

Urban Forest Master Plan

Johnson Ranch Community Owner's Association

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JOHNSON RANCH™

A guide to trees, their management and community priorities within the Johnson Ranch Community Owner's Association.

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Johnson Ranch Community Owner's Association Urban Forest Master Plan

Summary

There are over 1500 trees in the urban forest within Johnson Ranch Community Owner's Association's landscape corridors. In order to become more knowledgeable about their forest and its maintenance needs the Board commissioned a tree inventory and study of all the trees the JRCOA was responsible for.

The study found the most pressing issue facing the urban forest was overwatering which had contributed to severe soil compaction, surface rooting, high incidence of expressed fungus and general tree stress. The JRCOA has committed to reduce overall landscape watering.

There were four other significant issues within the urban forest at JRCOA: infrastructure conflict management, species diversity, stocking density and routine maintenance. More than half of the trees (54%) at JRCOA are too close to adjacent infrastructure, making them likely to cause conflicts. The most likely conflicts (74% of potential conflicts) are sidewalk lifting/raising/buckling due to tree roots and fence lifting/raising/buckling due to tree roots. Within the plan there are decision trees and remedial conflict management strategies as well as new species recommendations and siting guidelines to help reduce infrastructure conflict going forward.

From an urban forest management perspective species diversity helps contain costs and prevents potential deforestation if a pest or disease sweeps through a given tree species in a given region. Generally it is preferred to keep each species within a forest represented at < 10%. More than 30% of the existing urban forest at JRCOA is comprised of redwood trees. JRCOA is strongly urged to begin a selective removal and replacement program of approximately 75% of their redwood trees over the next 10 years to bring numbers down to commonly accepted representation levels.

JRCOA is committed to gradually reducing overall stocking density with the following priorities:

1. Remove trees identified in the inventory as having serious structural (non-emergent) deficits.
2. In the second pruning cycle begin thinning the stand by geography first, then species (starting with redwoods identified as having the greatest infrastructure conflict potential.)

Stocking density refers to the number of trees planted divided by the number of available planting spaces. JRCOA currently has a 97% stocking density. By contrast other high end residential settings with managed forests consider a stocking density of 70 – 80% to be “well treed” or “high density.” When stocking density is this high it is generally more expensive to maintain the forest and individual trees are more likely to underperform. JRCOA will gradually reach a goal of an 80% stocking density.

Routine maintenance of the urban forest at JRCOA is another pressing issue. Early maintenance in the forest was of high quality. In the last decade maintenance has not been to the same high standard. JRCOA has adopted specifications for a maintenance program more in line with the early high standard in order to preserve the health and safety of their urban forest asset.

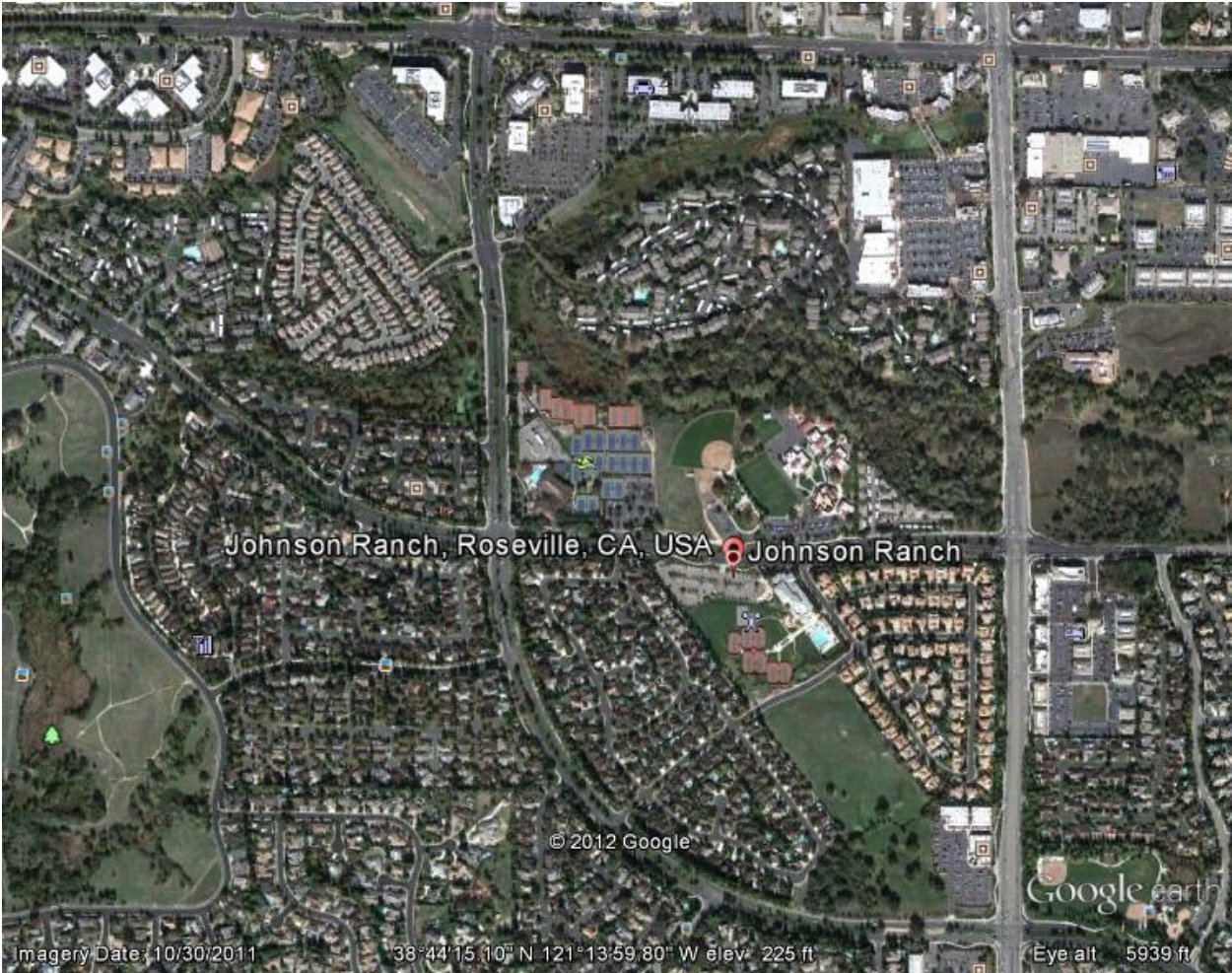
History

Johnson Ranch was developed on the former Johnson Sheep Ranch.

“William Johnson, born in the former Mormon Island mining camp now deep under the waters of Folsom Lake, purchased his first piece of Roseville area property in 1905 on which he raised sheep, and by 1918, Johnson Ranch had grown to 2,000 acres. Additional land was purchased in 1927 and the final parcel, the former Brown Ranch, was purchased in 1941. Each year in late October and early November until 1961, Johnson would drive the sheep along Rocky Ridge Road (now Douglas Boulevard) through town and on to the Natomas Basin in Sacramento County for grazing. Johnson continued to raise sheep on his vast ranch until his death when son Clifton assumed full control of the family operation. The family still holds an agreement granted by the City of Roseville to run livestock through the city although they no longer raise sheep. Today, modern office buildings occupy pastures where Johnson’s sheep once grazed. Their last 40 acres were sold in the mid-1980s and today, Johnson Ranch housing developments occupy land once owned by this early day ranching family.”

Excerpted from http://www.roseville.ca.us/visit_roseville/history_of_roseville/1980s.asp

Johnson Ranch Community Owner's Association Map



Notable Trees

There are two notable tree(s) within the Johnson Ranch Community Owner's Association. These trees help define Johnson Ranch as a whole and provide the lion's share of benefit to the Johnson Ranch Community Owner's Association. Both of these trees qualify as "heritage trees" and are therefore entitled to extra legal protection. These trees are also both old enough to be considered "witness" trees; or trees that have stood and witnessed the changes in the area over time. Communities generally hold these trees in very high esteem and are generally willing to allocate greater resources for their protection and preservation.

The Stud Oak of Roseville

The Stud Oak of Roseville is located in a tree preservation area off of Sierra College Blvd. and East Roseville Pkwy. This tree was mature at the time of development. Although it would be impossible to determine the exact age of the tree without invasive coring that would damage the tree we can make an educated guess (based on current size, growth habits of the species and similar trees in the area) of around 200 years. That puts this tree about 2/3 of the way through its natural lifecycle.

Special measures were taken during and after construction to preserve this remarkable tree. The original plans called for removing the tree but Roger Poulson (the arborist completing the initial pre-development arborist report) strongly believed that this individual should be preserved, "if for no other reason than keeping this tree in the gene pool." Bob Coker then replied "Ok, so we've got the stud oak for all of Roseville on our hands." Thus the tree was named "The Stud Oak of Roseville."

The post development maintenance on the tree has been good with an aeration system, no supplemental irrigation and routine maintenance that has been performed within industry standards. Continuing the same care system will allow the tree to remain safely in the landscape for the foreseeable future.

Blue Oak Grove – unnamed

The second group of notable trees within the Johnson Ranch Community Owner's Association is the Blue Oak Grove on Eureka Rd. near Sierra College Boulevard. The approximate age of the trees in this stand ranges from 40 – 100 years.

These trees were originally located in what is now Johnson Ranch East and were transplanted during development to their current location. Near the end of development there was an adjustment to the location of East Roseville Parkway that resulted in substantial root pruning on these trees.

The post development maintenance on these trees has also been good and included a supplemental summer irrigation regime that has helped the trees perform over time. These trees are prone to a common fungal disorder (*Tubakia dryina*, previously *Actinopelte sp.*) which is largely a cosmetic problem

causing defoliation late in the summer. Continuing the same care system will allow the trees to remain safely for the foreseeable future.

Urban Forest Priorities

Through an iterative process over the course of a year, the board of the Johnson Ranch Community Owner's Association identified the following priorities for their Urban Forest:

1. **safety of the forest** (trees behave in a routinely predictable manner with few branches or trees failing during the course of usual weather and maintenance events.)
2. **compliance with city regulations** (trees are pruned and managed within the City of Roseville ordinance)
3. **good neighbor actions within the forest** (this priority includes managing conflicts wherein a community tree has or will damage property not belonging to the association and building clearance pruning as well as mistletoe abatement)
4. **appearance of the forest** (trees appear healthy and attractive)
5. **health of the forest** (insect pests and diseases are monitored as they present and are treated as necessary)
6. **sustainability of the forest** (maintaining a consistent stocking density for a sustainable benefit level)
7. **preservation of notable trees** in the forest (including the Stud Oak and Blue Oak Grove)
8. **benefit : maintenance cost ratio** (the cost of care for an individual tree versus the benefit it provides which will include the potential for a tree to damage property belonging to or maintained by the association such as a sidewalk)
9. **density of the forest** (how many trees there are versus how many trees there could be)
10. **value of the forest** (how much the forest contributes to overall property value)

All actions taken within the Johnson Ranch Community Owner's Association should reflect these values.

