

3.5 Wildlife, Habitats, and Fish

Information presented in this section is summarized from the *Fish and Wildlife Species and Habitats Inventory, Impacts and Mitigation Recommendations for the Thurston Highlands Master Planned Community* (Coot Company 2008A).

AFFECTED ENVIRONMENT

The Thurston Highlands property is within the Yelm City limits, west of the developed area of the City. It is bordered by the Fort Lewis Military Reservation on the west, SR 507 to the south, SR 510 and rural residential development to the north. Some areas of rural Thurston County land with 1 unit/5-acre zoning occurs between the two State routes and the Thurston Highlands boundaries. The entire property was annexed to the City of Yelm in July 1994, and is zoned for development of a Master Planned Community.

The site covers approximately 2 square miles of landscape in a single, connected unit. The largest north-south property dimension is 1 mile, and the largest east-west dimension is approximately 1.5 miles. The entire property consists of undeveloped timber land formerly managed by Weyerhaeuser for clear-cut forestry for decades. Almost all areas of the site support replanted, even-aged, monotypic, Douglas fir forest of varying ages. A network of unimproved former logging roads provides access to all major areas of the property.

3.5.1 Wildlife

Specific censusing for wildlife was conducted on the Thurston Highlands site in June-July 2006 (primarily for birds) and April-May 2007 (singing amphibians only). Breeding season censuses focusing on avian use were conducted throughout the Thurston Highlands property. Wildlife occurrences were also noted during all field review activities, including wetland delineation and habitat evaluations by the same consultant. Records were made of sightings of unique species, and a list was compiled of all species observed on site. A total of 66 species – 53 bird, 9 mammal and 4 reptilian/amphibian species – were recorded within this property between September 2005 and May 2007. Passerine species dominated avian wildlife, with those adapted to mixed forest and shrub habitats the most common of these. Other bird species groups observed included six types of raptors, four types of woodpecker, four corvids (jays and crows), and 11 miscellaneous species. All mammals were large or mid-sized species, although no specific search was performed for small mammals. Black-tailed deer (*Odocoileus hemionus*) are common within Thurston Highlands, particularly associated with the Wetland A complex, but only three records of elk (*Cervus canadensis*) occurrence were noted.

The site is also the potential home range of a cougar (*Puma concolor*). Two recently-used scratch-post trees were observed in mid-winter, one close to Wetland A2 and another at the south end of Wetland H1. A lone adult cougar was observed on the property in June 2006 by the Thurston Highlands wildlife biologist. The cougar was running down one of the former logging roads on the site, near the middle-east side of Section 27 (close to the Wetland A2 scratch post).

3.5.2 Amphibians

Two species of frogs were recorded on the Thurston Highlands site during the Spring 2007 amphibian censuses: Pacific chorus frog (*Pseudacris regilla*), and red-legged frog (*Rana draytonii*). The chorus frog was by far the most common, occurring in 14 of the 35 wetlands on

the Thurston Highlands site, while red-legged frogs were only heard in five wetlands on the property. A total of 21 wetlands had no singing frogs. In general, the small, isolated wetlands on the site had no singing frogs, while all of the large wetland complexes did. No western toads (*Bufo boreas*), a target species for which a search was specifically conducted, were recorded.

3.5.3 Habitat

Individual habitat areas on the site were designated based on similarities in plant community characteristics. Polygons of each habitat area were traced on aerial photographs following ground-truthing of landscape conditions (see Figure 3.5-1). Ten distinct habitat areas were identified in this manner. Of these ten, four units (grasslands, shrubs, forest and mixed shrub-forest) comprise the majority of the site. The replanted, monotypic Douglas fir forest most prevalent on the property had very low wildlife use. Summary descriptions of each designated habitat area on the site are provided in the *Fish and Wildlife Species and Habitats Inventory, Impacts, and Mitigation Recommendations* (Coot Company 2008A).

All open meadow areas on the property were reviewed for potential prairie habitat conditions; none were found. Three Washington Department of Fish and Wildlife habitat biologists participated in a site visit with the project wetlands and wildlife biologist on June 13, 2006, and concurred with this determination (personal communication with Jeff Davis, Kelly McAllister, and Mary Linders, WDFW, June 13, 2006).

