be achieved before further expansion of intensive development is allowed.</p> <p><b>4.02.02.5.</b> New development shall result in no net loss of shoreline ecological functions.</p> <p><b>General Policies &amp; Regulations</b></p> <p><b>5.06.03.2</b> All shoreline uses and activities shall be located, designed, constructed and managed to result in no net loss of ecological functions and to facilitate the appropriate human intensity of use of such features.</p> <p><b>Wetlands</b></p> <p><b>5.08.02.3</b> All wetlands should be protected from alterations which adversely impact them so that there is no net loss of wetland acreage and functions.</p> <p><b>5.08.02.5</b> No wetland alteration should be authorized unless it can be shown that the impact can be mitigated.</p> <p><b>5.08.03.5</b> Mitigation Sequencing. Before impacting any wetland or its buffer, an applicant shall demonstrate that "mitigation sequencing steps" have been taken (5.07.03.5 a-f).</p> <p><b>5.08.03.6</b> Compensatory mitigation for alterations to wetlands shall be used only for impacts that cannot be avoided or minimized and shall achieve equivalent or greater biologic functions.</p> <p><b>Commercial Development</b></p> <p><b>6.04.03.3</b> Commercial development is PROHIBITED in wetlands.</p> <p><b>Shoreline Modification Policies &amp; Regulations, Fill</b></p> <p><b>7.04.02.1</b> Fill waterward of OHWM should be prohibited and only allowed when necessary to support the design and construction of a shoreline restoration or environmental enhancement project or to facilitate water-dependent and/or public access uses which are consistent with this master program</p>		<p>The proposed regulatory measures in combination with the environment designation will ensure "no net loss" of shoreline function from future development impacts.</p>

<b>REACH 1</b>					
<b>Existing Conditions</b>	<b>Foreseeable Development</b>	<b>Function or Processes At Risk</b>	<b>SMP Environmental Designations, Policies &amp; Regulations</b>	<b>Non-Regulatory Measures</b>	<b>Net Effect</b>
<p>The area between Kok Road and Front Street is bounded by the Whatcom County Fairgrounds on the east and commercial properties on the west. Two parcels near Kok Road and totaling 5 acres, are owned by the city. Most of this part of the reach is dominated by wetlands.</p>	<p>With most of this part of the reach listed as wetlands, additional development is unlikely. The fairgrounds and city property is designated Urban Conservancy, the rest is designated Urban. There is little potential for infill as most of the properties outside of wetlands are built out.</p>	<p>Water quantity would be impacted if this area is intensely developed due to loss of wetlands. Habitats would also be impacted due to loss of vegetative cover.</p>	<p><b>Urban Environment Designation</b> (<i>see above</i>)</p> <p><b>Conservancy Environment Designation</b> Designation Criteria - Areas to be designated Urban Conservancy should meet one or more of the following criteria:</p> <ol style="list-style-type: none"> <li>1. Areas suitable for water-related or water-enjoyment uses;</li> <li>2. Open space, flood plain or other sensitive areas that should not be more intensively developed;</li> <li>3. The potential for ecological restoration;</li> <li>4. The area retains important ecological functions, even though partially developed; or</li> <li>5. They have the potential for development that is compatible with ecological restoration.</li> </ol> <p><b>Management Policies - 4.04.02.1</b> Uses that preserve the natural character of the area or promote preservation of open space, flood plain or sensitive lands either directly or over the long term should be the primary allowed uses. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and the setting.</p> <p><b>4.04.02.6</b> Commercial and industrial uses should be prohibited.</p> <p><b>General Policies &amp; Regulations, Wetlands - 5.08.03</b> (<i>see above</i>)</p> <p><b>Commercial Development</b> <b>6.04.03.3</b> Commercial development is PROHIBITED in wetlands.</p>	<p>Encourage public access or other low intensity activities such as trails, especially on the fairgrounds.</p>	<p>The proposed regulatory measures in combination with the environment designation will ensure “no net loss” of shoreline function from future development impacts.</p>
<p>The area from Front street to the confluence with Double Ditch Creek. The commercial development along Front street is “built out” as is the property adjacent to the jurisdiction on the southwest part of this area. The rest of this area is residential with no more apparent buildable lots.</p>	<p>Development is unlikely in the area as it appears built out.</p>	<p>As with most of Reach 1, this area is also dominated by wetlands. Water quantity would be impacted if this area is intensely developed due to loss of wetlands. Habitats would also be impacted due to loss of vegetative cover.</p>	<p><b>Urban Environment Designation</b> (<i>see above</i>)</p> <p><b>Shoreline Residential Environment Designation</b> <b>Designation Criteria – 4.03.01</b> Areas to be designated Shoreline Residential Environment are predominantly single-family or multifamily residential development or are planned and platted for residential development.</p> <p><b>Shoreline Use Policies &amp; Regulations, Commercial Development</b> <b>6.04.02.2</b> No commercial development should be allowed in wetlands.</p> <p><b>6.09.03.1</b> Residential development shall be prohibited within floodways, wetlands and within other hazardous areas such as steep slopes and areas with unstable soils or geologic conditions.</p>		<p>The proposed regulatory measures in combination with the environment designation will ensure “no net loss” of shoreline function from future development impacts.</p>