Johnson Ranch Community Owner's Association Work Plan

Task	Value Addressed	Issue Addressed	Timeframe	Feedback Questions
Institute Pro-active maintenance cycle	Safety, Good neighbor actions, compliance with city regulations	Routine maintenance	2 three year cycles followed by feedback event with potential for longer cycles in the future	Is the forest safer? Are there fewer branches/trees down after routine storm events? Are there whole tree failures?
Reduce water	Health, Appearance & Value	Routine maintenance	In the first pruning cycle all remaining sprinkler heads will be replaced by the landscape contractor with smart heads to reduce overall water use.	Have all water systems been replaced with smart heads? Is overall water usage down, reflected with lower water bills? Are there still areas where the soil is compacted and saturated due to overwatering?
Reduce Infrastructure Conflicts	Safety, good neighbor actions, compliance with city regulations. Appearance	Infrastructure conflicts	In the second pruning cycle (year 4 from plan adoption) begin culling trees identified as most likely to conflict with adjacent infrastructure	Are reports of sidewalk lifting handled using the process chart? Are selective removals resulting in fewer conflicts reported where removals have been adjacent to infrastructure?

Task	Value Addressed	Issue Addressed	Timeframe	Feedback Questions
Reduce overall stocking density to 80%	Safety & Health, sustainability, density	Stocking density, infrastructure conflicts, species diversity	In the first pruning cycle: remove trees identified in the inventory as having serious structural (non-emergent) deficits. In the second pruning cycle: begin the stand thinning process by geography first, then species (starting with redwoods identified as having the greatest infrastructure conflict potential, and as the species most over-represented in the forest).	Are there fewer trees? Are there fewer redwoods?
Add mulch rings, increase size of weed-abated rings around trees	Safety, Health & Appearance	Routine maintenance	Ongoing: where trees are damaged by lawn mowers or string trimmers rings will be increased with herbicide or by adding mulch	Are there still/new lawn mower/string trimmer wounds at the bases of trees?
Tree Monitoring	Safety, Health & Appearance	Routine maintenance	Ongoing: where redwood, cedar and sycamore trees are identified as having low lying fungal infections the progression of the infection will be monitored to determine if intervention is necessary. Where crape myrtle are underperforming due to stem girdling roots the landscape contractor will continue to monitor them until they are removed or fail. Where Japanese Black Pine are identified, monitor for possible beetle infestation. Where Chinese Pistache are identified monitor for development of possible fungal infection via dead limbs in the canopy.	Are fungal infections progressing? Does the forest have an acceptable appearance?
Institute a Plant Health Care Program: Merit	Health & Appearance	Routine maintenance	Ongoing: reduce overall use of Merit in the forest by phasing species or individual trees out and monitoring for acceptable appearance.	Are there reports of insect infestations in the forest? Are trees dripping?

Task	Value Addressed	Issue Addressed	Timeframe	Feedback Questions
Institute a Plant Health Care Program: Anthracnose	Health & Appearance	Routine maintenance	In the first pruning cycle, JRCOA will use fungicides to manage anthracnose as necessary on sycamores. Re-evaluate for efficacy v. cost in year 4.	Are trees defoliating out of season? Is there less leaf litter clean up throughout the year? Are there fewer small branches being shed?
Let less desirable species age out of the forest	Health, density Appearance & Value	Routine maintenance	Ongoing: some species are identified as contributing little to the overall value of the forest. These species will be pruned for safety until such time as they age out of the forest and be replaced, where appropriate, with more valuable species. Species slated for aging out: Purple leaf plum, camphor, callery pear & evergreen pear.	Do purple leaf plum, camphor, callery pear & evergreen pear still represent a combined 5% of the forest?
Invasive species eradication	Value, density	Routine maintenance	Ongoing: where privet, sapium and other invasive species are spotted they will be removed expediently.	Are invasive species present in the forest?

Species level recommendations

Each species present in the Johnson Ranch Community Owner's Association is discussed broadly.

Species represented at more than 4% of the total forest:

Red maple (*Acer rubrum*):

The red maples represent the third generation forest (species that were not there either prior to development, and were not installed during the initial development landscaping). There are 82 individuals representing 5% of the total forest. The red maples are all small juvenile trees (all <11 inches in diameter). Red maples are primarily sited in turf environments. 77% of the red maples have poor-> fair structure and fair health. One routine pruning cycle will resolve most of the pressing structural deficits in the red maples.

The most frequently noted problems with red maples were: co-dominant stems (> 35% of trees affected), stem girdling roots (> 20% of trees affected), mower damage (> 13 % of trees affected) and overwatering (> 10% of trees affected). Co-dominant stems will be addressed as part of the routine structural pruning program. Stem girdling roots are the result of poor quality nursery stock being installed and installation that did not include thorough root pruning. Trees that already have stem girdling roots fall into two categories: correctable with root pruning and uncorrectable. Where stem girdling roots are correctable it may make more sense to remove and replace the trees than to pay for the remediation. Mower damage occurs when lawn mowers routinely abrade surface roots. The best way to address roots already damaged by mowers where there is light pedestrian traffic is to remove the turf and replace it with a wider tree mulch ring. The mulch ring prevents the need for mowers in the area, levels the grade to prevent trip and fall hazards and gradually improves the soil condition over time. Where heavier pedestrian traffic is anticipated or where turf cannot be replaced with mulch it may make more sense to prune out surface roots. Root pruning should be undertaken or supervised by a professional knowledgeable about tree structure and experienced in this area of practice.

Conflict data:

12 individual trees are outside the accepted infrastructure conflict guidelines, representing 15% of red maples and < 2% of the total forest.

Deodar cedar (*Cedrus deodara*):

The deodar cedars represent 69 individuals or about 4 % of the total forest. Cedars are sited primarily in landscaped planter beds. 51% of the cedars have fair structure and poor -> fair health. 41% of the cedars have fair structure and fair health. The largest problem affecting the cedars (> 50% affected) is a potential fungal infection with *Diplodia sp.* or *Botryosphaeria sp.* Both groups of fungi have increased in the region over the past two years with a combination of mild, wet weather and landscape overwatering. The only way to determine which specific fungi are affecting the trees is to perform

pathogen assays. The commonly accepted threshold for managing fungal diseases in trees is 25%. The trees hover at the treatment threshold. Instead of embarking on a regimen of testing and application of fungicides the most reasonable thing to do is to reduce the water to the cedars and wait. The cedars are juvenile trees and should have the resources to manage the infection themselves if overall environmental stress is reduced. Re-examine these trees annually to monitor the progression of the infection until such time that < 10% of the population is manifesting symptoms (sparse foliage and sunken bark areas). If the weather continues to be mild and wet the level of infection may result in an unacceptable plant appearance. When and if that occurs there are treatment options available.

Cedars are exceptionally large trees with a 90 ft. spread at maturity. Several of the deodar cedars are located in groves and rows of redwoods, and spaced similarly. Standard guidelines for deodar cedars would call for 45 feet between individual trees. Spacing at JRCOA varies between 10 and 30 ft. This spacing will ultimately require selective removal of many of the cedars at JRCOA.

Conflict data:

55 individual trees are outside the accepted infrastructure conflict guidelines, representing 80% of deodar cedars and 6% of the total forest.

Chinese hackberry (*Celtis sinensis*)

The hackberries represent 87 individuals, or about 5% of the total forest. 53% of the trees have poor -> fair structure and fair health. 31% have fair structure and poor-> fair health. The majority of hackberries are planted in landscape planter beds.

The biggest problem (89% of trees affected) facing the hackberries is co-dominant stems with included bark. This problem is also leading to a greater than average quantity of dead limbs in the canopy. The majority of these problems may be resolved in one routine pruning event.

The hackberries are currently being treated annually for aphid management with an annual soil injection of imidacloprid, marketed as Merit. This injection is applied by the landscape contractor each winter. Even with the injection, individual trees are showing some small aphid infestation throughout the property. This is not a problem that will be resolved but must be managed for the remainder of the life of the plant. The plant health care required for these trees makes them among the most expensive to maintain for the community.

Conflict data:

57 individual trees are outside the accepted infrastructure conflict guidelines, representing 77% of Chinese hackberries and 7% of the total forest.

Crape myrtle (*Lagerstroemia indica*)

There are 79 individual crape myrtles, representing about 5% of the total forest. The condition of the crape myrtles is evenly distributed. The biggest issues affecting the crape myrtles are powdery mildew (98% of trees affected) and stem girdling roots (51% of trees affected). The majority of crape myrtle trees are planted in landscape planter beds near entrance signs to each subdivision.

Powdery mildew is a fungal disorder common on crape myrtle and sycamore trees. It thrives in conditions with overwatering and overplanting, both abundant at JRCOA. Trees that already have stem girdling roots fall into two categories: correctable with root pruning and uncorrectable. Where stem girdling roots are correctable it may make more sense to remove and replace the trees than to pay for the remediation. Stem girdling roots may make trees more susceptible to powdery mildew. The large population of untreated sycamore trees nearby will definitely contribute to the extent of powdery mildew expressed in crape myrtles.

It would be possible to treat the powdery mildew annually with foliar fungicides at bud-break (usually in mid-March in our area). Reducing environmental stress like overplanting and overwatering, combined with routine pruning may alleviate some of the powdery mildew in the crape myrtles.

It may also make more sense not to treat the crape myrtles at all, understanding that they will continue to have powdery mildew and eventually fall over from stem girdling roots. It is unlikely that any of the crape myrtles with stem girdling roots will reach a size sufficient to cause damage to persons or property other than the entrance signs into each individual subdivision.

Conflict data:

35 individual trees are outside the accepted infrastructure conflict guidelines, representing 47% of crape myrtles and 4% of the total forest.

Liquidambar tree (*Liquidambar styraciflua*)

There are 67 individual liquidambar trees, representing 4% of the total forest. 57% of the trees have poor -> fair structure and fair health. 35% of the trees have fair health and structure. The majority of liquidambar trees are planted in landscape planter beds.

The biggest problems affecting the liquidambar trees are co-dominant stems and included bark (64%). This problem can be largely resolved in a single routine pruning cycle. Also of note the majority of liquidambar trees (70%) are noted to have a greater than average quantity of dead limbs in the canopy. There are several causes associated with dead limbs; the most likely include the co-dominant stems, low level fungal infection and the weather (late freeze and frost cycles). The majority of the dead limbs will be removed in one routine pruning cycle.

