CONTRACT DOCUMENTS
MCKINNON CREEK PUMPHOUSE AND SITEWORK

CONTENTS VOLUME TWO

VII. ATTACHED DOCUMENTS

- **Critical Areas Study and Mitigation Plan by Watershed Company update Mar. 26, 2019, incl. plan sheets.**
- **Arborist Assessment by Watershed Company Updates July 25, 2019**
- **US Army Core of Engineers Permit & Cond., Mar. 19, 2017 with conditions noted**
- **City of Lake Forest Park – Hearing Examiner decision, Aug. 12, 2016 – with conditions noted**
- **Geotechnical Report – Robinson Noble, Rev. 3, July 2018**
- **Major Critical Areas Permit, City of Lake Forest Park, May 13, 2019 with conditions noted**
- **Building Permit, City of Lake Forest Park August 28, 2019**
- **Major Land Clearing & Grading Permit, City of Lake Forest Park August 27, 2019**
- **Tree Permit & Conditions August 28, 2019**
- **Washington State Department of Health – Approval to construct letter May 30, 2019**

CRITICAL AREAS STUDY

Lake Forest Park McKinnon Creek Pump Facility and Utilities

Prepared for:

LAKE FOREST PARK WATER DISTRICT

GOOD WATER NATURALLY

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CRITICAL AREAS STUDY

MCKINNON CREEK PUMP FACILITY AND UTILITIES

1 INTRODUCTION

This critical areas study is intended to support local permit applications for work related to the Lake Forest Park Water District (District) pump house replacement project. The District, which currently provides domestic water to approximately 950 City residents, is relying on ageing and dilapidated infrastructure. In order to better serve the residents who depend on this water, the District is proposing to construct a new pump house, associated underground water mains and other related infrastructure that ties into the existing potable water network. The project would be on portions of two parcels and an adjacent vacant right-of-way within the City of Lake Forest Park near McKinnon Creek. A residentially zoned vacant lot at 18460 47th Place NE in the City of Lake Forest Park, Washington (Parcel number 401990-0176) was recently purchased by the District and would house the new pump house. New water lines and other supporting infrastructure would extend from the pump house northward through a portion of the adjacent District-owned parcel (parcel number 402290-6570) and City right-of-way, where the existing facilities are located. This proposal would result in permanent impacts in a wetland buffer, and temporary impacts in wetlands and their associated regulatory buffers. A total of 15 significant trees were identified by the City arborist for removal as a result of this plan. This report outlines the proposed mitigation that will compensate for proposed impacts to wetlands and buffers and detail how this proposal meets the requirements of the critical area land use regulations of the Lake Forest Park Municipal Code.

1.1 Background and Purpose

This critical areas study will support local sensitive area permitting, which includes a Major Sensitive Area Work permit and the clearing and grading under the Building Permit. As a result of a 2016 hearing, a conditional use permit (CUP) was approved for constructing the pump house (a nonconforming use for a residentially zoned parcel) in the small residentially-zoned parcel, and a public agency utility exemption (PAUE) was approved for construction of the building on a sensitive area steep slope. The hearing, however, did not address proposed wetland and wetland buffer impacts that would arise from the proposed project. The PAUE and CUP were approved with conditions as summarized in the August 12, 2016 Decision (Galt, 2015). State and Federal permits related to the temporary direct wetland impacts that will arise from the project are concurrently being sought.

2019 Revision

A previous version of this study was prepared in February 2017 and addressed compliance with the Lake Forest Park Critical Areas Ordinance (CAO) in effect at that time. Subsequently, a new CAO was adopted by the City, necessitating revision to the study. The wetland classification system under the current CAO requires use of the *2014 Western Washington Wetland Rating System* (Ecology Publication 14-06-029) (Rating System). The standard wetland buffers have similarly been updated to correspond with Ecology guidance. The result of these changes is a substantial increase in the standard buffer widths for project area wetlands from 100 feet to 105 – 165 feet. The new buffer widths encumber the entire project area. The new, larger buffers will not necessitate additional permanent buffer impacts; however, additional temporary buffer impacts will occur.

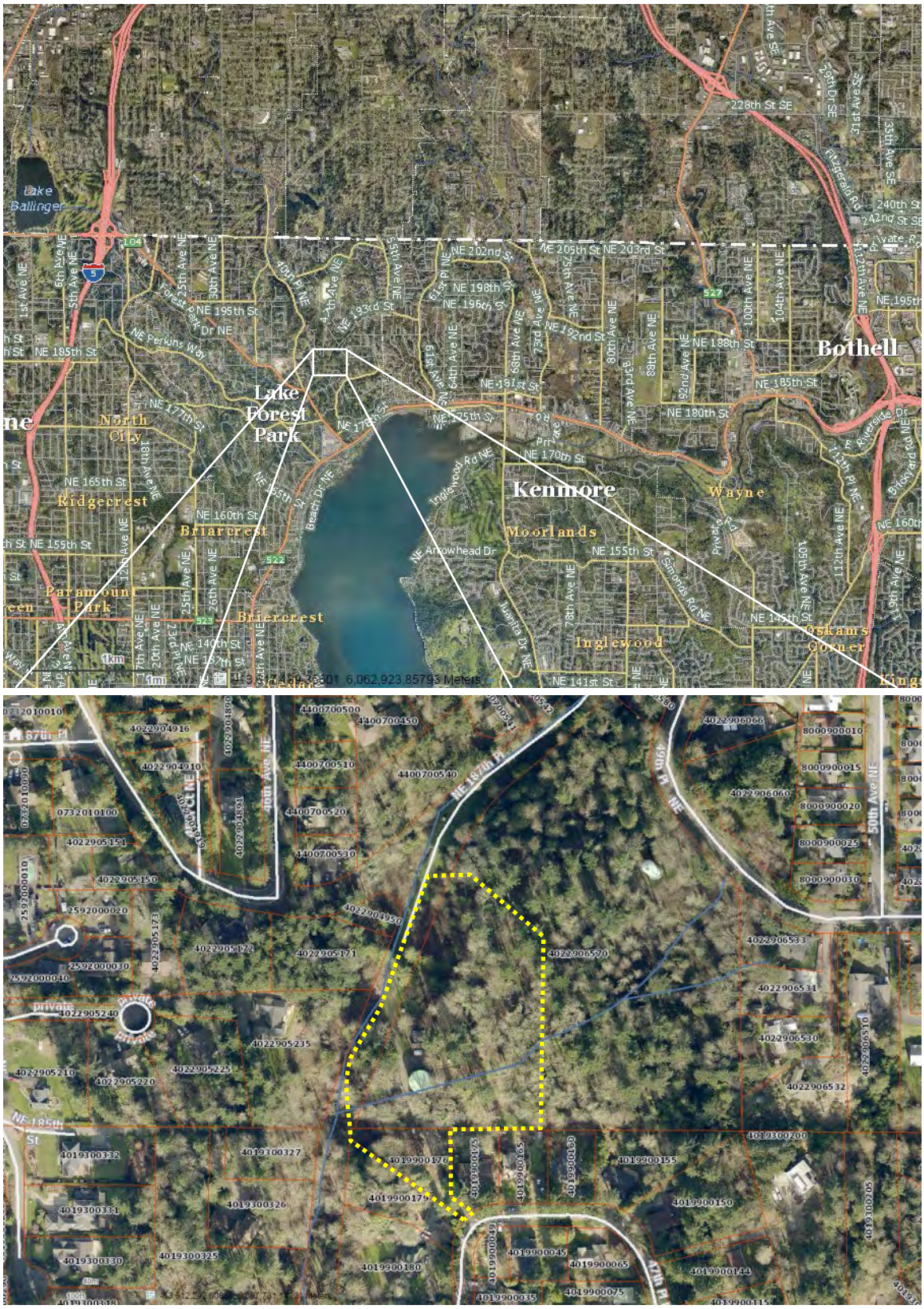


Figure 1. Vicinity map showing the approximate location of the proposed project. Note that King County stream layer is incorrect in this image. (Image courtesy of King County iMap, 2017)

2 PROJECT AREA

2.1.1 Project Area

Parcel number 401990-0176, the 17,820-square-foot (0.41-acre) residentially zoned parcel, is owned by the District, purchased in 2009. The 396,609-square-foot (9.10-acre) parcel (number 402290-6570) has a listed ownership of King County Water District #83, according to online King County records. The project area, as shown in Figure 1, is only a small subset of this large parcel. The project also extends into the adjacent right-of-way that generally follows the course of McKinnon Creek and is an extension of NE 187th Place.

A gravel access road currently used by the District to maintain infrastructure runs from 47th Place NE through the residential parcel (-0176) and continued northward along the east side of McKinnon Creek through parcel -6570, eventually connecting to NE 187th Place (Figure 3). An historic road grade (no longer in use) also extends south along the east side of McKinnon Creek. It is largely covered in vegetation and fenced off from vehicular use.

The parcels are mostly undeveloped with the exception of two large and one small water storage tank, the gravel access road described above, and a few small well houses on in parcel -6570 (Figure 2). The right-of-way contains the old pump house, an abandoned small concrete pad that once supported a water tank, some additional well houses, and the road bed along McKinnon Creek, part of which remains an active access drive. The residentially zoned lot (parcel -0176) once contained a single family home but now only contains the gravel access drive from 47th Place NE.

2.1.2 Landscape Setting

The project site is located within the Lyon Creek drainage basin, in the Cedar-Sammamish Water Resource Inventory Area 8 (WRIA-8); Section 3, Township 26N, Range 04E. McKinnon Creek (Type F stream, standard buffer 115 feet), a tributary of Lyon Creek, flows southwardly along the east side of the gravel access drive.

The landform in the project area generally slopes down to the west towards McKinnon Creek as it is within the topographic ravine formed by the stream. A steep slope occurs on the small triangular parcel near 47th Place NE between the gravel road and Wetland A. Wetlands E, EE and F (see description below and Wetland Delineation Report in Appendix B) occur just upslope of the road grade along McKinnon Creek but are physically separated from the creek by the access road bed, while Wetland A is directly adjacent McKinnon Creek. A few small-diameter culverts under the gravel road carry surface water from the on-site wetlands to McKinnon Creek. The parcels are mostly forested, aside from the

gravel roads and structures, but include small patches dominated by emergent and scrub shrub vegetation.

2.1.3 Critical Areas

Four wetlands (Wetlands A, E, EE, and F), one stream (McKinnon Creek) and a steep slope are located in the project area. The Watershed Company performed a wetland delineation study in the project area in 2016 and summarized the findings in a report entitled *McKinnon Creek Pumphouse – Wetland and Stream Delineation Study* (The Watershed Company, 2016). The delineation study has been revised to reflect the CAO update (Appendix B).

Wetland A, E, EE, and F are all classified as Category III wetlands. Wetlands A, E, and EE all have a habitat score of 6 points, while Wetland F has a habitat score of 5 points. Wetland buffers in Lake Forest Park are determined based on a combination of the wetland category, the habitat score, maintaining a 100-foot wide corridor between adjacent priority habitats, and/or complying with the minimization measures in LFP Table 16.16.320-2 (LFP 16.16.320.A.1).

It is not feasible to maintain a 100-fooot wide corridor between Wetlands E, EE, and F and Wetland A and/or McKinnon Creek (see below) due to the presence of the existing maintenance access road, which bisects the site. The access road is critical to maintain the water district's infrastructure and no alternative location is feasible. The proposed project will comply with the applicable measures in Table 16.16.320-2. The proposal will not create any of the permanent disturbances in the Table – lights, noise, toxic runoff, stormwater runoff, changes in water regime, pets and human disturbances, and/or dust. The new pump station is not anticipated to create noise levels significantly above ambient levels. Any temporary construction activities will be minimized as required and described in the SEPA documentation. Therefore, the wetland buffer widths under Table 16.16.320-1 are applied to all wetlands on the site (see Table 1).

Table 1. Project Area Wetlands and Buffers

Wetland	Category	Habitat Score	Standard Buffer
Wetland A	III	6 points	165 feet
Wetland E	III	6 points	165 feet
Wetland EE	III	6 points	165 feet
Wetland F	III	5 points	105 feet

McKinnon Creek is a perennial stream with documented fish use; therefore, it is a Type F stream. Type F streams in the City of Lake Forest Park require a standard 115 foot buffer (LFPMC 16.16.355.A), or with enhancement, a minimum buffer width of 86.5 feet (LFPMC 16.16.355.B). Where an existing legally established and improved public right-of-way or improved easement road interrupts a portion of the stream buffer, the required stream buffer may be waived in that portion of the buffer isolated from the stream (LFPMC 16.16.355.C).

2.1.4 Vegetation

The project area is vegetated with the exception of the gravel road, water tank, and small well houses. Non-wetland vegetation is characterized by a diffuse canopy of bigleaf maple (*Acer macrophyllum*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), and red alder (*Alnus rubra*). Salmonberry (*Rubus spectabilis*), sword fern (*Polystichum munitum*), pacific dewberry (*Rubus ursinus*), low Oregon grape (*Mahonia nervosa*) and Himalayan blackberry (*Rubus armeniacus*) dominate the understory, with some localized dense patches of the invasive weeds English ivy (*Hedera helix*) and old man's beard (*Clematis vitalba*).

In general within wetlands, common vegetation includes western red cedar and red alder in the canopy. Salmonberry, prickly currant (*Ribes lacustre*), Pacific ninebark (*Physocarpus capitatus*), and Himalayan blackberry dominate the shrub layers, and skunk cabbage (*Lysichiton americanus*), lady fern (*Athyrium cyclosorum*), giant horsetail (*Equisetum telmateia*), creeping buttercup (*Ranunculus repens*), mannagrass (*Glyceria elata*), stinging nettle (*Urtica dioica*), and small-fruited bulrush (*Scirpus microcarpus*) form the groundcover.

Non-native invasive species are also abundant within the project area. Himalayan blackberry occurs in locally dominant patches in and near Wetlands A, E, EE and F and covers the hillside buffer area upslope of the existing large water tank at the south edge of parcel -6570. A large stand of English laurel (*Prunus laurocerasus*) dominates the sub canopy in parcel -0176 and south of the project area on an adjacent residential lot. English ivy (*Hedera helix*) occurs throughout the entire site, blankets the steep slope uphill of Wetland A, and is climbing the trunk of several large trees near the location of the proposed pump house. Invasive knotweed (*Polygonum sp.*) occurs at the roadside on the steep slope near Wetland A, but is only a small patch at this time. Old man's beard covers trees and shrubs in and near Wetlands E and EE. Himalayan blackberry, knotweed, and old man's beard are listed in King County's Noxious Weed list. English ivy is listed as species of concern.

2.1.5 Habitat

The large, relatively undeveloped parcels, with restricted human access, and various habitat types, provide a moderate to high level of habitat function. A

stream and riparian ribbon runs north/south through the area, with associated wetlands and non-wetland forest. Structural complexity is provided by a multi-strata open forest which includes shrub and herbaceous layers, and small herbaceous and shrub dominated patches occur scattered within the forest. Dense vegetation provides refuge for a variety of native birds and raptors. Large, downed woody debris and standing snags occur throughout the site. McKinnon Creek flows southwest, passing through residential neighborhoods and connecting to Lyon Creek just upstream of the LFP Towne Center. The riparian corridor is well vegetated with native trees and shrubs, although some buffer areas are narrow.

However, despite being a relatively large patch of forest in an otherwise residential area, the project area is disconnected it from other large undisturbed areas like Lake Washington and other nearby forested parks and open spaces. This limits accessibility to sources of food and shelter for native wildlife. Lake Washington is located approximately 0.5 miles southeast of the project site.

3 PHOTOGRAPHS

Figure 2. A well house (a repurposed plastic outhouse) is located in a portion of Wetland E. The water storage tanks and storage containers are in the background. (11/29/2016)

Figure 3. View of Wetland EE upslope (left) of the access drive. Photo looking south. (11/29/2016)

Figure 4. View of the steep slope within Wetland A buffer, approximately where the proposed pump facility building would be located. (11/29/2016)

Figure 5. View of Wetland A and its buffer, facing west from parcel -0176. Wetland A is bordered by a dense stand of English laurel. (11/29/2016)

Figure 6. View downslope, facing southwest, at approximate location of the proposed eastern ‘arm’ pipes. (11/29/2016). Himalayan blackberry and some salmonberry dominate the shrub layer.

4 PROJECT DESCRIPTION

The proposal is to construct a new pump house on parcel -0176 and connect the structure to infrastructure on parcel -6570 with a new set of mains that extend north from the pump house. The pump house will be and above ground structure set into the hillside; the proposed water mains will be largely underground.

4.1 Proposed Impacts

The project elements will have impacts to critical areas and associated buffers on both subject parcels.

The pump house structure will be constructed on a sensitive area steep slope in parcel -0176. As stated, the PAUE for steep slope impacts was approved in a 2016 Hearing Examiner decision. But the pump house and associated clearing limits will also impact combined critical area buffers (from McKinnon Creek and various on-site wetlands) for which no decision or approval has yet been granted.

The associated underground water lines, as shown in the attached drawings, will extend northward from the pump house, crossing through Wetland E and Wetland EE and the associated buffers on parcel -6570 and the City ROW. Some lines branch off from the mains and cross through wetland and buffer (see engineering plans). As the earth will be replaced over these mains, the impacts are considered temporary.

A total of 14 trees have been identified for removal due to proposed impacts from the project. A summary of the impacts to trees is summarized in the Urban Forestry report entitled 2016-SATR-0011 LFPWD (October 26, 2016), along with the more recent Arborist Assessment, prepared by the Watershed Company (February 6, 2019).

4.2 Mitigation Sequencing LFPMC 16.16.130

Section 16.16.130 requires an applicant to make all reasonable efforts to avoid, minimize and compensate any and all critical areas and their buffers or setbacks.

Avoidance:

Avoidance is not entirely possible due to the nature of the District facility. The springs that are a source of water for the District also support slope wetlands. As stated in the introduction, the existing pump house and infrastructure need to be upgraded, and the location for building is restricted to the location to near the McKinnon Creek and associated spring-fed wetlands. The existing water distribution network, to which connections will be made, is located in and near on-site wetlands. As the upgrades are a part of an essential public utility, not

entirely feasible to avoid impacts to the wetlands or the regulatory buffers that surround them.

Minimization:

Construction plans have been modified to minimize the impacts to the minimum necessary. The walls of temporary trenches through the wetland will be shored to avoid a scenario in which a 2:1 layback slope would be excavated to install the pipes. That scenario would have a much larger impact to wetland and buffer vegetation. The proposed shoring construction technique will limit the extent of vegetation disturbed and the volume of excavated dirt to be stockpiled in the buffer. This construction method will preserve a significant amount of wetland and buffer that would have otherwise been cleared and graded. Work limits have also been narrowed from the original plans in the wetland areas.

Compensation:

Following completion of the construction project, buffer restoration will occur to offset permanent buffer impacts. Meanwhile, areas of temporary wetland impact will be mitigated through the enhancement of degraded wetland areas. Finally, all temporary impacts within the updated wetland buffer areas will be restored according to the planting typicals in the mitigation plan. The new, larger buffers encumber the entire project area. Thus, all temporary impacts resulting from the project will require restoration. The soil will be replaced, and TESC measures including straw wattles and silt fencing will be installed to help protect water quality. A diverse mix of native trees, shrubs and groundcover will be installed. The mitigation area will be monitored for a period of at least five years, held to a series of performance standards listed in Chapter 6 below, and a financial guarantee will be in place to ensure the site successfully establishes.

4.3 Impact Assessment / Lift Analysis

A total of 2,550 square feet of permanent buffer impact will result from construction of the new pump house. Meanwhile, 2,530 square feet of wetland will temporary disturbed during construction, whereas 30,290 square feet of buffer may be temporarily disturbed. As mitigation for temporary wetland impacts, a total of 8,000 square feet of wetland will be enhanced, equating to a ratio of 3.16:1. Meanwhile, 17,755 square feet of buffer will be restored, resulting in a ratio of 6.96:1 for permanent buffer impacts. Finally, all areas of temporary buffer impacts will be restored, at the direction of the restoration specialist.

Table 2 - Functional Lift Analysis

Critical Area/ Buffer Functions	Existing Conditions	Proposed Conditions	Functional Improvement?
Water Quality	The water quality function of the wetland buffer is moderately high. Most of the buffer consists of a dense understory that provides filtering function, however some areas are dominated by weedy invasive species	Install native trees, shrubs and groundcover where cover is lacking after invasive species are removed and after the project is complete.	Minor lift: Soil stabilization through tree and shrub planting is increased. Introduction of rigid vegetation will slow surface water flowing toward the wetland and adjacent stream.
Hydrology	The wetland buffer provides moderately high hydrologic function. Dense vegetation in most areas helps slow storm water flowing in the parcel, attenuating flood flow. Areas of primarily deciduous canopy, and less dense native species composition may not help reduce peak flows.	Plant densely in areas that currently lack understory vegetation and add a thick layer of woodchip mulch to help slow storm water flows. Plant conifers. Implement TESC measures.	Minor lift: Addition of plants and woodchip mulch will help attenuate flood flow during heavy rain events. Large conifer trees hold considerable amounts of rainwater, releasing some slowly and allowing some to evaporate back into the atmosphere. Addition of conifers will provide more flood flow reduction as they mature.
Habitat	Habitat function is currently moderate. Habitat features are plentiful on-site. The buffer is structurally, though not compositionally diverse. Extensive invasive species are present.	Increase vegetative diversity through addition of conifers and other species. Remove invasive species.	Yes: After a temporal loss of function, Increased vegetation structure and native plant cover through planting and invasive species removal will add cover and forage opportunities for wildlife.
Net Condition	Moderate to high function is present overall with good vegetation cover and structure however conifers are lacking and invasive species are abundant.	Invasive species removal, conifer planting throughout retained buffer and dense buffer planting between driveway and wetland	Yes: water quality function increases through native plantings in less dense areas; habitat function improves with added vegetation diversity. Hydrologic function is bolstered with addition of more conifer trees, and invasive species removal.

5 LOCAL REGULATORY FRAMEWORK

This Chapter details how this proposal meets the applicable sections of the code. The components of the proposed pump house that are specifically addressed by this report are the wetland and critical area buffer impacts. Impacts to steep slopes on parcel have already been addressed and approved under the Hearing Examiner's decision in 2015 (file number 2015-PAUE-0001, decision on August 12, 2016). The proposed zoning non-conformity was also addressed by the Hearing Examiner in the same decision (file number 2015-CU-0001). The conditions of that approval are incorporated into the attached mitigation plan, but the steep slope impacts are not addressed by this report.

In the City of Lake Forest Park, wetlands, streams and their respective buffers are afforded protection under Chapter 16.16 of the LFPMC. Applications for a development proposal on a site determined by the planning director to be subject to the requirements of Chapter 16.16 are required to have a critical areas study completed. Critical areas study requirements are detailed below.

5.1 LFPMC 16.16.330 – Wetlands – Permitted Alterations.

The proposed wetland impacts meet the condition of the permitted alterations under the LFPMC. Subsection 16.16.330(B)(6) allows for wetland crossings provided that the planning director finds that no possible alternative exists, the crossings minimize impact to the wetland and provide mitigation for unavoidable impacts, the wetland hydrology is not changed, important habitat functions are not disturbed, and the construction is scheduled during periods of low water tables.

The following is a description of how this proposal meets those criteria. As stated above, due to the constraints and specific function of the pump house, no feasible alternative exists that would be less impactful to the on-site wetlands. As stated in the introduction, the existing pump house and infrastructure on-site need to be upgraded to serve the water district customers. The only location suitable for the facility is to be located near the naturally-occurring springs in the McKinnon Creek ravine, which provide the water to the District, but that also support the wetlands that will be impacted by the proposal. Connections to the existing water distribution network need to be made in and near the existing wetlands. It is therefore not feasible to completely avoid all impacts to the wetlands or the regulatory buffers that surround them.

However, construction plans have been modified to minimize the impacts to the minimum necessary. The walls of temporary trenches through the wetland will be shored to avoid needing to lay back (at a 2:1 slope) the trench walls into the surrounding wetland and buffer. This technique will also limit the amount of excavated dirt to be stockpiled in the buffer. This strategy is preserving a significant amount of wetland and buffer that would have otherwise been cleared and graded.

Although wetland hydrology will be temporarily altered during construction, the soil surface will be restored, and no permanent alteration to hydrology is expected. Habitat function will be temporarily disrupted by vegetation clearing. Chapter 6 details the proposal to mitigate for the wetland and critical area buffer impacts through a dense and diverse planting plan. Although there will be some temporal loss to habitat function, the plan is expected to replace and eventually lift the function by removing competitive weeds and reestablishing a new generation of deciduous and evergreen trees.

The construction work will be scheduled for the dry season in order to limit the impact to water quality and hydrologic function.

5.2 LFPMC Section 16.16.110 – Contents of a Critical Areas Study

The following is a description of how this report meets the content requirements set forth in the code.

Critical area studies shall be in writing and:

1. *Identify and characterize sensitive area as a part of a larger development proposal site;*

   Response: The on-site critical areas are summarized in the Wetland Delineation Study, attached to this report in Appendix B.

2. *Assess hazards posed by the development proposal to any critical areas or critical area buffers on or adjacent to the proposed site;*

   Response: Sections 3.2 and 3.4 of this report assess potential impacts to Critical Areas.

3. *Propose adequate mitigation, maintenance, monitoring and contingency plans and bonding measures, if necessary;*

   Response: As compensatory mitigation for the impacts proposed, wetland buffer enhancement plantings and invasive species removal are proposed throughout the entirety of the retained buffer (see Appendix

A). A detailed 5-year maintenance and monitoring period is included in the plan to ensure the success of the project.

4. *Provide a scale map of the development proposal site;*

   Response: See Appendix A.

5. *Provide detailed studies, as required.*

   Response: A Wetland Delineation Report is included in Appendix B.

6 MITIGATION PLAN

This mitigation plan is intended to compensate for the unavoidable temporary and permanent impacts to wetlands and critical area buffer that will arise as part of the LFPWD pump house project. The plan was prepared in accordance with LFPMC 16.16.340. The 14 lost trees will be replaced with 87 native trees, a 6.1:1 ratio. Wetland impacts, although temporary, will be compensated at a 3:16 ratio to meet the requirements of the code. Disturbed wetland area will be enhanced, with other nearby degraded wetlands also targeted for weed removal and planting to reach the 3:16 ratio. A total of 8,000 square feet of wetland will be enhanced to compensate for 2,530 square feet of impact (a 3.16:1 actual ratio). Temporary critical area buffer impacts will be mitigated at a 1:1 ratio and be located in place of the temporary disturbance. Permanent buffer impacts associated with the well house structure will be compensated through enhancement planting in a buffer area dominated by English ivy and cherry laurel between the proposed pump house structure and Wetland A. These impacts will be compensated at a ratio of 6.96:1. A five-year maintenance and monitoring period is proposed that will ensure the successful establishment of the mitigation site.

6.1 Goal

Achieve no net loss of ecological function of the wetland and wetland buffer following completion of the project.

6.1.1 Objectives

1. Remove invasive weeds from the mitigation area.
2. Restore and enhance the wetland and critical area buffer with a diverse array of native tree, shrub and groundcover species. Additional temporarily disturbed areas within buffers are to be restored, as well.

3. Ensure the site successfully established through implementation of maintenance and monitoring period, and financial surety device.

6.2 Performance Standards

This section, along with other elements from this report is intended to satisfy Section 16.16.120 of the LFPMC. The standards listed below will be used to judge the success of the mitigation installation over the duration of the five year maintenance and monitoring period. If performance standards are met at the end of Year 5, the site will then be deemed successful. Failure to meet the performance standards may require additional maintenance and monitoring.

The standards listed below will be used to judge the success of the plan over time.

1. Survival: Achieve 100 percent survival of installed plants by the end of Year 1. This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.

2. Native cover in woody vegetation areas:

    - Achieve 60% cover of native trees and shrubs by Year 3. Volunteer species may count towards this cover standard.

    - Achieve 80% cover of native trees and shrubs by Year 5. Volunteer species may count towards this cover standard.

3. Species diversity: Establish at least 3 native tree species, 6 native shrub species, and 2 native groundcover species in the planted area by Year 5. Volunteer species may count towards this standard.

4. Invasive cover: No more than 10 percent cover by invasive weed species listed by the *King County Noxious Weed List* in any given year.

5. Provide a financial security device that satisfies LFPMC Section 16.16.150.

6.3 Monitoring Plan

This monitoring program is designed to track the success of the mitigation site over time and to measure the degree to which it is meeting the performance standards outlined in the Section above.

6.3.1 Monitoring Methods

Note: specifications for items in **bold** can be found below under "Material Specifications and Definitions."

The installed vegetation will be monitored for five years after initial installation. Within two months of plant installation, an as-built report will be prepared to

document the general implementation of the mitigation plan. Any minor changes to the approved mitigation plan that are required by field conditions or plant availability during plan implementation must be documented in the as-built report. The monitoring period begins once the as-built report has been approved by the City of Lake Forest Park. The approved as-built report then becomes the approved mitigation plan for future inspection purposes.

During the as-built inspection, the monitoring **biologist** will install monitoring transects. Approximate transect locations will be marked on the as-built plan. Transects will be established in both the wetland enhancement area, and the buffer enhancement area. Transects will be as long as allowed by each particular planting area, but will cover at least half the length of each planted area, with a preferred length of 100 feet. All other planted areas not directly covered by transects will be visually assessed and noted as to how they compare to the performance standards.

Monitoring will take place annually for five years and include a spring and early fall visit. The spring monitoring visit will record maintenance needs such as weeding, mulching, or plant replacement. Following the spring visit the **biologist** will notify the owner and/or maintenance crews of necessary early growing season maintenance. The regular yearly monitoring visits will take place after the growing season in the late summer or early fall. For each fall visit, the following will be recorded and reported in an annual report submitted to the City of Lake Forest Park:

1. General summary of the spring visit.
2. Counts of live and dead trees and shrubs by species in the planted areas in Year 1. Significant die-off should be reported by species and quantity in any other monitoring year.
3. Counts of dead plants where mortality is significant in any monitoring year.
4. Estimate of native tree and shrub cover using the line intercept method along established transects.
5. Estimate of non-native, invasive species cover in planted areas using the line intercept method.
6. Notes or sketches of non-native weed problems in planted areas not captured by the transect cover assessment.
7. Photographic documentation from fixed reference points and transect ends.
8. Intrusions into the planting areas, vandalism or other actions that impair the intended functions of the planted areas.

9. Recommendations for maintenance or repair of any portion of the mitigation area.

6.3.2 Contingencies

If there is a significant problem with the restoration areas meeting performance standards, a contingency plan will be developed and implemented. Contingency plans can include, but are not limited to: soil amendment; additional plant installation; and plant substitutions of type, size, quantity, and location.

6.4 Maintenance Plan

The site will be maintained for five years following completion of the construction. Note: specifications for items in **bold** can be found above under "Material Specifications and Definitions."

1. Replace each plant found dead in the spring monitoring visit during the upcoming fall dormant season (October 15th to March 1st).

2. Follow the recommendations noted in the spring monitoring site visit.

3. General weeding for all planted areas:

    a. At least twice-yearly, remove all competing weeds and weed roots from beneath each installed plant and any desirable volunteer vegetation to a distance of 18 inches from the main plant stem. Weeding should occur at least one time each during the spring and summer. Frequent weeding will result in lower mortality and lower plant replacement costs.

    b. More frequent weeding may be necessary, depending on weed conditions that development after plan installation.

    c. Do not use string trimmers (weed whacker / line trimmer) within the mitigation area.

4. Remove holly and Cherry laurel plants by hand, including roots where possible. Cutting to the ground where plant size is too large to remove roots is acceptable. Check cut trunks yearly to cut off any new sprouts.

5. Herbicide application SHALL NOT be allowed at this side as a precaution against groundwater/potable water source contamination.

6. Mulch the weeded areas beneath each plant with **wood chip mulch** as necessary to maintain a 4-inch thick mulch ring and keep down weeds.

7. Irrigate the buffer planting area during the dry periods for at least the first three growing seasons. (It is assumed that wetland areas will naturally have sufficient water during the dry period). The applicant shall either install a

temporary irrigation system or hand water such that all planting areas receive at least one inch of water per week between June 1 and September 15 in years 1 through 3.

6.5 Construction Notes and Sequence

The Restoration Specialist shall monitor:

1. All site preparation, including invasive species management.
2. Plant material inspection.
   a. Plant material delivery and salvaged plant inspection.
   b. 100% plant installation inspection.

6.6 General Work Sequence

1. Following completion of the proposed project, install or maintain TESC measures as shown on the plan drawings.

2. Remove invasive weeds from the areas that remain vegetated after site work is finished (in mitigation areas that were not excavated for the project). Use only mechanical means (no herbicide shall be used on-site). Care should be taken to not disturb or damage the existing native vegetation including salmonberry, red elderberry, and others that exists in the planting areas that were not cleared.

3. Amend soil where native topsoil was lost due to excavation by spreading 2 inches of **compost** according to the plan. **Compost** shall be incorporated into the top 8 inches of the soil by “ripping” or “tilling”.

4. Notify the **Biologist** after delivery of the plant material but prior to planting. Biologist will inspect and approve plants and determine if and where soil amendments may be needed.

5. Prepare a planting pit for each plant per the planting details. Install the plants per the planting detail.

6. Water individual plants thoroughly per best planting practices immediately after planting to eliminate air pockets and to ensure root to soil contact.

7. Apply a **wood chip mulch** ring, four (4) inches thick and extending to at least 18” from the stem of the plant.

8. Install a temporary **irrigation system** in the buffer enhancement area capable of supplying a minimum of 1 inch of water per week to all revegetated areas from June 1 through September 15 for the first three years following installation.

9. Survival in a healthy condition is to be guaranteed for all of the planted specimens through their entire first growing season. An acceptance inspection is to be made during the Year 1 monitoring visit following the initial planting and any dead, missing, or unhealthy specimens are to be replaced. Replacement is to occur during the then-upcoming dormant season.

6.7 Material Specifications and Definitions

- **Fertilizer**: No fertilizer shall be used on-site.
- **Irrigation system:** A temporary system capable of delivering at least one inch of water per week from June 1 through September 15 for at least the first three years following installation. Hand watering or water truck may be used provided the water delivery that will meet the irrigation flow and coverage requirement specified in this document. Failure to appropriately water can lead to very high mortality and replacement costs.
- **Biologist**: The Watershed Company [(425) 822-5242] personnel or other persons qualified to evaluate environmental restoration projects.
- **Wood chip mulch**: Wood chip mulch shall meet WSDOT Standard Specifications for Road, Bridge, and Municipal Construction for Wood Strand Mulch as defined 9-14.4(4). Wood strand mulch shall be a blend of angular, loose, long, thin wood pieces that are frayed, with a high length-to-width ratio, and it shall be derived from native conifer or deciduous trees. A minimum of 95 percent of the wood strand shall have lengths between 2 and 10 inches. At least 50 percent of the length of each strand shall have a width and thickness between 1/16 and ½ inch. No single strand shall have a width or thickness greater than ½ inch. The mulch shall not contain salt, preservatives, glue, resin, tannin, or other compounds in quantities that would be detrimental to plant life. **Sawdust or arborist wood chips or shavings are not acceptable.**

  NOTE: Pacific Topsoil (and most other soil wholesalers) sells a material that meets the above specification called "DOT Woodchip Mulch".
- **Compost**: Compost shall meet WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, 9-14.4(8) for Fine Compost.
- **Biologist**: Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects.

6.8 Timing

LFPMC Sections 16.16.140 requires that all work approved or mitigation required by a critical areas permit shall be completed prior to the final inspection and occupancy of a project or sooner as prescribed by the planning director. An extension may be sought from the planning director if it can be demonstrated

that project sequencing does not allow for mitigation completion in the specified timeline.

6.9 Assurance Device

LFPMC Sections 16.16.150 requires the applicant provide to the City an assurance device to cover the cost of monitoring and maintenance and other contingencies for the duration of the monitoring and maintenance period. The planning director shall establish the conditions of the bond or other security according to the nature of the proposed mitigation, maintenance or monitoring and the likelihood and expense of correcting mitigation or maintenance failures.

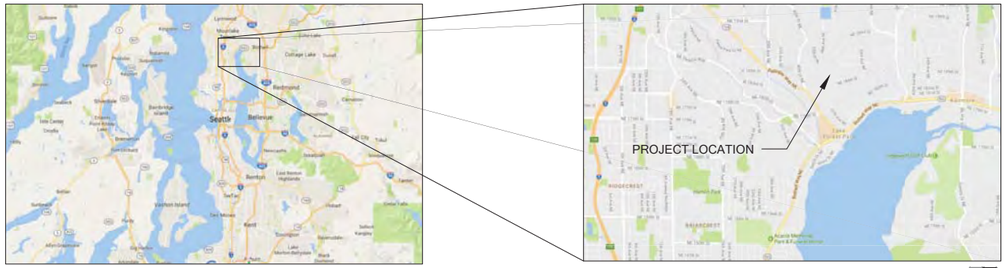
7 SUMMARY

Construction of a new pump house and associated infrastructure is proposed on the subject parcels that will impact wetland and critical area buffer. The proposed mitigation in this document is designed to no-net loss provision, as well as the other policy goals outlined in Section 16.16.010 of the Lake Forest Park Municipal Code. Wetland impacts, although temporary, will be compensated at a 3:16 ratio using a native plant palate designed to improve water quality and habitat function. Permanent critical area buffers impacted will be mitigated at a 6.96:1 ratio and be located in place of the temporary disturbance. Cherry laurel and ivy are targeted for removal and a mix of trees, shrubs and groundcover endemic to the area chosen for replanting. Plants were chosen to complement the surrounding forest and ensure a body of young climax species trees establish to age-stratify the existing forest. Additional areas of temporary disturbance will be restored in place, at the direction of the restoration specialist. An overall net gain in critical area buffer functions and values is expected.

APPENDIX A

Mitigation Plan

LAKE FOREST PARK PUMPHOUSE



VICINITY MAPS

SHEET INDEX

W1	EXISTING CONDITIONS
W2-W3	IMPACTS
W4-W5	RESTORATION/ MITIGATION PLAN
W6-W7	TESC AND SITE PREP PLAN
W8	TESC DETAILS AND INVASIVE SPECIES REMOVAL NOTES
W9	PLANTING TYPICAL SCHEDULE
W10	PLANT INSTALLATION NOTES AND DETAILS
W11	MITIGATION PLAN NOTES

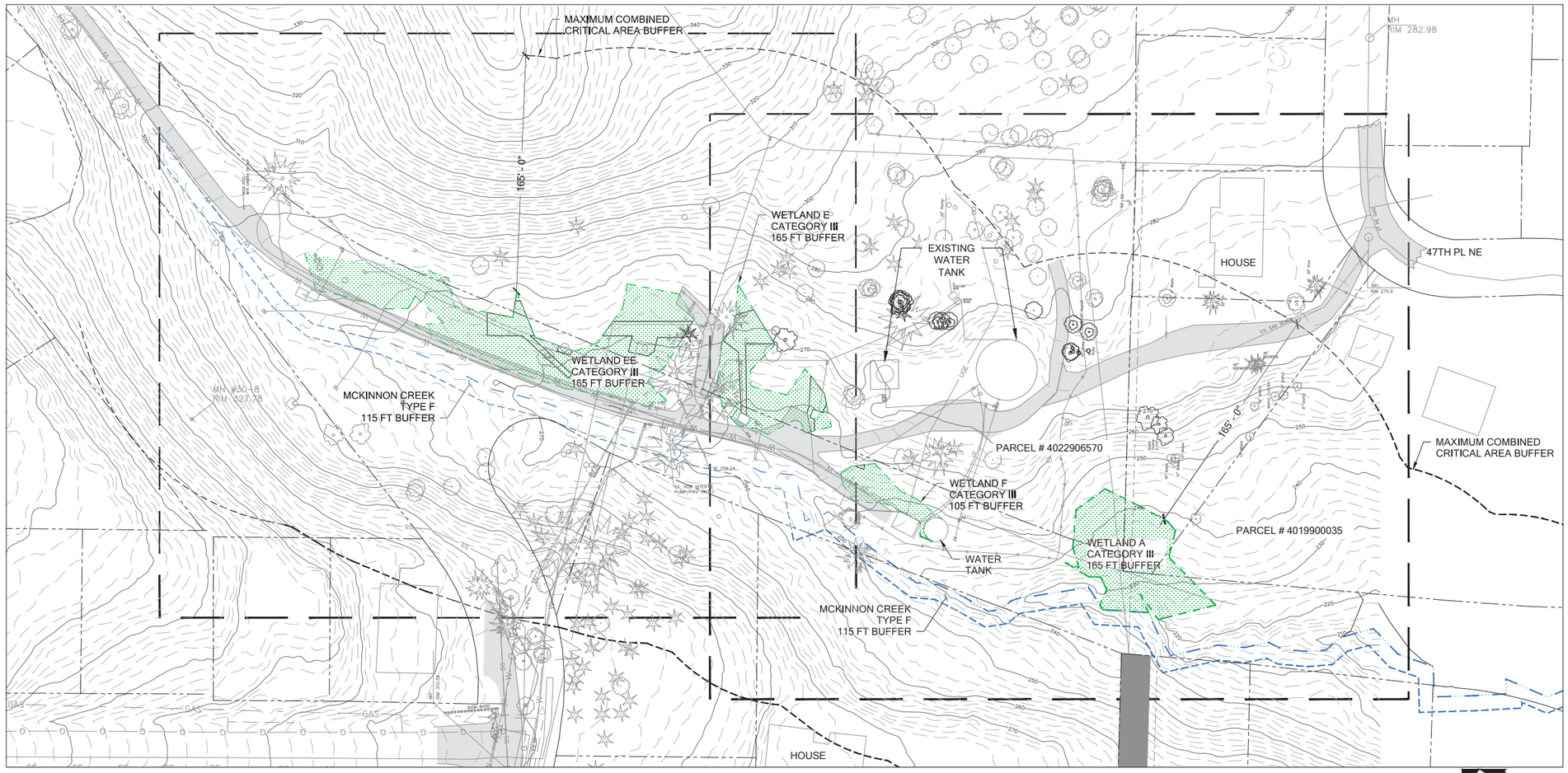
NOTES

1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY ON NOVEMBER 29, 2016.
2. WETLAND AND STREAM DELINEATION FLAGS GPS-LOCATED WITH A TRIMBLE XH.
3. SURVEY RECEIVED FROM MUNDALL ENGINEERING AND CONSULTING. 3635 H STREET ROAD, MAPLE FALLS, WA 98266. 360-319-1285.

LEGEND

EXISTING FEATURES

- EXISTING STREAM OHWM
- APPROXIMATE STREAM BOUNDARY
- DELINEATED WETLAND BOUNDARY
- MAXIMUM COMBINED CRITICAL AREA BUFFER
- EXISTING ROAD



EXISTING SITE CONDITIONS

THE WATERSHED COMPANY

750 Sixth Street South
Kirkland WA 98033

p 425.822.5242 f 425.827.8136
www.watershedco.com

Science & Design

LAKE FOREST PARK PUMPHOUSE
MITIGATION PLAN
PREPARED FOR LAKE FOREST PARK WATER DISTRICT
4029 NE 178TH ST
LAKE FOREST PARK, WA 98155

SUBMITTALS & REVISIONS

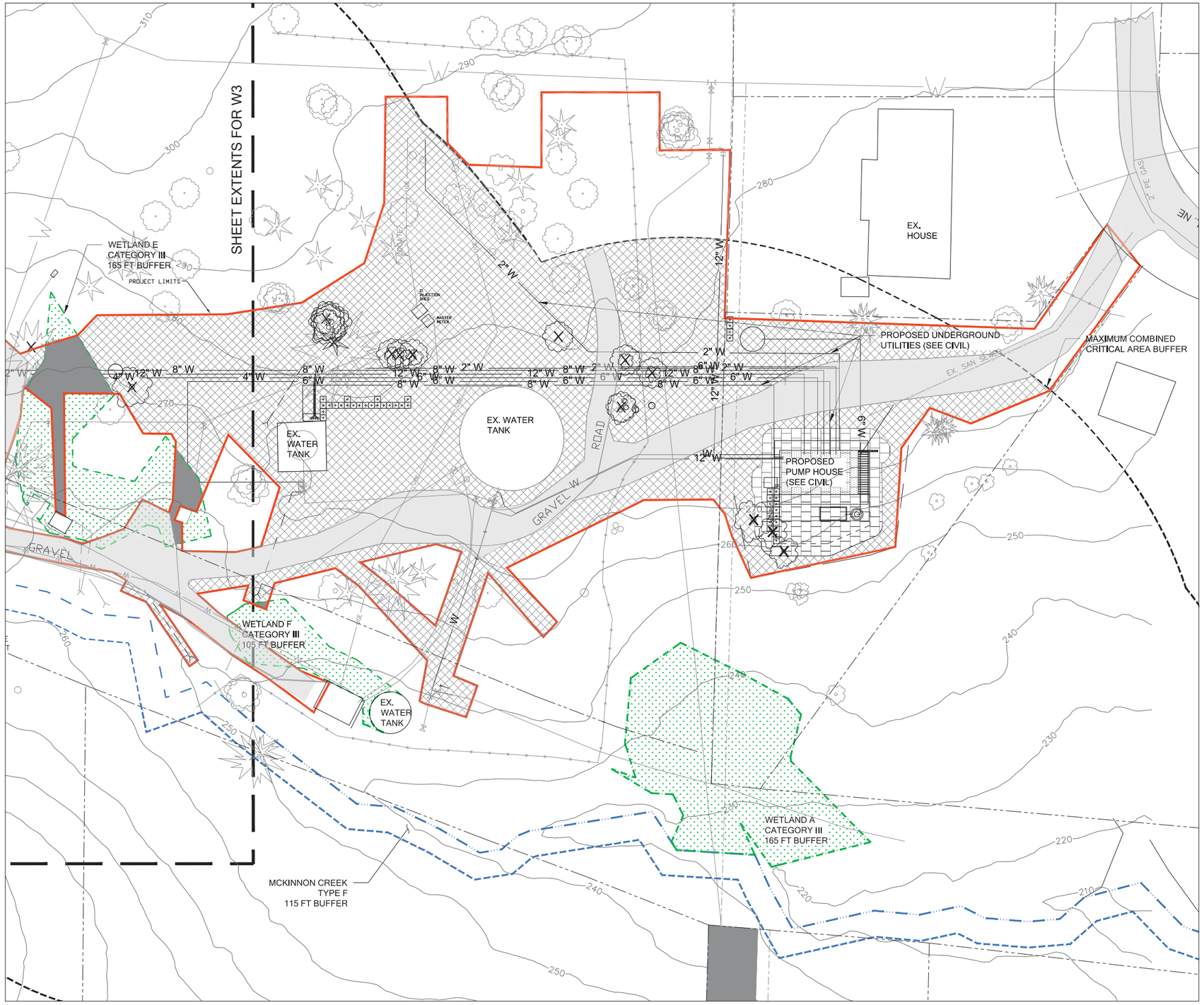
NO.	DATE	DESCRIPTION	BY
1	02-01-17	PERMIT SET	AJ
2	03-22-19	UPDATE	AL

GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
SCALE ACCORDINGLY.

PROJECT MANAGER: KB
DESIGNED: AJ / LV
DRAFTED: AJ / LV
CHECKED: JMF / AM
JOB NUMBER:
161129
SHEET NUMBER:
W1 OF 11

DATE: 3/26/2019 | PRINTED BY: AMANDA LARSON | FILENAME: 161129 LFP PUMPHOUSE_REV.DWG



LEGEND

EXISTING FEATURES

- STREAM BOUNDARY (NOT DELINEATED)
- EXISTING STREAM OHWM
- DELINEATED WETLAND BOUNDARY
- MAXIMUM COMBINED CRITICAL AREA BUFFER
- DECIDUOUS TREE
- CONIFEROUS TREE
- EXISTING ROAD

PROPOSED IMPACTS

- LIMITS OF WORK (SEE CIVIL)
- TEMPORARY WETLAND IMPACTS (2,530 SF)
- TEMPORARY CRITICAL AREA BUFFER IMPACTS (30,290 SF)
- PERMANENT CRITICAL AREA BUFFER IMPACTS (2,550 SF)
- DECIDUOUS TREE TO BE REMOVED (12)
- CONIFEROUS TREE TO BE REMOVED (2)

NOTES

1. SEE ARBORIST REPORT PREPARED BY THE WATERSHED COMPANY DATED FEBRUARY 6, 2019 FOR TREE ASSESSMENT AND REMOVAL INFORMATION.
2. FIGURES SHOWN IN ABOVE LEGEND REFLECT TOTALS FOR SHEETS W2 AND W3.
3. TEMPORARY CRITICAL AREA BUFFER IMPACTS SHALL BE RESTORED IN-PLACE AS REQUIRED BY THE RESTORATION SPECIALIST EXCEPT WHERE MITIGATION IS REQUIRED. SEE SHEETS W4 AND W5.

IMPACTS ASSESSMENT

THE WATERSHED COMPANY
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Critical Areas Study by Watershed Co.

