



September 11, 2019

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Park and Tree Sampling and Tree Protection Plan for Emergency Communications Facility in Cooks Butte Park

Summary

In order to site the emergency communication facility (EC Facility) in Cooks Butte Park, most of which is a Resource Conservation District (RC), city code requires that less than 15% of the RC area and the resources within that area is impacted. In order to determine that, Teragan & Associates, Inc complete a sampling process to identify the median size trees and the species that are located in the park's RC zone.

Sampling of the RC district within Cooks Butte Park was completed per the approval of the process submitted by Teragan & Associates, Inc by the City of Lake Oswego. The data from the sampling can be found in appendix #4, Sampling Data. The median diameter size of the trees sampled found that it was 18 inches diameter for all trees (20-inches diameter Douglas-fir (*Psuedotsuga menziesii*) and 17-inch diameter bigleaf maple (*Acer macrophyllum*).

As less than 6.76% of the RC District is to be impacted by the project's footprint including the approach drive, the criterion of protecting more than 85% of the RC District is met.

Only one tree is planned for removal for this project outside the planned delineation of the proposed RC Protection Area (RCPA). This removal will have to be permitted for but should be allowed as it is located outside of the proposed delineation of the RCPA.

A tree protection plan for the trees to be retain is included is this report.

Assignment

The purpose of this report is to provide the results of the sampling of the trees and vegetation in Cooks Butte Park for the purposes of obtaining a permit to install an EC Facility in the park.

It is also to provide the tree protection plan for the installation of the tower.

Assumptions and Limiting Conditions

Please see Appendix #2 for a detailed list of Assumptions and Limiting conditions.

Background

A new emergency communications facility (EC Facility) is proposed to be installed in Cooks Butte Park. Most of the park is a Resource Conversation District (RC). In order to allow for the placement of the EC Facility within the RC area, the new RC area has to be delineated so that at least 85% of the existing RC area is re-designated as the new RC Protection Area. The location of the RC Protection Areas shall be determined in accordance with the criteria listed in LOC 50.05.010.5.b. which is discussed below in the next section of this report.

Sampling Process

In order to meet City of Lake Oswego code requirements, the trees in the RC district had to be identified and measured as to their species identification and diameter size. Given the large size of the RC district, the City allowed a sampling to be completed to determine the median diameter size rather than inventory all of the tree in Cooks Butte Park.

Teragan & Associates, Inc. created a sampling process that was submitted to the City for approval. Through a couple of revisions, a sampling process was approved by the City consisting of five plots in what identified as predominantly Douglas-fir type and three plots in the bigleaf maple type stands. The sampling locations approved by the City can be found in appendix #3, Sampling Locations. The size of the sample plots was 1/20 of an acre, a circle with a radius of 26.3 feet.

Teragan & Associates then collected tree and vegetation data that were located in the sample plots. The data collected can be found in appendix # 4, Tree and Vegetation Sampling Data.

An analysis of the data indicated that the median diameter size of the trees was 18.5 inches.

Discussion and Observations

The review of the applicable criteria is discussed below based on the observations made during the sampling of the site and a review of the proposed plans:

Criteria of LOC 50.05.010.5.b

i – A minimum of 85% of the RC district shall be delineated as the “RC Protection Area (RCPA).

Cooks Butte Park is 42 acres. 12 acres has been designated as RP zone for stream corridors leaving 30 acres as the RC district. The area footprints of the developed areas are as follows:

Proposed construction area and permanent facilities for the EC Facility: 80' x 80' = 6,400 sq. ft (0.15 acres)

East Water Reservoir: 90-foot diameter tank = 6,380 sq. ft. (0.15 acres)

West Water Reservoir: 90-foot diameter tank = 6,380 sq. ft. (0.15 acres)

Open Meadow: 230-foot diameter area = 41,530 sq. ft. (0.95 acres)

Access Road to both reservoirs and meadow = 1,140 feet long x 24 feet wide = 27,360 (.63 acres)

Total area developed/open area or to be developed = 2.03 acres, 6.76% of the 30 acres of the RC area.

This allows 93.24 % of the RC to be designated as the RC Protection Area which easily exceeds the required protection of at least 85% of the existing RC district area.

ii - Applicant for a development utilizing Habitat Benefit Areas (HBA) incentives shall establish a protection area pursuant to the standards in LOC 50.05.010.7

Applicant is not utilizing the HBA incentive.

iii. Except as otherwise provided in LOC 50.05.010.5.c, no development shall be permitted within the RC protection area or HBA protection area. The land area outside of these areas may be fully developed pursuant to applicable regulations.