REACH 2					
Existing Conditions	Foreseeable Development	Function or Processes At Risk	SMP Environmental Designations, Policies & Regulations	Non-Regulatory Measures	Net Effect
<p>Reach 2 of Fishtrap Creek extends from the confluence of Fishtrap Creek and Double Ditch to the confluence of Fishtrap Creek and Benson Road Ditch. The dominant land uses along Reach 2 includes single family residential, multi-family residential, and schools. Reach 2 is almost fully developed consisting primarily of residential. There is a small commercial development, a park, two schools, a church and a large vacant parcel at the confluence with Double Ditch Creek. That vacant parcel is almost entirely wetland. Also approximately 5.6 acres of vacant pasture land is located just below the confluence with Benson Road Ditch. These properties are zoned for 5 units/acre and in a single ownership. Many of the residential properties include banks with less canopy due to the presence of lawns and other areas maintained by property owners. These areas also frequently use rockery type bulkheads or other armoring methods for bank stabilization.</p>	<p>This reach should see only limited infill in the foreseeable future although the vacant pasture land has the potential for additional residential development. The rest of the reach is fully platted and only a few lots remain for infill.</p>	<p>All shore ecological functions are degraded to some extent throughout this part of the reach due to extensive development, clearing of vegetation and shoreline armoring.</p> <ul style="list-style-type: none"> <li>- Removal of shoreline vegetation has reduced the shading of the creek and the LWD recruitment potential.</li> <li>- Lawns and other owner maintained areas near the creek may be contributing excess nitrogen and phosphorus to the creek.</li> <li>- Stormwater flows to the creek may increase the peak flows and lead to undesired stream bank erosion.</li> <li>- Construction of armored bulkheads along the creek reduces riparian function, sediment movement, and channel migration.</li> </ul>	<p><b>Shoreline Residential Environment</b></p> <p><b>General Regulations 5.02.1</b> New development shall result in no net loss of shoreline ecological functions.</p> <p><b>Residential development</b></p> <p><b>Regulation 6.09.03.1</b> Residential development shall be prohibited within floodways, wetlands and within other hazardous areas such as steep slopes and areas with unstable soils or geologic conditions.</p> <p><b>Regulation 6.09.03.2</b> New residential structures and accessory structures are prohibited over water.</p> <p><b>6.09.05.1</b> New subdivided lots are required to be designed, configured and developed to:</p> <ol style="list-style-type: none"> <li>a. Prevent the loss of ecological functions at full build-out;</li> <li>b. Prevent the need for new shoreline stabilization or flood hazard reduction measures; and</li> <li>c. Be consistent with applicable SMP environment designations and standards.</li> </ol>		<p>The proposed regulatory measures will ensure “no net loss” of shoreline function from future development impacts.</p>

