











### H. T. HARVEY & ASSOCIATES

**Ecological Consultants** 

Google Caribbean Campus Construction Office and Parking Site Arborist Report

Proposal #9274

Prepared for:

Johnson Chang SARES-REGIS at Google

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### **Section 1.0 Introduction**

- H. T. Harvey & Associates has prepared this arborist report for the proposed redevelopment project site (site), which spans four separate but conterminous parcels, identified as:
  - 1390-1398 Borregas Avenue in Sunnyvale, California (APN 110-33-014)
  - 1376-1380 Borregas Avenue in Sunnyvale, California (APN 110-33-036)
  - 1362-1366 Borregas Avenue in Sunnyvale, California (APN 110-33-011)
  - 245 Caspian Drive in Sunnyvale, California (APN 110-33-037)

H. T. Harvey & Associates' arborists performed an inventory of all trees on these and other adjacent parcels in November 2016. We visited the site again on March 26, 2018 to update the inventory and assess current site conditions. This report provides an inventory of each tree on the project site, including physical location, diameter at breast height (DBH), height, species, a figure showing the location of each surveyed tree, and an assessment of each tree's health and structural condition.

### Section 2.0 Methods

This report is based on observations made during site visits conducted in November 2016 and on March 26, 2018 by H. T. Harvey & Associates arborist Matt Pollock, an American Society of Consulting Arborists (ASCA) Registered Consulting Arborist (#631) and International Society of Arboriculture (ISA) Certified Arborist (WE-11610A). All trees with a DBH greater than 4 inches were included in the inventory. Tasks conducted during the site visits consisted of the following:

- identifying each tree to species (scientific name and common name);
- tagging each tree with an identifying number (sequential numbering assigned to the project);
- recording the approximate location of each tree;
- measuring tree trunk diameter at 54 inches above finish grade (DBH); and
- evaluating tree condition (i.e., tree health and tree structure) using a scale of 0 to 5 as shown in Table 1.

Tree assessments were based on ground-level visual observations and physical measurements. Field data collection was conducted using a diameter tape to measure DBH. Tree height was measured with a hypsometer, using the 3-point method. A Trimble Geo 7X GPS with laser offset capability was used to determine and record the location of each tree. Evaluations of tree health considered crown indicators such as vigor, density, leaf size, quality, and stem shoot extensions. Evaluations of tree structural condition considered root condition/formation, trunk condition, and branch assembly and arrangement.

An advanced assessment to quantify interior wood structure, root condition, and upper canopy condition was not performed as part of this assessment. Therefore, tasks performed did not include an excavation of the root zones of the trees, drilling for decay detection, collecting soil samples for laboratory testing, sending animal or vegetative material for laboratory testing, climbing the trees for an aerial inspection, a tree risk assessment, or a valuation (see Appendix A: Assumptions and Limiting Conditions and Appendix B: Certification of Performance). These tasks are not typically included in a standard arborist report.

Table 1. Tree Health and Structural Condition Evaluation Criteria

Condition Rating	Tree Health	Tree Structure
5	A healthy, vigorous tree with a well-balanced crown. No apparent pest problems or signs and symptoms of disease. Normal to exceeding shoot length on new growth. Leaf size and color normal. Exceptional life expectancy for the species.	Root plate undisturbed and clear of any obstructions. Root flare has normal development. Trunk is sound and solid. No visible trunk defects or cavities. Branch spacing / structure and attachments are free of any defects.
4	Tree with slight decline in vigor. Imperfect canopy density in few parts of the tree, 10% or less, lacking natural symmetry. Less than half normal growth rate and minor deficiency in leaf development. Few pest issues or damage, controllable. Normal branch and stem development with healthy growth. Small amount of twig dieback. Typical life expectancy for the species.	Root plate appears normal; only minor damage may be found. Possible signs of root dysfunction around trunk flare. Minor trunk defects from previous injury, with good closure; less than 25% of bark section missing. Good branch habit, minor dieback with some signs of previous pruning. Co-dominant stem formation may be present. Minor corrections required.
3	Tree with moderate vigor. Crown decline and dieback up to 30% of the canopy. Overall poor symmetry. Leaf color somewhat chlorotic with smaller leaves. Shoot extensions indicate some stunting and stressed growing conditions. Obvious signs of pest problems contributing to lesser condition. Some decay areas found in main stem and branches. Below average life expectancy.	Root plate reveals previous damage or disturbance and dysfunctional roots may be visible around main stem. Evidence of trunk damage or cavities with decay or defects present. Less than 30% of bark sections missing on trunk. Co-dominant stems are present. Branching habit and attachments indicate poor pruning or damage, which requires moderate corrections.
2	Tree in decline. Epicormic growth. Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting obvious with little evidence of growth on smaller stems. Leaf size and color reveal overall stress in the plant. Insect or disease infestation may be severe. Overmature. Life expectancy is low.	Root plate disturbance and defects indicate major damage with girdling roots around the trunk flare. Trunk reveals more than 50% of bark section missing. Branch structure has poor attachments, with several structurally important dead or broken branches. Canopy reveals signs of severe damage or topping, with major corrective actions required. Extensive decay or hollow.
1	Tree in severe decline. Crown has very little vigor and/or has a disease or insect problem that is ultimately fatal and, if not corrected, may threaten other nearby trees.	Root plate has major structural problems that present an unacceptable risk. Tree is in severe decline, with dieback of scaffold branches and/or trunk.
0	Dead	Dead

