



## Tree Inventory Report

---

Hummingbird Energy  
San Jose, CA 95139

PREPARED FOR  
**H. T. Harvey & Associates | Ecological Consultants**  
7983 University Avenue, Building D  
Los Gatos, CA 95032

PREPARED BY:  
**HortScience | Bartlett Consulting**  
325 Ray Street  
Pleasanton, CA 94566

July 16<sup>th</sup>, 2019



# **Tree Inventory Report Hummingbird Energy San Jose, CA**

## **Table of Contents**

---

	<b>Page</b>
Introduction and Overview	1
Tree Survey Methods	1
Description of Trees	2
Suitability for Preservation	3
Tree Replacement Requirements	5
General Tree Preservation Guidelines	5

## **List of Tables**

---

Table 1. Condition ratings and frequency of occurrence of trees	2
Table 2. Tree suitability for preservation	5
Table 3. City of San Jose Mitigation Requirements	5

## **Exhibits**

---

***Tree Assessment Map 1: Coyote Creek***  
***Tree Assessment Map 2: Monterey Road and San Ignacio Avenue***  
***Tree Assessment***

## Tree Inventory Report Hummingbird Energy San Jose, CA

### ***Introduction and Overview***

H. T. Harvey & Associates | Ecological Consultants is planning an environmental review of the Hummingbird Energy Utility Storage project in San Jose. The project entails work at four distinct locations. One site around Coyote Creek is undeveloped with dense tree cover. A second site is a paved parking lot. The two remaining sites are along Monterey Road. HortScience | Bartlett Consulting, divisions of The F.A. Bartlett Tree Expert Company, was asked to prepare a Tree Inventory Report for this project for permit submittal to the City of San Jose.

This report provides the following information:

1. Assessment of the health, structural condition, and suitability for preservation of the trees located on and adjacent to the proposed project area based on a visual inspection from the ground.
2. Standard tree replacement requirements.
3. General tree preservation guidelines during the design, construction, and maintenance phases of development.

### ***Tree Survey Methods***

Trees were assessed on July 22<sup>nd</sup> and July 29<sup>th</sup> 2019. The assessment included all trees located within and adjacent to the four proposed project areas. Off-site trees with canopies extending over the worksite boundaries were included in the assessment and viewed from the subject property. The survey procedure consisted of the following steps:

1. Identifying the tree species;
2. Tagging each tree with an identifying number and recording its location on a map;
3. Measuring the trunk diameter of each tree 6-feet and taller at a point 54-inches above grade; for off-site trees diameters were estimated.
4. Evaluating health and structural condition using a three-point rating scale based on a visual inspection from the ground:

**Good** A healthy tree that may have a slight decline in vigor, small amount of twig dieback, and minor structural defects that could be corrected.

**Fair** Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, and moderate structural defects that might be mitigated with regular care.

**Poor** Tree in decline, epicormic growth, extensive dieback of medium to large branches, and significant structural defects that cannot be abated.

5. Rating the suitability for preservation as “high”, “moderate”, or “low”. Suitability for preservation considers the health, age and structural condition of the tree, and its potential to remain an asset to the site for years to come.

**High:** Trees with good health and structural stability that have the potential for longevity at the site.

**Moderate:** Trees with somewhat declining health and/or structural defects that can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in ‘high’ category.

**Low:** Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes and generally are unsuited for use areas.

### Description of Trees

One hundred and thirty-six (136) trees representing 11 species were evaluated (Table 1). Of these, 28 appeared to be located off-site with canopies overhanging the adjacent workspaces. Descriptions of each tree are found in the **Tree Assessment** and approximate locations are plotted on the **Tree Assessment Maps** (see Exhibits).

Of the trees assessed, 9% were dead, 36% were in poor condition, 44% were in fair condition, and 11% were in good condition. Seventeen (17) trees were along Monterey Road, nine were in parking lot planters at 6321 San Ignacio Avenue, and 110 were growing around Coyote Creek. Coast live oak, valley oak, and California black walnut were among the native species present.

**Table 1. Condition ratings and frequency of occurrence of trees  
Hummingbird Energy Utility Storage, San Jose, CA**

Common Name	Scientific Name	Condition				Total
		Dead	Poor	Fair	Good	
Paper birch	<i>Betula papyifera</i>	-	-	-	1	1
European white birch	<i>Betula pendula</i>	-	-	1	1	2
California black walnut	<i>Juglans hindsii</i>	2	41	45	2	90
Crape myrtle	<i>Lagerstroemia indica</i>	-	-	-	9	5
Fremont cottonwood	<i>Populus fremontii</i>	8	2	2	1	13
Purpleleaf plum	<i>Prunus cerasifera</i>	-	1	3	-	3
Coast live oak	<i>Quercus agrifolia</i>	-	-	-	1	1
Valley oak	<i>Quercus lobata</i>	-	-	-	2	2
Arroyo willow	<i>Salix lasiolepis</i>	1	-	3	-	4
Elderberry	<i>Sambucus nigra</i>	-	3	5	-	8
Mexican fan palm	<i>Washingtonia robusta</i>	-	-	-	2	2
<b>Total</b>		<b>11</b>	<b>47</b>	<b>59</b>	<b>19</b>	<b>136</b>

California black walnut was the most common species assessed (90 trees, 66% of the inventory). Of these, 80 water stressed walnuts were growing around Coyote Creek and ranged in condition from poor (40 trees) to fair (37 trees) (Photo 1). Two of the Coyote Creek California black walnuts (#18 and 137) were standing dead. The remaining ten walnuts (#8-17) were located in between Monterey Road and Caltrain railroad tracks. These walnuts were generally larger and in better condition than those growing around the creek.



