Appendix B-4

Updated Arborist Report

August 21, 2018

The Grupe Company
3255 W. March Lane, Suite 400
Stockton, CA 95129

Subject: Review and Comment on Water Line Connection

Dear Mr. Masters:

You asked that I review development plans for the Water Line Connection Project entering from the southeast perimeter of the property. I reviewed the Preliminary Arborist Report that I wrote on March 16, 2017. I reviewed the plans that were sent over August 9 prepared by Wood Rodgers dated May 2018. The water line connection location had been identified as 8' wide. My observations and assessment of the plans are summarized below.

Description of the Trees
The conditions outlined in the March 16, 2018 Preliminary Arborist Report, in which 97 trees, including 42 off-site trees, were assessed. At the time of my inspection, March 7, 2016, 81% of the trees were in fair condition, 16% in poor and 2% were in good.

The 85 blue gum eucalyptus were generally in fair condition (70 trees) and 15 trees were in poor condition. The eucalyptus trees were young to over-mature in development, with diameters ranging from 3 to 82 inches. The average trunk diameter was 25.5 inches. The largest off-site tree (82 inch trunk diameter) had a canopy that extended on to the property by 10 foot.

Preliminary Evaluation of Impacts and Recommendations for Action
Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The ***2016 Preliminary Arborist Report*** was the reference point for tree condition and quality. I used the Water Line Connection Alternative 3 (dated May 2018) prepared by Wood Rodgers for this analysis. Only the row of off-site blue gum eucalyptus trees along the southeast side of the perimeter would be impacted by this plan (tree tag numbers 11-25). In order to finalize tree disposition, a map with accurate trunk locations and tag numbers for all trees would need to be reviewed.

The plan shows an 8 foot wide pipe entering from the southeast and running along the east side of the property line to the north. Based on the reviewed plans and the water line connection location, I identified trees 11 – 25 would need to be removed to accommodate the design. I estimate that work will occur within the dripline of the trees. However, without surveyed trunk locations and tree tag numbers shown on plans, I was unable to accurately assess tree impacts from water line construction.

Preservation is possible for the remaining 23 off-site blue gum eucalyptus trees (#6-10 and 26-43). This group of trees ranges are beyond the construction of the water line. Once designated trees have been removed, the area where the remaining trees are located can be closed to construction activities. A fence should be placed at the top of the slope, delineating the **Tree Protection Zone** where no equipment, vehicular or pedestrian traffic are allowed.

Tree Appraisal

The City of Hayward requires an appraisal of the value of the trees on the property. In appraising the value of the trees, we employed the standard methods found in ***Guide for Plant Appraisal***, 9th edition (International Society of Arboriculture, Champaign IL, 2000). In addition, we referred to ***Species Classification and Group Assignment*** (2004), a publication of the Western Chapter of the International Society of Arboriculture. These two documents outline the methods employed in tree appraisal.

The value of landscape trees is based on four factors: size, species, condition and location. Size is measured as trunk diameter, normally 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the East Bay area. The ***Species Classification and Group Assignment*** lists recommended species ratings. Condition reflects the health and structural integrity of the individual. The location factor considers the site, placement and contribution of the tree in its surrounding landscape.

The value of the 88 trees to be preserved is $144,300. The value of the 15 off-site trees to consider for replacement due to the installation of the water line connection is $22600. The value of each tree is given in the **Tree Appraisal** exhibit.

Summary and Recommendations

Based on my review of the water line connection plans, trees identified for preservation are well outside the project area and, with adherence to the **Tree Preservation Guidelines** (attached), can be preserved sustaining little or no construction impacts.

If you have any questions regarding my observations or recommendations, please feel free to contact me.

Sincerely,

Maryellen Bell
ISA Certified Arborist No. WE-5643A

Exhibits: **Tree Appraisal**
Tree Planting Guidelines

Tree Preservation Guidelines

Water Line Connection
The Grupe Company
3255 W. March Lane, Suite 400
Stockton, California

HORT SCIENCE
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A Division of The F.A. Bartlett Tree Expert Company

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 depends on the amount of excavation and grading, care with which demolition is undertaken, and construction methods. Coordinating any construction activity inside the **TREE PROTECTION ZONE** can minimize these impacts.

