

CAR 2 REPORT
BOSVELD-LIN HOME PROPOSAL
Mercer Island Parcel Number 3623500037



Arborist:	Layton Tree Consulting, LLC
Architect:	Wittman Estes
Biologist:	Avia Environmental Consulting
Civil Engineering:	G2 Civil Engineering / Litchfield Engineering
Geotechnical Engineer:	GEO Group Northwest Inc.
Surveyor:	Encompass Engineering and Surveying

Compiled by:
Paul Bosveld

INTRODUCTION

We are proposing to build a new single-family home on Mercer Island Parcel Number 3623500037, as shown in 2 – Site Plan. Our overall goal is to minimize our site impact and retain the majority of existing trees by creating a home with a compact house footprint of 1508 square feet. The total heated area is approximately 3100 square feet, with a proposed lot coverage of 2,995 square feet or 12.5% of the land, which is far less than the allowable area of 8,448 square feet. The design minimizes site disturbance by cantilevering upper stories over a small first floor (795 sf). This strategy reduces the volume of excavation needed and minimizes disturbance to the root systems of existing trees.

PROPERTY LOCATION AND DESCRIPTION

The project site is located in the northwest area of Mercer Island, Washington, as illustrated in 2 – Site Plan. The property is 24,138 square feet in size and trapezoidal in shape. The parcel is presently vacant and zoned R-15 (single family minimum 15,000 sf lot). Bordering properties are the same zoning. Other residential zones in the vicinity are R-9 and R-8.4.

The site is accessible from the intersection of 73rd Avenue SE and SE 38th Street at its north property line, or from W Mercer Way along its south property line. The property gradually slopes from north-to-south with a total inclination of approximately 50 feet over a horizontal distance of 217 feet. The north and southern portions of the property are relatively flat, while the steepest section at the middle of the property has an inclination of about 20 feet over a horizontal distance of over 50 feet (< 40%).

Mercerdale Hillside Park is approximately 220 feet NE of the subject property at its nearest point. The Lake Washington shoreline is about 500 feet to the SW. All surrounding properties are developed with single-family homes, with the exception of two vacant residential lots adjacent to Mercerdale Hillside Park. Commercial areas are about 0.45 miles to the NW, with the I-90 corridor a further 0.45 miles beyond that.

CRITICAL AREAS ON SITE

Referencing MICC 19.07.020:

A. Except as specifically exempted by MICC 19.07.120, Exemptions, these regulations apply to land uses, development activity, and all structures and facilities within the city of Mercer Island that contain any of the following critical areas and/or their buffers, as defined in Chapter 19.16 MICC:

1. Geologically hazardous areas
2. Fish and wildlife habitat conservation areas
3. Watercourses; and
4. Wetlands

The location of this parcel will be altering a geologically hazardous area (MICC 19.07.160) and is in a wildlife habitat area (MICC 19.07.170). We have included expert reports explaining our plans to address compliance with these items (and related items) as follows:

MICC 19.07.160 Geologically Hazardous Areas

Attached Reports: 3A – Geotechnical Plan Review and 3B – Geotechnical Plan Report

MICC 19.07.170 Fish and Wildlife Habitat Conservation Areas

Attached Reports: 4 – Habitat Assessment and 2 – Site Plan

The 3A – Geotechnical Plan Review and the 4 – Habitat Assessment follow the requirements set forth in MICC 19.07.110 Critical Area Study.

We have included a Civil Engineering report addressing the building pad location, as this relates to our efforts to reduce impact on the site. Our building pad location relates to both the Geotechnical Plan Review and the Habitat Assessment.

MICC 19.09.090 Building Pad

Attached Reports: 6A - Civil Engineering Memorandum, 6B Civil Engineering Driveway Access Exhibit, and 2 – Site Plan

MICC 19.09.100B Development in Critical Areas

In addition, we have included an Arborist Report and Tree Plan, which also relates to the Geotechnical Plan Review and the Habitat Assessment.

MICC 19.10.010 TREE CODE

Attached Report: 5A - Arborist Report and 5B – Tree Plan

MICC 19.07.160 GEOLOGICALLY HAZARDOUS AREAS

GEOTECHNICAL ENGINEERING ASSESSMENT

Since our land is classified as a geologically hazardous area, we had a Geotechnical Engineering Study completed by GEO Group Northwest, Inc. Both the Study (3B – Geotechnical Report) and a Statement of Minimum Risk (3A – Geotechnical Plan Review) are included with this report.