Applicant intends to meet the criteria of LOC 50.05.010.b thus there is no reason to review LOC 50.05.010.5.c.

iv. Except as provided in subsection 5.b.v of this section, the location of the RC/HBA protection area shall be based upon the following criteria:

- (1) The protection area shall link to abutting RP districts, or abutting RC or RC/HBA protection area lands if such lands are present;

The RC Protection Area will be the entire park minus the area of the existing RP Zones and where the communications tower, two water reservoir tanks, access road and the open meadow are located.

Within the park are two stream corridors designated as an existing RP zones which will be adjacent to the proposed RC Protection Area.

- (2) The trees having diameter at breast height (DBH) width greater than the median DBH within an RC district or HBA shall be included in the protection area;

*The median tree diameter for the two predominate species type as indicated by the sample plots were 20-inch diameter Douglas-fir (*Pseudotsuga menziesii*) and 17-inch diameter for bigleaf maple (*Acer macrophyllum*). The data from the sample plots can be found in appendix # 3, Sampling Data.*

As no trees within the newly designated RC Protection Area are to be removed, this criterion is met.

- (3) The location of the protection area shall be designed to protect development from blow-down hazards;

The newly designated RC Protection Area will consist of the entire Cooks Butte Park minus the area of the existing RP Zones and the new communications tower as well as the existing water tanks, access road and open meadow. Only on tree, a two stems leader (19/11") bigleaf maple is to be removed to place the EC Facility.

- (4) The protection area shall protect steep slopes and resources close to water areas from potential erosion and water quality impacts;

The location of the proposed EC Facility is located on a mostly level area of the park, just to the north of the east water tank that already exists in the park. The steep slopes and other resources adjacent to the existing streams corridors in the park are far removed from the proposed site. The steep slopes within the park will not be impacted so the potential for erosion or impacts to water quality is

very low to non-existent. The erosion control plan for the construction on the site will further ensure that erosion will not occur, and water quality will not be impacted.

- (5) The protection area shall protect wildlife habitat and travel corridors;

As the majority of the park will be protected as it currently exists, wildlife habitat and travel corridors should have minimal impacts. The minimal impacts shall only be on the proposed site which is approximately 0.15 acres out of the 42 acres of the park.

- (6) The protection area shall be designed to protect a contiguous canopy and a clustered configuration that does not fragment lands within an RP or RC district, or an HBA protection area;

The newly designated RC Protection will be a contiguous canopy. The proposed site for the EC Facility is adjacent to the existing, east water tank just on its north side. As only one below the overstory tree is to be removed, there will be minor impact to the continuity of the existing canopy even outside the proposed RC Protection Area and over the propose site.

- (7) The protection area shall consist of viable plant and wildlife communities;

The newly designated RC Protection Area will consist of viable plant and wildlife communities as the majority of the site will not be disturbed in any manner.

- (8) The protection area shall maintain the scenic qualities of the site.

The scenic qualities will be undisturbed within the proposed RC Protection Area. The site of the proposed EC Facility will be altered slightly but the scenic quality of the newly proposed RC Protection Area will remain undisturbed and left intact as it currently exists.

- v. It is recognized that all of the criteria listed in LOC 50.05.010.5.b.iv be applicable to every site. In some cases, the criteria may conflict on a given site. In such cases, the reviewing authority shall prioritize criteria that protect health and safety (e.g., blow-down hazards, erosion prevention, water quality protection, etc.) and then balance the remaining applicable criteria in order to protect the most environmentally significant portion of conservation lands.

There should be no reason that the criteria found in LOC 50.05.010.5.b.iv cannot be met and as such this criterion is not necessary. Only one tree is to be removed, the remaining trees protected during construction to ensure that the blow down hazard, erosion potential and water quality should not be impacted.

- vi. Once a protection area has been identified and protected pursuant to this section and approval becomes final, no future reduction in the RC/HBA protection area shall be permitted, unless the property owner files for a modification to the original permit and establishes a new protection area in compliance with subsection 5.b.iv of this section that is at least as large as the previously designated protection area or demonstrates that the

protection area as originally designated has degraded through natural causes pursuant to LOC 50.07.004.8.a, RP/RC district overlay procedures.