**Photo 1** – The Coyote Creek California black walnuts exhibited signs of water stress and canopy dieback.



**Photo 2** – Fremont cottonwoods #54-56 were old, weathered snags with low suitability for retention.

Thirteen (13) Fremont cottonwoods were growing in clumps around Coyote Creek as well. Like the California black walnuts in the area, they exhibited varying degrees of canopy dieback and water stress. Eight (8) were dead standing snags (62% of the cottonwood population, Photo 2), two were in poor condition, two were in fair condition, and a single cottonwood, tree #60, was observed to be in good condition. Trunk diameters ranged from 12-inches to 42-inches and averaged 19-inches. Should these trees be located where damage to people or property is likely, then the majority are poor candidates for retention due to the presence of structural defects.

The remaining nine species comprised 29% of the trees assessed. The most noteworthy of these included

- Three birch trees (trees #1-3) and four crape myrtles (#4-7) were assessed in the landscaped median of Old Monterey Road. The birches had thin canopies and exhibited symptoms of water stress. The crape myrtles were vigorous and shrubby in form.
- Four purpleleaf plums (#79-82) and six crape myrtles (#83-87) were assessed in the paved parking lot of 6321 San Ignacio Avenue. The purpleleaf plums were in poor (1 tree) to fair (3 trees) condition and presented varying degrees of canopy dieback, sunscald, and water stress. The six crape myrtles were in good condition and had full, vigorous crowns.

The City of San Jose protects live and dead trees with trunk diameters of 12-inches or greater measured at 54-inches above ground level (Municipal Code Chapter 13.32). For multi-trunked trees, the trunk diameters were added together. Based on this definition, 71 *Ordinance Sized* trees were included in this assessment. These trees cannot be removed without a permit. Protected status of trees is provided in the **Tree Assessment** exhibit.

### ***Suitability for Preservation***

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health presents a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

Evaluation of suitability for preservation considers several factors:

- **Tree health**  
Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.
- **Structural integrity**  
Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely. For instance, the structural integrity of many of the California black walnuts and Fremont cottonwoods around Coyote Creek was compromised.
- **Species response**  
There is a wide variation in the response of individual species to construction impacts and changes in the environment. For example, California black walnuts are very susceptible to construction impacts while coast live oaks are more tolerant.
- **Tree age and longevity**  
Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees such as the crape myrtles included in this assessment are better able to generate new tissue and respond to change.
- **Species invasiveness**  
Species that spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database <http://www.cal-ipc.org/plants/inventory/> lists species identified as being invasive. San Jose is part of the Central West Floristic Province. Mexican fan palm was the only assessed species listed as invasive. It is considered *moderately* invasive.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (see **Tree Assessment** exhibit). We consider trees with high suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

**Table 2. Tree suitability for preservation  
Hummingbird Energy, San Jose, CA**

<b>High</b>	These are trees with good health and structural stability that have the potential for longevity at the site. Eleven (11) trees considered highly suitable for preservation including all nine crape myrtles and valley oaks #45 and 108.
<b>Moderate</b>	Trees in this category have fair health and/or structural defects that may be abated with treatment. These trees require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Fourteen (14) trees considered moderately suitable for preservation included Fremont cottonwood #60, Mexican fan palms #59 and 67, purpleleaf plums #80-82, coast live oak #109, blue elderberries 140-141, and California black walnuts #139 and 142.
<b>Low</b>	Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. One hundred and eleven (111) trees considered poor candidates for preservation included blue elderberries #75-76, 106-107, 118-119, and Arroyo willows #49, 57, 70, 77, and the majority of the California black walnuts and Fremont cottonwoods around Coyote Creek.

### ***Tree Replacement Requirements***

The City of San Jose requires that trees that are removed be replaced following the ratios shown in Table 4.

**Table 3. City of San Jose Mitigation Requirements  
Hummingbird Energy, San Jose, CA**

Diameter of Tree to be Removed	Type of Tree to be Removed			Minimum Size of Each Replacement Tree
	Native	Non-Native	Orchard	
12-inches or greater	5:1	4:1	3:1	15-gallon container
6 to 11-inches	3:1	2:1	none	15-gallon container
less than 6-inches	1:1	1:1	none	15-gallon container
x:x = tree replacement to tree loss ratio				
<b>Note:</b> Trees greater than 12-inches diameter shall not be removed unless a Tree Removal Permit, or equivalent, has been approved for the removal of such trees.				

### ***Summary***

The project entails work at four distinct locations in San Jose. One hundred and thirty-six (136) trees 6-feet in height and taller were evaluated across the four sites. One site around Coyote Creek is undeveloped with dense tree cover. A second site is a paved parking lot. The two remaining sites are along Monterey Road.

The nine crape myrtles assessed in the Monterey Road median and in the San Ignacio Avenue parking lot were young, vigorous trees with high suitability for preservation.



The three birches and four purpleleaf plums growing in the Monterey Road median and in the San Ignacio Avenue parking lot, respectively, were generally moderately suitable for preservation. The paper and European white birches had thin canopies as a result of water stress. The sun scalded purpleleaf plums also exhibited water stress.

Eighty (80) California black walnuts and 13 Fremont cottonwoods assessed along Coyote Creek were also water stressed and exhibited varying degrees of canopy dieback. This coupled with the two species' poor tolerance of construction impacts makes these trees poorly suited for preservation.

The remaining 17 trees were located at the Coyote Creek site and included 4 Arroyo willows, 8 blue elderberries, 2 Mexican fan palms, 2 valley oaks, and 1 coast live oak. Overall, tree condition varied from good (29%), to fair (47%), to poor/dead (23%) (Table 1, page 2). Four Arroyo willows and six blue elderberries were poorly suited for preservation, two valley oaks were highly suitable, while the remaining Coyote Creek trees were moderately suitable.