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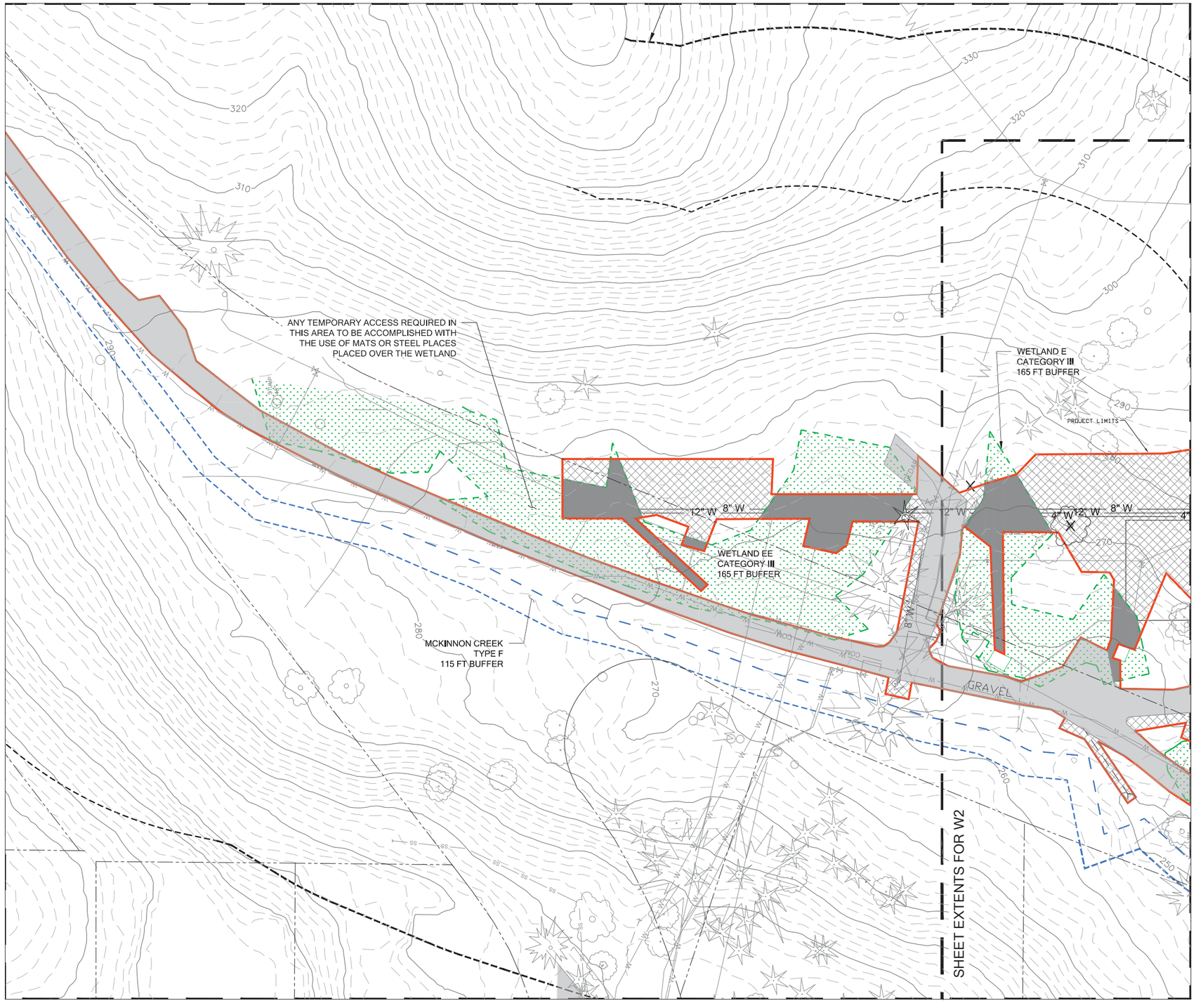

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NOTES

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0 10' 20' 40' 80'

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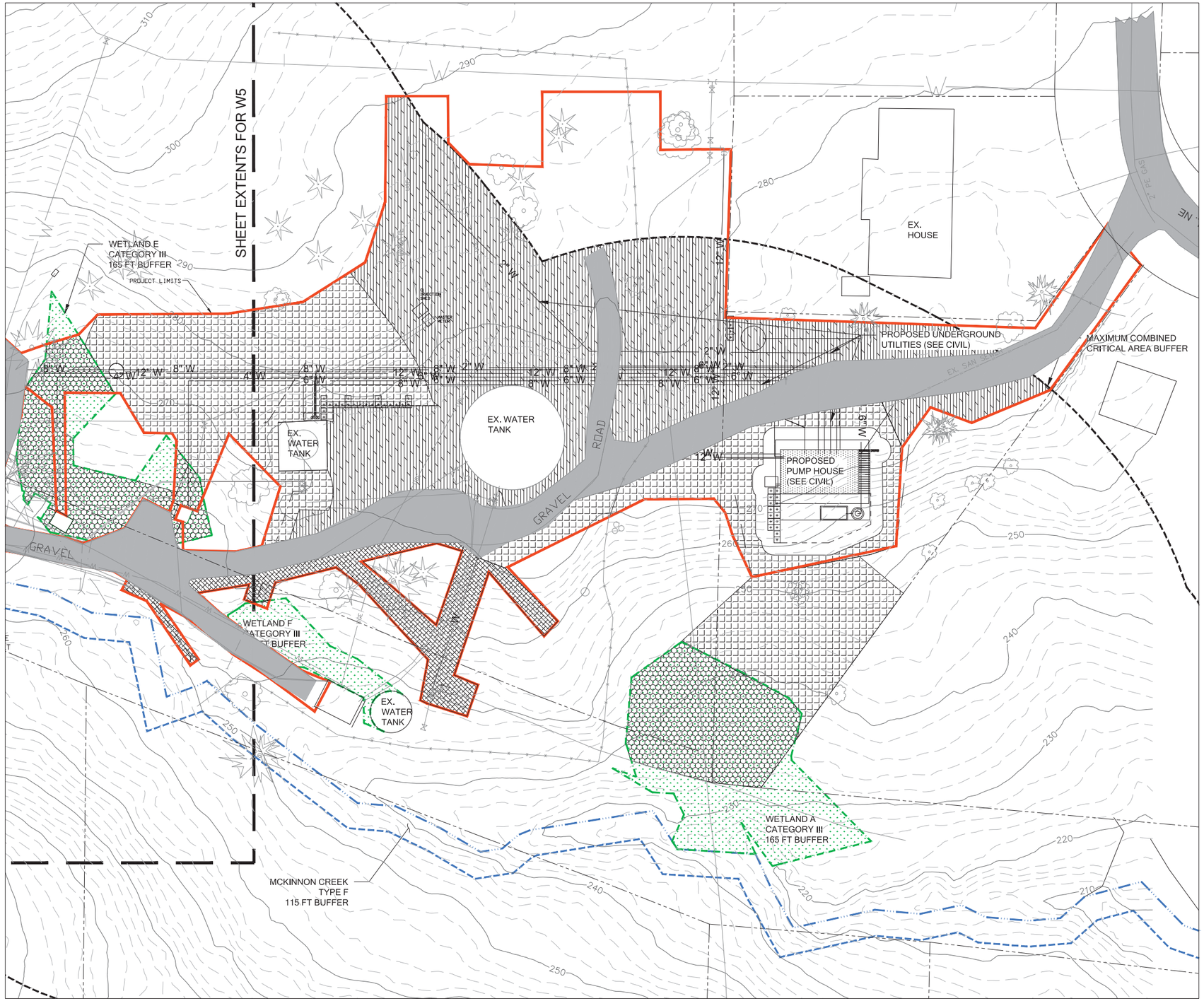

LEGEND

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PROPOSED MITIGATION PLANTING

SEE PAGE W9 FOR PLANTING SCHEDULE AND TYPICALS

- WETLAND MITIGATION TYPICAL 1 (8,000 SF)
- BUFFER MITIGATION TYPICAL 1 (14,700 SF)
- BUFFER MITIGATION TYPICAL 2 (3,055 SF)
- POTENTIAL TEMPORARY BUFFER MITIGATION (IN-KIND RESTORATION)

RESTORATION/ MITIGATION PLAN

0 10' 20' 40' 80'

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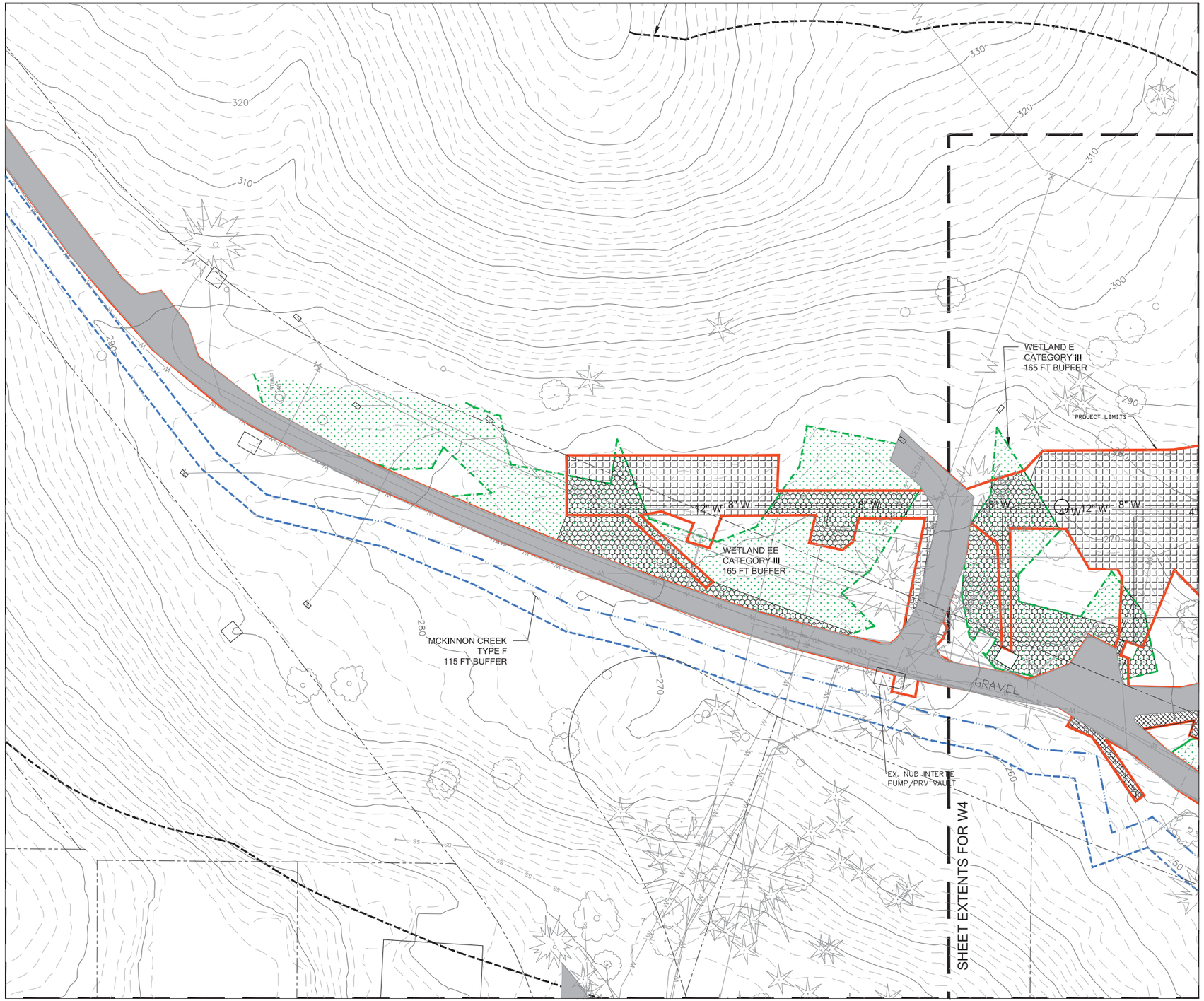

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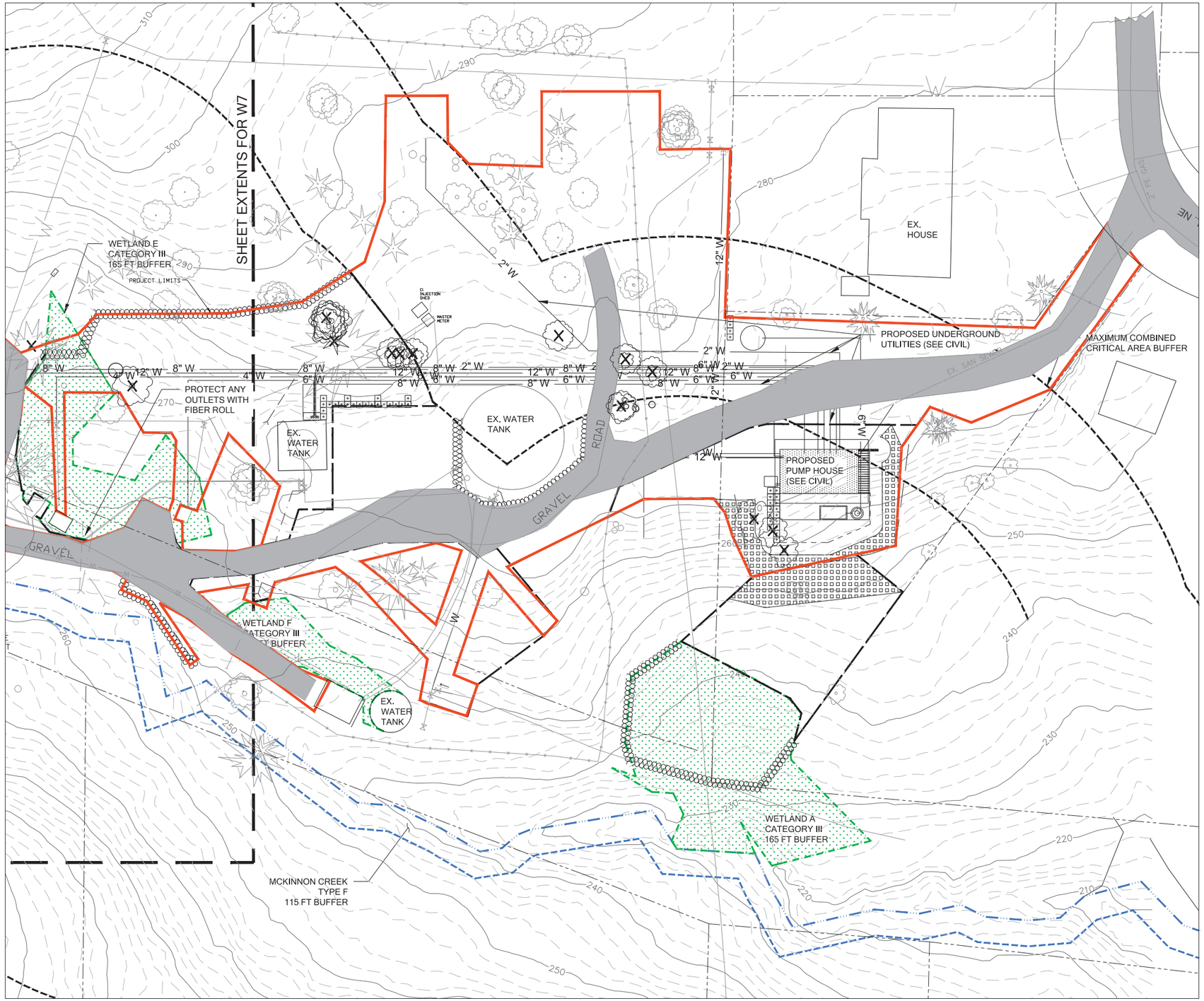

TESC & SITE PREP PLAN

LEGEND

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TESC FEATURES

- SILT FENCE (1 W8)
- FIBER ROLL (2 W8)
- HIGH-VIS FENCING (SEE CIVIL) (3 W8)
- GEOTEXTILE BLANKET (4 W8)

TESC NOTES - ALL AREAS

1. CONTRACTOR TO VERIFY TEMPORARY HIGH VISIBILITY FENCE IS INSTALLED AROUND THE LIMITS OF WORK PRE-CONSTRUCITON.
2. TREE RETENTION PLAN AND CALCULATIONS NOT INCLUDED IN THIS PLAN. SEE OTHERS.
3. SURVEY AND STAKE THE LIMITS OF WETLAND BUFFER ENHANCEMENT AREA PRE-CONSTRUCTION.
4. INSTALL SILT FENCE AND FIBER ROLL AS SHOWN ON THIS SHEET. MITIGATION CONTRACTOR TO COORDINATE WITH OTHER CONTRACTORS AS NEEDED TO ASSURE PROPER TESC MEASURES ARE IN-PLACE.

SOIL PREPARATION NOTES - ALL AREAS

1. REMOVE INVASIVE PLANT SPECIES AS SPECIFIED ON W6.
2. BACKFILL ANY DIVOTS WITH TOPSOIL TO RETURN TO EXISTING GRADE.
3. WHERE EXCAVATION OR TRENCHING HAS OCCURRED, INCORPORATE 2" OF COMPOST TO DEPTH OF 8".
4. PLANT.
5. INSTALL MULCH RINGS 4" DEEP WITH RADIUS OF 18" FROM PLANT STEM. SEE PLANTING PLAN FOR PLANT TYPE AND SPACING.

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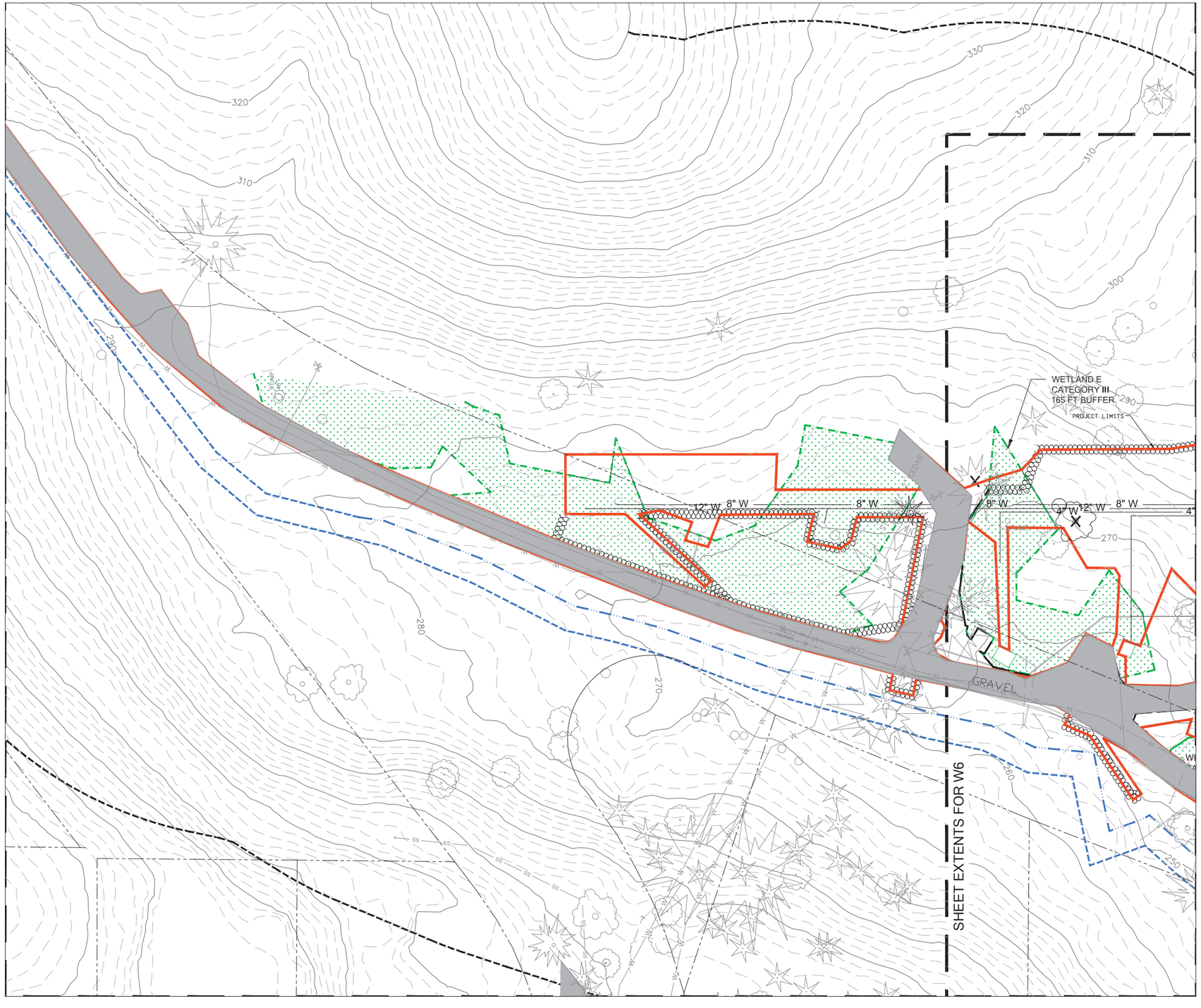

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TESC & SITE PREP PLAN

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W7 OF 11

DATE 3/26/2019 | PRINTED BY AMANDA LARSON | FILENAME 161129 LFP PUMPHOUSE_REV.DWG

NOXIOUS WEED REMOVAL & CONTROL

NOTE:
1. ALL INVASIVE PLANTS TO BE DISPOSED OF OF-SITE. NO INVASIVE SPECIES SHALL BE CHIPPED FOR REUSE AS MULCH.

REMOVE REED CANARYGRASS:

1. DIG WITH HAND TOOLS ALL REED CANARYGRASS RHIZOMES FROM THE PLANTING AREA.
2. REED CANARYGRASS CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL RHIZOMES SHALL BE GRUBBED OUT. AROUND SIGNIFICANT VEGETATION TO REMAIN, REED CANARYGRASS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
3. AFTER REED CANARYGRASS HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
4. DISPOSE OF REMOVED MATERIAL OFF SITE AT A PROFESSIONAL FACILITY.

REMOVE HIMALAYAN/EVERGREEN BLACKBERRY:

1. CUT ABOVE GROUND PORTION OF BLACKBERRY AND REMOVE OFFSITE. ENSURE THAT NO NATIVE PLANTS ARE REMOVED.
2. CANES SHALL BE REMOVED FROM CANOPY OF TREES TO REMAIN TO THE EXTENT FEASIBLE AS DETERMINED BY THE RESTORATION SPECIALIST.
3. DIG UP OR PULL THE REMAINING ROOT BALL. ENSURE THAT NO NATIVE PLANT ROOTS ARE DAMAGED.
4. REPLACE ANY DIVOTS CREATED WHEN REMOVING THE PLANT WITH APPROVED TOPSOIL.
5. ALL CANES SHALL BE CUT BACK AND REMOVED WITHIN THE TEN (10) FEET ADJACENT TO THE PLANTING AREA, INCLUDING TREE CANOPY. CANES SHALL BE PULLED AND REMOVED OFF-SITE.
6. REVEGETATE PER PLANTING PLAN. COVER WITH WOOD CHIP MULCH FOUR INCHES DEEP.
7. MONITOR SITE THROUGHOUT GROWING SEASON FOR EMERGING CANES AND GRUB OUT AND REMOVE ANY NEW PLANTS. CONTINUE TO CUT BACK CANES TEN (10) FEET FROM THE PLANTING AREA.

REMOVE ENGLISH IVY:

1. PHYSICALLY REMOVE ALL ENGLISH IVY VINES AND ROOTS FROM THE PLANTING AREA.
2. IF GROWING ON TREE TRUNKS, CUT VINES TO HEIGHT OF 4' OFF GROUND. DO NOT PULL DOWN FROM TREE CROWNS.
3. IVY CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL ROOTS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
4. IVY SHALL BE CUT AROUND THE BASE OF EACH TREE, TO PREVENT THE IVY FROM GIRDLING THE TREES. REMOVE STANDING VINES FROM THE LOWER 4' OF EVERY TREE TRUNK THAT CONTAINS ANY IVY.
5. AFTER IVY HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
6. DISPOSE OF REMOVED MATERIAL PROPERLY OFF SITE.

REMOVE JAPANESE KNOT WEED:

1. STAKE OUT INVASIVE CONTROL AREA AND VERIFY WITH RESTORATION SPECIALIST. INVASIVE PLANTS OTHER THAN KNOTWEED THAT IS NOT IN CONCENTRATED AREA ARE TO BE FLAGGED THROUGHOUT THE SITE AND THEN VERIFIED BY THE RESTORATION SPECIALIST FOR REMOVAL.
2. AT THE BEGINNING OF JUNE IN A CALENDAR YEAR CUT STEMS CLOSE TO THE GROUND USING A MACHETE, LOPPERS OR PRUNING SHEARS. BE SURE NOT TO SCATTER STEMS OR ROOT FRAGMENTS.
3. BE SURE THAT ALL PIECES OF STEMS AND CUT KNOTWEED ARE DISPOSED OF OFF-SITE PROPERLY TO PREVENT RE-INFESTATION.
4. ONCE STEMS HAVE BEEN CUT DOWN TO THE GROUND WAIT SIX (6) WEEKS FOR STEMS TO REGROW TO APPROXIMATELY 3'-6' ABOVE THE GROUND.
5. CUT ANY FLOWERS THAT HAVE APPEARED IN THE SHORT GROW BACK PERIOD.
6. TO ERADICATE THE KNOTWEED, EITHER SMOTHER CANES AT START OF PROJECT AND ON A REGULAR BASIS DURING THE GROWING SEASON, OR CUT AND REMOVE VEGETATED GROWTH REGULARLY DURING THE GROWING SEASON TO DEPLETE ENERGY STORES IN THE PLANT.
7. MONITOR KNOTWEED INFESTATION AND REPEAT AS NEW STARTS BEGIN TO COME BACK ONE MORE TIME BEFORE THE FIRST FROST.

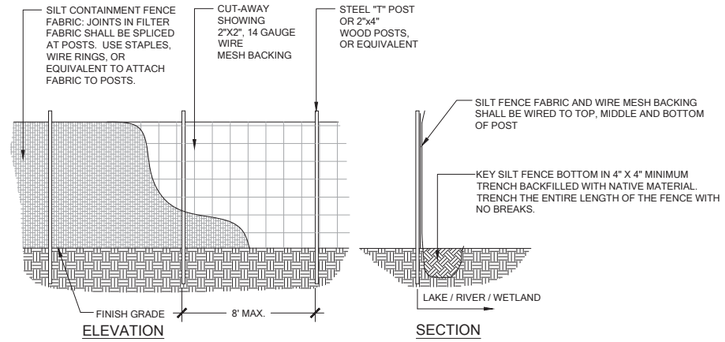
REMOVE ENGLISH LAUREL:

1. SMALL PLANTS CAN BE DUG UP WHEN SOIL IS MOIST (USE PROPER PERSONAL PROTECTIVE EQUIPMENT WHEN HANDLING BECAUSE THIS PLANT MAY BE POISONOUS).
2. TO CONTROL LARGER PLANTS, CUT STEMS AND TRUNKS BY HAND OR CHAINSAW, CUTTING AS CLOSE TO THE GROUND AS POSSIBLE, AND REMOVE STEMS TO MAKE IT EASIER TO CONTROL RE-GROWTH. LEAVING STEMS ON MOIST GROUND MIGHT RESULT IN SOME STEM-ROOTING.
3. AFTER CUTTING, PLANTS ARE VERY LIKELY TO RE-GROW. DIG OUT STUMPS INCLUDING AS MUCH ROOT AS POSSIBLE. TO AVOID REGROWTH, STUMPS SHOULD BE TURNED UPSIDE DOWN AND SOIL SHOULD BE BRUSHED OFF ROOTS. IF THE STUMPS ARE DUG UP, BE SURE TO STABILIZE THE AREA TO PREVENT EROSION.

REMOVE OLD MAN'S BEARD

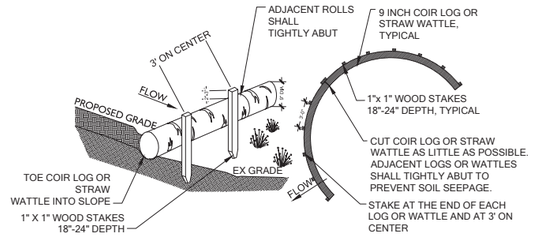
1. CUT VINES ON TREES OR FENCES AT ABOUT WAIST HEIGHT, FOLLOW THE VINE BACK TO THE ROOT AND DIG IT OUT. UPPER VINES CAN BE LEFT ON THE TREES SINCE THEY WILL DIE BACK, OR CAN BE REMOVED IF IT IS SAFE AND FEASIBLE TO DO SO.
2. MAKE SURE REMAINING VINES ARE NOT TOUCHING THE GROUND BECAUSE OLD MAN'S BEARD CAN FORM ROOTS AT STEM NODES
3. VINES GROWING ALONG THE GROUND SHOULD BE DUG UP AND REMOVED.
4. PULL SMALL PLANTS AND SEEDLINGS WHEN THE SOIL IS DAMP DURING WINTER OR SPRING. ALTHOUGH PLANTS CAN BE DUG UP YEAR ROUND, IT IS IDEAL TO DO SO DURING THE WINTER, WHEN MOST PLANTS ARE DORMANT, TO MINIMIZE DISTURBANCE TO THE SURROUNDING VEGETATION.

SILT FENCE MAINTENANCE STANDARDS:
1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS 6" IN DEPTH.



1 SILT FENCE

Scale: NTS

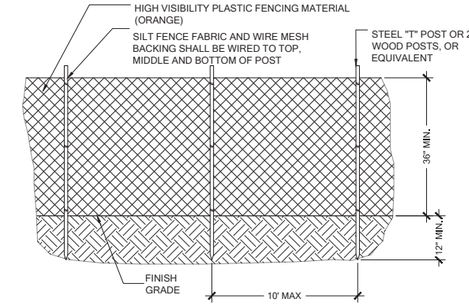


PLAN

NOTES
1. COIR LOG OR STRAW WATTLE SHALL BE INSTALLED PRIOR TO PLACEMENT OF HUMMOCK SOIL FROM STREAM EXCAVATION.
2. COIR LOG OR STRAW WATTLE SHALL BE 9 INCH IN DIAMETER.
3. STAKING: WOODEN STAKES ARE RECOMMENDED TO SECURE THE COIR LOG OR STRAW WATTLE. BE SURE TO USE A STAKE THAT IS LONG ENOUGH TO PROTRUDE SEVERAL INCHES ABOVE THE COIR LOG OR STRAW WATTLE: 18" IS A GOOD LENGTH FOR HARD, ROCKY SOIL; FOR SOFT LOAMY SOIL USE A 24" STAKE.
4. WHEN INSTALLING RUNNING LENGTHS OF COIR LOG OR STRAW WATTLE, BUTT THE SECOND LOG TIGHTLY AGAINST THE FIRST; DO NOT OVERLAP THE ENDS.
5. STAKE THE LOGS OR WATTLES AT EACH END AND THREE (3) FEET ON CENTER. STAKES SHOULD BE DRIVEN OUTSIDE THE THE COIR LOG OR STRAW WATTLE, BUT CLOSE ENOUGH TO HOLD IT IN PLACE. LEAVE 2 - 3 INCHES OF THE STAKE PROTRUDING ABOVE THE COIR LOG OR STRAW WATTLE. A HEAVY SEDIMENT LOAD WILL TEND TO PICK UP THE COIR LOG OR STRAW WATTLE AND COULD PULL IT OFF THE STAKES IF THEY ARE DRIVEN DOWN TOO LOW.
6. WHEN COIR LOG OR STRAW WATTLE ARE USED FOR FLAT GROUND APPLICATIONS, DRIVE THE STAKES STRAIGHT DOWN; WHEN INSTALLING COIR LOG OR STRAW WATTLE ON SLOPES, DRIVE THE STAKES PERPENDICULAR TO THE SLOPE. DRIVE THE FIRST END STAKE OF THE SECOND COIR LOG OR STRAW WATTLE AT AN ANGLE TOWARD THE FIRST COIR LOG OR STRAW WATTLE IN ORDER TO HELP ABUT THEM TIGHTLY TOGETHER.

2 FIBER ROLL

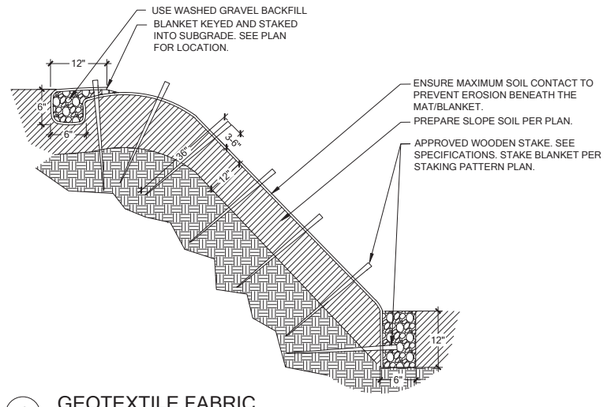
Scale: NTS

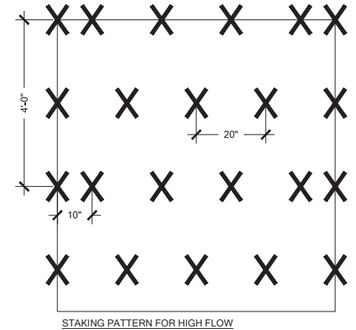


NOTES:
1. DO NOT NAIL OR STAPLE FENCE TO EXISTING TREES OR UTILITY POLES.
2. ANY DAMAGE TO THE FENCE SHALL BE REPAIRED IMMEDIATELY.

3 HIGH-VISIBILITY FENCING

Scale: NTS





STAKING PATTERN FOR HIGH FLOW CHANNEL
(3.8 STAKES PER SQUARE YARD)
VERIFY WITH MANUFACTURER WARRANTY

NOTES:
1. BIOGRADABLE EROSION CONTROL BLANKET SHALL PROVIDE EROSION PROTECTION FOR 24-36 MONTHS, AND SHALL BE 100% COIR MATTING, 900 GRAMS, BY BROTHERS COIR MILLS PVT. LTD. OR EQUIVALENT AS APPROVED BY THE OWNER'S REPRESENTATIVE.
2. BLANKET SHALL BE CUT LARGER THAN THE INSTALLATION AREA SHOWN ON THE CONTRACT DRAWINGS IN ORDER TO EXTEND BEYOND THE EDGES AND KEY INTO THE SUBGRADE AS SHOWN.
5. CLEAR ANY WEEDS OR DEBRIS FROM THE INSTALLATION AREA BEFORE INSTALLING THE BLANKET.
6. PREPARE SLOPE SOIL SURFACE PER PLAN.
7. BURY THE TOP END OF THE BLANKET IN A TRENCH 6 INCHES DEEP AND 6 INCHES WIDE WITH A MIN. 12" OF FABRIC EXTENDING BEYOND UPSLOPE PORTION OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER SECURING.
8. SECURE THE BLANKET AT THE TOP TRENCH WITH A ROW OF STAKES PLACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
9. ROLL THE BLANKET ACROSS SLOPE AS DIRECTED BY OWNER'S REPRESENTATIVE.
11. THE EDGES OF ALL HORIZONTAL AND VERTICAL SEAMS MUST BE SECURED WITH A MIN. 12" OF OVERLAP.
12. KEY BLANKET INTO SUBGRADE AT BOTTOM OF SLOPE IN A 12" X 6" ANCHOR TRENCH. BACKFILL AND COMPACT TRENCH AFTER SECURING WITH STAKES EVERY 12".

4 GEOTEXTILE FABRIC

Scale: NTS

TESC DETAILS & INVASIVE SPECIES REMOVAL NOTES

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Science & Design

LAKE FOREST PARK PUMPHOUSE
MITIGATION PLAN
PREPARED FOR LAKE FOREST PARK WATER DISTRICT
4029 NE 178TH ST
LAKE FOREST PARK, WA 98155

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	02-01-17	PERMIT SET	AJ
2	03-22-19	UPDATE	AL

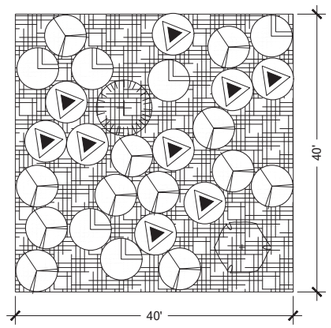
GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
SCALE ACCORDINGLY.

PROJECT MANAGER: KB
DESIGNED: AJ / LV
DRAFTED: AJ / LV
CHECKED: JMF / AM
JOB NUMBER: 161129
SHEET NUMBER: W8 OF 11

FILENAME: 161129 LFP PUMPHOUSE_REV.DWG
PRINTED BY: AMANDA LARSON
DATE: 3/26/2019

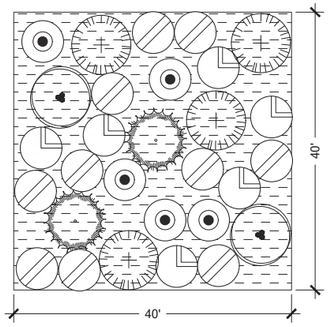
WETLAND PLANTING TYPICAL 1



WETLAND TYPICAL 1 PLANT SCHEDULE (8,000 SF)

TREES	QTY	MIN. SPACING	SIZE	NOTE
ALNUS RUBRA / RED ALDER	8	8' O.C.	1 GAL.	ALL TREES AND TO BE FULL AND WELL ROOTED
THUJA PLICATA / WESTERN REDCEDAR	8	8' O.C.	1 GAL.	
SHRUBS				ALL SHRUBS AND GROUNDCOVER TO BE FULL AND WELL ROOTED
CORNUS SERICEA / REDTWIG DOGWOD	60	6' O.C.	1 GAL.	
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	50	6' O.C.	1 GAL.	
RUBUS SPECTABILIS / SALMONBERRY	30	6' O.C.	1 GAL.	
GROUNDCOVER* *SPECIES TO BE PLACED IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY				
ATHYRIUM FILIX / FEMINA / LADY FERN	720	24" O.C.	4" POT	
CAREX OBNUPTA / SLOUGH SEDGE	720	24" O.C.	4" POT	
SCIRPUS MICROCARPUS / SMALL-FRUITED BULRUSH	720	24" O.C.	4" POT	

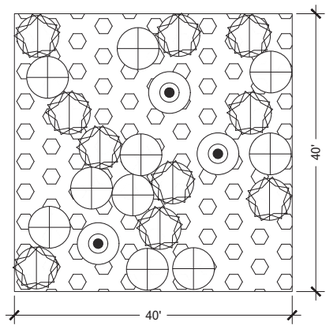
BUFFER PLANTING TYPICAL 1



BUFFER TYPICAL 1 PLANT SCHEDULE (14,700 SF)

TREES	QTY	MIN. SPACING	SIZE	NOTE
ACER MACROPHYLLUM / BIG-LEAF MAPLE	20	8' O.C.	1 GAL.	ALL TREES TO BE FULL AND WELL ROOTED
PSEUDOTSUGA MENZIESII / DOUGLAS-FIR	20	8' O.C.	1 GAL.	
TSUGA HETEROPHYLLA / WESTERN HEMLOCK	31	8' O.C.	1 GAL.	
SHRUBS				ALL SHRUBS AND GROUNDCOVER TO BE FULL AND WELL ROOTED
SAMBUCUS RACEMOSA / RED ELDERBERRY	87	6' O.C.	1 GAL.	
CORYLUS CORNUTA / BEAKED HAZELNUT	49	6' O.C.	1 GAL.	
RUBUS SPECTABILIS / SALMONBERRY	56	6' O.C.	1 GAL.	
GROUNDCOVER* * SPECIES TO BE SPACED TRIANGULARLY				
POLYSTICHUM MUNITUM / WESTERN SWORDFERN	1,614	3' O.C.	4" POT	

BUFFER PLANTING TYPICAL 2



BUFFER TYPICAL 2 PLANT SCHEDULE (3,055 SF)

SHRUBS	QTY	MIN. SPACING	SIZE	NOTE
OEMLERIA CERASIFORMIS / OSOBERRY	20	6' O.C.	1 GAL.	ALL SHRUBS AND GROUNDCOVER TO BE FULL AND WELL ROOTED
CORYLUS CORNATA / BEAKED HAZELNUT	4	6' O.C.	1 GAL.	
ROSA NUTKANA / NOOTKA ROSE	20	6' O.C.	1 GAL.	
GROUNDCOVER* *ALL SPECIES TO BE IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY				
POLYSTICHUM MUNITUM / WESTERN SWORDFERN	375	3' O.C.	4" POT	
MAHONIA NERVOSA / DWARF OREGON GRAPE	1,161	18" O.C.	4" POT	

PLANTING TYPICAL SCHEDULE

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PLANT INSTALLATION SPECIFICATIONS

GENERAL NOTES

QUALITY ASSURANCE
1. PLANTS SHALL MEET OR EXCEED THE SPECIFICATIONS OF FEDERAL, STATE, AND LOCAL LAWS REQUIRING INSPECTION FOR PLANT DISEASE AND INSECT CONTROL.
2. PLANTS SHALL BE HEALTHY, VIGOROUS, AND WELL-FORMED, WITH WELL DEVELOPED, FIBROUS ROOT SYSTEMS, FREE FROM DEAD BRANCHES OR ROOTS. PLANTS SHALL BE FREE FROM DAMAGE CAUSED BY TEMPERATURE EXTREMES, LACK OR EXCESS OF MOISTURE, INSECTS, DISEASE, AND MECHANICAL INJURY. PLANTS IN LEAF SHALL BE WELL FOLIATED AND OF GOOD COLOR. PLANTS SHALL BE HABITUATED TO THE OUTDOOR ENVIRONMENTAL CONDITIONS INTO WHICH THEY WILL BE PLANTED (HARDENED-OFF).
3. TREES WITH DAMAGED, CROOKED, MULTIPLE OR BROKEN LEADERS WILL BE REJECTED. WOODY PLANTS WITH ABRASIONS OF THE BARK OR SUN SCALD WILL BE REJECTED.
4. NOMENCLATURE: PLANT NAMES SHALL CONFORM TO FLORA OF THE PACIFIC NORTHWEST BY HITCHCOCK AND CRONQUIST, UNIVERSITY OF WASHINGTON PRESS, 1973 AND/OR TO A FIELD GUIDE TO THE COMMON WETLAND PLANTS OF WESTERN WASHINGTON & NORTHWESTERN OREGON, ED. SARAH SPEAR COOKE, SEATTLE AUDUBON SOCIETY, 1997.

DEFINITIONS
1. PLANTS/PLANT MATERIALS. PLANTS AND PLANT MATERIALS SHALL INCLUDE ANY LIVE PLANT MATERIAL USED ON THE PROJECT. THIS INCLUDES BUT IS NOT LIMITED TO CONTAINER GROWN, B&B OR BAREROOT PLANTS; LIVE STAKES AND FASCINES (WATTLES); TUBERS, CORMS, BULBS, ETC..; SPRIGS, PLUGS, AND LINERS.
2. CONTAINER GROWN. CONTAINER GROWN PLANTS ARE THOSE WHOSE ROOTBALLS ARE ENCLOSED IN A POT OR BAG IN WHICH THAT PLANT GREW.

SUBSTITUTIONS
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SPECIFIED MATERIALS IN ADVANCE IF SPECIAL GROWING, MARKETING OR OTHER ARRANGEMENTS MUST BE MADE IN ORDER TO SUPPLY SPECIFIED MATERIALS.
2. SUBSTITUTION OF PLANT MATERIALS NOT ON THE PROJECT LIST WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE RESTORATION CONSULTANT.
3. IF PROOF IS SUBMITTED THAT ANY PLANT MATERIAL SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL BE CONSIDERED FOR USE OF THE NEAREST EQUIVALENT SIZE OR ALTERNATIVE SPECIES, WITH CORRESPONDING ADJUSTMENT OF CONTRACT PRICE.
4. SUCH PROOF WILL BE SUBSTANTIATED AND SUBMITTED IN WRITING TO THE CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION.

INSPECTION
1. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE RESTORATION CONSULTANT FOR CONFORMANCE TO SPECIFICATIONS, EITHER AT TIME OF DELIVERY ON-SITE OR AT THE GROWER'S NURSERY. APPROVAL OF PLANT MATERIALS AT ANY TIME SHALL NOT IMPAIR THE SUBSEQUENT RIGHT OF INSPECTION AND REJECTION DURING PROGRESS OF THE WORK.
2. PLANTS INSPECTED ON SITE AND REJECTED FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED IMMEDIATELY FROM SITE OR RED-TAGGED AND REMOVED AS SOON AS POSSIBLE.
3. THE RESTORATION CONSULTANT MAY ELECT TO INSPECT PLANT MATERIALS AT THE PLACE OF GROWTH. AFTER INSPECTION AND ACCEPTANCE, THE RESTORATION CONSULTANT MAY REQUIRE THE INSPECTED PLANTS BE LABELED AND RESERVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS WITH OTHER INDIVIDUALS, EVEN OF THE SAME SPECIES AND SIZE, IS UNACCEPTABLE.

MEASUREMENT OF PLANTS
1. PLANTS SHALL CONFORM TO SIZES SPECIFIED UNLESS SUBSTITUTIONS ARE MADE AS OUTLINED IN THIS CONTRACT.
2. HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR ROOT TIP TO TIP. PLANT DIMENSIONS SHALL BE MEASURED WHEN THEIR BRANCHES OR ROOTS ARE IN THEIR NORMAL POSITION.
3. WHERE A RANGE OF SIZE IS GIVEN, NO PLANT SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST 50% OF THE PLANTS SHALL BE AS LARGE AS THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE RANGE IS 12" TO 18", AT LEAST 50% OF PLANTS MUST BE 15" TALL.).

SUBMITTALS

PROPOSED PLANT SOURCES
1. WITHIN 45 DAYS AFTER AWARD OF THE CONTRACT, SUBMIT A COMPLETE LIST OF PLANT MATERIALS PROPOSED TO BE PROVIDED DEMONSTRATING CONFORMANCE WITH THE REQUIREMENTS SPECIFIED. INCLUDE THE NAMES AND ADDRESSES OF ALL GROWERS AND NURSERIES.

PRODUCT CERTIFICATES
1. PLANT MATERIALS LIST - SUBMIT DOCUMENTATION TO CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION THAT PLANT MATERIALS HAVE BEEN ORDERED. ARRANGE PROCEDURE FOR INSPECTION OF PLANT MATERIAL WITH CONSULTANT AT TIME OF SUBMISSION.
2. HAVE COPIES OF VENDOR'S OR GROWERS' INVOICES OR PACKING SLIPS FOR ALL PLANTS ON SITE DURING INSTALLATION. INVOICE OR PACKING SLIP SHOULD LIST SPECIES BY SCIENTIFIC NAME, QUANTITY, AND DATE DELIVERED (AND GENETIC ORIGIN IF THAT INFORMATION WAS PREVIOUSLY REQUESTED).

DELIVERY, HANDLING, & STORAGE

NOTIFICATION
CONTRACTOR MUST NOTIFY CONSULTANT 48 HOURS OR MORE IN ADVANCE OF DELIVERIES SO THAT CONSULTANT MAY ARRANGE FOR INSPECTION.

PLANT MATERIALS
1. TRANSPORTATION - DURING SHIPPING, PLANTS SHALL BE PACKED TO PROVIDE PROTECTION AGAINST CLIMATE EXTREMES, BREAKAGE AND DRYING. PROPER VENTILATION AND PREVENTION OF DAMAGE TO BARK, BRANCHES, AND ROOT SYSTEMS MUST BE ENSURED.
2. SCHEDULING AND STORAGE - PLANTS SHALL BE DELIVERED AS CLOSE TO PLANTING AS POSSIBLE. PLANTS IN STORAGE MUST BE PROTECTED AGAINST ANY CONDITION THAT IS DETRIMENTAL TO THEIR CONTINUED HEALTH AND VIGOR.
3. HANDLING - PLANT MATERIALS SHALL NOT BE HANDLED BY THE TRUNK, LIMBS, OR FOLIAGE BUT ONLY BY THE CONTAINER, BALL, BOX, OR OTHER PROTECTIVE STRUCTURE, EXCEPT BAREROOT PLANTS SHALL BE KEPT IN BUNDLES UNTIL PLANTING AND THEN HANDLED CAREFULLY BY THE TRUNK OR STEM.
4. LABELS - PLANTS SHALL HAVE DURABLE, LEGIBLE LABELS STATING CORRECT SCIENTIFIC NAME AND SIZE. TEN PERCENT OF CONTAINER GROWN PLANTS IN INDIVIDUAL POTS SHALL BE LABELED. PLANTS SUPPLIED IN FLATS, RACKS, BOXES, BAGS, OR BUNDLES SHALL HAVE ONE LABEL PER GROUP.

WARRANTY

PLANT WARRANTY
PLANTS MUST BE GUARANTEED TO BE TRUE TO SCIENTIFIC NAME AND SPECIFIED SIZE, AND TO BE HEALTHY AND CAPABLE OF VIGOROUS GROWTH.

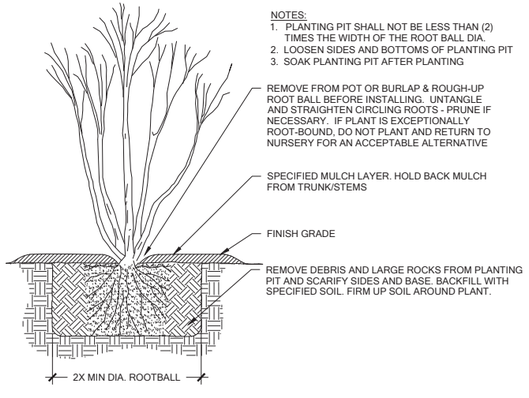
REPLACEMENT
1. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
2. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL

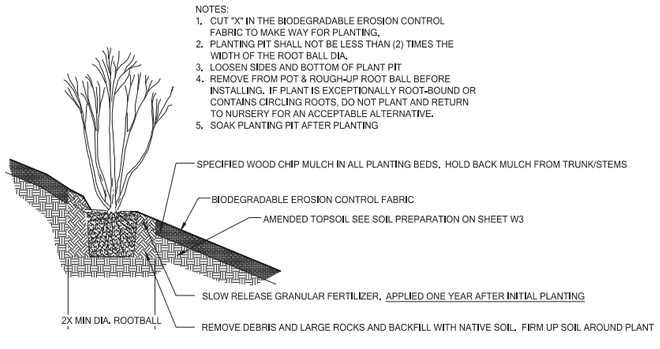
GENERAL
1. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
2. PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS SUCH.

QUANTITIES
SEE PLANT LIST ON ACCOMPANYING PLANS AND PLANT SCHEDULES.

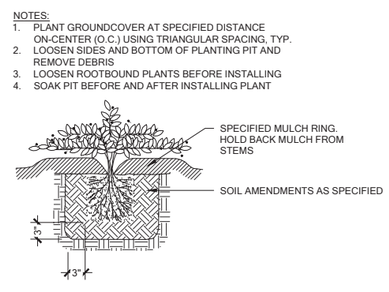
ROOT TREATMENT
1. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
2. PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.
3. ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.



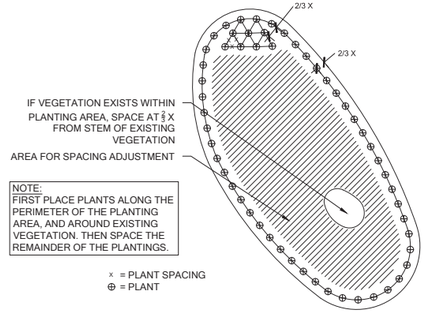
1 TREE AND SHRUB PLANTING
Scale: NTS



2 TREE AND SHRUB PLANTING ON A SLOPE
Scale: NTS



3 GROUNDCOVER PLANTING
Scale: NTS



4 PLANT SPACING
Scale: NTS

PLANT INSTALLATION NOTES AND DETAILS

THE WATERSHED COMPANY
750 Sixth Street South
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Science & Design

LAKE FOREST PARK PUMPHOUSE
MITIGATION PLAN
PREPARED FOR LAKE FOREST PARK WATER DISTRICT
4029 NE 178TH ST
LAKE FOREST PARK, WA 98155

Critical Areas Study by Watershed Co.

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	02-01-17	PERMIT SET	AJ
2	03-22-19	UPDATE	AL

GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
SCALE ACCORDINGLY.

PROJECT MANAGER: KB
DESIGNED: AJ / LV
DRAFTED: AJ / LV
CHECKED: JMF / AM
JOB NUMBER:
161129
SHEET NUMBER:
W10 OF 11

FILENAME: 161129 LFP PUMPHOUSE_REV.DWG
PRINTED BY: AMANDA LARSON
DATE: 3/26/2019

MITIGATION PLAN NOTES

1 MITIGATION PLAN

THIS MITIGATION PLAN IS INTENDED TO COMPENSATE FOR THE UNAVOIDABLE TEMPORARY AND PERMANENT IMPACTS TO WETLANDS AND CRITICAL AREA BUFFER THAT WILL ARISE AS PART OF THE LFPWD PUMP HOUSE PROJECT. THE PLAN WAS PREPARED IN ACCORDANCE WITH LFPMC 16.16.340. REMOVED TREES WILL BE REPLACED WITH 87 NATIVE TREES, A ROUGHLY 6:1 RATIO. WETLAND IMPACTS, ALTHOUGH TEMPORARY, WILL BE COMPENSATED AT A 3:16 RATIO TO MEET THE REQUIREMENTS OF THE CODE. DISTURBED WETLAND AREA WILL BE ENHANCED, WITH OTHER NEARBY DEGRADED WETLANDS ALSO TARGETED FOR WEED REMOVAL AND PLANTING TO REACH THE 3:16 RATIO. A TOTAL OF 8,000 SQUARE FEET OF WETLAND WILL BE ENHANCED TO COMPENSATE FOR 2,530 SQUARE FEET OF IMPACT (A 3.16:1 ACTUAL RATIO). TEMPORARY CRITICAL AREA BUFFER IMPACTS WILL BE MITIGATED AT A 1:1 RATIO AND BE LOCATED IN PLACE OF THE TEMPORARY DISTURBANCE. PERMANENT BUFFER IMPACTS ASSOCIATED WITH THE WELL HOUSE STRUCTURE WILL BE COMPENSATED THROUGH ENHANCEMENT PLANTING IN A BUFFER AREA DOMINATED BY ENGLISH IVY AND CHERRY LAUREL BETWEEN THE PROPOSED PUMP HOUSE STRUCTURE AND WETLAND A. THESE IMPACTS WILL BE COMPENSATED AT A RATIO OF 6.96:1. A FIVE YEAR MAINTENANCE AND MONITORING PERIOD IS PROPOSED THAT WILL ENSURE THE SUCCESSFUL ESTABLISHMENT OF THE MITIGATION SITE.

1.1 GOAL

ACHIEVE NO NET LOSS OF ECOLOGICAL FUNCTION OF THE WETLAND AND WETLAND BUFFER FOLLOWING COMPLETION OF THE PROJECT.

1.1.1 OBJECTIVES

1. REMOVE INVASIVE WEEDS FROM THE MITIGATION AREA.
2. RESTORE AND ENHANCE THE WETLAND AND CRITICAL AREA BUFFER WITH A DIVERSE ARRAY OF NATIVE TREE, SHRUB AND GROUNDCOVER SPECIES. ADDITIONAL TEMPORARILY DISTURBED AREAS WITHIN BUFFERS ARE TO BE RESTORED AS WELL.
3. ENSURE THE SITE SUCCESSFULLY ESTABLISHED THROUGH IMPLEMENTATION OF MAINTENANCE AND MONITORING PERIOD, AND FINANCIAL SURETY DEVICE.

1.2 PERFORMANCE STANDARDS

THIS SECTION, ALONG WITH OTHER ELEMENTS FROM THIS REPORT IS INTENDED TO SATISFY SECTION 16.16.120 OF THE LFPMC. THE STANDARDS LISTED BELOW WILL BE USED TO JUDGE THE SUCCESS OF THE MITIGATION INSTALLATION OVER THE DURATION OF THE FIVE YEAR MAINTENANCE AND MONITORING PERIOD. IF PERFORMANCE STANDARDS ARE MET AT THE END OF YEAR 5, THE SITE WILL THEN BE DEEMED SUCCESSFUL. FAILURE TO MEET THE PERFORMANCE STANDARDS MAY REQUIRE ADDITIONAL MAINTENANCE AND MONITORING.