This application will be setting the a new RCPA equal to 93.24% of the 30 acres within the RC District equal to 27.97 acres.

- vii. The City Manager shall note the establishment of a protection area on the Sensitive Lands Map, along with a reference to the application in which the protection area was created.

This criterion is not the responsibility of the applicant.

- viii. In order to put property owners and occupants on notice, the applicant shall execute and record a notice of development restriction running with the land that references the protection area and the Planning Department application file in which the protection area was established.

As the owner of the property/park is the City of Lake Oswego, I would think that it would be the City that would take the step to record the RC Protection Area on their maps and within their databases.

Tree Assessments

Per the information gathered during the sampling of the plots, the majority of the trees above the median diameter size were in good condition. Many of the trees less than median size were in lower condition which indicates that they are being suppressed by the growth of the larger trees that have had the opportunity to outgrow the suppressed trees.

Tree Protection

Only one tree is to be removed as part of this project.

Designers for the project have altered the design of the base area for the EC facility to be able to retain most of the trees in the area.

The footprint of the EC Facility, the drives that lead into it and the pull off parking area off the main road is to be fenced off with tree protection fencing to protect the trees that are to remain on the site. Tree protection fencing is to consist of six-foot-tall metal fencing supported by eight-foot-tall fence posts driven into the ground two feet deep at least every ten feet.

The project arborist is to be on site during the excavation for the entrance drive to the facility, the pull off from the existing park road parking area to the north, the excavation of the EC Facility base area and the excavation for the propane tank that is to be buried.

The purpose of having the project arborist on site is to ensure that no roots larger than three inches are cut or damage without a careful analysis of the ability to prune the root(s) to ensure that the stability and health of the tree that the roots are attached to is not unduly impacted long term in regard to tree health or stability.

If any root is discovered that is larger than three inches that is deemed significant by the project

arborist and cannot be pruned, steps to protect the root will be done. The steps are to excavate carefully on either side of the root, utilizing hand shovels if necessary, without damaging it. At least an inch of native soil is to remain on top of the root and along both sides. Geotex fabric is to be laid over the roots and over the bottom of the excavation on either side of the root as distance from the root of at least two feet. An appropriately sized rock is to be laid down on either side of the root with a layer no less than one inch on top of the root. The rock on either side of the root shall be set so that the elevation is slightly higher than the rock over the roots, a ¼" to ½" inch higher, to allow the placement of a steel plate to "bridge the root(s)" during the construction phase for the project. Site conditions may cause the project arborist to vary the depth and size of rock. Steel plates to be removed after the completion of the project.

Any root uncovered during careful excavation for the drive, parking area, EC Facility area and propane tank over one inch in diameter is to be pruned with a sharp cutting tool to prevent root ripping beyond the construction area. Such pruning is to be done to arboricultural standards to allow any pruned root to limit decay.

The project arborist shall also be on site during the excavation for the power supply for the water tank to be re-routed around the tower base area. The path of the rerouted power supply is to be in the main access road to the tower located to the south, then turning east to the tank. The presence of the project arborist is to assess and guide the management of any roots larger than one inch that might be encountered by any excavation.

The access road to the EC Facility site is to be lined with orange, plastic construction fence four feet tall supported every ten feet or less to prevent vehicles and construction equipment from parking off the main access road.

Conclusion

The analysis of the percentage of the area that will be impacted by the installation of the proposed EC Facility as well as the two existing water tanks, access road and open meadow is 2.03 acres of the 30-acre RC zone in the park. This is less than 6.76% of the existing area of the RC District within Cooks Butte Park.

The data collected from the approved sampling processed indicated a median diameter size of the trees in the park to be 18 inches. As none of the trees within the proposed designated RC Protection Area are to be removed there should be no reason for concern.

Only one tree, a two leader bigleaf maple (19/11" diameters) is to be removed to allow the installation of the new EC Facility. Given that the new, proposed RC Protection area does not include this area, there should be no impact to the new designated RC Protection area.

Please call if you have any questions or concerns regarding this report.

