



April 21, 2021

Doug Davis
WMB Architects
246 E. Main St.
Stockton, CA 95202

Subject: **Arborist Report**
Diablo Water District, Oakley CA

Dear Mr. Davis

WMB Architects is working with the Diablo Water District (DWD) on the proposed expansion of their maintenance facility, in Oakley CA. The City of Oakley requires an **Arborist Report** be prepared as part of the project submittals. HortScience | Bartlett Consulting (Divisions of the F.A. Bartlett Tree Expert Co.) was asked to prepare an **Arborist Report** for the project. This letter responds to that request.

Description of Trees

I visited the site on April 9, 2021. Twenty-three (23) trees were assessed across what is an empty lot at the corners of Oakley Rd. and Rose Avenue. Trees were tagged as #351-373. Descriptions of trees are provided in the **Tree Assessment Form** and locations are shown on the **Tree Assessment Map** (see attachments)

Following are brief descriptions of the trees:

- Trees #351 and 352 were coast live oaks (*Quercus agrifolia*) growing along the fence line between the empty lot and the existing DWD treatment facility. Both trees were semi-mature, with #351 measuring 19" in trunk diameter and #352 measuring 21" and 20" (it had two stems). Coast live oak #351 was in good condition and #352 was in fair, primarily as a result of the trunk having grown around the fence (Photo1, following page).
- Fifteen (15) trees of heaven (*Ailanthus altissima*) were assessed (#353-367), with trunks measuring from 4" to 15" in diameter. The species is considered invasive and was starting to take over the site. Condition of the trees of heaven was poor (8 trees) to fair (7 trees) and several had extensive trunk wounding and decay, possibly from frost damage.
- Fremont cottonwoods #369 and 371 were located near the corners of Rose Ave. and Oakley Road. They were mature in form and development, measuring 38" and 31" in diameter, respectively. Tree #369 was in poor condition, having been topped at some point in the past. Tree #371 was in fair condition.

The remaining 4 species were represented by single individuals, including:

- Australian bottle tree (*Brachychiton populneus*) #368 was young (10") and in good condition.
- Calif. black walnut (*Juglans hindsii*) #370 was young, with two trunks measuring 6" and 4" in diameter. It was in poor condition.
- River sheoak #372 (*Allocasuarina cunninghamiana*) was a stump sprout, with several stems measuring between 8" and 18" in diameter. It was in poor condition, with poor form and structure.
- Mulberry (*Morus alba*) #373 was mature at 22" in diameter. It had good form but a dead top and was in poor condition.

On all properties within the City of Oakley, Zoning Ordinance 9.1.1112 defines all California native oaks with a trunk diameter of 15.6" or greater as *Heritage*. On any undeveloped property, any tree with a trunk diameter of 15.6" or greater is considered *Heritage*. Based on these definitions, six of the trees assessed at DWD site qualified as *Heritage* trees, including #351, 352, 369 and 371-373.



Photo 1 (L): Looking northwest at coast live oaks #351 (L), 352 (center) and tree of heaven #353 (R), with the undeveloped lot in the background. Coast live oaks were in good and fair condition, respectively. Most of the trees of heaven were in poor condition and the species is invasive.

Inset (below): Shows the fence embedded in the trunk of coast live oak #352, the primary reason for its fair condition.



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.

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.
- **Species response**
There is a wide variation in the response of individual species to construction impacts and changes in the environment. In this case, coast live oak is tolerant of site disturbance, while mature Fremont cottonwood is less so.
- **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 are better able to generate new tissue and respond to change.
- **Invasiveness**
Species which 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/paf/>) lists species identified as being invasive. Walnut Creek is part of the Central West Floristic Province. Tree of heaven was the only species assessed at the DWD site that is listed as being 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. Suitability ratings are provided for each tree in the **Tree Assessment Forms** (see Exhibits). A summary is provided in Table 1.

**Table 1: Tree Suitability for Preservation
Diablo Water District, Oakley CA**

High	These are trees with good health and structural stability that have the potential for longevity at the site. None of the trees were considered highly suitable for preservation.
Moderate	Trees in this category have fair health and/or structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Coast live oaks #351 and 352, Australian bottle tree #368 and Fremont cottonwood #371 were of moderate suitability for preservation.

**Table 1, continued: Tree Suitability for Preservation
Diablo Water District, Oakley CA**

Low	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. Tree of heaven #353-367, Fremont cottonwood #369, Calif. black walnut #370, river sheoak #372 and mulberry #373 were of low suitability for preservation.
------------	--

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.