THE STANDARDS LISTED BELOW WILL BE USED TO JUDGE THE SUCCESS OF THE PLAN OVER TIME.

1. SURVIVAL: ACHIEVE 100 PERCENT SURVIVAL OF INSTALLED PLANTS BY THE END OF YEAR 1. THIS STANDARD CAN BE MET THROUGH PLANT ESTABLISHMENT OR THROUGH REPLANTING AS NECESSARY TO ACHIEVE THE REQUIRED NUMBERS.
2. NATIVE COVER IN WOODY VEGETATION AREAS:

   - ACHIEVE 60% COVER OF NATIVE TREES AND SHRUBS BY YEAR 3. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.

   - ACHIEVE 80% COVER OF NATIVE TREES AND SHRUBS BY YEAR 5. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.

3. SPECIES DIVERSITY: ESTABLISH AT LEAST 3 NATIVE TREE SPECIES, 6 NATIVE SHRUB SPECIES, AND 2 NATIVE GROUNDCOVER SPECIES IN THE PLANTED AREA BY YEAR 5. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD.
4. INVASIVE COVER: NO MORE THAN 10 PERCENT COVER BY INVASIVE WEED SPECIES LISTED BY THE *KING COUNTY NOXIOUS WEED LIST* IN ANY GIVEN YEAR.
5. PROVIDE A FINANCIAL SECURITY DEVICE THAT SATISFIES LFPMC SECTION 16.16.150.

1.3 MONITORING PLAN

THIS MONITORING PROGRAM IS DESIGNED TO TRACK THE SUCCESS OF THE MITIGATION SITE OVER TIME AND TO MEASURE THE DEGREE TO WHICH IT IS MEETING THE PERFORMANCE STANDARDS OUTLINED IN THE SECTION ABOVE.

1.3.1 MONITORING METHODS

NOTE: SPECIFICATIONS FOR ITEMS IN BOLD CAN BE FOUND BELOW UNDER "MATERIAL SPECIFICATIONS AND DEFINITIONS."

THE INSTALLED VEGETATION WILL BE MONITORED FOR FIVE YEARS AFTER INITIAL INSTALLATION. WITHIN TWO MONTHS OF PLANT INSTALLATION, AN AS-BUILT REPORT WILL BE PREPARED TO DOCUMENT THE GENERAL IMPLEMENTATION OF THE MITIGATION PLAN. ANY MINOR CHANGES TO THE APPROVED MITIGATION PLAN THAT ARE REQUIRED BY FIELD CONDITIONS OR PLANT AVAILABILITY DURING PLAN IMPLEMENTATION MUST BE DOCUMENTED IN THE AS-BUILT REPORT. THE MONITORING PERIOD BEGINS ONCE THE AS-BUILT REPORT HAS BEEN APPROVED BY THE CITY OF LAKE FOREST PARK. THE APPROVED AS-BUILT REPORT THEN BECOMES THE APPROVED MITIGATION PLAN FOR FUTURE INSPECTION PURPOSES.

DURING THE AS-BUILT INSPECTION, THE MONITORING BIOLOGIST WILL INSTALL MONITORING TRANSECTS. APPROXIMATE TRANSECT LOCATIONS WILL BE MARKED ON THE AS-BUILT PLAN. TRANSECTS WILL BE ESTABLISHED IN BOTH THE WETLAND ENHANCEMENT AREA, AND THE BUFFER ENHANCEMENT AREA. TRANSECTS WILL BE AS LONG AS ALLOWED BY EACH PARTICULAR PLANTING AREA, BUT WILL COVER AT LEAST HALF THE LENGTH OF EACH PLANTED AREA, WITH A PREFERRED LENGTH OF 100 FEET. ALL OTHER PLANTED AREAS NOT DIRECTLY COVERED BY TRANSECTS WILL BE VISUALLY ASSESSED AND NOTED AS TO HOW THEY COMPARE TO THE PERFORMANCE STANDARDS.

MONITORING WILL TAKE PLACE ANNUALLY FOR FIVE YEARS AND INCLUDE A SPRING AND EARLY FALL VISIT. THE SPRING MONITORING VISIT WILL RECORD MAINTENANCE NEEDS SUCH AS WEEDING, MULCHING, OR PLANT REPLACEMENT. FOLLOWING THE SPRING VISIT THE BIOLOGIST WILL NOTIFY THE OWNER AND/OR MAINTENANCE CREWS OF NECESSARY EARLY GROWING SEASON MAINTENANCE. THE REGULAR YEARLY MONITORING VISITS WILL TAKE PLACE AFTER THE GROWING SEASON IN THE LATE SUMMER OR EARLY FALL. FOR EACH FALL VISIT, THE FOLLOWING WILL BE RECORDED AND REPORTED IN AN ANNUAL REPORT SUBMITTED TO THE CITY OF LAKE FOREST PARK:

1. GENERAL SUMMARY OF THE SPRING VISIT.
2. COUNTS OF LIVE AND DEAD TREES AND SHRUBS BY SPECIES IN THE PLANTED AREAS IN YEAR 1. SIGNIFICANT DIE-OFF SHOULD BE REPORTED BY SPECIES AND QUANTITY IN ANY OTHER MONITORING YEAR.
3. COUNTS OF DEAD PLANTS WHERE MORTALITY IS SIGNIFICANT IN ANY MONITORING YEAR.
4. ESTIMATE OF NATIVE TREE AND SHRUB COVER USING THE LINE INTERCEPT METHOD ALONG ESTABLISHED TRANSECTS.
5. ESTIMATE OF NON-NATIVE, INVASIVE SPECIES COVER IN PLANTED AREAS USING THE LINE INTERCEPT METHOD.
6. NOTES OR SKETCHES OF NON-NATIVE WEED PROBLEMS IN PLANTED AREAS NOT CAPTURED BY THE TRANSECT COVER ASSESSMENT.
7. PHOTOGRAPHIC DOCUMENTATION FROM FIXED REFERENCE POINTS AND TRANSECT ENDS.
8. INTRUSIONS INTO THE PLANTING AREAS, VANDALISM OR OTHER ACTIONS THAT IMPAIR THE INTENDED FUNCTIONS OF THE PLANTED AREAS.
9. RECOMMENDATIONS FOR MAINTENANCE OR REPAIR OF ANY PORTION OF THE MITIGATION AREA.

1.3.2 CONTINGENCIES

IF THERE IS A SIGNIFICANT PROBLEM WITH THE RESTORATION AREAS MEETING PERFORMANCE STANDARDS, A CONTINGENCY PLAN WILL BE DEVELOPED AND IMPLEMENTED. CONTINGENCY PLANS CAN INCLUDE, BUT ARE NOT LIMITED TO: SOIL AMENDMENT; ADDITIONAL PLANT INSTALLATION; AND PLANT SUBSTITUTIONS OF TYPE, SIZE, QUANTITY, AND LOCATION.

1.4 MAINTENANCE PLAN

THE SITE WILL BE MAINTAINED FOR FIVE YEARS FOLLOWING COMPLETION OF THE CONSTRUCTION. NOTE: SPECIFICATIONS FOR ITEMS IN BOLD CAN BE FOUND ABOVE UNDER "MATERIAL SPECIFICATIONS AND DEFINITIONS."

1. REPLACE EACH PLANT FOUND DEAD IN THE SPRING MONITORING VISIT DURING THE UPCOMING FALL DORMANT SEASON (OCTOBER 15TH TO MARCH 1ST).
2. FOLLOW THE RECOMMENDATIONS NOTED IN THE SPRING MONITORING SITE VISIT.
3. GENERAL WEEDING FOR ALL PLANTED AREAS:
   a. AT LEAST TWICE-YEARLY, REMOVE ALL COMPETING WEEDS AND WEED ROOTS FROM BENEATH EACH INSTALLED PLANT AND ANY DESIRABLE VOLUNTEER VEGETATION TO A DISTANCE OF 18 INCHES FROM THE MAIN PLANT STEM. WEEDING SHOULD OCCUR AT LEAST ONE TIME EACH DURING THE SPRING AND SUMMER. FREQUENT WEEDING WILL RESULT IN LOWER MORTALITY AND LOWER PLANT REPLACEMENT COSTS.
   b. MORE FREQUENT WEEDING MAY BE NECESSARY, DEPENDING ON WEED CONDITIONS THAT DEVELOPMENT AFTER PLAN INSTALLATION.
   c. DO NOT USE STRING TRIMMERS (WEED WHACKER / LINE TRIMMER) WITHIN THE MITIGATION AREA.
4. REMOVE HOLLY AND CHERRY LAUREL PLANTS BY HAND, INCLUDING ROOTS WHERE POSSIBLE. CUTTING TO THE GROUND WHERE PLANT SIZE IS TOO LARGE TO REMOVE ROOTS IS ACCEPTABLE. CHECK CUT TRUNKS YEARLY TO CUT OFF ANY NEW SPROUTS.
5. HERBICIDE APPLICATION SHALL NOT BE ALLOWED AT THIS SIDE AS A PRECAUTION AGAINST GROUNDWATER/POTABLE WATER SOURCE CONTAMINATION.
6. MULCH THE WEEDED AREAS BENEATH EACH PLANT WITH WOOD CHIP MULCH AS NECESSARY TO MAINTAIN A 4-INCH THICK MULCH RING AND KEEP DOWN WEEDS.
7. IRRIGATE THE BUFFER PLANTING AREA DURING THE DRY PERIODS FOR AT LEAST THE FIRST THREE GROWING SEASONS. (IT IS ASSUMED THAT WETLAND AREAS WILL NATURALLY HAVE SUFFICIENT WATER DURING THE DRY PERIOD). THE APPLICANT SHALL EITHER INSTALL A TEMPORARY IRRIGATION SYSTEM OR HAND WATER SUCH THAT ALL PLANTING AREAS RECEIVE AT LEAST ONE INCH OF WATER PER WEEK BETWEEN JUNE 1 AND SEPTEMBER 15 IN YEARS 1 THROUGH 3.

1.5 CONSTRUCTION NOTES AND SEQUENCE

THE RESTORATION SPECIALIST SHALL MONITOR:

1. ALL SITE PREPARATION, INCLUDING INVASIVE SPECIES MANAGEMENT.
2. PLANT MATERIAL INSPECTION.
   a. PLANT MATERIAL DELIVERY AND SALVAGED PLANT INSPECTION.
   b. 100% PLANT INSTALLATION INSPECTION.

1.6 GENERAL WORK SEQUENCE

1. FOLLOWING COMPLETION OF THE PROPOSED PROJECT, INSTALL OR MAINTAIN TESC MEASURES AS SHOWN ON THE PLAN DRAWINGS.
2. REMOVE INVASIVE WEEDS FROM THE AREAS THAT REMAIN VEGETATED AFTER SITE WORK IS FINISHED (IN MITIGATION AREAS THAT WERE NOT EXCAVATED FOR THE PROJECT). USE ONLY MECHANICAL MEANS (NO HERBICIDE SHALL BE USED ON-SITE). CARE SHOULD BE TAKEN TO NOT DISTURB OR DAMAGE THE EXISTING SALMONBERRY, RED ELDERBERRY, AND OTHER NATIVE VEGETATION THAT EXISTS IN SOME OF THE PLANTING AREAS.
3. AMEND SOIL WHERE NATIVE TOPSOIL WAS LOST DUE TO EXCAVATION BY SPREADING 2 INCHES OF COMPOST ACCORDING TO THE PLAN. COMPOST SHALL BE INCORPORATED INTO THE TOP 8 INCHES OF THE SOIL BY "RIPPING" OR "TILLING".
4. NOTIFY THE BIOLOGIST AFTER DELIVERY OF THE PLANT MATERIAL BUT PRIOR TO PLANTING. BIOLOGIST WILL INSPECT AND APPROVE PLANTS AND DETERMINE IF AND WHERE SOIL AMENDMENTS MAY BE NEEDED.
5. PREPARE A PLANTING PIT FOR EACH PLANT PER THE PLANTING DETAILS. INSTALL THE PLANTS PER THE PLANTING DETAIL.
6. WATER INDIVIDUAL PLANTS THOROUGHLY PER BEST PLANTING PRACTICES IMMEDIATELY AFTER PLANTING TO ELIMINATE AIR POCKETS AND TO ENSURE ROOT TO SOIL CONTACT.
7. APPLY A WOOD CHIP MULCH RING, FOUR (4) INCHES THICK AND EXTENDING TO AT LEAST 18" FROM THE STEM OF THE PLANT.
8. INSTALL A TEMPORARY IRRIGATION SYSTEM IN THE BUFFER ENHANCEMENT AREA CAPABLE OF SUPPLYING A MINIMUM OF 1 INCH OF WATER PER WEEK TO ALL REVEGETATED AREAS FROM JUNE 1 THROUGH SEPTEMBER 15 FOR THE FIRST THREE YEARS FOLLOWING INSTALLATION.
9. SURVIVAL IN A HEALTHY CONDITION IS TO BE GUARANTEED FOR ALL OF THE PLANTED SPECIMENS THROUGH THEIR ENTIRE FIRST GROWING SEASON. AN ACCEPTANCE INSPECTION IS TO BE MADE DURING THE YEAR 1 MONITORING VISIT FOLLOWING THE INITIAL PLANTING AND ANY DEAD, MISSING, OR UNHEALTHY SPECIMENS ARE TO BE REPLACED. REPLACEMENT IS TO OCCUR DURING THE THEN-UPCOMING DORMANT SEASON.

NOTE: THE WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS, SHALL MONITOR:

- ALL SITE PREPARATION
- PLANT MATERIAL/INSTALLATION INSPECTION
  - 50% PLANT INSTALLATION INSPECTION
  - 100% PLANT INSTALLATION INSPECTION

1.7 MATERIAL SPECIFICATIONS AND DEFINITIONS

- FERTILIZER: NO FERTILIZER SHALL BE USED ON-SITE.
- IRRIGATION SYSTEM: A TEMPORARY SYSTEM CAPABLE OF DELIVERING AT LEAST ONE INCH OF WATER PER WEEK FROM JUNE 1 THROUGH SEPTEMBER 15 FOR AT LEAST THE FIRST THREE YEARS FOLLOWING INSTALLATION. HAND WATERING OR WATER TRUCK MAY BE USED PROVIDED THE WATER DELIVERY THAT WILL MEET THE IRRIGATION FLOW AND COVERAGE REQUIREMENT SPECIFIED IN THIS DOCUMENT. FAILURE TO APPROPRIATELY WATER CAN LEAD TO VERY HIGH MORTALITY AND REPLACEMENT COSTS.
- BIOLOGIST: THE WATERSHED COMPANY [(425) 822-5242] PERSONNEL OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS.
- WOOD CHIP MULCH: WOOD CHIP MULCH SHALL MEET WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION FOR WOOD STRAND MULCH AS DEFINED 9-14.4(4). WOOD STRAND MULCH SHALL BE A BLEND OF ANGULAR, LOOSE, LONG, THIN WOOD PIECES THAT ARE FRAYED, WITH A HIGH LENGTH-TO-WIDTH RATIO, AND IT SHALL BE DERIVED FROM NATIVE CONIFER OR DECIDUOUS TREES. A MINIMUM OF 95 PERCENT OF THE WOOD STRAND SHALL HAVE LENGTHS BETWEEN 2 AND 10 INCHES. AT LEAST 50 PERCENT OF THE LENGTH OF EACH STRAND SHALL HAVE A WIDTH AND THICKNESS BETWEEN 1/16 AND ½ INCH. NO SINGLE STRAND SHALL HAVE A WIDTH OR THICKNESS GREATER THAN ½ INCH. THE MULCH SHALL NOT CONTAIN SALT, PRESERVATIVES, GLUE, RESIN, TANNIN, OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO PLANT LIFE. SAWDUST OR ARBORIST WOOD CHIPS OR SHAVINGS ARE NOT ACCEPTABLE.

  NOTE: PACIFIC TOPSOIL (AND MOST OTHER SOIL WHOLESALERS) SELLS A MATERIAL THAT MEETS THE ABOVE SPECIFICATION CALLED "DOT WOODCHIP MULCH".
- COMPOST: COMPOST SHALL MEET WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, 9-14.4(8) FOR FINE COMPOST.
- BIOLOGIST: WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS.

1.8 ASSURANCE DEVICE

LFPMC SECTIONS 16.16.150 REQUIRES THE APPLICANT PROVIDE TO THE CITY AN ASSURANCE DEVICE TO COVER THE COST OF MONITORING AND MAINTENANCE AND OTHER CONTINGENCIES FOR THE DURATION OF THE MONITORING AND MAINTENANCE PERIOD. THE PLANNING DIRECTOR SHALL ESTABLISH THE CONDITIONS OF THE BOND OR OTHER SECURITY ACCORDING TO THE NATURE OF THE PROPOSED MITIGATION, MAINTENANCE OR MONITORING AND THE LIKELIHOOD AND EXPENSE OF CORRECTING MITIGATION OR MAINTENANCE FAILURES.

1.9 TIMING

LFPMC SECTIONS 16.16.140 REQUIRES THAT ALL WORK APPROVED OR MITIGATION REQUIRED BY A SENSITIVE AREAS PERMIT SHALL BE COMPLETED PRIOR TO THE FINAL INSPECTION AND OCCUPANCY OF A PROJECT OR SOONER AS PRESCRIBED BY THE PLANNING DIRECTOR. AN EXTENSION MAY BE SOUGHT FROM THE PLANNING DIRECTOR IF IT CAN BE DEMONSTRATED THAT PROJECT SEQUENCING DOES NOT ALLOW FOR MITIGATION COMPLETION IN THE SPECIFIED TIMELINE.

2 SUMMARY

CONSTRUCTION OF A NEW PUMP HOUSE AND ASSOCIATED INFRASTRUCTURE IS PROPOSED ON THE SUBJECT PARCELS THAT WILL IMPACT WETLAND AND CRITICAL AREA BUFFER. THE PROPOSED MITIGATION IN THIS DOCUMENT IS DESIGNED TO NO-NET LOSS PROVISION, AS WELL AS THE OTHER POLICY GOALS OUTLINED IN SECTION 16.16.010 OF THE LAKE FOREST PARK MUNICIPAL CODE. WETLAND IMPACTS, ALTHOUGH TEMPORARY, WILL BE COMPENSATED AT A 3:1 RATIO USING A NATIVE PLANT PALATE DESIGNED TO IMPROVE WATER QUALITY AND HABITAT FUNCTION. CRITICAL AREA BUFFERS IMPACTED WILL BE MITIGATED AT A 1:1 RATIO AND BE LOCATED IN PLACE OF THE TEMPORARY DISTURBANCE. CHERRY LAUREL AND IVY ARE TARGETED FOR REMOVAL AND A MIX OF TREES, SHRUBS AND GROUNDCOVER ENDEMIC TO THE AREA CHOSEN FOR REPLANTING. PLANTS WERE CHOSEN TO COMPLEMENT THE SURROUNDING FOREST AND ENSURE A BODY OF YOUNG CLIMAX SPECIES TREES ESTABLISH TO AGE-STRATIFY THE EXISTING FOREST. A TOTAL OF 25,755 SQUARE FEET OF WETLAND AND CRITICAL AREA BUFFER WILL BE ENHANCED UNDER THIS PLAN. AN OVERALL NET GAIN IN CRITICAL AREA BUFFER FUNCTIONS AND VALUES IS EXPECTED.

MITIGATION PLAN NOTES

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LAKE FOREST PARK PUMPHOUSE
MITIGATION PLAN
PREPARED FOR LAKE FOREST PARK WATER DISTRICT
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SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	02-01-17	PERMIT SET	AJ
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GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
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PROJECT MANAGER: KB
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FILENAME: 161129 LFP PUMPHOUSE_REV.DWG
PRINTED BY: AMANDA LARSON
DATE: 3/26/2019

July 25, 2019

Alan Kerley
Lake Forest Park Water District
4029 NE 178th Street
Lake Forest Park, WA 98155
Via email: alan@lfpwd.org

Re: Lake Forest Park Pumphouse - Arborist Assessment

The Watershed Company Reference Number: 161129

Dear Alan:

We are pleased to present to you the findings of our tree inventory and assessment for the new Lake Forest Park Water District pumphouse in response to the City of Lake Forest Park Planning Department correction letter dated December 28th, 2018 and email for City Arborist, Ashley Adams, dated July 18th, 2019. The Watershed Company ISA-Certified Arborist and Qualified Tree Risk Assessor (TRAQ) Kyle Braun visited the subject property January 23rd, 2019 and June 18th, 2019 to assess trees located within the proposed project extents and collect additional inventory information. The findings of this additional assessment and inventory can be found in the following sections.

Background

In order to better serve the residents of Lake Forest Park, the District is proposing to construct a new pump house, associated underground water mains and other related infrastructure that ties into the existing potable water network. The project would be located on portions of two parcels and an adjacent vacant right-of-way within the City of Lake Forest Park near McKinnon Creek. A residentially zoned vacant lot at 18460 47th Place NE in the City of Lake Forest Park, Washington (Parcel number 401990-0176) was recently purchased by the District and would house the new pump house. New water lines and other supporting infrastructure would extend from the pump house northward through a portion of the adjacent District-owned parcel (parcel number 402290-6570) and City right-of-way, where the existing facilities are located.

Study Area

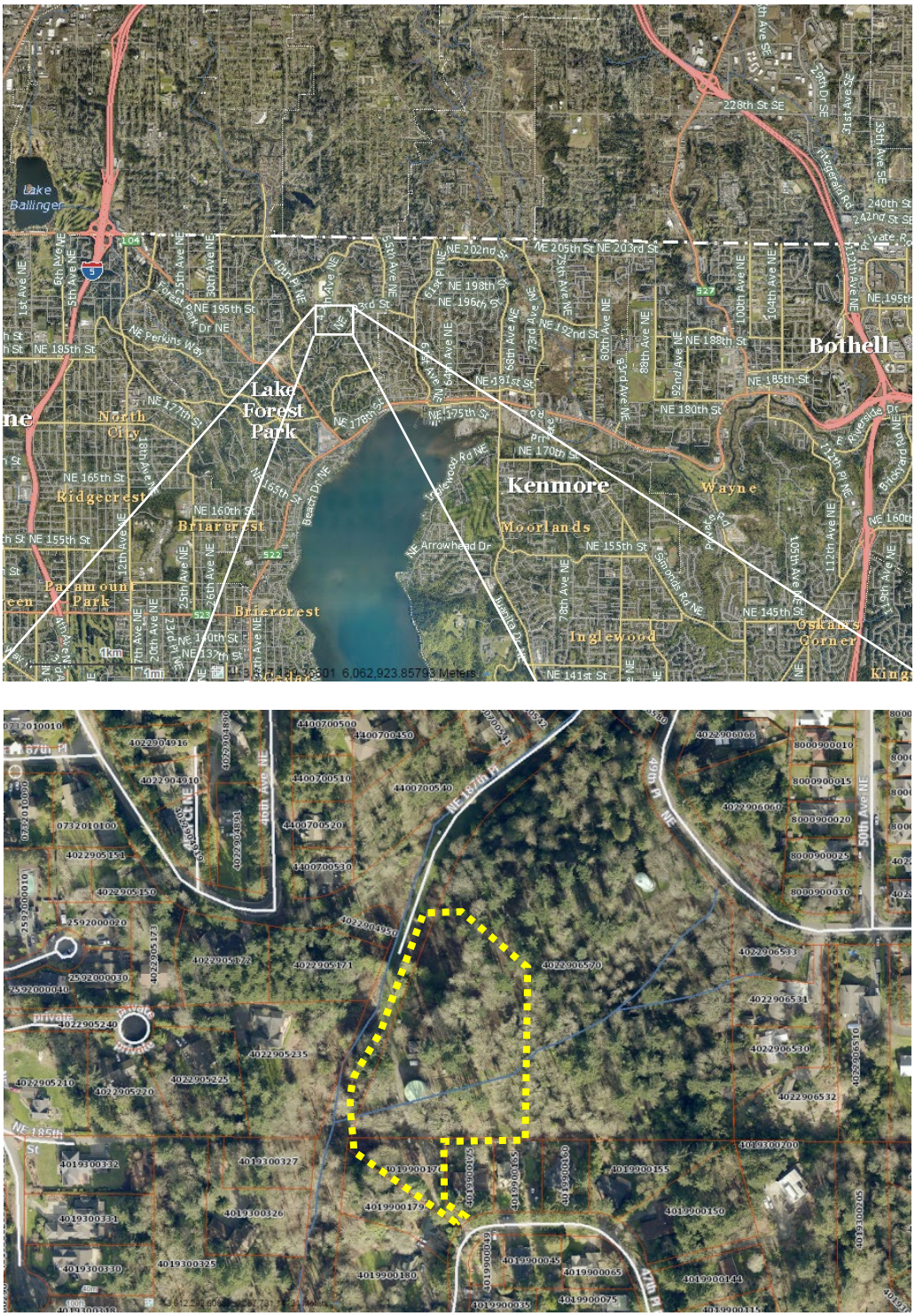


Figure 1. Vicinity map showing the approximate location of the proposed project. Note that King County stream layer is incorrect in this image. (Image courtesy of King County iMap, 2017)

Methods

Based on the Lake Forest Park Municipal Code (LFPMC) significant tree definition, any tree with a trunk diameter-at-breast-height (DBH) of six inches or greater, within the greater project extents, was identified and assessed in the field. Each assessed tree was tagged with a rectangular numbered aluminum tag that was affixed to the trunk.

Subject Tree Mapping

Mapping of trees and other site information was provided to The Watershed Company in PDF and AutoCAD format by Mundall Engineering & Consulting. Tree mapping is understood to have primarily originated from a 2016 survey of the site by Mundall Engineering although previous surveys by others may also be included.

Attribute data collection

Attributes documented for all inventoried trees include a unique identification number and species name. Physical attributes include the number of stems, DBH, estimated canopy radius, condition, and general assessment notes.

The DBH of all subject trees was measured at four-and-a-half feet above the surface of the ground at the trunk where possible; however, some stems were measured differently due to size or branching structure. For trees with major branching at or below four-and-a-half feet, the smallest portion of the trunk below major branching was measured. Per LFPMC, trees with multiple stems were measured by taking the square root of the sum of the DBH for each individual stem squared (DBH = square root of $[(\text{stem } 1)^2 + (\text{stem } 2)^2 + (\text{stem } 3)^2]$). Methodology for measuring and calculating the diameter of trees with major leans, on steep slopes, and with multiple trunks or stems generally followed those outlined in the Guide for Plant Appraisal (CTLA 2018).

Canopy radius, also known as dripline, was measured from the trunk to the outermost branch tips by estimating a vertical line to the ground. Canopy square footage was calculated by taking the total area of the canopy calculated by the dripline radius (Canopy Area = π[dripline radius]r^2). Areas of overlapping canopy were not counted twice.

A basic Level 1 visual assessment was used to evaluate the health and condition of trees within the study area in accordance with the International Society of Arboriculture (ISA) standards. Each tree was given a rating from 1-5 (Excellent – Severe) as summarized in Table 1 below.

Table 1. Assessment of plant condition considers health, structure, and form. Each may be described in rating categories that will be translated into a percent rating. (CTLA 2018)

Rating Category	Condition Components			Percent Rating
	Health	Structure	Form	
Excellent - 1	High vigor and nearly perfect health with little or no twig dieback, discoloration, or defoliation.	Nearly ideal and free of defects.	Nearly ideal for the species. Generally symmetric. Consistent with the intended use.	100%
Good - 2	Vigor is normal for species. No significant damage due to diseases or pests. Any twig dieback, defoliation, or discoloration is minor.	Well-developed structure. Defects are minor and can be corrected.	Minor asymmetries/deviations from species norm. Mostly consistent with the intended use. Function and aesthetics are not compromised.	61% to 80%
Fair - 3	Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twig dieback, defoliation, discoloration, and/or dead branches may compromise up to 50% of the crown.	A single defect of a significant nature or multiple moderate defect. Defects are not practical to correct or would require multiple treatments over several years.	Major asymmetries/deviations from species norm and/or intended use. Function and/or aesthetics are compromised.	41% to 60%
Poor - 4	Unhealthy and declining in appearance. Poor vigor. Low foliage density and poor foliage color are present. Potentially fatal pest infestation. Extensive twig and/or branch dieback.	A single serious defect or multiple significant defects. Recent change in tree orientation. Observed structural problems cannot be corrected. Failure may occur at any time.	Largely asymmetric/abnormal. Detracts from intended use and/or aesthetics to a significant degree.	21% to 40%
Severe - 5	Poor vigor. Appears dying and in the last stages of life. Little live foliage.	Single or multiple severe defects. Failure is probable or imminent.	Visually unappealing. Provides little or no function in the landscape.	6% to 20%
Dead				0% to 5%

Tree Inventory and Assessment Results

A total of 56 trees were inventoried, of those, 12 are proposed for removal. A summary of all trees inventoried can be found in *Appendix A - Tree Inventory Table*. A summary of trees to be removed can be found in *Table 2. Tree Removal Table* below.

Table 2. Tree Removal Table

Tag #	Species	DBH (IN)	Condition (Excellent-Severe)
001	*Acer macrophyllum* (Big leaf maple)	19	Excellent
002	*Acer macrophyllum* (Big leaf maple)	33	Excellent
003	*Acer macrophyllum* (Big leaf maple)	19.6	Excellent
005	*Acer macrophyllum* (Big leaf maple)	50.8	Good
006	*Acer macrophyllum* (Big leaf maple)	20.3	Fair
008	*Acer macrophyllum* (Big leaf maple)	30.5	Good
009	*Acer macrophyllum* (Big leaf maple)	24.3	Good
010	*Acer macrophyllum* (Big leaf maple)	12.8	Good
011	*Acer macrophyllum* (Big leaf maple)	11.8	Good
015	*Thuja plicata* (Western red cedar)	26.8	Good
019	*Acer macrophyllum* (Big leaf maple)	16	Good
041	*Acer macrophyllum* (Big leaf maple)	18	Fair

Tree #1 – Tree #3, Tree #5 – Tree #6, Tree #8 – Tree #11, Tree #19, and Tree #41 are big leaf maple trees located within the direct vicinity to the proposed pumphouse and associated piping. Due to the close proximity to the proposed improvements, the challenging topography of the site, and the difficulty of any kind of tree protection, these trees are not good candidates for retention and should be removed under the current proposal.

Tree #4 is a big-leaf maple snag in poor condition; the tree is nearly dead. Tree protection measures will do little to save this tree, therefore it can be retained in place to serve as a habitat snag.

Tree #5 is located in very close proximity to the existing water infrastructure. Tree #5 was observed to have a large crack continuing from the root plate upwards of 30-feet on the trunk. The location of the crack, if it were to break on crack, would most likely impact the existing water tank. (Figure 2). Additionally, big leaf maples normally drop large limbs that can be very

unpredictable and difficult to mitigate. Tree #5 currently poses a medium risk to vital drinking water infrastructure; such that severe consequences would result even if a small part of the tree failed and impacted the target.

Tree #7, a two-stem giant sequoia, is located near the entrance driveway to the site. This tree is proposed for retention under the current proposal. The proposed pump house is located outside the dripline of Tree #7, however associated piping occurs within the inner critical root zone. Tree protection fencing should be deployed as shown on the attached site plan and work within the interior root zone of Tree #7 shall be performed with alternative excavation methods as outline in the tree protection measures later in this report.

Tree #12 is a Douglas-fir growing atop a slope adjacent to the proposed pipe alignment. The proposed pipe alignment has been designed to avoid impacts to the roots of Tree #12. The alignment is far enough away (>22-feet) from Tree #12's rootzone that the new alignment will have no impacts to Tree #12's rootzone. However, due to the proximity to the proposed construction an ISA-Certified Arborist should be on-site supervising the excavation within this area.

Tree #13 is a big-leaf maple growing within five feet of Tree #12. Tree #12 is located between the proposed pipe alignment and Tree #13. There are no impacts proposed within the rootzone of Tree #13, therefore it is a good candidate for retention.

Tree #14, a large red alder, is rooted outside of the project work limits. Nosite improvements are proposed within the tree's critical root zone and it is a good candidate for retention.

Tree #15, a large western red cedar, is currently in the middle of the proposed piping. This tree will be too severely impacted to be retained under the current proposal.

Tree #16, a western red cedar growing on a nurse log, whose roots are located around the large old growth stump, is far enough away from the proposed impacts that it is a great candidate for retention.

Tree #17 and Tree #18 are located adjacent to the property boundary to the east of the proposed pump house. Existing driveway, wood shed structures, and gravel staging area is already present within the root zones of these trees. These physical obstacles and soil compaction make the area within the rootzones of Tree #17 and Tree #18 already impacted, therefore the proposed development action won't cause additional root impacts. However, an arborist will be on-site as excavation takes place in these critical rootzones.

Trees #23 through #35 are a combination of Douglas-fir and big-leaf maple trees. These trees are rooted in and around existing staging and driveway areas. Proposed excavation within the vicinity of these tree's rootzones shall consist of a three-foot-wide trench. The trench will contain water, power, and communication lines running to several locations on the east end of the property connecting to existing infrastructure. The proposed trench will impact the interior root zone of Tree #24 and Tree #23; both of these trees are dead or dying, therefore standard methods of excavation shall be authorized in this area under the supervision of the project arborist.

Trees #36 through #38 are western red cedar trees located immediately adjacent to an existing valve bank, atop several water district utility connection boxes, and in the direct vicinity to an existing water holding tank. Furthermore, an existing compacted crushed rock access road is located within the interior critical rootzones of all three trees. Tree #37 meets the size threshold for an exceptional tree pursuant LFPMC; however, due to the presence of existing utilities and proposed utility improvements to the site, this tree should not be considered exceptional pursuant to LFPMC 16.14.030 "Exceptional Tree" (5). If Tree #37 continues to grow, the species and failure characteristics are not compatible with water utility infrastructure, therefore future removal may be required if the tree presents a moderate hazard. Work within the interior root zone of Trees #36- #38 shall be performed with alternative excavation methods as outline in the tree protection measures later in this report.

Tree #39 is a dead/dying big leaf maple; the proposed construction will keep the snag intact throughout construction but tree protection measure will not be prescribed due to its condition.

Tree #40 is an exceptional tree pursuant to LFPMC, work within the critical rootzone will take place on an existing access road on-site; this is a previously impacted area therefore no additional impacts are anticipated. Proposed work in this area will consist of excavating the front of the existing utility vault to allow additional connection within. Excavation will be performed by hand or with an alternative method outlined in a later section; no heavy equipment will be used.

Tree #42 is a big leaf maple with existing trenching approximately two feet from the base of the truck. Proposed improvements include an eight-inch waterline in the existing trench. Excavation of this line will consist of only alternative excavation methods under the direct supervision of the Project Arborist. If large structural roots (≥3") are found during excavation, the Project Arborist may stop work and re-assess the design alignment to better protect Tree #42 from excavation impacts. If Tree #42 continues to grow, the species and failure characteristics

are not compatible with water utility infrastructure, therefore future removal may be required if the tree presents a moderate hazard in the future.

Trees #43 through #54 are a large grouping of western red cedar, western hemlock, and big-leaf maple grouping on a slope adjacent to the existing pumphouse, and existing access road to the east. There is also a former access road cut going through the center of the tree stand, within many of the critical rootzones. There is one new main pipe connection taking place in this area. A 12-inch line is proposed from the existing large storage tank to the existing pump house pad. Work within this area will be performed using an alternative method of excavation and under the supervision of the project arborist.

Trees #55 is growing atop of an existing old growth stump similar to Tree #16. The interior and rootzone is not consistent with the LFPMC definition. Work within this area includes the installation of a drain outlet onto a small splash pad. Soil disturbance will be limited to placing rocks for splash pad and digging a small receiving pit for the horizontal boring. No significant impacts area expected to Tree #55. Tree #56 has its rootzone protected by the old growth stump Tree #55 is going atop of. There are no impacts expected to Tree #56. Work within this area will be performed using an alternative method of excavation and under the supervision of the project arborist.

This proposal will involve excavating into the slope and into the interior critical root zones of nearly all 13 trees. All excavation in this area will be through an alternative form of excavation outlined in later sections. The existing access road cut is proposed for equipment to deliver pipe and large fitting to the lower connection areas. Equipment can use this existing access road grade if it is covered with six-inches of arborist wood chip mulch as shown on Appendix B – Tree Protection Plan. Trees #43 through #56 will be retained and excavation within any of these tree interior critical rootzones will be done under the direct supervision of the Project Arborist. If conditions arise that require the cutting of roots, additional tree protections measures, the project arborist will make this decision, in the field at their discretion.

Lake Forest Park Regulations

Lake Forest Park Municipal Code (LFPMC) 16.16.160 requires preparation of a vegetation management plan in those circumstances where the preservation of existing vegetation is required. The plan shall identify proposed clearing limits and areas of buffer disturbance. Compliance with the vegetation management plan requirements can be achieved through the preparation of landscape and/or erosion and sediment control plans. The proposed project includes previously prepared mitigation plans and an engineered plan set that includes erosion

control details. Together, these documents contain all required information, and thus demonstrate compliance with LFPMC 16.16.160.

Pursuant to LFPMC 16.14.080.A.4, the removal of non-exceptional trees from within critical areas and buffers is allowed when the tree removal is part of an approved action under LFPMC 16.16. In this case, the proposed project is allowed pursuant to LFPMC 16.16.330.B.6. Thus, the removal of non-exceptional trees is allowed. See the separately prepared Critical Areas Study for further information regarding compliance with LFPMC 16.16.330.B.6.

LFPMC 16.14.080.A.1 allows the removal of a tree that poses a risk that cannot be mitigated by pruning or other methods. In this case, the location of the one tree (Tree #5) in proximity to the District's low zone tank and other critical infrastructure represent a risk to public health and safety because Tree #5 is large enough to cause considerable damage from a tree or limb failure. The worst-case scenario being a rupture and the immediate release of approximately 240,000 gallons of water from the tank. Tree failure or limb failure damage could also result in the intermediate or long-term interruption of fire suppression and fire flow storage until replacement infrastructure/storage could be constructed. Removal of Tree #5, along with the other seven that are in close proximity to the low tank have been a part the District's proposed work from the beginning of this project for the reasons outlined above and for the optimal pipeline alignment for this necessary project. Tree #5 demonstrates a moderate risk with severe consequences and should be removed pursuant to LFPMC 16.14.080.A.1(b). Tree #5 is eligible for listing as 'exceptional' due to its species and size. However, as described above, Tree #5 presents a moderate risk with severe consequences, and should be removed.

LFPMC 16.14.080.C requires (at the request of the administrator) that a qualified professional determine whether or not the proposed tree removal is likely to cause damage to the critical area or buffer or reduce its ecological function. The proposed tree removal has been assessed by certified arborist, Kyle Braun, ISA, and Senior Wetland Ecologist, Ryan Kahlo, PWS. Removal will not cause damage to the on-site critical areas or buffers in that trees will either be removed due to direct conflict with proposed utility construction or trimmed into a habitat snag that doesn't present a safety or property damage issue. In addition, a total of 87 trees are proposed to be planted as part of the overall mitigation plan. This provides a tree replacement ratio of 7.25:1. Proposed trees will compensate for tree removal, including canopy and temporal loss of those functions provided by removed trees.

LFPMC 16.14.080.D requires that stumps of removed trees shall be retained, unless authorized by a qualified arborist. Further, removed trees are to be left on-site in such a way so as not to

impact existing native vegetation. The proposal will include retention of all stumps and the applicant will be directed to leave woody debris on-site, where feasible, and positioned such that it doesn't disturb native vegetation.

Finally, 79 of the 87 proposed trees appear on the City's approved tree list, ensuring compliance with LFPMC 16.14.090.B. This includes Douglas-fir, western red cedar, western hemlock, and big-leaf maple. Further, pursuant to LFPMC 16.14.090.C, all proposed trees will meet the minimum required standards for size and quality.

Tree Protection

Tree protection measures, listed below, and shown in Appendix B – Tree Protection Plan, should be used as a best effort to ensure tree survival following project completion.

- **Tree protection fencing:** Chain link or polyethylene fencing (minimum 4 feet in height) with "Tree Protection Area" signs should be placed around tree drip lines or critical root zones prior to comencment of any construction activities and shall remain in place through project completion (see attached tree protection detail). Tree protection fencing location is depicted on the Tree Protection Plan. If for whatever reason tree protection fencing needs to be moved, the project Arborist shall be notified immediately to ensure code compliance during the proposed development activity.
- **Trunk wrap:** Trunk wrap shall be installed on all trees located within 10 feet of proposed constrution activities. Wrap shall be installed prior to any constuction activities and shall remain intact until project completion. Trunk wrap locations are depicted on the attached Tree Protection plan. Also attached is a trunk wrap detail.
- **Alternative Excavation Methods:** The following are considered alternative methods of excavation that can be used, instead of heavy equipment, within the rootzones of protected trees:
    - Air excavation (Air-spade or Air-knife)
    - Hydro excavation (water jet)
    - Moling (horizontal boring)
    - Hand excavation, avoiding tree roots

- **Apply Arborist Woodchip mulch:** Where construction access is required within driplines, and as shown on the attached Tree Protection Plan, 5/8" plywood sheets should be placed on top of 6-inches of wood chip mulch to protect root zone areas from excessive compaction.

- **Preventative measures:** Trees that will be impacted and retained should be supplemented with fertilizer, mulch, and water to limit stress and enhance vigor.
- **Minimize injury:** When tree roots must be removed, cut roots cleanly using a sharp saw or pruners. Do not rip or cut tree roots with heavy equipment.
- **Pre and Post Constuction Monitoring:** The Project Arborist should be present on-site during construction activities within the critical root zones of retained trees to monitor tree protection, assist with changes in the field, and document construction impacts, all to ensure the proposed development activities comply with the LFPMC. This will be documented in weekly memos provided to the City of Lake Forest Park Arborist.

Limitations to the Study

The findings of this report are based on the best available science and are limited to the scope, budget and site conditions at the time of the assessment. Although the information in this report is based on sound methodology, internal physical flaws (such as cracking or root rot) or other conditions that are not visible cannot be detected with this limited basic visual screening. Trees are inherently unpredictable. Even vigorous and healthy trees can fail due to high winds, heavy snow, ice storms, rain, age or other causes.

This report is based on the current observable conditions and may not represent future conditions of the trees. Changes in site conditions, including clearing and grading, will alter the condition of remaining trees in a way that is not predictable. The conclusions contained within this report have been made for permitting purposes only and are not intended for tree risk assessment purposes.

Sincerely,

Kyle Braun, ISA
ISA Certified Arborist© (PN-7827A) | Tree Risk Assessment Qualified

Enclosures: Appendix A – Tree Inventory Table, Appendix B – Tree Protection Plan, Tree Risk Assessment Forms, Tree Protection Detail, Trunk Wrap Detail

Figure 2. Image of Tree #5 and the crack on one of the main leaders, aiming at the existing water storage tank.

Figure 3. Image of Tree #5 looking up at the interior cavity displaying large amounts of decay.

TAG #	TREE NAME	EV / DEC	# STEMS	COMBINED DBH (IN, ROUNDED)	CONDITION	CRITICAL ROOT ZONE (FT)	INTERIOR CRITICAL ROOT ZONE (FT)	CANOPY RADIUS (FT)	EXCEPTIONAL PER LFPMC	LANDMARK PER LFPMC
001	Acer macrophyllum (Bigleaf maple)	D	2	**19**	**1 - Excellent**	19	10	15		
002	Acer macrophyllum (Bigleaf maple)	D	2	**29**	**1 - Excellent**	29	15	18		X
003	Acer macrophyllum (Bigleaf maple)	D	2	**20**	**1 - Excellent**	20	10	15		
004	Acer macrophyllum (Bigleaf maple)	D	3	**13**	**4 - Poor**	13	7	12		
005	Acer macrophyllum (Bigleaf maple)	D	2	**51**	**3 - Fair**	51	26	25	X	X
006	Acer macrophyllum (Bigleaf maple)	D	2	**20**	**3 - Fair**	20	10	10		
007	Sequoia sempervirens (Redwood)	E	2	**74**	**2 - Good**	74	37	15		X
008	Acer macrophyllum (Bigleaf maple)	D	2	**31**	**2 - Good**	31	16	18		X
009	Acer macrophyllum (Bigleaf maple)	D	1	**36**	**2 - Good**	36	18	18		X
010	Acer macrophyllum (Bigleaf maple)	D	2	**13**	**2 - Good**	13	7	14		
011	Acer macrophyllum (Bigleaf maple)	D	1	**12**	**2 - Good**	12	6	14		
012	Pseudotsuga menziesii (Douglas-fir)	E	1	**46**	**2 - Good**	46	23	22	X	X
013	Acer macrophyllum (Bigleaf maple)	D	12	**35**	**2 - Good**	35	18	18		X
014	Alnus rubra (Red alder)	D	3	**23**	**2 - Good**	23	12	15		
015	Thuja plicata (Western red cedar)	E	1	**27**	**2 - Good**	27	14	16		X
016	Thuja plicata (Western red cedar)	E	1	**14**	**2 - Good**	14	7	14		
017	Acer macrophyllum (Bigleaf maple)	D	1	**18**	**1 - Excellent**	18	9	20		
018	Pseudotsuga menziesii (Douglas-fir)	E	1	**24**	**3 - Fair**	24	12	14		X
019	Acer macrophyllum (Bigleaf maple)	D	1	**16**	**2 - Good**	16	8	20		
020	Acer macrophyllum (Bigleaf maple)	D	2	**38**	**4 - Poor**	38	19	25		X

Arborist Assessment by Watershed Co.

TAG #	TREE NAME	EV / DEC	# STEMS	COMBINED DBH (IN, ROUNDED)	CONDITION	CRITICAL ROOT ZONE (FT)	INTERIOR CRITICAL ROOT ZONE (FT)	CANOPY RADIUS (FT)	EXCEPTIONAL PER LFPMC	LANDMARK PER LFPMC
021	Acer macrophyllum (Bigleaf maple)	D	3	**41**	**2 - Good**	41	21	25		X
022	Acer macrophyllum (Bigleaf maple)	D	2	**23**	**2 - Good**	23	12	25		X
023	Acer macrophyllum (Bigleaf maple)	D	2	**39**	**5 - Dead/Dying**	39	20	25		X
024	Acer macrophyllum (Bigleaf maple)	D	2	**25**	**5 - Dead/Dying**	25	13	25		X
025	Pseudotsuga menziesii (Douglas-fir)	E	1	**29**	**2 - Good**	29	15	18		X
026	Acer macrophyllum (Bigleaf maple)	D	1	**15**	**5 - Dead/Dying**	15	8	15		
027	Acer macrophyllum (Bigleaf maple)	D	1	**25**	**3 - Fair**	25	13	18		X
028	Acer macrophyllum (Bigleaf maple)	D	4	**31**	**2 - Good**	31	16	30		X
029	Acer macrophyllum (Bigleaf maple)	D	1	**16**	**4 - Poor**	16	8	15		
030	Pseudotsuga menziesii (Douglas-fir)	E	1	**21**	**2 - Good**	21	11	20		
031	Pseudotsuga menziesii (Douglas-fir)	E	1	**34**	**2 - Good**	34	17	18		X
032	Pseudotsuga menziesii (Douglas-fir)	E	1	**35**	**2 - Good**	35	18	18		X
033	Acer macrophyllum (Bigleaf maple)	D	1	**7**	**1 - Excellent**	7	4	12		
034	Acer macrophyllum (Bigleaf maple)	D	1	**8**	**2 - Good**	8	4	20		
035	Pseudotsuga menziesii (Douglas-fir)	E	1	**39**	**2 - Good**	39	20	20		X
036	Thuja plicata (Western red cedar)	E	1	**37**	**2 - Good**	37	19	25		X
037	Thuja plicata (Western red cedar)	E	2	**44**	**2 - Good**	44	22	25	X	X
038	Thuja plicata (Western red cedar)	E	1	**35**	**2 - Good**	35	18	25		X
039	Acer macrophyllum (Bigleaf maple)	D	1	**16**	**5 - Dead/Dying**	16	8	15		
040	Thuja plicata (Western red cedar)	E	1	**35**	**2 - Good**	35	18	25		X

TAG #	TREE NAME	EV / DEC	# STEMS	COMBINED DBH (IN, ROUNDED)	CONDITION	CRITICAL ROOT ZONE (FT)	INTERIOR CRITICAL ROOT ZONE (FT)	CANOPY RADIUS (FT)	EXCEPTIONAL PER LFPMC	LANDMARK PER LFPMC
041	Acer macrophyllum (Bigleaf maple)	D	1	**18**	**3 - Fair**	18	9	28		
042	Acer macrophyllum (Bigleaf maple)	D	2	**44**	**2 - Good**	44	22	25		X
043	Thuja plicata (Western red cedar)	E	1	**20**	**2 - Good**	20	10	15		
044	Acer macrophyllum (Bigleaf maple)	D	1	**34**	**2 - Good**	34	17	25		X
045	Pseudotsuga menziesii (Douglas-fir)	E	1	**23**	**4 - Poor**	23	12	20		
046	Thuja plicata (Western red cedar)	E	1	**30**	**2 - Good**	30	15	21		X
047	Pseudotsuga menziesii (Douglas-fir)	E	1	**28**	**3 - Fair**	28	14	18		X
048	Thuja plicata (Western red cedar)	E	1	**22**	**2 - Good**	22	11	15		
049	Tsuga heterophylla (Western hemlock)	E	1	**27**	**2 - Good**	27	14	18		X
050	Pseudotsuga menziesii (Douglas-fir)	E	1	**21**	**3 - Fair**	21	11	18		
051	Tsuga heterophylla (Western hemlock)	E	1	**25**	**3 - Fair**	25	13	15		X
052	Acer macrophyllum (Bigleaf maple)	D	1	**16**	**3 - Fair**	16	8	25		
053	Acer macrophyllum (Bigleaf maple)	D	1	**11**	**2 - Good**	11	6	21		
054	Acer macrophyllum (Bigleaf maple)	D	1	**32**	**2 - Good**	32	16	25		X
055	Thuja plicata (Western red cedar)	E	1	**15**	**2 - Good**	15	8	18		
056	Acer macrophyllum (Bigleaf maple)	D	1	**14**	**2 - Good**	14	7	20		

Arborist Assessment by Watershed Co.

LEGEND

- SIGNIFICANT TREE (6"≤)
- TREE TO BE REMOVED (12)
- CRITICAL ROOT ZONE
- INTERIOR CRITICAL ROOT ZONE BOUNDARY
- PROJECT WORK LIMITS
- CRITICAL AREA BUFFER

TREE PROTECTION MEASURES

- AREA OF ALTERNATIVE METHOD OF EXCAVATION (SEE NOTE 3)
- TREE PROTECTION FENCING
- TRUNK WRAP (17)
- AREA TO INSTALL 6-INCH DEEP LAYER OF ARBORIST WOOD CHIP MULCH

TREE PROTECTION NOTES

1. PROJECT ARBORIST SHALL BE ON SITE FOR ALL EXCAVATION WITHIN THE CRITICAL ROOT ZONES OF ON-SITE TREES. IF CONDITIONS ARISE THAT REQUIRE THE CUTTING OF ROOTS OR ADDITIONAL TREE PROTECTION MEASURES, THE PROJECT ARBORIST WILL MAKE THIS DECISION, IN THE FIELD AT THEIR DISCRETION.

2. PROJECT ARBORIST WILL PREPARE WEEKLY CONSTRUCTION MEMO REPORTS TO DOCUMENT CONSTRUCTION WITHIN THE ROOT ZONES OF ONE-SITE TREES. ITEMS DOCUMENTED IN THE REPORT WITH DISCUSS LOCATIONS OF SIGNIFICANT ROOT CUTTING, ADDITIONAL TREE PROTECTION MEASURES TO BE IMPLEMENTED, AND REPORTING ON THE OVERALL HEALTH OF TREES FOLLOWING THE PROPOSED CONSTRUCTION ACTIVITY.