Sincerely,



Terrence P. Flanagan
ISA Board Certified Master Arborist, #PN-0120 BMTL

Enclosures

- Appendix 1: Certification of Performance
- Appendix 2: Assumptions and Limitations Conditions
- Appendix 3: Sampling Map
- Appendix 4: Sampling Data
- Appendix 5: Aerial of RC and RP Protection Area and Disturbed Areas
- Appendix 6: Site Plan with Tree Protection Measures
- Appendix 7: Tree Protection Specifications

Appendix 1

Certification of Performance

I, Terrence P. Flanagan, Certify:

- That a representative of Teragan & Associates, Inc., has inspected the tree(s) and/or the property referred to in this report. The extent of the evaluation is stated in the attached report.
- That Teragan & Associates, Inc. has no current or prospective interest in the vegetation of the property that is the subject of this report, and Teragan & Associates, Inc. has no personal interest or bias with respect to the parties involved.
- That Teragan & Associates, Inc.'s compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party, or upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.
- That the analysis, opinions, and conclusions that were developed as part of this report have been prepared according to commonly accepted arboricultural practices.
- That a Board-Certified Master Arborist has overseen the gathering of data.

Appendix 2

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. Teragan and Associates, Inc. checked the species identification and tree diameters in the field.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultants' role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.

RP Zone

Bigleaf maple stand type

Douglas-fir stand type

Appendix #3

Sampling Map

Cook's Butte Park

RP Zone



Google Earth

AN

800 ft

Appendix #4 - Sampling Data

Tree No.	Common Name	Botanical Name	DBH*	Condition**	Structure**	Comments
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Sample Plot 1

1	Douglas Fir	<i>Pseudotsuga menziesii</i>	32	Good	Good	
3	Douglas Fir	<i>Pseudotsuga menziesii</i>	14	Fair	Fair	High crown. Suppressed.
4	Douglas Fir	<i>Pseudotsuga menziesii</i>	25	Good	Good	
5	Douglas Fir	<i>Pseudotsuga menziesii</i>	30	Good	Good	
6	Douglas Fir	<i>Pseudotsuga menziesii</i>	11	Poor	Poor	High crown. Suppressed.
7	Douglas Fir	<i>Pseudotsuga menziesii</i>	12	Poor	Poor	High crown. Suppressed.
8	Douglas Fir	<i>Pseudotsuga menziesii</i>	20	Good	Good	
9	Douglas Fir	<i>Pseudotsuga menziesii</i>	19	Fair	Fair	Thinning crown.
10	Douglas Fir	<i>Pseudotsuga menziesii</i>	28	Good	Good	
11	Bigleaf Maple	<i>Acer macrophyllum</i>	15	Fair	Fair	Suppressed.
Sample Plot 1 Understory						
	Salal	<i>Gaultheria shallon</i>		Good		90 %coverage.
	ThimbleBerry	<i>Rubus parviflorus</i>		Good		
	Pacific Blackberry	<i>Rubus ursinus</i>		Good		
	Western Hazel	<i>Corylus cornuta</i>		Good		
	Western Swordfern	<i>Polystichum munitum</i>		Good		
	Western Trillium	<i>Trillium ovatum</i>		Good		
	Solomon's Seal	<i>Polygonatum biflorum</i>		Good		
	False Solomon's Seal	<i>Maianthemum recemosum</i>		Good		
	Smooth Yellow Violet	<i>Viola glabella</i>		Good		

Sample Plot 2						
12	Douglas Fir	<i>Pseudotsuga menziesii</i>	19	Poor	Poor	Thin crown.
13	Oregon White Oak	<i>Quercus garryana</i>	30	Fair	Fair	High thin crown
14	Bigleaf Maple	<i>Acer macrophyllum</i>	12	Very Poor	Very Poor	Broken stem.
15	Bigleaf Maple	<i>Acer macrophyllum</i>	18	Good	Good	
16	Bigleaf Maple	<i>Acer macrophyllum</i>	19	Good	Good	
17	Pacific Dogwood	<i>Cornus nuttallii</i>	3	Fair	Fair	High thin crown.
Sample Plot 2 Understory						
	Elder Berry	<i>Sambucus racemosa</i>		Good		
	Snowberry	<i>Symphoricarpos albus</i>		Good		3 at 4' width varies.
	Shiny Geranium	<i>Geranium lucidum</i>		Good		90% coverage.

