SAN TOMAS AQUINO/SARATOGA CREEK REACH 6 RIPARIAN MITIGATION PROJECT

Fifth Year Monitoring Report

Prepared for
City of San Jose

December 2010

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EXECUTIVE SUMMARY

On behalf of the City of San Jose Environmental Science Associates (ESA) is conducting monitoring of the San Tomas Aquino/Saratoga Creek Trail Reach 6 Riparian Mitigation site. Monitoring will occur over a minimum ten year period at planting sites located in San Jose, California. This report summarizes the fifth year's monitoring results and provides recommendations.

In 2004 the City of San Jose completed construction of the San Tomas Aquino/Saratoga Creek Trail Reach 6 Project, which is a 1.1 mile pedestrian and bicycle trail that extends along Saratoga Creek. The project resulted in permanent impacts to 0.71 acre of upland riparian habitat. This impact included 0.39 acre (16,880 square feet) of riparian tree removal and 0.32 acre (14,000 square feet) of vegetation limbing and removal of understory vegetation.

In 2004 and 2005, the City restored a total of 2.15 acres of riparian habitat (a 3:1 replacement ratio), including 740 native riparian trees and shrubs, as mitigation. This mitigation also incorporated a 4:1 replacement ratio for two ordinance-sized trees that were removed. Riparian mitigation plantings were installed along Saratoga Creek adjacent to the Saratoga Creek Trail.

The first year annual monitoring was conducted in July 2006. The site was performing well for the first year. Survival was high and exceeded the 80% survival performance standard. The average health and vigor ratings ranged between good and excellent for all species. Percent cover of plantings and invasive species were not monitored in Year 1.

Annual monitoring was not conducted in the second or third year and there was no documentation to the type or extent of maintenance conducted during those years.

Fourth year annual monitoring was conducted in 2009. Monitors that year did not differentiate between planted and volunteer plants and included both in the percent survival. Total percent survival, including volunteers, was below the 80% performance standard at 68%. Most surviving plantings and volunteers had good and excellent health and vigor ratings. Plant cover was not measured again in 2009, but the report did note that invasive species cover was high.

In September, 2010, fifth year annual monitoring was conducted at the mitigation area. Overall, the site is performing poorly. Plant survival this year was only 49%. Percent cover was monitored for the first time this year. Most of the surviving planting areas do not have enough cover to meet the fifth year performance standards. Recent weed maintenance has removed a significant amount of non-native invasive cover within the planting areas, which enabled most planting areas to meet the invasive species cover performance standard.

SECTION 1
Introduction

1.1 Purpose and Background

This report details the annual riparian monitoring results conducted on behalf of the City of San Jose (City) by Environmental Science Associates (ESA) for the San Tomas Aquino/Saratoga Creek Trail Reach 6 Riparian Mitigation Project. The Project was executed by the City of San Jose as mitigation for impacts to upland riparian habitat from the San Tomas Aquino/Saratoga Creek Trail Reach 6 Trail Project. Trail construction and riparian mitigation was implemented in 2004 and 2005 in accordance with the *San Tomas Aquino/Saratoga Creek Trail Reach 6, Riparian Habitat Mitigation and Monitoring Plan* (MMP; Biotic Resources Group, 2003) and *Addendum to the San Tomas Aquino/Saratoga Creek Trail Reach 6, Riparian Habitat Mitigation and Monitoring Plan* (Biotic Resources Group, 2004).

San Tomas Aquino/Saratoga Creek Trail Reach 6 Trail Project, including mitigation and monitoring, was permitted by the following agencies: San Francisco Regional Water Quality Control Board [RWQCB; File No. 2188.07 (bkw), Site No. 02-43-C0461], California Department of Fish and Game (CDFG; 1600-2003-5234-3), and United States Army Corps of Engineers (28228S).

The following report documents the previous years' maintenance and monitoring efforts and documents the fifth year monitoring results and recommendations. This report includes a description of the mitigation site, monitoring methods, results, conclusions, and recommendations for the project to meet the established performance standards.

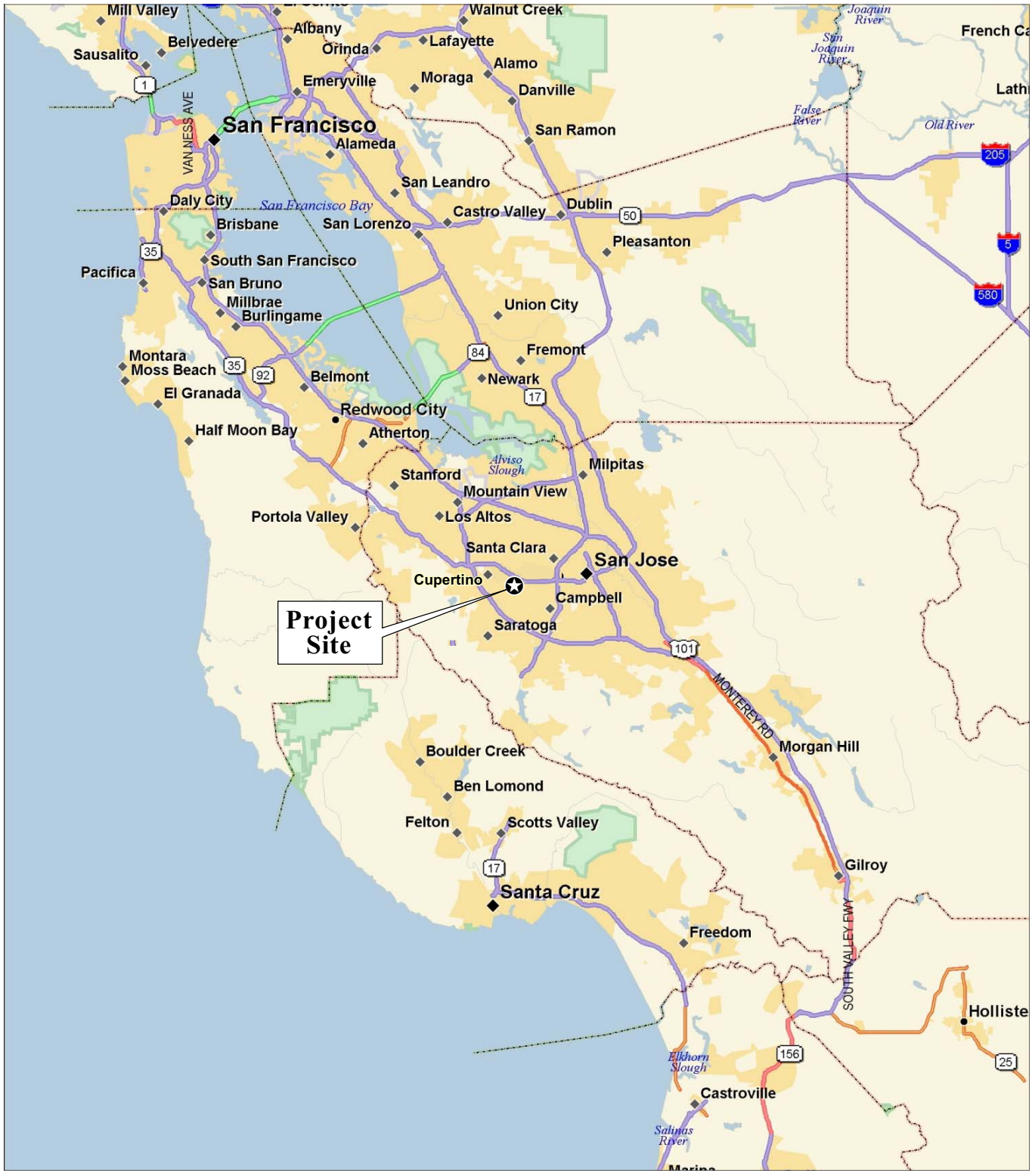
1.2 Mitigation Location and Description

In 2004 the City of San Jose completed construction of the San Tomas Aquino/Saratoga Creek Trail Reach 6 Project. The 1.1 mile pedestrian and bicycle trail extends north to south along Saratoga Creek between Bollinger Road and English Drive in San Jose, Santa Clara County, California (**Figures 1 and 2**). In addition to trail construction, the City installed a bridge over Saratoga Creek, new storm drain outfalls into the creek, and other site improvements (i.e. retaining walls) along the creek. According to the MMP, the project resulted in permanent impacts to 0.71 acre of upland riparian habitat. This impact included 0.39 acre (16,880 square feet) of riparian tree removal and 0.32 acre (14,000 square feet) of vegetation limbing and removal of understory vegetation.