3. AREA OF ALTERNATIVE EXCAVATION SHALL BE SUPERVISED BY THE PROJECT ARBORIST THROUGHOUT THE ENTIRE CONSTRUCTION PHASE. ALTERNATIVE METHODS OF EXCAVATION CAN BE ANY OF THE FOLLOWING, UPON APPROVAL BY THE PROJECT ARBORIST.
   - 3.1. AIR EXCAVATION (AIR KNIFE OR AIR SPADE)
   - 3.2. HYDRAULIC EXCAVATION (WATER JET)
   - 3.3. MOLING OR HORIZONTAL BORING
   - 3.4. HAND EXCAVATION

4. REFER TO THE WATERSHED COMPANY ARBORIST REPORT DATED JUNE 21ST, 2019 FOR SPECIFIC TREE TREE PROTECTION MEASURES TO BE IMPLEMENTED ON AN AS-NEEDED BASIS, OR UNDER THE DIRECTION OF THE PROJECT ARBORIST. IT IS ASSUMED THAT ALL SITE ACCESS WITH HEAVY EQUIPMENT WILL BE DONE USING THE EXISTING ACCESS ROADS. IN LOCATIONS WHERE HEAVY MACHINERY IS USED FOR PIPE AND DITCH EXCAVATION, TREES WITHIN 5-FEET OF THE PROPOSED WORK AREA SHALL BE TRUNK WRAPPED AS DEPICTED ON THE APPROVED PLAN.

TREE PROTECTION PLAN

0 10' 20' 40' 80'

PERMIT SET

NOT FOR CONTRACTOR BIDDING

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242 f 425.827.8136
www.watershedco.com
Science & Design

LAKE FOREST PARK PUMPHOUSE
TREE PROTECTION PLAN
PREPARED FOR LAKE FOREST PARK WATER DISTRICT
4029 NE 178TH ST
LAKE FOREST PARK, WA 98155

SUBMITTALS & REVISIONS

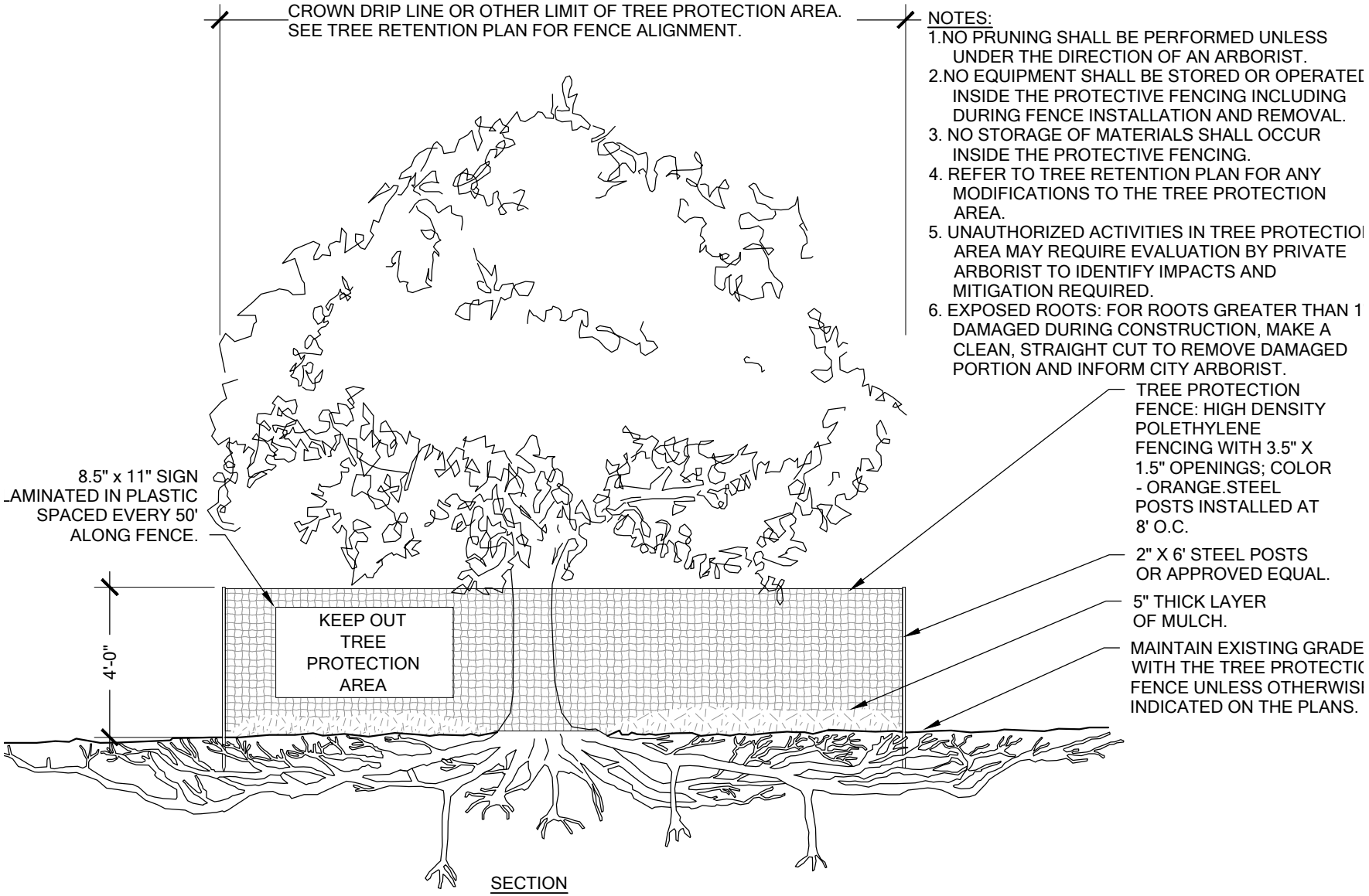
NO.	DATE	DESCRIPTION	BY
1	06-21-2019	TREE PROTECTION PLAN	KMB
2	07-23-2019	CITY COMMENT REVISIONS	KMB

GENERAL NOTES:

SHEET SIZE:
ORIGINAL PLAN IS 24" X 36".
SCALE ACCORDINGLY.

PROJECT MANAGER: KB
DESIGNED: AJ / LV
DRAFTED: AJ / LV
CHECKED: JMF / AM
JOB NUMBER: 161129
SHEET NUMBER: W1 OF 1

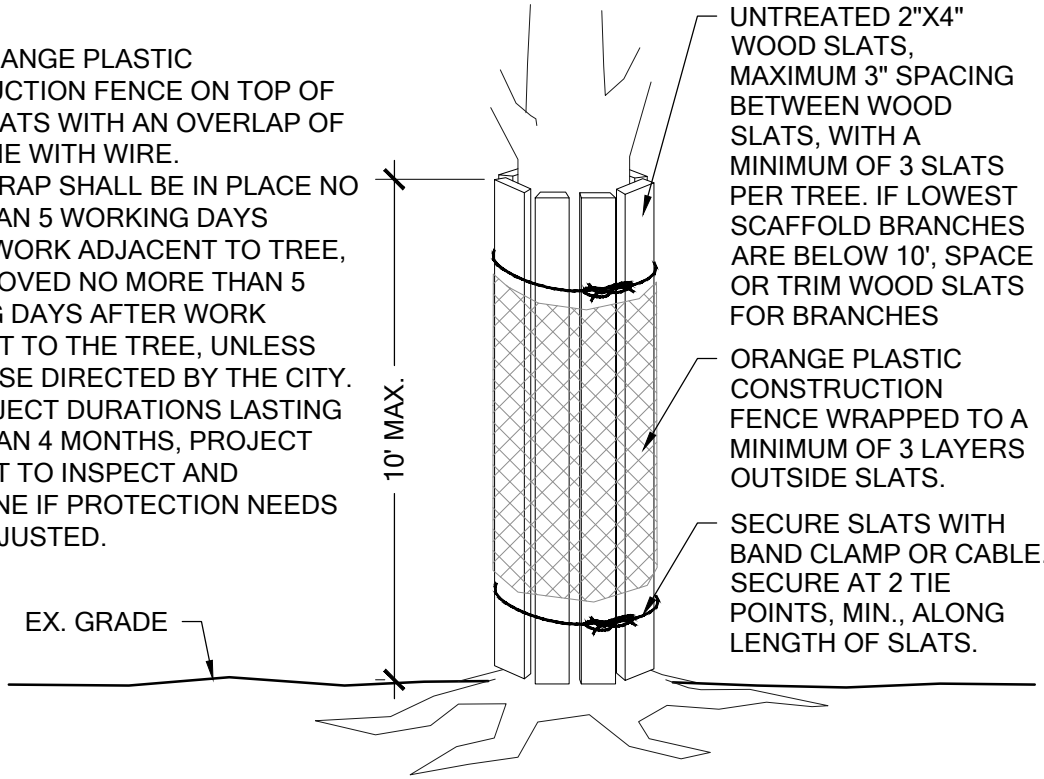
FILENAME: 161129 LFP PUMPHOUSE_REV_TP.DWG
PRINTED BY: KYLE BRAUN
DATE: 7/25/2019


CROWN DRIP LINE OR OTHER LIMIT OF TREE PROTECTION AREA.
SEE TREE RETENTION PLAN FOR FENCE ALIGNMENT.
NOTES:
1.NO PRUNING SHALL BE PERFORMED UNLESS UNDER THE DIRECTION OF AN ARBORIST.
2.NO EQUIPMENT SHALL BE STORED OR OPERATED INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.
3. NO STORAGE OF MATERIALS SHALL OCCUR INSIDE THE PROTECTIVE FENCING.
4. REFER TO TREE RETENTION PLAN FOR ANY MODIFICATIONS TO THE TREE PROTECTION AREA.
5. UNAUTHORIZED ACTIVITIES IN TREE PROTECTION AREA MAY REQUIRE EVALUATION BY PRIVATE ARBORIST TO IDENTIFY IMPACTS AND MITIGATION REQUIRED.
6. EXPOSED ROOTS: FOR ROOTS GREATER THAN 1 DAMAGED DURING CONSTRUCTION, MAKE A CLEAN, STRAIGHT CUT TO REMOVE DAMAGED PORTION AND INFORM CITY ARBORIST.
TREE PROTECTION FENCE: HIGH DENSITY POLETHYLENE FENCING WITH 3.5" X 1.5" OPENINGS; COLOR - ORANGE.STEEL POSTS INSTALLED AT 8' O.C.
8.5" x 11" SIGN LAMINATED IN PLASTIC SPACED EVERY 50' ALONG FENCE.
2" X 6' STEEL POSTS OR APPROVED EQUAL.
5" THICK LAYER OF MULCH.
MAINTAIN EXISTING GRADE WITH THE TREE PROTECTION FENCE UNLESS OTHERWISE INDICATED ON THE PLANS.
KEEP OUT TREE PROTECTION AREA
4'-0"

SECTION

NOTES:

1. WRAP ORANGE PLASTIC CONSTRUCTION FENCE ON TOP OF WOOD SLATS WITH AN OVERLAP OF 12" AND TIE WITH WIRE.
2. TRUNK WRAP SHALL BE IN PLACE NO MORE THAN 5 WORKING DAYS BEFORE WORK ADJACENT TO TREE, AND REMOVED NO MORE THAN 5 WORKING DAYS AFTER WORK ADJACENT TO THE TREE, UNLESS OTHERWISE DIRECTED BY THE CITY.
3. FOR PROJECT DURATIONS LASTING MORE THAN 4 MONTHS, PROJECT ARBORIST TO INSPECT AND DETERMINE IF PROTECTION NEEDS TO BE ADJUSTED.



Basic Tree Risk Assessment Form

Client Lake Forest Park Water District Date 01-23-2019 Time 10 AM

Address/Tree location Parcel # 4022906570 & 4019900176 Tree no. 5 Sheet 1 of 1

Tree species Acer macrophyllum (Big leaf maple) dbh 50.8" Height 80' Crown spread dia. 25

Assessor(s) Kyle Braun (PN-7827A) Tools used Hammer, mallet, binoculars **Time frame** 5 Years

Target Assessment

Target number	Target description	Target protection	Target zone: Target within drip line	Target zone: Target within 1 x Ht.	Target zone: Target within 1.5 x Ht.	Occupancy rate (1–rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1	Water storage tank and above ground piping	No	✓	✓	✓	4	No	No
2								
3								
4								

Site Factors

History of failures Limbs all over understory most likely from recent wind storm **Topography** Flat ☐ Slope ■ 40 % **Aspect** West

Site changes None ☐ Grade change ■ Site clearing ☐ Changed soil hydrology ■ Root cuts ☐ Describe

Soil conditions Limited volume ☐ Saturated ■ Shallow ☐ Compacted ■ Pavement over roots ☐ ____% Describe

Prevailing wind direction SW **Common weather** Strong winds ☐ Ice ☐ Snow ☐ Heavy rain ☐ Describe Puget Sound

Tree Health and Species Profile

Vigor Low ☐ Normal ■ High ☐ **Foliage** None (seasonal) ■ None (dead) ☐ Normal ____% Chlorotic ____% Necrotic ____%

Pests/Biotic **Abiotic**

Species failure profile Branches ■ Trunk ■ Roots ☐ Describe Species is known to drop large limbs and lose whole leaders

Load Factors

Wind exposure Protected ☐ Partial ■ Full ☐ Wind funneling ■ Access road could create wind tunnel **Relative crown size** Small ☐ Medium ▣ Large ☐

Crown density Sparse ☐ Normal ■ Dense ☐ **Interior branches** Few ■ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☐

Recent or expected change in load factors

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ■ LCR 40 %

Dead twigs/branches ■ 20 % overall Max. dia. 12"

Broken/Hangers Number 3 Max. dia. 4"

Over-extended branches ■

Pruning history

Crown cleaned ☐ Thinned ☐ Raised ▣

Reduced ☐ Topped ☐ Lion-tailed ☐

Flush cuts ☐ Other

Large over extended limbs

Part Size 8" Fall Distance 100'

Load on defect N/A ☐ Minor ☐ Moderate ■ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

Cracks ☐ Lightning damage ☐

Codominant ■ Included bark ☐

Weak attachments ■ Cavity/Nest hole 20 % circ.

Previous branch failures ■ Similar branches present ▣

Dead/Missing bark ■ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐

Conks ☐ Heartwood decay ☐

Response growth One large dead leader on north side of truck

Condition(s) of concern

Dead leader

Part Size 12" Fall Distance 100'

Load on defect N/A ☐ Minor ■ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ☐

Codominant stems ● Included bark ☐ Cracks ●

Sapwood damage/decay ☐ Cankers/Galls/Burls ☐ Sap ooze ☐

Lightning damage ☐ Heartwood decay ● Conks/Mushrooms ☐

Cavity/Nest hole 20 % circ. Depth ____ Poor taper ☐

Lean 10 ° Corrected? Slightly

Response growth

Condition(s) of concern Leader with large crack

Part Size 12" Fall Distance

Load on defect N/A ■ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ■ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth____ Stem girdling ☐

Dead ☐ Decay ☐ Conks/Mushrooms ☐

Ooze ☐ Cavity ☐ ____% circ.

Cracks ☐ Cut/Damaged roots ☐ Distance from trunk ____

Root plate lifting ☐ Soil weakness ☐

Response growth One large dead leader on north side of truck

Condition(s) of concern

Part Size Fall Distance

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

Risk Categorization

Target (Target number or description)	Tree part	Condition(s) of concern	Likelihood: Failure: Improbable	Failure: Possible	Failure: Probable	Failure: Imminent	Likelihood: Impact: Very low	Impact: Low	Impact: Medium	Impact: High	Failure & Impact (from Matrix 1): Unlikely	Somewhat	Likely	Very likely	Consequences: Negligible	Minor	Significant	Severe	Risk rating (from Matrix 2)
Water tank	Large limbs	Species	○	○	◉	○	○	○	○	◉	○	◉	○	○	○	○	○	◉	MOD
Water lines			○	○	◉	○	○	○	○	◉	○	◉	○	○	○	○	○	◉	MOD
			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Water tank	Leader	Large crack and decay pockets	○	○	○	◉	○	○	○	◉	○	○	○	◉	○	○	○	◉	EX
Water lines			○	○	○	◉	○	○	○	◉	○	○	○	◉	○	○	○	◉	EX
			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
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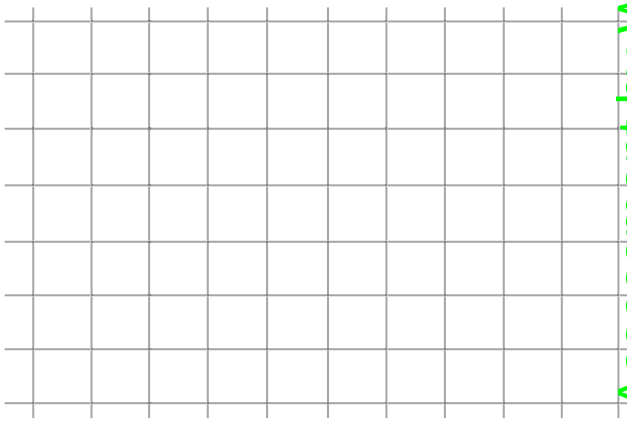
			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

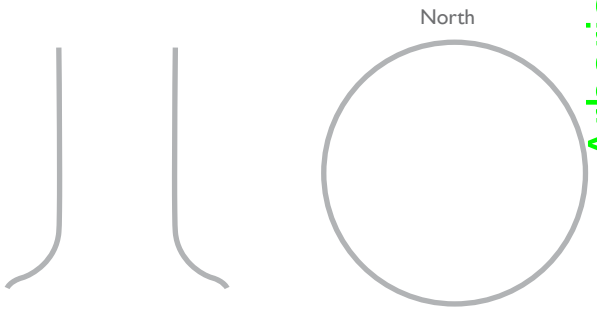
Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low





Notes, explanations, descriptions

_____

_____

_____

_____

_____

Mitigation options

1. Remove tree _____ **Residual risk** None

2. _____ **Residual risk** _____

3. _____ **Residual risk** _____

4. _____ **Residual risk** _____

Overall tree risk rating Low ☐ Moderate ☐ High ☐ Extreme ■

Overall residual risk None ■ Low ☐ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** N/A

Data ☐ Final ☐ Preliminary **Advanced assessment needed** ☐ No ☐ Yes-Type/Reason _____

Inspection limitations ☐ None ☐ Visibility ☐ Access ☐ Vines ☐ Root collar buried Describe _____

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Regulatory Branch

AUG 3 0 2017

Mr. Alan Kerley
Lake Forest Park Water District
4029 Northeast 178th Street
Lake Forest Park, Washington 98155

Reference: NWS-2017-157
Lake Forest Park Water District
(Mckinnon Creek Pump-House
Relocation)

Dear Mr. Kerley:

We have reviewed your application to temporary excavate and backfill wetlands to replace an existing pump facility in wetlands adjacent to McKinnon Creek at Lake Forest Park, Washington. Based on the information you provided to us, Nationwide Permit (NWP) 12, *Utility Line Activities* (Federal Register January 6, 2017, Vol. 82, No. 4), authorizes your proposal as depicted on the enclosed drawings dated February 10, 2017.

In order for this authorization to be valid, you must ensure the work is performed in accordance with the enclosed *NWP 12, Terms and Conditions*

We have reviewed your project pursuant to the requirements of the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act and the National Historic Preservation Act. We have determined this project complies with the requirements of these laws provided you comply with all of the permit general conditions.

The authorized work complies with the Washington State Department of Ecology's (Ecology) Water Quality Certification (WQC) requirements and Coastal Zone Management (CZM) consistency determination response for this NWP. No further coordination with Ecology for WQC and CZM is required.

You have not requested a jurisdictional determination for this proposed project. If you believe the Corps does not have jurisdiction over all or portions of your project you may request a preliminary or approved jurisdictional determination (JD). If one is requested, please be aware that we may require the submittal of additional information to complete the JD and work authorized in this letter may not occur until the JD has been completed.

Our verification of this NWP authorization is valid until March 18, 2022, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work has not been completed by that date and you have commenced or are under contract to commence this activity before March 18, 2022, you will have until March 18, 2023, to complete the activity under the enclosed terms and conditions of this NWP. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of Section 404 of the Clean Water Act. You must also obtain all local, State, and other Federal permits that apply to this project.

Upon completing the authorized work, you must fill out and return the enclosed *Certificate of Compliance with Department of the Army Permit*. Thank you for your cooperation during the permitting process. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey. These documents and information about our program are available on our website at www.nws.usace.army.mil, select "Regulatory Branch, Permit Information" and then "Contact Us." A copy of this letter without enclosures will be furnished to Mr. Kenny Booth, of The Watershed Company, at 750 Sixth Street South, Kirkland, Washington 98033. If you have any questions, please contact me at andrew.j.shuckhart@usace.army.mil or (206) 316-3822.

Sincerely,

Andrew Shuckhart, Project Manager
Regulatory Branch

Enclosures

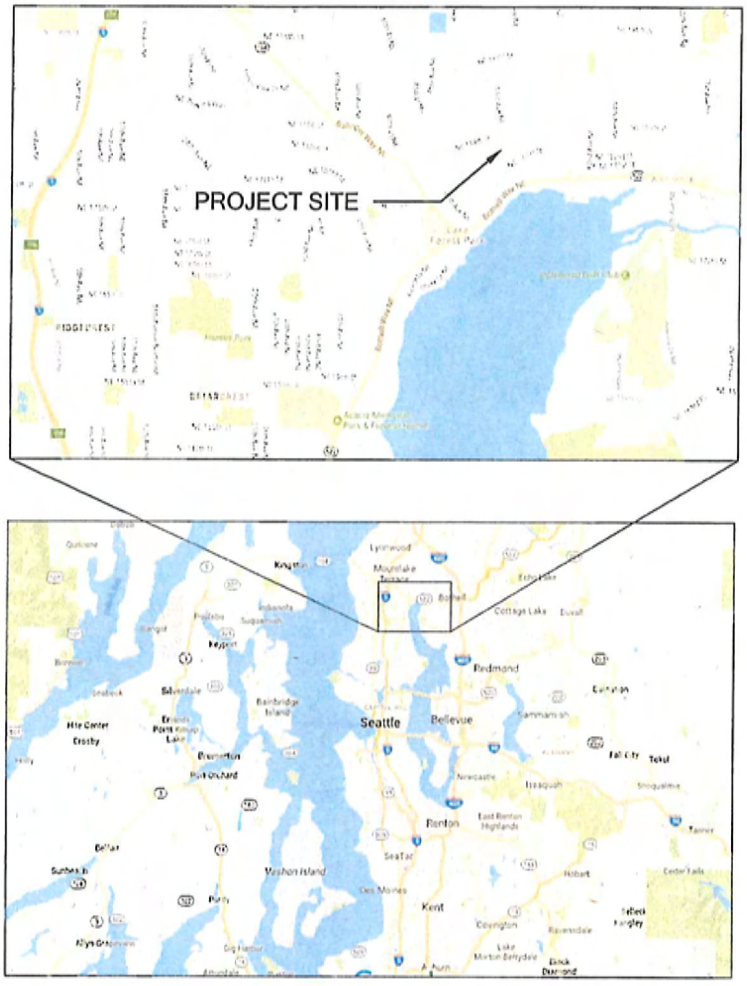
LAKE FOREST PARK PUMPHOUSE

NOTES

1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY ON NOVEMBER 29, 2016.
2. WETLAND AND STREAM DELINEATION FLAGS GPS-LOCATED WITH A TRIMBLE XH.
3. SURVEY RECEIVED FROM MUNDALL ENGINEERING AND CONSULTING. 3635 H STREET ROAD, MAPLE FALLS, WA 98266. (360) 319 -1285.

SHEET INDEX

1	TITLE PAGE
2	EXISTING CONDITIONS (1 OF 2)
3	EXISTING CONDITIONS (2 OF 2)
4	IMPACTS ASSESSMENT & MITIGATION PLAN (1 OF 2)
5	IMPACTS ASSESSMENT & MITIGATION PLAN (2 OF 2)
6	TESC & SITE PREP PLAN (1 OF 2)
7	TESC & SITE PREP PLAN (2 OF 2)
8	INVASIVE SPECIES REMOVAL NOTES
9	SITE PREP NOTES & TESC DETAILS (1 OF 2)
10	TESC DETAILS (2 OF 2)
11	PLANTING PLAN (1 OF 2)
12	PLANTING PLAN (2 OF 2)
13	PLANTING TYPICAL SCHEDULE (1 OF 3)
14	PLANTING TYPICAL SCHEDULE (2 OF 3)
15	PLANTING TYPICAL SCHEDULE (3 OF 3)
16	PLANT INSTALLATION NOTES
17	PLANT INSTALLATION DETAILS
18	MITIGATION NOTES (1 OF 3)
19	MITIGATION NOTES (2 OF 3)
20	MITIGATION NOTES (3 OF 3)



VICINITY MAPS

REFERENCE: NWS-2017-

PROPOSED PROJECT: REPLACE WATER DISTRICT PUMP HOUSE & WATER MAINS

DATE: 02/10/17

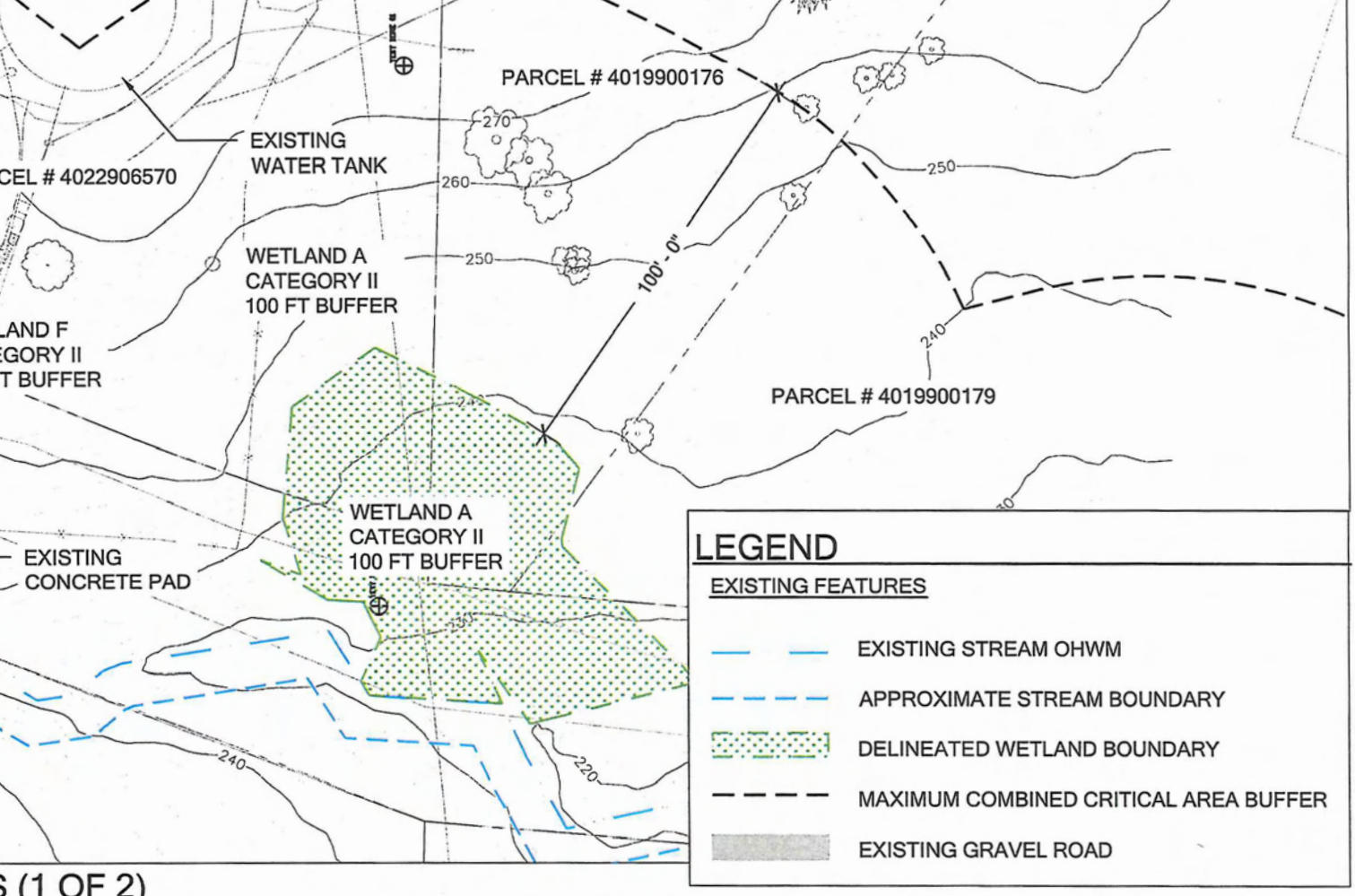
APPLICANT: LAKE FOREST PARK WATER DISTRICT

ADDRESS: 18460 47TH PL NE, LAKE FOREST PARK, WA 98155

Purpose: REPLACE AGING INFRASTRUCTURE

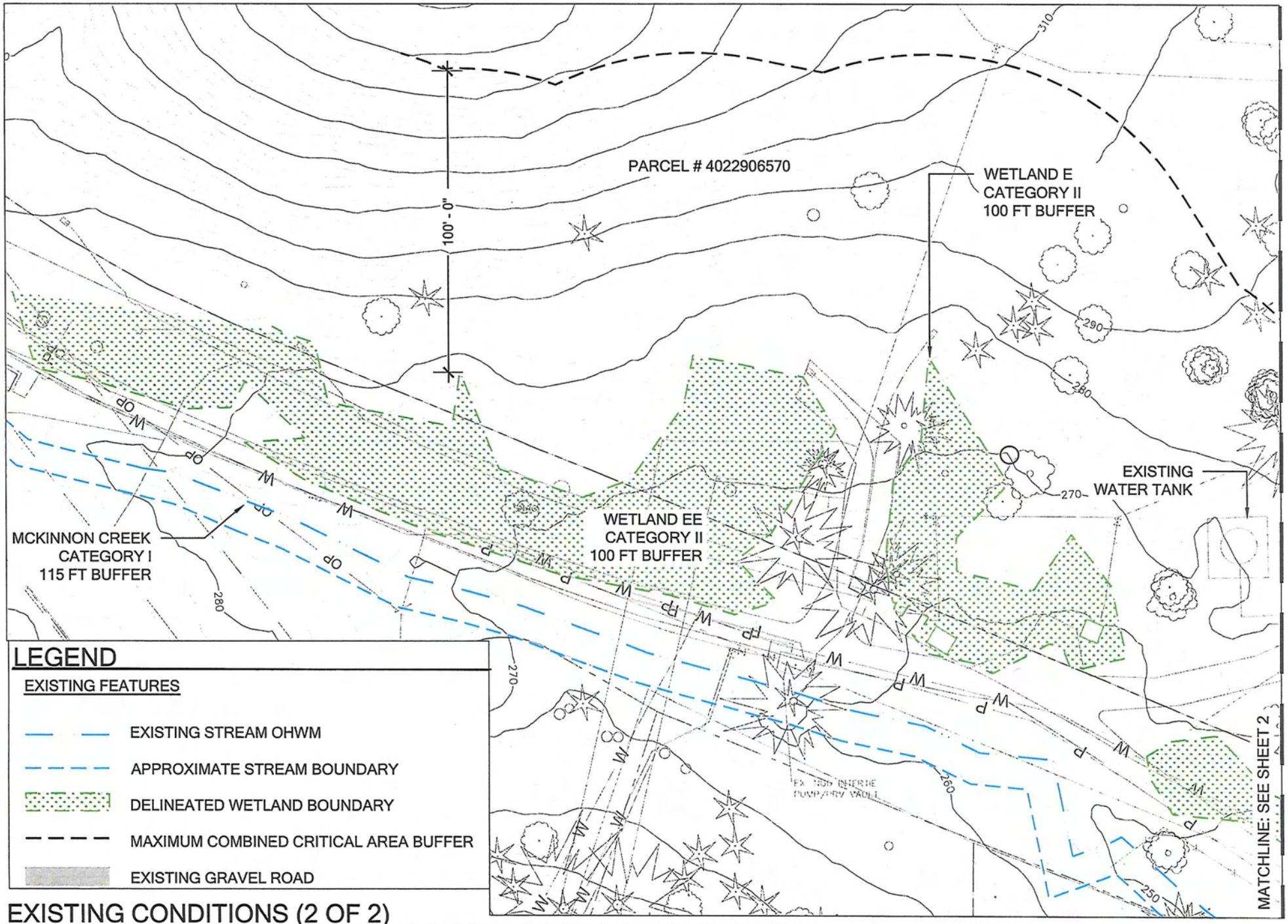
DATUM: NAVD88

COUNTY: KING



S (1 OF 2)

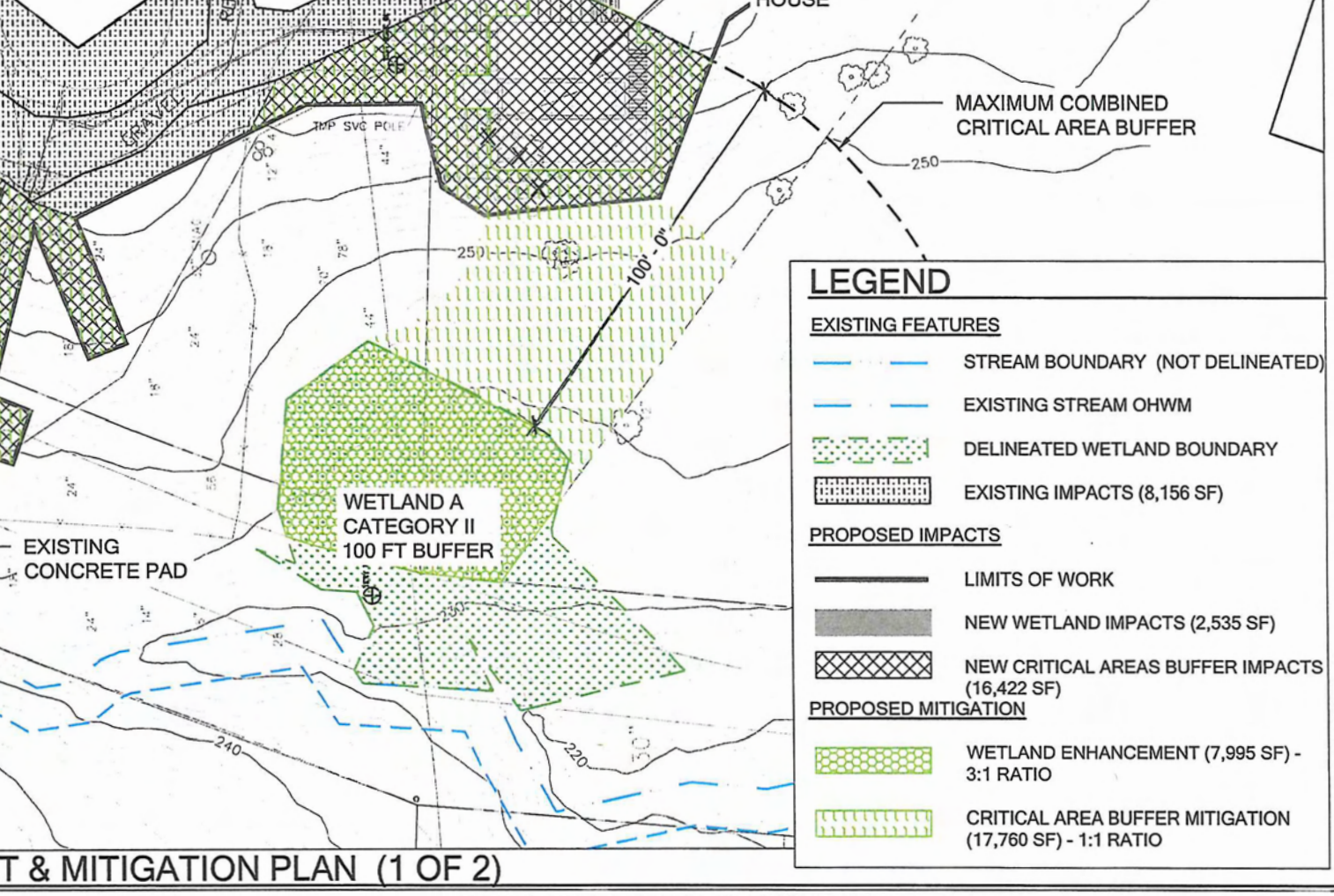
FERENCE: NWS-2017-
PLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017
Page 2 of 20



EXISTING CONDITIONS (2 OF 2)

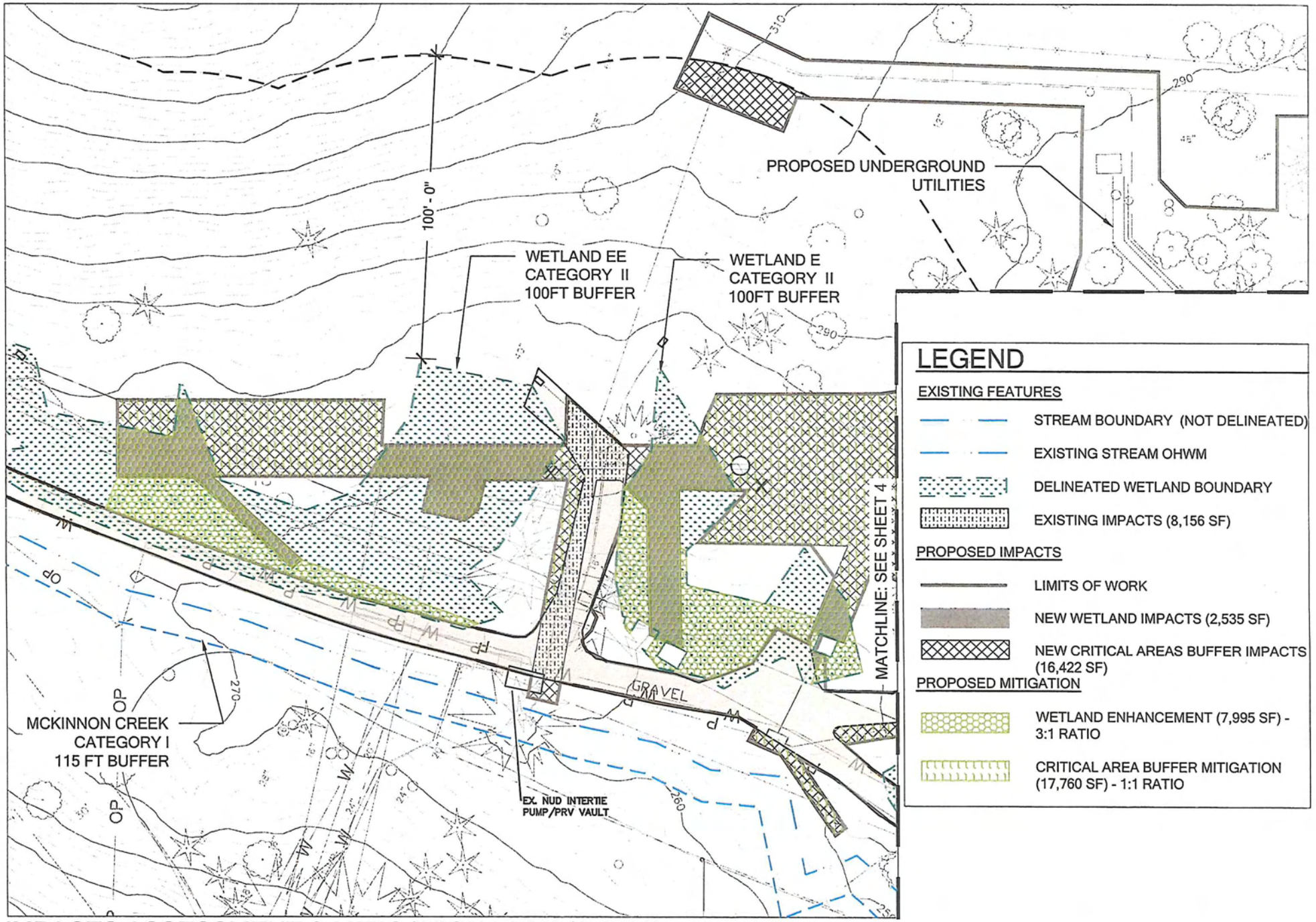
0 10' 20' 40'

REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017



T & MITIGATION PLAN (1 OF 2)

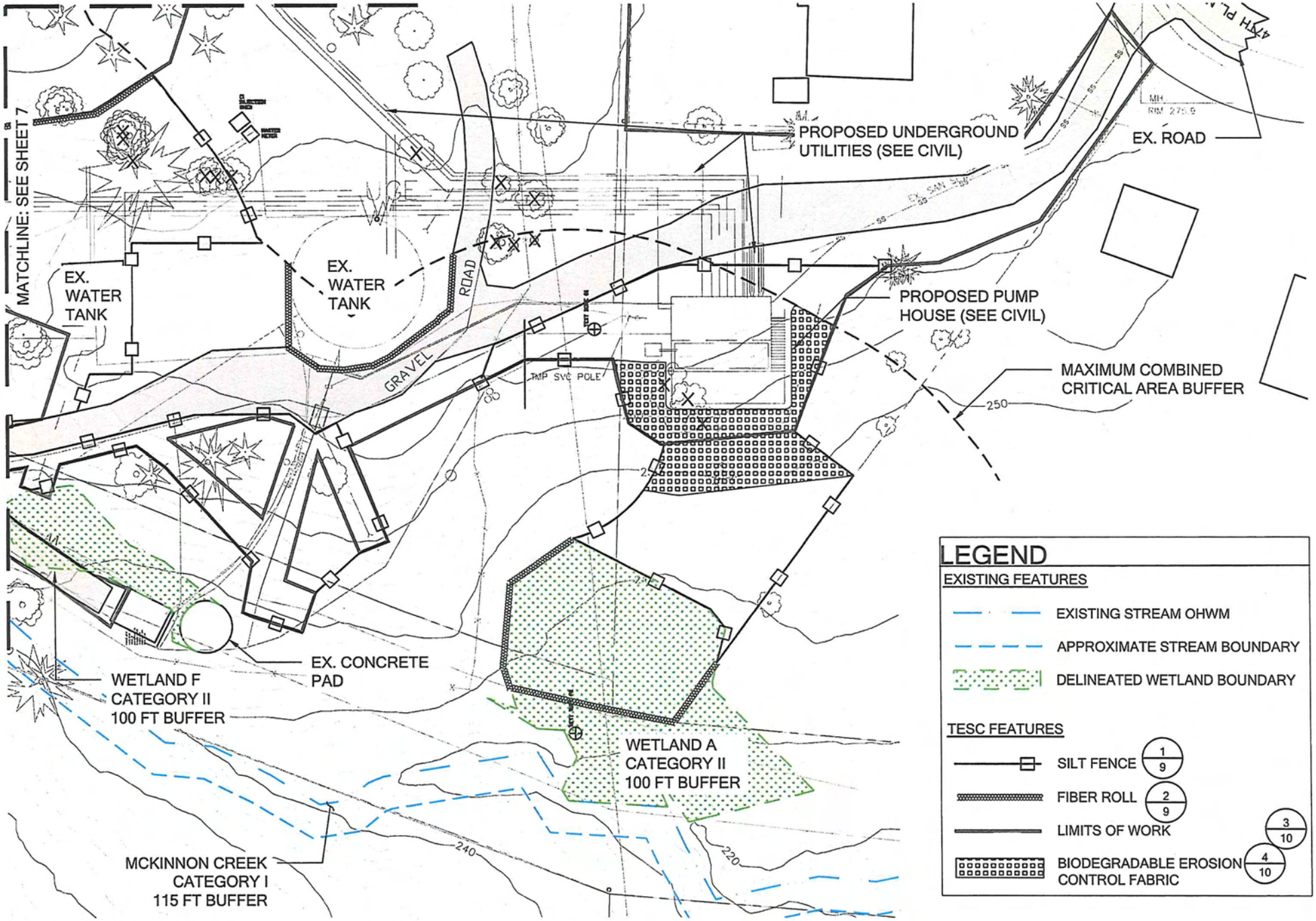
FERENCE: NWS-2017-
PLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017
Page 4 of 20



IMPACTS ASSESSMENT & MITIGATION PLAN (2 OF 2)

0 10' 20' 40'

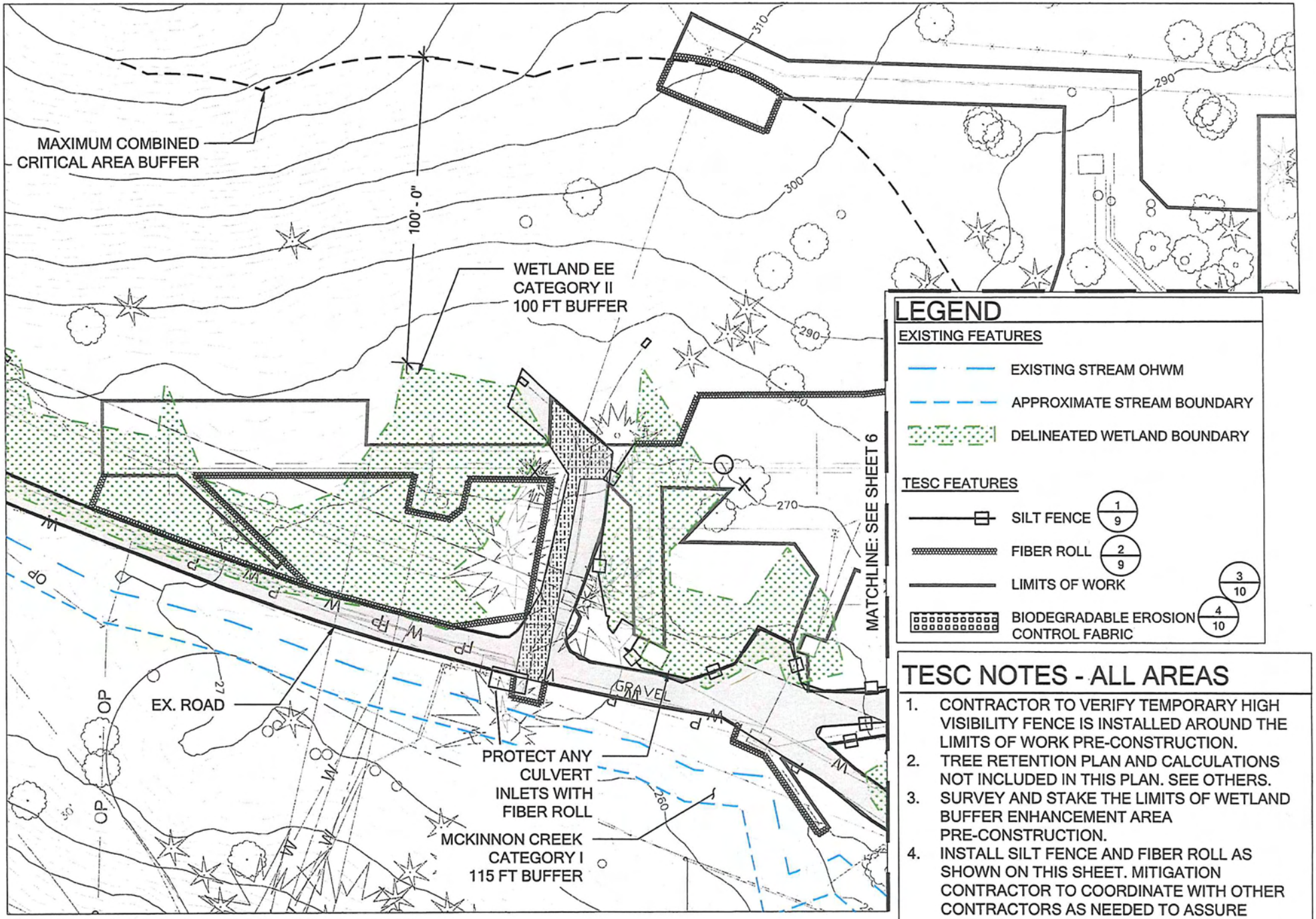
REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017



TESC & SITE PREP PLAN (1 OF 2)

0 10' 20' 40'

REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017



TESC NOTES - ALL AREAS

1. CONTRACTOR TO VERIFY TEMPORARY HIGH VISIBILITY FENCE IS INSTALLED AROUND THE LIMITS OF WORK PRE-CONSTRUCTION.
2. TREE RETENTION PLAN AND CALCULATIONS NOT INCLUDED IN THIS PLAN. SEE OTHERS.
3. SURVEY AND STAKE THE LIMITS OF WETLAND BUFFER ENHANCEMENT AREA PRE-CONSTRUCTION.
4. INSTALL SILT FENCE AND FIBER ROLL AS SHOWN ON THIS SHEET. MITIGATION CONTRACTOR TO COORDINATE WITH OTHER CONTRACTORS AS NEEDED TO ASSURE PROPER TESC MEASURES ARE IN-PLACE.

TESC & SITE PREP PLAN (2 OF 2)

0 10' 20' 40'

REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017

GENERAL NOTE:

1. ALL INVASIVE PLANTS TO BE DISPOSED OF OF-SITE. NO INVASIVE SPECIES SHALL BE CHIPPED FOR REUSE AS MULCH.

REMOVE REED CANARYGRASS:

1. DIG WITH HAND TOOLS ALL REED CANARYGRASS RHIZOMES FROM THE PLANTING AREA.
2. REED CANARYGRASS CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL RHIZOMES SHALL BE GRUBBED OUT. AROUND SIGNIFICANT VEGETATION TO REMAIN, REED CANARYGRASS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
3. AFTER REED CANARYGRASS HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
4. DISPOSE OF REMOVED MATERIAL OFF SITE AT A REGULATED FACILITY.

REMOVE HIMALAYAN/EVERGREEN BLACKBERRY:

1. CUT ABOVE GROUND PORTION OF BLACKBERRY AND REMOVE OFFSITE. ENSURE THAT NO NATIVE PLANTS ARE REMOVED.
2. CANES SHALL BE REMOVED FROM CANOPY OF TREES TO REMAIN TO THE EXTENT FEASIBLE AS DETERMINED BY THE RESTORATION SPECIALIST.
3. DIG UP OR PULL THE REMAINING ROOT BALL. ENSURE THAT NO NATIVE PLANT ROOTS ARE DAMAGED.
4. REPLACE ANY DIVOTS CREATED WHEN REMOVING THE PLANT WITH APPROVED TOPSOIL.
5. ALL CANES SHALL BE CUT BACK AND REMOVED WITHIN THE TEN (10) FEET ADJACENT TO THE PLANTING AREA, INCLUDING TREE CANOPY. CANES SHALL BE PULLED AND REMOVED OFF-SITE.
6. REVEGETATE PER PLANTING PLAN. COVER WITH WOOD CHIP MULCH FOUR INCHES DEEP.
7. MONITOR SITE THROUGHOUT GROWING SEASON FOR EMERGING CANES AND GRUB OUT AND REMOVE ANY NEW PLANTS. CONTINUE TO CUT BACK CANES TEN (10) FEET FROM THE PLANTING AREA.

REMOVE ENGLISH IVY:

1. PHYSICALLY REMOVE ALL ENGLISH IVY VINES AND ROOTS FROM THE PLANTING AREA.
2. IF GROWING ON TREE TRUNKS, CUT VINES TO HEIGHT OF 4' OFF GROUND. DO NOT PULL DOWN FROM TREE CROWNS.
3. IVY CAN RESPROUT FROM BELOW-GROUND PORTIONS, SO ALL ROOTS SHALL BE GRUBBED OUT BY HAND TO MINIMIZE DISRUPTION TO ADJACENT ROOTS.
4. IVY SHALL BE CUT AROUND THE BASE OF EACH TREE, TO PREVENT THE IVY FROM GIRDLING THE TREES. REMOVE STANDING VINES FROM THE LOWER 4' OF EVERY TREE TRUNK THAT CONTAINS ANY IVY.
5. AFTER IVY HAS BEEN REMOVED, AREA SHOULD BE MULCHED AND PLANTED PER PLAN.
6. DISPOSE OF REMOVED MATERIAL PROPERLY OFF SITE.

REMOVE JAPANESE KNOT WEED:

1. STAKE OUT INVASIVE CONTROL AREA AND VERIFY LIMITS WITH RESTORATION SPECIALIST. INVASIVE PLANTS OTHER THAN KNOTWEED THAT ARE NOT IN CONCENTRATED AREAS ARE TO BE FLAGGED THROUGHOUT THE SITE AND THEN VERIFIED BY THE RESTORATION SPECIALIST FOR REMOVAL.
2. AT THE BEGINNING OF JUNE IN A CALENDAR YEAR CUT STEMS CLOSE TO THE GROUND USING A MACHETE, LOPPERS OR PRUNING SHEARS. BE SURE NOT TO SCATTER STEMS OR ROOT FRAGMENTS.
3. BE SURE THAT ALL PIECES OF STEMS AND CUT KNOTWEED ARE DISPOSED OF OFF-SITE PROPERLY TO PREVENT RE-INFESTATION.
4. ONCE STEMS HAVE BEEN CUT DOWN TO THE GROUND WAIT SIX (6) WEEKS FOR STEMS TO REGROW TO APPROXIMATELY 3'-6' ABOVE THE GROUND.
5. CUT ANY FLOWERS THAT HAVE APPEARED IN THE SHORT GROW BACK PERIOD.
6. TO ERADICATE THE KNOTWEED, EITHER SMOTHER CANES AT START OF PROJECT AND ON A REGULAR BASIS DURING THE GROWING SEASON, OR CUT AND REMOVE VEGETATED GROWTH REGULARLY DURING THE GROWING SEASON TO DEPLETE ENERGY STORES IN THE PLANT.
7. MONITOR KNOTWEED INFESTATION AND REPEAT REMOVAL SEQUENCE AS NEW STARTS BEGIN TO COME BACK ONE MORE TIME BEFORE THE FIRST FROST.