Evaluation of Impacts

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The **Tree Assessment** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Site Improvement Plan prepared by WMB Architects (dated 4/21/2021).

The plans proposes to construct a new administrative and shop building and a covered equipment storage building on the site, with parking added along Rose Ave. and the northern property line. Infiltration basins would be added across the site.

Impacts from the proposed changes were estimated for each tree. Based on my assessment of the plans, Coast live oaks #351 and 352 can be preserved, with ~10' clearance between the trees and the adjacent infiltration basin. Both of the coast live oaks qualified as *Heritage* trees. Table 2 provides the recommended action for each tree. Preservation of trees is predicated on all contractors following the **Tree Preservation Guidelines** provided on the following page.

The remaining 21 trees would be directly impacted by the proposed changes, requiring their removal, including *Heritage* trees #369, 371-373.

**Table 2. Recommendations for Action
Diablo Water District, Oakley CA**

Tree No.	Common Name	Trunk Diameter	Heritage?	Recommendation for Action
351	Coast live oak	19	Yes	Preserve , 10' SE. of inflt. basin
352	Coast live oak	21,20	Yes	Preserve , 10' SE. of inflt. basin
353	Tree of heaven	12,8	No	Remove, invasive species
354	Tree of heaven	8	No	Remove, invasive species
355	Tree of heaven	14	No	Remove, invasive species
356	Tree of heaven	15,15,14	No	Remove, invasive species

(Continued, following page)

**Table 2, continued. Recommendations for Action
Diablo Water District, Oakley CA**

357	Tree of heaven	8	No	Remove, invasive species
358	Tree of heaven	8	No	Remove, invasive species
359	Tree of heaven	9,8,7,7	No	Remove, invasive species
360	Tree of heaven	6,6,4	No	Remove, invasive species
362	Tree of heaven	11,10	No	Remove, invasive species
363	Tree of heaven	6,4	No	Remove, invasive species
364	Tree of heaven	11	No	Remove, invasive species
365	Tree of heaven	14	No	Remove, invasive species
366	Tree of heaven	15,11,11	No	Remove, invasive species
367	Tree of heaven	7	No	Remove, invasive species
368	Australian bottle tree	10	No	Remove, within bldg. footprint
369	Fremont cottonwood	38	Yes	Remove, within parking
370	Calif. black walnut	6,5	No	Remove, within parking
371	Fremont cottonwood	31	Yes	Remove, within parking
372	River sheoak	18,10,9,8,8	Yes	Remove, within grading
373	Mulberry	22	Yes	Remove, within grading

Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Trees retained on sites that are either subject to extensive injury during construction or are inadequately maintained become a liability rather than an asset. The response of individual trees will depend on the amount of excavation and grading, the care with which demolition is undertaken, and the construction methods.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

1. Any changes to the plans affecting the trees shall be reviewed by the consulting arborist with regard to tree impacts. These include, but are not limited to, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition.
2. Plan to either leave the portion of the fence that is embedded in the trunk of tree #352 in place by cutting it just outside the trunk.
3. A **Tree Protection Zone** shall be established around each tree to be preserved. No trenching, excavation, construction or storage of materials shall occur within that zone. No underground services including utilities, sub-drains, water or sewer shall be placed in the **Tree Protection Zone**. Spoil from trench, footing, utility or other excavation shall not be placed within the **Tree Protection Zone**, either temporarily or permanently. The **Tree Protection Zone** for trees #351 and 352 shall be defined at 10' NW (at the limit of the infiltration basin) and at the dripline in all other directions.

4. Underground services including utilities, sub-drains, water or sewer shall be routed around the **Tree Protection Zone**. Where encroachment cannot be avoided, special construction techniques such as hand digging or tunneling under roots shall be employed where necessary to minimize root injury.
5. **Tree Preservation Guidelines**, prepared by the Consulting Arborist, should be included on all plans.
6. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
7. Irrigation systems must be designed so that no trenching will occur not within the **Tree Protection Zone**.

Pre-construction treatments and recommendations

1. The construction superintendent shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.
2. Trees recommended for preservation may require clearance pruning for construction. Pruning of off-site trees must be done with the property owner's permission. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the latest edition of the ANSI Z133 and A300 standards as well as the *Best Management Practices -- Tree Pruning* published by the International Society of Arboriculture.
3. 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.
4. Prior to grading for the new driveway, tree #2 may require root pruning outside the **Tree Protection Zone** by cutting all roots cleanly to the depth of the excavation. Pruning of off-site trees must be done with the property owner's permission. Roots shall be cut by manually digging a trench and cutting exposed roots with a sharp saw, or other approved root pruning equipment.
5. The Consulting Arborist will identify where root pruning is required and monitor all root pruning activities.
6. Do not lime treat soil within 25' of the trees to be preserved.