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.

Tree Protection Zone

1. **A TREE PROTECTION ZONE** shall be identified for each tree to be preserved on the Tree Protection Plan prepared by the project arborist.
    a. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link with posts sunk into the ground..
    b. Fences must be installed prior to beginning demolition and must remain until construction is complete.
    c. No grading, excavation, construction or storage or dumping of materials shall occur within the **TREE PROTECTION ZONE**.
    d. No underground services including utilities, sub-drains, water or sewer shall be placed in the **TREE PROTECTION ZONE**.

Design Recommendations

2. Plot accurate locations of all trees to be preserved on all project plans.
3. Plan for tree preservation by designing adequate space around trees to be preserved. This is the **TREE PROTECTION ZONE:** No grading, excavation, construction or storage of materials should occur within that zone. Route underground services including utilities, sub-drains, water or sewer around the **TREE PROTECTION ZONE**. The **TREE PROTECTION ZONE** shall be defined as the tree dripline or the top of the slope area.
4. Consider the vertical clearance requirements near trees during design. Avoid pruning more than 20% of a tree's canopy.

5. All plans affecting trees shall be reviewed by the Project Arborist with regard to tree impacts. These include, but are not limited to, demolition plans, grading plans, drainage plans, utility plans, and landscape and irrigation plans.
6. **TREE PROTECTION ZONE** shall be the entire top of the slope area to the dripline of the outer most tree. No grading, 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**.
7. Irrigation systems must be designed so that no trenching severs roots larger than 1 inch in diameter will occur within the **TREE PROTECTION ZONE**.
8. **Tree Preservation Guidelines** prepared by the Project Arborist, which include specifications for tree protection during demolition and construction, should be included on all plans.
9. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
10. Do not lime the subsoil within 50 feet of any tree. Lime is toxic to tree roots.
11. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.
12. Ensure adequate but not excessive water is supplied to trees; in most cases occasional irrigation will be required. Avoid directing runoff toward trees.

Pre-demolition and pre-construction treatments and recommendations

1. The demolition and construction superintendents shall meet with the Project Arborist before beginning work to review all work procedures, access routes, storage areas, and tree protection measures.
2. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link with posts sunk into the ground or equivalent as approved by the Project Arborist.
3. Fence all trees to be retained to completely enclose the Tree Protection Zone prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link. Fences are to remain until all grading and construction is completed. The Tree protection zones shall be:
    - Fence the entire top of the slope area to the dripline of the outer most tree.
4. Apply and maintain 4-6 inches wood chip mulch within the **TREE PROTECTION ZONE**. Keep the mulch 2 feet from the base of tree trunks.
5. Branches extending into the work area that can remain following demolition shall be tied back and protected from damage.
6. Prune trees to be preserved to clean the crown of dead branches 1 inch and larger in diameter, raise canopies as needed for construction activities. All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300). The Project Arborist will provide pruning specifications prior to site demolition. Branches extending into the work area that can remain following demolition shall be tied back and protected from damage.