REMOVE ENGLISH LAUREL:

1. SMALL PLANTS CAN BE DUG UP WHEN SOIL IS MOIST (USE PROPER PERSONAL PROTECTIVE EQUIPMENT WHEN HANDLING BECAUSE THIS PLANT MAY BE POISONOUS).
2. TO CONTROL LARGER PLANTS, CUT STEMS AND TRUNKS BY HAND OR CHAINSAW, CUTTING AS CLOSE TO THE GROUND AS POSSIBLE, AND REMOVE STEMS TO MAKE IT EASIER TO CONTROL RE-GROWTH. LEAVING STEMS ON MOIST GROUND MIGHT RESULT IN SOME STEM-ROOTING.
3. AFTER CUTTING, PLANTS ARE VERY LIKELY TO RE-GROW. DIG OUT STUMPS INCLUDING AS MUCH ROOT AS POSSIBLE. TO AVOID REGROWTH, STUMPS SHOULD BE TURNED UPSIDE DOWN AND SOIL SHOULD BE BRUSHED OFF ROOTS. IF THE STUMPS ARE DUG UP, BE SURE TO STABILIZE THE AREA TO PREVENT EROSION.

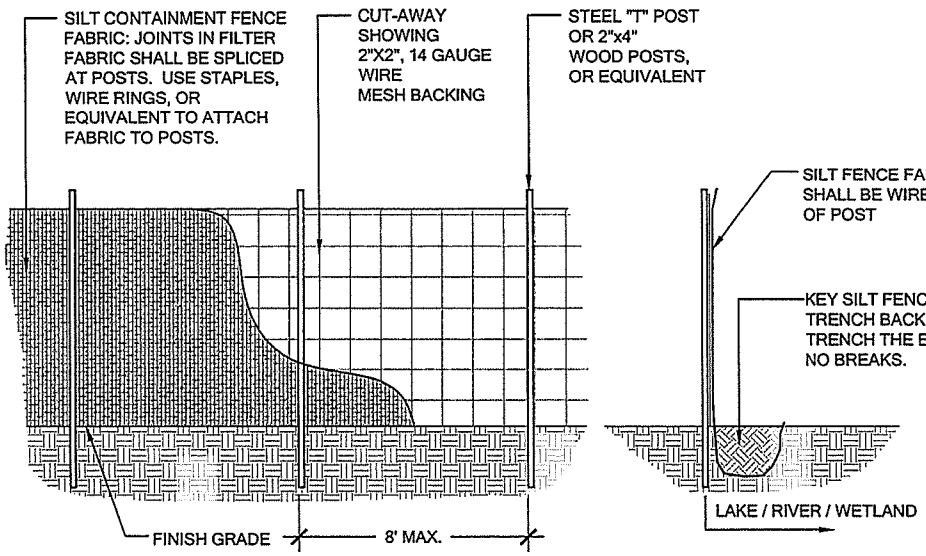
REMOVE OLD MAN'S BEARD

1. CUT VINES ON TREES OR FENCES AT ABOUT WAIST HEIGHT, FOLLOW THE VINE BACK TO THE ROOT AND DIG IT OUT. UPPER VINES CAN BE LEFT ON THE TREES SINCE THEY WILL DIE BACK, OR CAN BE REMOVED IF IT IS SAFE AND FEASIBLE TO DO SO.
2. MAKE SURE REMAINING VINES ARE NOT TOUCHING THE GROUND BECAUSE OLD MAN'S BEARD CAN FORM ROOTS AT STEM NODES
3. VINES GROWING ALONG THE GROUND SHOULD BE DUG UP AND REMOVED.
4. PULL SMALL PLANTS AND SEEDLINGS WHEN THE SOIL IS DAMP DURING WINTER OR SPRING. ALTHOUGH PLANTS CAN BE DUG UP YEAR ROUND, IT IS IDEAL TO DO SO DURING THE WINTER, WHEN MOST PLANTS ARE DORMANT, TO MINIMIZE DISTURBANCE TO THE SURROUNDING VEGETATION.

INVASIVE SPECIES REMOVAL NOTES

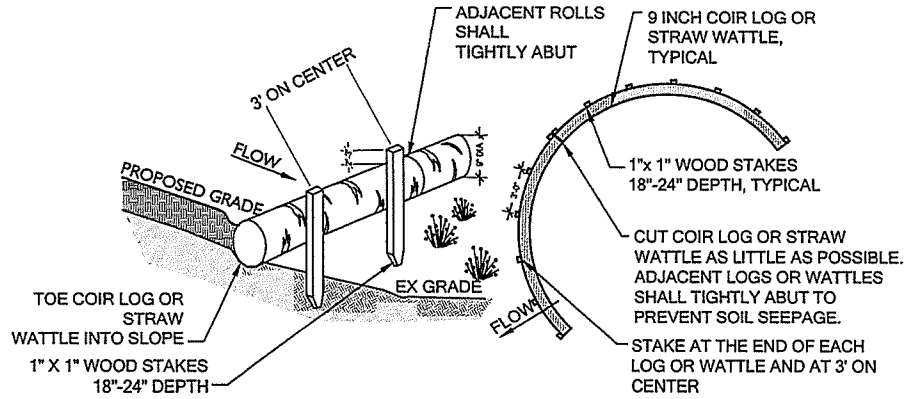
SILT FENCE MAINTENANCE STANDARDS:

1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS 6" IN DEPTH.



1 SILT FENCE

Scale: NTS



PLAN

SOIL PREPARATION NOTES - ALL AREAS

1. REMOVE INVASIVE PLANT SPECIES AS SPECIFIED ON SHEET 8.
2. BACKFILL ANY DIVOTS WITH TOPSOIL TO RETURN TO EXISTING GRADE.
3. WHERE EXCAVATION OR TRENCHING HAS OCCURRED, INCORPORATE 2" OF COMPOST TO DEPTH OF 8".
4. PLANT.
5. INSTALL MULCH RINGS 4" DEEP WITH RADIUS OF 18" FROM PLANT STEM. SEE PLANTING PLAN FOR PLANT TYPE AND SPACING.

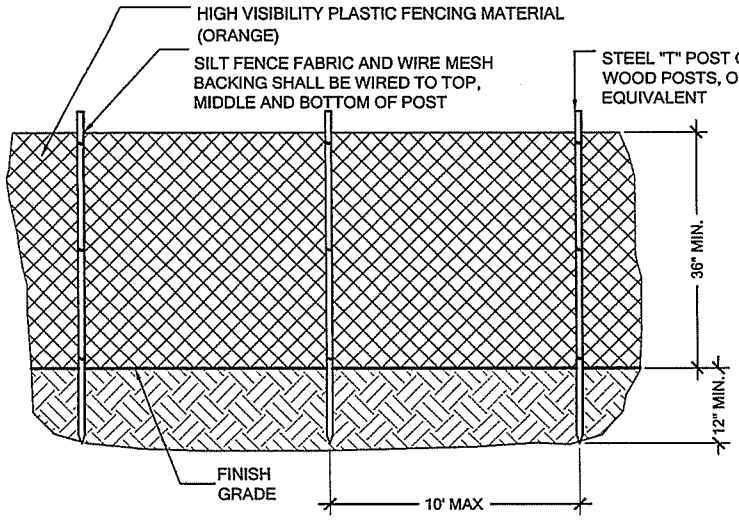
NOTES

1. COIR LOG OR STRAW WATTLE SHALL BE INSTALLED PRIOR TO PLACEMENT OF HUMMOCK SOIL FROM EXCAVATION.
2. COIR LOG OR STRAW WATTLE SHALL BE 9 INCH IN DIAMETER.
3. STAKING: WOODEN STAKES ARE RECOMMENDED TO SECURE THE COIR LOG OR STRAW WATTLE. BE SURE TO USE A STAKE THAT IS LONG ENOUGH TO PROTRUDE SEVERAL INCHES ABOVE THE COIR LOG OR STRAW WATTLE: 18" IS A GOOD LENGTH FOR HARD, ROCKY SOIL; FOR SOFT LOAMY SOIL USE A 24" STAKE.
4. WHEN INSTALLING RUNNING LENGTHS OF COIR LOG OR STRAW WATTLE, BUTT THE SECOND LOG TIGHTLY AGAINST THE FIRST; DO NOT OVERLAP THE ENDS.
5. STAKE THE LOGS OR WATTLES AT EACH END AND THREE (3) FEET ON CENTER. STAKES SHOULD BE DRIVEN OUTSIDE THE THE COIR LOG OR STRAW WATTLE, BUT CLOSE ENOUGH TO HOLD IT IN PLACE. LEAVE 2 - 3 INCHES OF THE STAKE PROTRUDING ABOVE THE COIR LOG OR STRAW WATTLE. A HEAVY SEDIMENT LOAD WILL TEND TO PICK UP THE COIR LOG OR STRAW WATTLE AND COULD PULL IT OFF THE STAKES IF THEY ARE DRIVEN DOWN TOO LOW.
6. WHEN COIR LOG OR STRAW WATTLE ARE USED FOR FLAT GROUND APPLICATIONS, DRIVE THE STAKES STRAIGHT DOWN; WHEN INSTALLING COIR LOG OR STRAW WATTLE ON SLOPES, DRIVE THE STAKES PERPENDICULAR TO THE SLOPE. DRIVE THE FIRST END STAKE OF THE SECOND COIR LOG OR STRAW WATTLE AT AN ANGLE TOWARD THE FIRST COIR LOG OR STRAW WATTLE IN ORDER TO HELP ABUT THEM TIGHTLY TOGETHER.

2 FIBER ROLL

Scale: NTS

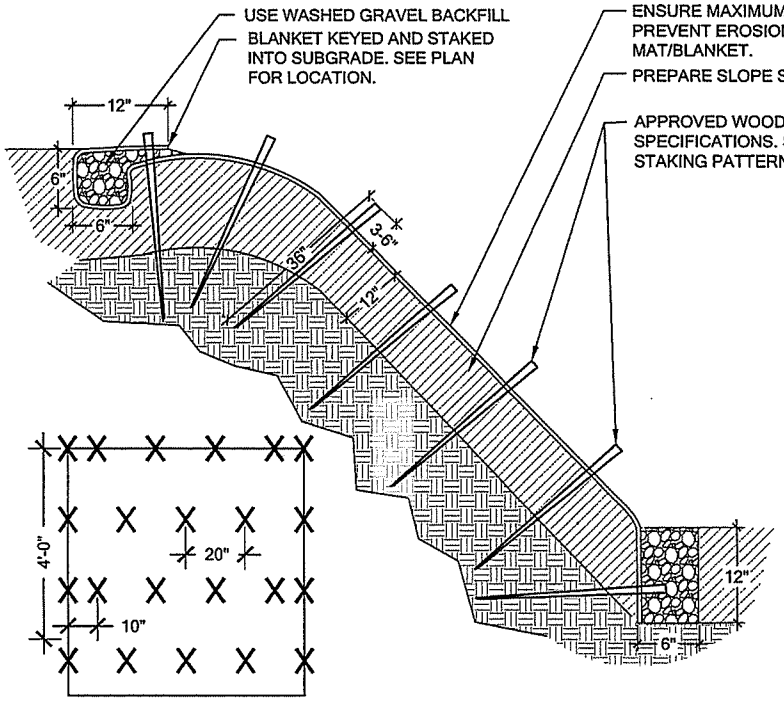
SITE PREP NOTES & TESC DETAILS(1 OF 2)



NOTES:
1. DO NOT NAIL OR STAPLE FENCE TO EXISTING TREES OR UTILITY POLES.
2. ANY DAMAGE TO THE FENCE SHALL BE REPAIRED IMMEDIATELY.

3 HIGH-VISIBILITY FENCING

Scale: NTS



STAKING PATTERN
VERIFY WITH MANUFACTURER WARRANTY

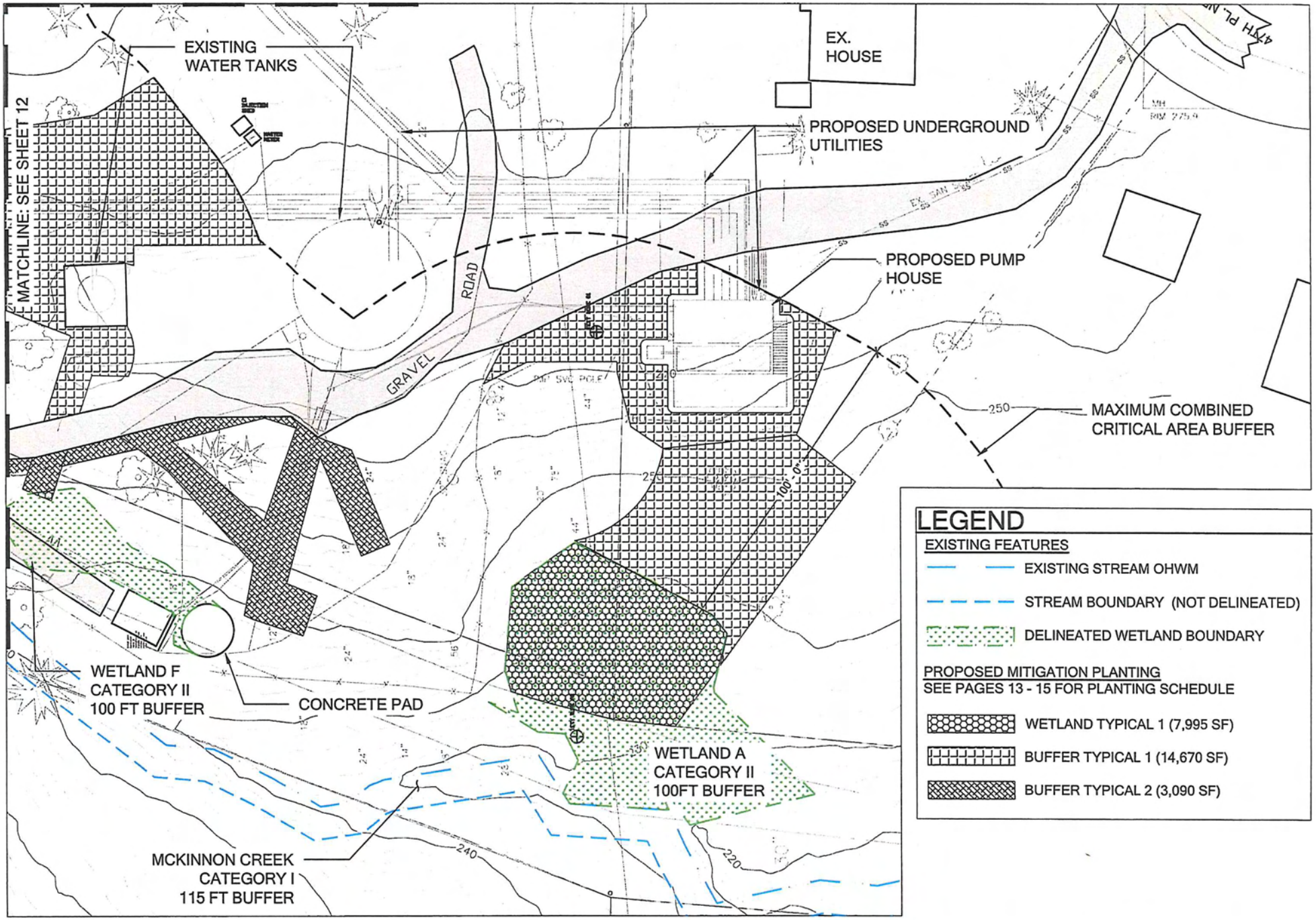
NOTES:
1. BIOGRADABLE EROSION CONTROL BLANKET SHALL PROVIDE EROSION PROTECTION FOR 24-36 MONTHS, AND SHALL BE 100% COIR MATTING, 900 GRAMS, BY BROTHERS COIR MILLS PVT. LTD. OR EQUIVALENT AS APPROVED BY THE OWNER'S REPRESENTATIVE.
2. BLANKET SHALL BE CUT LARGER THAN THE INSTALLATION AREA SHOWN ON THE CONTRACT DRAWINGS IN ORDER TO EXTEND BEYOND THE EDGES AND KEY INTO THE SUBGRADE AS SHOWN.
5. CLEAR ANY WEEDS OR DEBRIS FROM THE INSTALLATION AREA BEFORE INSTALLING THE BLANKET.
6. PREPARE SLOPE SOIL SURFACE PER PLAN.
7. BURY THE TOP END OF THE BLANKET IN A TRENCH 6 INCHES DEEP AND 6 INCHES WIDE WITH A MIN. 12" OF FABRIC EXTENDING BEYOND UPSLOPE PORTION OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER SECURING.
8. SECURE THE BLANKET AT THE TOP TRENCH WITH A ROW OF STAKES PLACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
9. ROLL THE BLANKET ACROSS SLOPE AS DIRECTED BY OWNER'S REPRESENTATIVE.
11. THE EDGES OF ALL HORIZONTAL AND VERTICAL SEAMS MUST BE SECURED WITH A MIN. 12" OF OVERLAP.
12. KEY BLANKET INTO SUBGRADE AT BOTTOM OF SLOPE IN A 12" X 6" ANCHOR TRENCH. BACKFILL AND COMPACT TRENCH AFTER SECURING WITH STAKES EVERY 12".

4 GEOTEXTILE FABRIC

Scale: NTS

TESC DETAILS (2 OF 2)

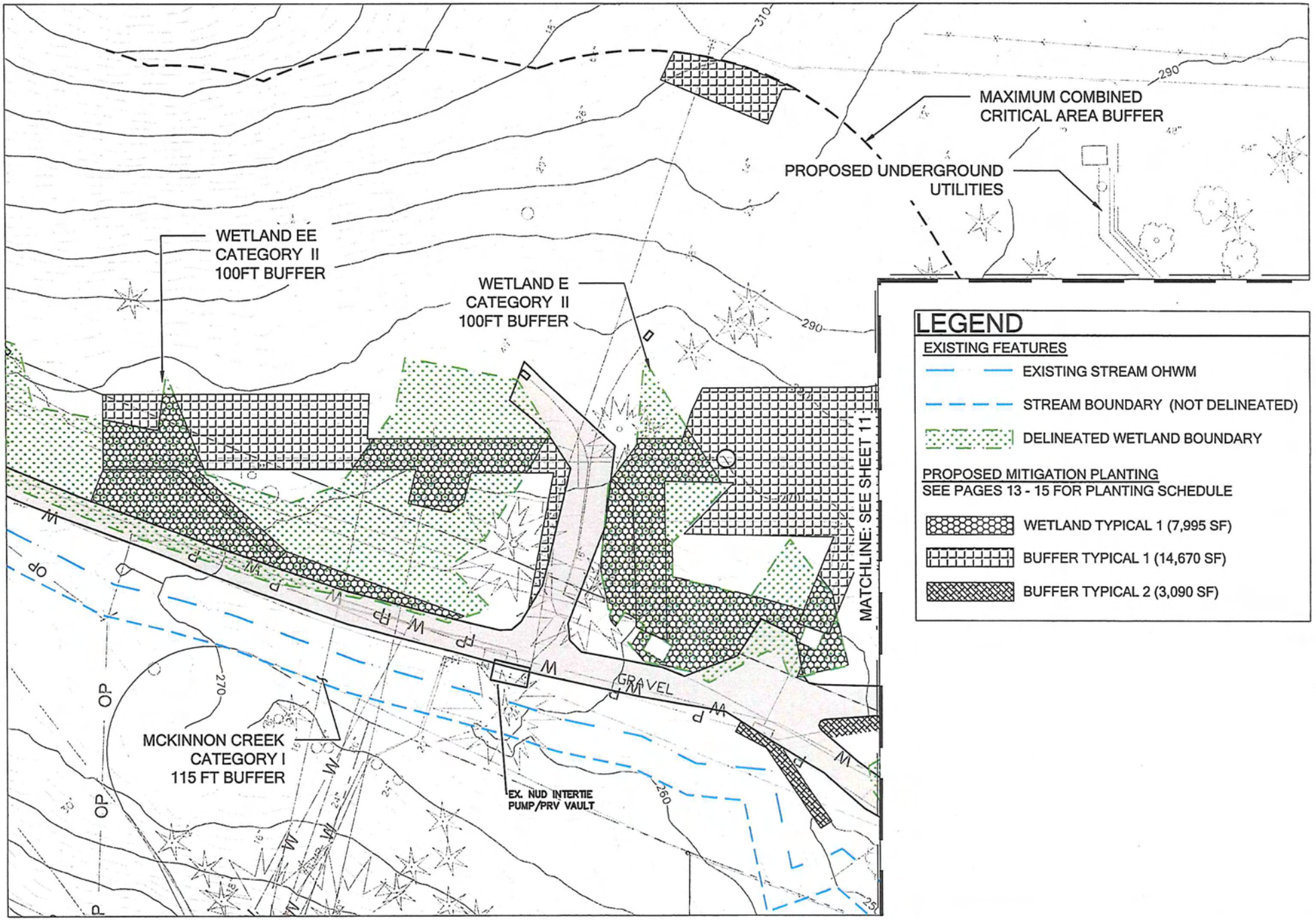
REFERENCE: NWS-2017-	**PROPOSED PROJECT:** REPLACE PUMP HOUSE & WATER MAINS	**DATE:** 02/08/2017
APPLICANT: LAKE FOREST PARK WATER DISTRICT	**LOCATION:** LAKE FOREST PARK, WA	Page 10 of 20



PLANTING PLAN (1 OF 2)

0 10' 20' 40'

REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017

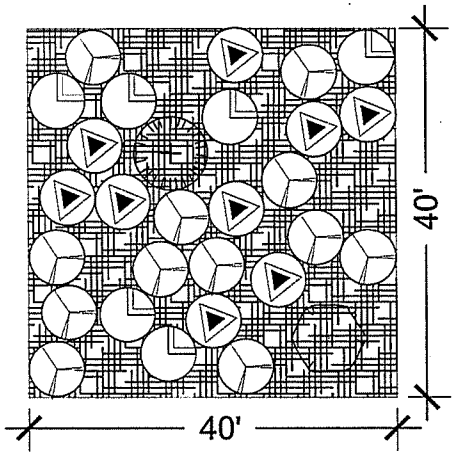


PLANTING PLAN (2 OF 2)

0 10' 20' 40'

REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017

WETLAND PLANTING TYPICAL 1

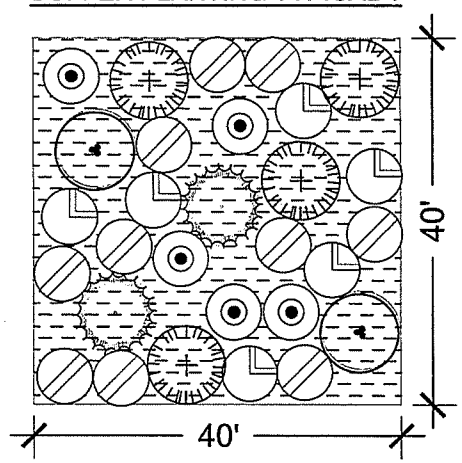


WETLAND TYPICAL 1 PLANT SCHEDULE (7,995 SF)

	TREES	QTY	MIN. SPACING	SIZE	NOTE
	ALNUS RUBRA / RED ALDER	8	8' O.C.	1 GAL.	ALL TREES AND TO BE FULL AND WELL ROOTED
	THUJA PLICATA / WESTERN REDCEDAR	8	8' O.C.	1 GAL.	
	SHRUBS				ALL SHRUBS AND GROUNDCOVER TO BE FULL AND WELL ROOTED
	CORNUS SERICEA / REDTWIG DOGWOD	60	6' O.C.	1 GAL.	
	PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	50	6' O.C.	1 GAL.	
	RUBUS SPECTABILIS / SALMONBERRY	30	6' O.C.	1 GAL.	
	GROUNDCOVER* *SPECIES TO BE PLACED IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY				
	ATHYRIUM FILIX-FEMINA / LADY FERN	720	24" O.C.	4" POT	
	CAREX OBNUPTA / SLOUGH SEDGE	720	24" O.C.	4" POT	
	SCIRPUS MICROCARPUS / SMALL-FRUITED BULRUSH	720	24" O.C.	4" POT	

PLANTING TYPICAL SCHEDULE (1 OF 3)

BUFFER PLANTING TYPICAL 1



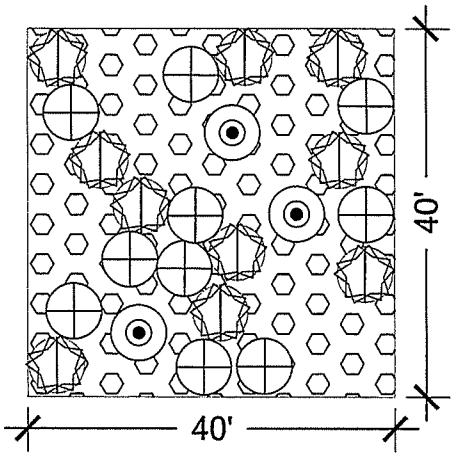
BUFFER TYPICAL 1 PLANT SCHEDULE (12,333 SF)

	TREES	QTY	MIN. SPACING	SIZE	NOTE
	ACER MACROPHYLLUM / BIG-LEAF MAPLE	20	8' O.C.	1 GAL.	ALL TREES TO BE FULL AND WELL ROOTED
	PSEUDOTSUGA MENZIESII / DOUGLAS-FIR	20	8' O.C.	1 GAL.	
	TSUGA HETEROPHYLLA / WESTERN HEMLOCK	31	8' O.C.	1 GAL.	
	SHRUBS				ALL SHRUBS AND GROUNDCOVER TO BE FULL AND WELL ROOTED
	SAMBUCUS RACEMOSA / RED ELDERBERRY	87	6' O.C.	1 GAL.	
	CORYLUS CORNUTA / BEAKED HAZELNUT	49	6' O.C.	1 GAL.	
	RUBUS SPECTABILIS / SALMONBERRY	56	6' O.C.	1 GAL.	
	GROUNDCOVER* * SPECIES TO BE SPACED TRIANGULARLY				
	POLYSTICHUM MUNITUM / WESTERN SWORDFERN	1,614	3' O.C.	4" POT	

PLANTING TYPICAL SCHEDULE (2 OF 3)

REFERENCE: NWS-2017-
APPLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017

BUFFER PLANTING TYPICAL 2



BUFFER TYPICAL 2 PLANT SCHEDULE (5,427 SF)

	SHRUBS	QTY	MIN. SPACING	SIZE	NOTE
	OEMLERIA CERASIFORMIS / OSOBERRY	20	6' O.C.	1 GAL.	ALL SHRUBS AND GROUNDCOVER TO BE FULL AND WELL ROOTED
	CORYLUS CORNUTA / BEAKED HAZELNUT	4	6' O.C.	1 GAL.	
	ROSA NUTKANA / NOOTKA ROSE	20	6' O.C.	1 GAL.	
	GROUNDCOVER* *ALL SPECIES TO BE IN GROUPS OF 9 - 15 AND SPACED TRIANGULARLY				
	POLYSTICHUM MUNITUM / WESTERN SWORDFERN	395	3' O.C.	4" POT	
	MAHONIA NERVOSA / DWARF OREGON GRAPE	1,161	18" O.C.	4" POT	

PLANTING TYPICAL SCHEDULE (3 OF 3)

NT MATERIALS SHALL INCLUDE ANY LIVE PLANT MATERIAL
IS NOT LIMITED TO CONTAINER GROWN, B&B OR
NES (WATTLES); TUBERS, CORMS, BULBS, ETC..; SPRIGS,

LANTS ARE THOSE WHOSE ROOTBALLS ARE ENCLOSED IN

O OBTAIN SPECIFIED MATERIALS IN ADVANCE IF SPECIAL
MENTS MUST BE MADE IN ORDER TO SUPPLY SPECIFIED

N THE PROJECT LIST WILL NOT BE PERMITTED UNLESS
ON CONSULTANT.
TERIAL SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL
EQUIVALENT SIZE OR ALTERNATIVE SPECIES, WITH
CT PRICE.
SUBMITTED IN WRITING TO THE CONSULTANT AT LEAST 30
S SECTION.

AND APPROVAL BY THE RESTORATION CONSULTANT FOR
R AT TIME OF DELIVERY ON-SITE OR AT THE GROWER'S
AT ANY TIME SHALL NOT IMPAIR THE SUBSEQUENT RIGHT
OGRESS OF THE WORK.
FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED
ND REMOVED AS SOON AS POSSIBLE.
T TO INSPECT PLANT MATERIALS AT THE PLACE OF
ANCE, THE RESTORATION CONSULTANT MAY REQUIRE THE
RVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS
ME SPECIES AND SIZE, IS UNACCEPTABLE.

ED UNLESS SUBSTITUTIONS ARE MADE AS OUTLINED IN

D REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR
BE MEASURED WHEN THEIR BRANCHES OR ROOTS ARE IN

T SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST
THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE
TS MUST BE 15" TALL.).

CONTRACTOR MUST NOTIFY CONSULTANT 48 HOURS OR MORE IN ADVANCE OF DELIVERIES SO THAT CONSULTANT MAY ARRANGE FOR INSPECTION.

PLANT MATERIALS

1. TRANSPORTATION - DURING SHIPPING, PLANTS SHALL BE PACKED TO PROVIDE PROTECTION AGAINST CLIMATE EXTREMES, BREAKAGE AND DRYING. PROPER VENTILATION AND PREVENTION OF DAMAGE TO BARK, BRANCHES, AND ROOT SYSTEMS MUST BE ENSURED.
2. SCHEDULING AND STORAGE - PLANTS SHALL BE DELIVERED AS CLOSE TO PLANTING AS POSSIBLE. PLANTS IN STORAGE MUST BE PROTECTED AGAINST ANY CONDITION THAT IS DETRIMENTAL TO THEIR CONTINUED HEALTH AND VIGOR.
3. HANDLING - PLANT MATERIALS SHALL NOT BE HANDLED BY THE TRUNK, LIMBS, OR FOLIAGE BUT ONLY BY THE CONTAINER, BALL, BOX, OR OTHER PROTECTIVE STRUCTURE, EXCEPT BAREROOT PLANTS SHALL BE KEPT IN BUNDLES UNTIL PLANTING AND THEN HANDLED CAREFULLY BY THE TRUNK OR STEM.
4. LABELS - PLANTS SHALL HAVE DURABLE, LEGIBLE LABELS STATING CORRECT SCIENTIFIC NAME AND SIZE. TEN PERCENT OF CONTAINER GROWN PLANTS IN INDIVIDUAL POTS SHALL BE LABELED. PLANTS SUPPLIED IN FLATS, RACKS, BOXES, BAGS, OR BUNDLES SHALL HAVE ONE LABEL PER GROUP.

WARRANTY
PLANT WARRANTY
PLANTS MUST BE GUARANTEED TO BE TRUE TO SCIENTIFIC NAME AND SPECIFIED SIZE, AND TO BE HEALTHY AND CAPABLE OF VIGOROUS GROWTH.

REPLACEMENT

1. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
2. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL
GENERAL

1. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
2. PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS SUCH.

QUANTITIES
SEE PLANT LIST ON ACCOMPANYING PLANS AND PLANT SCHEDULES.

ROOT TREATMENT

1. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
2. PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.
3. ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.

NOTES

FINISH GRADE

REMOVE DEBRIS AND LARGE ROCKS FROM PLANTING PIT AND SCARIFY SIDES AND BASE. BACKFILL WITH SPECIFIED SOIL. FIRM UP SOIL AROUND PLANT.

G

Scale: NTS

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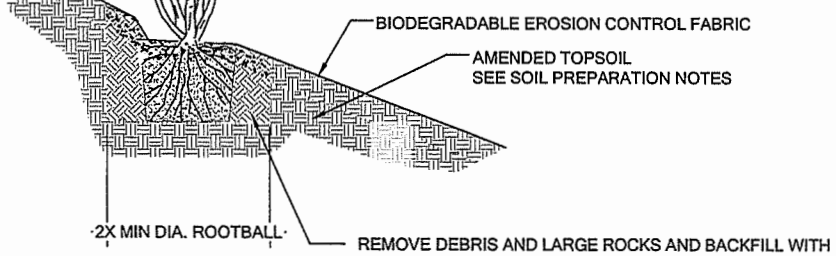
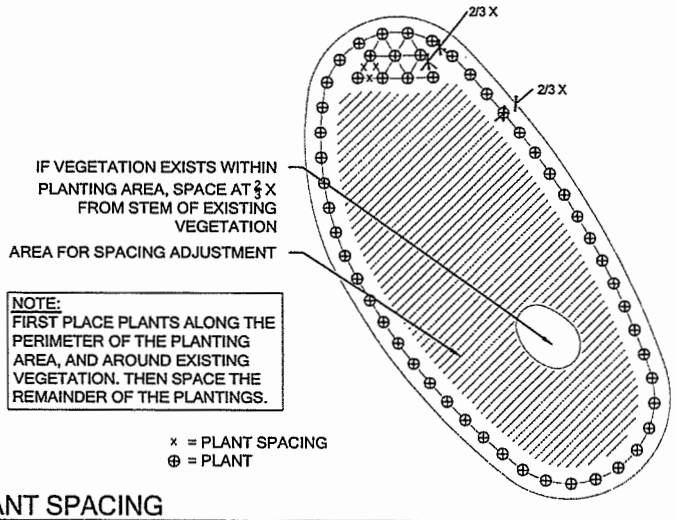
AMENDMENTS AS SPECIFIED

Scale: NTS



2 TREE AND SHRUB PLANTING ON A SLOPE

Scale: NTS



4 PLANT SPACING

Scale: NTS

DETAILS

FERENCE: NWS-2017-
PLICANT: LAKE FOREST PARK WATER DISTRICT
PROPOSED PROJECT: REPLACE PUMP HOUSE & WATER MAINS
LOCATION: LAKE FOREST PARK, WA
DATE: 02/08/2017
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MITIGATION PLAN NOTES

1 MITIGATION PLAN

THIS MITIGATION PLAN IS INTENDED TO COMPENSATE FOR THE UNAVOIDABLE TEMPORARY AND PERMANENT IMPACTS TO WETLANDS AND CRITICAL AREA BUFFER THAT WILL ARISE AS PART OF THE LFPWD PUMP HOUSE PROJECT. MITIGATION WILL TAKE THE FORM OF VEGETATION ENHANCEMENT. WETLAND IMPACTS, ALTHOUGH TEMPORARY, WILL BE COMPENSATED AT A 3:1 RATIO TO MEET THE REQUIREMENTS OF THE CODE. DISTURBED WETLAND AREA WILL BE ENHANCED, WITH OTHER NEARBY DEGRADED WETLANDS ALSO TARGETED FOR WEED REMOVAL AND PLANTING TO REACH THE 3:1 RATIO. A TOTAL OF 7,995 SQUARE FEET OF WETLAND WILL BE ENHANCED TO COMPENSATE FOR 2,535 SQUARE FEET OF IMPACT (A 3.15:1 ACTUAL RATIO). CRITICAL AREA BUFFER IMPACTS WILL BE MITIGATED AT A 1:1 RATIO AND BE LOCATED IN PLACE OF THE TEMPORARY DISTURBANCE. PERMANENT IMPACTS ASSOCIATED WITH THE WELL HOUSE STRUCTURE WILL BE COMPENSATED THROUGH ENHANCEMENT PLANTING IN A BUFFER AREA DOMINATED BY ENGLISH IVY AND CHERRY LAUREL BETWEEN THE PROPOSED PUMP HOUSE STRUCTURE AND WETLAND A. A TOTAL OF 17,760 SQUARE FEET OF BUFFER ENHANCEMENT WILL COMPENSATE FOR 16,442 SQUARE FEET OF BUFFER IMPACT. (A 1.1:1 ACTUAL RATIO). A FIVE YEAR MAINTENANCE AND MONITORING PERIOD IS PROPOSED THAT WILL ENSURE THE SUCCESSFUL ESTABLISHMENT OF THE MITIGATION SITE.

1.1 GOAL

ACHIEVE NO NET LOSS OF ECOLOGICAL FUNCTION OF THE WETLAND AND WETLAND BUFFER FOLLOWING COMPLETION OF THE PROJECT.

1.1.1 OBJECTIVES

1. REMOVE INVASIVE WEEDS FROM THE MITIGATION AREA.
2. PLANT 25,755 SQUARE FEET OF WETLAND AND CRITICAL AREA BUFFER WITH A DIVERSE ARRAY OF NATIVE TREE, SHRUB AND GROUNDCOVER SPECIES.
3. ENSURE THE SITE SUCCESSFULLY ESTABLISHED THROUGH IMPLEMENTATION OF MAINTENANCE AND MONITORING PERIOD, AND FINANCIAL SURETY DEVICE.

1.2 PERFORMANCE STANDARDS

THIS SECTION, ALONG WITH OTHER ELEMENTS FROM THIS REPORT IS INTENDED TO SATISFY SECTION 16.16.120 OF THE LFPMC. THE STANDARDS LISTED BELOW WILL BE USED TO JUDGE THE SUCCESS OF THE MITIGATION INSTALLATION OVER THE DURATION OF THE FIVE YEAR MAINTENANCE AND MONITORING PERIOD. IF PERFORMANCE STANDARDS ARE MET AT THE END OF YEAR 5, THE SITE WILL THEN BE DEEMED SUCCESSFUL. FAILURE TO MEET THE PERFORMANCE STANDARDS MAY REQUIRE ADDITIONAL MAINTENANCE AND MONITORING.

THE STANDARDS LISTED BELOW WILL BE USED TO JUDGE THE SUCCESS OF THE PLAN OVER TIME.

1. SURVIVAL: ACHIEVE 100 PERCENT SURVIVAL OF INSTALLED PLANTS BY THE END OF YEAR 1. THIS STANDARD CAN BE MET THROUGH PLANT ESTABLISHMENT OR THROUGH REPLANTING AS NECESSARY TO ACHIEVE THE REQUIRED NUMBERS.
2. NATIVE COVER IN WOODY VEGETATION AREAS:
   - ACHIEVE 60% COVER OF NATIVE TREES AND SHRUBS BY YEAR 3. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
   - ACHIEVE 80% COVER OF NATIVE TREES AND SHRUBS BY YEAR 5. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS COVER STANDARD.
3. SPECIES DIVERSITY: ESTABLISH AT LEAST 3 NATIVE TREE SPECIES, 6 NATIVE SHRUB SPECIES, AND 2 NATIVE GROUNDCOVER SPECIES IN THE PLANTED AREA BY YEAR 5. VOLUNTEER SPECIES MAY COUNT TOWARDS THIS STANDARD.
4. INVASIVE COVER: NO MORE THAN 10 PERCENT COVER BY INVASIVE WEED SPECIES LISTED BY THE KING COUNTY NOXIOUS WEED LIST IN ANY GIVEN YEAR.

PROVIDE A FINANCIAL SECURITY DEVICE THAT SATISFIES LFPMC SECTION 16.16.150.

1.3 MONITORING PLAN

1. THIS MONITORING PROGRAM IS DESIGNED TO TRACK THE SUCCESS OF THE MITIGATION SITE OVER TIME AND TO MEASURE THE DEGREE TO WHICH IT IS MEETING THE PERFORMANCE STANDARDS OUTLINED IN THE SECTION ABOVE.

1.3.1 MONITORING METHODS

NOTE: SPECIFICATIONS FOR ITEMS IN BOLD CAN BE FOUND BELOW UNDER "MATERIAL SPECIFICATIONS AND DEFINITIONS."

THE INSTALLED VEGETATION WILL BE MONITORED FOR FIVE YEARS AFTER INITIAL INSTALLATION. WITHIN TWO MONTHS OF PLANT INSTALLATION, AN AS-BUILT REPORT WILL BE PREPARED TO DOCUMENT THE GENERAL IMPLEMENTATION OF THE MITIGATION PLAN. ANY MINOR CHANGES TO THE APPROVED MITIGATION PLAN THAT ARE REQUIRED BY FIELD CONDITIONS OR PLANT AVAILABILITY DURING PLAN IMPLEMENTATION MUST BE DOCUMENTED IN THE AS-BUILT REPORT. THE MONITORING PERIOD BEGINS ONCE THE AS-BUILT REPORT HAS BEEN APPROVED BY THE CITY OF LAKE FOREST PARK. THE APPROVED AS-BUILT REPORT THEN BECOMES THE APPROVED MITIGATION PLAN FOR FUTURE INSPECTION PURPOSES.

DURING THE AS-BUILT INSPECTION, THE MONITORING BIOLOGIST WILL INSTALL MONITORING TRANSECTS. APPROXIMATE TRANSECT LOCATIONS WILL BE MARKED ON THE AS-BUILT PLAN. TRANSECTS WILL BE ESTABLISHED IN BOTH THE WETLAND ENHANCEMENT AREA, AND THE BUFFER ENHANCEMENT AREA. TRANSECTS WILL BE AS LONG AS ALLOWED BY EACH PARTICULAR PLANTING AREA, BUT WILL COVER AT LEAST HALF THE LENGTH OF EACH PLANTED AREA, WITH A PREFERRED LENGTH OF 100 FEET. ALL OTHER PLANTED AREAS NOT DIRECTLY COVERED BY TRANSECTS WILL BE VISUALLY ASSESSED AND NOTED AS TO HOW THEY COMPARE TO THE PERFORMANCE STANDARDS. MONITORING WILL TAKE PLACE ANNUALLY FOR FIVE YEARS AND INCLUDE A SPRING AND EARLY FALL VISIT. THE SPRING MONITORING VISIT WILL RECORD MAINTENANCE NEEDS SUCH AS WEEDING, MULCHING, OR PLANT REPLACEMENT. FOLLOWING THE SPRING VISIT THE BIOLOGIST WILL NOTIFY THE OWNER AND/OR MAINTENANCE CREWS OF NECESSARY EARLY GROWING SEASON MAINTENANCE. THE REGULAR YEARLY MONITORING VISITS WILL TAKE PLACE AFTER THE GROWING SEASON IN THE LATE SUMMER OR EARLY FALL. FOR EACH FALL VISIT, THE FOLLOWING WILL BE RECORDED AND REPORTED IN AN ANNUAL REPORT SUBMITTED TO THE CITY OF LAKE FOREST PARK:

1. GENERAL SUMMARY OF THE SPRING VISIT.
2. COUNTS OF LIVE AND DEAD TREES AND SHRUBS BY SPECIES IN THE PLANTED AREAS IN YEAR 1. SIGNIFICANT DIE-OFF SHOULD BE REPORTED BY SPECIES AND QUANTITY IN ANY OTHER MONITORING YEAR.
3. COUNTS OF DEAD PLANTS WHERE MORTALITY IS SIGNIFICANT IN ANY MONITORING YEAR.
4. ESTIMATE OF NATIVE TREE AND SHRUB COVER USING THE LINE INTERCEPT METHOD ALONG ESTABLISHED TRANSECTS.
5. ESTIMATE OF NON-NATIVE, INVASIVE SPECIES COVER IN PLANTED AREAS USING THE LINE INTERCEPT METHOD.
6. NOTES OR SKETCHES OF NON-NATIVE WEED PROBLEMS IN PLANTED AREAS NOT CAPTURED BY THE TRANSECT COVER ASSESSMENT.
7. PHOTOGRAPHIC DOCUMENTATION FROM FIXED REFERENCE POINTS AND TRANSECT ENDS.
8. INTRUSIONS INTO THE PLANTING AREAS, VANDALISM OR OTHER ACTIONS THAT IMPAIR THE INTENDED FUNCTIONS OF THE PLANTED AREAS.
9. RECOMMENDATIONS FOR MAINTENANCE OR REPAIR OF ANY PORTION OF THE MITIGATION AREA.

1.3.2 CONTINGENCIES

IF THERE IS A SIGNIFICANT PROBLEM WITH THE RESTORATION AREAS MEETING PERFORMANCE STANDARDS, A CONTINGENCY PLAN WILL BE DEVELOPED AND IMPLEMENTED. CONTINGENCY PLANS CAN INCLUDE, BUT ARE NOT LIMITED TO: SOIL AMENDMENT; ADDITIONAL PLANT INSTALLATION; AND PLANT SUBSTITUTIONS OF TYPE, SIZE, QUANTITY, AND LOCATION.

MITIGATION NOTES (1 OF 3)

E NECESSARY, DEPENDING ON WEED CONDITIONS THAT
ION.

WHACKER / LINE TRIMMER) WITHIN THE MITIGATION AREA.

NTS BY HAND, INCLUDING ROOTS WHERE POSSIBLE. CUTTING
OO LARGE TO REMOVE ROOTS IS ACCEPTABLE. CHECK CUT
ROUTS.

E ALLOWED AT THIS SIDE AS A PRECAUTION AGAINST
CONTAMINATION.

EACH PLANT WITH WOOD CHIP MULCH AS NECESSARY TO
KEEP DOWN WEEDS.

URING THE DRY PERIODS FOR AT LEAST THE FIRST THREE
WETLAND AREAS WILL NATURALLY HAVE SUFFICIENT WATER
T SHALL EITHER INSTALL A TEMPORARY IRRIGATION SYSTEM
G AREAS RECEIVE AT LEAST ONE INCH OF WATER PER WEEK
EARS 1 THROUGH 3.

OR:

VE SPECIES MANAGEMENT.

AGED PLANT INSPECTION.

N.

OSED PROJECT, INSTALL OR MAINTAIN TESC MEASURES AS

AS THAT REMAIN VEGETATED AFTER SITE WORK IS FINISHED
CAVATED FOR THE PROJECT). USE ONLY MECHANICAL MEANS
CARE SHOULD BE TAKEN TO NOT DISTURB OR DAMAGE THE
RY, AND OTHER NATIVE VEGETATION THAT EXISTS IN SOME OF

AS LOST DUE TO EXCAVATION BY SPREADING 2 INCHES OF
MPOST SHALL BE INCORPORATED INTO THE TOP 8 INCHES OF

OF THE PLANT MATERIAL BUT PRIOR TO PLANTING. BIOLOGIST
ND DETERMINE IF AND WHERE SOIL AMENDMENTS MAY BE

T PER THE PLANTING DETAILS. INSTALL THE PLANTS PER THE

- ALL SITE PREPARATION
- PLANT MATERIAL/INSTALLATION INSPECTION
  - 50% PLANT INSTALLATION INSPECTION
  - 100% PLANT INSTALLATION INSPECTION

1.7 MATERIAL SPECIFICATIONS AND DEFINITIONS

- FERTILIZER: NO FERTILIZER SHALL BE USED ON-SITE.
- IRRIGATION SYSTEM: A TEMPORARY SYSTEM CAPABLE OF DELIVERING AT LEAST ONE INCH OF WATER PER WEEK FROM JUNE 1 THROUGH SEPTEMBER 15 FOR AT LEAST THE FIRST THREE YEARS FOLLOWING INSTALLATION. HAND WATERING OR WATER TRUCK MAY BE USED PROVIDED THE WATER DELIVERY THAT WILL MEET THE IRRIGATION FLOW AND COVERAGE REQUIREMENT SPECIFIED IN THIS DOCUMENT. FAILURE TO APPROPRIATELY WATER CAN LEAD TO VERY HIGH MORTALITY AND REPLACEMENT COSTS.
- WOOD CHIP MULCH: WOOD CHIP MULCH SHALL MEET WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION FOR BARK OR WOOD CHIPS AS DEFINED BY 9-14.4(3). "BARK OR WOOD CHIP MULCH SHALL BE DERIVED FROM DOUGLAS FIR, PINE, OR HEMLOCK SPECIES. IT SHALL NOT CONTAIN RESIN, TANNIN, OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO PLANT LIFE. SAWDUST SHALL NOT BE USED AS MULCH.

  BARK OR WOOD CHIPS WHEN TESTED SHALL BE ACCORDING TO WSDOT TEST METHOD T 123 PRIOR TO PLACEMENT AND SHALL MEET THE FOLLOWING LOOSE VOLUME GRADATION:

Sieve Size	Percent Passing	
	Minimum	Maximum
2"	95	100
No. 4	0	30

NOTE: PACIFIC TOPSOIL (AND MOST OTHER SOIL WHOLESALERS) SELLS A MATERIAL THAT MEETS THE ABOVE SPECIFICATION CALLED "DOT WOODCHIP MULCH".

- COMPOST: COMPOST SHALL MEET WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, 9-14.4(8) FOR FINE COMPOST.
- RESTORATION SPECIALIST: WATERSHED COMPANY [(425) 822-5242] PERSONNEL, OR OTHER PERSONS QUALIFIED TO EVALUATE ENVIRONMENTAL RESTORATION PROJECTS.

1.8 ASSURANCE DEVICE

LFPMC SECTIONS 16.16.150 REQUIRES THE APPLICANT PROVIDE TO THE CITY AN ASSURANCE DEVICE TO COVER THE COST OF MONITORING AND MAINTENANCE AND OTHER CONTINGENCIES FOR THE DURATION OF THE MONITORING AND MAINTENANCE PERIOD. THE PLANNING DIRECTOR SHALL ESTABLISH THE CONDITIONS OF THE BOND OR OTHER SECURITY ACCORDING TO THE NATURE OF THE PROPOSED MITIGATION, MAINTENANCE OR MONITORING AND THE LIKELIHOOD AND EXPENSE OF CORRECTING MITIGATION OR MAINTENANCE FAILURES.

FUNCTION. CRITICAL AREA BUFFERS IMPACTED WILL BE
IN PLACE OF THE TEMPORARY DISTURBANCE. CHERRY LAUREL
A MIX OF TREES, SHRUBS AND GROUNDCOVER ENDEMIC TO
ITS WERE CHOSEN TO COMPLEMENT THE SURROUNDING
IMAX SPECIES TREES ESTABLISH TO AGE-STRATIFY THE
RE FEET OF WETLAND AND CRITICAL AREA BUFFER WILL BE
. NET GAIN IN CRITICAL AREA BUFFER FUNCTIONS AND VALUES IS

OF 3)

ERENCE: NWS-2017-	**PROPOSED PROJECT:** REPLACE PUMP HOUSE & WATER MAINS	**DATE:** 02/08/2017
LICANT: LAKE FOREST PARK WATER DISTRICT	**LOCATION:** LAKE FOREST PARK, WA	**Page** 20 of 20

US Army Corps of Engineers ®
Seattle District

NATIONWIDE PERMIT 12
Terms and Conditions

Effective Date: March 19, 2017

A. Description of Authorized Activities
B. U.S. Army Corps of Engineers (Corps) National General Conditions for all NWPs
C. Corps Seattle District Regional General Conditions
D. Corps Regional Specific Conditions for this NWP
E. Washington Department of Ecology (Ecology) Section 401 Water Quality Certification (401 Certification): General Conditions
F. Ecology 401 Certification: Specific Conditions for this NWP
G. Coastal Zone Management Consistency Response for this NWP

In addition to any special condition that may be required on a case-by-case basis by the District Engineer, the following terms and conditions must be met, as applicable, for a Nationwide Permit (NWP) authorization to be valid in Washington State.

A. DESCRIPTION OF AUTHORIZED ACTIVITIES

Utility Line Activities. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio, and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area. Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

comply with 33 CFR 330.6(d). Note 3: Utility lines consisting of aerial electric power transmission lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i). Note 4: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills. Note 5: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15). Note 6: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures. Note 7: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities. Note 8: For NWP 12 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

B. CORPS NATIONAL GENERAL CONDITIONS FOR ALL NWPs

To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. (b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status. (c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur. (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical

historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. (d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment. (a) Discharges of dredged or fill material into

more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)). (3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation. (4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). (5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided. (6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs. (h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management. (i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency

NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches

discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes. (3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5. (4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act. (5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision: 1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre. 2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource

C. CORPS SEATTLE DISTRICT REGIONAL GENERAL CONDITIONS: The following conditions apply to all NWPs for the Seattle District in Washington State, unless specified.

1. Project Drawings: Drawings must be submitted with pre-construction notification (PCN). Drawings must provide a clear understanding of the proposed project, and how waters of the U.S. will be affected. Drawings must be originals and not reduced copies of large-scale plans. Engineering drawings are not required. Existing and proposed site conditions (manmade and landscape features) must be drawn to scale.

