

## **X. LAKE WHATCOM SMA**

**Summary:** The northern most portion of Lake Whatcom, Basin One and parts of Basin Two, are located within the City and the Urban Growth Boundary. SMA jurisdiction within this segment is approximately 309 acres. Land use is dominated by high density urban residential development. The only public access is Bloedel-Donovan Park. Many areas within Basin One are considered polluted for dissolved oxygen and/or mercury. Habitat loss is extensive. Only two significant native habitat areas remain in Lake Whatcom Reaches 3 and 4.

### **X.1 Watershed Analysis**

#### **X.1.1 Landscape Setting**

Lake Whatcom is a large body of water that was created by glaciation. The lake consists of three basins separated by distinct glacial sills. Basin 1 and a portion of Basin 2 are located within the City of Bellingham or the Urban Growth Area. Basins 1 and 2 are relatively shallow (20 to 25 m maximum depth). The lake is fed by several creek systems around the lake. Surface water exits the lake from the north (Basin 1) via Whatcom Creek. The hydroperiod of the lake has been reversed and controlled for recreation and erosion control purposes. Lake levels are maintained at higher levels during the summer and lowered during the winter. This change in water level and discharge also affects the hydroperiod of Whatcom Creek.

The lake is situated in a valley formation dominated by sedimentary deposits and rocks. The topography ranges from gentle to moderate slopes, with occasional areas of steep slopes adjacent to the lake. The majority of the upland adjacent to the lakeshore in SMA jurisdiction is flat and shallow giving rise to moderate slopes. The exception to this is Reach 2 and the northern portion of Reach 3. These areas are relatively flat. The soils in the vicinity of the lake reflect the sedimentary nature of the geology. The soils in Reaches 1-4 and the northern half of Reach 5 are Group B hydrologic soils and have moderate filtration rates and runoff potential. The soils in the southern half of Reach 5 are Group A hydrologic soils and have high filtration and low runoff potential. Approximately 50% of the soils in the Lake Whatcom SMA jurisdiction are susceptible to severe sheet flow and rill erosion; the remaining soils are a slight risk for erosion. Lake substrate in Basin 1 tends to have a higher content of sand and gravel. Basin 2 tends to have less sand and gravel due to the increased presence of mud and bedrock.

#### **X.1.2 Land Use**

**Land Use:** Urban level residential density is extensive in the shoreline jurisdiction of Lake Whatcom. Single family residential development is high in Basin 1 and moderate to high in Basin 2. The exception to this is Reach 2 which is dominated by Bloedel-Donovan Park, a public city park. Future development in the Lake Whatcom watershed is uncertain. Zoning ranges from rural residential to commercial forestry. Potential

residential densities could be substantial and would have an increasing impact on overall ecological functions.

**Transportation and Utilities:** A major arterial and associated collector streets dominate the transportation system. Northshore Road, Electric Avenue and Lake Whatcom Boulevard are the main access roads and are often just within or adjacent to SMA jurisdiction. Portions of Northshore Road and Electric Avenue are public transportation routes for bus service.

**Public Access:** Bloedel-Donovan Park dominates Reach 2. This park is the only existing public access to lake recreation in the City of Bellingham. Two small neighborhood association parks are located along the lake shore in Reach 1, but access is limited and not open to the general public. One privately owned parcel of open space is also located in Reach 1; again, there is no access to the general public. Euclid County Park Reserve is located at the southern most portion of Reach 4. The property abuts the lake and is undeveloped, dedicated public open space and does not currently offer public access to the lake.

**Shoreline Modifications:** Shoreline and associated upland modification is extensive along the Lake Whatcom shoreline. In Basin 1, dock density averages 3 docks per 100 meters and bulkhead density averages 30%. In Reaches 1 and 5 where development is highest, impervious surface averages 45% with pervious surfaces averaging 12.5%. Semi-impervious surface dominates Reaches 2 and 3 averaging 60%. Surfaces in Reach 4 are balanced with fairly equal percentages of impervious (28%), semi-pervious (39%) and pervious (33%) surfaces.

