Piped Watercourse Buffer Enhancement Plan

for Proposed Buffer Averaging

Niederman SFR

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Mercer Island, WA

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1. Introduction

The Niederman family proposes to build a 2,000 square foot multi-level addition to their existing 1,800 square foot home located at 6800 - 96th Ave SE, shown in the aerial photograph in Figure 1. As can be seen, most of the site, including most of the buffer, is developed.

Figure 1. Aerial photograph (City of Mercer Island)

A piped watercourse is present on the property to the north as shown in Figure 2; the pipes pass beneath the residence on the neighboring lot to the north, and the buffer extends onto the Niederman parcel, as shown on the City of Mercer Island's online map, shown in Figure 2. The proposed addition will result in 121 square feet of encroachment into this piped watercourse buffer. This report presents a plan to mitigate for these impacts.

Figure 2. City of Mercer Island piped watercourse map

2. Proposed Impacts

As noted above, this proposal will result in an incidental increase of 121 square feet of encroachment into the piped watercourse buffer (see attached site plan). A photograph showing the existing conditions within this proposed impact area is provided in Figure 3.

Figure 3. Area of proposed new watercourse buffer impacts. The proposed addition would extend 3 feet beyond the existing concrete retaining wall.

3. Mitigation Plan for Proposed Project Impacts

3.1 Mitigation Goals

The goal of the mitigation plan is to compensate for loss of ecological functions resulting from creation of impervious surface within a piped watercourse buffer. Mitigation for these impacts will involve removing 124 square feet of impervious surface, i.e. a parking pad, located on the western portion of the site; the surface material will be removed and replaced with natural soil. The existing condition of the compensation area is shown in Figure 4. This restoration area will be enhanced, and an additional 401 square foot area adjacent to the standard buffer will be added to the standard 25-foot buffer to compensate for the proposed buffer impacts, as summarized in Figure 5. The proposal will result in a greater than 1:4 reduction:compensation ratio.

Figure 4. Photos of existing condition of compensation area

Figure 5. Overview of proposed buffer averaging

3.2 Description of Mitigation Measures

Construction limits will be marked during project construction to protect the area from intrusion with equipment. The existing parking pad will be excavated to a depth of at least 6 inches below the concrete and any underlying material and the material properly disposed of; topsoil and compost will be installed within this area to bring it to a minimum of 6 inches above grade to allow for eventual soil settling and to avoid creation of a depression that could retain water, and the area will be planted with native vegetation. Non-native vegetation in the balance of the enhancement area will be grubbed entirely out. A total of 2 trees, 4 shrubs and 4 swordferns will be planted within the enhancement area, as shown in Figure 6. The enhancement area will be mulched to a depth of four inches. A temporary irrigation system will be installed to ensure the success of the plantings.