Sample Plot 3						
18	Bigleaf Maple	<i>Acer macrophyllum</i>	23	Fair	Fair	8 x 72 inch cavity from ground on

19	Bigleaf Maple	<i>Acer macrophyllum</i>	16	Fair	Good	14" x 8' cavity. from ground.
20	Pacific Yew	<i>Taxis brevifolia</i>	5	Good	Good	
21	Bigleaf Maple	<i>Acer macrophyllum</i>	11	Good	Good	
22	Bigleaf Maple	<i>Acer macrophyllum</i>	8	Good	Good	
23	Bigleaf Maple	<i>Acer macrophyllum</i>	15	Good	Good	
24	Apple	<i>Malus pumila</i>	9	Good	Poor	Severe lean.
25	Apple	<i>Malus pumila</i>	5	Good	Poor	Severe lean.
Sample Plot 3 Understory						
	Sweet Cherry	<i>Prunus avium</i>		Good		3 at 10' tall less than 6"DBH.
	Western Hazel	<i>Corylus cornuta</i>		Good		12' tall x 8' wide.
	Western Swordfern	<i>Polystichum munitum</i>		Good		

Sample Plot 4						
26	Douglas Fir	<i>Pseudotsuga menziesii</i>	40	Good	Good	
27	Douglas Fir	<i>Pseudotsuga menziesii</i>	32	Good	Good	
28	Bigleaf Maple	<i>Acer macrophyllum</i>	32	Good	Good	2 stems 30,10.
Sample Plot 4 Understory						
	Western Hazel	<i>Corylus cornuta</i>		Good		2 at 12' tall width varies.
	Western Hazel	<i>Corylus cornuta</i>		Good		4 at 8' tall width varies.
	Snowberry	<i>Symphoricarpos albus</i>		Good		3 at 4' tall width varies
	Wild Rose			Good		4 at 2' tall.
	Western Sword Fern	<i>Polystichum munitum</i>		Good		
	European Mtn.Ash	<i>Sorbus aucuparia</i>		Good		7' tall less than 6" DBH.
	Bedstraw	<i>Galium aprine</i>		Good		
	Solomon's Seal	<i>Polygonatum biflorum</i>		Good		
	False Solomon's Seal	<i>Maianthemum racemosum</i>		Good		
	Fringecup	<i>Tellima grandiflora</i>		Good		

Sample Plot 5						
29	Douglas Fir	<i>Pseudotsuga menziesii</i>	21	Poor	Poor	Red Ring Rot
30	Douglas Fir	<i>Pseudotsuga menziesii</i>	28	Good	Good	
31	Douglas Fir	<i>Pseudotsuga menziesii</i>	32	Good	Good	
32	Douglas Fir	<i>Pseudotsuga menziesii</i>	37	Good	Good	
33	Douglas Fir	<i>Pseudotsuga menziesii</i>	17	Fair	Fair	High thin crown
34	Douglas Fir	<i>Pseudotsuga menziesii</i>	17	Fair	Poor	High thin crown
35	Douglas Fir	<i>Pseudotsuga menziesii</i>	23	Fair	Fair	High thin crown
36	Douglas Fir	<i>Pseudotsuga menziesii</i>	13	Fair	Fair	High thin crown
37	Douglas Fir	<i>Pseudotsuga menziesii</i>	27	Good	Good	
Sample Plot 5 Understory						