### **X.1.3 Critical Areas**

**Wetlands/ Regulated Streams:** Wetlands and streams are the only critical areas of note in the Lake Whatcom shoreline study area. Only three wetland areas remain: a large shrub/forested wetland complex is located at the southern extent of Reach 3 and is associated with an un-named creek that flows into Lake Whatcom; a forested wetland area is located within the Euclid County Park Reserve at the southern most extent of Reach 4 and is associated with an un-named creek that flows into Lake Whatcom; and, a small shrub wetland is located at the southern end of Bloedel-Donovan Park and is associated with Lake Whatcom. All three wetlands appear on the 1992 City wetland inventory and/or on the National Wetland Inventory maps. Five City regulated streams are located in the Lake Whatcom shoreline: four streams flow into the lake (Streams 10, 11, 12 and 14 ) and one flows out of the lake (Stream 13 – Whatcom Creek).

**FEMA:** The FEMA floodway and 100 year floodplain in Lake Whatcom does not extend beyond the maximum controlled lake level.

**Slopes:**

**Potential PHS/TSE Species:** No current documentation on priority habitat species was found. However, historically, bald eagles, a Federal and State threatened species, have used Scudder Pond as nesting territory. This territory is adjacent to, and partially included, in Reaches 1 and 2. Bald eagles also use the cottonwood trees in Bloedel-Donovan Park for daytime perching.

#### **X.1.4 Ecological Functions**

Ecological functions of the lake shore and adjacent buffers have been greatly reduced by high density development and land use. Development has resulted in a loss of habitat and native vegetation. These losses have reduced the use of the area by wildlife: mammals, birds and amphibians. Naturally occurring aquatic shoreline vegetation has also been significantly reduced or lost which has caused habitat loss for fish. Water quality has also been affected. Many areas in Basin 1 have been listed by the Washington Department of Ecology as Category 5 “Polluted Water” for dissolved oxygen and/or mercury. Testing results for mercury in the southern half of Basin 1 and Basin 2 (in the UGA) have meet current standards.

### **X.2 Reach Analysis: Segment A (Reaches 1, 4, 5)**

#### **X.2.1 Landscape Setting**

These three reaches constitute approximately 255 acres. Lake Whatcom is located in a sedimentary rock valley that has been glaciated. Sedimentary deposits and rock dominate the land forms around the shoreline. Sands and gravel dominate the lake substrate in Reaches 1 and 4. Bedrock becomes evident in Reach 5. The soils are Group B hydrologic soils and are moderate to high for filtration and tend to have lower potentials for runoff. Approximately 50% of the soils in the segment are susceptible to severe sheet flow and rill erosion; the remaining soils are a slight risk for erosion. Slopes adjacent to the shoreline are gradual in the northern portion of the lake (Reach 1). Areas throughout Reaches 1, 4 and 5 have steeper slopes, particularly in Reach 4 where slopes can range from 20-70%.

#### **X.2.2 Land Use**

**Land Use:** Residential zoning dominates the segment. Residential development is high in Reaches 1 and 4, and moderate to high in Reach 5.

**Transportation and Utilities:**

**Public Access:**

**Shoreline Modifications:** Reach 1 has 102 dock structures, Reach 4 has 34 dock structures and Reach 5 has 110 structures. Bulkhead density is approximately 30% in

Basin One and 25% in Basin Two. Total impervious and semi-pervious surfaces are high in Reaches 1 and 5 at greater than 85%. Reach 4 is moderately high with 67%.

### **X.2.3 Critical Areas**

**Wetlands/ Regulated Streams:** No wetlands were identified in this segment. Four City regulated streams are located in this segment: four streams flow into the lake, Streams 10, 11, 12 in Reach 1 and Stream 14 in Reach 5.

**FEMA:** The FEMA floodway and 100 year floodplain in Lake Whatcom does not extend beyond the maximum controlled lake level.

**Slopes:** A narrow band of steep slopes occurs in the southern portion of Reach 5 on the uphill side of Lake Whatcom Boulevard. Generally, the slopes are located adjacent to the road.