As mitigation for these impacts, the MMP describes a 3:1 replacement ratio for impacted riparian habitat. This mitigation also incorporated a 4:1 replacement ratio for two ordinance-sized trees that were removed. In 2004 and 2005 a total of 2.15 acres of riparian habitat, including 740 native riparian trees and shrubs, were installed as mitigation. The planting locations are shown in **Figure 3**.

The trail and mitigation area is located along Saratoga Creek, which flows north/northeast from the Santa Cruz Mountains and eventually reaches South San Francisco Bay via Guadalupe Slough. The majority of the creek is located within a narrow riparian corridor surrounded by dense residential and commercial development of the Cities of San Jose and Santa Clara. The Lawrence Expressway closely borders the eastern boundary of the corridor. Within the project area, the creek channel is fairly steep and narrow with banks largely dominated by non-native species such as Himalayan blackberry (*Rubus discolor*). Riparian woodland buffers the majority of the creek channel and is dominated by coast live oak (*Quercus agrifolia*), white alder (*Alnus rhombifolia*), blue elderberry (*Sambucus mexicana*), and sycamore (*Platanus racemosa*). The understory is a mix of native shrubs including California blackberry (*Rubus ursinus*) and coyote brush (*Baccharis pilularis*) as well as non-native Himalayan blackberry and French broom (*Genista monspessulanus*) with a non-native annual grassland herbaceous layer.

Before planting occurred, invasive species such as French broom and fennel (*Foeniculum vulgare*) were removed from the upland riparian planting areas. Upland riparian plantings were then installed in openings in the upland riparian woodland and as understory in closed canopies. Willow plantings were installed at the edges of the creek channel in a few areas but primarily on the western bank.



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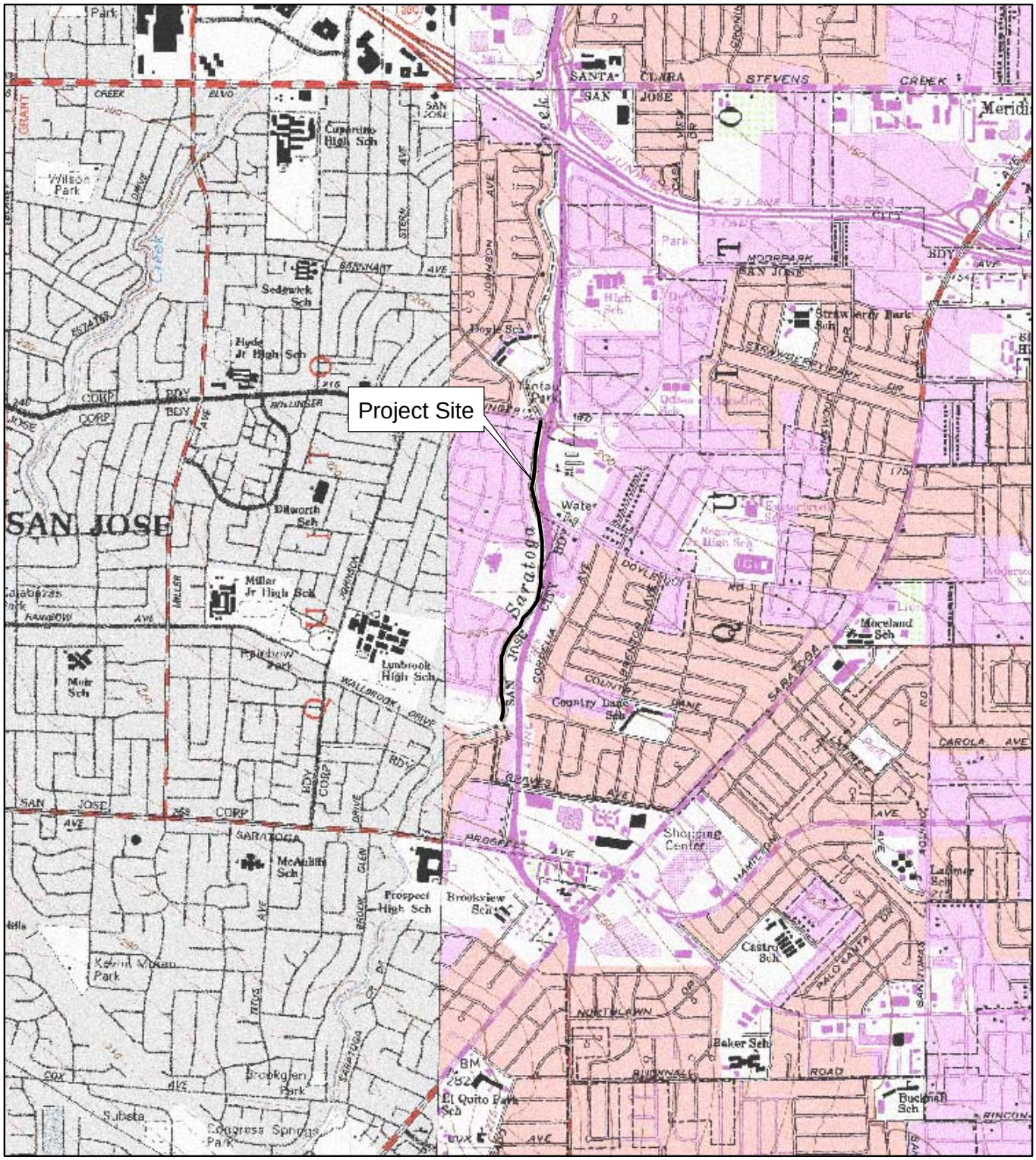
San Tomas Aquino/Saratoga Creek Trail Reach 6 Fifth Year Monitoring Report . 210011