	Poison Oak	<i>Rhus diversiloba</i>				Vining on trees and small shoots in ground.
	Western Hazel	<i>Corylus cornuta</i>				1 at 12' by 8' wide. 1 at 4' tall by 3' wide.
	Pacific Blackberry	<i>Rubus ursinus</i>				
	Black Raspberry	<i>Rubus occidentalis</i>				
Sample Plot "a"						
38	Bigleaf Maple	<i>Acer macrophyllum</i>	21	Good	Good	2 stems 15,14.
39	Bigleaf Maple	<i>Acer macrophyllum</i>	31	Good	Good	Measured at ground.
40	Bigleaf Maple	<i>Acer macrophyllum</i>	35	Good	Good	7 stems 12,13,12,11,12,23..
41	Bigleaf Maple	<i>Acer macrophyllum</i>	34	Good	Good	Measured 1' above ground.
42	Bigleaf Maple	<i>Acer macrophyllum</i>	18	Good	Good	2 stems 13,12.
43	Bigleaf Maple	<i>Acer macrophyllum</i>	10			
44	Bigleaf Maple	<i>Acer macrophyllum</i>	13	Poor	Poor	Trunk broken off at 20' above ground.
Sample Plot "a" Understory						
	Western Hazel	<i>Corylus cornuta</i>				3 at 8' width varies.
	Oregon Viburnum	<i>Viburnum ellipticum</i>				3 at 8' width varies
	Western Swordfern	<i>Polystichum munitum</i>				
	Western Trillium	<i>Trillium ovatum</i>				
	Solomon Seal	<i>Polygonatum biflorum</i>				
	False Solomon Seal	<i>Maianthemum racemosum</i>				
	Fringecup	<i>Tellima grandiflora</i>				
	Elderberry	<i>Sambucus racemosa</i>				16' tall x 10' wide.
Sample Plot "b"						
45	Bigleaf Maple	<i>Acer macrophyllum</i>	8	Fair	Fair	Suppressed .
46	Bigleaf Maple	<i>Acer macrophyllum</i>	12	Poor	Poor	Broken top.
47	Bigleaf Maple	<i>Acer macrophyllum</i>	8	Good	Good	
48	Bigleaf Maple	<i>Acer macrophyllum</i>	21	Good	Good	
49	Bigleaf Maple	<i>Acer macrophyllum</i>	11	Good	Good	
50	Bigleaf Maple	<i>Acer macrophyllum</i>	30	Good	Good	Measured at 2' above ground.
Sample Plot "b" Understory						
	Western Hazel	<i>Corylus cornuta</i>		Good		4 at 16' width varies.
	Sweet Cherry	<i>Prunus avium</i>		Good		4 at 3" to 5" DBH.
	Snowberry	<i>Symphoricarpus albus</i>		Good		9 at 5' with varies.
	Little Wood Rose	<i>Rosa gymnocarpa</i>		Good		5 at 4' to 5' tall width varies.
	Solomon Seal	<i>Polygonatum biflorum</i>		Good		
	False Solomon Seal	<i>Maianthemum racemosum</i>		Good		

	Western Trillium	<i>Trillium ovatum</i>		Good		
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Sample Plot "c"						
51	Black Cottonwood	<i>Populus trichocarpa</i>	13	Good	Good	
52	Bigleaf Maple	<i>Acer macrophyllum</i>	7	Good	Good	
53	Black Cottonwood	<i>Populus trichocarpa</i>	17	Good	Good	
54	Black Cottonwood	<i>Populus trichocarpa</i>	9	Good	Good	
55	Black Cottonwood	<i>Populus trichocarpa</i>	13	Good	Good	
56	Bigleaf Maple	<i>Acer macrophyllum</i>	7	Good	Good	
57	Black Cottonwood	<i>Populus trichocarpa</i>	15	Good	Good	
58	Black Cottonwood	<i>Populus trichocarpa</i>	7	Good	Good	
59	Black Locust	<i>Robinia pseudoacacia</i>	24	Good	Good	Diameter estimated due to Poison Oak.
60	Bigleaf Maple	<i>Acer macrophyllum</i>	14	Good		
Sample Plot "c" Understory				Good		
	Western Hazel	<i>Corylus cornuta</i>		Good		3 at 8' width varies.
	Poison Oak	<i>Rhus diversiloba</i>		Good		
	Western Swordfern	<i>Polystichum munitum</i>		Good		
	Salal	<i>Gaultheria shallon</i>		Good		
	Little Wood Rose	<i>Rosa gymnocarpa</i>		Good		5 at 4' to 6'.
	Cascade Mahonia	<i>Mahonia nervosa</i>		Good		
	Bracken Fern	<i>Pteridium aquilinum</i>		Good		
	Pacific Blackberry	<i>Rubus ursinus</i>		Good		
	Bedstraw	<i>Galium aprine</i>		Good		

*DBH is the trunk diameter measured per International Society of Arboriculture (ISA) standards.

*Condition and Structure ratings range from very poor, poor, fair, to good.



Legend

Polygon Measure

Appendix # 5

Area of Disturbance, Map of RC and RP Protection Area

800 ft



Cook's Butte Park

Google Earth

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1. THE OVERALL SITE PLAN IS GENERATED FROM MULTIPLE SOURCES INCLUDING, BUT NOT LIMITED TO, GIS MAPS, AERIAL MAPS, PHOTOS, IMAGES, AND TOPOGRAPHIC SURVEY (IF PROVIDED).

DRAWING VERSION		
VER.	DATE	DESCRIPTION
1	01/12/18	PRELIM SKETCH
2	03/28/18	CLIENT COMMENT
3	04/24/18	PRELIM ZONING DRAWINGS
4	11/15/18	CC - FINAL LU DRAWINGS
5	08/21/19	CLIENT COMMENT

[illegible]

PROJECT INFORMATION

COOKS BUTTE

COOKS BUTTE CITY PARK
2100 PALSADES CREST DR.
LAKE OSWEGO, OR 97034

SHEET TITLE
ENLARGED SITE PLAN

SHEET NO.