Summarizing GEO Group Northwest’s assessment:

19.07.160.A – Designation and Typing 19.07.160.A of the Mercer Island City Code (MICC) designates geologically hazardous areas as being either erosion hazard areas, landslide hazard areas, and seismic hazard areas ... During our site reconnaissance and subsurface investigation on October 16, 2020, described in more detail in our above-referenced geotechnical report, we did not encounter evidence that the project site may be susceptible to the risks associated with erosion, landslide, or seismic hazards or that the proposed scope of work for the new residence would increase the risks of these hazards to the property or the adjacent properties

The Statement of Minimum Risk provided by GEO Group Northwest, Inc. is quoted here:

The following statement of risk is provided regarding the proposed alterations of the landslide and seismic hazards present at the site. It is our opinion that the project satisfies all of the conditions listed in MICC 19.07.160.B.2 and one of the conditions listed in MICC 19.07.160.B.3, stated below, such that our geotechnical statement of risk for the proposed new residence at the above-subject property may be warranted and certified by the code official; MICC 19.07.160.B.3.b:

The landslide hazard area or seismic hazard area will be modified or the development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe.

BUILDING PAD LOCATION / CIVIL ENGINEERING ASSESSMENT

We have included a Civil Engineering Assessment outlining the factors that guided the building pad location design, in the section entitled ‘ADDITIONAL CONSIDERATIONS – MICC 19.09.090 BUILDING PAD’ located below.

MICC 19.07.170 WILDLIFE HABITAT CONSERVATION AREA

CERTIFIED BIOLOGIST ASSESSMENT

The attached 4 - Habitat Assessment, prepared by a Certified Biologist from Avia Environmental Consulting, outlines the expected impact and mitigations of the proposed building, and addresses the requirements outlined in MICC 19.07.170.

From that report:

The local inventory identifies the presence of a bald eagle nest in in a large Douglas fir in Mercerdale Hillside Park. The surveyed distance from the nest tree to the closest edge of the subject property is 333 feet.

Recommended buffers are 660 feet from nests for most residential construction projects if the activity will be visible from the nest. If the activity will not be visible to the nesting eagles, a 330-foot buffer is recommended.

An exception to the 660-foot buffer for visible activity may be implemented when similar activities occur within one mile of the nest. In the present case, dense residential use and construction activities of residential and commercial scale are not only abundant within one mile of the nest, but residential use is present between the proposed project site and the nest. Regarding the visibility criterion, I attempted to view the nest from numerous areas within and near the subject property. The results are documented in a series of photos (Appendix A, Photos 3 through 6). Due to the combined factors of topography and vegetation, the nest was not visibly from the project site. Even allowing for the superior eyesight of bald eagles, it is unlikely line-of-sight exists, as the entire nest tree is obstructed.

In summary, by choosing the building pad location shown in 2 – Site Plan, which comprises the least valuable habitat on the site, direct impacts to nesting and foraging wildlife due to habitat loss are expected to be very limited.

This assessment is in fulfillment of Mercer Island City Code (MICC) Section 19.07.170(B) and includes a field assessment of existing habitat on and adjacent to the site; evaluation of proposed actions and their potential direct and indirect impacts to bald eagles; discussion of management recommendations; and avoidance, minimization, and mitigation measures.

ADDITIONAL CONSIDERATIONS – MICC 19.09.090 BUILDING PAD

CIVIL ENGINEERING ASSESSMENT

Our proposed building pad location, which is referenced in both the 3B – Geotechnical Report, and 4 – Habitat Assessment, was guided by the following Civil Engineering assessment, found in 6A - Civil Engineering Memorandum:

Access from Mercer Island Way:

The attached driveway exhibit depicts that a driveway from West Mercer Way is not feasible due to the existing property grades & the connection requirements to West Mercer Way. Access from the West Mercer Way would require a driveway with a slope of greater than 30%. Per MICC 19.09.040(G)(1) a driveway cannot exceed a slope of 20%. Therefore access from West Mercer Way is infeasible. A driveway extending from West Mercer Way would also require the removal of at least one additional significant tree. The proposed driveway extending from SE 38th Street does not require any significant tree removals. The exhibit provides two options to evaluate any potential feasibility for access from West Mercer Way.