<b>REACH 3</b>					
<b>Existing Conditions</b>	<b>Foreseeable Development</b>	<b>Function or Processes At Risk</b>	<b>SMP Environmental Designations, Policies &amp; Regulations</b>	<b>Non-Regulatory Measures</b>	<b>Net Effect</b>
<p>Reach 3 of Fishtrap Creek extends from the confluence of Fishtrap and Benson Road Ditch to the Bender Road Bridge. Reach 3 is fully built out with two schools, a city park and a 7 acre green belt comprising large open spaces in the reach. There is public access to Fishtrap Creek in the Lynden City Park. In addition, a trail system follows Fishtrap Creek beginning in the City Park and extending upstream along the Fishtrap Creek past the Bender Fields Park. The trail is set outside a narrow vegetated area adjacent to the Creek but does allow access to Fishtrap Creek at various locations. Development within 200 feet of Fishtrap is common in Reach 3. The presence of houses, driveways, and roads affects the hydrologic and sediment processes along Fishtrap Creek. Hard armoring of stream banks is common along Reach 3. In addition, property owners maintain lawns and other landscaping to the stream edge. Portions of Reach 3 have little riparian vegetation and the vegetation that is present is immediately adjacent to the creek.</p>	<p>Development in this reach is unlikely.</p>	<p>The ecological function in Reach 3 is affected by the development along Fishtrap Creek. Homes or other structures are located in the shoreline jurisdiction throughout Reach 3. Additional development would affect the following functions:</p> <ul style="list-style-type: none"> <li>- Removal of shoreline vegetation would reduce the shading of the creek and the LWD recruitment potential.</li> <li>- Lawns and other owner maintained areas near the creek may contribute excess nitrogen and phosphorus to the creek.</li> <li>- Stormwater flows to the creek may increase the peak flows and lead to undesired stream bank erosion.</li> <li>- Construction of armored bulkheads along the creek would reduce riparian function, sediment movement, and channel migration.</li> </ul>	<p><b>Shoreline Residential Environment</b></p> <p><b>General Regulations 5.02.1</b> New development shall result in no net loss of shoreline ecological functions.</p> <p><b>Residential development</b></p> <p><b>Regulation 6.09.03.1</b> Residential development shall be prohibited within floodways, wetlands and within other hazardous areas such as steep slopes and areas with unstable soils or geologic conditions.</p> <p><b>Regulation 6.09.03.2</b> New residential structures and accessory structures are prohibited over water.</p>	<p>Development is limited due to lack of buildable lots.</p>	<p>The proposed regulatory measures and the environment designation will ensure “no net loss” of shoreline function from future development impacts.</p>