Recommendations for tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are required to meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas and tree protection measures.
2. Any excavation within the dripline or other work that is expected to encounter tree roots should be approved and monitored by the Consulting Arborist. Roots shall be cut by manually digging a trench and cutting exposed roots with a sharp saw. The Consulting Arborist will identify where root pruning is required and monitor all root pruning activities.

3. 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.
4. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **Tree Protection Zone**.
5. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

Maintenance of impacted trees

Trees preserved at the Diablo Water District site 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. As trees age, the likelihood of failure of branches or entire trees increases. Therefore, annual inspection for hazard potential is recommended.

HortScience | Bartlett Consulting



John Leffingwell
Board Certified Master Arborist WE-3966B
Registered Consulting Arborist #442

Attached: *Tree Assessment Form*

Tree Assessment Map

Tree Assessment

Diablo Water District
Oakley, California
April 2021



TREE No.	SPECIES	SIZE DIAMETER (in inches)	HERITAGE	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
351	Coast live oak	19	Yes	4	Moderate	Codominant trunks at 6'; crowded & leans SW.; fill at base S.
352	Coast live oak	21,20	Yes	3	Moderate	Codominant trunks at 4'; grew through fence/embedded fence; fill at base S.
353	Tree of heaven	12,8	No	3	Low	Codominant trunks at 2'; suppressed by #352; trunk wound & decay.
354	Tree of heaven	8	No	2	Low	Suppressed; poor form and structure.
355	Tree of heaven	14	No	3	Low	Crowded; one sided N.
356	Tree of heaven	15,15,14	No	3	Low	Multiple attachments at 3'; upright form; trunks no wounds & decay.
357	Tree of heaven	8	No	2	Low	Suppressed; poor form and structure; growing against fence.
358	Tree of heaven	8	No	2	Low	Extensive trunk wounds & decay; growing against fence.
359	Tree of heaven	10	No	1	Low	Extensive trunk wounds & decay; dead top.
359	Tree of heaven	9,8,7,7	No	3	Low	Multiple attachments at base; upright, narrow
360	Tree of heaven	6,6,4	No	3	Low	Multiple attachments at base; upright, poor form; 4" stem lost top.
362	Tree of heaven	11,10	No	3	Low	Codominant trunks at base; trunk wound & decay; moderate dieback.
363	Tree of heaven	6,4	No	3	Low	Codominant trunks at base; suppressed.
364	Tree of heaven	11	No	1	Low	All but dead; only basal sprouts remain.
365	Tree of heaven	14	No	2	Low	Topped for overhead utilities; trunk wounds & decay; moderate dieback.

Tree Assessment

Diablo Water District
Oakley, California
April 2021



TREE No.	SPECIES	SIZE DIAMETER (in inches)	HERITAGE	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
366	Tree of heaven	15,11,11	No	2	Low	Multiple attachments at 2'; topped for overhead utilities; trunk wounds & decay; central leader dead.
367	Tree of heaven	7	No	1	Low	All but dead; only basal sprouts remain.
368	Australian bottle tree	10	No	4	Moderate	Codominant trunks at 7'; topped at 12'; metal attached to trunk.
369	Fremont cottonwood	38	Yes	2	Low	Codominant trunks at 8'; leans S.; topped at 25'; trunk wounds & decay.
370	Calif. black walnut	6,5	No	1	Low	All but dead.
371	Fremont cottonwood	31	Yes	3	Moderate	Multiple attachments at 15'; cankers/burls; fair form and structure.
372	River sheoak	18,10,9,8,8	Yes	2	Low	Multiple attachments at 3'; stump sprout; poor form and structure.
373	Mulberry	22	Yes	2	Low	Multiple attachments at 7'; dead top; trunk wounds & decay.

Tree Assessment Map

Diablo Water District
Corporation Yard
3990 Main Street
Oakley, CA

Prepared for:
WMB Architects
Stockton, CA

April 2021

No Scale

Notes:

Base map provided by:
WMB Architects
Stockton, CA

Numbered tree locations are approximate.

TS = Too small. Not included in this assessment.