Compliance with MICC 19.09.090:

The location of the proposed building pad does not require the removal of any healthy significant trees. Per the geotechnical engineering study prepared by GEO Group NW, Inc. dated November 2, 2020 the proposed development will not have adverse impacts to topography or the critical area (geological hazardous area). The proposed building pad location allows for a driveway that is in compliance with 19.09.040, see above. The proposed building pad is located outside of the required setbacks and ROW. No section of the building pad is less than 20 feet in width.

Compliance with MICC 19.09.100(B):

Per the geotechnical engineering study prepared by GEO Group NW, Inc. dated November 2, 2020 the proposed development will not have adverse impacts to topography or the critical area (geological hazardous area).

An added benefit of the SE 38th Street driveway location is that it enters a very quiet dead-end lane with only two other homes and virtually no traffic. Since our home will also be much closer to SE 38th Street as shown in 2 – Site Plan, this is a much safer location for our two young children (3- and 5-years old) to be near and likely playing around when compared with the higher speeds and heavy traffic found on West Mercer Way.

ADDITIONAL CONSIDERATIONS – MICC 19.10.010 TREE CODE

ARBORIST ASSESSMENT

By siting the building pad at the north end of the property, considerable effort has been put into developing an architectural plan and footprint that reduces or eliminates any impact on the surrounding mature trees. The house has cantilevered areas to meet occupant space needs while keeping the footprint small, and reducing proximity to tree roots. As noted in the attached 4 – Habitat Assessment, the proposed building area comprises the least valuable habitat on the site, with few native plants and low structural and composition diversity of vegetation, and thus direct impacts to nesting and foraging wildlife due to habitat loss are expected to be very limited.

Throughout the site, all trees in healthy condition will be retained, with removal limited to 13 mainly dead or diseased trees, per arborist's recommendation in 5A – Arborist Report. This preserves eagle perches and avoids disruption of the tree canopy. All exceptional trees in Good or Fair condition shall be retained, with the exception of one Non-Exceptional, Fair condition tree (Tree #16). Replacement trees will be planted as noted in the report. This also stays far under the removal limits set forth in MICC 19.10.060.

Tree protection measures will be followed as set forth in MICC 19.10.080, and as noted in the Arborist report. The following actions (5A – Arborist Report) will be taken to protect Tree #23, which is close to the proposed building footprint:

The owner desires to retain as many healthy trees as possible. Tree #23 is close to the proposed building footprint but can be successfully preserved if measures are taken to protect the root system. The carport floor will be metal bar grating floated above the existing grade to minimize root disturbance for Tree #23 and the neighboring trees. Only small pier footings shall be excavated within the defined LOD boundary. Footing pads within the LOD boundaries shall be hand-excavated only. Heavy equipment shall be limited to only those areas that are outside of the fenced protection areas and defined LOD. Exposed LOD areas outside of the fenced protection area shall be protected by covering the ground surface with a protective covering of a 6 to 8-inch layer of arborist wood chip mulch or hog fuel, rubber mats or plywood to prevent damage from equipment.

MITIGATIONS - 19.09.100B DEVELOPMENT IN CRITICAL AREAS

Significant efforts have been made to mitigate adverse impacts to critical areas – in particular by minimizing the footprint and locating the proposed home in the location noted in the 2 – Site Plan and discussed above. Specific mitigations and actions during construction are also noted in the Geotechnical, Habitat and Arborist reports attached. An overview is provided below, with more details found in each of the reports.

GEOTECHNICAL MITIGATIONS

The small footprint and building site are aimed at minimizing impact on the land. The 1,508 square foot house footprint and 2,996 square foot lot coverage is less than half of the allowable 8,448 sf lot coverage on the approximately 24,138 square foot piece of land, and is noted in the Geotechnical Engineering Assessment:

The footprint of the residence is proposed to contain about 1,300 square feet of space, and the residence will also include a 670 square-foot carport adjacent to its north perimeter that will be accessible from SE 38th Street to the north. The lower floor of the residence will contain a south-facing daylight basement with just under 800 square feet of living space and foundations, and the larger main floor will contain an “overhanging,” portion at its south edge as a result to minimize overall site disturbance by the project’s scope.