2. Aquatic Resources Requiring Special Protection: Activities resulting in a loss of waters of the United States in mature forested wetlands, bogs and peatlands, aspen-dominated wetlands, alkali wetlands, vernal pools, camas prairie wetlands, estuarine wetlands, wetlands in coastal lagoons, and wetlands in dunal systems along the Washington coast cannot be authorized by a NWP, except by the following NWPs:

NWP 3 – Maintenance
NWP 20 – Response Operations for Oil and Hazardous Substances
NWP 32 – Completed Enforcement Actions
NWP 38 – Cleanup of Hazardous and Toxic Waste

In order to use one of the above-referenced NWPs in any of the aquatic resources requiring special protection, prospective permittees must submit a PCN to the Corps of Engineers (see NWP general condition 32) and obtain written authorization before commencing work.

3. New Bank Stabilization in Tidal Waters of Puget Sound: Activities involving new bank stabilization in tidal waters in Water Resource Inventory Areas (WRIAs) 8, 9, 10, 11 and 12 (within the areas identified on Figures 1a through 1e on Corps website) cannot be authorized by NWP.

4. Commencement Bay: The following NWPs may not be used to authorize activities located in the Commencement Bay Study Area (see Figure 2 on Corps website):

NWP 12 – Utility Line Activities (substations)
NWP 13 – Bank Stabilization
NWP 14 – Linear Transportation Projects
NWP 23 – Approved Categorical Exclusions
NWP 29 – Residential Developments
NWP 39 – Commercial and Institutional Developments
NWP 40 – Agricultural Activities
NWP 41 – Reshaping Existing Drainage Ditches
NWP 42 – Recreational Facilities
NWP 43 – Stormwater and Wastewater Management Facilities

5. Bank Stabilization: All projects including new or maintenance bank stabilization activities require PCN to the Corps of Engineers (see NWP general condition 32). For new bank stabilization projects only, the following must be submitted to the Corps of Engineers:

a. The cause of the erosion and the distance of any existing structures from the area(s) being stabilized.
b. The type and length of existing bank stabilization within 300 feet of the proposed project.
c. A description of current conditions and expected post-project conditions in the waterbody.
d. A statement describing how the project incorporates elements avoiding and minimizing adverse environmental effects to the aquatic environment and nearshore riparian area, including vegetation impacts in the waterbody.

In addition to a. through d., the results from any relevant geotechnical investigations can be submitted with the PCN if it describes current or expected conditions in the waterbody.

10. Forage Fish: For projects in forage fish spawning habitat, in-water work must occur within designated forage fish work windows, or when forage fish are not spawning. If working outside of a designated work window, or if forage fish work windows are closed year round, work may occur if the work window restriction is released for a period of time after a forage fish spawning survey has been conducted by a biologist approved by the Washington State Department of Fish and Wildlife (WDFW). Forage fish species with designated in-water work windows include Pacific sand lance (*Ammodytes hexapterus*), Pacific herring (*Clupea pallasi*), and surf smelt (*Hypomesus pretiosus*). This RGC does not apply to NWP 48, *Commercial Shellfish Aquaculture Activities*. Please see specific regional conditions for NWP 48.

11. Notification of Permit Requirements: The permittee must provide a copy of the nationwide permit authorization letter, conditions, and permit drawings to all contractors and any other parties performing the authorized work prior to the commencement of any work in waters of the U.S. The permittee must ensure all appropriate contractors and any other parties performing the authorized work at the project site have read and understand relevant NWP conditions as well as plans, approvals, and documents referenced in the NWP letter. A copy of these documents must be maintained onsite throughout the duration of construction.

12. Construction Boundaries: Permittees must clearly mark all construction area boundaries before beginning work on projects that involve grading or placement of fill. Boundary markers and/or construction fencing must be maintained and clearly visible for the duration of construction. Permittees should avoid and minimize removal of native vegetation (including submerged aquatic vegetation) to the maximum extent possible.

13. Temporary Impacts and Site Restoration

a. Temporary impacts to waters of the U.S. must not exceed six months unless the prospective permittee requests and receives a waiver by the district engineer. Temporary impacts to waters of the U.S. must be identified in the PCN.
b. No more than 1/2 acre of waters of the U.S. may be temporarily filled unless the prospective permittee requests and receives a waiver from the district engineer (temporary fills do not affect specified limits for loss of waters associated with specific nationwide permits).
c. Native soils removed from waters of the U.S. for project construction should be stockpiled and used for site restoration. Restoration of temporarily disturbed areas must include returning the area to pre-project ground surface contours. If native soil is not available from the project site for restoration, suitable clean soil of the same textural class may be used. Other soils may be used only if identified in the PCN.
d. The permittee must revegetate disturbed areas with native plant species sufficient in number, spacing, and diversity to restore affected functions. A maintenance and monitoring plan commensurate with the impacts, may be required. Revegetation must begin as soon as site conditions allow within the same growing season as the disturbance unless the schedule is approved by the Corps of Engineers. Native plants removed from waters of the U.S. for project construction should be stockpiled and used for revegetation when feasible. Temporary Erosion and Sediment Control measures must be removed as soon as the area has established vegetation sufficient to control erosion and sediment.
e. If the Corps determines the project will result in temporary impacts of submerged aquatic vegetation (SAV) that are more than minimal, a monitoring plan must be submitted. If recovery is not achieved by the end of the monitoring period, contingencies must be implemented, and additional monitoring will be required.

This RGC does not apply to NWP 48, *Commercial Shellfish Aquaculture Activities*. Please see specific regional conditions for NWP 48.

4. **Aquatic resources requiring special protection**. Certain aquatic resources are unique, difficult-to-replace components of the aquatic environment in Washington State. Activities that would affect these resources must be avoided to the greatest extent possible. Compensating for adverse impacts to high value aquatic resources is typically difficult, prohibitively expensive, and may not be possible in some landscape settings. Ecology Section 401 review is required for activities in or affecting the following aquatic resources (and not prohibited by Seattle District Regional General Condition): (a) Wetlands with special characteristics (as defined in the Washington State Wetland Rating Systems for western and eastern Washington, Ecology Publications #14-06-029 and #14-06-030):

- Estuarine wetlands.
- Wetlands of High Conservation Value.
- Bogs.
- Old-growth and mature forested wetlands.
- Wetlands in coastal lagoons.
- Interdunal wetlands.
- Vernal pools.
- Alkali wetlands.

(b) Fens, aspen-dominated wetlands, camas prairie wetlands. (c) Marine water with eelgrass (*Zostera marina*) beds (except for NWP 48). (d) Category I wetlands. (e) Category II wetlands with a habitat score $\geq$ 8 points. This State General Condition does not apply to the following Nationwide Permits: NWP 20 – *Response Operations for Oil and Hazardous Substances,* NWP 32 – *Completed Enforcement Actions*

5. Mitigation. Applicants are required to show that they have followed the mitigation sequence and have first avoided and minimized impacts to aquatic resources wherever practicable. For projects requiring Ecology Section 401 review with unavoidable impacts to aquatics resources, adequate compensatory mitigation must be provided.

(a) Wetland mitigation plans submitted for Ecology review and approval shall be based on the most current guidance provided in Wetland Mitigation in Washington State, Parts 1 and 2 (available on Ecology's website) and shall, at a minimum, include the following:

i. A description of the measures taken to avoid and minimize impacts to wetlands and other waters of the U.S.

ii. The nature of the proposed impacts (i.e., acreage of wetlands and functions lost or degraded).

iii. The rationale for the mitigation site that was selected.

iv. The goals and objectives of the compensatory mitigation project.

v. How the mitigation project will be accomplished, including construction sequencing, best management practices to protect water quality, proposed performance standards for measuring success and the proposed buffer widths.

vi. How it will be maintained and monitored to assess progress towards goals and objectives. Monitoring will generally be required for a minimum of five years. For forested and scrub-shrub wetlands, 10 years of monitoring will often be necessary.

vii. How the compensatory mitigation site will be legally protected for the long term.

Refer to Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Ecology Publication #06-06-011b) and Selecting Wetland Mitigation Sites Using a Watershed Approach (Ecology Publications #09-06-032 (Western Washington) and #10-06-007 (Eastern Washington)) for guidance on selecting suitable mitigation sites and developing mitigation plans. Ecology encourages the use of alternative mitigation approaches, including credit/debit methodology, advance mitigation, and other programmatic approach such as mitigation banks and in-lieu fee programs. If you are interested in proposing use of an alternative mitigation approach, consult with the appropriate Ecology regional staff person. Information on alternative mitigation approaches is available on Ecology's website.

(b) Mitigation for other aquatic resource impacts will be determined on a case-by-case basis.

General Conditions: For Federal Permittees (Agencies)

1. Necessary Data and Information. Federal agencies shall submit the determination, information, and analysis required by 15 CFR 930.39 to obtain a federal consistency determination.

2. Timing. Within 60 days from receipt of the necessary data and information, Ecology will provide a federal consistency determination for the proposed project or activity. If Ecology fails to act within the 60 day period, concurrence with the CZMP is presumed.

US Army Corps of Engineers ®
Seattle District

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

Permit Number: NWS-_____

Name of Permittee: _____

Date of Issuance: _____

Upon completion of the activity authorized by this permit, please check the applicable boxes below, date and sign this certification, and return it to the following address:

Department of the Army
U.S. Army Corps of Engineers
Seattle District, Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-3755

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of your authorization, your permit may be subject to suspension, modification, or revocation.

☐ The work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of this permit.

Date work complete: _____

☐ Photographs and as-built drawings of the authorized work (OPTIONAL, unless required as a Special Condition of the permit).

☐ If applicable, the mitigation required (e.g., construction and plantings) in the above-referenced permit has been completed in accordance with the terms and conditions of this permit (not including future monitoring).

Date work complete: _____ ☐ N/A

☐ Photographs and as-built drawings of the mitigation (OPTIONAL, unless required as a Special Condition of the permit).

☐ Provide phone number/email for scheduling site visits (must have legal authority to grant property access).

Printed Name: _____

Phone Number: _____ Email: _____

Printed Name: _____

Signature: _____

Date: _____

BEFORE the HEARING EXAMINER for the
CITY of LAKE FOREST PARK

DECISION

FILE NUMBERS:	2015-PAUE-0001 and 2015-CU-0001 [1]
APPLICANT:	Lake Forest Park Water District 4029 178th Street NE Lake Forest Park, WA 98155
TYPE OF CASE:	Consolidated: 1) Environmentally Sensitive Areas Public Agency and Utility Exception to build a pump house within a steep slope area; and 2) Conditional Use Permit to construct a utility facility on a residentially zoned lot
STAFF RECOMMENDATION:	Approve both applications subject to conditions
EXAMINER DECISION:	GRANT both applications subject to conditions
DATE OF DECISION:	August 12, 2016

INTRODUCTION [2]

Lake Forest Park Water District (LFPWD) filed an Environmentally Sensitive Areas (EnvSA [3]) Public Agency and Utility Exception (PAUE) application and a Conditional Use Permit (CUP) application pursuant to Chapter 16.26 Lake Forest Park Municipal Code (LFPMC) on December 4, 2015, to build a pump house within a steep slope area on a residentially zoned lot. (Exhibits 4 and 5 [4]) The Lake Forest Park Department of Planning and Building (Planning) deemed the applications to be complete as of June 23, 2016. (Exhibit 13.1)

The subject property is located at 18460 47th Place NE.

The Lake Forest Park Hearing Examiner (Examiner) viewed the subject property on August 9, 2016.

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1 Some documents in the record list the file number for the Conditional Use Permit as "2016-CU-0001." City staff testified that the correct file number is as set forth herein.

2 Any statement in this section deemed to be either a Finding of Fact or a Conclusion of Law is hereby adopted as such.

3 "ESA" might seem to be a more logical acronym for "Environmentally Sensitive Areas." However, the acronym ESA is commonly used to refer to the Federal Endangered Species Act. In order to avoid confusion and/or misunderstanding, the Examiner has coined the acronym "EnvSA."

4 Exhibit citations are provided for the reader's benefit and indicate: 1) The source of a quote or specific fact; and/or 2) The major document(s) upon which a stated fact is based. While the Examiner considers all relevant documents in the record, typically only major documents are cited. The Examiner's Decision is based upon all documents in the record.

The Examiner held a consolidated open record hearing on August 9, 2016. Planning gave notice of the hearing as required by the LFPMC. (Exhibit 17)

Subsection 16.26.040(F)(1) LFPMC requires land use entitlement permit decisions to be issued within 120 net review days. This decision is being issued within the 120-day period.

Testimony under oath was presented by:

Andrea Flower	Alan Kerley
Dan Mundall	Catherine Kernan
Mike Dee	

Exhibits were offered and admitted during the hearing, a list of which is maintained by the Hearing Clerk.

The action taken herein and the requirements, limitations and/or conditions imposed by this decision are, to the best of the Examiner's knowledge or belief, only such as are lawful and within the authority of the Examiner to take pursuant to applicable law and policy.

FINDINGS OF FACT

1. The LFPWD (previously known as King County Water District 83) desires to replace an old, substandard pumphouse with a new pumphouse. The proposed location for the new pumphouse is at the top of a slope of greater than 40% with a vertical elevation change of more than 20 feet on a lot which is zoned RS 10,000. (Exhibits 3, 4.8, 4.9, 5.5, 21, 23; testimony)

   The City's adopted EnvSA regulations require substantial buffers and building setbacks from steep slopes such as those present at the proposed pumphouse location. [LFPMC 16.16.310] The LFPWD considered an alternate location for the pumphouse on the subject lot ("Alt. B") which would have moved the pumphouse approximately 40 feet further away from the steep slope, but that location would still not have met the steep slope buffer requirement and would likely have caused a noise compliance problem with the adjoining property. (Exhibits 5.7, 8, 21) Therefore, the LFPWD filed the current PAUE application.

   City zoning regulations allow public "utilities" to be located on property zoned RS 10,000 upon issuance of a CUP. [LFPMC 18.20.020 and 18.54.048(D)] Since the pumphouse is a public utility facility, the LFPWD also filed the current CUP application.

2. The LFPWD is one of four water purveyors in the City. Its water source is the McKinnon Creek Well Field located along the thread of McKinnon Creek in the northeastern part of the City. The LFPWD draws from four deep wells and eight shallow artesian wells within the well field. The current pump

house, which dates from the 1940s-50s, is located about 15 feet from McKinnon Creek and within a wetland associated with the Creek. A second wetland, located along the south edge of the well field site is about 50 feet from the proposed pumphouse site. Although that distance is less than the standard buffer width for the type of wetland present, it is within the range where Planning can administratively reduce the buffer width. (Exhibits 1, 7, 21) Therefore, wetland buffer considerations are not before the Examiner in this proceeding.

3. Some LFPWD submittals refer to a proposed storage building. (*e.g.*, Exhibit 5.11) The LFPWD testified that it does not plan to build the storage building within the next three years and that its current application does not seek approval for a storage building. (Testimony) Therefore, the future storage building is also not before the Examiner in this proceeding.

4. The LFPWD has submitted a CUP application with associated descriptive text (Exhibit 4), a PAUE application with associated descriptive text (Exhibit 5), a wetland delineation report (Exhibit 7), a noise impact report (Exhibit 8), a geotechnical report (Exhibit 9), a current site plan for the well field and pumphouse lot (Exhibit 21), its Energy Conservation and Greenhouse Gas Reduction Program (Exhibit 22), and computer-generated perspective drawings of the proposed pumphouse (Exhibit 23).

5. The pumphouse is proposed to be located on a lot near the northwest corner of the 47th Place NE loop whose address is 18460 47th Place NE. The lot is essentially triangular in shape with an approximate 20' x 50' panhandle connecting it to 47th Place NE. A single-family residence was located on the lot from apparently some time in the 1960s until in or around 2008. That residence was demolished in or around 2008 and the lot has been vacant since, except for a gravel drive leading from 47th Place NE to the abutting well field site to the north. The access drive is gated. (Exhibits 3, 18, 19, 21) The LFPWD purchased the lot in or around 2009. (Testimony)

6. The review criteria for a PAUE are set out at LFPMC 16.16.260(C). The five criteria and the facts relating to each follow.

"The hearing examiner shall approve, approve with conditions, or deny the request according to the following criteria:"

A. "1. There is no other practical alternative to the proposed development with less impact on the sensitive areas;"

Facts: Prior to purchasing the lot, the LFPWD considered moving the pumphouse to a location elsewhere on the well field property. However, wetland and drainage issues prevented that proposal from going forward. The adjoining lot will allow connection to all the necessary well field piping and has no drainage problems. If the pumphouse were moved further east, away from the steep slope, noise from the pumps could not be controlled to meet City standards. (Exhibits 1, 5, 8; and testimony)

B. "2. The application of this chapter would unreasonably restrict the ability to provide utility services to the public;"

Facts: The LFPWD needs to modernize its pump facility in order to adequately serve its 950± customers. The proposed location is the only reasonable place where a modern pumphouse can be built. (Exhibits 1, 5)

C. "3. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site;"

Facts: The affected slope is stable. (Exhibit 9) The building, as proposed and located, will meet City noise standards. (Exhibit 8) Although the new pumphouse building will have an "office," there will be no full-time employees on the site. Maintenance workers will visit the site on the same schedule as they presently do. Once constructed, there will be no traffic increase due to the new pumphouse. (Exhibit 5; and testimony)

D. "4. The proposal attempts to protect and mitigate impacts to the sensitive area functions and values consistent with the best available science with the objective of no net loss of critical area functions and values; and"

Facts: Standard best management practices (BMPs) will be used before and during construction to minimize erosion and sedimentation. BMPs include, but are not limited to, use of silt fences and other temporary erosion control measures, timing of activities, and monitoring by a geotechnical engineer through the process of site preparation. The geotechnical report includes many recommendations intended for the mitigation of impacts to the function and value of the steep slope. All recommendations included in the geotechnical report will be incorporated by proxy into recommended conditions of approval for the PAUE request and/or for the Sensitive Area Work Permit. (Exhibits 1, 9)

The project must comply with City, State, and Federal requirements for mitigation of necessary impacts, specifically regarding removal of the existing pump house which rests upon a known wetland. (Exhibits 1, 7, 21)

E. "5. The proposal is consistent with other applicable regulations and standards."

Facts: This proposal must meet all other applicable City, State and Federal codes. Structural details of the building must meet the International Building Code, as adopted by the City. State permits including an HPA and Federal approval (Section 404 permit) may be required prior to removal of the existing pumphouse because it sits on a known wetland. (Exhibits 1, 7, 21)

7. The review criteria for a CUP are set forth at LFPMC 18.54.030. The criteria and the facts relating to each are as follows:

> A conditional use may be authorized upon a finding that the proposal conforms to specific development criteria established for that use, if any, and that it meets the following minimum criteria:
>
> A. The proposed use is consistent with the policies and goals of the comprehensive plan;
>
> Facts: Planning has identified numerous Comprehensive Plan policies with which the proposal is consistent. (Exhibits 1.9 and 1.10)
>
> B. The proposed use is not materially detrimental to other property in the neighborhood;
>
> Facts: Vehicular trips will not increase. The distance between the proposed pumphouse and the east property line, together with the pumphouse's structural features (partially underground, masonry construction of above-ground portion, insulated steel roof) will allow the pumphouse to comply with the City's adopted noise regulations. The pumphouse will be about 150 feet back from 47th Place NE. (Exhibits 1, 8, 21, 23)
>
> C. The proposed use will supply goods or services that will satisfy a need of the community;
>
> Facts: Approximately 950 City residents rely on the LFPWD for their domestic water supply. The current old system is not adequately reliable. (Exhibits 1, 4)
>
> D. The proposed use is designed in a manner which is compatible with the character and appearance with the existing or proposed development in the vicinity of the subject property;
>
> Facts: The new pumphouse will be about 32' x 24' with the pumps and pipe gallery in a partial daylight basement and support spaces on the upper floor. The building will have a metal gable roof. From the street, the pumphouse will look much like a two-car garage – but without the garage doors. (Exhibits 5.7, 23)
>
> E. The proposed use is designed in a manner that is compatible with the physical characteristics of the subject property;
>
> Facts: The daylight basement design uses the slope of the site to minimize perceived building height. The placement minimizes tree removal in the immediate vicinity of the pumphouse. (Exhibits 5.7, 21, 23)

F. Any requested modifications to the standards of the underlying zone shall require a variance and be subject to mitigation to minimize or remove any impacts from the modification;

Facts: No modification of standards (other than the PAUE to allow the pumphouse to be built at the top of the slope) has been requested.

G. The proposed use is not in conflict with the health and safety of the community;

Facts: Vehicular trips will not increase. The distance between the proposed pumphouse and the east property line, together with the pumphouse's structural features (partially underground, masonry construction of above-ground portion, insulated steel roof) will allow the pumphouse to comply with the City's adopted noise regulations. The new pumphouse will allow the LFPWD to continue to provide safe drinking water to its customers and includes the ability to install water treatment equipment should the need arise. (Exhibits 1, 4, 5.7, 8, 23; testimony)

H. The proposed use is such that pedestrian and vehicular traffic associated with the use will not be hazardous or conflict with existing and anticipated traffic in the neighborhood;

Facts: Once construction is complete, traffic levels will be the same as currently occurs – about 10 vehicular trips each day. (Exhibit 4)

I. The conditional use will be supported by adequate public facilities or services and will not adversely affect public services to the surrounding area or conditions can be established to mitigate adverse impacts on such facilities;

Facts: The proposed pumphouse will have no adverse effect upon community facilities. The proposed pumphouse will improve the area's public water supply system. (Exhibits 1, 4)

J. The applicant's past performance regarding compliance with permit requirements and conditions of any previously issued land use permit including building permits, conditional uses or variances, shall be considered before approving any new permit.

Facts: The LFPWD has previously obtained permits for utility maintenance activities in the area. Most of the property owned by LFPWD is encumbered with sensitive areas and their buffers. Therefore, the City has had sufficient experience in working with LFPWD through

the permitting process. LFPWD has been adequately responsive to City regulations and policies regarding emergency actions and those that involve other agencies. (Exhibit 1)

8. Lake Forest Park's State Environmental Policy Act (SEPA) Responsible Official issued a threshold Determination of Nonsignificance (DNS) for the proposal on July 18, 2016. (Exhibit 16) The DNS was not appealed.

9. Two neighbors participated in the hearing. One (Dee) expressed general concerns regarding the public notice process for land use applications. The other (Kernan) expressed concern regarding noise, visual appearance, and traffic. (Exhibit 15; and testimony) The Examiner recessed the hearing for fifteen minutes so that the citizens could review all the materials submitted by the LFPWD. When the hearing was reconvened, neither participant offered any rebuttal testimony.

10. Planning recommends that the applications be approved subject to conditions. (Exhibit 1) Planning asked the Examiner to include a condition barring clearing within EnvSAs and their required buffers between October and March. (Testimony)

Planning's "Discussion" (Exhibit 1.13 and 1.14) addresses certain "inconsistencies." One is the number of trees that would have to be removed. The LFPWD's revised site plan indicates that approximately 15 trees would have to be removed, of which one group of three Maples would be removed for the pumphouse *per se*. The remainder of the trees would be associated with the related piping work, most of which will occur on the well field site. (Exhibit 21; and testimony)

Another inconsistency is whether the steep slope upon which the pumphouse will be built exceeds a vertical height of 20 feet. The LFPWD accepts that the slope is more than 20 feet high. (Testimony)

A third inconsistency was a question about the purpose of a "Flushing Hydrant" at the north end of the associated piping. The current plan has removed that hydrant and replaced it with a plugged flange. (Exhibit 21)

A fourth question was whether the east property line is fenced. The LFPWD testified that it is fenced, although much of the fence is covered with vegetation. (Testimony)

Finally, staff questioned the noise that would be generated from idling pick-up trucks. The LFPWD's Energy Conservation and Greenhouse Gas Reduction Program does not allow LFPWD vehicles to idle. (Exhibit 22) Trucks would idle only as long as it took to unlock the access gate and then relock it after driving through. (Testimony)

11. The LFPWD concurs with Planning's analysis and recommended conditions. (Testimony)

12. Any Conclusion of Law deemed to be a Finding of Fact is hereby adopted as such.

LEGAL FRAMEWORK [5]

The Examiner is legally required to decide this case within the framework created by the following principles:

Authority
A PAUE is within the Examiner's jurisdiction pursuant to LFPMC 16.16.260(C), but is not expressly "Typed" by LFPMC 16.26.030. A Reasonable Use Exception under LFPMC 16.16.250 is classified as a Type I application. [LFPMC 16.16.030(A)(8)] Given the similarity between the two types of actions and the similarity in code language between LFPMC 16.16.250 and 16.16.260, the Examiner processes a PAUE request as a Type I application.

A CUP is a Type I application. [LFPMC 16.26.030(A)]

Type I applications are subject to an open record hearing before the Examiner who makes a final decision on the application. The Examiner's decision is subject to the right of reconsideration and appeal to Superior Court. [LFPMC 16.26.100 and .110 and Hearing Examiner Rule of Procedure 504]

> A Type I application that complies with the applicable decision criteria shall be approved; provided, that the examiner may modify or condition a proposal to ensure conformity with the relevant decision criteria.

[LFPMC 16.26.110(A)]

Review Criteria
The review criteria for a PAUE are set out at LFPMC 16.16.260(C), quoted in Finding of Fact 6, above.

The review criteria for a CUP are set out at LFPMC 18.54.030, quoted in Finding of Fact 7, above.

The Local Project Review Act [Chapter 36.70B RCW] establishes a mandatory "consistency" review for "project permits", a term defined by the Act to include "building permits, subdivisions, binding site plans, planned unit developments, conditional uses, shoreline substantial development permits, site plan review, permits or approvals required by critical area ordinances, site-specific rezones authorized by a comprehensive plan or subarea plan". [RCW 36.70B.020(4)]

> (1) Fundamental land use planning choices made in adopted comprehensive plans and development regulations shall serve as the foundation for project review. The review of a proposed project's consistency with applicable development regulations or, in the absence of

[5] Any statement in this section deemed to be either a Finding of Fact or a Conclusion of Law is hereby adopted as such.

> applicable regulations the adopted comprehensive plan, under RCW 36.70B.040 shall incorporate the determinations under this section.
>
> (2) During project review, a local government or any subsequent reviewing body shall determine whether the items listed in this subsection are defined in the development regulations applicable to the proposed project or, in the absence of applicable regulations the adopted comprehensive plan. At a minimum, such applicable regulations or plans shall be determinative of the:
>
> > (a) Type of land use permitted at the site, including uses that may be allowed under certain circumstances, such as planned unit developments and conditional and special uses, if the criteria for their approval have been satisfied;
> > (b) Density of residential development in urban growth areas; and
> > (c) Availability and adequacy of public facilities identified in the comprehensive plan, if the plan or development regulations provide for funding of these facilities as required by [the Growth Management Act].

[RCW 36.70B.030]

Vested Rights

The City has no vesting regulations. "Vesting" serves to "fix" the regulations against which a development application is judged. [*Potala Village Kirkland, LLC v. City of Kirkland*, __ Wn. App. __ (Div. I, 2014)]

> In the 1950s, the [state] supreme court first adopted the common law vested rights doctrine [for building permit applications]. … In cases that followed, Washington courts applied the vested rights doctrine to permit applications other than building permit applications. They included conditional use permit applications, grading permit applications, shoreline substantial development permit applications, and septic permit applications.
>
> In 1987, the legislature enacted legislation regarding the vested rights doctrine. The session laws added … RCW 19.27.095(1) and RCW 58.17.033(1) respectively … [which] only refer to building permit applications and subdivision applications. …
>
> Most recently, in *Town of Woodway v. Snohomish County*, the [state] supreme court reiterated that "[w]hile it originated at common law, the vested rights doctrine is now statutory."

[*Potala*, Slip Opinion 6 – 8 and 11] "With these points in mind, [the *Potala* court held] that the filing of [an] application for [a] shoreline substantial development permit, without filing an application for a building permit, [does] not vest rights to zoning or other land use control ordinances." [*Potala*, Slip Opinion at 12] The *Potala* court "express[ed] no opinion on whether or to what extent the vested rights doctrine applies to

permits other than shoreline substantial development permits. These questions [were] not before [it]." [*Potala*, Slip Opinion at 25] Therefore, whether the vested rights doctrine still applies to CUPs is debatable.

The state's judicially-created vested rights doctrine has never been applied to applications which seek exception from the established rules (such as Variances, Reasonable Use Exceptions, and PAUEs).

Vesting is not particularly important in this case as the City has made no development regulations changes between the time the application was filed and this date.

Standard of Review
The standard of review is preponderance of the evidence. The Applicant has the burden of proof.

CONCLUSIONS OF LAW

1. The preponderance of the evidence, as summarized in Finding of Fact 6, above, demonstrates compliance with the criteria for approval of a PAUE.

2. The preponderance of the evidence, as summarized in Finding of Fact 7, above, demonstrates compliance with the criteria for approval of a CUP.

3. The proposal passes the "consistency" test: A utility facility is allowed in the RS 10,000 zone upon issuance of a CUP; density is not an issue as this is not a residential use; and adequate public facilities are available to support the pumphouse.

4. The recommended conditions of approval as set forth in Exhibit 1 are reasonable, supported by the evidence, and capable of accomplishment with the following changes:

    A. Both a CUP and a PAUE embody the concept of approval of a specific development proposal on a specific site. Both a CUP and a PAUE evaluation are based upon the specific development plans submitted by the applicant. It is appropriate, therefore, that the conditions of approval clearly identify the plans which are being approved. The Planning recommendation as drafted does not do so. Exhibits 21 and 23 constitute the plans which should be approved. Reference to those exhibits will be incorporated into Recommended Condition 1.

    B. The additional condition requested by Planning should be added.

    C. A few minor, non-substantive punctuation revisions to the Recommended Conditions will improve parallel construction, clarity, and flow within the conditions. Such changes will be made.

5. Any Finding of Fact deemed to be a Conclusion of Law is hereby adopted as such.

DECISION

Based upon the preceding Findings of Fact and Conclusions of Law, and the testimony and evidence submitted at the open record hearing, the Examiner hereby:

A. **GRANTS** the Public Agency Utility Exception under file number 2015-PAUE-0001; and

B. **GRANTS** the Conditional Use Permit application under file number 2015-CU-0001,

BOTH SUBJECT TO THE ATTACHED CONDITIONS.

Decision issued August 12, 2016.

\s\ John E. Galt (Signed original in official file)
John E. Galt
Hearing Examiner

NOTICE OF RIGHT OF RECONSIDERATION

This Decision is subject to the right of reconsideration pursuant to Hearing Examiner Rule of Procedure 504. Reconsideration may be requested by the applicant, appellant, a party of record, or the City. Reconsideration requests must be filed in writing with the City Clerk within seven (7) calendar days of the date of mailing of this Decision. Any reconsideration request shall specify the error of law or fact, procedural error, or new evidence which could not have been reasonably available at the time of the hearing conducted by the Examiner which forms the basis of the request. Any reconsideration request shall also specify the relief requested. See Hearing Examiner Rule of Procedure 504 for additional information and requirements regarding reconsideration.

NOTICE OF RIGHT OF APPEAL

This Decision becomes final and conclusive as of the eighth calendar day after the date of mailing of the Decision unless reconsideration is timely requested. If reconsideration is timely requested, the Examiner's order granting or denying reconsideration becomes the final and conclusive action for the City. The final action may be reviewed in Superior Court pursuant to the procedures established by Chapter 36.70C RCW, the Land Use Petition Act. Section 36.70C.040 RCW requires that any appeal be properly filed with the

Court within 21 days of the issuance of the final City Decision. Please refer to Chapter 36.70C RCW for further guidance regarding judicial appeal procedures.

The following statement is provided pursuant to RCW 36.70B.130: "Affected property owners may request a change in valuation for property tax purposes notwithstanding any program of revaluation."

CONDITIONS OF APPROVAL
2015-PAUE-0001/2015-CU-0001
Lake Forest Park Water District
McKinnon Creek Pumphouse

This consolidated Public Agency Utility Exception and Conditional Use Permit is subject to compliance with all applicable provisions, requirements, and standards of the Lake Forest Park Municipal Code, standards adopted pursuant thereto, and the following special conditions:

1. Exhibits 21 and 23 are the approved site plans. The site plans are valid for a period of three years from the date of approval.

2. Permittee must apply for and receive all necessary permits from the Department of Planning and Building prior to commencing any proposed work. These include, but are not limited to the following: Major Sensitive Area Work, Land Clearing & Grading, Sensitive Area Tree Removal, Side sewer, Building, Mechanical, and Plumbing permits.

3. All work must comply with the City's adopted standards for development and construction, including storm water mitigation, erosion control, zoning, and building.

4. Prior to issuance of any clearing and grading permits: A) The Permittee shall provide a temporary erosion control plan; and B) the Permittee shall submit for review and approval all clearing and grading plans, engineering construction drawings, and other site improvement plans.

5. All import fill material shall be clean and free of environmental hazards and contaminants. Proof of clean import soils shall be submitted to the Planning & Building Department.

6. All trucks shall be inspected and cleaned as necessary before leaving the site in order to ensure that dirt, mud, and other materials are not deposited on public streets. The Permittee shall provide for prompt sweeping or cleanup of any dirt, mud, or other materials deposited by the project's trucks on public streets. Temporary traffic control shall be provided as necessary for safe sweeping or cleanup operations.

7. Before construction begins, the Permittee shall apply for a Sensitive Area Tree Removal permit. The tree removal permit must be issued and tree protection measures inspected before construction may begin. The arborist report associated with this tree permit must address every significant tree that will be impacted or removed by the proposed work. Priority locations for replacement tree plantings shall be 1:1 on the slope according to City Arborist recommendations, and remaining trees shall be planted for the benefit of additional screening between the subject site and adjoining properties. A qualified geotechnical engineer shall review, report, and inspect all tree removal activities, at the owner's expense.

8. There shall be no clearing or grading within environmentally sensitive areas and their regulatory buffers between October and March, inclusive.

9. The Permittee is responsible for obtaining any necessary State and Federal permits and approvals for the project, and is responsible for complying with any conditions of approval placed on these or other state or federal permits or approvals, and for submitting revised drawings to the City for its review and approval, if necessary, to reflect these state or federal conditions of approval.

ROBINSON
NOBLE

July 8, 2018

Mr. Dan Mundall, PE
Lake Forest Park Water District
4029 NE 178th Street
Lake Forest Park, Washington 98155

Revision 3 - Geotechnical Information Report
Lake Forest Park McKinnon Creek Pumphouse
Lake Forest Park, Washington
RN File No. 2093-006A

Dear Mr. Mundall:

This letter serves as transmittal for our Revision 3 - Geotechnical Information Report for the McKinnon Creek Pumphouse project. The scope of our services is outlined in our proposal, "Lake Forest Park Utilities Building", dated March 2, 2012.

The slopes at the site appear stable and we do not expect the construction of the McKinnon Creek Pumphouse will significantly reduce the stability. An approximate 16-foot gravel "porch" is planned on the west side of the planned McKinnon Creek Pumphouse structure. We understand you are planning a small detention tank beneath the planned gravel "porch". We have discussed with you the potential for shallow surficial sloughing on the slope and we expect the new building will help stabilize the upper part of the slope.

We appreciate the opportunity of working with you on this project. If you have any questions regarding this report, please contact us.

Sincerely,

Rick B. Powell
Principal Engineer

RBP:am

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APPENDIX A: Robinson Noble, Inc. 2010 Borings

APPENDIX B: Geotech Consultants, Inc. 2008 Test Pits

APPENDIX C: Design Maps Summary Report and 3D Histogram

APPENDIX D: Ultra Block Wall Calcs.

INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed utility McKinnon Creek Pumphouse located north of 47th Place Northeast in Lake Forest Park, Washington. The general site area is shown on the Vicinity Map in Figure 1 and a detailed view of the project is on the Site Plan in Figure 2.

You have requested that we complete this report to evaluate subsurface conditions near the proposed McKinnon Creek Pumphouse and provide recommendations for site development. For our use in preparing this report, we have been provided with an undated, untitled electronic copy of a plan sheet designated "lfpwd_18460_map" showing the proposed McKinnon Creek Pumphouse and topography. We have also been provided with a topographic survey dated July 1, 2008 by Signature Surveying and Mapping, PLLC that shows site topography and property boundaries. The site plan shows an area of the slope that is over 40% and that area is defined on the plans slightly taller than 20 feet. The steep slope area does not show that a large portion of the slope is man-made by placing fill on the slope, creating a taller and steeper slope. Since the fill was placed prior to 2009, we expect the slope was made during development of the original house; therefore, the steep slope was created during a legal grading activity.

We have previously prepared a geotechnical report, dated July 16, 2010 for the water line installed below McKinnon Creek using a directional drill process. We have been provided with a geotechnical report dated September 17, 2008, prepared by Geotech Consultants, Inc. titled "Geotechnical Engineering Considerations" that shows the location of four test pits performed on the east side of the site area near the proposed McKinnon Creek Pumphouse.

PROJECT DESCRIPTION

The project will include the installation of a new utilities building as shown on the site plan. The project is located near the top of a steep west facing slope. The slope extends down to McKinnon Creek at the base of the slope. You plan to construct a building with a daylight basement into the existing hillside. The depth of the building will be approximately 10 feet below grade and will have dimensions of 32 feet in the north-south direction and 18 feet in the east-west direction. A gravel "porch" is planned on the west side of the McKinnon Creek Pumphouse to access the building. To the west of the pumphouse, you are planning a small detention tank and manhole sump. The tank will be approximately 5 feet wide, 8 feet tall and 11 feet long.

SCOPE

The purpose of this study is to explore and characterize the subsurface conditions and present our opinion on the installation of a new utilities building. Specifically, our scope of services as outlined in our Services Agreement, dated March 2, 2012, includes the following:

- Review available geologic maps for the site area.
- Explore the subsurface soil and groundwater conditions in the area of the proposed tank with hand auger borings.
- Prepare a geotechnical report containing the results of our subsurface explorations, and our conclusions and recommendations for geotechnical design elements of the project. Our report will include:
    - Description of the geologic materials encountered.

- Description of depth to groundwater, if encountered.
- Exploration logs with the density information from the hand augers and other available explorations previously performed.
- A site plan showing the boring locations.
- Discussion of seismicity at the site along with seismic design parameters including Site Class and site coefficients based on current IBC criteria.
- Excavation considerations and potential foundation support recommendations.
- Recommendations for shallow foundations including allowable soil bearing values, minimum footing sizes, soil parameters for lateral load resistance, and footing drains.
- Estimate the total and differential settlements of spread footings and floor slabs for variable loading within the building.
- Geotechnical recommendations and considerations for support of concrete slab-on-grade floors.
- Recommendations for earthwork and site preparation. An evaluation of the effects of weather and/or construction equipment on site soils and mitigation of any unsuitable soil conditions at the site will be included.

SITE CONDITIONS

Surface Conditions

An access road exists east of the proposed McKinnon Creek Pumphouse extending north from 47th Place Northeast to the approximate location of a water reservoir tank. To the west of the proposed McKinnon Creek Pumphouse there is a steep slope with an approximate 42% inclination and 16 feet of elevation drop. The slope then decreases to an approximate inclination of 37% to McKinnon Creek at the base of the slope. The steep slope continues to the north and south of the site in an approximate Northwest to Southeast alignment. A residential structure and property exist to the east of the project site.

Numerous small to large trees and some dense undergrowth occupy the area of the proposed McKinnon Creek Pumphouse. The large diameter trees appeared to be growing straight. Curvature of mature trees is an indication of long-term creep or slope movement. No groundwater seepage onto the slope was evident below the improvements.

Geology

Most of the Puget Sound Region was affected by past intrusion of continental glaciation. The last period of glaciation, the Vashon Stade of the Fraser Glaciation, ended approximately 10,000 to 11,000 years ago. Many of the geomorphic features seen today are a result of scouring and overriding by glacial ice. During the Vashon Stade, areas of the Puget Sound region were

overridden by over 3,000 feet of ice. Soil layers overridden by the ice sheet were compacted to a much greater extent than those that were not.

The surface geologic units mapped for this area are shown on the Geologic Map of the Edmonds East and Edmonds West Quadrangles, Snohomish and King Counties, Washington, by James P. Minard (U.S.G.S., 1985). The site is mapped as Esperance sand (Qe) with nearby areas of older clay (Qcl), glacial till (Qvt) and recessional outwash (Qvr). Our explorations encountered Esperance sand.

- **Older Clay:** Clay and silt of unknown origin compacted by the weight of the Vashon glacier.
- **Esperance sand:** Thinly bedded sand and gravel layers placed prior to and compacted by the weight of advancing glaciers.
- **Glacial till:** Glacially consolidated mixture of non-sorted, non-stratified silt, sand and gravel deposited directly beneath the glacier.
- **Recessional Outwash:** Non-glacially consolidated stratified sand and gravel deposited by meltwater streams as the glacier retreated.
- **Fill:** Artificial or foreign soils used for grading in construction. Consistency and density of the fill soils will depend on construction procedures.

Subsurface Explorations

General: We explored the soil and groundwater conditions on the site with hand excavating equipment on April 4, 2012. The hand augers were excavated to depths of 3.5 to 7.5 feet below the ground surface. The approximate locations of the explorations are shown on the Site Plan in Figure 2. The soils were visually classified in general accordance with the Unified Soil Classification System, a copy of which is presented as Figure 3. The logs of the explorations are presented in Figure 4. A cross section view of the slope in the area of the proposed McKinnon Creek Pumphouse can be seen in Figure 5.

We have also reviewed Boring 1 from our previously prepared report for the adjacent water main project drilled just north of the planned building. Four test pits were also excavated just east of our hand augers at the top of the east slope. These test pits were excavated by Geotech Consultants for a residential evaluation.

Robinson Noble Hand Augers 1 through 3: Topsoil was encountered within the hand augers to a depth of 2 feet. Below the topsoil, Hand Auger 1, located at the top of the slope, encountered silty sand with and gravel from 2.2 feet to the depths explored of 3.5 feet. Hand Auger 2, located approximately half way down the slope encountered silty sand and gravel from 1.5 feet to the depths explored of approximately 7.5 feet. Hand Auger 3 was performed at the bottom of the slope and encountered silty sand and gravel from 1.9 feet to the depths explored of approximately 3 feet.

Robinson Noble Boring 1: Boring 1 was performed on the gravel access road above the creek on the east slope. Fine sand was encountered from the surface to 26 feet below grade. Silty fine sand to sandy silt was encountered from 26 feet below grade to 30 feet below grade. Sand with silt was encountered from 30 feet below grade to the depth explored of 41.5 feet. Groundwater was encountered at 28 feet below grade.

Geotech Consultants Test Pits 1 through 4: These test pits encountered fill soils to depths of 1 to 8 feet. The fill consisted of loose to medium dense slightly silty sand with gravel. Dense sandy silt underlayed the fill in Test Pit 2 from a depth of approximately 3 to 6 feet. Underlying the silt in Test Pit 2 and fill in the other test pits, dense sand to slightly silty sand was observed from 1 foot to the depths explored of up to 12 feet. We expect the fill was placed during the development of the removed residence.

Hydrologic Conditions

We observed no groundwater in Hand Augers 1, 2 and 3 but we observed some mottling as identified in the exploration logs. We observed groundwater seeping out of the toe of the slope at an approximate elevation of 258 feet. Wetland vegetation was also observed in this area. We also observed a water level in Boring 1 on top of the underlying less permeable fine grained soil at 28 feet below grade. We consider this water to be perched on top of the low permeable soils.

GEOLOGIC HAZARDS

Landslide Hazards

The core of the site is inferred to be composed of glacially overridden soils. We consider these soils stable with regard to deep-seated slope failures. We did not observe indications of shallow or deep-seated slope failures at the site. Numerous mature evergreen trees are located on the site. We expect that the surficial soils on the steeper sections of the site slopes could slough over time. Any sloughing events are expected to be surficial. We believe that the removal of man made fill in the proposed McKinnon Creek Pumphouse will increase overall slope stability. Removal of trees and roots could destabilize the slope. Care should be used when removing vegetation from a steep slope.

Erosion Hazards

The erosion hazard criteria used for determination of affected areas include soil type, slope gradient, vegetation cover, and groundwater conditions. The erosion potential is related to vegetative cover and the specific surface soil types (group classification), which are related to the underlying geologic units. Over the gently sloping conditions of the site we consider the erosion hazard to be slight with vegetative cover in place and moderate when stripped of vegetation. A portion of the site is over 40 percent slope. These areas are generally considered to have moderate potential for erosion when covered with vegetation and high when stripped of vegetation. We do not expect removal of vegetation in areas of steep sloping conditions outside of the area of the planned building. Best management practices (BMPs) and applicable codes should be followed during site grading to limit potential for erosion. We do not expect this site will require unusual or extreme erosion management methods.

Steep Slopes Hazards

The proposed McKinnon Creek Pumphouse is adjacent to the steep slope on the west side of the site. Removal of man made soils near the top of the slope will increase the slope stability. The planned foundation depth for the McKinnon Creek Pumphouse of approximately 10 feet and the detention tank will add stability to the upper portion of the slope. The drains behind the wall will help control near-surface groundwater.

Seismic Hazard

It is our opinion based on our subsurface explorations that the Soil Profile in accordance with the 2015 International Building Code (IBC) is Site Class D with Seismic Design Category D. We used the US Geological Survey program "U.S. Seismic Design Maps Web Application." The design maps summary report for the 2015 IBC is included in this report as Appendix C.

Additional seismic considerations include liquefaction potential and amplification of ground motions by soft soil deposits. The liquefaction potential is highest for loose sand with a high groundwater table. We do not expect groundwater at the elevations within the medium dense sands observed near the surface in our explorations. If liquefaction was to occur we would expect that the settlement induced would be minor and would not be detrimental to the structure.

CONCLUSIONS AND RECOMMENDATIONS

General

It is our opinion that the site is compatible with the planned improvements. We do not anticipate that the planned McKinnon Creek Pumphouse will have adverse impacts on the slope stability and it should improve the stability of the top portion of the slope. We recommend that the building and detention tank foundations be embedded deep enough to have at least a 15 foot horizontal distance from the slope face to the footing as shown in Figure 6. The footing should extend through any loose soil and be embedded at least 2 feet into native dense soil.

The natural steep slope in the area of the project is less than 20 feet tall after the man-made fills are discounted. At least a portion of the fill appears to have been placed during the development of the residence that has been removed; therefore, the fill was placed during a legal grading activity. Native steep slopes observed in the area of the project were measured to be less than 20 feet in height with no signs of instability. According to the LFP municipal code chapter 16.16.310 C 2, this designation allows the slope to be regraded as part of an approved development plan. Any steep slope after the project completion will be considered a steep slope and subject to all steep slope requirements.

Any shallow slope failures will have minimal impacts to the planned improvements due to the depth of the planned improvements.

It is important to reduce the amount of uncontrolled fill placed out over the slope. Placing fill on the slopes could increase the risk of landslides. Any soils removed during the excavation should be removed from the site or stockpiled in the eastern region of the site, away from the

top of the steep slope. Controlling surface water from over the slope will help maintain the planned improvements.

Temporary Slopes

Temporary cut slope stability is a function of many factors, such as the type and consistency of soils, depth of the cut, surcharge loads adjacent to the excavation, length of time a cut remains open, and the presence of surface or groundwater. It is exceedingly difficult under these variable conditions to estimate a stable temporary cut slope geometry. Therefore, it should be the responsibility of the contractor to maintain safe slope configurations, since the contractor is continuously at the job site, able to observe the nature and condition of the cut slopes, and able to monitor the subsurface materials and groundwater conditions encountered.

For planning purposes, we recommend that temporary cuts be no steeper than 1.5 Horizontal to 1 Vertical (1.5H:1V). If groundwater seepage is encountered, we would expect that flatter inclinations would be necessary. We recommend that cut slope heights and inclinations conform to local and WISHA/OSHA standards. Shoring may be needed to control the size of the excavation.

Structural Fill

General: All fill placed beneath buildings or other settlement sensitive features should be placed as structural fill. Structural fill, by definition, is placed in accordance with prescribed methods and standards, and is observed by an experienced geotechnical professional or soils technician. Field observation procedures would include the performance of a representative number of in-place density tests to document the attainment of the desired degree of relative compaction.

Materials: Imported structural fill should consist of a good quality, free-draining granular soil, free of organics and other deleterious material, and be well graded to a maximum size of about 3 inches. Imported, all-weather structural fill should contain no more than 5 percent fines (soil finer than a Standard U.S. No. 200 sieve), based on that fraction passing the U.S. 3/4-inch sieve.

The use of on-site soil as structural fill will be dependent on moisture content control. Some drying of the native soils may be necessary in order to achieve compaction. During warm, sunny days this could be accomplished by spreading the material in thin lifts and compacting. Some aeration and/or addition of moisture may also be necessary. We expect that compaction of the native soils to structural fill specifications would be difficult, if not impossible, during wet weather.

Fill Placement: Following subgrade preparation, placement of the structural fill may proceed. Fill should be placed in 8- to 10-inch-thick uniform lifts, and each lift should be spread evenly and be thoroughly compacted prior to placement of subsequent lifts. All structural fill underlying building areas, and within a depth of 2 feet below pavement and sidewalk subgrade, should be compacted to at least 95 percent of its maximum dry density. Maximum dry density, in this report, refers to that density as determined by the ASTM D1557 compaction test procedure. Fill more than 2 feet beneath sidewalks and pavement subgrades should be compacted to at least 90 percent of the maximum dry density. The moisture content of the soil

to be compacted should be within about 2 percent of optimum so that a readily compactable condition exists. It may be necessary to overexcavate and remove wet surficial soils in cases where drying to a compactable condition is not feasible. All compaction should be accomplished by equipment of a type and size sufficient to attain the desired degree of compaction.

Foundations

Conventional shallow spread foundations should be founded on undisturbed, medium dense or firmer soil. If the soil at the planned bottom of footing elevation is not suitable, it should be overexcavated to expose suitable bearing soil. Footings should extend at least 18 inches below the lowest adjacent finished ground surface for frost protection. Minimum foundation widths should be at least 16 inches and should conform to IBC requirements. Standing water should not be allowed to accumulate in footing trenches. All loose or disturbed soil should be removed from the foundation excavation prior to placing concrete. The footings should be embedded to satisfy the 15 foot horizontal distance from the slope face as shown in Figure 6.

For foundations constructed as outlined above, we recommend an allowable design bearing pressure of 2,000 pounds per square foot (psf) be used for the footing design. IBC guidelines should be followed when considering short-term transitory wind or seismic loads. Potential foundation settlement using the recommended allowable bearing pressure is estimated to be less than 1 inch total and 1/2-inch differential across the distance of the building.

Lateral Pressures

The lateral earth pressure acting on retaining walls is dependent on the nature and density of the soil behind the wall, the amount of lateral wall movement, which can occur as backfill is placed, and the inclination of the backfill. Walls that are free to yield at least one-thousandth of the height of the wall are in an "active" condition. Walls restrained from movement by stiffness or bracing are in an "at-rest" condition. Active earth pressure and at-rest earth pressure can be calculated based on equivalent fluid density. Equivalent fluid densities for active and at-rest earth pressure of 35 pounds per cubic foot (pcf) and 55 pcf, respectively, may be used for design for a level backslope. These values assume that the on-site soils or imported granular fill are used for backfill, and that the wall backfill is drained. The preceding values do not include the effects of surcharges, such as due to foundation loads or other surface loads. Surcharge effects should be considered where appropriate.

Seismic lateral loads are a function of the site location, soil strength parameters and the peak horizontal ground acceleration (PGA) for a given return period. We used the US Geological Survey program "2009 PSH Deaggregation on NEHRP" to compute the PGA for the site. The 3-D histogram is included in Appendix C. The above drained active and at-rest values should be increased by a uniform pressure of 6.1H and 20.3H psf, respectively, when considering seismic conditions. H represents the wall height.

Lateral pressures may be resisted by friction at the base of the wall and passive resistance against the foundation. A coefficient of friction of 0.45 may be used to determine the base friction in the native glacial soils if a continuous foundation is used. An equivalent fluid density of 250 pcf may be used for passive resistance design. To achieve this value of passive

pressure, the foundations should be poured "neat" against the native dense soils, or compacted fill should be used as backfill against the front of the footing, and the soil in front of the wall should extend a horizontal distance at least equal to three times the foundation depth. A factor of safety of 2.0 has been applied to the passive pressure to account for required movements to generate these pressures. The friction coefficient does not include a factor of safety.

Ultra Block Wall

An ultra block wall is planned on the north side of the pump station to support and maintain the existing sloping condition. We have provided in this report Figure 8, showing specifications for the construction of the block wall. We have also included the design calculation for the wall, attached as Appendix D.

