

3.9 Noise

AFFECTED ENVIRONMENT

The predominant sources of noise within the project area at the present time include birds, distant traffic, construction equipment on offsite properties, aircraft flyovers, and periodic military training exercises on the Fort Lewis Rainier Training Area west of the site. Existing sound levels have not been quantified by measurement.

City of Yelm Comprehensive Plan Environment Policy (EP) 35 adopts Washington State Environmental Noise Limits (WAC 173-60) to ensure that excessive noise does not impair permitted land uses in residential, commercial, and industrial land use districts (City of Yelm 2006). The State rule establishes both limits on the levels and duration of noise crossing property boundaries, and hours when construction activities are not subject to these limits. Construction noise during daytime hours is exempt from the State noise limits, as is sound associated with motor vehicles operating on public roadways.

Draft EIS Section 3.10 describes the City's coordination with the Fort Lewis Military Reservation concerning periodic noise generated within the Rainier Training Area. Military maneuvers can result in noise from a variety of sources, including aircraft, artillery, explosives, and small arms firing. Some training exercises occur during nighttime hours. Sound levels associated with such exercises can extend beyond installation boundaries and can affect neighboring land uses. In addition, Fort Lewis periodically conducts forest practices on portions of the Rainier Training Area, in accordance with its *Integrated Natural Resources Management Plan* (ENSR International, August 2006). Noise associated with tree thinning or removal is audible on the Thurston Highlands site, particularly in the western portion.

POTENTIAL IMPACTS DURING CONSTRUCTION

Full Build-Out Conceptual Land Use Alternatives

Construction noise on the Thurston Highlands site would originate from the operation of conventional types of equipment, such as bulldozers, excavators, loaders, backhoes, highway and off-road trucks, graders, compactors, and pavers. Sound levels associated with these types of equipment operating at a distance of 50 feet from the receiving source range from 76 to 89 dBA¹ (WSDOT, April 2008). The standard distance reduction for point source noise is 6 dBA per doubling of distance from the source. Due to the large size of the Thurston Highlands site, it is expected that it would be a relatively infrequent occurrence for construction equipment to be working in such close proximity to adjacent land uses.

The proposal includes utilizing gravel from an onsite source as material for road building, utility trench backfill, and building pad construction (KPFF Consulting Engineers 2008). The main area targeted for gravel extraction and processing is in the southeast area of the site, where commercial development is indicated on the conceptual land use plans. This area is internal to the site, approximately 100 feet from adjoining properties within unincorporated Thurston County. Gravel processing is proposed on the north side of the extraction area, approximately 1,200 feet north of the south property line (personal communication with Doug

¹ Environmental noise is commonly characterized using "A-weighted" decibels (dBA), which is a scale that reflects how an average person hears sounds. Baseline (ambient) noise levels vary greatly and depend on site-specific factors.

Bloom, Partner, Thurston Highlands, L.L.C., May 19, 2008). Noise-generating activities associated with removal and use of the gravel resource would include excavation, screening gravel to variable specification sizes, possible rock crushing, and onsite hauling and distribution. The types of equipment typically involved in gravel extraction, processing and distribution include excavators, bulldozers, wheeled front-loaders, a portable screening plant, feed-hopper, portable gravel crusher, finishing crusher, water trucks, highway/off-road trucks for transport, and vibratory/sheeps-foot compactor rollers.

The estimated quantity of gravel available from the onsite source is approximately 800,000 cubic yards of in-place material. Assuming a 30 percent swell factor, it is estimated that approximately 35,000 off-road transport truck trips would be required to move this material from the source to final destinations onsite. These truck trips would occur internal to the site, not on the surrounding public road system.

Other trips would originate offsite for the transport of construction materials and workers to the Thurston Highlands site over the projected 10- to 30-year build-out period. Because construction trips would not generate traffic levels higher than forecast with phased build-out of the site, no specific analysis of construction traffic was performed (Draft EIS Section 3.17.6.9).

Phase 1 Development Concept

Construction noise associated with site clearing and grading and home construction within the Phase 1 development area would be similar in nature to that described for full build-out, though on a smaller scale (involving approximately 28 percent of the site). There is no identified gravel extraction area within the Phase 1 development area; however, gravel processing may occur in this area using the portable screening plant and portable gravel crusher.

No Action Alternative

Under the No Action Alternative, the property would temporarily remain in its undeveloped condition; therefore, there would be no construction noise associated with the site.

POTENTIAL DEVELOPED-CONDITION IMPACTS

Full Build-Out Conceptual Land Use Alternatives

The onsite activity associated with the fully-developed Master Planned Community with the greatest potential to generate noise that would be audible at offsite locations would be events at the proposed Regional Sports Complex. Unamplified human voices from players and spectators tend to represent the major source of noise from baseball and soccer fields (Geomatrix Consultants, Inc., July 12, 2006). These fields had not yet been designed at the time of this writing, so it was not possible to consider their orientation and related potential effects to offsite receivers. Although sound from unamplified human voices is generally exempt from noise limits, sports field noise could be perceived as an impact at homes in the Rural Residential area north of the Thurston Highlands site, if this is still the predominant land use at the time the Regional Sports Complex is developed and fully functional.

In the developed condition of the Thurston Highlands Master Planned Community, under any of the conceptual land use alternatives, residents and visitors to public areas on the site would, at times, experience noise generated by training activities on the Fort Lewis military reservation. Aviation, demolition, and gunnery training activities would have the potential to

cause short-term noise impacts. Fort Lewis has an established procedure to deal with noise complaints. This procedure allows the Army to explain the steps that have been taken to keep noise at a minimum while allowing the Army to continue to fulfill the need for combat-readiness training.

Phase 1 Development Concept

The Regional Sports Complex is located within the Phase 1 development area (see Figure 2.5.6 in Chapter 2). It would not, however, be fully developed within the Phase 1 timeframe. Therefore, sports field noise sources would be substantially deferred to later stages of development.

The Phase 1 development area is not adjacent to Fort Lewis; however, the noise of military training exercises would still at times be audible to residents within this area of the Thurston Highlands Master Planned Community.

No Action Alternative

Under the No Action Alternative, there would be no change in existing sound levels emanating from or received on the site.

MITIGATION MEASURES

Incorporated Plan Features. The applicant proposes to require contractors to locate noise-generating equipment during construction (e.g., the portable gravel screening plant and crusher, and construction staging areas) as far as practicable away from sensitive offsite receivers.

The proposal includes retaining a minimum 50-foot perimeter buffer around the site. This buffer would be substantially larger in places where the proposal includes retaining high-value wetland complexes with substantial wetland buffers, and the mature forested habitat in the northeast corner of the site. These areas are described in Draft EIS Section 3.5.

Applicable Regulations. Noise received on offsite properties generated by gravel extraction and gravel processing would be subject to the State noise limits, adopted by the City of Yelm by reference in their development regulations.

Noise associated with nighttime construction could be avoided by adhering to hours of construction identified in the State Noise Rule. If unusual circumstances require occasional nighttime construction activities, the contractor would be required to obtain a variance from the City.

Other Possible Mitigation Measures. The applicant proposes to include notification in real estate transaction documents to advise prospective home purchasers and business owners of the proximity to Fort Lewis, and of possible noise and visual impacts associated with military training exercises. This notification should include the most current update of Fort Lewis noise-complaint procedures.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

At the time of this writing, no significant unavoidable adverse noise impacts were identified. When the Regional Sports Complex proposal is more specifically defined in the future, the City

will review its potential noise impacts in the context of adjacent land uses at that time, and will impose appropriate mitigation requirements.