In total, 11 trees were highly suitable for preservation, 14 were moderately suitable, and 111 were poorly suited (Table 2, Page 5).

Seventy-one (71) of the 136 assessed trees met the City of San Jose's criteria for Protected *Ordinance Size* status per Municipal Code Chapter 13.32: all trees with a trunk diameter of 12-inches or greater. Protected *Ordinance Size* trees are identified in the **Tree Assessment** (see exhibits).

### **General Tree Preservation Guidelines**

The following recommendations will help reduce impacts to trees from development as well as maintain and improve their health and vitality through the clearing, grading and construction phases. The key elements of a tree preservation would include:

1. Retaining select trees with high or moderate suitability for preservation, including trees around the perimeter of proposed work areas and those along Monterey Road and in the paved parking lot of 6321 San Ignacio Avenue.
2. Establishing **TREE PROTECTION ZONES** for each tree to be preserved. **TREE PROTECTION ZONES** are identified by the Consulting Arborist based on species tolerances, tree condition, trunk diameters, and the nature and proximity of the proposed disturbance.
3. Providing supplemental irrigation prior to and during the demolition and construction phases, especially for any of the birches, California black walnuts, and Fremont cottonwoods identified for preservation.

### **Design recommendations**

1. Any changes to the plans affecting the trees should be reviewed by the Consulting Arborist with regard to tree impacts. These include, but are not limited to, site plans, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans.
2. Plan for tree preservation by designing adequate space around trees to be preserved. This is the **TREE PROTECTION ZONE**: No grading, excavation, construction or storage of materials should occur within that zone. Route underground services including utilities, sub-drains, water or sewer around the **TREE PROTECTION ZONE**.
3. Irrigation systems must be designed so that no trenching severs roots larger than 1" in diameter will occur within the **TREE PROTECTION ZONE**.



4. **Tree Preservation Guidelines** prepared by the Consulting Arborist, which include specifications for tree protection during demolition and construction, should be included on all plans.
5. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
6. Do not lime the subsoil within 50' of any tree identified for preservation. Lime is toxic to tree roots.
7. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.
8. Ensure adequate but not excessive water is supplied to trees; in most cases occasional irrigation will be required. Avoid directing runoff toward trees.

#### **Pre-demolition and pre-construction treatments and recommendations**

1. The demolition and construction superintendents shall meet with the Consulting Arborist before beginning work to review all work procedures, access routes, storage areas, and tree protection measures.
2. Fence all trees to be retained to completely enclose the Tree Protection Zone prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link. Fences are to remain until all grading and construction is completed. The Tree Protection Zones radii are listed in Table 4.
3. Apply and maintain 4-6" wood chip mulch within the **TREE PROTECTION ZONE**. Keep the mulch 2' from the base of tree trunks.
4. Fences are to remain until all grading and construction is completed. Where demolition must occur close to trees, such as removing curb and pavement, install trunk protection devices such as winding silt sock wattling around trunks or stacking hay bales around tree trunks.
5. Prune trees to be preserved to clean the crown of dead branches 1" and larger in diameter, raise canopies as needed for construction activities.
  - a. All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).
  - b. The Consulting Arborist will provide pruning specifications prior to site demolition.
  - c. Branches extending into the work area that can remain following demolition shall be tied back and protected from damage.
  - d. While in the tree the arborist shall perform an aerial inspection to identify any defects, weak branch and trunk attachments and decay not visible from the ground. Any additional work needed to mitigate defects shall be reported to the property owner.
6. Tree(s) to be removed that have branches extending into the canopy of tree(s) or located within the **TREE PROTECTION ZONE** of tree(s) to remain shall be removed by a Certified Arborist or Certified Tree Worker and not by the demolition contractor. The Certified Arborist or Certified Tree Worker shall remove the trees in a manner that causes no damage to the tree(s) and understory to remain. Stumps shall be ground below grade.
7. Trees to be removed shall be felled so as to fall away from **TREE PROTECTION ZONE** and avoid pulling and breaking of roots of trees to remain. If roots are entwined, the

Consulting Arborist may require first severing the major woody root mass before extracting the trees, or grinding the stump below ground.

8. All down brush and trees shall be removed from the **TREE PROTECTION ZONE** either by hand, or with equipment sitting outside the **TREE PROTECTION ZONE**. Extraction shall occur by lifting the material out, not by skidding across the ground. Brush shall be chipped and spread beneath the trees within the **TREE PROTECTION ZONE**
9. Structures and underground features to be removed within the **TREE PROTECTION ZONE** shall use equipment that will minimize damage to trees above and below ground, and operate from outside the **TREE PROTECTION ZONE**. Tie back branches and wrap trunks with protective materials to protect from injury as directed by the Project arborist. The Project arborist shall be on-site during all operations within the **TREE PROTECTION ZONE** to monitor demolition activity.
10. All tree work shall comply with the Migratory Bird Treaty Act as well as California Fish and Wildlife code 3503-3513 to not disturb nesting birds. To the extent feasible tree pruning and removal should be scheduled outside of the breeding season. Breeding bird surveys should be conducted prior to tree work. Qualified biologists should be involved in establishing work buffers for active nests.