SOURCE: LSA, 2009

Figure 1

Regional Location of Project

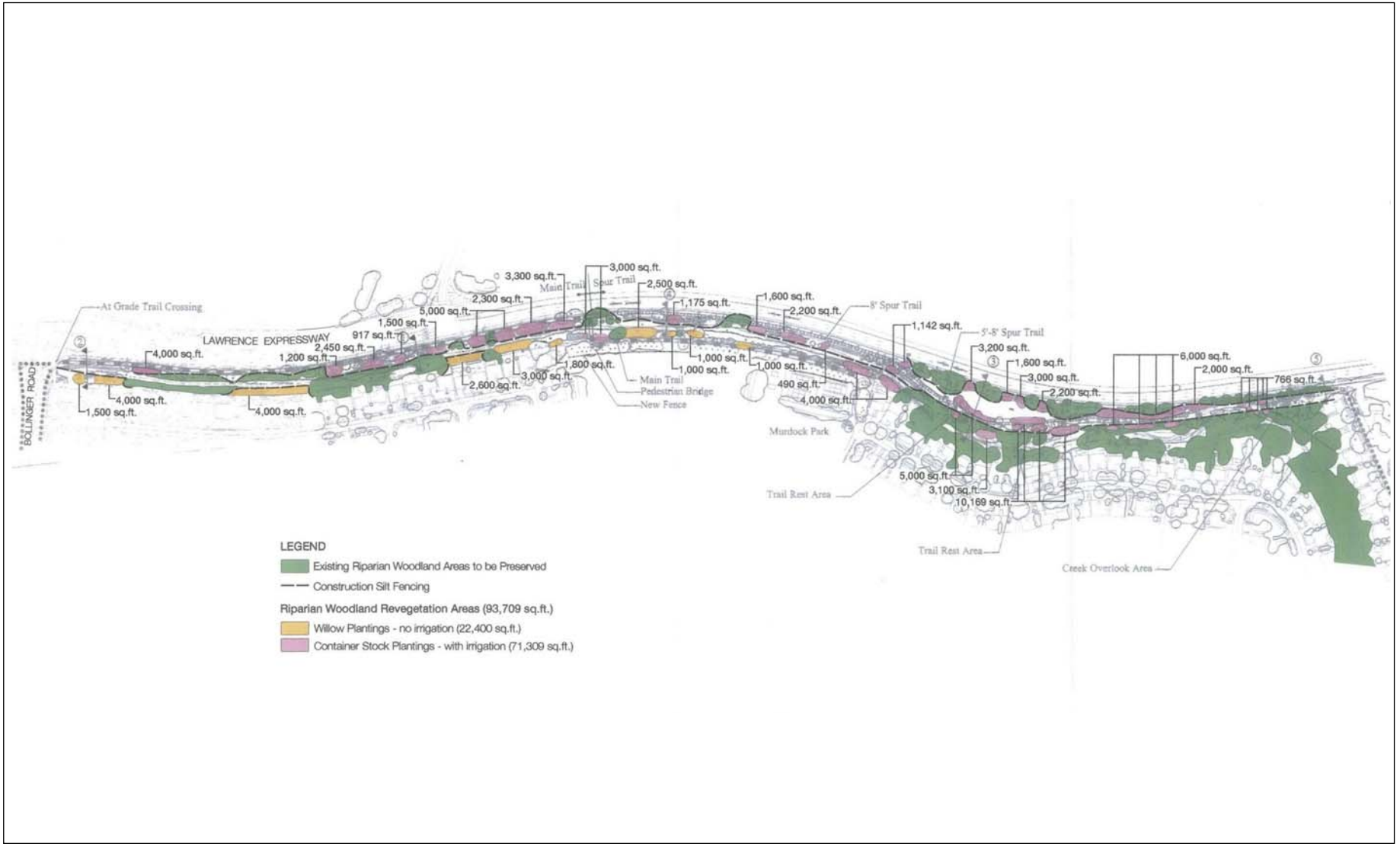


SOURCE: LSA, 2009

San Tomas Aquino/Saratoga Creek Trail Reach 6 Fifth Year Monitoring Report . 210011

Figure 2

Project Site Location



SOURCE: LSA, 2009

Figure 3
Riparian Habitat Planting Plan

1.4 Mitigation Program Goals

The goal of the mitigation program is to preserve, restore and enhance the existing riparian resources within the San Tomas Aquino/Saratoga Creek Reach 6 Trail project area. The mitigation program is intended to provide compensation for impacts to riparian woodland habitat from the Trail project.

The primary goals of the MMP are to:

- Avoid impacts to existing wetland and riparian resources to the greatest extent practicable through environmentally sensitive site design.
- Minimize impacts to wetland and riparian resources during project construction through site-specific protective measures, including pre-construction surveys for raptors and the placement of exclusionary fencing for pond turtles.
- For riparian resources directly impacted by trail construction activities, achieve riparian habitat at a replacement ratio of 3:1 for all trees and native vegetation removed by the project (including a 4:1 replacement for removal of ordinance-sized trees).
- Remove invasive, non-native plant species from the project area.
- Improve on-site water quality through erosion control seeding and revegetation that will trap sediment before surface runoff reaches Saratoga Creek.
- Implement a 10-year[1] maintenance and monitoring program to ensure successful implementation of the MMP.

1.5 Monitoring Purpose

Monitoring is to be conducted annually in Years 1 through 5 and then again in years 7, 9 and 10. The purpose of the monitoring is to:

- determine total percent survivorship for the entire planting as well as on a per species basis;
- determine percent cover for the plantings as a whole and on a per species basis;
- determine percent cover of non-native invasive species;
- determine the average height of each tree species;

[1] The MMP establishes a 5-year monitoring period, while the Addendum to the MMP establishes a 10-year monitoring period for some elements.

- qualitatively evaluate site conditions (e.g., cover of native versus non-native, areas of significant die-off, areas of erosion, diseases) and make observations about necessary remedial actions (e.g., refuse removal, weed control, irrigation repairs, plant replacement); and

- photodocument the site at permanent photopoints.

1.5 Success Criteria

During the ten-year monitoring period the mitigation areas will be monitored and evaluated against established success criteria. The MMP established success criteria for monitoring in the first five years following planting and the Addendum to the MMP established success criteria for monitoring in Years 6 through 10. In some cases the CDFG Streambed Alteration Agreement included additional success criteria. **Table 1.1** details the annual and final success criteria for Years 1 through 10 as established in the MMP, Addendum to the MMP, and agency approvals. The final success criteria for this project consist of the following:

Plant Survival. Plantings shall have a minimum 80% survival by the fifth year. The Addendum to the MMP also includes container stock tree survival monitoring in Years 7, 9, and 10. Tree survival at Year 10 should be at least 70% of the initial planting rate.

Percent Cover. The MMP success criterion for total percent cover is contradictory. The MMP text states that by the fifth monitoring year, native woody plants (trees and shrubs) should provide a minimum of 60% cover. Table 6: Performance Standards for Years 1-4 and Final Success Criteria for Year 5 of the MMP states that by the fifth monitoring year tree cover should be 20% and shrub cover should be 25%, which only amounts to a total of 45% cover of native woody plants. The CDFG Streambed Alteration Agreement also states that the plantings shall have 75% cover after 5 years.

Additionally, by the fifth year of monitoring, the site should have less than 5% cover of invasive non-native plant species.

Tree Height. Select planted tree species shall reach specified tree height criteria by the fifth year, as specified in the MMP, and additional criteria by the tenth year, as specified in the Addendum to the MMP. These criteria are provided below in Table 1.1.

Tree and Shrub Health and Vigor. There are no success criteria for health and vigor and no monitoring methods for this parameter were established in the MMP. However, monitoring methods for these parameters were provided in the Year 1 monitoring report, and were also monitored in Year 4, so they should continue to be monitored.

The performance standards table (Table 6) of the MMP also includes standards for “drought stress per year” and “weed control per year”. These standards were not defined in the MMP, nor

were they reported in the previous monitoring reports. These parameters are addressed in the general site conditions.

TABLE 1.1
SUCCESS CRITERIA YEARS 1 THROUGH 10

Monitoring Parameter	Year 1	Year 2	Year 3	Year 4	Year 5	Year 7	Year 9	Year 10 (Final)
Percent Survival	80%	80%	80%	80%	80%	70%	70%	70%
Percent Cover Shrubs	5%	10%	15%	20%	25%	N/A[a]	N/A	N/A
Percent Cover Trees	2%	5%	10%	15%	20%	N/A	N/A	N/A
Total Percent Cover	N/A[b]	N/A	N/A	N/A	75%[c]	N/A	N/A	N/A
Invasive Non-Native Plant Species Cover	<20	<15	<15	<10	<5	N/A	N/A	N/A
Tree Height (feet)								
box elder	1	2	4	6	8	8	9	10
coast live oak	1	2	3	4	4	5	6	8
valley oak	1	2	3	4	4	5	6	8
willows	3	5	6	8	10	N/A	N/A	N/A
blue elderberry	3	4	5	5	6	8	8	10

a. In Years 6 through 10 only container stock tree survival and height success criteria are required to be monitored
b. Success criteria were not established for total percent cover for Years 1 through 4.
c. This is the most stringent percent cover success criteria for the site; it is included in the CDFG Streambed Alteration Agreement. The MMP includes two contradictory success criteria; in the text it states 60% and in the performance standards for Year 1-4 and Final Success Criteria for Year 5 it is 45%.

SECTION 2
Revegetation Monitoring

2.1 Background

Plant Installation 2004 and 2005

In winter 2004 willow poles were installed within designated planting areas along the creek bank. In summer 2005, container stock plants were installed following the completion of trail construction. A total of 241 willow poles, 350 shrubs, and 149 container stock trees were installed in the planting areas. Plantings included typical upland riparian species such as gooseberry (*Ribes californicum*), California rose (*Rosa californica*), snowberry (*Symphorcarpos albus*), coast live oak, valley oak (*Quercus lobata*), and box elder (*Acer negundo*). **Table 2.1** below details the number of plants installed for each species.