7. Tree(s) to be removed that have branches extending into the canopy of tree(s) or located within the **TREE PROTECTION ZONE** of tree(s) to remain shall be removed by a Certified Arborist or Certified Tree Worker and not by the demolition contractor. The Certified Arborist or Certified Tree Worker shall remove the trees in a manner that causes no damage to the tree(s) and understory to remain. Stumps that are on level ground shall be ground below grade. Stumps on the slope should be left in place so as not to disturbed the slope.
8. Trees to be removed shall be felled so as to fall away from **TREE PROTECTION ZONE** and avoid pulling and breaking of roots of trees to remain. If roots are entwined, the Project Arborist may require first severing the major woody root mass before extracting the trees, or grinding the stump below ground.
9. All down brush and trees shall be removed from the **TREE PROTECTION ZONE** either by hand, or with equipment sitting outside the **TREE PROTECTION ZONE**. Extraction shall occur by lifting the material out, not by skidding across the ground. Brush shall be chipped and spread beneath the trees within the **TREE PROTECTION ZONE.**
10. Structures and underground features to be removed within the **TREE PROTECTION ZONE** shall use equipment that will minimize damage to trees above and below ground, and operate from outside the **TREE PROTECTION ZONE**. Tie back branches and wrap trunks with protective materials to protect from injury as directed by the Project arborist. The Project arborist shall be on-site during all operations within the **TREE PROTECTION ZONE** to monitor demolition activity.
11. All tree work shall comply with the Migratory Bird Treaty Act as well as California Fish and Wildlife code 3503-3513 to not disturb nesting birds. To the extent feasible tree pruning and removal should be scheduled outside of the breeding season. Breeding bird surveys should be conducted prior to tree work. Qualified biologists should be involved in establishing work buffers for active nests.

Recommendations for tree protection during construction

1. Any approved grading, construction, demolition or other work within the **TREE PROTECTION ZONE** should be monitored by the Project Arborist.
2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.
3. Tree protection devices are to remain until all site work has been completed within the work area. Fences or other protection devices may not be relocated or removed without permission of the Project Arborist.
4. Construction trailers, traffic and storage areas must remain outside **TREE PROTECTION ZONE** at all times.
5. Any root pruning required for construction purposes shall receive the prior approval of and be supervised by the Project Arborist. Roots should be cut with a saw to provide a flat and smooth cut. Removal of roots larger than 2 inches in diameter should be avoided. If an abundance of roots are found in the drill hole material contact the Project Arborist.
6. If roots 2 inch and greater in diameter are encountered during site work and must be cut to complete the construction, the Project Arborist must be consulted to evaluate effects on the health and stability of the tree and recommend treatment.
7. Any brush clearing required within the **TREE PROTECTION ZONE** shall be accomplished with hand-operated equipment.

8. All down brush and trees shall be removed from the **TREE PROTECTION ZONE** either by hand, or with equipment sitting outside the **TREE PROTECTION ZONE**. Extraction shall occur by lifting the material out, not by skidding across the ground.
9. Prior to grading or trenching, trees may require root pruning outside the **TREE PROTECTION ZONE.** Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Project Arborist.
10. Spoil from trench, footing, utility or other excavation shall not be placed within the **TREE PROTECTION ZONE**, neither temporarily nor permanently.
11. All trees shall be irrigated on a schedule to be determined by the Project Arborist (every 3 to 6 weeks is typical). Each irrigation shall wet the soil within the **TREE PROTECTION ZONE** to a depth of 30 inches.
12. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Project Arborist so that appropriate treatments can be applied.
13. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.
14. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.
15. Trees that accumulate a sufficient quantity of dust on their leaves, limbs and trunk as judged by the Project Arborist shall be spray-washed at the direction of the Project Arborist.

Maintenance of impacted trees

Preserved trees will experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, provisions for monitoring both tree health and structural stability following construction must be made a priority. As trees age, the likelihood of failure of branches or entire trees increases; therefore, annual inspection for hazard potential is recommended.