3.5.4 Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database, and the Washington Department of Natural Resources (WDNR) Natural Heritage Information System (NHIS) database were reviewed in January and February 2006 (respectively) for listed wildlife and plant species on or in the vicinity of the Thurston Highlands site. The PHS database reports only two occurrences of one species, Western bluebird (*Sialia mexicana*), within the Thurston Highlands property. Both data points from 1988 were recorded as “bluebirds nesting in boxes.” Defunct bird boxes that have not been used for several years were observed by the Thurston Highlands wildlife biologist at both point locations indicated on the PHS maps. One occurs in an open meadow that could still be viable bluebird habitat, while the other now occurs within a young, dense, fir forest that has grown since the box was first installed. Bluebirds were not observed during any of the 2006 field reviews or censuses conducted within the Thurston Highlands property. It is assumed that this species no longer occurs on the site (Coot Company 2008A).

The PHS database shows oak stands to the east and south of the Thurston Highlands property, beyond perimeter boundaries. Field review of the Thurston Highlands site found only a handful of scattered, young oak in the southeast area close to the identified, off-property stands. No regulated oak habitat conditions occur within the Thurston Highlands property.

The NHIS database identifies two significant wetland systems within the Thurston Highlands property, one as a sphagnum bog. These two systems are part of the Wetland A complex described in the *Wetlands Inventory, Impacts and Mitigation Recommendations for the Thurston Highlands Master Planned Community* (Coot Company 2008B). All other WDNR NHIS listings for the general vicinity of Thurston Highlands occur off-property. On-property wetlands are thoroughly described in the technical report, and in Section 3.4 of this Draft EIS.

Insert Figure 3.5-1. Site Map with Habitat Areas.

3.5.5 Federally-Listed Threatened and Endangered Species

A comprehensive query of the U.S. Fish and Wildlife Service (USFWS) website was conducted for documentation of any Listed or Proposed Endangered and Threatened Species and Critical Habitat, Candidate Species and Species of Concern occurring within a 1.5-mile radius of the project area. In addition, a thorough search was conducted of the National Marine Fisheries Service, Northwest Regional Office, Office of Protected Resources web pages. Both of these websites were accessed October 4, 2006. No Federally-listed species or critical habitat records were found for the Thurston Highlands property. The prevalence of low-diversity, replanted, mostly young Douglas fir forest does not afford preferred habitat conditions for listed species that could potentially occur, such as Northern spotted owl (*Strix occidentalis*). Furthermore, the absence of prairie habitat conditions within Thurston Highlands eliminates the potential for listed plant and animal species associated with this habitat type to occur. The only potential Federally-listed species that might occur within Thurston Highlands is an aquatic plant, water howellia (*Howellia aquatilis*), that could occur within the sphagnum bog habitat associated with the Wetland A complex.

3.5.6 Fish

The generalized stream-type mapping of the Washington Department of Natural Resources (WDNR) was reviewed with respect to the Thurston Highlands site (<http://www3.wadnr.gov/dnrapp5/website/fpars/viewer.htm>). Ground-truthing identified errors in this generalized mapping. WDNR maps depict seven individual stream channels in the southeast corner of Thurston Highlands (see Figure 3.5-2). Five of these mapped streams (Channels 1 through 5) terminate at or within the eastern edge of the property, the sixth terminates just south of the property, and the seventh goes past and continues on south. Four of the five channels that terminate in the southeast edge of Thurston Highlands are associated with Wetlands A7 and A8 (channels 1 through 4), but only one drainage actually occurs (Channel 4). Channels 1 and 2 occur primarily in sloped, upland conditions. Channel 3 is partially associated with Wetland A8, but field review found no defined scour channel, only sheet-flow within the wetland. Channel 4 is associated with Wetland A7 and depicts a drainage route that actually occurs. However, this channel would only qualify as a stream “downstream” (off-property) from Wetland A7 where it has been ditched. Once the drainage route enters Wetland A7, sheet-flow again dominates, with no true defined scour channel. Channel 5 is associated with the northwest arm of Wetland F (mostly off-property), but on-property portions of this system again support only shallow sheet-flow, with no defined scour channel. Channel 6 is off-property, and very likely does not occur. Channel 7 is associated with the main portion of Wetland F, but again, the on-property portions of this drainage would be more accurately described as a wetland swale, with stream features confined to ditched, off-property portions to the north.