TABLE 2.1
SAN TOMAS AQUINO/SARATOGA CREEK: PLANT INSTALLATION

Scientific Name	Common Name	# Installed 2005
Shrubs		
Ceanothus thyrsiflorus	blue blossom	9
Mimulus aurantiacus	sticky monkeyflower	47
Myrica californica	wax myrtle	10
Rhamnus californica	coffeeberry	79
Ribes californicum	gooseberry	51
Rosa californica	California rose	65
Symphoricarpos albus	snowberry	65
Zauschneria californica	California fuchsia	24
TOTAL SHRUBS		**350**
Trees		
Acer macrophyllum	big leaf maple	10
Acer negundo	box elder	11
Quercus agrifolia	coast live oak	67
Quercus lobata	valley oak	55
Salix sp.	willows	241
Sambucus mexicana	blue elderberry	3
Sequoia sempervirens	coast redwood	3
TOTAL TREES		**390**
TOTAL		**740**

An underground drip and sprinkler irrigation system was installed for the plantings. Irrigation was connected to a programmable timer.

Maintenance Activities 2006 through 2009

As noted in the Year 1 monitoring report, the installed container plantings were regularly irrigated in spring 2006 through October 2006 (Biotic Resources Group, 2007). Regular maintenance was also implemented on-site in 2006. Work included weeding planting basins, removing invasive plant seedlings, replenishing mulch, removing litter, repairing irrigation lines, weed whipping, etc. Annual monitoring was conducted at the end of Year 1.

Annual monitoring was not conducted in Year 2 (2007) or Year 3 (2008) and there was no available documentation on the type or extent of maintenance conducted during those years.

In 2009, the City contracted LSA Associates, Inc. to identify immediate maintenance needs at the site. That same year, Central Coast Wilds was sub-contracted by LSA Associates to conduct summer weed maintenance in selected mitigation planting areas (LSA, 2009). Due to limited funds, priority was given to sites where invasive species such as French broom and fennel (*Foeniculum vulgare*) were directly competing with surviving native plantings or volunteers. The large infestations of Himalayan blackberry dominating the lower banks of the creek were not prioritized in this effort.

The MMP states that irrigation would be discontinued after Year 3, but resumed during Years 4 and 5 if plants show significant drought stress. LSA recommended irrigation be turned on and the Year 4 report states that the City repaired the irrigation system in March, 2009 and applied it until November, 2009 (LSA, 2009).

2.2 Methods

The mitigation site was to be monitored annually for a period of five years and then again in Years 7, 9 and 10. This is the fifth monitoring year following planting and the methods implemented followed the methods established in the MMP and the Addendum to the MMP.

General Site Conditions

The general condition of each planting site was qualitatively evaluated for the presence of native species recruits, invasive species, erosion, vandalism, animal damage, etc.

Percent Survival

All surviving trees and shrubs were counted and tallied per species. Percent survival was then calculated by dividing the total number of surviving plants by the total number installed, then multiplying by 100.

Percent survival monitoring of all species is required in Years 1 through 5 and only for container stock trees in Years 7, 9, and 10.

Percent Cover

Although the MMP includes percent cover as a final success criterion, it did not include monitoring methods. Percent cover was also not monitored in Years 1 through 4 (monitoring was not conducted in Years 2 and 3). Percent cover monitoring was required in Years 1 through 5.

This year, ESA determined percent cover by mapping the boundaries of each of the planted areas with a Trimble GeoXT Global Positioning System (GPS) with sub-meter accuracy. The cover of planted trees and shrubs was visually estimated in each planting area. The percent cover of invasive species was also estimated at each planting area and the dominant invasive species were noted.

Tree Height

The height of each surviving and volunteer tree and shrub was measured using a graduated rod. There are no success criteria for shrub height, but both tree and shrub heights were measured during the previous monitoring efforts, so they were monitored this year to provide a comparison. Tree and shrub height was to be monitored in Years 1 though 5. Only container stock tree height monitoring is required in Years 7, 9, and 10.

Tree and Shrub Health and Vigor

There are no success criteria for tree and shrub health and vigor. The MMP did not contain methods for measuring health and vigor; however they were monitored in the Year 1 report. Health and vigor was measured in Years 1 and 4 following the methods established in Year 1, and were used this year for consistency.

Health and vigor was assessed by assigning each plant with a code (1 through 4) for each health and vigor based on the rating provided in **Table 2.2**. For example, a plant that had both 100% healthy foliage and new growth observed throughout the plant would be given both a health code of 4 and a vigor code of 4.

TABLE 2.2
PLANT HEALTH AND VIGOR RATING SYSTEM

Code	Rating	Health Characteristics	Vigor Characteristics
4	Excellent	75 – 100% healthy foliage	Vigorous new growth observed throughout plant
3	Good	50 – 74% healthy foliage	Vigorous new growth observed only at terminal bud
2	Fair	25 – 49% healthy foliage	No new growth evident
1	Poor	0 – 24% healthy foliage	Stem dieback observed

Photomonitoring

Permanent photograph points were not established during the first monitoring year. However, representative photographs were taken from several vantage points in Year 1. In Year 4, photographs were taken from these same vantage points. Photographs were taken from the same vantage points this year, when they could be located. **Appendix B** contains photographs from the vantage points from this year as well as a comparison to Year 1.

Photos were also taken of every mapped planting area this year. The purpose of these photographs is to provide a comparison for future monitoring efforts. These photos are not included in the photo appendix but are available upon request.

SECTION 3
Results

On September 8, 9, and 15, 2010, ESA conducted the annual mitigation monitoring of the San Tomas Aquino/Saratoga Creek Trail Reach 6 site. This is the fifth year of monitoring following site restoration in 2004 and 2005. The following section describes the current site conditions, a general summary of the previous monitoring, and the results from this year.

3.1 General Site Conditions

The San Tomas Aquino/Saratoga Creek Trail Reach 6 site is located within a narrow riparian corridor bordering Saratoga Creek. The site is surrounding by residential development and the Saratoga Creek Trail runs alongside the planting areas. The creek and riparian corridor have been subject to heavy disturbance leaving a confined channel with steep slopes. The base of the creek banks are densely covered in non-native Himalayan blackberry. Willow plantings were installed on these lower slopes, but have either been overwhelmed by blackberries, or swept away during high flow events.

This year, frequent weed maintenance removed much of the non-native cover within the container stock planting areas at the top of the creek bank. Weed whipping and hand removal focused on surviving plants and resulted in little to no weed cover within the planting basins. Crews removed French broom, Harding grass (*Phalaris aquatica*), fennel, and other non-natives that have accumulated within the planting areas over the last three years. Although these species were removed this year, most of them have established seed banks and root systems that will allow them to emerge again next year.

Soil conditions at the site are very poor. The soil is compacted and contains a large amount of fill material such as gravel and little organic matter. The upper banks are also well above the water the water table, and this combined with compact soil makes it difficult for taproots to reach a water source. The irrigation has failed or been damaged at several locations throughout the site, adding to drought stress. This leaves annual precipitation as the main water source for many of the plantings.

3.2 Year 1 through 4 Monitoring

Year 1

The first year annual monitoring was conducted in July 2006 by Biotic Resources Group (Biotic Resources Group, 2007). The site was performing well for the first year. Survival was high with

an overall 84% survival rate and most species exceeding 80% survival. The average health and vigor ratings ranged between good and excellent for all species. Percent cover of plantings and invasive species was not monitored in Year 1.

Years 2 and 3

Annual mitigation monitoring was not conducted in Years 2 and 3.