### Section 3.0 Results

### 3.1 Site History and General Condition

On three of the four site parcels (APNs 110-33-014, 110-33-036, and 110-33-011), there is a single-story commercial building surrounded by surface parking. These parcels are dominated by hardscaping, with narrow planting beds about the buildings and running parallel to streets and parcel boundaries. One of the parcels (APN 110-33-037) includes a parking area and large empty lot. The parking area has several small planting areas containing trees. The empty lot is soil with herbaceous cover. The parcel also has trees lining the northern and western perimeter, as well as a stand of trees along the Caspian Drive frontage. The majority of trees on the site are mature.

## 3.2 Summary of Findings

One hundred and thirty-seven trees were identified on the property (Figure 1). Descriptions of each tree are included in Appendix C (Tree Assessment), including DBH, height, and tree condition score. A summary of the 137 trees, representing fourteen species, is provided in Table 2. Of the 137 trees located on the property, 72 (53%) meet the City's criteria for protected status (see Section 3.4 below). The most common trees on the site are Southern magnolia (Magnolia grandiflora) and shamel ash (Fraxinus uhdei).

#### 3.3 Tree Condition

The majority of trees were in good condition (93%) as shown in Table 2. The condition ratings below are based on both the tree health and structural ratings from Appendix C. The condition of the trees was rated as follows:

- Good if their combined rating was 60% or greater;
- Fair if their combined rating was between 40% and 60%; or
- **Poor** if their combined rating was less than 40%.

Table 2. Tree Condition Summary

		Tree Condition					
Scientific Name	Common Name	Poor	Fair	Good	Total Trees		
Quercus agrifolia	California live oak	-	1	14	15		
Pyrus calleryana	Callery pear	-	-	1	1		
Pinus canariensis	Canary Island pine	-	1	1	2		
Pistacia chinensis	Chinese pistache	-	1	1	2		
Lagerstroemia indica	crape myrtle	-	-	2	2		
Quercus ilex	holly oak	-	-	2	2		
Platanus hybrida	London plane	-	1	18	19		
Maytenus boaria	Mayten tree	-	1	7	8		
Prunus cerasifera	purple leaf plum	-	-	9	9		
Fraxinus uhdei	shamel ash	-	4	17	21		
Eucalyptus polyanthemos	silver dollar eucalyptus	-	-	5	5		
Magnolia grandiflora	Southern magnolia	-	-	32	32		
Liquidamber styraciflua	sweetgum	-	-	14	14		
Liriodendron tulipifera	tulip tree	-	-	5	5		
	All Tree Species	-	9	128	137		





irts\Appendix A Locations of Existing Trees.mxd

Figure 1. Locations of Existing Trees

# 3.4 Significant Trees

The City of Sunnyvale provides special provisions for protected trees, which are defined as either:

- A single-trunk tree with a circumference of at least 38 inches, measured at a point 4.5 feet above the ground, or
- A multi-trunk tree where one trunk has a circumference of at least 38 inches or the sum of all trunk circumferences is at least 113 inches, measured at a point 4.5 feet above the ground.

Based on this definition, seventy-two significant trees were identified on the site. (see Appendix C: Tree Assessment).