Occurrence of fish within the Thurston Highlands property is unlikely. Anadromous fish have no access potential because of the large head-cut barrier within the Thompson Creek channel north of SR 510 (Watershed Company, November 2005). Small fish, assumed to be three-spine sticklebacks (*Gasterosteus aculeatus*), have been observed by Steve Shanewise (Coot Company, 2006 and 2007) within “downstream”, off-property portions of the ditched Thompson Creek channel within the Tahoma Terra housing development, but no fish have been observed above this location. However, because the entire Thompson Creek channel is completely dry every summer (stranding and killing many aquatic organisms, including fish), it is assumed that the fish observed must be sustained by dry-season presence in one or more permanent ponds

that occur within the landscape east of Thurston Highlands, connected to the Thompson Creek channel by ditched drainages. When winter rains cause the groundwater in the shallow aquifer to rise, filling the ditches and establishing a surface connection to the permanent ponds, fish (i.e., sticklebacks) then temporarily reinvade the Thompson Creek channel. Although fish from the Thompson Creek system could potentially reach the off-property pond to which Wetland A7 is connected, the minimal surface flow within Wetland A7 is likely unusable for fish. The only other drainage within Thurston Highlands that could potentially support fish would be Wetland F. However, “downstream” conditions within off-property habitats contain one or more perched culverts, buried culverts, and areas where surface flows are very shallow and pass through heavily grazed pasture, which could prove impassible to fish. Finally, Wetland A5, which is a large, permanent-water wetland, could support fish if they had historical access, or were artificially introduced. There is no known occurrence of fish in Wetland A5 at the present time.

POTENTIAL CONSTRUCTION IMPACTS

Full Build-Out Conceptual Land Use Alternatives

All areas to be developed under any of the conceptual land use alternatives would be cleared of existing vegetation prior to construction work. The seasonal timing of this activity could affect wildlife survival. If performed during the general “breeding” season (1 March through 1 July), significant potential would exist for the loss of wildlife reproductive efforts because nest sites with eggs or young would be destroyed as the habitat is cleared. If clearing activities were confined to the non-breeding season, this loss of reproductive effort would largely be avoided, thereby minimizing the impacts to existing wildlife by affording them at least some opportunity to try to relocate to other, undeveloped areas within the landscape. Minimizing the area of land cleared in any one year would also minimize the impact to wildlife from habitat loss, because fewer numbers of organisms would be searching out new areas in which to live in any given year.

Development of the Master Planned Community under any of the conceptual land use alternatives would require mass-grading the site to specified construction elevations following vegetation removal. Because grading would only occur after all woody vegetation had been removed from areas undergoing development, little if any wildlife would still be present in these areas of the site. Once mass grading was completed, there would be essentially no existing wildlife or wildlife habitat left within these areas. At this point, all existing wildlife would have either relocated elsewhere within the landscape, or would have perished.

Nocturnal construction (if any) involving artificial lighting could temporarily disrupt wildlife use of adjacent, undeveloped property, particularly large mammals. Artificial lighting functionally changes the structural component of nocturnal habitat by reducing, if not eliminating darkness. Noise associated with construction should have minimal impact on wildlife occurring within the surrounding, undeveloped environment. Common, primarily forest species that occur within the undeveloped landscape generally habituate to the sounds of constant, daily construction activity in a relatively short period of time (Fletcher and Busnel 1978).

Two areas of high-value upland habitat, the Mature Forest communities shown on Figure 3.5-1, would be almost completely avoided under any of the conceptual land use alternatives. The proposal includes preserving these areas either within a protected wetland buffer, or directly as valuable upland habitat.

Insert Figure 3.5-2. WDNR Stream Typing Map.

There would be no impacts to protected habitats (e.g., prairie habitat or oak woodland habitat) as a result of the proposed Master Planned Community development, as these habitat types are not present on the property. Potential impacts to wetlands are described in Draft EIS Section 3.4.

Construction of the Master Planned Community under any of the conceptual land use alternatives would result in no impacts to listed species or anadromous fish, as none have access to the site or Thompson Creek.

Phase 1 Development Concept

The seasonal clearing, mass grading, and nocturnal construction (if any) impacts described above for full build-out of the Master Planned Community would also apply to the Phase 1 development area.