Conflict data:

25 individual trees are outside the accepted infrastructure conflict guidelines, representing 37% of liquidambar trees and 3% of the total forest.

Liriodendron tree, tulip poplar, tulip tree, yellow poplar (*Liriodendron tulipifera*)

There are 183 individual liriodendron trees representing 11% of the total forest. Liriodendron are planted primarily in landscape planter beds and tend to be the dominant trees in each stand. 57% of the liriodendron trees have fair structure and health. The condition of the remainder of the trees is evenly distributed. Liriodendron are planted primarily in landscape planter beds.

40% of the liriodendron have greater than average quantities of dead limbs in the canopy. This is largely due to the weather with later than usual frost and freeze events. The majority of these limbs will be removed in one routine pruning cycle.

Conflict data:

147 individual trees are outside the accepted infrastructure conflict guidelines, representing 80% of liriodendron and 16% of the total forest.

Tupelo tree, Sour gum (*Nyssa sylvatica*)

There are 93 individual tupelo trees representing 5% of the total forest. The tupelo trees are also third generation forest (they were planted after development and after the majority of the landscape plantings were installed.) Tupelo remains an excellent choice for JRCOA because they perform well in wet, compacted soil. The tupelo trees are all juvenile; < 15 inches in diameter and are located primarily in medians and turf areas.

The largest problem affecting the tupelo trees is co-dominant stems. Although not usually prone to co-dominance the tupelo trees at JRCOA have only been pruned previously for clearance, not for structure. This issue will be completely resolved after one routine pruning cycle.

Conflict data:

11 individual trees are outside the accepted infrastructure conflict guidelines, representing 12% of tupelos and 1% of the total forest.

London Plane tree, Sycamore (*Platanus x. acerifolia*)

There are 129 sycamores representing almost 8% of the total forest. 79% of the trees have poor -> fair structure and poor -> fair health. The sycamores are primarily located in landscape planter beds.

100% of the sycamore trees are infected with anthracnose, a common fungal complex. 96% have advanced anthracnose with associated structural deficits such as serpentine branches. The disease is expressed in areas of active growth like the tips of stems and buds. Each emerging leaf is already infected. As leaves grow they become covered in fungal spores, inhibiting their ability to participate in photosynthesis. The tree sheds impaired leaves throughout the summer. Although uninfected deciduous

trees will typically go through 3 – 5 leaf sets per year, a tree with anthracnose may go through 7 or more leaf sets each year. When water (either from irrigation or rain) hits infected leaves spores are washed back into soil where they are taken up again by roots to buds to re-infect a new generation of leaves. In addition to effecting buds anthracnose also impacts the tips of stems. Trees with advanced anthracnose lose apical control resulting in serpentine branches. These branches are weakly attached and prone to failure.

Anthrachnose is a significant and costly problem throughout the region. Unseasonal defoliation results in 2 issues: the trees become damaged by sunscald and maintenance costs rise dealing with the excessive leaf clean up. Additionally small limbs are shed throughout the year resulting in increased maintenance costs and poor tree structure over time.

Anthrachnose very rarely kills trees. Heavily infected trees are usually removed due to an unacceptable plant appearance and high maintenance costs over time.

The best management practice for infected trees in our area is to apply foliar fungicides with 2 treatments 10 – 14 days apart at bud break (usually mid-March in our area.) All of the trees at JRCOA will require annual treatment for the rest of their lives.

If the decision is made not to treat the sycamores for anthracnose they should be removed and replaced (as space allows) with other resistant species. The most reasonable solution may be to remove and replace the trees in phases, treating trees expected to remain in the landscape for more than one year.

Conflict data:

91 individual trees are outside the accepted infrastructure conflict guidelines, representing 71% of sycamores and 10% of the total forest.

Purple leaf plum (*Prunus cerasifera*)

There are 87 individual purple leaf plum trees, representing 5% of the total forest. 80% of the purple leaf plums have poor -> fair structure and fair health. They are primarily located in landscape planter beds.

98% of the purple leaf plum trees have co-dominant stems. The majority (69%) also have included bark. Although this problem is not as serious in a purple leaf plum as it is in a liquidambar tree (the purple leaf plum is a much smaller tree with smaller branches and is therefore less likely to reach a size sufficient to damage people or property) it will still affect the value of the forest.

It would be possible to restore the purple leaf plums to an improved structural condition in two routine pruning cycles.

According to the Western Chapter of the International Society of Arboriculture and the Council of Tree and Landscape Appraisers, purple leaf plum trees are not considered valuable specimens in the region.

Given the cost of maintaining and restoring these trees relative to their overall value and contribution it may make more sense to prune the trees for safety as necessary, let them age out of the forest and replace them with a more valuable species.

Conflict data:

26 individual trees are outside the accepted infrastructure conflict guidelines, representing 30% of purple leaf plums and 3% of the total forest.

Valley Oak (*Quercus lobata*)

There are 72 individual valley oak trees, representing 4% of the total forest. Their condition is relatively evenly distributed.

The largest issue effecting valley oaks is co-dominant stems (64%). 53% of the trees also have dead limbs in the canopy. Both of these issues can be resolved in two routine pruning cycles.

The most notable and valuable tree within the Johnson Ranch Community Owner's Association is the Stud Oak. The Stud Oak is a valley oak tree.

According to the Western Chapter of the International Society of Arboriculture and the Council of Tree and Landscape Appraisers the valley oak tree is an example of an extremely well adapted and valuable tree in the region.

Conflict data:

38 individual trees are outside the accepted infrastructure conflict guidelines, representing 53% of valley oak trees and 4% of the total forest.

Coast redwood (*Sequoia sempervirens*)

There are 494 coast redwood trees, representing 30% of the total forest. They are located primarily in landscape planter beds. When evaluating species diversity in a given forest population arborists apply the 10-20-30 rule which states: No species should be represented at more than 10%, no genus at more than 20% and no family at more than 30%.

There are significantly too many coast redwood trees within JRCOA.

Begin a phased removal plan to reduce the overall number of redwood trees. In order to arrive at a number of redwood trees to remove you must not assume that the stocking density of the forest will remain constant (for example in the instance that there are 1688 trees in the forest and 326 redwoods are removed and replaced with other species then the total density of redwood trees would fall to 10%). More realistically the number of redwood trees to be removed will total 375, reducing the overall forest to 1313 trees and the remaining 119 trees would then represent 9% of the total reduced forest size.

99% of the coast redwood trees at JROCA are showing signs of *Cytospora sp.*, a common fungal problem recently affecting redwoods in the region. The level of infection is about 25%, or hovering right at the threshold requiring treatment. Instead of recommending a regimen of pathology assays and fungicide applications, wait and manage the trees with improved cultural practices. Monitor the trees annually to see if the problem progresses. By reducing the total number of trees in the forest and reducing water the trees may be able to manage the infection themselves without remediation. Increasing the distance between individuals will also make the trees less prone to infection in the future.

Given the representation of coast redwood in the greater forest any long term fungal infection could have expensive long term consequences.

Conflict data:

282 individual trees are outside the accepted infrastructure conflict guidelines, representing 57% of coast redwoods and 31% of the total forest.

Species represented at < 4% of the forest make up:

Japanese Maple (*Acer palmatum*)

There is only one Japanese maple tree in the Johnson Ranch Community Owner's Association landscape corridors. It is located in the median of an entrance to a subdivision. The tree would benefit from some restoration pruning.

'Autumn Blaze' Maple (*Acer x. 'Autumn Blaze'*)

There is only one Autumn Blaze maple in the Johnson Ranch Community Owner's Association landscape corridors. It is located in the median of E. Roseville Pkwy. near Sierra College Blvd. This tree may have been mislabeled in the nursery as a red maple or was planted in lieu of a red maple. This individual tree has stem girdling roots requiring rehabilitation. If you choose not to rehabilitate the root system, remove the tree.

Eastern redbud (*Cercis canadensis*)

There are 18 redbuds in the Johnson Ranch Community Owner's Association landscape corridors and they may primarily be found near the site of the proposed but undeveloped park off of E. Roseville Pkwy. near Sierra College Blvd. Co-dominant stems are the biggest issue facing redbuds, and these may be remedied in one routine pruning cycle.

The redbuds examined had a minor infestation of red hump backed caterpillar, a common pest in the region. Although these caterpillars are capable of defoliating a small tree they were not doing so at the time of the examination. These caterpillars tend to proliferate in cycles and this has been a heavy year. Inspection of the trees during the late spring by the landscape contractor to monitor infestation levels will help determine if management protocols are needed.

Camphor tree, headache tree (*Cinnamomum camphora*)

There are 9 individual camphor trees in the Johnson Ranch Community Owner's Association landscape corridors. They are distributed throughout the community and are primarily located in landscape planter beds.

Many of the camphor trees have sparse foliage and a form atypical of the species. Inadequate space and overwatering are the primary factors contributing to both the sparse foliage and atypical form.

According to the Western Chapter of the International Society of Arboriculture and the Council of Tree and Landscape Appraisers, camphor trees are not considered valuable specimens in the region.

Given the maintenance cost for these trees relative to their contribution to the forest and overall value it may make more sense to prune the trees for safety as necessary, let them age out of the forest and replace them with a more valuable species.

Silk Oak, Silky Oak (*Grevillea robusta*)

There are 2 silk oaks in the Johnson Ranch Community Owner's Association landscape corridors. They are located on E. Roseville Pkwy. between Sierra College and Cirby Wy.

Both of the silk oaks at JRCOA have shelf fungi and extensive decay. Both were identified for urgent removal.

Privet (*Ligustrum vulgare*)

Privet may be trained as a tree or shrub. The privet in the Johnson Ranch Community Owner's Association landscape corridors are found at the entrance to the racquet club. Privet have been identified as an invasive species by the California Invasive Plants Council and should be removed immediately.

Star magnolia (*Magnolia stellata*)

There are 26 star magnolia trees in the Johnson Ranch Community Owner's Association landscape corridors. They are located under power lines along East Roseville Parkway.

Most of the star magnolia trees have been pruned in a manner consistent with lion's tailing, meaning the interior canopy has been removed on these trees. Since a mature height of less than 12 feet is likely it is not necessary to remediate the previous pruning.

Crabapple (*Malus floribunda*)

There are 4 crabapple trees in the Johnson Ranch Community Owner's Landscape Corridors. They are located near the star magnolias on Eureka Rd. near the utility easement.

There are no significant issues facing the entire group, although one individual tree has stem girdling roots.