#### **Recommendations for tree protection during construction**

1. Any approved grading, construction, demolition or other work within the **TREE PROTECTION ZONE** should be monitored by the Consulting Arborist.
2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.
3. Tree protection devices are to remain until all site work has been completed within the work area. Fences or other protection devices may not be relocated or removed without permission of the Consulting Arborist.
4. Construction trailers, traffic and storage areas must remain outside **TREE PROTECTION ZONE** at all times.
5. Any root pruning required for construction purposes shall receive the prior approval of and be supervised by the Project Arborist. Roots should be cut with a saw to provide a flat and smooth cut. Removal of roots larger than 2" in diameter should be avoided.
6. If roots 2" and greater in diameter are encountered during site work and must be cut to complete the construction, the Project Arborist must be consulted to evaluate effects on the health and stability of the tree and recommend treatment.
7. Prior to grading or trenching, trees may require root pruning outside the **TREE PROTECTION ZONE**. Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Project Arborist.
8. Spoil from trench, footing, utility or other excavation shall not be placed within the **TREE PROTECTION ZONE**, neither temporarily nor permanently.
9. All grading within the dripline of trees shall be done using the smallest equipment possible. The equipment shall operate perpendicular to the tree and operate from outside the **TREE PROTECTION ZONE**. Any modifications must be approved and monitored by the Consulting Arborist.
10. All trees shall be irrigated on a schedule to be determined by the Consulting Arborist (every 3 to 6 weeks is typical). Each irrigation shall wet the soil within the **TREE PROTECTION ZONE** to a depth of 30".
11. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

12. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.
13. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.
14. Trees that accumulate a sufficient quantity of dust on their leaves, limbs and trunk as judged by the Consulting Arborist shall be spray-washed at the direction of the Project Arborist.

#### **Maintenance of impacted trees**

Our procedures included assessing trees for observable defects in structure. This is not to say that trees without significant defects will not fail. Failure of apparently defect-free trees does occur, especially during storm events. Wind forces, for example, can exceed the strength of defect-free wood causing branches and trunks to break. Wind forces coupled with rain can saturate soils, reducing their ability to hold roots, and blow over defect-free trees. Although we cannot predict all failures, identifying those trees with observable defects is a critical component of enhancing public safety.

Furthermore, trees change over time. Our inspections represent the condition of the tree at the time of inspection. As trees age, the likelihood of failure of branches or entire trees increases. Annual tree inspections are recommended to identify changes to tree health and structure. In addition, trees should be inspected after storms of unusual severity to evaluate damage and structural changes. Initiating these inspections is the responsibility of the client and/or tree owner.

Preserved trees will experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, provisions for monitoring both tree health and structural stability following construction must be made a priority.

If you have any questions about my observations or recommendations, please contact me.

**HortScience | Bartlett Consulting**



Jillian Keller  
Certified Arborist #WE-12057A



## Exhibits

---

**Tree Assessment Map 1  
Coyote Creek**

**Tree Assessment Map 2  
Monterey Road and San Ignacio Avenue**

**Tree Assessment**



Tree Assessment Map

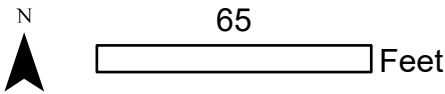
Map 1  
Hummingbird Energy  
San Jose, CA

Prepared for:  
H.T. Harvey & Associates  
July 2019

- Notes:
- 1. Tree locations are collected by HBC on a Geo 7x decimeter GPS.
  - 2. Project area provided by H.T. Harvey.
  - 3. Aerial photo provided by ESRI.

Condition

- Dead
- Fair
- Good
- Poor



325 Ray Street  
Pleasanton, CA 94566  
925-484-0211



# Tree Assessment Map

Map 2  
Hummingbird Energy  
San Jose, CA

Prepared for:  
H.T. Harvey & Associates  
July 2019

- Notes:
- 1. Tree locations are collected by HBC on a Geo 7x decimeter GPS.
  - 2. Project area provided by H.T. Harvey.
  - 3. Aerial photo provided by ESRI.

Legend  
ProjectArea

### Condition

- Fair
- Good
- Poor

N  
120 Feet



325 Ray Street  
Pleasanton, CA 94566  
925-484-0211



# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
1	Paper birch	6	No	Good	Moderate	Median tree; Good form; Irrigation; Minor twig dieback.
2	European white birch	8	No	Good	Moderate	Median tree; Minor twig dieback; Codominant at 6'; Thin canopy; Water stressed.
3	European white birch	6	No	Fair	Moderate	Minor twig dieback; Thin upper crown; Water stressed.
4	Crape myrtle	3,2,2,2,1,1,1,1,1	Protected	Good	High	Multistem median tree with multiple attachments at base; Full vigorous canopy; White flowering; Shrubby.
5	Crape myrtle	2,2,2,2,2,2,1,1,1	Protected	Good	High	Shrub form; Interior dead wood.
6	Crape myrtle	2,1,1,1,1,1,1,1,1	No	Good	High	Pink flowering; Shrubby; Median tree; Multiple attachments at base; Full vigorous crown.
7	Crape myrtle	3,3,2,2,2,1,1,1,1	Protected	Good	High	Shrub form.
8	California black walnut	38	Protected	Fair	Low	In between road and railroad tracks; Codominant at 7'; 3.5' healing wound on east side of trunk; Branch dieback; Deadwood in canopy; Beneath overhead electrical lines.
9	California black walnut	7	No	Good	Low	Overhead utility lines; Swelling on south side of root flare; Growing 2' north of similar tree.
10	California black walnut	6	No	Fair	Low	In between road and railroad tracks; 2' from adjacent walnut; Decaying wound at base on northern side of trunk; Codominant at 13'; Beneath overhead electrical lines.
11	California black walnut	46	Protected	Fair	Low	Codominant at 5'; Guy wires; Buried root flare; Overhead utility lines.
12	California black walnut	45	Protected	Fair	Low	In between road and railroad tracks; Branch dieback; Large deadwood in canopy; Codominant at 7'; 1' decaying wound 7' up on southern side of trunk; Epicormic growth; Topped beneath overhead electrical.
13	California black walnut	33	Protected	Poor	Low	Wound on southern root flare; Epicormic growth; Topped pruning; Buried root flare; Also tagged 415; Overhead utility lines.



# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
14	California black walnut	29	Protected	Fair	Low	In between road and railroad tracks; Branch dieback; Deadwood in canopy; Epicormic growth; Codominant at 7'; Topped beneath overhead electrical; Burrows around base of tree; Walnut sapling volunteers growing nearby.
15	California black walnut	19,16,11	Protected	Fair	Low	Multiple pruning wounds below 6'; Buried root flare; Overhead utility lines.
16	California black walnut	13,13,12,11,11	Protected	Fair	Low	Multiple attachments at 1'; In between road and railroad tracks; Branch dieback; Deadwood in canopy; Topped beneath overhead electrical; Trunk close to guardrail on eastern side of tree; Poor structure; Many codominant stems throughout canopy.
17	California black walnut	37	Protected	Fair	Low	Overhead utility lines; Buried root flare; 3' from utility pole; Epicormics from basal mass (north side); Dead wood in canopy.
18	California black walnut	16	Protected	Dead	Low	Adjacent to creek; Dead standing; Pink flagging on trunk; Orange lichen on branches.
19	California black walnut	13,9,8	Protected	Poor	Low	Thin canopy; Branch dieback and deadwood in canopy; Multiple attachments at base; Woody debris against trunk; Codominant at 1'.
20	California black walnut	20,9	Protected	Poor	Low	Significant dieback on larger stem; Codominant at 1'; Poor structure; Water stressed; Live sprouts at base.
21	California black walnut	4	No	Poor	Low	Significant branch dieback; Water stressed; Main trunk dieback.
22	California black walnut	4	No	Poor	Low	Thin canopy and branch dieback; Water stressed; Codominant at 6'.
23	California black walnut	4	No	Poor	Low	Thin canopy and branch dieback; Water stressed; Codominant at 5'.
24	California black walnut	4	No	Poor	Low	Thin canopy and branch dieback; Water stressed.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
25	California black walnut	5	No	Poor	Low	Thin canopy and branch dieback; Water stressed; Main trunk dieback.
26	California black walnut	5	No	Poor	Low	Thin canopy and branch dieback; Water stressed; Main trunk dieback; Dead hanging branches.
27	California black walnut	5	No	Poor	Low	Very little live foliage; Significant branch dieback; Adjacent dead tree present in canopy.
28	Fremont cottonwood	12,11	Protected	Dead	Low	Main trunk laying on ground; 2 upright dead stems grew vertically from main trunk; Dead standing, No live foliage.
29	California black walnut	8,7,5	Protected	Fair	Low	Tip and branch dieback; Codominant at 3.5'; Water stressed; Basal swelling; Leaning slightly west.
30	California black walnut	3	No	Poor	Low	Significant branch and main trunk dieback; Only the bottom half of canopy is alive; Water stressed.
31	California black walnut	11	No	Fair	Low	Moderate branch dieback; Codominant 7'; Water stressed.
32	California black walnut	5	No	Fair	Low	Moderate branch and main trunk dieback; Leaning away from #31; Water stressed.
33	California black walnut	7	No	Fair	Low	Moderate branch dieback; Moderate trunk decay; Codominant at 10'; Downhill from path; Water stressed.
34	California black walnut	8	No	Fair	Low	Moderate branch and main trunk dieback; Downhill from path; Water stressed.
35	California black walnut	8	No	Fair	Low	Moderate branch dieback; Moderate trunk decay; Downhill from path; Codominant at 5'; Water stressed.
36	California black walnut	5	No	Fair	Low	Moderate branch and main trunk dieback; Downhill from path; Leaning away from #35; Water stressed.
37	California black walnut	28,14	Protected	Poor	Low	Half of canopy is dead; Large dead branches leaning against trunk; Significant deadwood in canopy; Water stressed; Codominant at 6.5'; Adjacent to path.
38	California black walnut	12,8	Protected	Fair	Low	Moderate branch dieback and deadwood in canopy; Water stressed; Codominant at 2'; Adjacent to path.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
39	California black walnut	4	No	Fair	Low	Moderate branch dieback; Moderate trunk decay; Deadwood in canopy; Water stressed.
40	California black walnut	6,5	No	Fair	Low	Moderate branch and main trunk dieback; Deadwood in canopy; Water stressed; Codominant at 3' and 6'.
41	California black walnut	40	Protected	Fair	Low	Moderate branch dieback; Moderate trunk decay; Deadwood in canopy; Water stressed; Codominant with 3 stems at 4'; Poor structure with multiple narrow branch attachments; Woody debris against trunk.
42	California black walnut	8,8	Protected	Poor	Low	Significant branch and main trunk dieback; Only the bottom half of the canopy is live; Downhill from path; Codominant with narrow angle of attachment at 3'.
43	California black walnut	5	No	Fair	Low	Moderate branch dieback; Moderate trunk decay; Downhill from path; Water stressed; Leaning away from #42.
44	California black walnut	6	No	Fair	Low	Moderate main trunk dieback; Adjacent to path; Suppressed and water stressed.
45	Valley oak	24	Protected	Good	High	Minor twig dieback; Full vigorous canopy; Codominant large stems with seam at 16'.
46	California black walnut	2	No	Fair	Low	Volunteer with cracked main trunk; Suppressed; Water stressed.
47	California black walnut	3	No	Fair	Low	Sapling volunteer; Moderate branch dieback.
48	California black walnut	4,4,3	No	Poor	Low	Significant branch and main trunk dieback; Some live sprouts at base; A dead tree is leaning over this tree; epicormic sprouts.
49	Arroyo willow	9	No	Fair	Low	Large trunk of adjacent walnut is resting on willow branch crotch; Tall with low live crown ratio.
50	California black walnut	7	No	Poor	Low	Top half of canopy is dead; Live sprouts; Water stressed.
51	California black walnut	20,19,16	Protected	Fair	Low	Moderate twig and branch dieback; Large codominant stems at 3'.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
52	California black walnut	13,8,8	Protected	Fair	Low	Upright stems growing off of fallen trunk; Adjacent to woody debris pile; 13' long stem lying on ground; 8" stems have full vigorous canopies.
53	Fremont cottonwood	16	Protected	Dead	Low	Old tall snag; No lateral branches; Several dead and dried stems resting against trunk.
54	Fremont cottonwood	16	Protected	Dead	Low	Old, 6' tall standing snag; No lateral branches; Several dead and dried stems resting against trunk.
55	Fremont cottonwood	19	Protected	Dead	Low	Old, 15' tall standing snag; No lateral branches; Several dead and dried stems resting against trunk.
56	Fremont cottonwood	17	Protected	Dead	Low	Old, tall standing snag; No lateral branches; Several dead and dried stems resting against trunk; Bark sloughing off.
57	Arroyo willow	16	Protected	Fair	Low	Several large stems against trunk; Leaning east away from #56; Asymmetric vigorous crown.
58	Fremont cottonwood	18	Protected	Poor	Low	Dead standing snag; Several large trunks leaning against it; Bark is sloughing off; Large dead stem is resting in branch crotch at the top of the tree.
59	Mexican fan palm	18	Protected	Good	Moderate	5' of bare trunk; Adjacent to creek.
60	Fremont cottonwood	16	Protected	Good	Moderate	Part of cottonwood grouping; Full vigorous crown; Adjacent to creek; Many dead and dried branches resting against trunk.
61	Fremont cottonwood	20	Protected	Dead	Low	Part of cottonwood grouping; Dead standing with lateral branches still attached; Bark sloughing off.
62	Fremont cottonwood	18,12	Protected	Poor	Low	Part of cottonwood grouping; Many dead and dried branches resting against trunk; 12" stem has decay column on south side; Full vigorous crown.
63	Fremont cottonwood	18	Protected	Dead	Low	Part of cottonwood grouping; Dead standing snag; Bark sloughing off.
64	Fremont cottonwood	12	Protected	Fair	Low	Part of cottonwood grouping; Full vigorous crown; Previously lost central leader; structural defects.
65	Fremont cottonwood	18	Protected	Dead	Low	Part of cottonwood grouping; Dead standing; Bark sloughing off; Lateral branches still attached.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
66	California black walnut	1	No	Good	Low	Small volunteer adjacent to cottonwood grouping; tag is zip-tied to tree.
67	Mexican fan palm	16	Protected	Good	Moderate	2' of bare brown trunk.
68	Fremont cottonwood	42	Protected	Fair	Low	Moderate branch and twig dieback; Codominant stems at 20'; Deadwood in canopy; Cracks along branches and visible decay; Appears to be an off-site tree.
69	California black walnut	4	No	Fair	Low	Moderate branch and twig dieback; Codominant stems at 1'; Deadwood in canopy; Water stressed; Main trunk leaning east.
70	Arroyo willow	14,13,12,9,9,7	No	Dead	Low	Dead standing willow with multiple trunks; Lateral branches still attached; Branches cracking and bark sloughing off.
71	California black walnut	19	Protected	Poor	Low	Live sprouts at base; Dead canopy; Lateral branches still attached.
72	California black walnut	5	No	Poor	Low	Live sprouts at base; Top half and main trunk of tree are dead; Water stressed.
73	California black walnut	12	Protected	Poor	Low	Live sprouts at base; Canopy of tree is dead; Water stressed.
74	California black walnut	11	No	Poor	Low	Codominant at 14'; Significant branch and main trunk dieback.
75	Blue elderberry	5,4,2,2	Protected	Fair	Low	Shrubby volunteer along path; Multiple attachments at base.
76	Blue elderberry	10,10,6,3	Protected	Fair	Low	Shrubby volunteer along path; Multiple attachments at base; decay at base.
77	Arroyo willow	6	No	Fair	Low	6" main trunk is lying on ground; Many small stems growing vertical off of main stem.
78	California black walnut	65	Protected	Poor	Low	No tag and inaccessible; Bee hive in large lateral branch; Approximately 20' from path; 3/4 of canopy is dead; Live sprouts at base; May be an off-site tree; Base is not visible; Deadwood in canopy; Cracked and splitting branches.
79	Purpleleaf plum	5	No	Poor	Low	Fruiting tree in parking lot planter; sun burnt bark on west side of trunk; bark sloughing off; codominant at 6.5'; slight lean east; internal decay; twig dieback.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
80	Purpleleaf plum	6	No	Fair	Moderate	Fruiting tree in parking lot planter; Multiple attachments at 6.5'; Slight lean south, Minor twig dieback.
81	Purpleleaf plum	11	No	Fair	Moderate	Multiple attachments at 4'; Moderate twig dieback; Water stressed.
82	Purpleleaf plum	5,5,4,4,3,3	Yes	Fair	Moderate	Multiple attachments at 2.5'; Bark damage on western side of trunk; Tree in parking lot planter, Minor twig dieback; Water stressed.
83	Crape myrtle	2	No	Good	High	In parking lot planter; Young and vigorous; White flowering; planted too high ; Codominant at 5'.
84	Crape myrtle	2	No	Good	High	In parking lot planter; Young and vigorous; White flowering; Codominant at 5'; Good form and structure; Zip tied tag.
85	Crape myrtle	2	No	Good	High	In parking lot planter; Young and vigorous; White flowering; Codominant at 5'; Good form and structure; Zip tied tag.
86	Crape myrtle	2	No	Good	High	In parking lot planter; Young and vigorous; White flowering; Codominant at 5'; Good form and structure; Zip tied tag; Compartmentalizing damage at base on south aide of trunk.
87	Crape myrtle	2	No	Good	High	In parking lot planter; Young and vigorous; White flowering; Codominant at 5'; Good form and structure; Zip tied tag.
101	California black walnut	48	Protected	Poor	Low	Creek side; Only epicormic sprouts alive.
102	California black walnut	14	Protected	Poor	Low	Grouped with 103 and 104; Epicormic sprouts only alive.
103	California black walnut	16	Protected	Poor	Low	Only epicormic root sprouts alive.
104	California black walnut	15	Protected	Poor	Low	Only epicormic root sprouts alive.
105	California black walnut	10	No	Fair	Low	Leaning to west.
106	Blue elderberry	9,9,9,7,4,4	Protected	Poor	Low	Significant deadwood on lower canopy.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
107	Blue elderberry	9,9,6,4	Protected	Poor	Low	Significant decay in trunks.
108	Valley oak	26	Protected	Good	High	Upright form; Overhead utility lines; On fence line.
109	Coast live oak	20,14	Protected	Good	Moderate	Most of canopy over Right-of-Way; Overhead utility lines; Codominant at 1'.
110	California black walnut	26	Protected	Poor	Low	Only epicormic sprouts alive; Near creek bank.
111	California black walnut	10	No	Fair	Low	Leaning east; On eroding river bank.
112	California black walnut	14	Protected	Poor	Low	On river bank; Deadwood in upper canopy.
113	California black walnut	21	Protected	Poor	Low	Only epicormic sprouts alive.
114	California black walnut	5	No	Poor	Low	Top dead; 10 foot tall; Substantial dead stems at base.
115	California black walnut	12	Protected	Fair	Low	Upright canopy; Bifurcates at 6 feet.
116	California black walnut	6	No	Poor	Low	Top is dead; On creek bank.
117	California black walnut	16	Protected	Fair	Low	Upright canopy; Overextended branches.
118	Blue elderberry	3,2,1,1	No	Poor	Low	All canopy leaning west; Basal decay.
119	Blue elderberry	3,3,2,1,1	No	Fair	Low	Eastern portion dead; Western portion growing upright.
120	California black walnut	15,12,12,10	Protected	Poor	Low	Fence line; Overhead utility lines; Only epicormic sprouts alive.
121	California black walnut	18,16,14,14,12,12,10	Protected	Fair	Low	Overhead utility lines; Most of canopy growing towards or over the Right-of-Way.
122	California black walnut	11	No	Fair	Low	Canopy growing west; Overextended branches; Overhead utility lines.



# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
123	California black walnut	9,7	Protected	Fair	Low	Upright canopy; Bifurcates at 3 feet.
124	California black walnut	7	No	Poor	Low	Top dead; Inferior branching.
125	California black walnut	6	No	Poor	Low	Top dead; Inferior branching; 8 feet south of tree #124.
126	California black walnut	3	No	Poor	Low	Top dead; Only lower branches alive.
127	California black walnut	7,4	No	Poor	Low	Decaying branch at bifurcation (3 feet above grade); Overextended branch to east.
128	California black walnut	40	Protected	Poor	Low	Creek bank; Only live part is lower canopy sprouts.
129	California black walnut	7	No	Poor	Low	Leaning towards north; Tip dieback; Creek bank.
130	California black walnut	6	No	Poor	Low	Codominant at 4 feet; Top dead; Creek bank.
131	California black walnut	6,6	Protected	Poor	Low	Leaning towards south; Tip dieback; Partially failed; Creek bank.
132	California black walnut	6	No	Poor	Low	Leaning west; Tip dieback; Growing under other canopies.
133	California black walnut	17,14,12,12,10,10,9	Protected	Fair	Low	Overhead utility lines; Most of canopy growing towards or over the Right-of-Way; Tip dieback; Fence line.
134	California black walnut	3	No	Fair	Low	Codominant at 5 feet; South side dead.
135	California black walnut	6	No	Fair	Moderate	Creek bank; Overextended branches.
136	California black walnut	3	No	Fair	Low	Main stem broke at 3 feet; Creek bank; Near steep drop off.
137	California black walnut	7,5	Protected	Dead	-	Leaning towards west; Trunk In creek.