# Section 4.0 References

- [Cal-IPC] California Invasive Plant Council. 2017. California Invasive Plant Inventory Database. Accessed online at http://cal-ipc.org/paf/ [October 2017].
- City of Sunnyvale. 2018. Homes, Streets and property>Trees>Tree Removal. Accessed March 27, 2018. https://sunnyvale.ca.gov/property/trees/removal.htm

# Appendix A. Assumptions and Limiting Conditions

- Any legal description provided to the consultant is assumed to be correct. Any titles and ownerships to any
  property are assumed to be good and marketable. No responsibility is assumed for matters legal in
  character. Any and all property is appraised or evaluated as though free and clear, under responsible
  ownership and competent management.
- 2. Property lines were not clearly surveyed or marked in the field by the owner, consultant attempted to provide as accurate of boundary for the inventory as possible using the limited data available.
- Care has been taken to obtain all information from reliable sources. All data have been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
- 4. The consultant shall not be required to give testimony or attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
- 5. Loss or alteration of any part of this report invalidates the entire report.
- 6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant.
- 7. Neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed written or verbal consent of the consultant particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in his/her qualifications.
- 8. This report and values expressed herein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
- 9. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
- 10. Unless expressed otherwise: a) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection and b) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

# Appendix B. Certification of Performance

#### I certify that:

I have personally inspected the trees and the property referred to in this report and have stated my findings accurately. The extent of the evaluation is stated in the attached report and the terms of the assignment.

I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.

The analysis, opinions, and conclusions stated herein are my own and are based on current scientific procedures and facts.

My analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.

No one provided significant professional assistance to me, except as indicated within the report.

Compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

Matt Pollock

Mollock

ASCA Registered Consulting Arborist #631

ISA-Certified Arborist WE-11610A

# Appendix C. Tree Assessment

Tree Tag	Scientific Name	Common Name	DBH	Height (feet)	Health	Structure	City of Sunnyvale Protected Tree
1581	Platanus hybrida	London plane	22	76	5	4	Yes
1582	Platanus hybrida	London plane	22	79	5	4	Yes
1583	Platanus hybrida	London plane	23	78	5	5	Yes
1584	Platanus hybrida	London plane	11	37	5	4	No
1585	Platanus hybrida	London plane	22	70	5	3	Yes
1586	Platanus hybrida	London plane	19	79	5	4	Yes
1587	Platanus hybrida	London plane	21	70	5	5	Yes
1588	Platanus hybrida	London plane	19	62	5	4	Yes
1589	Platanus hybrida	London plane	26	67	5	5	Yes
1590	Magnolia grandiflora	Southern magnolia	7	21	5	4	No
1591	Magnolia grandiflora	Southern magnolia	6	22	5	4	No
1592	Magnolia grandiflora	Southern magnolia	5	16	5	4	No
1593	Magnolia grandiflora	Southern magnolia	8	23	5	4	No
1594	Magnolia grandiflora	Southern magnolia	5	18	5	4	No
1595	Magnolia grandiflora	Southern magnolia	6	23	5	4	No
1596	Magnolia grandiflora	Southern magnolia	6	19	5	4	No
1597	Magnolia grandiflora	Southern magnolia	9	22	5	4	No
1598	Magnolia grandiflora	Southern magnolia	9	23	5	4	No
1599	Magnolia grandiflora	Southern magnolia	7	16	5	4	No
1600	Magnolia grandiflora	Southern magnolia	5	18	5	4	No
1601	Magnolia grandiflora	Southern magnolia	5	17	5	4	No
1602	Magnolia grandiflora	Southern magnolia	7	20	5	4	No
1603	Magnolia grandiflora	Southern magnolia	8	21	5	4	No
1604	Magnolia grandiflora	Southern magnolia	7	15	5	4	No
1605	Magnolia grandiflora	Southern magnolia	7	17	5	4	No
1606	Magnolia grandiflora	Southern magnolia	11	22	5	4	No
1607	Magnolia grandiflora	Southern magnolia	7	17	5	4	No
1608	Magnolia grandiflora	Southern magnolia	10	21	5	4	No
1609	Magnolia grandiflora	Southern magnolia	5	13	5	4	No
1610	Magnolia grandiflora	Southern magnolia	9	18	5	4	No
1611	Magnolia grandiflora	Southern magnolia	7	22	5	4	No
1612	Magnolia grandiflora	Southern magnolia	6	17	5	4	No
1613	Magnolia grandiflora	Southern magnolia	9	23	5	4	No
1614	Magnolia grandiflora	Southern magnolia	10	24	5	4	No