Oleander (*Nerium oleander*)

There are two oleander standards in the Johnson Ranch Community Owner's Landscape Corridors that had damage significant enough to include in the report. Although oleanders are usually grown as evergreen shrubs in our area these two individuals have been pruned as standards in a tree form. Sometime after the tree form was established these individuals were topped. There is no nearby overhead infrastructure, making this an odd pruning choice. This kind of pruning is outside recognized industry standards.

Photinia (*Photinia fraserii*)

There are five photinia standards in the Johnson Ranch Community Owner's landscape corridors. Photinia may be grown either as large shrubs or small trees. These individuals are pruned as small trees. Almost all of the photinia have co-dominant stems that can be remediated in one routine pruning cycle. Two of the individuals are showing signs of entomosporium, a common fungal infection affecting photinia. Instead of applying fungicides, reduce water and monitor the plant appearance. If plant appearance becomes unacceptable it would be possible to create and implement a management strategy.

Canary Island Pine (*Pinus canariensis*)

There are 7 Canary Island pine trees in the Johnson Ranch Community Owner's landscape corridors. Although some individuals are sparse the group is largely unremarkable. These trees would benefit from a reduction of water. Do not prune pine trees in the summer (when pine beetles are the most active).

Afghan Pine, Mondell Pine (*Pinus eldarica*)

There are 2 Afghan and 1 'Mondell' pine trees in the Johnson Ranch Community Owner's landscape corridors. 'Mondell' is a variety of Afghan pine. All of the individuals showed evidence of some beetle infestation, a common pest on Afghan pines. All Afghan pines were recommended for prophylactic removal to prevent a beetle infestation that could move on to affect other pine species in JRCOA.

Aleppo pine (*Pinus halapensis*)

There are 14 Aleppo pine in the Johnson Ranch Community Owner's landscape corridors. All of the individuals are manifesting significant problems from fungal fruiting bodies to evidence of beetle infestation. All Aleppo pines were recommended for prophylactic removal to prevent a beetle infestation that could move on to affect other pine species in JRCOA.

Japanese Black Pine (*Pinus thunbergiana*)

There are 16 Japanese Black Pine in the Johnson Ranch Community Owner's Association landscape corridors. Remarkably, at the time of the exam 3 of the trees were in fair condition. The remainder are

manifesting a variety of problems from fungal disorders to beetle infestation. The majority of the Japanese Black Pines at JRCOA were recommended for prophylactic removal to prevent a beetle infestation that could move on to affect other pine species in JRCOA.

Chinese Pistache (*Pistacia chinensis*)

There are 44 individual Chinese pistache trees in the Johnson Ranch Community Owner's Association landscape corridors, representing 3% of the total forest. They are primarily located in landscape planter beds. A large group may be found on Parkhill Dr.

The biggest issue facing Chinese pistache at JRCOA is dead limbs in the canopy. This may be due to the weather recently (late frost/freeze patterns). It may also be due to a low lying fungal disorder or restricted rooting environment.

The majority of the dead limbs will be removed in one routine pruning event. If dead limbs continue to be a problem for Chinese pistache trees at JRCOA further investigation may become necessary.

Cottonwood tree (*Populus freemanii*)

There was one group of standing dead cottonwood trees in the Johnson Ranch Community Owner's Association landscape corridors. The trees are located on the bank of Cirby Creek and were tagged as hazards for immediate removal.

Callery Pear, Ornamental Pear, New Bradford, Aristocrat Pear, Chanticleer Pear (*Pyrus calleryana*)

There are 54 callery pear trees in the Johnson Ranch Community Owner's Association Landscape Corridors. They are primarily sited in medians.

The majority of the trees have co-dominant limbs, a structural deficit common in callery pears. Limbs on the callery pears have started to tear out as a result. Additionally the callery pear trees at JRCOA are infested with mistletoe. Both of these issues will continue with greater frequency as the trees age until they are removed.

Given the cost of maintaining the trees it may make more sense to prune them for safety and mistletoe abatement and as they age out of the forest replace them with a better adapted species.

Evergreen Pear (*Pyrus kawakamii*)

There are 13 evergreen pear trees in the Johnson Ranch Community Owner's Association Landscape Corridors. They are primarily sited in landscape planter beds.

The majority of the evergreen pears at JRCOA are underperforming due to a combination of overwatering, soil compaction and low level fungal infection. The trees do not perform well in the region as a whole.

Coast live oak (*Quercus agrifolia*)

There are 13 coast live oak in the Johnson Ranch Community Owner's Association landscape corridors. The majority of trees are underperforming due to overwatering and soil compaction. Reduce water to these trees.

Blue oak (*Quercus douglasii*)

There are 11 blue oak trees sited throughout the Johnson Ranch Community Owner's Association landscape corridors. The majority of trees are underperforming due to overwatering and soil compaction with the most affected trees in turf medians. Reduce water to these trees.

Interior Live Oak (*Quercus wislizenii*)

There are 11 interior live oak in the Johnson Ranch Community Owner's Association landscape corridors. The majority of trees are underperforming due to overwatering and soil compaction. Reduce water to these trees.

Tallow tree, Chinese Tallow tree (*Sapium sebiferum*)

There are 2 tallow trees in the Johnson Ranch Community Owner's Association landscape corridors. Tallow trees have been identified by the California Invasive Plants Council as an invasive tree pest. Remove both as an undesirable species.

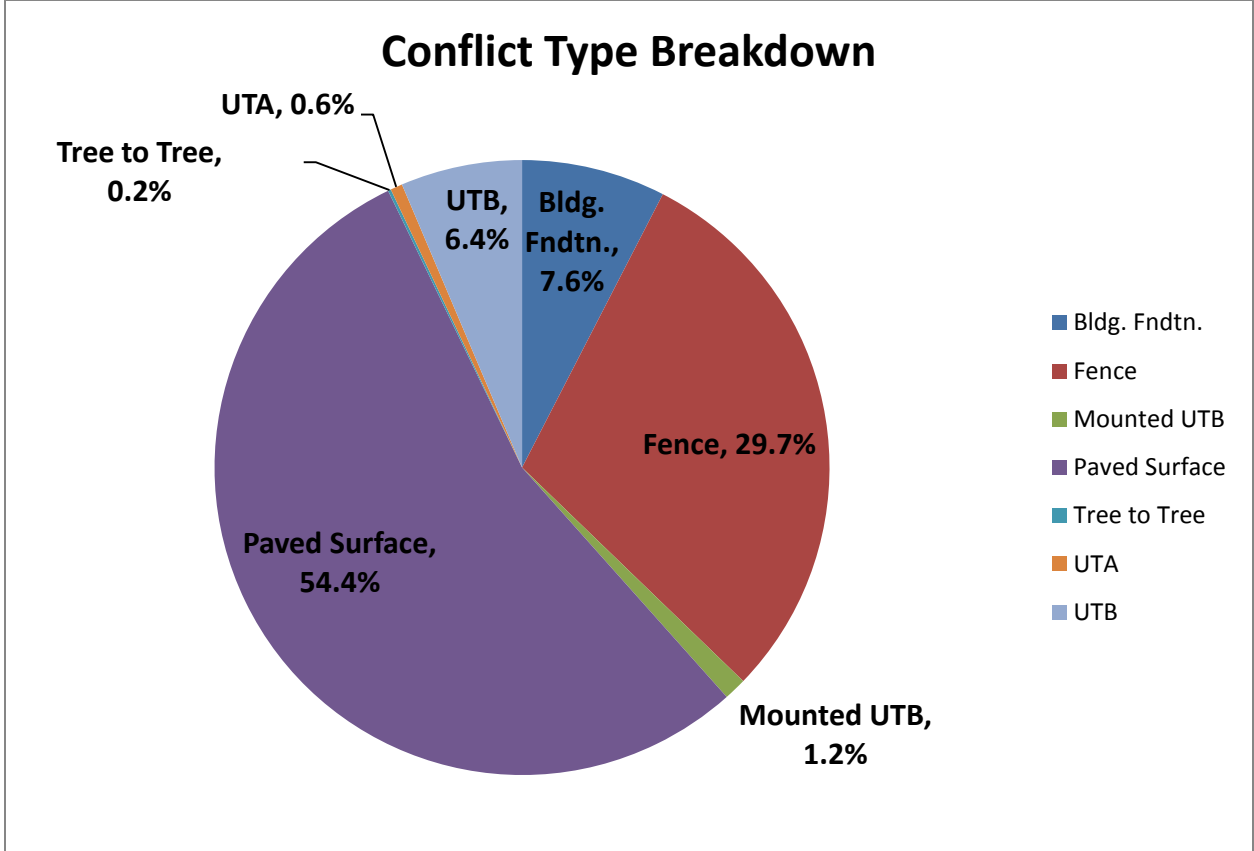
Infrastructure Conflicts within the Johnson Ranch Community Owner's Association landscape corridors.

Infrastructure conflicts within the forest in the Johnson Ranch Community Owner's Association are considered to pose a significant risk to several of the expressed values held by the community, namely safety of the forest, compliance with regulations, density of the forest, good neighbor actions within the forest and value of the forest. Infrastructure conflicts are likely to occur with the existing tree spacing and the history of water management in the forest.

Types of Conflicts

There are 8 generally recognized conflict classes at JRCOA including:

- Paved surfaces (streets, sidewalks, curbs)
- Fences (fences and non-structural walls)
- Building foundations (and retaining or structural walls)
Retaining and structural walls are considered building foundation because they require different remediation measures than a non-structural wall.
- Mounted utilities (including electrical boxes, water boxes and traffic signal boxes mounted on concrete pads)
- Utilities below ground (including cables, electric lines, water/sewer lines but not irrigation lines)
Irrigation lines are generally closer to the surface than other utilities and generally easier to repair.
- Utilities above ground (including overhead power lines)
- Traffic signal, street lamp and street sign conflicts
These differ from other utilities above ground because they can generally be managed with clearance pruning within routine cycles and do not cause the same level of damage or potential hazard if unmanaged.
- Tree spacing conflicts (distance between two trees)