Drainage

We recommend that runoff from impervious surfaces, such as roofs, driveway and access roadways, be collected and routed to an appropriate storm water discharge system. The finished ground surface should be sloped at a gradient of 5 percent minimum for a distance of at least 10 feet away from the buildings, or to an approved method of diverting water from the foundation, per IBC Section 1804.4. Surface water should be collected by permanent catch basins and drain lines, and be discharged into a storm drain system.

We recommend that footing drains be used around all of the structures as shown in Figure 5. The footing drains should consist of 4-inch-diameter, perforated PVC pipe that is surrounded by free-draining material, such as pea gravel and placed at the footing elevation. A drainage composite or 1 foot blanket of sand should extend up from the footing drain to within 1 foot of the ground surface. Footing drains could discharge onto the slope because we expect an insignificant amount of water.

Erosion Control

We recommend that cut slopes and any disturbed soils be protected from erosion. We expect that erosion control BMP's such as silt fencing and ground cover such as straw or visqueen will be limited to the construction areas of the project.

USE OF THIS REPORT

We have prepared this report for Lake Forest Park Water District and its agents, for use in planning and design of this project. The data and report should be provided to prospective contractors for their bidding and estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of subsurface conditions.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report, for consideration in design. There are possible variations in subsurface conditions. We recommend that project planning include contingencies in budget and schedule, should areas be found with conditions that vary from those described in this report.

Within the limitations of scope, schedule and budget for our services, we have strived to take care that our services have been completed in accordance with generally accepted practices followed in this area at the time this report was prepared. No other conditions, expressed or implied, should be understood.

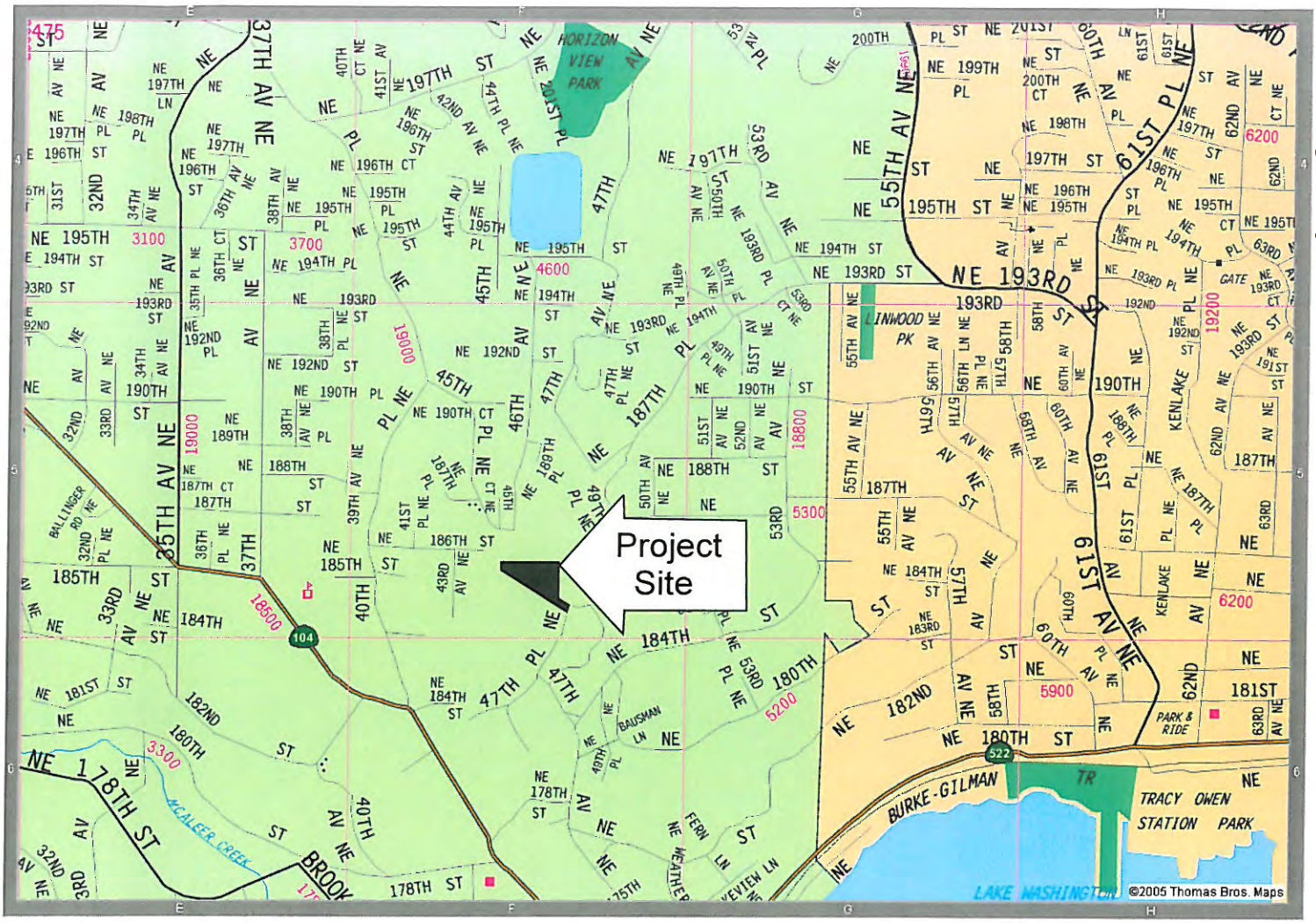
We appreciate the opportunity to be of service to you. If there are any questions concerning this report or if we can provide additional services, please call.

Sincerely,
Robinson Noble, Inc.

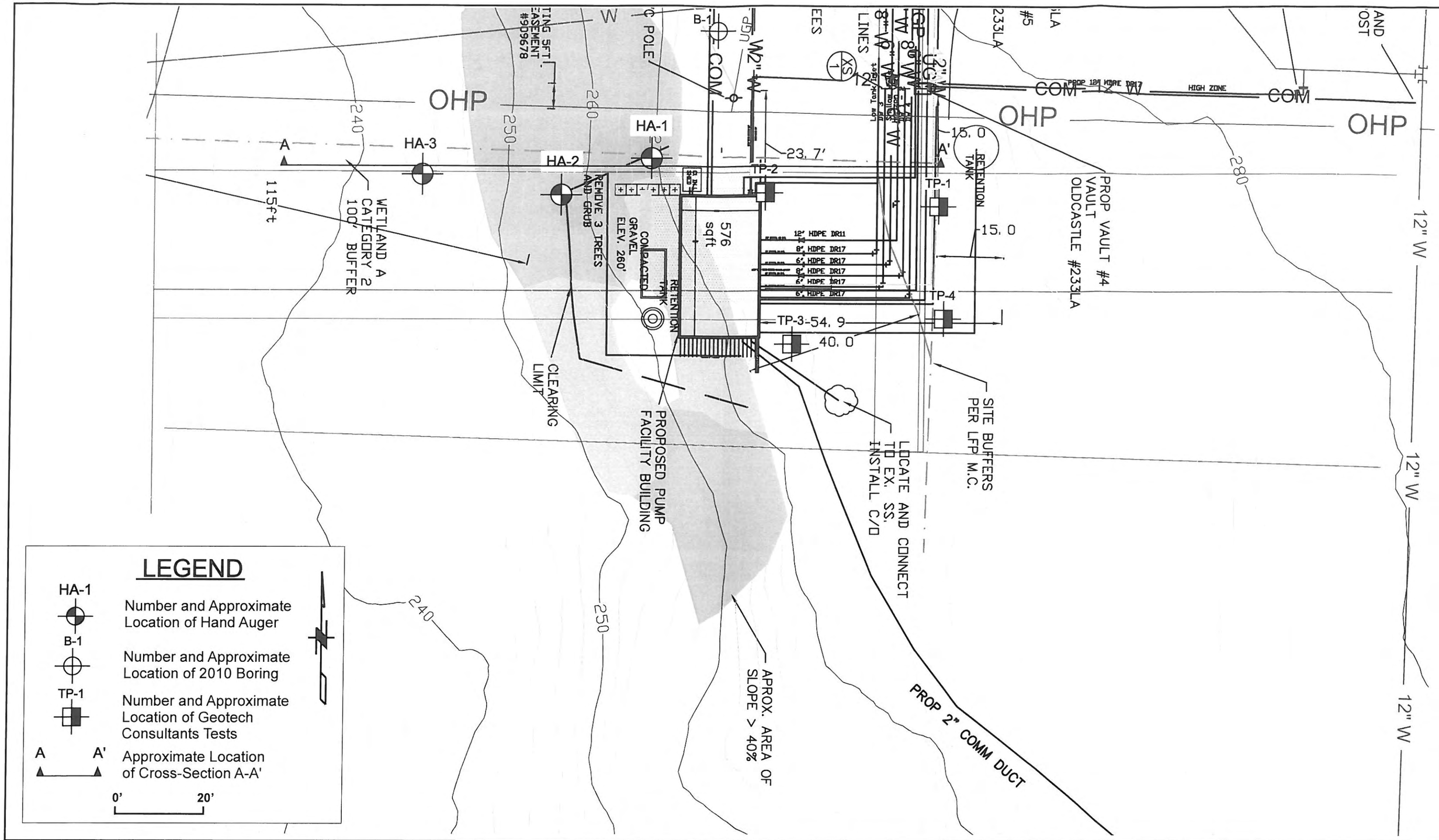
Rick B. Powell, PE
Principal Engineer

RBP:am

Eight Figures
Appendix A – Boring 1 from RN geotechnical letter, dated July 16, 2010
Appendix B – Test Pit 1-4 from Geotechnical Consultant, dated September 17, 2008
Appendix C – Design Maps Summary Report and 3D Histogram
Appendix D – Ultra Block Wall Calcs.



ROBINSON NOBLE		PM: RBP July 2018 2093-006A	Figure 1 Vicinity Map Lake Forest Park Water District: McKinnon Creek Pumphouse



LEGEND

HA-1 — Number and Approximate Location of Hand Auger

B-1 — Number and Approximate Location of 2010 Boring

TP-1 — Number and Approximate Location of Geotech Consultants Tests

A A' — Approximate Location of Cross-Section A-A'

0' 20'

ROBINSON NOBLE

Note: Basemap taken from AutoCAD file received from Mundall Engineering on 6/29/2018.

PM: RBP
July 2018
2093-006A

Figure 2
Site Plan
Lake Forest Park Water District: Northeast 185th Street Utilities Building

Unified Soil Classification System

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE - GRAINED SOILS MORE THAN 50% RETAINED ON number 200 SIEVE	GRAVEL MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE - GRAINED SOILS MORE THAN 50% PASSES NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50%	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LIQUID LIMIT 50% OR MORE	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1) Field classification is based on visual examination of soil in general accordance with ASTM D 2488-83.
2) Soil classification using laboratory tests is based on ASTM D 2487-83.
3) Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS

Dry- Absence of moisture, dusty, dry to the touch

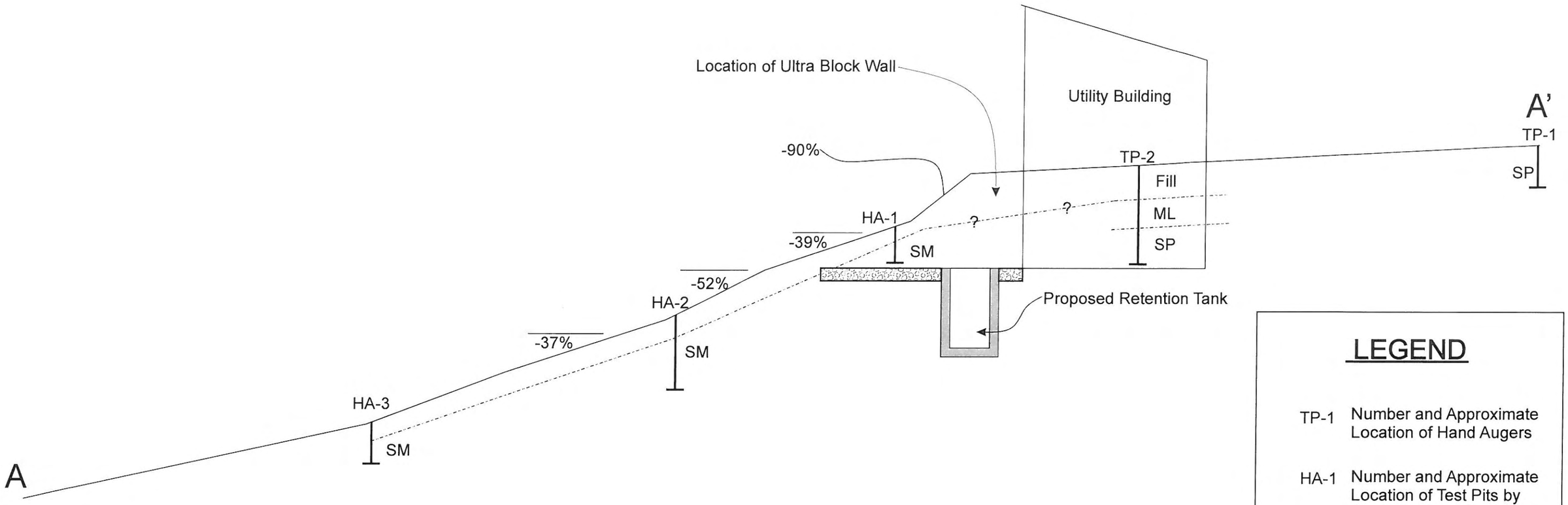
Moist- Damp, but no visible water

Wet- Visible free water or saturated, usually soil is obtained from below water table

LOG OF EXPLORATION

DEPTH	USC	SOIL DESCRIPTION
HAND AUGER ONE		
0.0 – 2.2	SM	Brown-dark brown silty fine sand with roots and trace gravel (loose, moist)**(Topsoil)**
2.2 – 3.5	SM	Light brown to brown silty fine to medium sand with trace roots and gravel (Medium dense, moist) – refusal on rock at 3.5 feet **(Esperance Sand)**
		Samples were collected at 1.3 and 2.3 feet Groundwater seepage was not encountered Hand Auger caving was not encountered Hand Auger was completed at 3.5 feet on 4/2/2012
HAND AUGER TWO		
0.0 – 1.5	SM	Brown silty fine to medium sand with roots and gravel (loose, moist) **(Topsoil)**
1.5 – 7.5	SM	Gray-light brown silty fine to medium sand with trace roots and gravel and mottling (medium dense, moist) **(Esperance Sand)**
		Samples were collected at 1.0, 1.7, 2.7, 5.4 and 7.3 feet Groundwater seepage was not encountered Hand Auger caving was not encountered Hand Auger was completed at 7.5 feet on 4/2/2012
HAND AUGER THREE		
0.0 – 1.9	SM	Dark brown-black silty fine sand with roots and gravel (loose, wet) **(Topsoil)**
1.9 – 3.0	SM	Brown-gray silty fine to medium sand with trace roots and gravel (dense, wet) – refusal on rock at 3.0 feet **(Esperance Sand)**
		Samples were collected at 1.7 and 2.4 feet Groundwater seepage was not encountered Hand Auger caving was not encountered Hand Auger was completed at 3.0 feet on 4/2/2012

Cross Section A-A'



LEGEND

TP-1 Number and Approximate Location of Hand Augers

HA-1 Number and Approximate Location of Test Pits by Geotech Consultants

0 10 20

Scale 1" = 10'

*Measurements made in the field with hand tools and measuring tape

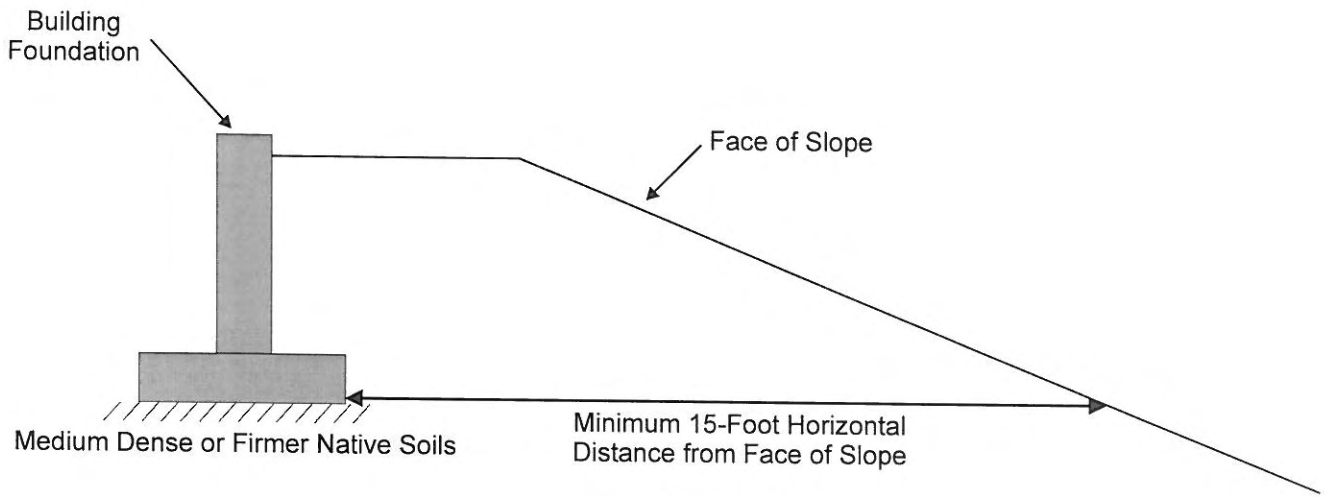
ROBINSON NOBLE

PM: RBP
July 2018
2093-006A

Figure 5
Cross Section
Lake Forest Park Water District: McKinnon Creek Pumphouse

Typical Foundation Embedment Detail with Effective Setback from Slope Face

(Not to Scale)



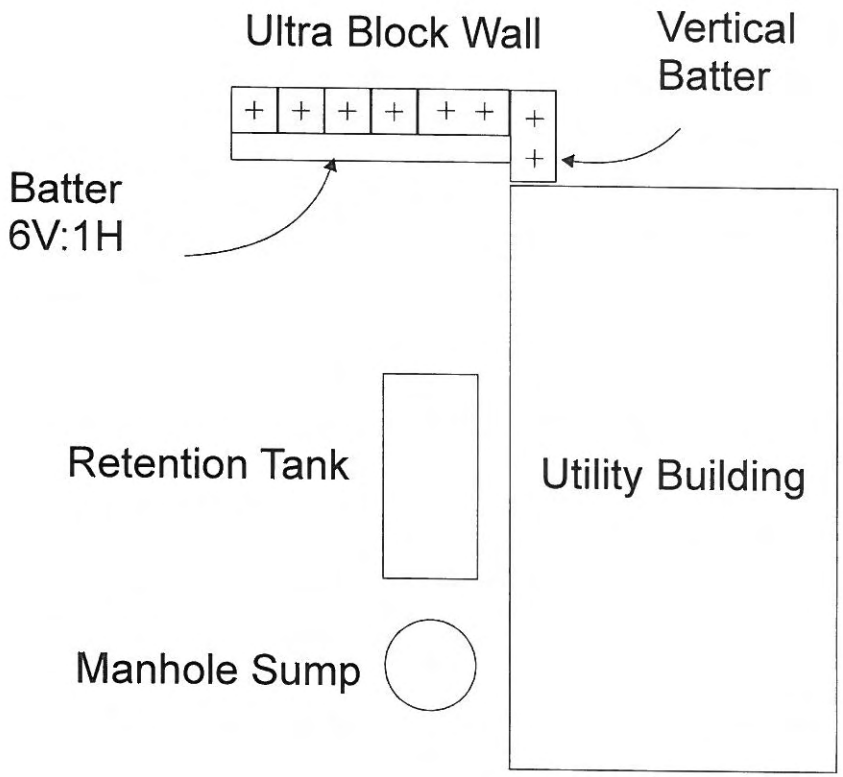
ROBINSON NOBLE

PM: RBP
July 2018
2096-006A

Figure 6

Footing Setback

Lake Forest Park Water District: McKinnon Creek Pumphouse



ROBINSON NOBLE

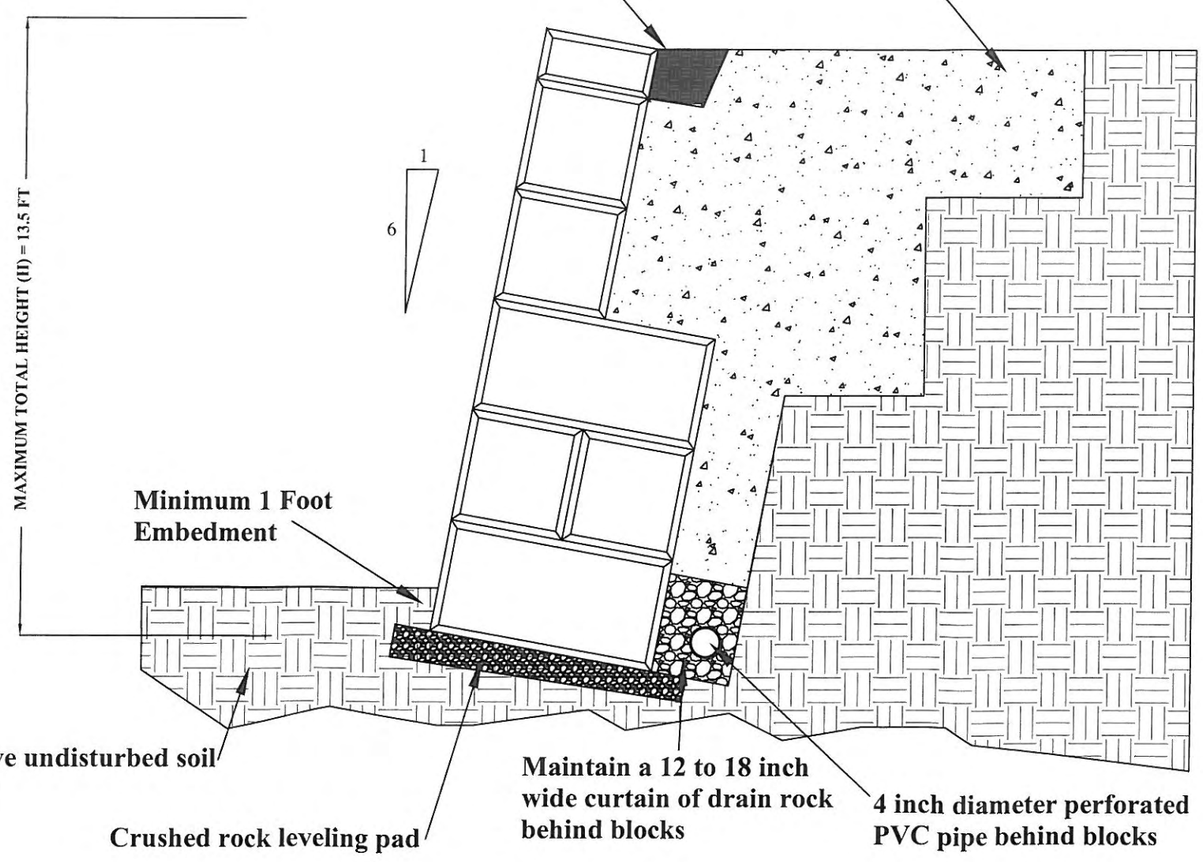
PM: RBP
July 2018
2093-006A

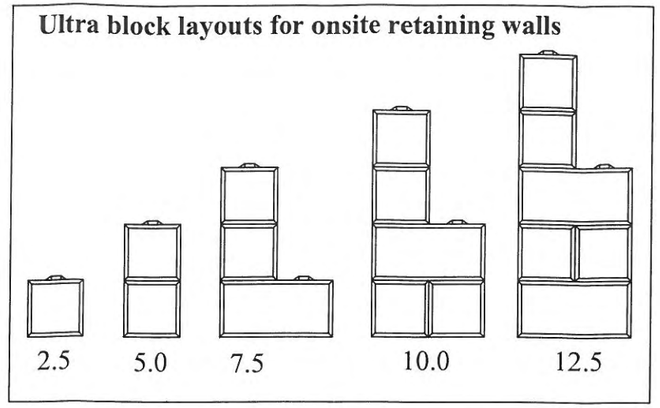
Figure 7

Ultra Block Site Plan

Lake Forest Park McKinnon Creek Pumphouse

TYPICAL ULTRA BLOCK RETAINING WALL
(not to scale)





SPECIFICATIONS FOR ULTRA BLOCK RETAINING WALL

General:

1. The contractor shall have an approved set of plans and specifications on site at all times during the construction of the wall. The wall layout is the responsibility of the contractor.
2. A professional engineer or representative should observe the construction of the wall.
3. **The contractor is responsible for excavation cuts near property lines. If excavation stability is inadequate, temporary construction easements or shoring may be required. The contractor could try constructing the wall in small slot cuts to reduce the sloughing potential.**
4. Excavations made behind the planned wall, should be made with vertical cuts and flat benches.

Subgrade Preparation:

1. The ground should be prepared by removing surficial unsuitable soil, exposing dense or firmer inorganic, native soils as approved by the geotechnical engineer. Batter of the subgrade shall match the batter of the wall.
2. The excavation shall be cleaned of all excess material and protected, as necessary, from construction traffic to maintain the integrity of the subgrade.
3. A leveling pad approximately 6 inches thick of crushed rock shall be placed and compacted.

Drainage:

1. A minimum 4 inch diameter, perforated PVC pipe should be placed behind the blocks as shown on the detail.
2. The pipe should be surrounded by 6 inches of clean washed rock – 0.75 to 1.5 inches in diameter.

Ultra Blocks:

1. Ultra blocks should have a layout corresponding to the wall height as shown on this plan.
2. Base blocks should be embedded at least 1 foot into bearing, native undisturbed soils.
3. Stacked ultra blocks should be placed in a manner such that the blocks are interconnected and in accordance with the manufacturer's recommendations.
4. Ultra block layouts shown are for ultra blocks with dimensions of 2 ½ feet by 2 ½ feet by 5 feet. Half-blocks shall be used as needed.
5. The wall shall have a batter of 1H:6V in the east to west direction and will buttress a vertical stack in the north to south direction.

Structural Fill

1. Structural fill, consisting of granular import soils or on-site material with no greater than ¾ inch in size, would then be placed upon the subgrade. The geotechnical engineer shall approve the backfill material before placement.
2. Structural fill should have parameters equal to or better than those stated for the reinforced wall fill with less than 20% passing the number 200 sieve. The geotechnical engineer may allow a higher silt content based on review of the wall design and proposed fill parameters.
3. Soil density tests should be performed as designated by the geotechnical engineer.
4. Fill soils in the wall area shall be compacted to at least 90% of Maximum Dry Density (MDD) as determined by ASTM D-1557 Maximum Dry Density.
5. The soil shall be placed in relatively uniform horizontal lifts not exceeding 12 inches in thickness. The lift thickness shall not exceed the manufacturer's recommended depth for the compactive device used on the project.

Inspection:

The construction shall be periodically observed under the direction of an engineer registered in the state of Washington with experience in the design of gravity retaining walls.

Design Parameters:

Retained Backfill: $\Phi = 37$ deg, $\gamma = 140$ pcf, $c = 0$ psf
Foundation Soil: $\Phi = 30$ deg, $\gamma = 135$ pcf, $c = 0$ psf

External Stability:

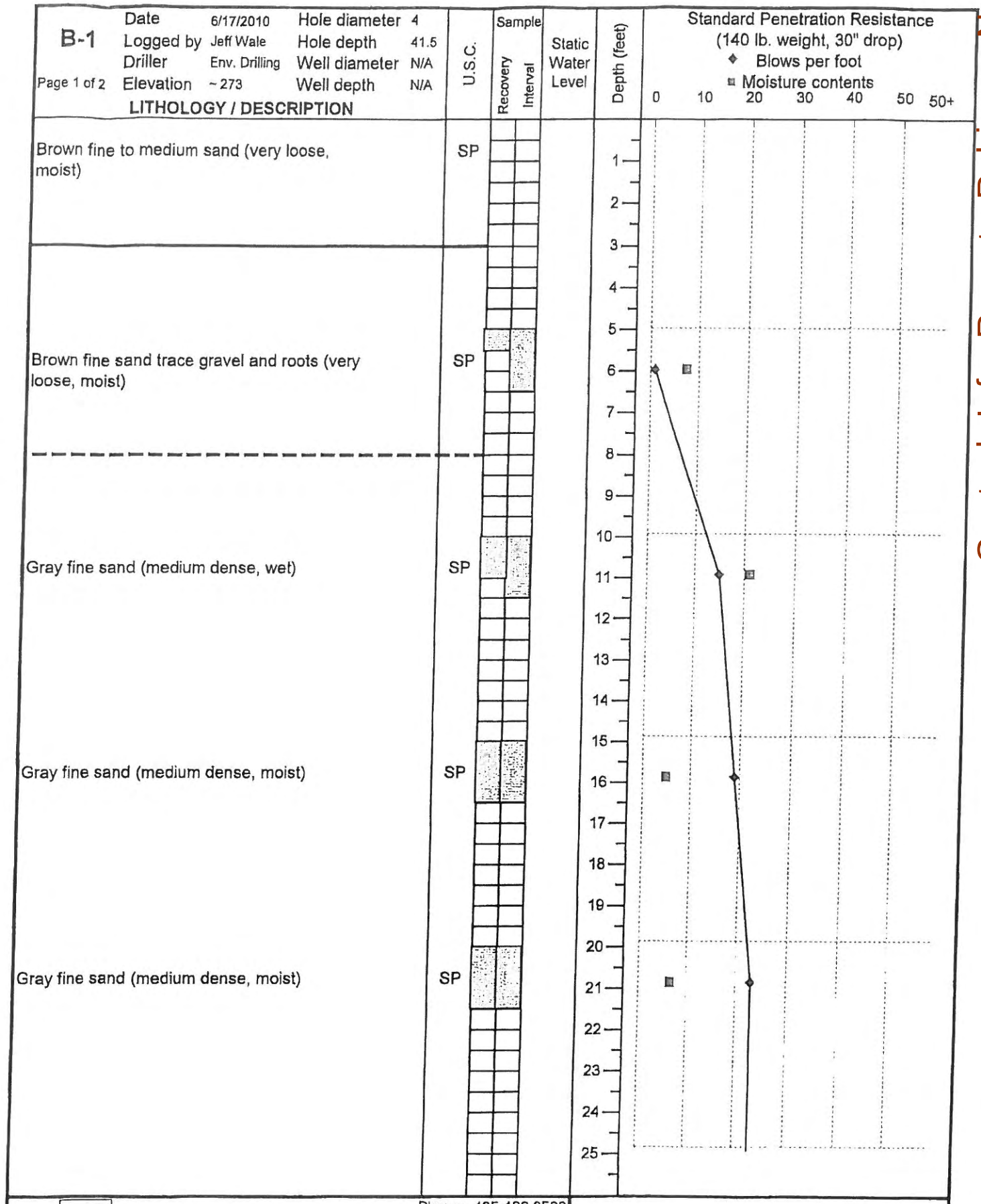
Minimum Factor of Safety against Base Sliding = 1.5
Minimum Factor of Safety against Overturning = 2.0
Minimum Factor of Safety against Bearing Capacity = 2.5

ROBINSON NOBLE	Note:	PM: RBP July 2018 2093-006A	Figure 8 UltraBlock Wall Detail Page 206 of 61 Lake Forest Park McKinnon Creek Pumphouse

APPENDIX A

B-1
Page 1 of 2

Date	6/17/2010	Hole diameter	4
Logged by	Jeff Wale	Hole depth	41.5
Driller	Env. Drilling	Well diameter	N/A
Elevation	~ 273	Well depth	N/A



ROBINSON NOBLE
Phone: 425-488-0599
Fax: 425-488-2330
17625 - 130th Avenue Northeast, Suite 102
Woodinville, Washington 98072

Lake Forest Park Water District

2093-003A | **Appendix A-1**

B-1	Date	6/17/2010	Hole diameter	4
	Logged by	Jeff Wale	Hole depth	41.5
	Driller	Env. Drilling	Well diameter	N/A
Page 2 of 2	Elevation		Well depth	N/A

LITHOLOGY / DESCRIPTION	U.S.C.	Sample Recovery	Sample Interval	Static Water Level	Depth (feet)
Gray fine sand with silt (medium dense, wet)	SP-SM				26
Gray silty very fine sand with small flakes of mica to very fine sandy silt (medium dense, wet)	SM/ML				27
				▽	28
					29
					30
Gray fine sand with silt (dense, wet)	SP-SM				31
					32
					33
					34
					35
Brown fine sand with silt (medium dense, wet)	SP-SM				36
Bluish gray fine sand with silt (medium dense, wet)	SP-SM				37
					38
					39
					40
Gray fine sand with silt (dense, wet) - Approximately 2 feet of heave	SP-SM				41
Boring completed at 41.5 feet Groundwater encountered at 28.0 feet					42
					43
					44
					45
					46
					47
					48
					49
					50

Standard Penetration Resistance
(140 lb. weight, 30" drop)
♦ Blows per foot
▪ Moisture contents

0 10 20 30 40 50 50+

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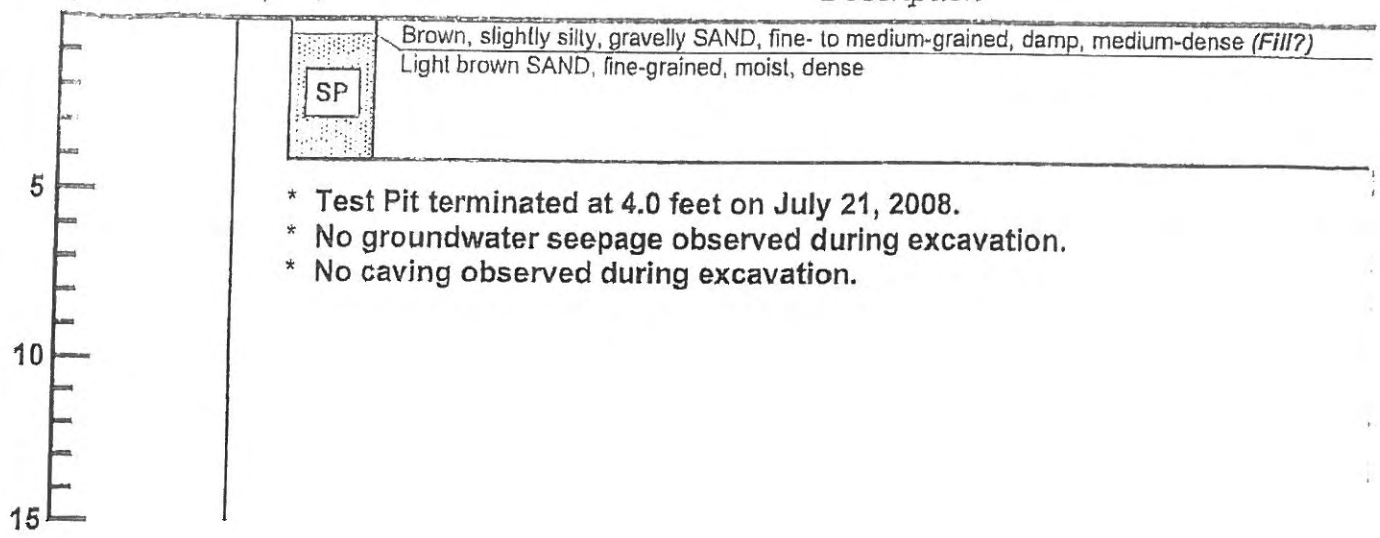
Lake Forest Park Water District

2093-003A | Appendix A-2

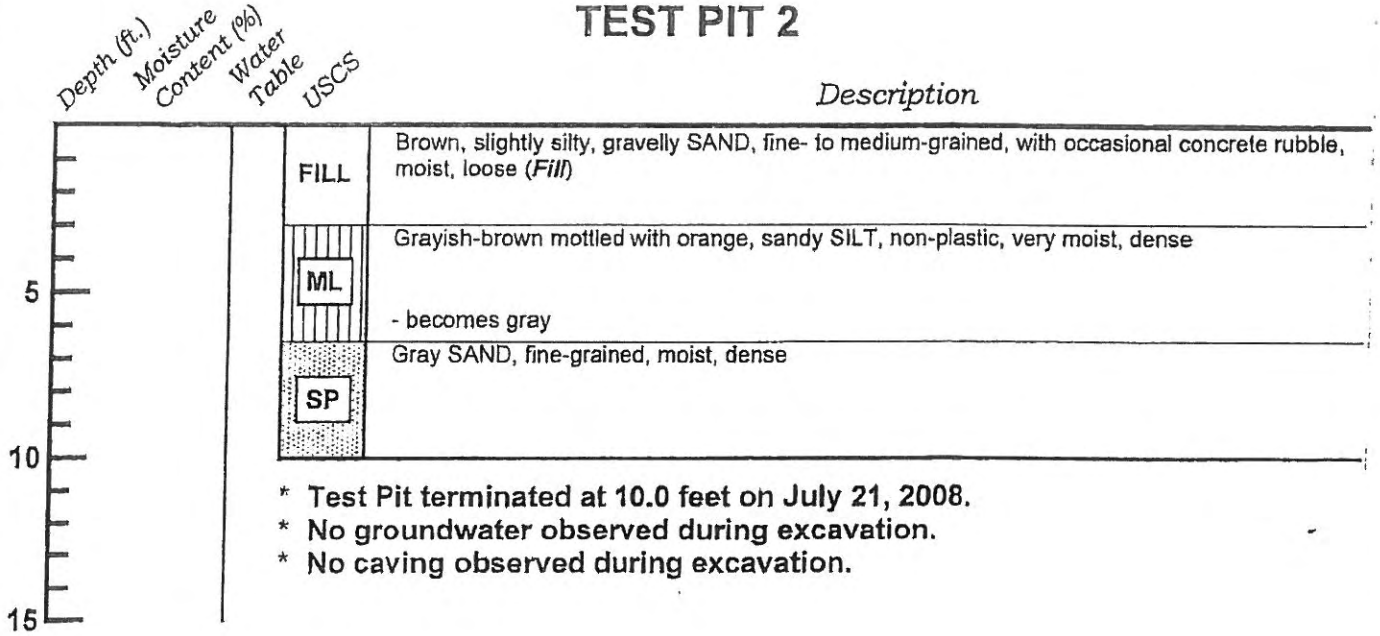
APPENDIX B

TEST PIT 1



* Test Pit terminated at 4.0 feet on July 21, 2008.
* No groundwater seepage observed during excavation.
* No caving observed during excavation.

TEST PIT 2



* Test Pit terminated at 10.0 feet on July 21, 2008.
* No groundwater observed during excavation.
* No caving observed during excavation.

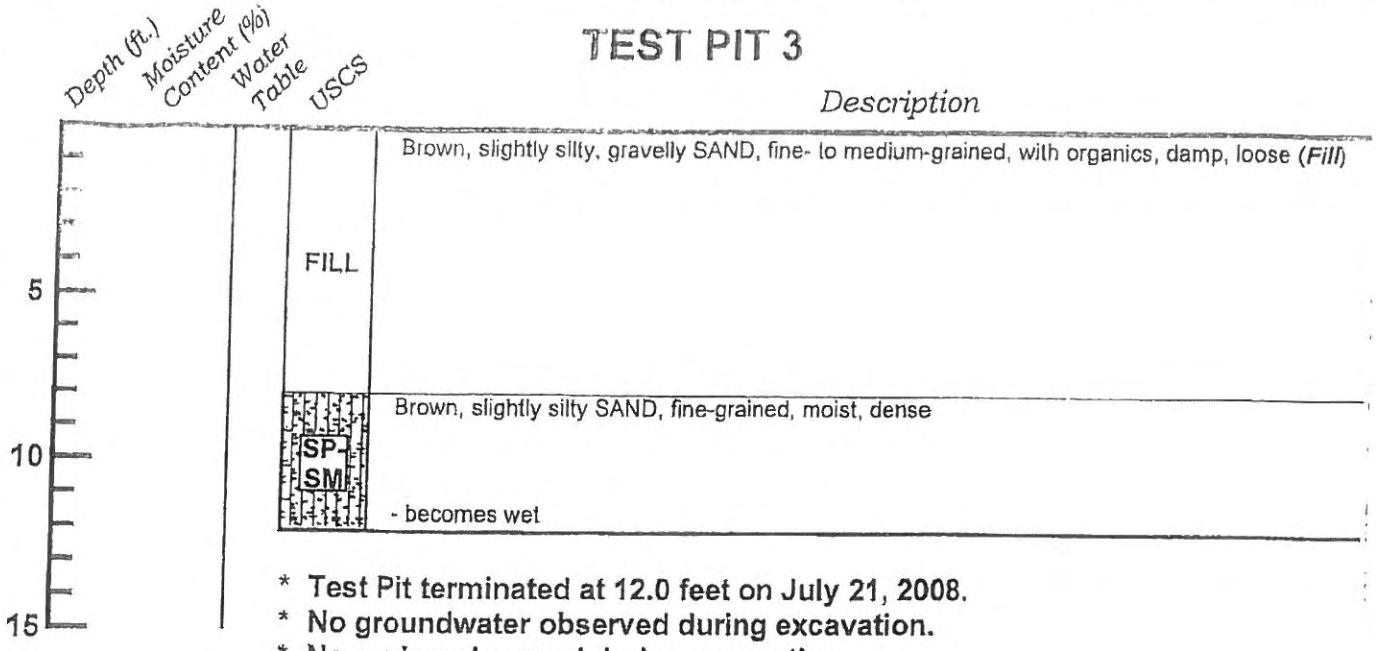
GEOTECH CONSULTANTS, INC.

TEST PIT LOG

18460 - 47th Place Northeast
Lake Forest Park, Washington

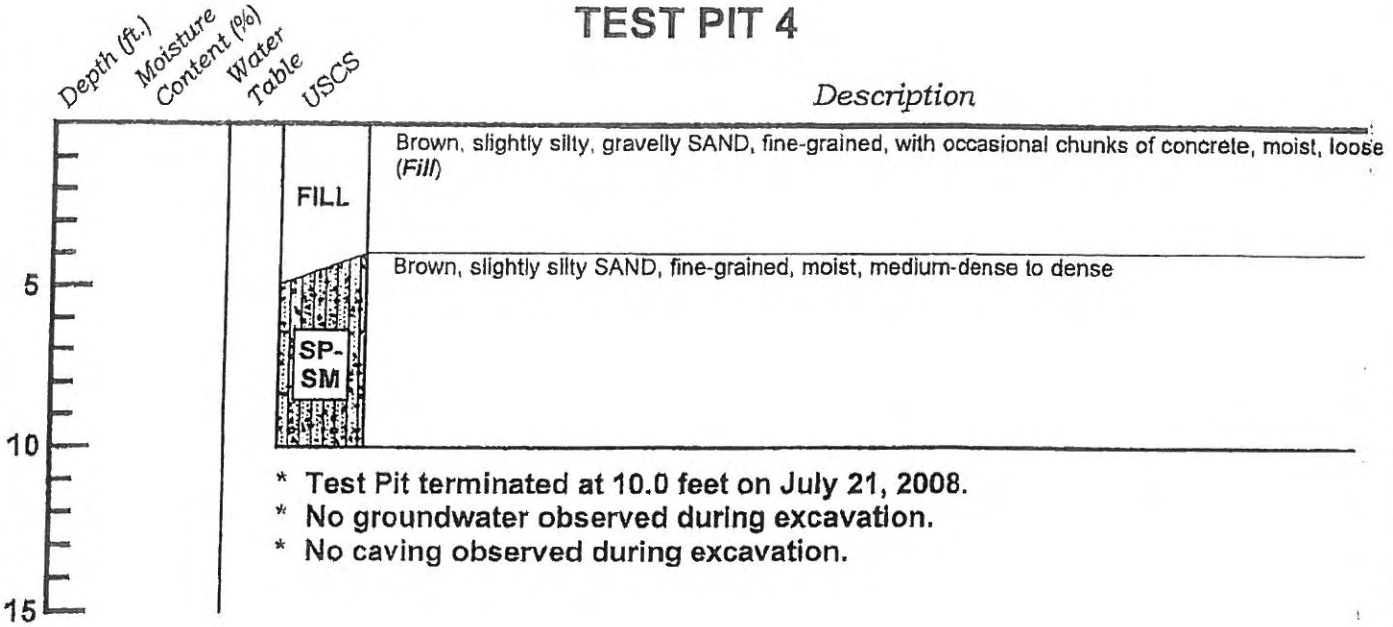
Job	Date:	Logged by:	Plate:
08235	Sept. 2008	MRM	3

TEST PIT 3



* Test Pit terminated at 12.0 feet on July 21, 2008.
* No groundwater observed during excavation.
* No caving observed during excavation.

TEST PIT 4



* Test Pit terminated at 10.0 feet on July 21, 2008.
* No groundwater observed during excavation.
* No caving observed during excavation.

GEOTECH CONSULTANTS, INC.

TEST PIT LOG

18460 - 47th Place Northeast
Lake Forest Park, Washington

Job	Date:	Logged by:	Plate:
08235	Sept. 2008	MRM	4

CITY OF LAKE FOREST PARK
INCORPORATED 1961

ADMINISTRATIVE DECISION FOR TYPE III
MAJOR CRITICAL AREA WORK PERMIT

CASE: File # 2017-SAMJ-0003

APPLICANT: LFP Water District via Watershed Company and Mike Foster
750 Sixth Street South
Kirkland, WA 98033

REQUEST: Demolish an existing pump house, and construct a new pump house building on parcel -0176, and connect the structure to infrastructure on parcel -6570 with a new set of mains that extend north from the pump house. The pump house will be and above ground structure; the proposed water mains will be largely underground. This project has already received approval for a Public Agency Utility Exception (PAUE) through the City's Hearing Examiner on August 12, 2016. The PAUE approval authorizes the LFPWD to construct the new pump house within steep slope areas. The project proposes to temporarily and permanently impact on-site wetlands, wetland buffers, and stream buffers, and provides for compensatory mitigation.

SITE ADDRESS: 18460 47 PL NE
Lake Forest Park, WA 98155

APPLICATION DATES: Application Submitted: February 7, 2017
Date of Complete Application: March 6, 2017

Major Critical Area Work Permit

Posted for 14-day Notice of Application with ODNS: December 19, 2018
Decision Issued: May 13, 2019

COMPREHENSIVE PLAN: Single Family Residential; Moderate

ZONING: RS 10000

APPLICABLE REVIEW PROVISIONS:

- Chapter 16.06- State Environmental Policy Implementation
- Chapter 16.14 LFPMC- Tree Canopy Preservation and Enhancement
- Chapter 16.16 LFPMC- Environmentally Critical Areas; Ordinance 930
- Chapter 16.26 LFPMC- Land Use Decisions and Procedures

ENVIRONMENTAL DETERMINATION: Determination of Non-Significance issued on December 19, 2018

ASSIGNED STAFF: Nick Holland
Senior Planner

DECISION: Approve with conditions

I. APPLICATION TIMELINES

Mike Foster of Kirkland's Watershed Company filed a major critical area permit application on the behalf of the Lake Forest Park Water District on February 7, 2017. The application was determined complete on March 6, 2017, and put on hold awaiting additional information from the applicant. On July 11, 2018, the applicant submitted additional information detailing a change in the project's scope. On October 31, 2018, the applicant provided an updated sensitive area memorandum detailing the critical area compliance aspects of the proposed design changes. On December 28, 2018, the City requested additional information from the applicant, because of changes in the critical areas ordinance (ord. 1150 adopted). The applicant responded to the City's request on April 3, 2019, and provided a new critical areas study. The City requested additional information on April 5, 2019. The applicant responded with clarifying information on April 22, 2019. The City is issuing this decision and permit on May 13, 2019.

II. SITE DESCRIPTION and CHARACTERISTICS

The subject site is a combination of two parcels. Parcel one (#401990-0176) is a residentially zoned parcel owned by the water district, and contains the existing pump house, which is to be demolished. The parcel takes access via an unimproved construction access road directly from 47 PL NE, and is roughly rectangular in shape totaling 17,820 square feet. The parcel contains a steep slope roughly 30-40% in grade at the southern portion of the property, as well as a category 3 wetland which is identified as wetland A in the updated critical area study (Exhibit 1).

The adjacent parcel (4022906570) to the north is owned by King County and contains several pump stations, water lines, and vaults; essential infrastructure for the LFP Water district. The parcel is 396, 609 square feet, and also contains several critical areas including wetlands F, E, and EE (as identified in the most recent critical area study-Exhibit 1), and McKinnon Creek. Each wetland is classified as a category 3 wetland, and McKinnon Creek is classified as a type F stream per the critical area study.

III. PROJECT DESCRIPTION

On February 7, 2017, the applicant applied for a major critical area permit to construct a new pump house building (then proposed to be 768 square feet) on parcel -0176, and connect the structure to infrastructure on parcel -6570 with a new set of water mains that extend north from the pump house. The pump house will be an above ground structure set into the hillside; the proposed water mains (averaging from 6-12 inches in diameter) will be largely underground. There will also be a mix of above and underground vaults, valve stations, sensors, and risers installed to support the system.

The construction and installation of these facilities will require a significant amount of excavation in, and around documented critical areas and their buffers. Approximately 2,030 cubic yards of material will be excavated from the project site to support pipe and infrastructure installation. Excavation within steep slope areas will be required for the construction of the pump house, and has been approved as a part of a previous land use action on August 12, 2016 (see the Hearing Examiner decision for 2015-PAUE 0001, and 2018-CU-0001 (Exhibit 2, and specifically exhibit 23 which is the approved site plan).

The proposed project is contained entirely within the combined stream/wetland buffer. The applicant had proposed to mitigate permanent and temporary impacts to wetland and buffer areas that the installation of the equipment and infrastructure will create.

On July 19, 2018 the applicant's engineer, Mundall Engineering, approached the City about a change in the scope of the project. Changes for some of the areas to be largely impacted were sought; most notably was the reduction in square footage of the pump house to 576 square feet. Changes to the site infrastructure were also proposed, in some cases creating temporary infrastructure to be replaced at a later date with permanent systems. The changes were an attempt to minimize the amount of impact the project

would have, and to ultimately reduce costs, and improve construction schedules and timing. These changes are summarized in the memorandum document contained within Exhibit 3. An updated sensitive area memorandum in support of the changes was also provided on October 31, 2018 (Exhibit 4). All of the revisions were described as within the scope of the Hearing Examiner decision for 2015-PAUE 0001, and 20185-CU-0001.

Changes in critical area regulations at the local level has prompted the need for a revised critical area study, and another look at wetland and stream classification and associated buffer widths. The applicant has provided an updated study (see Exhibit 1) which describes the classification of critical areas, and defines buffer widths. Removed trees will be replaced with native trees at an increased ratio (under a separate permit as a condition of this approval), and several thousand square feet of wetland, and combined stream and wetland buffer, will be replaced at ratio compensation levels for the impacts that the project creates. The critical area mitigation will result in no net loss of biological function for the site's critical areas.

IV. CRITICAL AREA PERMIT REQUIREMENTS

This project is subject to the City's critical area ordinance regulations, as adopted through ordinance 1150. The following are staff's findings and conclusions for relevant criteria within that ordinance.

LFPMC 16.16.060 Critical area – Authority of planning director – Review process.

Pursuant to LFPMC 16.16.060 (A), the Planning Director is authorized to administer the critical areas ordinance, and to make all decisions required by the ordinance, unless otherwise specified. Pursuant to LFPMC 16.16.060 (B), the Planning Director shall perform a review for any development proposal permit application or other request for permission to proceed with an alteration on a site. The requirements listed in LFPMC 16.16.060 (B) (1) through (5) along with staff's findings and conclusions for each requirement, are as follows:

1. *Determine whether any critical area exists on the property and confirm its nature and type.*

   Findings: Staff has performed site visits to the subject properties, and confirmed the presence of critical areas on-site. The applicant has submitted professional studies that document the characteristics of wetlands, streams, slopes, and associated buffers on the property. The site contains a type F stream in McKinnon Creek, and four category III wetlands.

   Conclusion: This criterion is met.

2. *Determine whether a critical area study is required and, if so, the nature of that study.*

   Findings: City critical area maps do not provide enough detail about the characteristics of the critical areas on this property. The City requires additional information on the critical areas present, such as the classifications, locations, sizes, and information on functions and values of wetlands and streams in the project area. The City also requires information on the associated wetland, and stream buffers for the site. Steep slope analysis has been approved through a previous land use action (PAUE approved 8/12/16), and direct impacts to McKinnon Creek on the project site will be avoided.

   Conclusion: A critical areas study is needed and has been provided by the applicant. This criterion is met.

3. *Evaluate the critical area study.*

   Findings: The City has evaluated the critical areas study, designs, and mitigation plans for compliance with applicable critical area regulations, specifically for impact to wetland and buffer areas, as well as stream, and combined stream/wetland buffers.