**Potential PHS/TSE Species:** No current documentation on priority habitat species was found. However, historically, bald eagles, a Federal and State threatened specie, have used Scudder Pond as nesting territory. This territory is adjacent to, and partially included, in the southwest extent of Reach 1.

### **X.2.4 Ecological Functions**

**Water Quality:** High density use and relatively shallow water conditions in Basin 1 have lead to decreasing water quality. Many areas in the northern portion of Basin 1 have been listed by the WA Dept. of Ecology as a Category 5 "Polluted Water" for dissolved oxygen and/or mercury.

**Vegetation:** Vegetation in this segment is dominated by residential lawns and ornamental landscaping. Naturally vegetated shoreline is virtually non-existent. Very small isolated pockets of native shrubs and deciduous trees persist in a few areas. Data was not available regarding aquatic vegetation. However, based on personal observation, some homeowners have allowed shallow water hydrophytic vegetation to remain in the nearshore area of the lake shore, but these areas seem to be few and do not provide extensive habitat opportunities due to small size and isolation. Knotweed, a noxious weed, is present on some private properties along the lake shore.

**Wildlife:** Kokanne and resident cutthroat trout are indigenous to Lake Whatcom. Many non-native fish species have been introduced into the lake and persist today, including, rainbow trout, lake trout, large and small mouth bass, yellow perch, brown bullhead and pumpkinseed. Documented use of the shoreline by specific priority habitat species was not found. Presence of native and non-urban animals, reptiles, birds and amphibians is unknown. Animal movement is not possible without high risk.

**Habitat:** Buffer width along the lake shore varies. Generally a lawn/landscape buffer width of at least 25-50 feet buffer exists along the shoreline. Virtually no native shoreline habitat remains in this segment. Small pockets of native vegetation exist in scattered locations in the shallow nearshore and occasionally near the shoreline. These habitats have no connectivity. The only habitat adjacent to the shoreline of any significant size is the reserve park property at the southern end of Reach 4. The vegetation in this area is native, of high quality and structural diversity. The area still provides habitat for native amphibians, non-urban mammal and birds, and provides the possibility of movement of animals to other habitat areas.

Fish passage into and out of Lake Whatcom is limited by naturally occurring water falls in Whatcom Creek. In addition, two dams have been constructed in the headwaters of Whatcom Creek, up stream of the water fall blockage.

### **X.2.5 Opportunities**

#### **Preservation**

- Maintain protection and preservation of Euclid County Reserve Park. Use of this property as public recreational access to the lake is not recommended due to its value as habitat.

#### **Enhancement or Restoration Opportunities**

- When the opportunity presents itself, native vegetation enhancement along the lake shore should be encouraged.
- Erosion control practices and land disturbance should be required in areas of the lake shore where highly erosive soils exist. Such practices are important for minimizing sediment load into surface water bodies thus reducing water quality degradation.

### **X.3 Reach Analysis: Segment B (Reach 2)**

#### **X.3.1 Landscape Setting**

This reach is approximately 17 acres in size. Lake Whatcom is located in a sedimentary rock valley that has been glaciated. Sedimentary deposits and rock dominate the land forms around the shoreline. Sands and gravel dominate the lake substrate in this segment. The soils are Group B hydrologic soils and are moderate for filtration and runoff potential. Approximately 60% of the soils in Reach 2 are susceptible to severe sheet flow and rill erosion; the remaining soils are a slight risk for erosion. Reach 2 is relative flat, 2-5% slopes, and is located at the outlet for the lake.

#### **X.3.2 Land Use**

**Land Use:** This Segment is zoned for public use and is currently developed as a city park with swimming and boating access available.

**Transportation and Utilities:** A major arterial is located along the northern boundary of this segment and is located at the outflow of Lake Whatcom.

**Public Access:**

**Shoreline Modifications:** Seven in-water structures were identified in this reach. In addition, a concrete bulkhead is located at the ordinary high water mark along the majority of the shoreline in the park. A portion of three buildings are located within the SMA jurisdiction. Impervious surfaces constitute 32% of reach, semi-pervious surfaces 58% and pervious surfaces 9%. Five detention facilities are located in the reach totaling 0.05 acres.