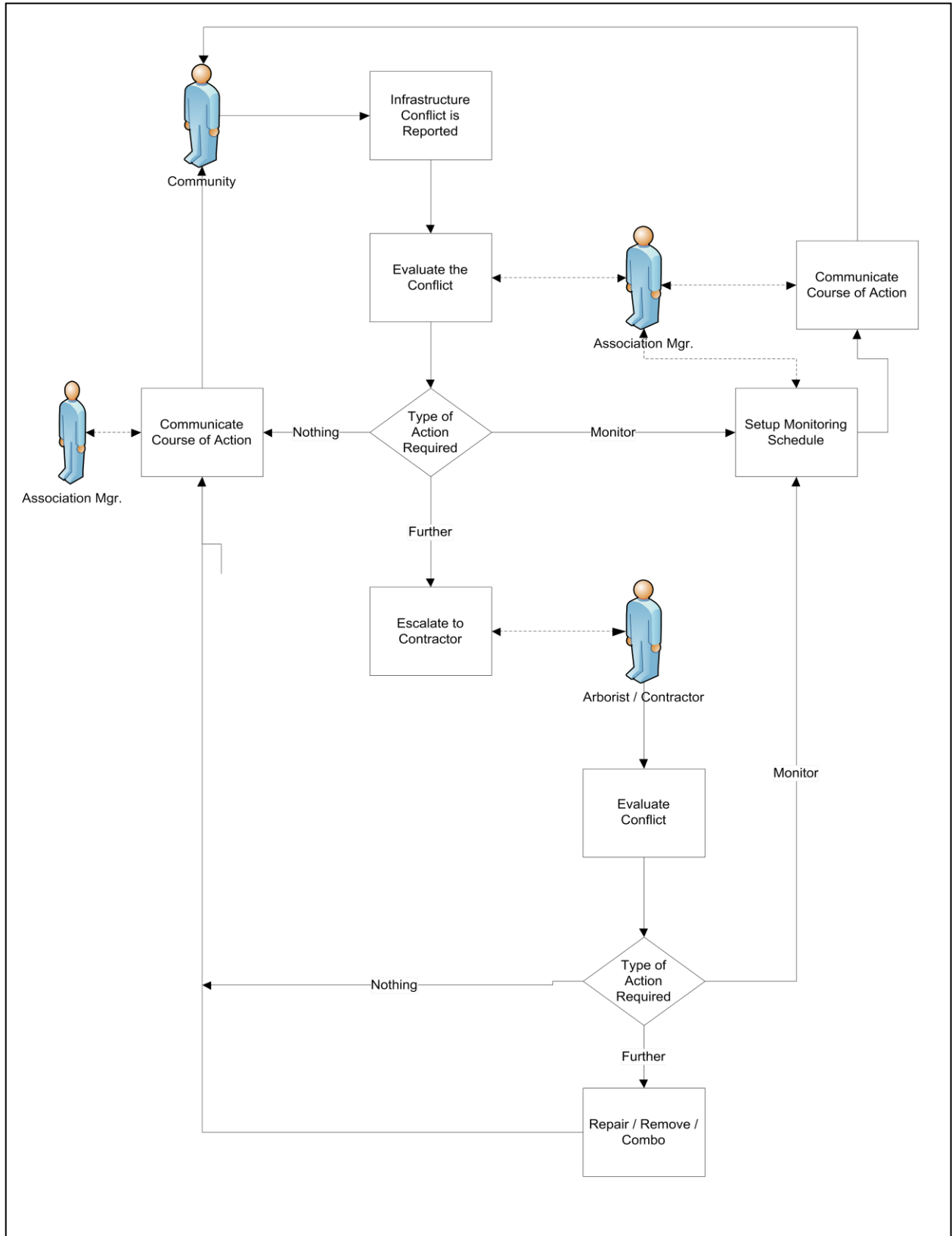


The majority of the existing infrastructure conflicts within the Johnson Ranch Community Owner’s Association landscape corridors are paved surface conflicts such as streets, sidewalks and curbs that are cracked or lifting. Buckling or lifting fences are also a significant concern.

Infrastructure Conflict breakdown by species

Botanical Nm	# with conflicts	total # in forest	Conflict % by Species	% by Total Conflicts
Acer palmatum	0	1	0	0.00%
Acer rubrum	12	81	14.81%	1.30%
Acer x. 'Autumn Blaze'	0	1	0.00%	0.00%
Cedrus deodara	55	69	79.71%	5.98%
Celtis sinensis	67	87	77.01%	7.28%
Cercis canadensis	5	18	27.78%	0.54%
Cinnamomum camphora	5	9	55.56%	0.54%
Grevillia robusta	2	2	100.00%	0.22%
Lagerstroemia indica	35	75	46.67%	3.80%
Liquidambar styraciflua	25	67	37.31%	2.72%
Liriodendron tulipifera	147	183	80.33%	15.98%
Magnolia stellata	16	26	61.54%	1.74%
Malus floribunda	2	4	50.00%	0.22%
Nyssa sylvatica	11	93	11.83%	1.20%
Oleander	0	2	0.00%	0.00%
Photinia fraserii	0	5	0.00%	0.00%
Pinus canariensis	3	7	42.86%	0.33%
Pinus eldarica	0	2	0.00%	0.00%
Pinus halapensis	8	14	57.14%	0.87%
Pinus thunbergiana	10	16	62.50%	1.09%
Pistacia chinensis	38	44	86.36%	4.13%
Platanus x. acerifolia	91	129	70.54%	9.89%
Populus freemanii	0	1	0.00%	0.00%
Prunus cerasifera	26	87	29.89%	2.83%
Pyrus calleryana	27	54	50.00%	2.93%
Pyrus kawakamii	5	13	38.46%	0.54%
Quercus agrifolia	6	13	46.15%	0.65%
Quercus douglasii	1	11	9.09%	0.11%
Quercus lobata	38	72	52.78%	4.13%
Quercus wislizenii	2	5	40.00%	0.22%
Sapium sebiferum	1	2	50.00%	0.11%
Sequoia sempervirens	282	494	57.09%	30.65%
Grand Total	920	1687	54.53%	100.00%

Infrastructure Conflict Response Flowchart



Infrastructure Conflict Management Strategies

The beginning: Infrastructure conflict is expressed.

Johnson Ranch Community Owner's Association may become aware of a potential infrastructure conflict in a variety of ways. Reports from homeowners, reports from vendors, unrelated construction projects/repairs or even routine property walks may all reveal potential infrastructure conflicts.

Decision Point 1: Who should evaluate the conflict?

Generally there is a natural progression for conflict evaluation. The association manager may do the initial conflict evaluation and determine if no action, monitoring action or further action is required.

No action: communication with the entity that registered the complaint indicating that the conflict has been evaluated and falls within the standards used for evaluation by the community at that time.

Monitoring action: communication with the entity that registered the complaint indicating the conflict has been evaluated and the conflict falls within the standards used for evaluation by the community at that time, but may exceed acceptable conflict limits and will be monitored on a specific schedule.

Further action: communication with the entity that registered the complaint indicating the conflict has been evaluated and referred for further action by the community.

Decision Point 2: Escalated evaluation chain

If the primary responder has determined action may become necessary to mitigate a conflict it should be evaluated by the vendors the contractor will use to mitigate the conflict.

No action: contractors determine the conflict falls within the standards used for evaluation.

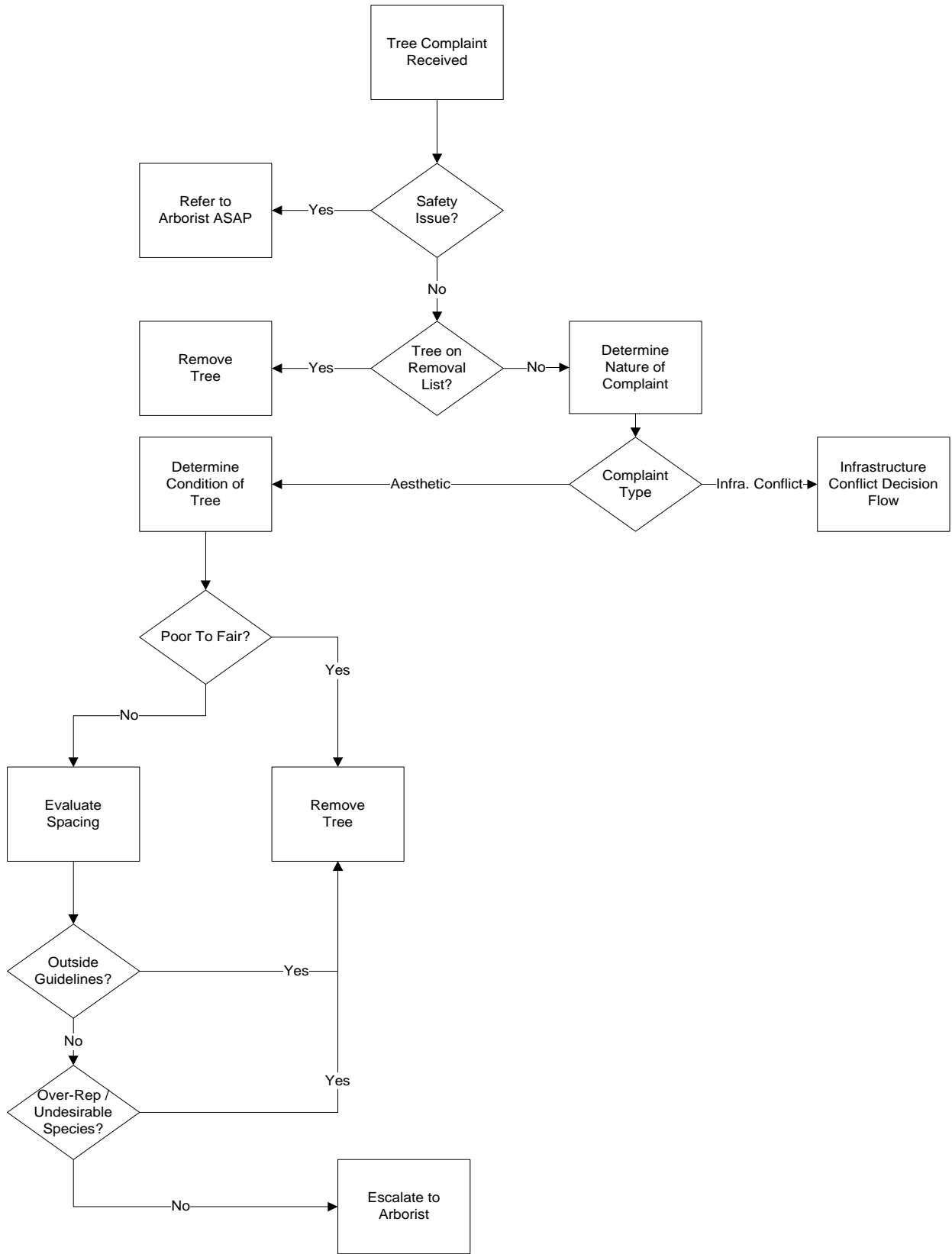
Action required: evaluation of decision criteria to determine appropriate solution

Decision Point 3: Repair, remove, or a combination?

If the contractor has determined action is necessary to mitigate the conflict it will be necessary to determine how severe the mitigation should be. Some criteria to consider include: The severity of the conflict, the likelihood of recurrence and time frame for same, the species of the tree (is this a valuable species to the community? Is it prone to conflict?) and the individual specimen (is this a notable tree to the community? What was the condition of the tree at the time of its last evaluation?)