The proposed developments were designed such that the carport would be located on relatively flat topography and the finished grade for the new residence would achieve minimal alterations to the existing contours located at the northeast section of the property.

We plan to follow the recommendations provided in the Geotechnical Report to mitigate or eliminate concerns. This includes guidance for Grading and Earthwork, Foundations, Slab-on-grade floors, Conventional Concrete Basement and Retaining Walls, Surface Drainage and Subsurface Drainage.

Provided that our recommendations concerning the earthwork, foundations, retaining walls, and drainage are properly implemented into the design and construction of the new residence, it is our opinion that the proposed new residence will not adversely impact the geologic hazard areas mapped at the above-subject property. Furthermore, it is our opinion that the risk to the above subject property and the adjacent properties will be minimal such that the project site is determined to be safe in both its existing and developed conditions.

WILDLIFE HABITAT CONSERVATION AREA MITIGATIONS

As noted in the 4 – Habitat Assessment, the following mitigations are planned:

Avoidance and minimization measures have been considered as part of this proposal from the initial planning stages. These are directed at both limiting general habitat disturbance and protecting the nesting bald eagles particularly.

The proposed development footprint has been minimized to well below the standard permitted 35% of the lot area. The foundation area is only 824 sf, a driveway is avoided, and the planned home is of modest size. The home is positioned to stay entirely within the disturbed habitat area, thereby avoiding the removal of trees and native ground vegetation. Throughout the site, all healthy trees will be retained, with removal limited to 13 dead or diseased trees. This preserves eagle perches and avoids disruption of the tree canopy. The foundation will be constructed by methods designed to avoid root damage. Outdoor recreational use areas associated with the house are limited to a deck and situated on the west side of the house, away from the nest. No lawn or additional vegetation clearing is planned. The applicant intends to keep all outdoor areas naturally vegetated with existing native species.

Landscaping will be very limited to preserve existing native vegetation, and will consist of native species. A "green roof" is planned, which will reduce visual impact from above and compensate for ground cover loss and impervious surface in the building footprint. Siding is designed to blend with the surroundings and the majority of glazing will face away from the nest area to further avoid visual impact. Outdoor areas proposed for human use are situated on the south side of the house, away from the eagle nest area and Biodiversity Area.

A TESC plan and BMPs will be in place during construction. Although not a jurisdictional requirement, a vegetated "green roof" is intended to provide a level of stormwater quantity control for the project treat stormwater quality and quantity. A raised deck using standard board spacing of approximately ¼- inch will allow water to drain to the ground beneath it. As directed by the City, all stormwater from hard surfaces (i.e., roof, driveway, patios, etc.) will be collected and conveyed to an existing public system in West Mercer Way. In addition, permeably open grating will be used for the carport floor. No road construction is planned, and intensity of road use will not change. Underground power line connection is proposed to avoid the need for above-ground structures. Powerline trenches will be excavated in a manner and location to avoid disturbance to mature tree roots.

TREE MITIGATIONS

We intend to conserve all of the viable trees on our property, and only remove the diseased or dead trees as described in the 5A - Arborist Report, with the exception of one Non-Exceptional, Fair condition tree (Tree #16). Replacement trees will be planted as noted in the report. Tree protection measures will be followed as set forth in MICC 19.10.080, and as note in the Arborist report. The following actions will be taken to protect Tree #23, which is close to the proposed building footprint:

The owner desires to retain as many healthy trees as possible. Tree #23 is close to the proposed building footprint but can be successfully preserved if measures are taken to protect the root system. It is my understanding the garage floor will be floated above the existing grade to minimize root disturbance for Tree #23 and the neighboring trees. Only small footing pads shall be excavated within the defined LOD boundary. Footing pads within the LOD boundaries shall be hand-excavated only. Heavy equipment shall be limited to only those areas that are outside of the fenced protection areas and defined LOD.

CONCLUSION

As addressed in each of the attached reports and the narrative above, our project has worked diligently to honor the ecological conditions of the existing site. We see the house design as a way to minimize adverse effects on the site while providing new habitat for humans. We have focused our design efforts to meet both the intents and stated requirements of the City of Mercer Island code, and to make a house design that can be model for sustainable development in the region.