Year 4

The fourth year mitigation monitoring was conducted on April 9, 2009 by LSA Associates (LSA, 2009). Plant cover was not measured in 2009. Since it was difficult for monitors to distinguish between planted and volunteer plantings due to the deterioration of planting basins and irrigation combined with dense weed cover, percent survival was determined by counting all plants that appeared to have been planted or germinated since 2005. Overall survival, including volunteers, was 68%. Shrub survival (including volunteers) was 85%, container stock tree survival (including volunteers) was 130%, and willow survival (including volunteers) was 8%. Most surviving plantings and volunteers had good and excellent health and vigor ratings. Two of the five tree species with height performance standards met or exceeded their fourth year standards. Although the percent cover of invasive species was not monitored, it was noted in the report. The project area contained high cover from invasives such as French broom, English ivy, and Himalayan blackberry.

3.3 Year 5 Monitoring Results

Percent Survival

Percent survival in Year 5, as opposed to Year 4, was determined by counting the total number of surviving installed plants. Volunteers were not included in the percent survival calculations. Installed plants were counted if they were within a planting basin and/or had an irrigation emitter. In some cases a basin and/or emitter could not be located, but the plant appeared to be the same age as other installed plants in the vicinity; these plants were included in the total percent cover.

Overall survival this year was 49%, which is well below the 80% survival performance standard. Shrub survival was 61% and tree survival was 39%. **Table 3.1** below details the percent survival of each species. The most significant loss was from willows (*Salix* sp.), which lost 220 plants, coffeeberry (*Rhamnus californica*), which lost 67 plants, and sticky monkey flower (*Mimulus aurantiacus*), which lost 36 plants. California rose (*Rosa californica*) and coast live oak (*Quercus agrifolia*) both had over 100% survival this year. Both of these species have performed well at this site despite poor conditions. Their survival rates are over 100% due to the difficulty in distinguishing between some installed and volunteer species. Additionally, it appeared that creek and neighborhood groups have occasionally planted in this area, particularly with coast live oak.

Table 3.1 below also includes the percent survival of each species in Year 1 and Year 5. Monitoring was not conducted in Years 2 and 3. Year 4 is not included since monitoring did not differentiate between installed and volunteer plantings, so the data is not useful for comparison. Percent survival has declined considerably since Year 1. Overall survival was 84% in Year 1, which included 83% shrub survival and 86% tree survival. Since Year 1, nearly all willows and a large percentage of the remaining species were lost. Most willows were likely installed too high above the water table and were out-competed by Himalayan blackberry and other invasives. The other plantings were likely lost to an increase in non-native cover and poor irrigation due to infrequent site maintenance.

TABLE 3.1
PLANT SURVIVAL IN YEARS 1 AND 5[a]

Scientific Name	Common Name	# Installed 2005	# Alive 2006 (Year 1)	Percent Survival 2006 (Year 1)	# Alive 2010 (Year 5)	Percent Survival 2010 (Year 5)
Shrubs						
Ceanothus thyrsiflorus	blue blossom	9	9	100%	4	44%
Mimulus aurantiacus	sticky monkeyflower	47	25	53%	11	23%
Myrica californica	wax myrtle	10	7	70%	2	20%
Rhamnus californica	coffeeberry	79	64	81%	12	15%
Ribes californicum	gooseberry	51	44	86%	30	59%
Rosa californica	California rose	65	61	94%	75	115%
Symphoricarpos albus	snowberry	65	61	94%	60	92%
Zauschneria californica	California fuchsia	24	18	75%	18	75%
TOTAL SHRUBS		**350**	**289**	**83%**	**212**	**61%**
Trees						
Acer macrophyllum	big leaf maple	10	10	100%	6	60%
Acer negundo	box elder	11	11	100%	6	55%
Quercus agrifolia	coast live oak	67	66	98%	75	112%
Quercus lobata	valley oak	55	45	82%	40	73%
Salix sp.	willows	241	200	83%	21	9%
Sambucus mexicana	blue elderberry	3	1	33%	2	67%
Sequoia sempervirens	coast redwood	3	3	100%	3	100%
TOTAL TREES		**390**	**336**	**86%**	**153**	**39%**
TOTAL		**740**	**625**	**84%**	**365**	**49%**

a. Monitoring was not conducted in Years 2 and 3. Year 4 monitoring did not differentiate between installed and volunteer species and therefore is not used for comparison.

California rose, snowberry, coast live oak, valley oak (*Quercus lobata*), and blue elderberry (*Sambucus mexicana*), have either increased in survival or only declined slightly.

Percent Cover

Percent cover was not monitored in Years 1 through 4. Percent cover for 2010 was estimated within each planting area and then averages across all planting areas. **Table 3.2** below includes

the total percent cover of planted species, percent cover of trees and shrubs, and cover of non-native invasive species for each planting area. **Figure 4** shows the location of the surveyed planting areas.

TABLE 3.2
PERCENT COVER IN EACH PLANTING AREA

Planting Area[a]	Extent (square feet)	Planted Tree Cover (%)	Planted Shrub Cover (%)	Total Planted Cover (%)	Invasive Species Cover (%)
2	80	0	30	30	5
3	727	10	15	25	0
4	407	20	0	20	0
6	18	0	30	30	0
7	310	25	0	25	5
8	437	5	25	30	5
9	325	20	0	20	5
10	554	50	0	50	0
11	617	20	0	20	0
12a	558	5	0	5	0
12	80	0	10	10	0
13	583	5	35	40	5
14	239	5	1	6	1
15	970	10	0	10	25
16	203	5	0	5	0
17	2,358	5	30	35	0
18	4,471	15	10	25	5
19	320	2	0	2	0
20	1,223	5	0	5	5
21	3,876	10	10	20	5
22	457	2	0	2	2
23	7,514	8	5	13	5
24	3,516	2	5	7	2
25	2,585	10	15	25	5
27	90	30	0	30	25
28	1,113	2	0	2	5
29	1,752	15	20	35	5
30	1,306	20	0	20	75
31	734	25	0	25	75
32	613	20	0	20	80
Average % cover		**12**	**8**	**12**	**3.4**[b]

a. Planting Areas 1, 5 and 26 are not included in this table since they are "landscaping" planting areas and not "restoration" planting areas
b. Planting areas 27, and 30-32 are not included in invasive species percent cover calculations as these sites have lost most of the plants installed and are not currently being maintained

Nine of the 30 planting areas are meeting the fifth year tree cover performance standard of 20% and five areas are meeting the fifth year shrub cover performance standard of 25%. All planting areas are below the CDFG fifth year total cover performance standard of 75%. However, the majority of planting areas (19 out of 30) have total percent cover exceeding 20%. Average tree

cover over all planting areas is 12% and ranges between 0 and 50%. Average shrub cover is 8% and ranges between 0 and 35%. Average total cover over all sites is 20% and ranges between 2 and 50% for individual sites.

Table 3.2 also includes the percent cover of invasive non-native species within each planting area. Thirteen planting areas are meeting the non-native invasive species performance standard of less than five percent cover, and an additional 12 areas have an estimated five percent cover of non-native invasive species. Some of the more common invasives observed include Himalayan blackberry, black mustard (*Brassica nigra*), french broom, and stinkwort (*Dittrichia graveolens*).