   The critical area study classifies the wetland areas (wetlands A, E, EE, and F in Exhibit 1) as category 3 wetlands based on the Department of Ecology's rating system. LFPMC 16.16.320-1 assigns buffer widths to each category wetland based on a combination of category, and the specific habitat score for each wetland. It also assumes that a 100 foot wide vegetated corridor exists within a protected easement.

   Due to the presence of the District's access road, which is required to maintain the potable water infrastructure, as well as other infrastructure necessary to maintain the District's system, a 100 foot wide vegetated corridor, and protection easement is not possible for each wetland. Therefore, the applicant's critical area study is proposing to use the measures listed in LFPMC 16.16.320-2 to minimize impacts to wetland areas. Pursuant to LFPMC 16.16.320 (A) (1) (b), when the measures listed in LFPMC 16.16.320-2 are used, the buffer widths listed in LFPMC 16.16.320-1 apply to wetland areas. Correspondingly, the applicant's critical area study assigns the following buffer widths to each wetland:

   - Wetland A: 165 foot buffer (Habitat score of 6)
   - Wetland E: 165 foot buffer (Habitat score of 6)
   - Wetland EE: 165 foot buffer (Habitat score of 6)
   - Wetland F: 105 foot buffer (Habitat score of 5)

The District is not proposing to average wetland buffer widths, as allowed per LFPMC 16.16.320 (C). According to an addendum to the applicant's critical area study, and information received on April 22, 2019 in a technical memorandum from the Watershed Company (see Exhibit 5), increased buffer widths for this utility corridor (see LFPMC 16.16.320 (E) (1) through (6)) are not needed because existing and proposed infrastructure are located within standard buffers, and would be located within any increased buffers. The proposed mitigation within the standard buffer width will result in no net loss of ecological function, therefore increased buffer widths are not needed to provide additional critical area functions.

McKinnon Creek is a stream with documented fish use, and therefore is classified as a type F stream, pursuant to the applicant's critical area study. LFPMC 16.16.355 (A) (2) requires that type F streams maintain a 115-foot buffer (buffer reduction methods are allowed pursuant to LFPMC 16.16.355 (B), but are not proposed by the applicant).

The project will have impacts to both wetlands and combined stream and wetland buffers on each parcel. Construction of the pump house will result in a permanent wetland buffer impact, while associated clearing limits, as well as the installation of underground pipe will require excavation within wetland F, E, and wetland EE, as well as their buffers. Other water lines will also cross through wetland buffers on site (see exhibit 6-design plans). The applicant's sensitive area study proposes that impacts to wetland areas will be temporary. Impacts to buffer areas will be temporary (with just the pump house as the only permanent wetland buffer impact), as the excavated material will be replaced, and mitigation installed once construction is finished. The applicant has provided a critical area study that proposes to mitigate project impacts, pursuant to LFPMC 16.16.130 (Mitigation Sequencing). The applicant's critical area study indicates that avoiding project impacts isn't entirely feasible because of the nature of the Water District's function and existing infrastructure. It will be necessary to perform work within wetland and combined wetland and stream buffer areas to connect to existing infrastructure, so that the community can be served with potable water. The applicant plans to minimize impacts to critical areas by shoring all excavation trenches, which will limit the area and vegetation disturbed. They also plan to use steel plates or mats when access to areas adjacent or within wetlands is required. Finally, compensatory mitigation is proposed in the form of wetland, and combined stream and wetland buffer restoration and enhancement (see Exhibit 6- mitigation plans). The result, according to the applicant's critical area study, will be new, restored buffers that encompass the entire project area. If the information contained within the design plans (Exhibit 6), and critical area report (Exhibit 1) are not

sufficient for a contractor to execute construction level work, or for the City to perform any required inspections, the permittee will be required to obtain the necessary construction level permits (at the discretion of the City), with fully engineered designs for any work associated with the project (condition of approval).

All mitigation will be monitored for a period of 5 years, as detailed in the applicant's critical area study, and held to a series of performance standards (see section 6.2 of critical area study).

A total of 14 trees are proposed for removal as a part of the project. 2 of the 14 trees (trees 5 and 12 as identified in the arborist report prepared by the Watershed Company) are exceptional trees. Per LFPMC 16.14.060 (B), viable exceptional trees are not be removed. The permittee has identified the two exceptional trees to be a risk, and recommend removal.

The applicant has already applied for a tree removal permit to remove trees within sensitive areas (application no. 2016-SATR-0011). The application was filed in 2016 when the City was operating under different tree regulations. An updated arborist evaluation has been submitted (prepared by the Watershed Company), and the City's Arborist is in the process of reviewing the application materials. As a condition of this decision, construction shall not start until the existing tree removal application is issued, and after the permittee has completed a pre-construction meeting with the City.

Conclusion: Staff has evaluated the applicant's critical area study. The applicant's critical area study includes all of the relevant content, as described in LFPMC 16.16.110. It adequately classifies critical areas, includes descriptions of functions and values, discusses project impacts, and specifies mitigation and monitoring for project impacts. As conditioned, this criteria has been met.

4. *Determine whether any proposed alteration to the critical area is necessary.*

Findings: A mitigation sequencing exercise has been done as a part of the wetland study, and to comply with LFPMC 16.16.130. This code section indicates an applicant shall make every effort to avoid impacts to critical areas, minimize them if impacts are absolutely necessary, and mitigate them if impacts result in a loss of function and values.

Impacts to wetland and buffer areas, as well as stream buffer areas are essentially unavoidable because of the nature of where the project's infrastructure must be installed in order for the agency to adequately

provide the utility. Springs that are a source of water for the District also support onsite wetlands.

Construction plans have been designed and modified to minimize the impacts to the least necessary. Shoring techniques will be used while installing piping, so that slopes for excavation can be minimized within wetland areas, and ultimately minimize wetland and buffer impacts, as well as stream buffer impacts. Any vegetation to be retained will be supplemented with protection fencing, as a condition of construction, and of this permit. A condition of this major sensitive area permit shall require the property owner to record a notice on the property's title that the properties are subject to regulation under this chapter. Notice on title shall include any requirement for mitigation and monitoring imposed as a condition of this sensitive area permit.

The mitigation plan is intended to compensate for the unavoidable temporary and permanent impacts to wetlands and critical area buffer that will arise as part of the LFPWD pump house project. The plan was prepared in accordance with LFPMC 16.16.340. The 14 lost trees will be replaced with 87 native trees, a 6.1:1 ratio. Wetland impacts, although temporary (with exception of the pump house itself), will be compensated at a 3.16:1 ratio to meet the requirements of the code [To clarify this ratio, several places within the submitted critical areas study misstate this number. Specifically, Sections 6 and 7 indicate that wetland mitigation will occur at a 3:16 ratio]. Disturbed wetland area will be enhanced, with other nearby degraded wetlands also targeted for weed removal and planting to reach the 3.16:1 ratio. A total of 8,000 square feet of wetland will be enhanced to compensate for 2,530 square feet of impact (a 3.16:1 actual ratio). Temporary critical area buffer impacts will be mitigated at a 1:1 ratio and be located in place of the temporary disturbance. Permanent buffer impacts associated with the well house structure will be compensated through enhancement planting in a buffer area dominated by English ivy and cherry laurel between the proposed pump house structure and Wetland A. These impacts will be compensated at a ratio of 6.96:1. A five-year maintenance and monitoring period is proposed that will ensure the successful establishment of the mitigation site.

All proposed mitigation will be monitored, and contingencies have been developed in the event mitigation fails (see section 6.3 of the critical area study- Exhibit 1). These measures meet the intent of LFPMC 16.16.340.

Conclusion: Critical areas will need to be altered to facilitate the project. Adequate mitigation, monitoring, and contingencies have been provided for the impacts. As conditioned, this criteria has been satisfied.

5. *Determine whether the mitigation and monitoring plans and bonding measures proposed by the applicant are sufficient to protect the public health, safety and welfare, consistent with the purposes of this chapter.*

Findings: The details of LFPMC 16.16.120 (Mitigation and Monitoring) are contained within the applicant's wetland study. The study contains a mitigation plan, and a monitoring schedule. The mitigation plan proposed by the applicant's consultant (exhibit 6) meets the regulations for wetland and buffer mitigation in terms of ratios. The monitoring component of the wetland study contains performance measures for the mitigation, and contingencies in the event the mitigation does not meet those performance standards. Lake Forest Park Water District (LFPWD) is a public agency, and as such cannot be subject to bonding regulations, per state law. Conditions of this permit will be established to ensure long term survivability of the installed mitigation. The survivability of the project has a direct impact on the public's health, safety, and general welfare, so, a condition for the applicant to provide to the City a copy of the signed contract of the individual qualified to perform monitoring will be a condition of approval.

Conclusion: As conditioned, this criterion has been met.

LFPMC 16.16.090 Applications – Approval – Criteria – Revocation.

The Planning Director shall make final critical area determinations and issue critical area permits according to the requirements of this chapter, best available science, and critical area studies prepared by qualified professionals. Criteria for permit approval are contained in LFPMC 16.16.090 (B) thorough (D). Staff's findings and conclusions for each requirement, are as follows:

B. The planning director is authorized to conduct review of the critical area study submitted by the applicant using a qualified professional to verify the study's findings, conclusions and recommendations. Before initiating a professional review, the city shall inform the applicant of the review and anticipated expense.

Findings: The City has not initiated a professional or third party review for this project.

Conclusion: This criterion does not apply.

C. When reviewing an application, the planning director may consider any recommended development practices that may be used in conjunction with the adopted critical areas map and study including those referenced in LFPMC 16.16.050. Recommended development practices may serve as a guideline for interpretation of both the study and critical areas map.

Findings: Staff referenced City critical area maps, and research historical data only to determine the presence of critical areas, but did not find any additional information regarding the subject property.

Conclusion: This criterion has been met.

D. A permit issued on the basis of false information provided by the applicant is void and the holder of such permit shall have no rights thereunder.

Findings: There has been no evidence of false information with this permit application.

Conclusion: This criterion does not apply.

16.16.230 Authorized work in critical areas.

The Planning Director may issue a critical area permit for work in critical areas or critical area buffers as described below. Staff's findings and conclusions for each requirement, are as follows:

E. Utility projects that have minor or short-duration impacts to critical areas, and do not significantly impact the function or values of a critical area(s), as determined by the planning director according to the following criteria:

1. There is no practical alternative to the proposed activity with less impact on critical areas;

Findings: Due to the nature of the District's operations, and the current placement of potable water infrastructure, the project has been designed with the least amount of impact to critical areas as possible. Construction plans have been designed and modified to minimize the impacts to the least necessary. Shoring techniques will be used while installing piping, so that slopes for excavation can be minimized within wetland areas, and ultimately minimize wetland and buffer impacts, as well as stream buffer impacts. Any vegetation to be retained will be supplemented with protection fencing, as a condition of construction, and of this permit. A condition of this major sensitive area permit shall require the property owner to record a notice on the property's title that the properties are subject to regulation under this chapter. Notice on title shall include any requirement for mitigation and monitoring imposed as a condition of this sensitive area permit.

Conclusions: As conditioned, this criteria has been met.

2. All unavoidable impacts to critical areas and associated buffers are fully mitigated;

Findings: Mitigation measures are fully explained in the findings of section IV, criteria 4, paragraph 4 above.

Conclusions: This criteria has been met.

3. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility;

Findings: The District is not proposing to install a utility pole, street signs, anchor, or vault or other small component of a utility facility.

Conclusions: This criteria does not apply.

4. The activity involves disturbance of an area less than 75 square feet;

Findings: The project scope is in excess of 75 square feet, however permanent disturbance of buffer areas will be restored completely to no net loss of critical area function.

Conclusions: This criteria does not apply.

5. *The project does not result in the permanent transportation of sediment or increased stormwater flow.*

Findings: Mitigation measures for construction impacts have been designed to prevent stormwater from exiting the site during construction, and during mitigation work. There will be no transportation of stormwater from the site, according to the applicant's critical area study.

Conclusions: This criteria has been met.

16.16.120 Mitigation and monitoring.

B. Mitigation of critical area impacts shall be conducted according to an approved mitigation plan that shall describe the existing functions and values of the affected critical areas, the nature and extent of impacts to those areas, and proposed mitigation measures to offset those impacts. The mitigation plan shall also contain a drawing that illustrates the compensatory mitigation elements. The plan and/or drawing shall list plant materials and other habitat features to be installed. Staff's findings and conclusions for each requirement, are as follows:

Findings: The applicant has provided mitigation plans (see exhibit 6) in conjunction with their critical area report. These plans describe existing critical area functions, and values of the project area. They also outline the specific mitigation proposed to recover and compensate for permanent and temporary functions lost as a part of the construction process. Finally, the plan includes a specific vegetation list for the plantings. If the information contained within the design plans (Exhibit 6), and critical area report (Exhibit 1) are not sufficient for a contractor to execute construction level work, or for the City to perform any required inspections, the permittee will be required to obtain the necessary construction level permits (at the discretion of the City), with fully engineered designs for any work associated with the project (condition of approval).

Conclusions: As conditioned, this criteria has been met.

C. The applicant shall submit a monitoring and maintenance program prepared by a qualified professional that shall, at a minimum, include the following:

1. The goals and objectives for the mitigation plan;
2. The criteria for assessing the mitigation;
3. A monitoring plan that includes annual site visits by a qualified professional, with annual progress reports submitted to the planning director and that lasts for a period sufficient to establish that performance standards have been met as determined by the planning director, but no less than five years;
4. A contingency plan; and
5. A signed copy of the written contract with a qualified professional who will perform the monitoring program. The contract shall incorporate the terms of the required monitoring program.

Findings: The applicant's monitoring plan is outlined in section 6.3 of the critical area study and includes all of the above elements. A signed copy of the written contract with a qualified professional who will perform the monitoring program will be a condition of this approval. The contract shall incorporate the terms of the required monitoring program.

Conclusions: As conditioned, this criteria has been met.

16.16.130 Mitigation sequencing.

Applicants shall demonstrate that all reasonable efforts to avoid and minimize impacts to critical areas and buffers have been examined and that impacts have been avoided, minimized, or compensated for in the following order of preference. Staff's findings and conclusions for each requirement, are as follows:

A. Avoiding impacts to environmentally sensitive areas by avoiding actions or parts of actions;

Findings: The applicant's critical area study indicates that avoiding project impacts isn't entirely feasible because of the nature of the Water District's function and existing infrastructure. It will be necessary to perform work within wetlands and combined wetland and stream buffer areas to connect to existing infrastructure, so that the community can be served with potable water.

Conclusions: This criteria does not apply.

B. Minimizing impacts by limiting the degree or magnitude of the action by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;

Findings: The applicant plans to minimize impacts to critical areas by shoring all excavation trenches, which will limit the area and vegetation disturbed. Excavation will be returned to the ground once finished, and all construction impacts will be supported by the appropriate temporary erosion and sedimentation control measures.

Conclusions: This criteria does not apply.

C. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

Findings: It will not be possible to restore all of the affected areas, some impacts will be permanent. All permanent impacts will be compensated per the applicant's mitigation plan, and result in critical areas and buffers that compensate for all impacts. There will not be any loss of ecological function as a result.

Conclusions: This criteria has been met.

D. Reducing or eliminating the impact over time through preservation and/or maintenance operations;

Findings: The district will carry-on maintenance operations by utilizing the existing and proposed utility facilities in much the same fashion as they have to-date. Specifically, existing access roads will be used and maintenance equipment will avoid retained trees and critical areas.

Conclusions: Compensatory mitigation is planned for this project and will restore critical area function. This criteria does not apply.

E. Compensating for the impact by replacing, enhancing, or providing substitute critical areas and/or buffers; and/or

Findings: Finally, compensatory mitigation is proposed in the form of wetland, stream, and wetland buffer and stream buffer restoration and

enhancement (see Exhibit 6- mitigation plans). The result, according to the applicant's critical area study, will be new, larger buffers that encompass the entire project area.

Conclusions: This criteria has been met.

F. Monitoring the impact and/or hazard and making appropriate corrective measures when necessary.

Findings: The critical area study has a monitoring plan included, which includes performance measures for new plantings and all mitigation. If the new mitigation falls out of compliance with the performance standards, the applicant will be responsible for enacting the contingencies listed within the report.

Conclusions: This criteria has been met

16.16.330 Wetlands – Permitted alterations.

B. Alterations to wetlands and their buffers may only be allowed for the following activities, in addition to any established in LFPMC 16.16.220 and 16.16.230, if the city determines that there is no practical alternative location for the proposed activity with less adverse impacts on the wetlands or its buffer, subject to mitigation requirements set forth in this chapter. Staff's findings and conclusions for each requirement, are as follows:

3. Utility corridors may be allowed in wetland buffers only if:

a. The applicant demonstrates that there are no feasible alternatives;

Findings: Impacts to wetland and buffer areas, as well as stream buffer areas are essentially unavoidable because of the nature of where the project's infrastructure must be installed in order for the agency to adequately provide the utility. Springs that are a source of water for the District also support onsite wetlands. The project is being done with the least amount of impact possible, according to the applicant's critical area study.

Conclusions: This criteria has been met.

b. The corridor is not located in a wetland or buffer that is used by species listed as endangered, threatened or priority by the state or federal government or that contains critical or outstanding actual habitat for those species or rookeries or raptor nesting sites;

Findings: According to the applicant's critical area study, there is no evidence to suggest that this site is being used by endangered species. Although, the area is relatively undeveloped, and provides a moderate to high habitat function (see critical area study, Exhibit 1).

Conclusions: This criteria has been met.

c. The corridor alignment including, but not limited to, any allowed maintenance roads follows a path beyond a distance equal to 75 percent of the standard buffer width from the wetland edge;

Findings: The location of the pump house has already been authorized through the PAUE approval. Locations of water lines through critical areas will be largely underground. The existing maintenance road and all of the infrastructure for this project is located within the combined stream and wetland buffer. These impacts are unavoidable, but will be mitigated to result in no net loss of ecological function. The applicant seeks approval of this proposal under the provisions of LFPMC 16.16.330 (B) (6), where the Planning Director can approve wetland and buffer crossings when criteria (a) through (e) are met. Sections 5.1 of the applicant's critical area study address this criteria adequately.

Conclusions: This criteria does not apply.

d. Any corridor construction or maintenance protects the wetland and buffer, the corridor is aligned to avoid cutting trees greater than 12 inches in diameter when possible, and use of pesticides, fertilizers, or herbicides is consistent with best management practices to avoid wetland and habitat impacts;

Findings: The project has been designed to mitigate and protect wetlands and buffers. There will be a need to cut 14 trees as a part of the project, and some may be in excess of 12 inches in diameter. Tree cutting will be evaluated under the requirements of LFPMC 16.14, and appropriate replacement mitigation will be implemented. The use of pesticides, fertilizers, or herbicides is not anticipated.

Conclusions: This criteria has been met.

e. Provision is made for an additional contiguous buffer of equal width to the proposed corridor, including any maintenance roads to protect the wetland;

Findings: The existing maintenance road is proposed to remain as a part of this project. The applicant seeks approval of this proposal under the

provisions of LFPMC 16.16.330 (B) (6), where the Planning Director can approve wetland and buffer crossings when criteria (a) through (e) are met. According to a technical memorandum received from the Watershed Company (see Exhibit 5), section 5.1 of the applicant's critical area study address this criteria adequately.

Conclusions: This criteria has been met.

f. The corridor is revegetated with native vegetation to a state equal to or greater than preconstruction densities immediately upon completion of construction or as soon as possible. Maintenance and monitoring provisions for the revegetation will be a part of any revegetation plan;

Findings: As a part of the mitigation for the project, the utility corridor will be revegetated with wetland and native plant life, and in densities that are appropriate to create a functional wetland and buffer. The mitigation measures meet the standards of LFPMC 16.16.340. As a condition of this decision, monitoring and performance measures will be required, per the guidelines in the applicant's critical area study. If any of the plantings fall short of performance measures, maintenance and contingencies will be enacted.

Conclusions: As conditioned, this criteria has been met.

g. Additional access for maintenance shall be limited to specific points rather than via parallel roads; and

Findings: The applicant's critical area study does not address this criteria, so a condition for maintenance access to occur perpendicular to the established maintenance road will be included with this decision.

Conclusions: As conditioned, this criteria has been met.

h. The width of any necessary parallel road providing maintenance access is as narrow as possible, not to exceed 15 feet, and maintenance is carried out in accordance with wetland management standards.

Findings: The maintenance road that serves this project site will be required to be altered as a condition of this decision to equal a maximum of 15 feet. Any maintenance of the site will be subject to current and future versions of the City's critical areas ordinance.

Conclusions: As conditioned, this criteria has been met.

6. Wetland and wetland buffer crossings may be allowed; provided, that the planning director determines that:

a. No possible alternative exists;

Findings: Impacts to wetland and buffer areas, as well as stream buffer areas are essentially unavoidable because of the nature of where the project's infrastructure must be installed in order for the agency to adequately provide the utility. Springs that are a source of water for the District also support onsite wetlands. The project is being done with the least amount of impact possible, according to the applicant's critical area study.

Conclusions: This criteria has been met.

b. All crossings minimize impact to the wetland and/or buffer and provide mitigation for unavoidable impacts through restoration, enhancement or replacement of disturbed areas;

Findings: A total of 2,550 square feet of permanent buffer impact will result from construction of the new pump house. Meanwhile, 2,530 square feet of wetland will temporary disturbed during construction, whereas 30,290 square feet of buffer may be temporarily disturbed. As mitigation for temporary wetland impacts, a total of 8,000 square feet of wetland will be enhanced, equating to a ratio of 3.16:1. Meanwhile, 17,755 square feet of buffer will be restored, resulting in a ratio of 6.96:1 for permanent buffer impacts. Finally, all areas of temporary buffer impacts will be restored, at the direction of the restoration specialist. These mitigation ratios comply with the standards in LFPMC 16.16.340-1. The buffer mitigation proposed complies with the 1:1 ration in LFPMC 16.16.340 (D) (3). If the information contained within the design plans (Exhibit 6), and critical area report (Exhibit 1) are not sufficient for a contractor to execute construction level work, or for the City to perform any required inspections, the permittee will be required to obtain the necessary construction level permits (at the discretion of the City), with fully engineered designs for any work associated with the project (condition of approval).

Conclusions: As conditioned, this criteria has been met.

c. The overall wetland hydrology is not changed;

Findings: Temporary impacts to wetland hydrology are anticipated, according to the applicant's critical area study. All impacts will be

mitigated for, and overall wetland hydrology will improve as a result of mitigation measures.

Conclusions: This criteria has been met.

d. Important habitat functions are not disturbed;

Findings: Temporary impacts to habitat functions are anticipated, according to the applicant's critical area study. All impacts will be mitigated for, and overall habitat functions will improve as a result of mitigation measures.

Conclusions: This criteria has been met.

e. Construction is scheduled during periods of low water tables as recommended by a qualified professional, generally during the drier summer months.

Findings: A condition of this decision will be for construction to occur during the summer months (May-October).

Conclusions: As conditioned, this criteria has been met.

16.16.340 Wetlands – Mitigation and restoration requirements.

A. Mitigation shall be conducted pursuant to LFPMC 16.16.100 through 16.16.130. Staff's findings and conclusions for each requirement, are as follows:

Findings: These sections specifically deal with critical area studies, the content of critical area studies, mitigation and monitoring, and mitigation sequencing respectively. The applicant has submitted a critical area study that addresses all of the requirements in 16.16.110, but does not need a special study per 16.16.100. Mitigation and monitoring, as specified in 16.16.120, have been evaluated above (see section IV- staff findings and conclusions for mitigation and monitoring). Mitigation sequencing, as described in 16.16.130 has been evaluated above (see section IV- staff findings and conclusions for mitigation sequencing).

Conclusions: This criteria has been met.

B. Compensatory mitigation shall address the functions affected by the proposed project, with an intention to achieve functional equivalency or improvement of functions. The goal shall be for the compensatory mitigation to provide similar wetland functions as those lost, except when either:

1. The lost wetland provides minimal functions, and the proposed compensatory mitigation action(s) will provide equal or greater functions or will provide functions shown to be limiting within a watershed through a formal Washington State watershed assessment plan or protocol; or

2. Out-of-kind replacement of wetland type or functions will best meet watershed goals formally identified by the city, such as replacement of historically diminished wetland types.

Findings: The applicant has elected to provide compensatory mitigation, because restoration, creation, enhancement, and protection as described in LFPMC 16.16.340 (C) (1 through 4) does not fit the nature of this project. All compensatory mitigation, as described in section 6 of the critical area report meets the standards for this section. The specific mitigation measures have been described in detail above. All compensatory mitigation meets the ratios in LFPMC 16.16.340 (D). All buffers will be mitigated at a 1:1 ratio. See mitigation plans, Exhibit 6.

The applicant has not elected to use any credit/debit measures as described in LFPMC 16.16.340 (D) (2).

The applicant has not elected to utilize off-site mitigation as described in LFPMC 16.16.340 (E). Alternate wetland mitigation plans are not proposed.

Conclusions: This criteria has been met.

C. Mitigation for lost or diminished wetland and buffer functions shall rely on a type listed below in order of preference. A lower preference form of mitigation shall be used only if the applicant's qualified wetland professional demonstrates to the planning director's satisfaction that all higher-ranked types of mitigation are not viable or consistent with the criteria in this section. Surface water management or flood control alterations shall not constitute any of the below unless other functions are simultaneously improved.

1. Restoration. The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland.

a. Reestablishment. The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Reestablishment results in a gain in wetland acres (and

functions). Activities could include removing fill material, plugging ditches, or breaking drain tiles.

b. Rehabilitation. The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Activities could involve breaching a dike to reconnect wetlands to a floodplain or return tidal influence to a wetland.

2. Establishment (Creation). The manipulation of the physical, chemical, or biological characteristics of a site to develop a wetland on an upland or deepwater site where a wetland did not previously exist.

a. If a site is not available for wetland restoration to compensate for expected wetland and/or buffer impacts, the approval authority may authorize creation of a wetland and buffer upon demonstration by the applicant's qualified wetland professional that:

i. The hydrology and soil conditions at the proposed mitigation site are conducive for sustaining the proposed wetland and that creation of a wetland at the site will not likely cause hydrologic problems elsewhere;

ii. Adjacent land uses and site conditions do not jeopardize the viability of the proposed wetland and buffer (e.g., due to the presence of invasive plants or noxious weeds, stormwater runoff, noise, light, or other impacts); and

iii. The proposed wetland and buffer will eventually be self-sustaining with little or no long-term maintenance.

3. Enhancement. The manipulation of the physical, chemical, or biological characteristics of a wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present.

4. Protection/Maintenance (Preservation). Removing a threat to, or preventing the decline of, wetland conditions by an action in or near a wetland.

Findings: The project proposes use of wetland and buffer restoration and enhancement, as outlined in Sections 4.3 and 6 of the critical area study.

Conclusions: This criteria has been met.

D. Compensatory mitigation for approved wetland alterations shall meet the ratio requirements in LFPMC 16.16.340 (D) (1):

Findings: The project proposes no permanent wetland impacts. All wetland impacts are to be temporary, with full restoration occurring following project completion. In addition, further areas of existing degraded wetland will be restored, bringing the total ratio of wetland restoration to 3.16:1. [To clarify this ratio, several places within the submitted critical areas study misstate this number. Specifically, Sections 6 and 7 indicate that wetland mitigation will occur at a 3:16 ratio]. However, as shown on the project plans (8,000 square feet of restoration: 2,530 square feet of impact), this ratio is actually 3.16:1.] In further compliance with this provision, all temporary buffer impacts will be restored in place, with permanent buffer impacts compensated for at a 6.96:1 ratio, greatly exceeding the required standard.

Conclusions: This criteria has been met.

E. Compensatory mitigation actions shall be conducted on the site of the alteration except when the applicant can demonstrate that off-site mitigation is ecologically preferable. The following criteria will be evaluated when determining whether the proposal is ecologically preferable. When considering off-site mitigation, preference should be given to using alternative mitigation, such as a mitigation bank, an in-lieu fee program, or advance mitigation.

1. There are no reasonable opportunities on site (e.g., on-site options would require elimination of high-functioning upland habitat), or opportunities on site do not have a high likelihood of success based on a determination of the capacity of the site to compensate for the impacts.

2. On-site mitigation would require elimination of high quality upland habitat.

3. Off-site mitigation has a greater likelihood of providing equal or improved wetland functions.

4. Off-site locations shall be in the same subdrainage basin unless:

a. Established watershed goals for water quality, flood storage or conveyance, habitat, or other wetland functions have been established by the city and strongly justify location of mitigation at another site; or

b. Credits from a state certified wetland mitigation bank are used as compensation, and the use of credits is consistent with the terms of the certified bank instrument;

c. Fees are paid to a state-approved in-lieu fee program to compensate for the impacts.

5. The design for the compensatory mitigation project must be appropriate for its location (i.e., position in the landscape). Therefore, compensatory mitigation should not result in the creation, restoration, or enhancement of an atypical wetland.

Findings: All proposed mitigation will occur on-site in compliance with this provision.

Conclusions: This criteria has been met.

F. Monitoring shall be required in accordance with LFPMC 16.16.120. If a shrub-scrub or forested vegetation community is proposed, monitoring may be required for 10 years or more.

Findings: Monitoring protocols are outlined in Section 6.2 of the submitted critical areas study. A 10 year monitoring period is not required for the scrub shrub community in this project.

Conclusions: This criteria has been met.

G. The planning director may approve alternative wetland mitigation plans that are based on best available science, such as priority restoration plans that achieve restoration goals identified in the SMP. Alternative mitigation proposals must provide an equivalent or better level of protection of wetland functions and values than would be provided by the strict application of this chapter.

Findings: Alternative mitigation is not proposed for this project.

Conclusions: This criteria is not applicable.

16.16.355 Streams – Development standards

Development proposals and other alterations on sites containing streams or buffers shall comply with the standards in LFPMC 16.16.355 (A) through (F). Staff's findings and conclusions for those standards that are applicable are listed below:

A. The following minimum buffers shall be established from the ordinary high water mark or from the top of the bank if the ordinary high water mark cannot be identified:

2. Type F stream containing fish habitat shall have a 115-foot buffer;

Findings: McKinnon Creek and its buffer is classified as a type F stream, where a 115 foot wide buffer is required. The entire proposal is within the combined wetland and stream buffer. The applicant has proposed mitigation within the buffer area, which will result in no net loss of ecological function.

Conclusions: This criteria has been met.

6. Any stream adjoined by a riparian wetland or other contiguous critical area shall have the buffer required for the stream class involved or the buffer which applies to the wetland or other critical area, whichever is greater.

Findings: The stream and buffer also contain category III wetlands within the buffer area. Each wetland buffer totals 165 feet wide. The combined stream and wetland buffer established for the project area is 165 feet.

Conclusions: This criteria has been met.

C. Existing Legally Established Development in Stream Buffer.

4. The planning director may waive the buffer requirement if the waiver request is found to meet the following criteria:

a. The existing legal improvement creates a substantial barrier to the buffer function;

b. The interrupted buffer does not provide additional protection of the stream from the proposed development; and

c. The interrupted buffer does not provide significant hydrological, water quality and wildlife buffer functions relating to the portion of the buffer adjacent to the stream.

Findings: The existing pump house and infrastructure had been established legally some years ago. The permittee has not requested a reduction of any buffers for the project.

Conclusions: This criteria does not apply.

E. Compliance with this chapter shall be in addition to, and not a fulfillment of, all requirements under Chapter 90.58 RCW, the Shoreline Management Act, and any development proposal shall, in addition to the requirements of this chapter, comply with the permitting and substantive requirements of Chapter 90.58 RCW, the Shoreline Management Act.

Findings: This project is not within the shoreline jurisdiction. Pursuant to the City's Shoreline Master Program, page 8; Lake Washington is the only shoreline of state significance in the City limits.

Conclusions: This criteria does not apply.

F. All buildings or structures shall have a setback of at least 15 feet from any place on the edge of a stream buffer. The setback line shall be established by measuring perpendicularly from the edge of a stream buffer.

Findings: The pump house location has been established through a previous land use approval (see exhibit 2). A 15 foot setback from the critical area buffer will not be possible due to the previously approved location.

Conclusions: This criteria does not apply.

16.16.360 Streams – Permitted alterations

Alterations to streams and buffers may be allowed per LFPMC 16.16.360 (A) through (N). Staff's findings and conclusions for those standards that are applicable are listed below:

A. In accordance with a critical area study.

Findings: The permittee has provided a critical area study and it has been evaluated in section IV, LFPMC 16.16.060, paragraph 3, of this report. All material contained within the study meets applicable municipal regulations.

Conclusions: This criteria has been met.

D. LFPMC 16.16.330(B) applies to streams and their buffers.

Findings: These criteria were evaluated in previous sections of this report. See the findings under section IV, LFPMC 16.16.330 (B). All alterations have been considered as combined stream and wetland buffer impacts/mitigation.

Conclusions: This criteria has been met.

E through N. LFPMC 16.16.360 E through N:

Findings: These sections address work directly within the ordinary high water mark of a stream. The permittee is not proposing to perform any work within McKinnon Creek itself. Only the combined wetland and stream buffer will be affected.

Conclusions: These criterion do not apply.

V. SEPA DETERMINATION

A determination of non-significance was issued for this project on December 19, 2018, and is Exhibit 7 in this decision. The determination was noticed using the optional DNS process in WAC 197-11-355.

VI. PUBLIC NOTIFICATION AND INPUT

A notice of application, which included an optional Determination of Non-Significance (ODNS), was posted and published pursuant to LFPMC 16.26.040 (D) on December 19, 2018. This notice comes late, and out of compliance with LFPMC 16.26.040 (D). Staff has considered all public comments while drafting the decision and creating the conditions of approval. All of the citizen's concerns can be mitigated through the project as designed, or as it will be conditioned. The notice of decision to approve for this project was published and posted May 13, 2019.

VII. PRELIMINARY CONCLUSIONS

Staff has reviewed the proposal for general conformance with city codes and ordinances and the requirements set forth herein, and has provided findings in response to each requirement. Based upon said findings, staff concludes that the major critical area permit application as described herein conforms to the criteria for major critical area permits as defined in LFPMC Section 16.16.

VIII. CONDITIONS

In consideration of the above findings of fact and conclusions, the proposed major critical area permit is hereby granted approval, subject to the following conditions:

1. The permittee may be required to obtain additional permits, at the discretion of the City, if it is found that the exhibits supporting this permit are not adequate to support construction level activity.
2. On-site construction shall not commence until the associated tree removal permit application (2016-SATR-0011) is issued. A pre-construction meeting with the City is required prior to the start of construction. ✓
3. Protection fencing shall be required for any vegetation retained. OK

4. The permittee shall record a notice on each property's title that the properties are subject to regulations within the City's critical area ordinance. Notice on title shall include the requirements for mitigation and monitoring for this project.
5. Any required mitigation shall be installed pursuant to the materials in Exhibit 1 and 6. The required mitigation shall meet the performance measures outlined in Exhibit 1. Should any of the required mitigation fail, the contingency measures detailed in Exhibit 1 shall be enacted.
6. A signed copy of the executed monitoring contract with the company responsible for monitoring the required mitigation shall be provided to the City prior to the finalization of this permit. The contract shall incorporate the terms of the required monitoring program.
7. Should access to critical areas occur as a result of maintenance of the installed infrastructure, it shall be limited to those points that are perpendicular to the maintenance road.
8. All portions of the existing and any extensions/alterations of the maintenance road shall be altered and/or limited to a width of 15 feet.
9. Construction for this project shall be limited to the months of May through October.

IX. ATTACHMENTS

The following documents are attached to or referenced, and made a part of this report:

Attached:

Exhibit 1: Critical area report prepared by the Watershed Company, date stamped April 3, 2019 by the City of Lake Forest Park.
Exhibit 2: Hearing Examiner decision for 2015-PAUE 0001, and 2018-CU-0001.
Exhibit 3: Technical memorandum from Mundall Engineering describing changes to the project scope, date stamped July 19, 2018 by the City of Lake Forest Park.
Exhibit 4: Temporary pipe impact assessment prepared by the Watershed Company, date stamped October 31, 2018 by the City of Lake Forest Park.
Exhibit 5: Technical memorandum prepared by the Watershed Company, date stamped April 22, 2019 by the City of Lake Forest Park.
Exhibit 6: Design Plans prepared by the Watershed Company, sheets W1 through 11; date stamped April 5, 2019 by the City of Lake Forest Park.
Exhibit 7: SEPA determination issued December 19, 2018.

Referenced:

- Sensitive Area Study prepared by the Watershed Company, date stamped February 7, 2017 by the City of Lake Forest Park.

- Arborist report prepared by Urban Forestry Services, dated October 26, 2016.
- SEPA checklist prepared by Mike Foster of the Watershed Company, date stamped February 7, 2017 by the City of Lake Forest Park.
- Sensitive Area Work Permit Application, date stamped February 7, 2017 by the City of Lake Forest Park.
- Arborist report prepared by the Watershed Company, date stamped April 3, 2019 by the City of Lake Forest Park.

Staff Signatures:

Name & Title: Nick Holland
Senior Planner

Issued Date: May 13, 2019

A. APPEALS

This decision may be appealed by the applicant or any party of record under the provisions of LFPMC Section 16.26.190. Appeals must be submitted in writing.

CITY OF LAKE FOREST PARK
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Lake Forest Park, WA 98155
206-368-5440

To schedule an inspection, call the City of Lake Forest Park Building Department inspection line, 206-957-2835, by 3:00 PM the day prior. Calls after 3:00 will be scheduled for the following day.

BUILDING PERMIT

Permit Number: 2019-CB-0003	
Date of Issuance: 8/28/2019	**Date of Expiration: One Year from Issuance**

Project Description:
New McKinnon Creek Pumphouse - installation of connecting piping to the pumphouse

Owner:
LAKE FOREST PARK WATER DISTRICT
Address of Work:
18460 47TH Pl NE Lake Forest Park, WA 98155

Contractor:
OWNER
City License Number:
City License Expiration:
State License Number:
State License Expiration:

Construction Value: $129,065.96 Construction Type: commerical Occupancy Group: U Zoning Classifications: RS10	Building permit fee: $1463.70 Plan Review fee: $951.41 State Surcharge fee: $25.00 **Total Fees:**
Proposed Living Sq ft: 511 Proposed Unfinshed Sq ft: 495 Prosposed Porch Sq ft: 263	Sprinklers Required:

LFP Building Permit

PERMIT CONDITIONS

This permit becomes null and void if work or construction authorized has not commenced within 1 year of permit issuance. Permit to be posted on site and available to Building Inspector. The holder of this permit or their duly authorized agent shall be responsible for scheduling inspection(s) within 180 days of work commencing and to provide access and means. ***The approved site copy of plans and permit(s) be on the construction site and be available to the building inspector.***

PERMITTED WORK TO BE DONE:

New McKinnon Creek Pumphouse - installation of connecting piping to the pumphouse

Per LFPMC 8.51.040 Noises emanating from temporary construction sites and noises created by powered equipment including, but not limited to, lawnmowers, powered hand tools, and chainsaws used in temporary or periodic maintenance or repairs, but not during the hours of 9:00 p.m. and 7:00 a.m. weekdays, and 9:00 p.m. to 8:00 a.m. weekends and holidays

All contractors/subcontractors to be licensed with the State of Washington and have a current City of Lake Forest Park Business License. The attached Business License Declaration form for contractors and/or subcontractors must be posted on the project site and be available to the Building Inspector.

For any digging of 12" or more it is required to mark the boundary of the digging/excavation site with white paint and call the Call center at 1-800-424-5555 for a locate of underground facilities. Owners/operators of underground facilities must respond within 2 business days. Failure to comply will be the responsibility of the owner/contractor if an underground facility is damaged and such damage is the consequence of the failure to fulfill this obligation will be liable for any damages. Fines may also be imposed for those who fail to comply. RCW Chapter 19.122

Permission is hereby given to do the above described work, according to the conditions hereon and according to the approved plans and specifications thereto and subject to the compliance with the City of Lake Forest Park Municipal Code and the International Building Code.

I hereby certify that I have read and understand these permit conditions. All provisions of laws and ordinances governing this work will be completed whether specified or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local laws regulating constructions or the performance of construction.

AK ***(initial) on*** 8/28/19 ***(date)***

	8/28/19
Responsible Official Signature	**Date**
	8/28/19
Applicant Signature	**Date**

It is unlawful to use or occupy a building or structure until a final inspection has been performed and final approval and/or a Certificate of Occupancy has been granted (IRC R110.1 and IBC 110.1)No construction noise allowed before 7:00AM or after 9:00PM Monday – Friday. No construction noise allowed before 8:00AM or after 9:00PM on Saturdays, Sundays and Holidays per LFPMC 8.24.040

IBC Section 109.6

Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building inspector. The building inspector, upon notification, shall make the requested inspections and shall either indicate the portion of the construction, satisfactory completed or that portion of the construction has failed to comply with this code. Any portion that does not comply shall be corrected and such portion shall not be covered or concealed until approved by the building inspector.

To schedule an inspection, call the City of Lake Forest Park Building Department inspection line 206-957-2835 by 3:00 PM the day prior, calls after 3:00 will be scheduled for the following day.

Contractor / Subcontractor Business License Declaration Form

CITY OF LAKE FOREST PARK MUNICIPAL CODE Chapter 5.02.030 requires that every person who engages in business within the City shall apply for and obtain a business license. **Failure to have a business license could result in a stop work order.**

The following activities that are performed by a contractor and/or subcontractor **will require** a City of Lake Forest Park business license. This must be presented upon request by the building official.

Any other activities not listed but are performed by a contractor and/or subcontractor **will require** a City of Lake Forest Park business license.

Provide business name , Lake Forest Park business license number and date of expiration in the table below.

	Business Name	**LFP Business License Number**	**Date of Expiration**
SURVEY			
EXCAVATION			
SEWER			
CONCRETE			
FRAMING			
PLUMBING			
ELECTRICAL			
MECHANICAL			
INSULATION			
SHEETROCK			
CABINET/TRIM			
COUNTER TOPS			
PAINTING			
FLOORING			
FLOORING FINISH			
ROOFING			
SIDING			
GUTTERS			
WATER PIPING /ALT			
DRIVEWAY/SIDEWALK			
DECK			
FENCE			
LANDSCAPING			
OTHER			

*****Building Permit Inspection Record*****

Inspection Type	Inspection Date	Pass/Fail	Comments
Silt Fencing			
Footing (Foundation)			
Foundation			
Slab			
Footing (Drainage)			
Storm			
Drainage (Other)			
Underfloor Framing			
Shear Nail Wall			
Shear Nail Roof			
Framing			
Insulation - Slab			
Insulation - Walls			
Insulation - Floor			
Insulation - Ceiling			
Drywall - Nailing/Sheetrock			
Misc.			

FINAL INSPECTION:

Finaled by_____ Date Finaled_____

To schedule an inspection, call the City of Lake Forest Park Building Department inspection line 206-957-2835 by 3:00 PM the day prior, calls for inspections after 3:00 PM will be scheduled for the following day.

KING COUNTY FIRE PROTECTION DISTRICT NO.16
7220 NE 181st Street
KENMORE, WA 98028

BUSINESS: 425-354-1780 FAX: 425-354-1781

Calculation of Needed Fire Flow

Site Address: 18460 47th Pl. NE Date: 6/17/19

Application No. 2019-CB-0003 Owner Name: LFP Water District

Contractor: TBD Contact: _____ Phone: _____

Building Information
Type of Construction: III-B Number of Stories: 2 Building footprint: 511 sq. ft.

Area of mezzanines or partial floors _____ Total gross floor area of building: 511

Base fire flow from International Fire Code Table B105.1 _____ gpm

Type of Occupancy: U **Adjustment for hazard** +/- _____% _____ gpm
Low hazard reduction or high hazard addition not to exceed 25%

Sub-Total **(A)** _____ **gpm**

Sprinklers: _____ **Subtract** _____ **%** x A _____ gpm

Sub-Total _____ **gpm**
(never under 1,000 gpm)

Exposures:		**Add**
North;	150 + feet	_____ %
South;	150 + feet	_____ %
East;	75 feet	_____ %
West;	150 + feet	_____ %

Sub-Total _____ **%** (not to exceed 75%) x (A) = _____ gpm

(NOTE: The exposure distance is measured to the nearest property line that can be built upon.)
0 -10 ft =25%, 11-30 ft = 20%, 31 -60 ft = 15%, 61 – 100 ft = 10%, 101 – 150 ft = 5%

Total _____ **gpm**

Round to nearest 250 gpm if under 2,500, nearest 500 if over 2,500

Fire Flow Required 1,500 **gpm**

Fire Flow Available 1,500+ **gpm**

Comments: No fire department conditions for this project.

Fire Department Reviewer

6/17/19
Date

CLEARING GRADING PERMIT

CITY OF LAKE FOREST PARK
17425 Ballinger Way NE
Lake Forest Park, WA 98155
206-368-5440

To schedule an inspection, *call the City of Lake Forest Park Building Department inspection line,* ***206-957-2835 by 3:00 PM the day prior, if called after 3:00 PM the inspection will be scheduled for the following day.***

CLEARING & GRADING PERMIT

Permit Number: 2019-CGMA-0004	
Date of Issuance: 8/27/2019	**Date of Expiration: One Year from Issuance**

Project Description:

Clearing ,Grading, Excavating permit for McKinnon Creek Pumphouse new location

Owner:

LAKE FOREST PARK WATER DISTRICT

Address of Work:

18460 47TH Pl NE Lake Forest Park, WA 98155

Contractor: All contractor must have a City & State Business License before job start.

OWNER

City License Number:	**State License Number:**
City License Expiration:	**State License Expiration:**

Fees:

Total Fees: $973.35
Total PAID: $973.35

CLEARING GRADING PERMIT

**********CLEARING AND GRADING INSPECTIONS**********

Inspection Type	Inspection Date	Date Approved
Erosion Control		
Tree Protection		
Final		

To schedule an inspection call please call the Lake Forest Park Inspection Line at 206-957-2835 by 3:00pm the day prior to the requested inspection.

CITY OF LAKE FOREST PARK
17425 Ballinger Way NE
Lake Forest Park, WA 98155
206-368-5440

TREE REMOVAL PERMIT

Permit Number: 2019-TREE-0100	
Date of Issuance: 8/28/2019	**Date of Expiration: 180 Days from Issuance**

Project Description:

Permit to remove seven (7) significant trees and five (5) landmark trees to build a new pumphouse facility associated with Sensitive Area Permit 2017-SAMJ-0003. No replacement canopy is required for tree permit because lot will still exceed canopy coverage goal for lot (58%) following removal of these trees.

Owner:

Lake Forest Park Water District

Address of Work:

18460 47th Pl NE, Lake Forest Park, WA 98155

Contractor: TBD – Must have active City of LFP Business License

City License Number: **State License Number:**
City License Expiration: **State License Expiration:**

Fees:

Total Fees: $1198.32
Total Due at Issuance: **$1122.19**

LFP TREE REMOVAL PERMIT

PERMITTED WORK TO BE DONE:

Permit to remove seven (7) significant trees and five (5) landmark trees to build a new pumphouse facility associated with Sensitive Area Permit #2017-SAMJ-0003. No replacement canopy is required for tree permit because lot will still exceed canopy coverage goal (58%) following removal of these trees.

PERMIT CONDITIONS:

1. Permit expires six months from date of issuance. Permit to be posted on site, see posting requirements.
2. All contractors/subcontractors to be licensed with the State of Washington and have a current City of Lake Forest Park Business License.
3. Tree protection fencing, trunk wrap, and arborist wood chip mulch shall be installed prior to commencing work as shown on Tree Protection Plan and shall remain in place throughout construction.
4. Applicant shall call in to City Arborist for a tree protection fencing inspection and on-site pre-con meeting prior to commencing work.
5. No equipment shall be stored or operated inside the protective fencing including during fence installation and removal.
6. No storage of materials shall occur inside the protective fencing.
7. Refer to tree retention plan for any modifications to the tree protection area.
8. Unauthorized activities in tree protection area will required evaluation by City Arborist to identify impacts and mitigation required.
9. Exposed roots: for roots greater than 1" diameter damaged during construction, make a clean, straight cut to remove damaged portion and inform City Arborist.
10. Project Arborist shall be on site for all excavation within the critical root zones of on-site trees.
11. Project Arborist shall prepare weekly construction memo reports to document construction within the root zones of on-site trees. Items documented in the report shall discuss locations of significant root cutting, additional tree protection measures to be implemented, and reporting on the overall health of trees following the proposed construction activity.
12. Area of alternative excavation as shown on Tree Protection Plan shall be supervised by the project arborist throughout the entire construction phase. Alternative methods of excavation can be any of the following, upon approval of project arborist: air excavation (air knife or air spade), hydraulic excavation (water jet), moling or horizontal boring and hand excavation.
13. Refer to the Watershed Company arborist report dated June 21st, 2019 for specific tree protection measures to be implemented on an as-needed basis, or under the direction of the project arborist.
14. All site access with heavy equipment will be done using the existing access roads.

I affirm that notice of application was posted on site for a minimum of two weeks. This permit must be posted throughout tree removal and must remain on site for seven (7) days after the removal of designated trees.

I hereby certify that I have read and examined this permit and know the same to be true and correct. All provisions of laws and ordinances governing this work will be completed whether specified or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local laws regulating constructions or the performance of construction.

AL (initial) on 8/28/19 (date)

Ashley Adams — 8/28/19

Responsible Official Signature — Date

[signature] — 8/28/19

Applicant Signature — Date

The holder of this permit is responsible for complying with conditions as set forth, and all applicable codes. This permit requires tree replacement within six months. When replacement trees have been planted, applicant is responsible for contacting the Planning Department at 206-368-5440.

State of Washington
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310 • Kent Washington 98032-2388

May 30, 2019

F. ALAN KERLEY
LAKE FOREST PARK WATER DISTRICT
4029 NE 178TH ST
LAKE FOREST PARK WA 98155

Subject: Lake Forest Park Water District (ID #40950)
King County
McKinnon Creek Pumphouse – Construction Documents - Approval
Submittal #19-0403

Dear Mr. Kerley:

Thank you for submitting the construction documents for the proposed McKinnon Creek Pumphouse project. The construction documents were prepared by your engineer, Dan Mundall, PE and received in our office on April 9, 2019, with amendments received on May 29, 2019. The project report, submittal 18-0911, was approved on October 26, 2018.

The construction documents for the above project, were reviewed and, in accordance with the provisions of WAC 246-290 are hereby **APPROVED**. The approval issued herein is only valid as it relates to current standards outlined in WAC 246-290, effective April 19, 2019. Future revisions in the rules may be more stringent and require facility modifications or corrective action.

It is acknowledged that the McKinnon Creek Pumphouse project is included in the District's Capital Improvement Program in the District's Water System Plan approved June 19, 2017.

Design Summary: New McKinnon Creek pump house to replace the existing pump house feeds the High zone (452HGL) and distribution system from the Low zone (294HGL). Proposed project to include four identical 600gpm capacity, Pentair-Aurora #3804 pumps with variable frequency drives. Three pumps in parallel provide 1,500gpm total capacity to meet fire flow demand. The fourth pump, to be installed within four years, will improve reliability. The pumps will operate in lead lag configuration with alternating lead position. The new building will provide room for potential iron and manganese removal treatment in the future.

The department's approval of your water system design does not confer or guarantee any right to a specific quantity of water. The approved number of service connections is based on your representation of available water quantity. If the Washington Department of Ecology, a local planning agency, or other authority responsible for determining water rights and water system adequacy determines that you have use of less water than you represented, the number of approved connections may be reduced commensurate with the actual amount of water and your legal right to use it.

As required in WAC 246-290-120(5) within sixty days following the completion of and prior to the use of the above project or portions thereof, the enclosed construction report must be completed by a professional engineer and returned to this department. In addition, complete and submit the enclosed Pressure, Leakage, and Bacteriological Test Report form for applicable portions of this project.

Regulations establishing a schedule of fees for review of planning, engineering and construction documents have been adopted (WAC 246-290-990). The total cost is $565.00. An itemized invoice for the review of this project has been sent to the primary contact on file for your water system. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter in the enclosed envelope or mail payment to: **DOH, Revenue Section, PO Box 1099, Olympia WA 99507-1099.**

WAC 246-290-120(8) provides that if construction of the project has not been started within two years of the date of this letter, this approval will become null and void unless you take action at that time to arrange for an extension of the approval in the manner prescribed.

Nothing in this approval shall be construed as satisfying other applicable federal, state, or local statutes, ordinances and regulations.

Sincerely,

Brietta Carter

Brietta Carter, PE
Regional Engineer
NW Office of Drinking Water

Enclosures – Construction completion report form
Invoice

cc: Public Health – Seattle & King County
Dan Mundall, PE, Mundall Engineering