Tree Tag	Scientific Name	Common Name	DBH	Height (feet)	Health	Structure	City of Sunnyvale Protected Tree
1615	Magnolia grandiflora	Southern magnolia	11	27	5	4	No
1616	Magnolia grandiflora	Southern magnolia	9	22	5	4	No
1617	Magnolia grandiflora	Southern magnolia	7	17	5	4	No
1618	Magnolia grandiflora	Southern magnolia	11	24	5	4	No
1619	Magnolia grandiflora	Southern magnolia	7	19	5	4	No
1620	Magnolia grandiflora	Southern magnolia	12	30	5	4	Yes
1621	Magnolia grandiflora	Southern magnolia	7	20	5	4	No
1622	Platanus hybrida	London plane	13	40	5	4	Yes
1623	Platanus hybrida	London plane	11	55	3	3	No
1624	Platanus hybrida	London plane	21	76	5	5	Yes
1625	Platanus hybrida	London plane	13	75	2	3	Yes
1626	Platanus hybrida	London plane	21	73	5	5	Yes
1627	Platanus hybrida	London plane	21	70	5	4	Yes
1628	Platanus hybrida	London plane	21	67	5	4	Yes
1629	Platanus hybrida	London plane	11	50	3	4	No
1630	Platanus hybrida	London plane	20	68	4	5	Yes
1631	Platanus hybrida	London plane	19	73	5	5	Yes
1632	Fraxinus uhdei	shamel ash	28	56	5	5	Yes
1633	Fraxinus uhdei	shamel ash	22	55	5	4	Yes
1634	Fraxinus uhdei	shamel ash	32	59	5	5	Yes
1635	Fraxinus uhdei	shamel ash	22	46	5	4	Yes
1636	Fraxinus uhdei	shamel ash	22	48	5	4	Yes
1637	Fraxinus uhdei	shamel ash	27	53	5	4	Yes
1638	Fraxinus uhdei	shamel ash	19	38	2	3	Yes
1639	Fraxinus uhdei	shamel ash	25	52	4	4	Yes
1640	Fraxinus uhdei	shamel ash	13	25	2	3	Yes
1641	Fraxinus uhdei	shamel ash	19	39	3	4	Yes
1642	Fraxinus uhdei	shamel ash	24	36	3	3	Yes
1643	Fraxinus uhdei	shamel ash	18	38	3	2	Yes
1644	Fraxinus uhdei	shamel ash	21	52	5	4	Yes
1645	Fraxinus uhdei	shamel ash	16	37	4	4	Yes
1646	Fraxinus uhdei	shamel ash	15	37	5	5	Yes
1647	Fraxinus uhdei	shamel ash	31	52	5	4	Yes
1649	Maytenus boaria	Mayten tree	7	13	3	4	No
1650	Maytenus boaria	Mayten tree	12	17	2	4	Yes
1651	Liriodendron tulipifera	Tulip tree	19	44	5	3	Yes
1652	Liriodendron tulipifera	Tulip tree	12	40	5	4	Yes
1653	Liriodendron tulipifera	Tulip tree	16	53	4	4	Yes