The Phase 1 development area encompasses one high-value upland wildlife habitat: Mature Conifer Forest. The *Fish and Wildlife Species and Habitats Inventory, Impacts, and Mitigation Recommendations* (Coot Company 2008A) recommends that site development preserve as much of this existing habitat as possible, due to the decades it would take to restore similar conditions. This habitat is adjacent to the only significant wetland complex within the Phase 1 development area (Wetland H), thus enhancing its value as both wildlife habitat and wetland buffer.

No Action Alternative

Under the No Action Alternative, there would be no development of the Thurston Highlands site in the near-term; therefore, there would be no construction impacts that would impact wildlife or wildlife habitat.

POTENTIAL DEVELOPED-CONDITION IMPACTS

Full Build-Out Conceptual Land Use Alternatives

Human presence can disturb wildlife, some species more than others. In particular, random human occurrence where people might just appear any place, unexpectedly, can be especially disruptive to wildlife. However, most wildlife – particularly those species likely to move into the completed condition of the Master Planned Community – will habituate to persistent, non-threatening human presence, and eventually, functionally ignore it. Non-threatening situations that would allow wildlife to habituate basically entail repeated human occurrence in the same location, performing the same activity.

Human-related disturbance to wildlife may be slightly less with the Urban Village Alternative, due to the larger amount of open space to be retained around more intensive, more centralized development of the site.

In general, however, when the Master Planned Community is constructed and occupied, this level of urban development would be a significant deterrent to potential terrestrial wildlife movements into and across the site. The long-term implications of this may be minimized when surrounding lands eventually also build-out to an urban density, as indicated in the *City of Yelm Comprehensive Land Use Plan*. When this occurs, the southwest area of the City will be significantly degraded for potential terrestrial wildlife use.

Because the western boundary of Thurston Highlands will represent the boundary between City and rural landscapes (i.e., the edge of the Urban Growth Area), preventing large terrestrial mammal access into the City is recommended by the Thurston Highlands wildlife biologist. Allowing animals like deer, elk, bear or cougar to integrate with humans and their homes almost always has an undesirable and potentially dangerous outcome. If wildlife corridors were to be provided through the Master Planned Community, this would create the potential for unwanted species to wander into the City from the large, mostly undeveloped landscape of the Ft. Lewis Military Reservation to the west, with nowhere to go except toward heavily-traveled state highways.

Although technically the limits of Thompson Creek occur east of the Thurston Highlands site, surface and groundwater conditions within the project would affect this off-property habitat. The Wetland A and Wetland H complexes provide direct, though seasonal access to intermittent surface water flows in the Thompson Creek channel. In addition, shallow groundwater connections also supply subsurface input to the ditched channel, and will be affected by an increased quantity of stormwater infiltration (PGG 2008). The Thurston Highlands project has the potential to have a beneficial affect on fish habitat within the Thompson Creek system, as a result of prolonged seasonal stream flow. The proposal to infiltrate 100 percent of stormwater generated on the site, and to potentially also infiltrate Class A reclaimed water from the City's advanced wastewater treatment process, could help sustain surface water persistence, providing a "temporal" increase in usable fish habitat. Because the proposal includes preserving and protecting the entire Wetland A and Wetland H complexes with large buffers, it is assumed that surface water inputs from these systems to Thompson Creek would remain at least the same as at present.

Phase 1 Development Concept

Similar to the description of wildlife corridor disruption impacts that would result from full build-out of the Master Planned Community, the Phase 1 development would block potential terrestrial wildlife movements across the northeast portion of the site. The proposal includes preserving the high-value habitats within the Phase 1 development area (Mature Forest and the Wetland H complex) to the maximum extent practicable, subject to unavoidable road crossing impacts described in the *Wetlands Inventory, Impacts and Mitigation Recommendations for the Thurston Highlands Master Planned Community* (Coot Company 2008B).

Approximately 0.56 acre of the Mature Forest habitat in the northeast area of the site would be lost due to the extension of Tahoma Boulevard in a north/south direction through Phase 1. In addition, approximately 2.09 acres of the Mature Forest habitat remaining west of the road may or may not be preserved. However, even if this area is saved, the wildlife value of this small section of mature forest habitat would be minimal due to its isolation by the road from the remaining intact habitat to the east. Road corridor impacts to the Mature Forest habitat would be unavoidable due to alignment constraints relative to roadway connections and turn radii. The impact to wildlife from this unavoidable loss and isolation of Mature Forest habitat would be minimized by the fact that a large majority of this habitat would be preserved in the northeast corner of the Phase 1 development area.