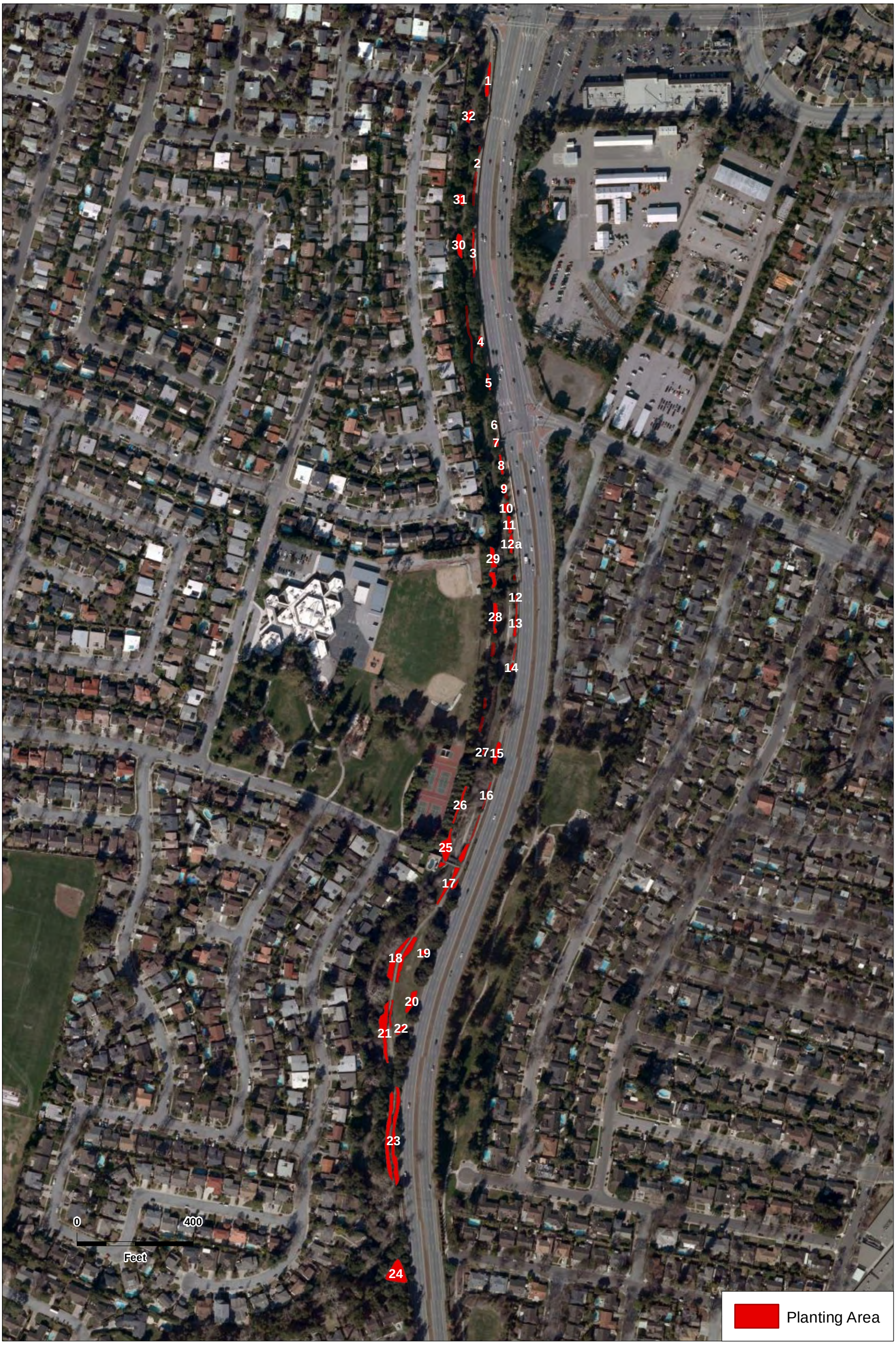
Height

Table 3.3 shows the average height of each tree species, with an established height performance standard, in Year 1 and 5 and their fifth year performance standards. Blue elderberry and the few surviving willows have exceeded their respective performance standards. Coast live oak and valley oak have nearly met their performance standards, and box elder is below its performance standard.

TABLE 3.3
AVERAGE TREE HEIGHT YEARS 1 AND 5[a]

Scientific Name[b]	Common Name	Year 5 Average Height Performance Standard (Feet)	Average Height (Feet) 2006 (Year 1)	Average Height (Feet) 2010 (Year 5)
Acer negundo	box elder	8	3.0	4.8
Quercus agrifolia	coast live oak	4	2.5	3.9
Quercus lobata	valley oak	4	1.9	3.6
Salix sp.	willows	10	4.5	14.5
Sambucus mexicana	blue elderberry	6	4.0	6.25

a. Monitoring was not conducted in Years 2 and 3. Year 4 monitoring did not differentiate between installed and volunteer species and therefore is not used for comparison.
b. Height performance standards were not established for big leaf maple (*Acer macrophyllum*).



SOURCE:ESA, 2010; Microsoft Bing Aerial, 2010

Figure 4

Planting Areas Identified in 2010

Health and Vigor

Table 3.4 details the average health and vigor rating for each species in Years 1 and 5. There are no success criteria for health and vigor ratings. Average health and vigor has declined for every species since Year 1, although ten out of the 15 planted species still maintain "good" or "excellent" average health and vigor ratings (see page 13 in Section 2 for definitions of the health and vigor ratings). The coffeeberry, wax myrtle (*Myrica californica*), and few surviving willows all have high health and vigor ratings. Sticky monkeyflower (*Mimulus aurantiacus)*, gooseberry (*Ribes californicum*), and blue elderberry were the worst performing species with "fair" to "poor" health and vigor ratings.

TABLE 3.4
AVERAGE HEALTH AND VIGOR YEARS 1 AND 5[a]

Scientific Name	Common Name	Average Health 2006 (Year 1)	Average Health 2010 (Year 5)	Average Vigor 2006 (Year 1)	Average Vigor 2010 (Year 5)
Shrubs					
Ceanothus thyrsiflorus	blue blossom	4.0	3.15	4.0	3.95
Mimulus aurantiacus	sticky monkeyflower	3.7	1.58	3.7	1.53
Myrica californica	wax myrtle	4.0	3.6	4.0	3.75
Rhamnus californica	coffeeberry	3.9	3.80	3.9	3.88
Ribes californicum	gooseberry	3.7	2.13	3.7	2.12
Rosa californica	California rose	3.9	3.19	3.9	3.32
Symphoricarpos albus	snowberry	3.9	2.90	3.9	3.00
Zauschneria californica	California fuchsia	3.9	2.72	3.9	2.87
Trees					
Acer macrophyllum	big leaf maple	3.7	3.23	3.7	3.38
Acer negundo	box elder	4.0	2.55	4.0	2.9
Quercus agrifolia	coast live oak	4.0	3.38	4.0	3.41
Quercus lobata	valley oak	4.0	3.32	4.0	3.13
Salix sp.	willows	4.0	3.81	4.0	3.81
Sambucus mexicana	blue elderberry	4.0	2.5	4.0	2
Sequoia sempervirens	coast redwood	4.0	3.5	4.0	4

a. Monitoring was not conducted in Years 2 and 3. Year 4 monitoring did not differentiate between installed and volunteer species and therefore is not used for comparison.

SECTION 4
Conclusion and Recommendations

4.1 Conclusion

Overall, the San Tomas Aquino/Saratoga Creek Trail Reach 6 site is performing poorly. The surviving planted area totals 0.87 acres. This is less than half the required mitigation acreage of 2.15 acres. Half of the loss in acreage is due to the mortality of nearly all of the willows installed in 2005.

Plant survival this year was 49%, with the most significant loss from willows, coffeeberry, and sticky monkey flower. Most plants appear to have died from drought stress and competition from non-native invasive plants. California rose and coast live oak were two species that performed well, with high percent survival this year.

This is the first year that percent cover was monitored, so the results can not be compared to previous years. However, most of the surviving planting areas do not have enough cover to meet the fifth year performance standards. Nine of 30 planting areas are meeting the tree cover performance standard and five of 30 are meeting the shrub cover standard. The overall percent cover performance standard was not met.

Recent weed maintenance has removed a significant amount of non-native invasive cover within the planting areas. As a result, thirteen planting areas are meeting the non-native invasive species performance standard of less than five percent cover, and an additional 12 areas have an estimated five percent cover of non-native invasive species. The most common invasive species within the planting areas are Himalayan blackberry, black mustard, French broom, and stinkwort. Continued maintenance should be implemented to prevent invasive species from competing with the native plantings. Recommendations are discussed in the next section.

The surviving plants are performing moderately well. Blue elderberry and the few surviving willows have exceeded their height performance standards and the remaining trees have nearly met their performance standards. Most of the surviving species also have “good” or “excellent” health and vigor ratings, indicating that once established, these species can do well in the project area.