<b>REACH 4</b>					
<b>Existing Conditions</b>	<b>Foreseeable Development</b>	<b>Function or Processes At Risk</b>	<b>SMP Environmental Designations, Policies &amp; Regulations</b>	<b>Non-Regulatory Measures</b>	<b>Net Effect</b>
<p>Reach 4 of Fishtrap Creek extends from the Bender Road Bridge to the Badger Road Bridge at the north city limits. There are 5 city owned park properties along this reach while the rest of the reach is almost fully built out residential including only a few buildable lots for infill. Houses, driveways, and roads affect the hydrologic and sediment processes along Fishtrap Creek. Hard armoring of stream banks is also common along the downstream segments of Reach 4. Newer development in the northern segment of the reach is set back from the creek to a greater extent than the older development. In the older developed areas, properties are more likely to have lawns and other landscaping to the stream edge which may be sources of nitrogen and phosphorus. Portions of Reach 4 have little riparian vegetation. There is little LWD present in the northern segment of the reach though restoration efforts have been undertaken. Stormwater detention facilities are common in the area draining to Reach 4 but toxins remaining in the treated stormwater may still be impacting the reach.</p>	<p>Foreseeable development will be limited to infill on a few vacant lots.</p>	<p>Newer developments along Reach 4 have been set back from the creek and restoration efforts have been undertaken in the upstream segment. Some of the results of the development along Reach 4 include:</p> <ul style="list-style-type: none"> <li>- Restoration efforts have been undertaken to replace mature riparian vegetation along the creek. Shading conditions have improved due to those efforts.</li> <li>- Filtering of nitrogen and phosphorus due to lawns and other owner maintained areas near the creek.</li> <li>- Stream bank erosion may be increased due to unmitigated stormwater flows to the creek during peak flows.</li> <li>- Bulkheads along the creek could reduce riparian function, sediment movement, and channel migration.</li> </ul>	<p><b>Shoreline Residential Environment</b></p> <p><b>General Regulations 5.02.1</b> New development shall result in no net loss of shoreline ecological functions.</p> <p><b>Residential development</b></p> <p><b>Regulation 6.09.03.1</b> Residential development shall be prohibited within floodways, wetlands and within other hazardous areas such as steep slopes and areas with unstable soils or geologic conditions.</p> <p><b>Regulation 6.09.03.2</b> New residential structures and accessory structures are prohibited over water.</p> <p><b>Recreational Development Regulations</b></p> <p><b>Regulation 6.08.03.1</b> All recreational development in the shoreline jurisdiction shall result in no net loss of ecological processes and functions.</p> <p><b>Regulation 6.08.03.2</b> Valuable shoreline resources and fragile or unique areas such as wetlands shall be used only for non-intensive and nonstructural recreation activities.</p> <p><b>Regulation 6.08.03.3</b> All permanent substantial recreational structures and facilities shall be located outside officially mapped floodways provided the City may grant administrative exceptions for non-intensive minor accessory uses (e.g., picnic tables, tennis courts, etc.).</p> <p><b>Regulation 6.08.03.4</b> Substantial accessory use facilities, such as rest rooms, recreation halls and gymnasiums, commercial services, access roads and parking areas shall be setback 100 feet from the OHWM.</p> <p><b>Regulation 6.08.03.5</b> For recreation developments that require the use of fertilizers, pesticides, or other toxic chemicals are prohibited in the shoreline jurisdiction</p>	<p>Preservation and enhancement efforts could include:</p> <ul style="list-style-type: none"> <li>- Areas along the city trail could be enhanced with more vegetation and additional public access sites.</li> <li>- Vacant land east of Bender Park Boulevard could be acquired to provide additional area for wetland/riparian enhancement.</li> </ul>	<p>The proposed regulatory measures in combination with the non-regulatory measures will ensure “no net loss” of shoreline function from future development impacts.</p>

