

Gilles Consulting

— Brian K. Gilles —

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**Point Roberts Beach Club
Lon Subdivision
(LSS 2007-00005)**

**ARBORIST RESPONSE TO
Whatcom County Planning
& Development Services
September 12, 2008 Letter
Sections A.4.B. & D, on Pages 3 & 4**

December 11, 2009

PREPARED FOR:

**Mr. Anders Kruus, Principal
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Whatcom County P&DS

PREPARED BY:

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EXECUTIVE SUMMARY

As a result of my examinations, investigations, and analysis of the trees and shrubs, it is my professional judgment that the drip irrigation can be installed without significant damage to the trees or any long-term negative impact on the trees if minor tree protection measures are followed. These are broadly outlined below.

ASSIGNMENT

In a September 12, 2008, letter Senior Planner Amy Keenan, in Section A, Sub-section 4, Paragraph D, on page 4 states:

The community drainfields are proposed for the northeast portion of Tract F, which is also shown as a large area for tree canopy preservation. Please have an arborist confirm that the trees will not be affected by the proposed community drainfield construction and/or operation. Additional approval conditions will be implemented to insure survival and replacement of the tree canopy if impacted.

On page 3 & 4 of the same letter, Section A, Sub-section 4, Paragraph B states:

The most current tree canopy plan indicates that the saved tree canopy will end in a straight line at the newly created lots. Tree canopies typically do not end in straight lines. Please indicate on the tree canopy plan the trees and associated driplines of the trees to be retained. This information will be used to ensure protection of the trees. In addition, please have an arborist verify the health of the trees to ensure that they are healthy trees prior to development."

Mr. Anders Kruus of Lily Point, LLC, contracted with Gilles Consulting to review these two sections of the letter and requested that Gilles Consulting review the septic design, the soils report, and the trees in the area and provide a professional opinion to address the concerns expressed by the County.

METHODOLOGY

To evaluate the situation the trees in the northeast section of the property were observed as well as the shrubs and ground cover plants to determine a general view of their health and condition. To do this and to prepare this report I drew upon my 25+ years of experience in the field of arboriculture and my formal education in natural resources management, dendrology, forest ecology, plant identification, and plant physiology. I also followed the protocol of the International Society of Arboriculture (ISA) for Visual Assessment (VA) that includes looking at the overall health of a representative sample of

the trees in the area, as well as the site conditions. This is a scientifically based process to look at the entire site, surrounding land and soil, as well as a complete look at the trees themselves.

In examining each tree, I looked at such factors as: size, vigor, canopy and foliage condition, density of needles, injury, insect activity, root damage and root collar health, crown health, evidence of disease-causing bacteria, fungi or virus, dead wood and hanging limbs.

I then reviewed the soils report prepared by Golder Associates Inc. of Redmond, Washington and the latest site plan and *Tree Canopy Plan* Developed by Core Design Inc. of Redmond Washington.

OBSERVATIONS

The northeast corner of the property where the septic system is proposed is primarily a dense forest of native tree species and associated shrubs and ground covers typical of the lowland Puget Sound region. Species are primarily Douglas Fir, Western Hemlock, and Western Red Cedar. There are a few Red Alder and Big Leaf Maple in the openings where there are no conifers.

The trees appear to be reasonably even aged and are possibly second or third growth. There is very little evidence of past logging activities in this portion of the property.



Photo # 1:
generic look at
the conifer
forest in the
northeast
corner where
the septic drain
field is being
proposed

DISCUSSION

Forest and Tree Conditions

As noted above in the observations section, the forest appears generally to be in good health. If we look at tree conditions in 5 test plots of 100 square feet each, 70+% of the trees evaluated were rated as Fair, or Good. Details are seen in the chart below.

# of Trees	Current Health Condition	%
19	Dead	10.8%
5	Dying	2.8%
28	Poor	15.9%
104	Fair	59.1%
20	Good	11.4%
176	Trees on 5 Plots	100.0%

These numbers, showing the individual tree conditions, indicates that the majority of trees are capable of tolerating minor construction stress without undue concern for rapid decline.



Photo # 2:
Another view of the forest conditions in the northeast property corner

Soils Report Information

Golder Associates Inc. dug multiple test pits on the site. Test pits 1 and 2 are near the proposed area for the septic drain field system and are similar in forest cover. It is reasonable to extrapolate that the soils play an important part in the species composition and forest extent—for those areas not previously managed for pasture, gardens, and lawns. Therefore, the data for test pits 1 and 2 can be expected to be similar to the soil conditions of the proposed drain field area.

The test pit data shows A, B, and C horizon of well drained soils extending down between 4 and 6 feet. This is consistent with the observations that there were few if any surface roots of the trees that were observed—meaning that the well draining soils are allowing the tree roots to penetrate down into the soil.

Proposed Septic Drain Field Design

The generic concept of the drain field design is to have the pipes installed at a level between 6 inches below the surface and the surface—meaning that the pipes can be located anywhere in this 6-inch horizon and the system will function and will operate successfully.

The proposed installation is to use a vibrator attachment on a small tractor or ditch-witch type unit and to pull the pipe into their final locations in long sections.

CONCLUSIONS AND RECOMMENDATIONS

Septic Drain Field Installation Impact on Trees

Based upon observations of the trees/forest condition, the information in the soils report, and the proposed method of installation, it is my professional judgment, that, given some minor tree protection measures and changes in installation, the installation of the septic system will not have an immediate damaging nor a long-term negative impact on the trees. The long term operation of the system impact on the trees is harder to define, however, functioning properly, given the preliminary design reviewed, and the soils data reviewed, it appears that the long-term functioning of the system will not have a long-term negative impact on the health of the trees.