Once tree criteria have been evaluated the most reasonable mitigation measure may be to remove the entire tree.

Mid-cycle tree removal request flowchart



Tree Siting Guidelines

This document is adapted from a document created by the Technical Advisory Committee of the Sacramento Tree Foundation to reflect the species represented in the Johnson Ranch Community Owner's Association landscape corridors. There may be individual trees that do not fit into the guidelines set forth yet continue to perform well for the association. The guidelines are not hard and fast, but are generalizations about how trees perform in our area.

Botanical Name	Mounted UTB	Bldg. Fndtn.	Sidewalk	Fences	UTB offset	UT A	Tree to Tree
<i>Acer palmatum</i>	8	5	5	3	3	3	12
<i>Acer rubrum</i>	8	15	8	6	6	30	25
<i>Cedrus deodara</i>	12	22	12	10	8	30	45
<i>Celtis sinensis</i>	8	15	8	6	6	30	30
<i>Cercis canadensis</i>	8	6	3	3	3	6	12
<i>Cercis occidentalis</i>	8	6	3	3	3	6	12
<i>Cinnamomum camphora</i>	8	15	6	6	6	20	18
<i>Grevillia robusta</i>	8	15	8	6	6	30	30
<i>Lagerstroemia indica</i>	8	6	4	3	3	6	12
<i>Liquidambar styraciflua</i>	8	10	6	6	6	30	18
<i>Liriodendron tulipifera</i>	10	20	10	8	6	30	30
<i>Magnolia stellata</i>	8	5	5	3	3	3	12
<i>Malus floribunda</i>	8	6	5	3	3	6	12
<i>Nyssa sylvatica</i>	8	15	6	6	6	20	18
<i>Oleander</i>	8	6	5	3	3	6	12
<i>Photinia fraserii</i>	8	6	5	3	3	6	12
<i>Pinus canariensis</i>	8	10	6	6	6	30	18
<i>Pinus halapensis</i>	8	15	6	6	6	20	18
<i>Pinus thunbergiana</i>	8	12	6	6	6	12	15
<i>Pistacia chinensis</i>	8	15	6	6	6	20	25
<i>Platanus x. acerifolia</i>	8	15	8	6	30	15	30
<i>Populus freemanii</i>	10	20	10	8	6	30	30
<i>Prunus cerasifera</i>	8	8	6	3	5	6	15
<i>Pyrus calleryana</i>	8	10	6	6	6	20	20
<i>Pyrus kawakamii</i>	8	10	6	6	6	18	15
<i>Quercus agrifolia</i>	8	15	8	6	6	30	30
<i>Quercus douglasii</i>	8	15	8	6	6	30	30
<i>Quercus lobata</i>	8	15	8	6	6	30	30
<i>Quercus wislizenii</i>	8	15	8	6	6	30	30
<i>Sapium sebiferum</i>	8	15	6	6	6	20	18
<i>Sequoia sempervirens</i>	8	12	6	5	6	15	15

Tree species palette

Where Johnson Ranch Community Owner’s Association has the interest and space to replant trees here are some suggestions and guidelines for trees that could work well in the community grouped by size:

Name	Desirable characteristics for JRCOA	Height at maturity	Mounted UTB	Building Foundation	Paved Surface	Fence	UTB	UTA	Tree to Tree
River Birch (<i>Betula nigra</i>)	Can take wet, compacted soils. Exfoliating bark provides year round interest. Fast growing.	60 ft.	8	15	8	6	6	30	30
Dawn Redwood (<i>Metasequoia glyptostroboides</i>)	Can take wet, compacted soils. Considered to be a tree-of-interest since it is deciduous. Shape and size consistent with redwood. Resistant to most pests and diseases present at JRCOA.	100 ft.	8	15	8	6	6	30	15
Willow Oak (<i>Quercus phellos</i>)	Can take wet, compacted soils. Unusual leaf shape is not reminiscent of most oaks.	80 ft.	8	15	8	6	6	30	30
Bur Oak (<i>Quercus macrocarpa</i>)	Can take wet, compacted soils. Very large leaves are distinctive and can have excellent fall color.	80 ft.	8	15	8	6	6	30	30
Hybrid Elm (<i>Ulmus x. 'Frontier' or 'Accolade'</i>)	Can take wet, compacted soils. New varieties are DED resistant. Fast growing.	80 ft.	8	15	8	6	6	30	30
Sawtooth Zelkova (<i>Zelkova serrata</i>)	Under-represented in forest (resulting in a resistance to pests and diseases). Long lived. Exfoliating bark provides year round interest.	80 ft.	8	15	8	6	6	30	30

Name	Desirable characteristics for JRCOA	Height at maturity	Mounted UTB	Building Foundation	Paved Surface	Fence	UTB	UTA	Tree to Tree
Mushishino Zelkova (<i>Zelkova serrata</i> 'Musashino')	Tightly columnar form works well in tight areas. Under-represented in forest (resulting in a resistance to pests and diseases). Long lived.	65 ft.	8	15	8	6	6	30	15
Little leaf linden (<i>Tilia cordata</i>)	Low-pollen bloom Slow growth defers maintenance over a longer period. Resistant to most pests and diseases.	40 ft.	8	15	6	6	6	20	20
Shantung Maple (<i>Acer truncatum</i>)	Excellent fall color. Under-represented in forest (resulting in a resistance to pests and diseases).	40 ft.	8	10	6	6	6	6	15
Hedge maple (<i>Acer campestre</i>)	Excellent fall color. Under-represented in forest (resulting in a resistance to pests and diseases).	40 ft.	8	10	6	6	6	6	15
Goldenrain tree (<i>Koelreuteria paniculata</i>)	Under-represented in forest (resulting in a resistance to pests and diseases). Lantern-like seed pods are desirable in flower arranging. Resistant to most pests and diseases.	40 ft.	8	10	6	6	6	6	18
Chinese flame tree (<i>Koelreuteria bipinnata</i>)	Excellent fall color. Under-represented in forest (resulting in a resistance to pests and diseases). Lantern-like seed pods are desirable in flower arranging. Resistant to most pests and diseases.	40 ft.	8	10	6	6	6	6	18
Wireless zelkova (<i>Zelkova serrata</i> 'Schmidtlow')	Small statured tree. Under-represented in forest (resulting in a resistance to pests and diseases).	20 ft.	8	6	6	3	3	3	12

Name	Desirable characteristics for JRCOA	Height at maturity	Mounted UTB	Building Foundation	Paved Surface	Fence	UTB	UTA	Tree to Tree
Washington Hawthorne (<i>Crataegus phaenopyrum</i>)	Small statured tree. Under-represented in forest (resulting in a resistance to pests and diseases). Has a two inch, true wood thorn. Excellent fall color. White blooms in spring, orange fall color and red berries that persist after leaf drop provide year round interest.	20 ft.	8	6	6	3	3	3	12
Japanese snowbell (<i>Styrax japonicas</i>)	Small statured tree. Resistant to most pests and diseases. Small white blooms are very showy.	20 ft.	8	6	6	3	3	3	12

Name: The botanical and common name for each tree is listed

Mounted UTB: Includes pad mounted utilities like electrical boxes

Building Foundation: includes buildings and structural/retaining walls

Paved surface: includes sidewalks, streets, parking lots and curbs

Fence: includes non-load bearing fences

UTB: utilities below ground

UTA: utilities above ground

Tree to tree: this is the recommended distance between trees from trunk to trunk. Where trees will be different sizes at maturity use the mean distance. For example, a willow oak tree should be 30 ft. from other large trees. A Japanese snowbell should be 12 ft. from other small trees. Where you are considering planting a snowbell near a willow oak, the trunks should be 21 ft. apart.

Pruning

JRCOA should adopt a 3 year pruning rotation, consistent with the standard in other residential settings. (See pruning specifications, pg. 37) Contracting with one qualified or highly qualified arborist/tree service would be beneficial in terms of continuity of care and out-of-cycle pruning requests (clearance pruning, storm clean up, emergency damage, etc.).

Pruning Specifications

Pruning operations at JRCOA shall be covered by the ANSI A 300 Part 1 (and the companion Best Management Practices Document) and the ANSI Z 133 standards.

Goals of the pruning program at the Johnson Ranch Community

Owner's Association include:

Ongoing safety and sustainability of the forest, including:

Reducing risk of failure

Development of a dominant central leader in each tree as appropriate to the age and size of the tree.

Cleaning, reducing, or restoring trees as appropriate to age, species and size.

Maintaining health:

Removal of dead or diseased tree parts or parasites (including mistletoe).

Improving Aesthetics

Strategic removal of branches to improve overall tree appearance.

Minimum pruning specifications and guidelines:

1. Clearly state which trees are to be pruned, include a map.
2. Include the following statement:
"All work shall be performed in accordance with the ANSI A 300 Part 1 Pruning standards and the ANSI Z 133.1 safety standards."
3. Include the above pruning objectives
4. Specify pruning types to meet objectives (Preference for structural pruning and crown cleaning)
5. Specify minimum and maximum branch sizes to be removed (> 1 inch, < 20 inches without additional consultation)
6. Specify the maximum amount of live tissue to be removed (< 25%).

Sample Pruning Specification:

Objectives:

500 trees in the Johnson Ranch Community Owner's landscape corridors shall be pruned to improve structure and reduce the risk of limb failure by:

1. Promoting a dominant central leader by removing or reducing competing limbs.
2. Cleaning the entire crown of each tree by removing all undesirable branches > 1 inch in diameter.
3. Reducing or removing limbs with included bark at the attachment by 20%.
4. Reducing end weight on limbs that extend past the natural line of the crown or are sharply attached to the main stem by 20%.

Procedures:

1. All pruning cuts shall be in accordance with ANSI A 300 Part 1 pruning standards and work shall be performed in accordance with ANSI Z 133.1 safety standards. Pruning shall be in accordance with the ISA's Best Management Practices: Tree Pruning.
2. No trees shall be lion's tailed; although some interior limbs may need to be removed the person performing the work will leave interior and mid-canopy intact except as such branches conflict with overall pruning objectives. Limbs < 1 inch will be left in the interior and mid-canopy (acknowledging some branches may need to be removed to allow the arborist to enter and work in the trees).
3. Dead, diseased or broken branches > 1 inch shall be removed from the canopy of all trees.
4. No more than 25% of live foliage shall be removed from any one tree without the prior approval of owner's agent.
5. All waste must be removed from site daily, site shall be left in broom clean condition at the end of each day.