A2.0

Assess Road Limit fencing to extend to Palisades Crest Drive entrance

Four foot tall plastic, orange construction fence to prevent construction and other vehicles from leaving access road



Appendix # 7

Tree Protection Specifications

It is critical that the following steps be taken to ensure that be retained are protected.

Before Construction Begins

1. Notify all contractors of the tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection. It can only take one mistake with a misplaced trench or other action to destroy the future of a tree.
 - a. Hold a Tree Protection meeting with all contractors to fully explain goals of tree protection.
 - b. Have all sub-contractors sign memoranda of understanding regarding the goals of tree protection. Memoranda to include penalty for violating tree protection plan. Penalty to equal appraised value of tree(s) within the violated tree protection zone per the current Trunk Formula Method as outline by the Council of Tree & Landscape Appraisers current edition of the ***Guide for Plant Appraisal***. Penalty is to be paid to owner of the property.
2. Fencing
 - a. Establish fencing around each tree or grove of trees to be retained.
 - b. The fencing is to be put in place before the ground is cleared in order to protect the trees and the soil around the trees from any disturbance at all.
 - c. Fencing is to be placed at the edge of the root protection zone. Root protection zones are to be established by the project arborist based on the needs of the site and the tree to be protected.
 - d. Fencing is to consist of 6-foot high steel fencing secured to the ground with 8-foot metal posts to prevent it from being moved by contractors, sagging or falling down.
 - e. Fencing is to remain in the position that is established by the project arborist and not to be moved without written permission from the project arborist until the end of the project.
3. Signage
 - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

VEGETATION/TREE PROTECTION ZONE

DO NOT REMOVE OR ADJUST THIS FENCING.

THE FENCE LOCATIONS ARE APPROVED TO PROTECT VEGETATION & TREES.

NOTE: Moving these fences is a civil violation.

Please contact the Code Enforcement Specialist and project arborist, if alterations to the approved location of the protection fencing are requested

Project Arborist:
TERAGAN & ASSOCIATES, INC 503-697-1975

- b. Signage should be place as to be visible from all sides of a tree protection area and spaced every 75 feet.

Teragan & Associates, Inc.
3145 Westview Circle, Lake Oswego, OR 97034
503-697-1975, info@teragan.com

During Construction

1. Protection Guidelines Within the Root Protection Zone
 - a. No traffic shall be allowed within the root protection zone. No vehicle, heavy equipment, or even repeated foot traffic.
 - b. No storage of materials including but not limiting to soil, construction material, or waste from the site.
 - i. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
 - c. Construction trailers are not to be parked / placed within the root protection zone without written clearance from project arborist.
 - d. No vehicles shall be allowed to park within the root protection areas.
 - e. No activity shall be allowed that will cause soil compaction within the root protection zone.
2. The trees shall be protected from any cutting, skinning or breaking of branches, trunks or roots.
3. Any roots that are to be cut from existing trees that are to be retained, the project consulting arborist shall be notified to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots are to be immediately covered with soil or mulch to prevent them from drying out.
4. No grade change should be allowed within the root protection zone.
5. Any necessary deviation of the root protection zone shall be cleared by the project consulting arborist or project owner.
6. Provide water to trees during the summer months. Tree(s) that will have had root system(s) cut back will need supplemental water to overcome the loss of ability to absorb necessary moisture during the summer months.
7. Any necessary passage of utilities through the root protection zone shall be by means of tunneling under roots by hand digging or boring.

After Construction

1. Carefully landscape in the area of the tree. Do not allow trenching within the root protection zone. Carefully plant new plants within the root protection zone. Avoid cutting the roots of the existing trees.
2. Do not plan for irrigation within the root protection zone of existing trees unless it is drip irrigation for a specific planting or cleared by the project arborist.
3. Provide for adequate drainage of the location around the retained trees.
4. Pruning of the trees should be completed as one of the last steps of the landscaping process before the final placement of trees, shrubs, ground covers, mulch or turf.
5. Provide for inspection and treatment of insect and disease populations that are capable of damaging the retained trees and plants.
6. Trees that are retained may need to be fertilized as called for by project arborist after final inspection.