Since Year 1, the site has declined in every monitoring parameter. This is likely due to poor placement of willows, poor site conditions (and in particular, the subsoil), and inadequate maintenance. The site is not suitable for willow plantings and this species should not have been

prescribed in such high quantities for this area. The planting areas have poor soil and, until 2010, had high cover of invasive species. Since frequent weed maintenance was not conducted in Years 2 and 3, invasive species competed with the limited water and nutrients available on-site and many individuals were either lost or struggled to survive.

4.2 Recommendations

Based on the low survival rate and low percent cover, ESA recommends the following remedial measures be implemented to ensure the San Tomas Aquino/Saratoga Creek Trail Reach 6 site meets its permit conditions and final success criteria.

The following recommendations will ensure that the site reaches its final performance standards.

- *Continue regular weed maintenance throughout the remaining five years of required monitoring*. Weed whipping and hand weeding should continue as often as needed within and adjacent to the planting areas. Additionally, subject to approval by the City of San Jose, flaming may be used to control French broom seedlings. Special attention should be paid to the most invasive species on-site including French broom, stinkwort, Harding grass, mustard, fennel, thistles, and Himalayan blackberry. Most of the effort to control Himalayan blackberry should occur on the upper banks, since the effort to control the dense blackberry on the lower banks would be labor intensive and, therefore, very expensive and out of scale with the original impacts.

- *Provide surface drip irrigation or DRiWATER® to existing plants in need of water and to new plants*. Some plants are in poor condition due to lack of irrigation. Either drip irrigation should be provided to the largest areas of dry plants or dry water should be used.

- *Coordinate with the permitting agencies to determine a strategy for achieving compliance with permit conditions. Potential options could include:*

    a. *Plant in recommended areas to increase the extent of the restoration area* (See **Figure 5**). During the 2010 monitoring ESA located and mapped potential new planting areas. These areas total 0.56 acre in size but planting may not be feasible in all areas due to potential ownership or easement issues. The City will research the feasibility of using these sites with regard to legal access.

    b. *Replant lost trees and shrubs in appropriate existing planting areas to increase percent cover* (See **Figure 5**). Replant areas with poor cover and provide new drip irrigation or gel packs (i.e. DRiWATER®). Plant with species that are adapted to drier conditions. The exact number and type of species to be replanted will be determined once replanting areas have been finalized. Six areas are identified in **Figure 5** as being suitable for replanting. However, replanting here would not add significantly to the overall cover for the installation. Many of the areas with poor cover are not suitable for replanting due to existing canopy cover and lack of full sun, competition with existing mature trees, and poor soil.

c. *Replace willows with upper riparian zone tree and shrub species.* The site is unsuitable for willow establishment. The creek consists of a narrow channel with steep slopes and lacks creek banks or low terraces suitable for willow installation. Additionally, Himalayan blackberry and other invasive cover is so dense and widespread that it would quickly overrun any new willow poles and the cost for removal and maintenance would be out of scale with the original impacts. The planting of willows was an out-of-kind mitigation, as all project impacts were to upland riparian habitat. Therefore, it seems reasonable to replace willows with upland riparian vegetation if further planting is undertaken at this site. If the agencies request additional willow plantings, these should be implemented at another more suitable mitigation site, to be determined in coordination with the City.

d. *Propose to the agencies that the City provide funding to a local mitigation bank or to other creek restoration efforts in lieu of additional planting.* To date habitat restoration at the San Tomas Aquino/Saratoga Creek Trail Reach 6 site has proven difficult. The soils are poor; the riparian corridor has been overrun with several invasive plant species that are difficult to control and readily outcompete installed plants for water, nutrients, and sunlight; and the existing mature trees along much of the reach also compete with establishing plants. The effort to bring this site into full permit compliance would be cost prohibitive. Money and effort would be better spent at a site that has greater potential to flourish with restoration and that has greater potential to provide functional habitat with high values for wildlife.

SOURCE:ESA, 2010; Microsoft Bing Aerial, 2010

Figure 5

Potential Sites for Replanting and New Installation

SECTION 5
Report Preparation and References

5.1 Report Preparation

Prepared by: Michelle Giolli, Field Biologist
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Other contributors: Martha Lowe, Project Biologist and Deputy Project Manager
Chris Rogers, Project Manager
Perry Jung, Graphics

5.2 References

Biotic Resources Group, 2003. San Tomas Aquino/Saratoga Creek Trail Reach 6, Riparian Habitat Mitigation and Monitoring Plan. Soquel, California. December 8.

Biotic Resources Group, 2004. Addendum to the San Tomas Aquino/Saratoga Creek Trail Reach 6, Riparian Habitat Mitigation and Monitoring Plan. Soquel, California. January 20.

Biotic Resources Group, 2007. San Tomas Aquino/Saratoga Creek Trail Reach 6 Riparian Mitigation Project Year 1 (2006) Monitoring Report prepared for the City of San Jose Facilities Architectural Services and Denise Duffy & Associates. Soquel, California. February 9.

LSA Associates, 2009. San Tomas Aquino/Saratoga Creek Trail Reach 6 Riparian Mitigation Project Year 4 (2009) Monitoring Report prepared for the City of San Jose Department on Parks, Recreation, and Neighborhood Services. Point Richmond, California. December 17.

APPENDIX A
Monitoring Data Sheets

San Tomas Aquino Planting Area Field/Survey Notes. Fifth Year Annual Monitoring. September, 2010.

Planting Area	Extent (sq. ft.)	Planted Tree Cover (%)	Planted Shrub Cover (%)	Total Planted Cover (%)	Invasive Species Cover (%)	Invasive Species Present	Recommended Management Efforts	Comments	Photo Number
1	1,090	15	30	45	15	Himalayan blackberry, Brassica, Carduus		Area can be called riparian. Roses and Coyote brush look newer, possibly 3 years old	683 and 684
2	80	0	30	30	5	Mostly Himalayan blackberry, some french broom	Roses are not healthy, may need water and are overrun by oaks		685
3	727	10	15	25	0	Invasive species have been mown	Slopes at either ends of planting area and could be replanted with upland species. (See Replanting Areas C and D)		686
4	407	20	0	20	0	Invasive species have been mown			687
5	318	5	35	40	0	Invasive species have been mown		Labelled Landscaping, but should be included as Restoration and we surveyed cover as if it was Restoration	688
6	18	0	30	30	0	Invasive species have been mown		2 SYAL present	
7	310	25	0	25	5	Himalayan blackberry on edge, French broom was present before mowing	Could replante a few live oaks and buckeye		689
8	437	5	25	30	5	Himalayan blackberry on bottom edge			690
9	325	20	0	20	5	Himalayan blackberry creeping in, Detrichia, Brassica	Open and sunny, existing BAPI and volunteer oaks, room to plant		691
10	554	50	0	50	0				
11	617	20	0	20	0				
12a	558	5	0	5	0				
12	80	0	10	10	0	Invasive species have been mown, Detrichia in surrounding areas			692
13	583	5	35	40	5	Has mostly been mown, but some Detrichia and Brassica	Could replant 10-12 more shrubs like BAPI		693
14	239	5	1	6	1	Some mown Detrichia	Most plants are dead or dying, need water, soil is compact, and may not be beneficial to replant		696
15	970	10	0	10	25	Himalayan blackberry and harding grass, although some has been mown	Trees may benefit from water		697
16	203	5	0	5	0	Area has been mown	Only a few trees planted, planting area is narrow and not necessarily suitable for replanting	California blackberry is present	698
17	2,358	5	30	35	0	Area has been mown, some Raphanus and blackberry just outside the edge of the planting area			700, 701, and 702

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/7/10 Surveyors: M. Lowe, M Giolli

Time: 0900 Weather Conditions: cloudy cool

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ZACA		4	4	"Landscape"
ZACA		2.5	3	"
ZACA		3	4	"
RHCA	~~6.5~~	3.7	3.5	"
RHCA		3.5	3.5	"
RHCA	~~3.8~~	2	3	"
RHCA		3	3	"
QUAG	8.2	4	4	"
RHCA		3	3	" hit with weed wacker
RHCA		2	2.5	"
BAPI		3.5	4	
QUAG	6.9	3.5	3.8	