Phase 1 development would have a proportionally comparable benefit to aquatic habitat in Thompson Creek to that described above for the overall Master Planned Community, due to the stormwater infiltration proposal. If the ditched outfall to Wetland H1 is blocked with a water control structure to restore a large, drained marsh (as discussed in the *Wetlands Inventory*,

Impacts and Mitigation Recommendations; Coot Company, 2008B), this would provide additional surface water and potentially groundwater inputs to Thompson Creek by increasing the depth and duration of surface water within the reflooded wetland.

No Action Alternative

If there were no development on the site in the near-term, there would be no alteration of existing habitats or wildlife use of the site. Therefore, birds and wildlife species that presently inhabit, breed and nest, and/or forage on the site would likely continue to use the property in this manner.

MITIGATION MEASURES

Incorporated Plan Features. The proposal includes preparing approximately 100 acres of the site for each 250-lot subdivision application. As these lots are sold and construction is underway, the next \pm 100 acres would be cleared for development. In this manner, approximately 100 to 300 acres would be cleared, undergoing development, and/or awaiting landscaping at any one time (personal communication with Doug Bloom, Thurston Highlands, L.L.C., May 29, 2007).

The landscaping proposal for the site includes replanting with native vegetation to the extent practicable. This would partially compensate for the loss of native wildlife habitat with implementation of any conceptual land use alternative. Target species should include serviceberry (*Amelanchier alnifolia*), cascara (*Rhamnus purshiana*), and native roses (*Rosa pisocarpa*; *R. nutka*; *R. gymnocarpa*). Potentially invasive, exotic vegetation should not be allowed in site landscaping, including, but not limited to English ivy (*Hedera helix*).

Applicable Regulations. Construction hours would be regulated by applicable City code to minimize noise disturbance to neighbors. This would have the secondary benefit of limiting nocturnal lighting on the site during construction. A variance would be required for nighttime work (if any is considered).

Other Possible Mitigation Measures. It is recommended for consideration by City decision makers that vegetation clearing activities be confined to periods outside of the common breeding season for wildlife (1 March to 1 July). Grading activities would not require any seasonal constraints for wildlife consideration, because most wildlife would have left the construction area during the initial vegetation clearing.

It is recommended that the area to be cleared for development in any one year be limited to the minimum necessary to allow continued project development until more clearing is necessary to provide more developable land.

Normal construction activities should be limited to diurnal hours to prevent possible disturbance of wildlife within adjacent, undeveloped landscapes. If special circumstances would require nocturnal work with bright, artificial lighting, shields should be provided to prevent fixed lighting from shining into non-construction areas.

To partially compensate for the loss of wildlife habitat due to clearing and grading activities, a variety of artificial nest boxes could be placed within undeveloped open space areas to be preserved. Targeted species would include most avian cavity nesters (swallows, chickadees,

wrens, bluebirds, woodpeckers, and ducks), and bats. Within the Phase 1 development area, the most desirable location for nest boxes would be within and around Wetland H1.

Control (eradication) of invasive, exotic species should be undertaken in all undeveloped open space areas of the site where clearing is not otherwise proposed. Targeted species present on site include Scot's broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus discolor*).

It is recommended that a perimeter fence should be constructed along the Thurston Highlands west property boundary, sufficient to deter, at a minimum, access by deer, elk, bear and cougar (see Figure 3.5-3). The City may decide to require this fence to prevent the intrusion of large terrestrial mammals from undeveloped lands west of Thurston Highlands into the developed urban environment that would result from the Master Planned Community.

All human access into undeveloped open space should be restricted to defined trails. Thurston Highlands, L.L.C. should be encouraged to consider making it a condition of the Covenants, Conditions and Restrictions (CC&Rs) of the development that no uncontrolled wandering through the landscape should be allowed. In addition, dogs (or any other domestic pets) should only be allowed on trails if on a leash.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The mass grading proposal to create grades suitable for development of the proposed Master Planned Community at urban densities would require removal of the majority of existing vegetation from the site. This would leave essentially no wildlife or wildlife habitat in areas cleared and graded, requiring individual animals, birds, reptiles and amphibians that use the property at the present time to relocate. Individuals unable to find available habitat in the surrounding area would perish.

Insert Figure 3.5-3. West Boundary Wildlife Fence.