### **X.3.3 Critical Areas**

**Wetlands/ Regulated Streams:** The only remaining wetland in this segment is a small wetland at the southern extent of the reach. The wetland is located at the south end of the park. Surrounding uses include a boat launch to the north and undeveloped open space to the south.

**FEMA:** The FEMA floodway and 100 year floodplain in Lake Whatcom does not extend beyond the maximum controlled lake level.

**Slopes:** There are no steep slopes in Reach 2.

**Potential PHS/TSE Species:** No current documentation on priority habitat species was found. However, historically, bald eagles, a Federal and State threatened specie, have used Scudder Pond as nesting territory. This territory is adjacent to, and partially included, in this reach. Bald eagles also use the cottonwood trees in Bloedel-Donovan Park for daytime perching.

### **X.3.4 Ecological Functions**

**Water Quality:** High density use and relatively shallow water conditions in Basin 1 have lead to decreasing water quality. Many areas in the northern portion of Basin 1 have been listed by the WA Dept. of Ecology as Category 5 "Polluted Water" for dissolved oxygen and/or mercury.

**Vegetation:** The use of this area as a public park dictates that large grassy areas are available for recreation. The majority of the vegetation in this segment is dominated by mowed grass, however, several large deciduous trees remain throughout the park. Data was not available regarding aquatic vegetation. Knotweed, a noxious weed, is present to some degree in Bloedel-Donovan Park.

**Wildlife:** Kokanne and resident cutthroat trout are indigenous to Lake Whatcom. Many non-native fish species have been introduced into the lake and persist today, including, rainbow trout, lake trout, large and small mouth bass, yellow perch, brown bullhead and pumpkinseed. Documented use of the shoreline by specific priority habitat species was not found. However, bald eagles do use the cottonwood trees in the park for perching. This area is also within the historic bald eagle nesting territory at Scudder Pond. In some areas of the segment, there is some presence of garter snakes and lizards. Both urban and non-urban animals and birds also use portions of the segment. Native amphibian use is possible.

**Habitat:** Buffer width in the northern portion of the segment is only several feet wide and often is dominated by Electric Avenue, a major arterial. Buffer width within the park is generally several tens of feet wide and varies between mowed grass and mature deciduous trees. The buffer in the southern portion of the reach is paved to the shoreline and is used as a boat launch. The only native habitat that remains in this segment is a shrub wetland just south of the boat launch. A narrow strip of undeveloped land along the southern park property boundary provides some amount of connectivity, for some animals, between this shoreline habitat and upland habitat to the south and west (the wetland complex in Reach 3 and Whatcom Falls Park). The vegetation in the wetland area is both native and naturalized non-native plants. The native plant community is of medium quality.

Fish passage into and out of Lake Whatcom is limited by naturally occurring water falls in Whatcom Creek. In addition, two dams have been constructed in the headwaters of Whatcom Creek, up stream of the water fall blockage.

### **X.3.5 Opportunities**

#### **Preservations**

- Because so little shoreline associated wetlands remain around the northern portion of the lake, the remaining shoreline wetland in the southern portion of the park, even though it is small and nearly isolated from other habitats, should be protected from development.

#### **Enhancement or Restoration Opportunities**

- The area of the shoreline and associated wetlands could also benefit from enhancement by planting and diversifying the native plant community.
- Enhance vegetation diversity along park boundary to improve habitat corridor.
- When practicable, noxious weeds should be eliminated and monitored.

## **X.4 Reach Analysis: Segment C (Reach 3)**

### **X.4.1 Landscape Setting**

This reach is approximately 37 acres in size. Lake Whatcom is located in a sedimentary rock valley that has been glaciated. Sedimentary deposits and rock dominate the land forms around the shoreline. Sands and gravel dominate the lake substrate in this segment. The soils are Group B hydrologic soils and are moderate for filtration and runoff potential. Approximately 40% of the soils in Reach 3 are susceptible to severe sheet flow and rill erosion; the remaining soils are a slight risk for erosion. The slopes along the shoreline transition from flat, to gently sloping to moderately steep at the southern extent of the segment. An un-named creek enters the lake from the south. The creek and geological land forms have resulted in the formation of a wetland complex at the mouth of the creek and narrow outlet to the lake forming a land peninsula.