Tree Tag	Scientific Name	Common Name	DBH	Height (feet)	Health	Structure	City of Sunnyvale Protected Tree
1654	Liriodendron tulipifera	Tulip tree	20	50	5	3	Yes
1655	Liriodendron tulipifera	Tulip tree	14	45	4	4	Yes
1656	Maytenus boaria	Mayten tree	9	14	3	4	No
1657	Maytenus boaria	Mayten tree	6	12	3	4	No
1658	Maytenus boaria Eucalyptus	Mayten tree	8	12	4	4	No
1659	polyanthemos	silver dollar eucalypt	23	73	5	3	Yes
1660	Prunus cerasifera	purple leaf plum	9	26	2	4	No
1661	Prunus cerasifera	purple leaf plum	8	25	2	4	No
1662	Prunus cerasifera	purple leaf plum	11	23	5	4	No
1663	Eucalyptus polyanthemos	silver dollar eucalypt	30	61	5	4	Yes
1664	Eucalyptus polyanthemos	silver dollar eucalypt	25	65	5	3	Yes
1665	Lagerstroemia indica	crape myrtle	4	17	5	4	No
1666	Lagerstroemia indica	crape myrtle	5	17	5	5	No
1667	Pistacia chinensis	Chinese pistache	5	21	3	2	No
1668	Pistacia chinensis	Chinese pistache	7	23	4	3	No
1669	Prunus cerasifera	purple leaf plum	7	27	3	5	No
1670	Prunus cerasifera	purple leaf plum	7	25	3	5	No
1671	Prunus cerasifera	purple leaf plum	10	22	5	4	No
1672	Liquidamber styraciflua Liquidamber	Sweetgum	8	27	4	5	No
1673	styraciflua Liquidamber	Sweetgum	10	39	5	4	No
1674	styraciflua	Sweetgum	13	42	4	4	Yes
1675	Prunus cerasifera Liquidamber	purple leaf plum	11	26	3	4	No
1676	styraciflua	Sweetgum	19, 9	51	4	2	No
1680	Quercus agrifolia	California live oak	18	36	5	4	Yes
1681	Quercus agrifolia	California live oak	16	30	4	4	Yes
1682	Quercus agrifolia	California live oak	9	19	5	4	No
1683	Quercus ilex	Holly oak	5	19	4	5	No
1684	Quercus ilex	Holly oak	4	16	5	5	No
1685	Quercus agrifolia	California live oak	6	17	4	4	No
1686	Quercus agrifolia	California live oak	14	25	3	4	Yes
1687	Quercus agrifolia	California live oak	14	31	1	3	Yes
1688	Quercus agrifolia	California live oak	23	38	4	4	Yes
1689	Quercus agrifolia	California live oak	15	38	1	5	Yes
1690	Quercus agrifolia	California live oak	26	44	5	4	Yes
1691	Quercus agrifolia	California live oak	18	35	3	3	Yes

Tree Tag	Scientific Name	Common Name	DBH	Height (feet)	Health	Structure	City of Sunnyvale Protected Tree
1692	Quercus agrifolia Liquidamber	California live oak	15	32	4	4	Yes
1693	styraciflua	Sweetgum	11	48	5	5	No
1694	Quercus agrifolia	California live oak	20	44	3	4	Yes
1695	Quercus agrifolia	California live oak	13	26	4	4	Yes
1696	Quercus agrifolia	California live oak	9	18	3	4	No
1697	Quercus agrifolia	California live oak	30	58	3	3	Yes
1698	Pinus canariensis	Canary Island pine	27	69	4	5	Yes
1699	Fraxinus uhdei	shamel ash	26	54	4	4	Yes
1700	Fraxinus uhdei	shamel ash	32	66	5	5	Yes
1701	Fraxinus uhdei	shamel ash	43	57	3	2	Yes
1702	Fraxinus uhdei	shamel ash	28	67	5	4	Yes
1703	Fraxinus uhdei	shamel ash	30	63	5	4	Yes
1704	Pinus canariensis Eucalyptus	Canary Island pine	29	76	2	3	Yes
1705	polyanthemos Liquidamber	silver dollar eucalypt	26	67	4	4	Yes
1706	styraciflua Liquidamber	Sweetgum	8	33	4	4	No
1707	styraciflua Liquidamber	Sweetgum	10	35	5	4	No
1708	styraciflua	Sweetgum	8	30	4	3	No
1709	Prunus cerasifera	purple leaf plum	5	18	4	5	No
1710	Prunus cerasifera	purple leaf plum	4	17	4	5	No
1711	Pyrus calleryana Liquidamber	Callery pear	5	10	3	4	No
1712	styraciflua Liquidamber	Sweetgum	14	41	5	4	Yes
1713	styraciflua	Sweetgum	16	43	4	4	Yes
1714	Maytenus boaria	Mayten tree	14	22	2	3	Yes
1715	Maytenus boaria	Mayten tree	15	24	3	4	Yes
1716	Maytenus boaria Liquidamber	Mayten tree	14	20	2	4	Yes
1717	styraciflua Eucalyptus	Sweetgum	16	45	4	4	Yes
1718	polyanthemos Liquidamber	silver dollar eucalypt	32	72	4	4	Yes
1719	styraciflua Liquidamber	Sweetgum	15	37	4	4	Yes
1720	styraciflua Liquidamber	Sweetgum	10	34	3	3	No
1721	styraciflua	Sweetgum	15	43	4	4	Yes