# Tree Assessment

Hummingbird Energy  
San Jose, CA  
7/30/2019



Tree No.	Species	Trunk Diameter (in.)	Protected Tree?	Condition	Suitability for Preservation	Comments
138	California black walnut	8,8	Protected	Poor	Low	Leaning towards west; Codominant trunk in creek.
139	California black walnut	10	No	Fair	Moderate	Leaning towards west; Tip dieback; Creek bank.
140	Blue elderberry	12,10,7,5,3,3,3	Protected	Fair	Moderate	Fence line; Western canopy pruned by vehicles; Epicormic sprouts at base; Dense canopy.
141	Blue elderberry	13,9,6,5,3,3	Protected	Fair	Moderate	Fence line; Western canopy pruned by vehicles; Dense canopy.
142	California black walnut	18	Protected	Fair	Moderate	Upright canopy; Abuts Right-of-Way; Overhead utility lines.
143	California black walnut	7	No	Fair	Low	Leaning towards road.
144	California black walnut	7	No	Poor	Low	Leaning towards road; Topped at 8 feet.
145	California black walnut	8,8	Protected	Fair	Low	Codominant at base; Dead wood in canopy; Leaning towards road.
146	California black walnut	7	No	Fair	Low	Leaning west towards road; One sided canopy due to close proximity to tree #147.
147	California black walnut	8,7	Protected	Fair	Low	Codominant at base; Dead wood in canopy; Leaning towards road.
148	California black walnut	12,8	Protected	Fair	Low	Codominant at base; 4' decay at base; Deadwood in canopy; Leaning towards road; Fence line.
149	California black walnut	2,2,2	No	Fair	Low	Fence line; One lateral growing toward Right-of-Way.