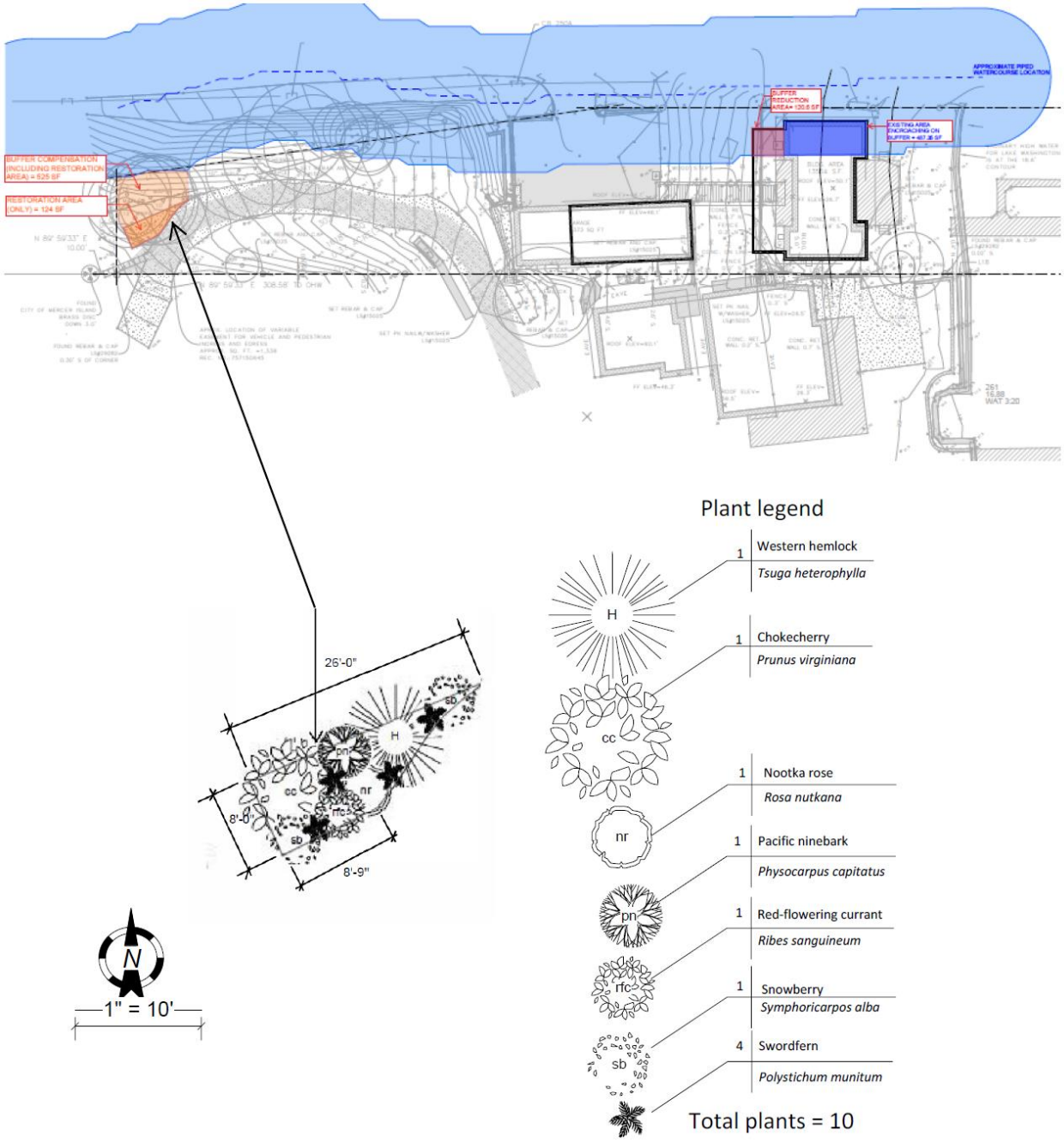

Figure 6: Planting Plan

3.3 Post Installation Measures

Overview photographs will be taken from good vantage points around the enhancement area. A metal post marker will be placed on the side of the area adjacent to the driveway, and a sensitive areas buffer sign will be placed on the marker.

3.4 Performance Standards

When evaluated against monitoring data, performance standards are used to determine the relative success of the mitigation project. Failure to meet these general minimum standards throughout the

monitoring period will result in implementation of contingency measures. Performance standards for the buffer enhancement areas are as shown in **Error! Not a valid bookmark self-reference..**

Table 1: Performance Standards

Criterion	Year 1	Year 3	Year 5
Total Plant Cover (%)[1]	N/A	≥40	≥60
Native woody plant cover (%)	N/A	≥30	≥40
Plant survivorship	100		
Species diversity	The following minimum standards apply to species diversity of plants, including both planted and volunteer native species, within the various strata: Trees = 2 species Shrubs = 4 species Ground covers = 1 species To meet this standard, at least one half of the total number of each planted species must be present at the end of the monitoring period, regardless of plant cover from volunteers.		
Non-native, invasive plant cover (%)	Noxious weeds (identified on the King County 2009 noxious weeds list) must be entirely and properly eliminated and disposed of prior to installation of native material, and may not exceed 10% cover throughout the monitoring period.		

[1] Total plant cover standards will be achieved through a combination of planted material and volunteer native species.

3.5 Monitoring

An as-built plan will be submitted to the city immediately following planting. Monitoring shall continue every year for a period of five years according to the schedule in Table 2. Year 1 of the mitigation monitoring period will commence the quarter following the installation and following approval of the as-built/initial installation report that will be prepared by the biologist. Due to the small size of the mitigation area, the applicant shall be allowed to perform monitoring and submit the monitoring reports for Years 1 through 5. Overview photos will be taken from the same vantage points as during the as-built phase each year to document overall appearance of the mitigation area before, during, and after construction. A full plant count will be conducted each year of the monitoring term.

Table 2: Maintenance & Monitoring Schedules

Year	Maintenance Visits	Monitoring	Report due
1 - 5	Between January 1 and March 1 AND Between April 1 and June 1 AND Between July 1 and September 30 AND Between October 15 and December 30	Between July 1 and September 31	October 30

3.6 Maintenance Plan

Over the monitoring period, a rigorous semiannual maintenance program will be implemented according to the schedule provided in Table 2, or as needed to eliminate undesirable plants and to protect shrubs and small trees from competition from weeds or predation, repair posts, repair or replace any buffer and interpretive signage, replace dead plants, etc. An informal notification (e.g. email correspondence) of completion of this task shall be provided by the applicant to the city within 2 weeks of each maintenance visit.

3.7 Contingency Plan

In order to provide for the contingency that performance standards may not be met during the five-year monitoring period, it may be necessary to provide supplemental plantings. Plant attrition can be remedied by evaluating the cause, and replanting with the same or a more appropriate and approved native species. The landscaping contractor should guarantee 100 percent survivorship for one year from initial planting for losses due to defects in materials or workmanship. All plants that are used for replacement must meet or exceed the standards of the initial plantings. The causes of any mortality will be evaluated, and, based upon the results of this evaluation, alternate species selection may occur, predation barriers installed, or additional mulch applied. All dead plants will be replaced with the same or a more suitable species throughout the monitoring period. Replacement will be subject to the same conditions and be made in the same manner as specified for the original planting.

4. Report Limitations

The information contained herein is, to our knowledge, correct and accurate. We recommend obtaining jurisdictional approval before completing final site plans and/or beginning construction activities. We are not responsible for the accuracy of information provided by others.

Within the limitations of schedule, budget, and scope-of-work, we warrant that this study was conducted in accordance with generally accepted environmental science practices, including the technical guidelines and criteria in effect at the time of this study. The results and conclusions of this report represent the authors' best professional judgment based upon information provided by the project proponent and information obtained during the course of this study. No other warranty, expressed or implied, is made.