Maryellen Bell
ISA Certified Arborist No. WE-5643A

Tree Appraisal

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Appraised Value
1	Calif. buckeye	10	Yes	550
2	Calif. buckeye	8,7,6,5	Yes	950
3	Calif. buckeye	12,10,9,8	Yes	2050
4	Calif. buckeye	5,5,5	Yes	400
5	Calif. buckeye	8	Yes	350
6	Blue gum	82	Yes	7450
7	Blue gum	68	Yes	6600
8	Blue gum	29,23,12	Yes	3800
9	Blue gum	75	Yes	7100
10	Blue gum	20,16,12,8,6	Yes	2150
11	Blue gum	25,18	Yes	2400
12	Blue gum	22,17	Yes	1150
13	Blue gum	20,19,17,12	Yes	3000
14	Blue gum	16	Yes	650
15	Blue gum	11,5	Yes	250
16	Blue gum	25,19,16	Yes	3100
17	Blue gum	19,17,16	Yes	1350
18	Blue gum	19	Yes	900
19	Blue gum	8,7,6	Yes	250
20	Blue gum	17,12	Yes	1100
21	Blue gum	17,17,12	Yes	1800
22	Blue gum	16	Yes	150
23	Blue gum	45	Yes	4300
24	Blue gum	17,15,5	Yes	1350
25	Blue gum	17,7	Yes	850
26	Blue gum	14,12,5	Yes	950
27	Blue gum	28,18	Yes	2800
28	Blue gum	19	Yes	900
29	Blue gum	36,28,8	Yes	5250
30	Blue gum	22,21,19,17	Yes	800
31	Calif. buckeye	5,4,2	Yes	250
32	Calif. buckeye	4,4,3	Yes	250
33	Blue gum	40	Yes	3650
34	Blue gum	29,24,10	Yes	3800
35	Blue gum	39	Yes	700
36	Blue gum	30	Yes	450
37	Blue gum	23,23	Yes	550
38	Blue gum	31	Yes	2350
39	Blue gum	24, 20	Yes	1450
40	Blue gum	12,10,8	Yes	450

41	Blue gum	16,14,12	Yes	900
42	Blue gum	19,5	Yes	1000
43	Blue gum	23,19	Yes	2250
44	Coast live oak	19	Yes	7000
45	Blue gum	9	Yes	200
46	Blue gum	7	Yes	150
47	Blue gum	15	Yes	100
48	Blue gum	17,8,7,5,3	Yes	1100
49	Blue gum	11	Yes	300
50	Blue gum	6,6,4,2	Yes	250
51	Blue gum	4,2	No	50
52	Blue gum	5,3	Yes	100
53	Blue gum	7	No	150
54	Blue gum	7	No	150
55	Blue gum	9,7	Yes	350
56	Blue gum	12	Yes	350
57	Blue gum	8,6,3	Yes	300
58	Blue gum	5	No	100
59	Blue gum	26	Yes	1700
60	Blue gum	16,3,2,2	Yes	700
61	Blue gum	22,9,5	Yes	1500
62	Blue gum	15	Yes	600
63	Blue gum	21,7,6	Yes	1350
64	Blue gum	12	Yes	350
65	Blue gum	14	Yes	500
66	Blue gum	19,6	Yes	1000
67	Blue gum	36	Yes	3100
68	Blue gum	30,28	Yes	4200
69	Blue gum	24	Yes	1800
70	Blue gum	26	Yes	2100
71	Blue gum	27	Yes	2250
72	Willow	8,7,7,6	Yes	500
73	Blue gum	6,5,3,1,1,1	Yes	50
74	Blue gum	5,4,2	Yes	150
75	Blue gum	28,19,18	Yes	4550
76	Blue gum	40,16	Yes	5300
77	Blue gum	36	Yes	3800
78	Willow	6	No	0
79	Coast live oak	10	Yes	1200
80	Coast live oak	7	Yes	1050
81	Blue gum	24	Yes	1450
82	Blue gum	24, 8	Yes	300
83	Blue gum	31	Yes	2350
84	Blue gum	24,13	Yes	1900
85	Blue gum	19,19,17, 12,9	Yes	2900
86	Blue gum	27,21	Yes	2950
87	Blue gum	16	Yes	650

88	Blue gum	27	Yes	1850
89	Blue gum	21	Yes	1100
90	Blue gum	21	Yes	1100
91	Blue gum	21,11	Yes	1400
92	Blue gum	15	Yes	600
93	Blue gum	5	No	100
94	Blue gum	16,4	Yes	700
95	Blue gum	43	Yes	4050
96	Blue gum	25	Yes	1600
97	Blue gum	26	Yes	1700
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