Qualifications:

All work shall be performed under the on-site supervision of an ISA Certified Arborist. A ratio of 1 Certified Arborist: 9 uncertified personnel shall be maintained. Where there are Certified Tree Workers performing work they shall be supervised by a Certified Arborist at a ratio of 1 Certified Arborist: 20 Certified Tree Workers.

Phase 1: Johnson Ranch Community Owner's Association 3 year pruning cycle

Johnson Ranch Community Owner's Association is seeking qualified vendors to bid on a 3 year tree pruning and removal contract. Johnson Ranch Community Owner's Association has recently undergone an Urban Forest Master Planning Project and is aware of several ongoing tree management issues within the scope of work. This contract is a first step toward a standardized maintenance program.

Requirements: In order to bid vendors **must** attend the pre-bid meeting and property walk. All bidders **must** furnish proof of a valid D-49 Contractor's License in the name of the business or one of the principal owners and general business liability insurance >\$ 999,999.00. **The winning bidder(s) must** name both Johnson Ranch Management and the Johnson Ranch Community Owner's Association as additional insured on their insurance, with a certificate provided prior to commencing work. It is not necessary to name Johnson Ranch Management and the Johnson Ranch Community Owner's Association as additional insured to bid.

Bids will be accepted in all or part by the Johnson Ranch Community Owner's Association.

Contracts will not necessarily be awarded to the low bidder; experience, ability to perform the work as described, staff credentialing and cost will all be considered.

Objectives:

Between 450 and 550 trees in the Johnson Ranch Community Owner's landscape corridors shall be pruned each year to improve structure and reduce the risk of limb failure by:

- Promoting a dominant central leader by removing or reducing competing limbs.
- Cleaning the entire crown of each tree by removing undesirable branches > 1 inch in diameter.
- Reducing or removing limbs with included bark at the attachment by at least 20%.
- Reducing end weight on limbs that extend past the natural line of the crown or are sharply attached to the main stem by 20%.

Procedures:

- All pruning cuts shall be in accordance with ANSI A 300 Part 1 pruning standards and work shall be performed in accordance with ANSI Z 133.1 safety standards. Pruning shall be in accordance with the ISA's Best Management Practices: Tree Pruning.
- No trees shall be lion's tailed; although some interior limbs may need to be removed the person performing the work will leave interior and mid-canopy intact except as such branches conflict with overall pruning objectives. Limbs < 1 inch will be left in the interior and mid-canopy (acknowledging some branches may need to be removed to allow the arborist to enter and work in the trees, and on trees with advanced anthracnose there may need to be some small limb promotion).

- Dead, diseased or broken branches > 1 inch shall be removed from the canopy of all trees.
 - No more than 25% of live foliage shall be removed from any one tree without the prior approval of the owner's agent.
 - No trees to be retained in the landscape shall be damaged by the removal of other trees including pruning to permit mechanical access or mechanical damage from equipment.
 - All waste must be removed from site daily, site shall be left in broom clean condition at the end of each day.
 - Where trees overhang streets, sidewalks or structures the following clearances shall be observed: 14 ft. above streets, 8 ft. above sidewalks, 5 ft. above or away from structures. Where such clearances may not be maintained by the removal or suppression of limbs within the pruning standards the contractor shall inform the owner's agent and await direction.
 - Mistletoe abatement: where mistletoe is observed it shall be removed at least three feet nearer to the trunk than the location of the clump, or the entire limb shall be removed. Where such treatment is impractical (such as a clump on the trunk or other main stem) mistletoe may be treated with ethephon and wrapped.
 - Species exceptions:
 - **Redwoods (*Sequoia sempervirens*)** shall only be pruned for clearance or to remove co-dominant stems. Where the size of the co-dominant stem will not safely support a climber upon notification to the owner's agent pruning may be deferred until later in the pruning cycle.
 - **Purple leaf plum (*Prunus cerasifera*)** shall only be pruned for clearance or safety.
 - **Camphor trees (*Cinnamomum camphora*)** shall only be pruned for clearance or safety.
 - **Callery/Ornamental Pear (*Pyrus calleryana*)** shall have all mistletoe removed. Where it is impractical to remove mistletoe the contractor shall inform the owner's agent and await a decision about treating the clump with ethephon and wrapping or to remove the tree.
 - **Evergreen Pear (*Pyrus kawakamii*)** shall have mistletoe removed. Where it is impractical to remove mistletoe the contractor shall inform the owner's agent and await a decision about treating the clump with ethephone and wrapping or removing the tree.
6. Notable individuals/groups:
- The Stud Oak of Roseville** (Tree #165) has special care requirements as follows:
- A certified arborist shall lead the crew pruning and climbing this tree.
 - No more than 15% of live foliage shall be removed.
 - While aloft the certified arborist shall inspect the tree and report any concerns to the owner's agent.

The Blue Oak Grove (Tree # 1516, 1517 and 1518) has special care requirements as follows:

- A certified arborist shall lead the crew pruning and climbing this tree.
- No more than 15% of live foliage shall be removed.
- While aloft the certified arborist shall inspect the tree and report any concerns to the owner's agent.

Scope of Work:

Phase 1: Trees on East Roseville Pkwy, # 99 – 183 (84 trees). Trees on Eureka Rd., # 983-1320 (276 trees), 1504-1688 (184 trees).

Total trees: 544

Trees to be removed:

0 – 10 inches: 39

11 – 20 inches: 1

Trees to be pruned:

0 – 10 inches: 251

11 – 20 inches: 241

21 – 30 inches: 10

31+ inches: 2

Phase 2: East Roseville Pkwy, southern portion, Cirby Wy., Trees # 184 – 261 (77), 262 – 395 (133) and 396-693 (287).

Total trees: 496

Trees to be removed:

0 – 10 inches: 20

11 – 20 inches: 5

Trees to be pruned:

0 – 10 inches: 181

11 – 20 inches: 237

21 – 30 inches: 53

Phase 3: Douglas Blvd. Trees # 1 – 98 (98 trees), East Roseville Pkwy., central portion Trees # 899-984 (85 trees), 1320-1434 (67 trees), Parkhill Dr. Trees # 694-725 (32 trees) & 824-898 (75 trees), McLaren Dr. Trees #726 – 797 (71 trees), Johnson Ranch Rd. Trees #798 - 823 (26 trees).

Total trees: 454

Trees to be removed:

0 – 10 inches: 40

11 – 20 inches: 6

21 – 30 inches: 1

Trees to be pruned:

- 0 – 10 inches: 198
- 11 – 20 inches: 180
- 21 – 30 inches: 28
- 31+ inches: 1

Time & Material Rates: In addition to the above described work Johnson Ranch Community Owner’s Association acknowledges there are some occasions upon which they will require mid-cycle pruning. This mid-cycle work is anticipated to be in response to storm events or to homeowner requests.

Qualifications:

All work shall be performed under the on-site supervision of an ISA Certified Arborist who is a member in good standing of the International Society of Arboriculture and the Western Chapter of the ISA. A ratio of 1 Certified Arborist: 9 uncertified personnel shall be maintained. Where there are Certified Tree Workers performing work they shall be supervised by a Certified Arborist at a ratio of 1 Certified Arborist: 20 Certified Tree Workers. Alternately a member in good standing of the American Society of Consulting Arborists may supervise work.

Performance Measures:

Where it is determined by the owner’s agent that non-compliant work was performed the successful bidder forfeits compensation on the tree and an additional \$500 fine per non-compliant incident. Work shall not be compensated until all work is completed as described. Once work begins it shall be continuous until it is completed.

Public Access:

Sidewalks and other areas that may be accessed by the public during the course of work must be appropriately signed throughout the course of work with safety measures in place.

Road Closures:

It is incumbent upon the winning bidder to procure any road closures necessary to complete the work as described prior to commencing work.

Rope and saddle climbing:

Rope and saddle climbing ONLY. Spurs may only be used on trees slated for removal or to rescue a seriously injured climber requiring medical attention. Spurs MAY NOT be used in routine pruning operations.

Stumps:

Median stumps are all stumps contained within median strips between traffic lanes.

Slope stumps are all stumps located where the grade differential is > 3 ft. from the adjacent sidewalk.

All **other stumps** are all stumps that are neither median stumps nor slope stumps.

Stump grinding(s):

- Where removals are done with the same species remaining < 10 ft. away stumps shall only be ground to a depth of 6 inches.
- Where removals are done with neighboring trees of different species, stumps shall be ground down until they are removed completely, or until a depth of 24 inches.
- Grindings may be placed back in the hole or mounded on top to a depth of <6 inches.
- Where stump grindings are > 6 inches they are to be hauled away at the contractor's expense.

Time of Work:

All work is to occur between 8:00 – 4:00 Monday through Friday, with all equipment off site no later than 4:30 pm each day.

Wood waste:

Wood waste is to be removed from site daily and disposed of at the contractor's expense.

Work Plan:

A work plan complete with timeline, staging areas and general order of work shall be submitted to the JR Community Owner's Association with the bid package.

Use of Aerial Lift/Bucket/Boom trucks:

Use of Aerial Lift, bucket or boom trucks is permissible within the scope of work.

Bidder Check Sheet/Cover Page:

Name of Company:

Contact Person:

Phone:

Street address:

E mail address:

Line Item Bid Amounts:

Each line item is bid discretely. Johnson Ranch Community Owner's Association may except each bid in all or part.

Task	Phase 1	Phase 2	Phase 3
Structural Pruning			
Tree #165: Stud Oak		X	X
Trees #1516, 1517 & 1518: Blue Oak Grove		X	X
Removals			
Median stumps			
Slope stumps			
All other stumps			
Tree removals < 20 ft.			
Tree removals > 20 ft.			
Time & Material Rate: Storm Response			
Time & Material Rate: Mid-cycle pruning			

Documents to be included:

____ Proof of D 49 Contractor's License

____ Proof of insurance

____ Work Plan

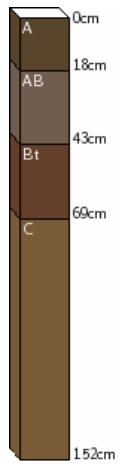
Johnson Ranch Community Owner’s Association Soil Types

Soil information provided by the USGS Soil Survey and confirmed with spot tests on site to a depth of approximately 2 ft.

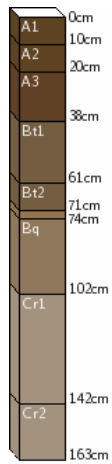
Although these soil types are generally fast draining, consistent over-watering over time has led to a high degree of soil compaction in the Johnson Ranch Community Owner’s Association landscape corridors.