<b>Nooksack River Reach</b>					
<b>Existing Conditions</b>	<b>Foreseeable Development</b>	<b>Function or Processes At Risk</b>	<b>SMP Environmental Designations, Policies &amp; Regulations</b>	<b>Non-Regulatory Measures</b>	<b>Net Effect</b>
<p>Only 0.04 miles of the Nooksack River fall in the City of Lynden Shoreline Jurisdiction. The City of Lynden shoreline Jurisdiction is located within Reach 12 of the Whatcom County shoreline jurisdiction. A few properties in southern Lynden are located in the Nooksack River reach, primarily because they are located in the floodway or in the floodplain within 200 feet of the floodway. Whatcom County land, outside of the Lynden UGA, lies between the Lynden shoreline jurisdiction and the Nooksack River. The City of Lynden sewage treatment plant is the only property in the city with direct access to the Nooksack River. This portion of the Nooksack River is heavily diked and armored. Other properties in the Lynden Shoreline Jurisdiction are zoned residential and commercial. There is a significant amount of undeveloped land located in the southern portion of the City's commercial zone.</p>	<p>Development of properties at the western edge of the reach is unlikely due to their inclusion in the Nooksack River floodway and/or floodplain. Except for a condominium, the Lynden Waste Treatment Plant and a County Housing Authority development, the rest of the central portion of the reach is either vacant or pasture land. These low lying areas are unlikely to be further developed since they all lie within the floodway. The Front Street part of this reach is unlikely to be developed because it is all wetlands in the floodway. The very eastern portion of the reach is associated wetlands and unlikely to be developed.</p>	<p>The loss of wetlands in the Nooksack floodplain would negatively affect the hydrologic cycle, the movement of sediment, the movement and destruction of nitrogen and phosphorus, and the movement of toxins.</p>	<p><b>Urban Conservancy designation.</b>  <b>4.04</b> The intent of the Urban Conservancy environment is to protect and restore ecological functions of open space, flood plain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses.  <b>Residential development</b>  <b>Regulation 6.09.03.1</b> Residential development shall be prohibited within floodways, wetlands and within other hazardous areas such as steep slopes and areas with unstable soils or geologic conditions.  <b>Regulation 6.09.03.2</b> New residential structures and accessory structures are prohibited over water.</p>		<p>The proposed regulatory measures and the environment designations will ensure "no net loss" of shoreline function from future development impacts.</p>

## **B.05 Ecological Functions at Risk from Future Developments**

### **Habitat**

Two threatened or endangered species of fish are present in Fishtrap Creek, Puget Sound Chinook salmon and steelhead. Coho salmon, listed as a federal candidate species, is also present. Juvenile Chinook rear in the area. Other fish found in the Creek are chum and cutthroat trout.

### **Wetlands**

Wetland areas have been identified throughout Fishtrap Creek and in the Nooksack River Floodway and floodplain. Most of these wetlands directly connected to the Creek are important for flood storage and distribution of nutrients.

### **Floodplains**

Fishtrap Creek is largely incised through the City of Lynden and has limited migration potential with the exception of a few flat broad areas. The Nooksack River was known to migrate throughout the floodplain before the lower portion of the river was extensively diked. Due to the construction of the dikes, the river is largely confined to the current channel. Floodplain management is important for maintaining habitats and wetlands. Ecological functions need to be considered in flood control projects and in pursuing non-structural alternatives. Developing floodplain management policies which help minimize more vulnerable development and encourage more compatible uses will also help maintain habitats and wetlands.

## **B.06 Anticipated Beneficial Effects**

As part of the SMP process, restoration opportunities have been identified for each Reach. The restoration projects help to offset some of the cumulative effects of development along the Shoreline as identified in Section B.04. Some projects which are being implemented in Lynden include:

1. Large woody debris placement, revegetation, and riparian planting in the area south of Kok Road in Reach 1.
2. Large woody debris placement, vegetation, and riparian planting near the confluence of Double Ditch and Fishtrap Creek in Reaches 1 and 2.
3. Restoration of riparian function, wetland function, and preservation of riparian areas in the undeveloped shoreline areas along Fishtrap Creek and the Nooksack River.
4. Community-wide revegetation efforts lead by Lynden Christian students and Nooksack Salmon Enhancement Association.
5. Implementation of restoration projects in other opportunity areas as identified in Chapter 9 Restoration Plan. Completion of these projects is contingent on finding funding sources.

### **B.07 No Net Loss Summary**

How the City of Lynden achieves “no net loss” in its Shoreline Master Program is demonstrated in the Detailed Reach Analysis Tables in Section B.04 above. The tables bring together information gathered for the inventory and characterization, shoreline use analysis, environmental designations and the policies and regulations of the updated SMP. The “net effect” column shows the conclusions that were drawn based on the information. Restoration opportunities and current restoration projects are detailed in the Chapter 9 Restoration Plan.

Because the vast majority of the Lynden shoreline jurisdiction is already built out, including roads and utilities, limited infill opportunities should not result in a net loss of ecological functions. A different pattern of development is unlikely to be created that will result in additional cumulative impacts.