Tree Protection Measures

In order for trees to survive the stresses placed upon them in the construction process, tree protection must be planned in advance of equipment arrival on site. If tree protection is not planned integral with the design and layout of the project, the trees will suffer needlessly and possibly die. With proper preparation, often costing little or nothing extra to the project budget, trees can survive and thrive after construction. This is critical for tree survival because damage prevention is the single most effective treatment for trees

on construction sites. Once trees are damaged, the treatment options available are limited.

In this case the tree protection measures will be quite straight forward:

1. Depth of Drain Field Lines:
 - a. Maintain the depth of the drain field lines at less than 3 inches below the surface.
 - b. Where large surface roots are present in the path of installation, route the lines over or around the roots on the surface if necessary.
 - c. When surface lines are utilized, use 3 to 4 inches of clean mulch over the lines for protection and proper functioning.
 - i. Bio-debris, the clean tree and plant waste generated during the clearing operations, can be chipped and stored on site for just this purpose. This will save time and money and will be better for the environment.
2. Distance From Tree Trunks:
 - a. For sub-surface pipe installation, (again no more than 3 inches below the surface), the pipe must be a minimum of 5 feet from the base of the tree.
 - b. For surface pipe installation, the pipe must be 2.5 feet from the base of the tree.

Septic Drainfield Construction and Staging

1. It will be vitally important to keep all vehicles, equipment, supplies, debris, and any other construction related materials away and out from under the driplines of all trees to be retained.
 - a. To accomplish this, the areas should be fenced off at the edge of the rest of development to protect the retained forest retention areas.
 - b. Set up an area where construction supplies and debris can be concentrated and stored.
 - i. These areas must be out away from the forest areas—outside the driplines of the trees to be retained.
 - c. Set up an area for the parking of vehicles and equipment away from the trees to be retained—minimally outside the driplines.
 - d. Set up an area where the pipes can be welded/glued together that is outside the driplines of the retained trees and then transport them to the installation site.
2. Use landscape sized equipment:
 - a. All equipment must be the smallest size possible to accomplish the goals.
 - i. Soil compaction, trunk damage, and shearing the bark off surface roots and roots near the surface are critical thing to prevent to the preserve the long-term health and survival of the trees.
 - ii. If the soil becomes compacted in the process, there will be 2 long term problems: the trees will slowly die of drought and asphyxiation, and the septic drainfield system will not function.

- b. Use rubber tires or rubber tracked small vehicles for ALL work within the dripline of the trees.

Section A.4.B: Verification of Tree Health of Trees to be Retained

Given the size of the property and the number of trees involved, it would be a monumental task to locate the individual trees at this time. In addition, without an approved preliminary plat with the lot sizes and shapes locked in, it is possible that lot lines will move several feet in any direction.

The owner, the engineering/planning firm, and I are all suggesting that once the preliminary plot is locked in, the proposed lot lines can then be surveyed in. With those survey points and a rough idea of where driveways, building envelopes, and utilities will be located, we can evaluate the specific trees requested will be evaluated.

WAIVER OF LIABILITY

There are many conditions affecting a tree's health and stability, which may be present and cannot be ascertained, such as, root rot, previous or unexposed construction damage, internal cracks, stem rot and more which may be hidden. Changes in circumstances and conditions can also cause a rapid deterioration of a tree's health and stability. Adverse weather conditions can dramatically affect the health and safety of a tree in a very short amount of time. While I have used every reasonable means to examine these trees, this evaluation represents my opinion of the tree health at this point in time. These findings do not guarantee future safety nor are they predictions of future events.

The tree evaluation consists of an external visual inspection of an individual tree's root flare, trunk, and canopy from the ground only unless otherwise specified. The inspection may also consist of taking trunk or root soundings for sound comparisons to aid the evaluator in determining the possible extent of decay within a tree. Soundings are only an aid to the evaluation process and do not replace the use of other more sophisticated diagnostic tools for determining the extent of decay within a tree.

As conditions change, it is the responsibility of the property owners to schedule additional site visits by the necessary professionals to ensure that the long-term success of the project is ensured. It is the responsibility of the property owner to obtain all required permits from city, county, state, or federal agencies. It is the responsibility of the property owner to comply with all applicable laws, regulations, and permit conditions. If there is a homeowners association, it is the responsibility of the property owner to comply with all Codes, Covenants, and Restrictions (CC&R's) that apply to tree pruning and tree removal.

This tree evaluation is to be used to inform and guide the client in the management of their trees. This in no way implies that the evaluator is responsible for performing

recommended actions or using other methods or tools to further determine the extent of internal tree problems without written authorization from the client. Furthermore, the evaluator in no way holds that the opinions and recommendations are the only actions required to insure that the tree will not fail. A second opinion is recommended. The client shall hold the evaluator harmless for any and all injuries or damages incurred if the evaluator's recommendations are not followed or for acts of nature beyond the evaluator's reasonable expectations, such as severe winds, excessive rains, heavy snow loads, etc.

This report only responds to the impact of a properly installed septic drainfield as described to me. This report addressed the impact of a properly installed and properly functioning drainfield system as it was represented to me. It does not in any way guarantee the proper installation, functioning, or any issues dealing with soils and the functioning of the septic system.

This report and all attachments, enclosures, and references, are confidential and are for the use of the client concerned. They may not be reproduced, used in any way, or disseminated in any form without the prior consent of the client concerned and Gilles Consulting.

Thank you for calling Gilles Consulting for your arboricultural needs.

Sincerely,



Brian K. Gilles, Consulting Arborist
ISA Certified Arborist # PN-0260A
ASCA Registered Consulting Arborist # RCA-418
PNW-ISA Certified Tree Risk Assessor #148



ATTACHMENT 2 - REFERENCES

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