Cometa-Fiddymnt Sandy Loams, 1-5 % sandy slopes (type 141): Major Component List for [460305]:

Cometa (35%)
Typic Palexerafls



Fiddymnt (35%)
Typic Durixeralfs



Cometa-Fiddymnt complex, 1 to 5 percent slopes terraces / Backslope

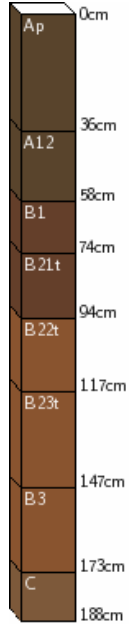
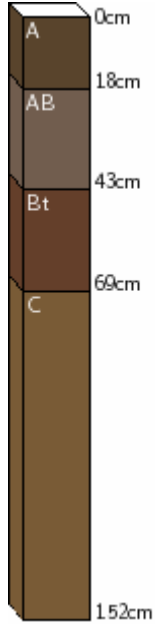
Cometa-Fiddymnt complex, 1 to 5 percent slopes ridges / Backslope

Cometa-Ramona sandy loams, 1 to 5 percent slopes (type 142):

Major Component List for [460306]:

[Cometa](#) (50%)
Typic Palexeralfs

[Ramona](#) (30%)
Typic Haploxeralfs



Cometa-Ramona sandy loams, 1 to 5 percent slopes terraces / Backslope

Cometa-Ramona sandy loams, 1 to 5 percent slopes terraces / Backslope

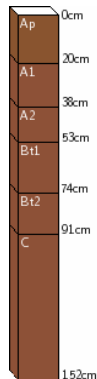
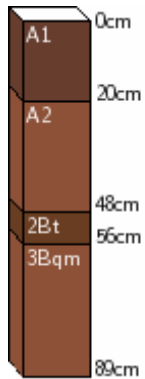
Finally, along the intersection of Sierra College and East Roseville Parkway there is a pocket of

Redding and Corning gravelly loams, 2 to 9 percent slopes (Type 172):

Major Component List for [460340]:

[Redding](#) (45%)
Abruptic Durixeralfs

[Corning](#) (45%)
Typic Palexeralfs



Redding and Corning gravelly loams, 2 to 9 percent slopes terraces / Backslope

Redding and Corning gravelly loams, 2 to 9 percent slopes terraces / Backslope

Glossary

Drip Line Environment Descriptions:

Drip Line Environment (DLE): the area beneath tree canopy. Includes information on ground covers, infrastructure and soil: hardscape.

Landscape planter bed: area with landscaped/intentional ground cover, grasses, shrubs and other plantings.

Median: planting area between two paved surfaces, usually streets or sidewalks. In Johnson Ranch Community landscape corridors medians occur on Eureka Rd. and on East Roseville Pkwy. and contain both turf and trees.

Mulch: any non-living ground cover. Typically bark chips. Preferred mulch for trees is organic, whole tree bark, stems, leaves and twigs that has not been painted. Organic whole tree bark mulch that has been dyed with food grade vegetable dyes are preferred when colored mulch is required.

Mulched bed: planting area covered in bark mulch with few/no intentional landscape plants beyond any existing trees.

Naturalized landscape: planting area that does not have any intentional landscape plants beyond any existing trees and is not maintained on a routine basis. May have naturally occurring seasonal grasses and other seasonal plants.

Preservation bed: area designated for the preservation of a tree prior to construction or development activities. Efforts are made to reduce/eliminate grade and other environmental changes in order to retain the tree in the landscape.

Structure descriptions:

Structure descriptions include information that impacts a tree's ability to remain upright in the landscape.

Aggressively skirted: describes trees that have been "limbed up" or pruned to remove low limbs in the canopy.

Apical dieback: describes the extent to which a tree may be dying from the tips down/inward.

Atypical for species: describes a form or feature that is irregular for a given species and may require monitoring or further investigation.

Atypical trunk bulges: describes unusual growth that may be caused by poor weight distribution in the canopy, disease or a change in a tree's close environment. Typically requires monitoring or further investigation.

Auto-corrected lean: describes a tree with poor apical dominance correcting the structural deficit without intervention.

Auto-corrected stem girdling root: describes a root that has "popped" under pressure from other roots or the trunk without intervention.

Bark plate failure: when a large section of bark that has been damaged (usually with blunt force, as in the case of a tree struck by a car) falls off of the trunk.

Bark weft: twisting bark pattern that is less structurally sound than a more typical vertical orientation.

Basal damage: damage to the trunk flare, or base of a tree. Often caused by mowers and string trimmers.

Basal decay: decay or rot present at the base of the tree, also called the trunk flare.

Bottle butt: distinctive and atypical pattern of swelling at the base of a tree associated with damage or rot.

Branch grafting: two limbs that have temporarily adhered.

Brown rot: one of two classes of wood decay agents of brown rot remove cellulose from trees leaving lignin that dries and cracks, often in cube-like shapes. Trees known to have brown rot should be monitored on a routine schedule.

Bulge: atypical swelling. Often associated with included bark.

Car damage: describes a variety of damage to trees caused by cars including bark plate failure low on the stem.

Cavity: hole in a tree or stem

co-dominant stems: two stems of approximately the same size originating at approximately the same point on the trunk. Severity of deficit is dependent on a variety of overall factors including: tree species, size, location, overall health and landscape function.

Crowded: used to refer to trees planted too closely together

Dominant: a canopy classification, dominant trees are the largest, best competing trees in a given stand.

End weight: weight translocated to the tips of tree branches through non-standard previous pruning, disease processes, environmental causes or a variety of other factors.

Hanger: a dead limb suspended in the canopy.

Heading cuts: also referred to as “topping” or “inter-nodal” cuts, heading cuts are most often used in nursery production. Instead of making cuts to a viable outside limb or bud, heading cuts are made between nodes and result in stubs which either die back to a viable bud or put on adaptive growth.

History of tearouts: describes a tree that has shed one or more large limbs.

Horizontal bark checking: adapting growth that can indicate the early signs of compression failure.

Included bark: occurs where two stems have increased in girth to the extent that they touch, and eventually act with repulsive force, each trying to push the other away until one or both limbs fail.

Lion's tail: predatory pruning practice or naturally occurring disease process wherein interior and mid canopy are removed/shed and weight is transferred to the ends of limbs making them more prone to failing.

Mower damage: damage to trees caused by lawn mowers/string trimmers.

Multiple stems: trees with a growth habit that includes several main stems instead of one distinct trunk
non-standard previous pruning cuts: intentional cuts made to remove limbs that did not adhere to the ANSI A 300 pruning standards.

Partial rotational failure: common in trees with poor soils or stem girdling roots, partial rotational failure occurs when a tree twists in the ground and heaves on one side while buckling on the other. Partial rotational failures are difficult to predict.

Pollard: recognized pruning style wherein inter-nodal cuts are made to encourage the formation of a callous knob. Pollarded trees must be maintained annually.

Serpentine branch structure : occurs when trees lose apical dominance. Describes limbs with an atypically bent or twisted structure. These limbs are more prone to failure than a typically straight and tapered limb.

Shear plane cracking: results when the compression and tension side of limbs twist, causing a crack in the center of the limb.

Stem girdling root: root moving in circles around the main stem, instead of radially away from the main stem.

Stubs: dead portion of a stem left as a result of a non-standard pruning cut

Stump sprout: re-growth from the stump of a removed tree

Sub-dominant: canopy class designation referring to small trees in the stand

Sun scald: environmental disorder resulting from sun damage to the main stem. Most often found on the west/southwestern trunk aspect.

Suppressed: atypical growth form occurring when a tree distorts in shape in response to another tree or structure too close to allow each plant to develop normally. Also a canopy class designation.

Tear outs: site of a missing limb that failed.

Water sprouts: weakly attached and vigorously upright growth.

White rot: one of two classes of wood decay agents of white rot remove lignin, leaving cellulose behind with a white, stringy or spongy appearance and texture. Trees known to have white rot should be monitored on a routine schedule.

Health descriptions

Health descriptions include information that impacts a tree's ability to demonstrate signs of life in the landscape.

Anthraxnose: a common fungal complex, anthracnose infects several common landscape species including ash, sycamore and oak among others. In severe cases branches become distorted with a serpentine shape and are shed.

Aphids: a common landscape pest, aphids infest several common landscape species including hackberry, yellow poplar and crape myrtle among others.

Armillaria mellea: pathogenic wood decay fungi.

Botryphaeria sp.: pathogenic wood decay fungi primarily affecting evergreen trees.

Chlorosis: a yellowing of foliage usually indicative of a nutrient deficiency.

***Cytophora sp.*:** landscape fungi effecting primarily redwood trees.

***Diplodia sp.*:** pathogenic wood decay fungi primarily affecting evergreen trees.

***Entomosporium sp.*:** landscape fungi effecting many species including evergreen pear and photinia.

Epicormic growth: stress growth reaction resulting in leaves growing atypically out of the trunk or other large stems.

Exudate: sap, pitch, resin, photosynthate or other material coming out of the trunk.

***Ganoderma sp.*:** pathogenic wood decay fungi.

Gummosis: sticky material coming out of the trunk.

Inadequate wound response: generally a sign of poor health or stress, inadequate wound response refers to poor or no formation of a callous roll to seal existing damage.

Leaf scale: insect pest common on Sycamore.

Mistletoe: parasitic plant. Susceptible species include ash, oak and ornamental pear.

Needle blight: atypical damage on the needles of evergreen trees.

Oyster shell: saprophytic fungi common on dead limbs and dead trees.

Phytophthora: water mold associated with crown and root rot in trees, most commonly oak species.

Pit scale: insect pest colonizing the bark of susceptible trees, most commonly oak species.

Powdery mildew: fungal disorder of sycamore and crape myrtle. Occasionally seen in conjunction with anthracnose. Causes a strong allergic response in susceptible people.

Sap rot: pathogenic decay fungi primarily associated with the vascular tissue of trees. Often a more serious issue than wood decay fungi.

Shelf fungi: describes the shape of fungal fruiting bodies. Instead of typical mushrooms with capped stalks, these fungi appear (often on the trunk or a large limb) with a wedge or shelf shape.

Sooty mold: Sticky, moldy black residue often associated with aphids and/or scale insects.

Stem gall: Noticeable swelling in a stem due to insect infestation.

Sucker growth: atypical growth extending from the base of the tree from roots or the trunk.

Verticillium wilt: common fungal disorder of maple and palm.

Target canker: fungal disorder with a circular ringed appearance reminiscent of a target

Trametes versicolor: saprophytic fungi common on dead limbs and dead trees.

Water sprouts: atypical growth response wherein shoots extend vigorously upward with weak branch attachments.

Cultural Practices: The way humans care for trees over time including activities such as watering, weed management, pruning.

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