# MEMORANDUM

**DAVID J. POWERS & ASSOCIATES, INC.**

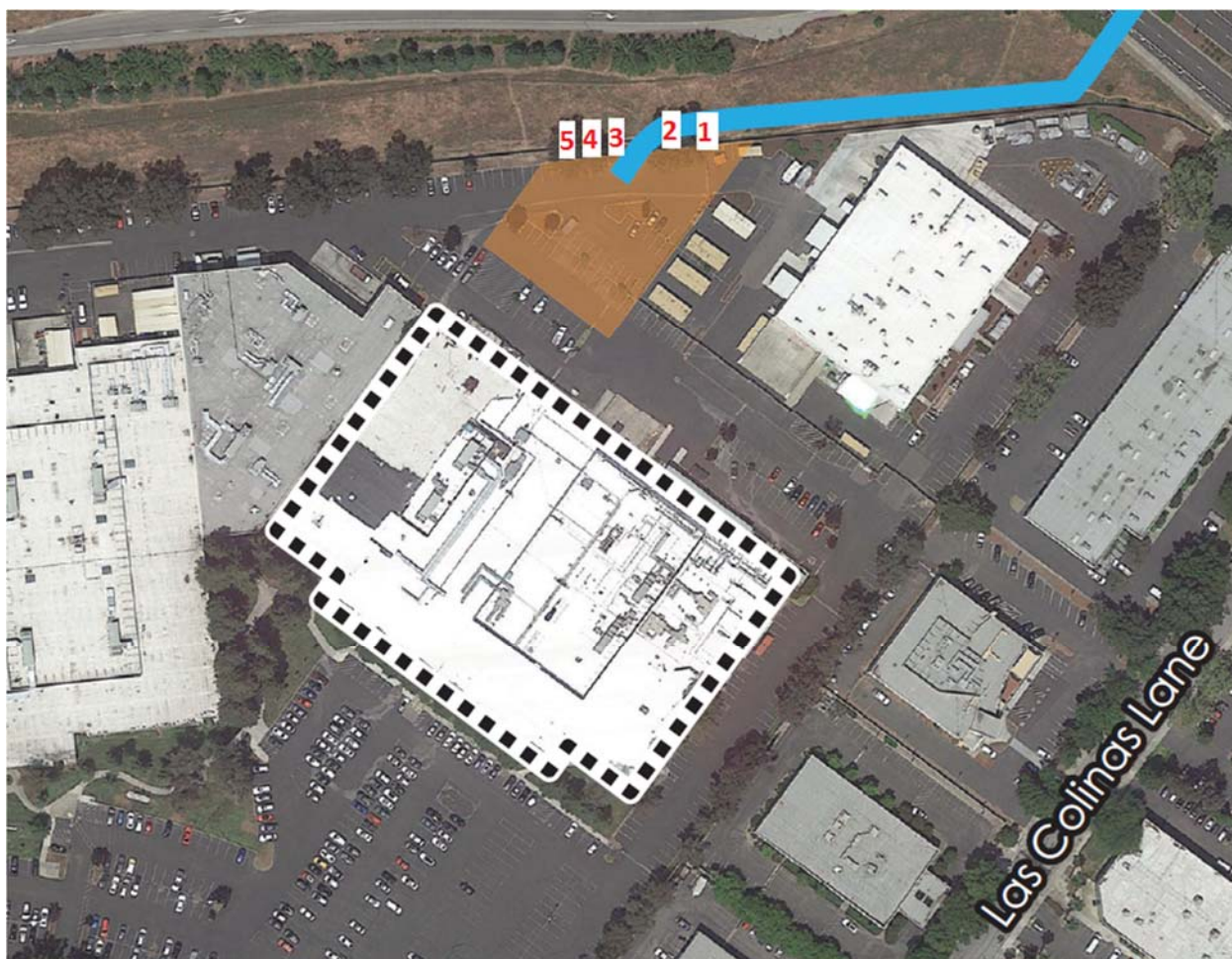
1871 The Alameda • Suite 200 • San José, CA 95126  
Tel: 408-248-3500 • Fax: 408-248-9641 • [www.davidjpowers.com](http://www.davidjpowers.com)

**Date:** August 8, 2019

**Re: Additional Tree Measurements for Hummingbird Energy Storage Project**

---

DJP&A visited the Hummingbird Energy Storage Project site on August 7, 2019 to measure five additional trees. The location of the trees are shown below.



David J. Powers & Associates, Inc. is a Certified Green Business • Please Recycle

The five trees are located along the northern edge of the proposed substation. Table 1 below shows the measured tree diameter for each of the five trees, all of which are Red Ironbark (*Eucalyptus sideroxylon*).

Table 1: Surveyed Tree Diameter	
Tree Number	Diameter at 48 inches
1	25.5
2	27.1
3	15.3
4	17.5
5	35.3