#### **X.4.2 Land Use**

**Land Use:** Residential zoning, particularly multi-family housing, dominates this segment. Development has occurred in the northern portion of the segment, but the wetland complex and land peninsula remain undeveloped. Sixteen buildings are located within the SMA jurisdiction. The existing housing units have been located off the lake shoreline leaving open space adjacent to the lake.

**Transportation and Utilities:** Only one minor collector road is located in this segment. The road crosses the wetland complex in the southern portion of the reach.

**Public Access:**

**Shoreline Modifications:** Only five dock structures are located with this segment. Impervious surfaces constitute 14% of reach, semi-pervious surfaces 61% and pervious surfaces 24%.

#### **X.4.3 Critical Areas**

**Wetlands/ Regulated Streams:** A large wetland complex is located in the southern portion of this segment. The wetlands is located at the mouth of an un-named creek and is directly associated with the lake.

**FEMA:** The FEMA floodway and 100 year floodplain in Lake Whatcom does not extend beyond the maximum controlled lake level.

**Slopes:** Steep slopes are present along the lake shore in the southern most portion of the segment.

**Potential PHS/TSE Species:** No current documentation on priority habitat species was found.

#### **X.4.4 Ecological Functions**

**Water Quality:** High density use and relatively shallow water conditions in Basin 1 have lead to decreasing water quality. Many areas in the northern portion of Basin 1 have been listed by the WA Dept. of Ecology as a Category 5 “Polluted Water” for dissolved oxygen and/or mercury. The un-named creek which flows into Lake Whatcom in this reach is also listed as polluted for mercury.

**Vegetation:** The built environment, which is a little less than half of the segment, is dominated by residential lawn and landscaping. The rest of the segment is wetland or undeveloped upland. The wetland is a medium quality native shrub and tree plant community. The wetland buffer is dominated by native deciduous trees. The undeveloped peninsula is predominately a shrub/herbaceous plant community with scattered trees. Patches of homogeneous non-native grasses are scattered throughout this area, decreasing the overall quality of the vegetation. Data was not available regarding aquatic vegetation.

**Wildlife:** Kokanee and resident cutthroat trout are indigenous to Lake Whatcom. Many non-native fish species have been introduced into the lake and persist today, including, rainbow trout, lake trout, large and small mouth bass, yellow perch, brown bullhead and pumpkinseed. Documented use of the shoreline by specific priority habitat species was not found. In some areas of the segment, there is some presence of garter snakes and lizards. Both urban and non-urban animals and birds also use portions of the segment. Native amphibian use is possible.

**Habitat:** Lake shore and wetland buffers in this segment are at least 50 feet and as much as 200 feet in most of the reach. The exception to this is in the vicinity of the roadway through the wetland and some housing structures in this area well. A relatively large wetland/upland complex with medium quality native vegetation remains in this segment. The wetland has direct association with the lake and good connectivity with upland habitat. In addition, connectivity to Whatcom Falls Park and Whatcom Creek is available for some species – those that can pass across Electric Avenue. The size and quality of the native habitat in this wetland/creek/lake/upland complex all contribute to making this area valuable, rare habitat in an area of dense residential development.

The un-named creek in this segment provides spawning and rearing habitat for resident cutthroat trout. Fish passage into and out of Lake Whatcom is limited by naturally occurring water falls in Whatcom Creek. In addition, two dams have been constructed in the headwaters of Whatcom Creek, up stream of the water fall blockage.

#### **X.4.5 Opportunities**

##### **Preservation**

- The existing wetland/upland complex in Reach 3, associated with a natural drainage, should be protected. Protection should include the entire area east of

Electric Avenue in order to preserve the habitat corridor between Lake Whatcom and Whatcom Creek.

- The upland peninsula at the southern end of the reach should also be protected. The area has the potential to provide greater habitat value based on its proximity to the lake and the creek/wetland complex by enhancing the vegetation structure (removing invasive species and diversifying the shrub and trees species, particularly coniferous trees).

### **Enhancement or Restoration Opportunities**

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