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
RHCA		1.5	2.5	Landscape
BAPI	3.0	2	2.5	
BAPI	4.5	2.8	3	
RHCA		1.5	2.2	Landscape
BAPI		3.5	3.5	
QUAG	4.4	3	3.5	
BAPI		2.5	3.5	
-Dead QUAG				
-Dead QUAG				
QUAG	4.8	3.5	4	
ROCA		2	1	no water
ROCA		2	2	no water

Health Code	Rating	Health Characterisitics
4	Excellent	75-100% healthy foliage
3	Good	50-74% healthy foliage
2	Fair	25-49% healthy foliage
1	Poor	1-24% healthy foliage

Vigor Characteristics
Vigorous new growth overall
Vigorous new growth only at terminal bud
No new growth evident
Stem dieback observed

(box elder) Acer negundo: ACNE

(big leaf maple) Acer macrophyllum: ACMA

(lilac) Ceanothus thrysiflorus: CETH

(sticky monkey flower) Mimulus aurantiacus: MIAU

(wax myrtle) Myrica californica: MYCA

(coast live oak) Quercus agrifolia: QUAG

(valley oak) Quercus lobata: QULO

(coffeeberry) Rhamnus californica: RHCA

(gooseberry) Ribes californica: RICA

(CA rose) Rosa californica: ROCA

(willow) Salix spp.: SASP

(elderberry) Sambucus mexicana: SAME

(redwood) Sequoia sempervirens: SESE

(snowberry) Symphoricarpos albus: SYAL

(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/7/10 Surveyors: M Lowe, M Gioli

Time: 1100 Weather Conditions: Rain

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ROCA - Dead				
ROCA		2.5	2	
ROCA		2.5	3	
ROCA		2	2	volunteer in area B
QUAG	3.2	2	3	
QUCH*	6.2	3.5	3.5	volunteer area B
QUAG	6.8	3.8	4.0	volunteer area B
QUAG	2.2	3.0	3	Planted (area C)
QUAG	3.9	3.5	3.8	Planted
MIAU		1.5	1	no H^2O
MIAU		1.6	1.3	"
MIAU		2	1.5	"
MIAU		1	2	"
MIAU		1.6	1.8	"
MIAU		2	2	"
MIAU		1	1.5	
QUAG	3.3	3	3.5	In basin but not orig?
MIAU		2	2	drought stress
MIAU				"
QUAG		1.5	1.8	

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	2.1	2	2	no water ?
MIAU		1	1	drought
MIAU		1.3	1.7	"
QUAG	2	3	3	add'l sm Quag seedlings
QUAG	2.4	3.5	3.8	not orig planting in basin - ?
QUAG	2.2	3.2	3	basin - sm orig ?
QUAG	3.1	2.5	3	Yellowing lvs
QUAG	2.4	2	2.5	" "
QUAG	2.9	3	3.2	
QUAG	3.9	3.5	3.5	
QUAG	5.8	3.3	3.5	
QUAG	5.0	3.8	4	
QUCH	6.2	4	4	volunteer
QUAG	4.7	2.5	2	
SYAL		3	3.5	Landscape
QUCH	6.6	4	4	volunteer
SYAL		3	3.2	landscape
SYAL		2.5	3	"
ZACA		3	3.5	"
ZACA		2.5	3	"

Stunted ?

* Q. chrysolepis

- Oak seedling criteria 2' tall

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/7/16 Surveyors:

Time: 1350 Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ZACA		2.8	3	Landscape
ZACA		3.4	4	"
ZACA		3.2	3	"
ZACA		3.7	4	"
QUAG	3.7	3.2	3.5	Planted
SYAL		2.5	3	
SYAL		2.8	3.2	
ZACA		3.0	3.5	
ZACA		2.0	2.8	
ZACA		3.0	3.2	
ZACA		2.0	2.8	
SYAL		2.8	3.0	

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	4.9	3.4	3.8	planted? PA7
QULO	1.6	4	4	" " in cage stunted? new?
QUAG	4.1	3.8	3.8	Volunteer
QUAG	4.5	3.9	4	" "
QUAG	3.7	3.8	4	" "
QUAG	4.2	3.5	3	" "
QUAG	2.8	3.5	3.8	" "
QUAG	2.6	3.2	3.5	" "
QULO	1.4	4	4	in cage new? stunted? — PA7
SYLA		2	3	ones grown by oaks
SYLA		3	3.5	combined area = 15ft²
ZACA		2.3	3	PA8

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
3	Good	50-74% healthy foliage	Vigorous new growth only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: Surveyors:

Time: Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QULO	2.2	3.5	3	PA 8
QUAG	3.2	3.5	3.5	volunteer "
QUAG	3.4	3.8	3.8	volunteer "
ZACA		1	2	
ZACA		1	2	re plant?
ZACA		2	3	
ZACA		2	3	
ZACA		1	2	replant
ZACA		2	2	
ZACA		2	2	
ZACA		2	2	
ZACA		3.5	4	
ZACA		3.5	4	
QULO	2.4	4	3.8	Planted
QUAG	2.1	3.5	3.5	volunteer PA8
QULO	1.4	3.5	3.8	PA9
QUAG	2.2	3.2	3.5	vol
QUAG	3.8	3.2	3.5	Planted? in basin
QUAG	7.2	3.5	3.8	planted?
QUAG	6.0	3.5	4.0	Planted

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	4.3	3.2	3.5	volunteer? PA9
QUAG	3.4	3	3.2	Vol. PA10
QUAG	4.5	4	4	
QUAG	3.4	3.6	3.8	Planted
QUCH	5.8	3.5	4	Vol
QUAG	3.2	3	3 5	vol
QUAG	3.8	3.2	3,5	planted
QUAG	4.4	3.	3.2	" "
QUAG	3.7	3.5	3.5	Vol
QUAG	8.4	3.5	3.2	vol?
QUAG	3.8	3.5	3	Vol
QUAG	2.8	3	3	vol
QUAG	2.9	2.8	3	Vol
QUAG	4.7	3	3	vol
QUAG	2.4	2.8	3	vol
QUAG	8.2	3	3.5	vol no basin
QUAG	5.1	3.5	3.5	planted
QUAG	7.8	3.5	4	Vol
QUAG	4.3	3.2	3	vol
QUAG	4.5	4	4	planted

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: Surveyors:

Time: Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	3.6	3.8	3.5	VOL PALO
QUAG	2-3'	3.5	3.5	7 trees "
QUAG	5.6	4	4	Planted PALL
QUAG	7.8	3.5	4	" "
QUAG	2-6'	3.5	3.5	13 VOL
QUAG	4.9	4	4	Planted
QUAG	5.6	4	4	Planted ?
SALIX	4 3	3.5	3	PAR
SALIX	6.5	3.5	3	
SALIX	5.6	3	3	
QUAG	4.1	3.5	4	VOL
QUAG	8.5	4	4	VOL

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	11	4	4	VOL
ROCA		3.5	3	
ROCA		3.8	3.5	
ROCA		3.5	3.8	
ROCA		3.5	3.8	
ROCA		4	4	
ROCA		3	3.2	
ROCA		4	4	
ROCA		2	2.5	
ROCA		2	2.5	
ROCA		1.5	2	
ROCA		3.5	3.8	

Health Code	Rating	Health Characterisitics
4	Excellent	75-100% healthy foliage
3	Good	50-74% healthy foliage
2	Fair	25-49% healthy foliage
1	Poor	1-24% healthy foliage

Vigor Characteristics
Vigorous new growth overall
Vigorous new growth only at terminal bud
No new growth evident
Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/8 Surveyors: MEG, LLT

Time: 9:15 Weather Conditions: warm ~65°F clear

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ROCA		3.8	3.8	lots of branches / full					
ROCA		3.8	4	"					
ROCA		3.8	3.8	"					
ROCA		3.6	3.8	lots of volunteer					
ROCA		3.9	4	lots branches / full / volunteers					
ROCA		3.2	3	some die backs not as full					
QUAG	2'6"	3.8	4						
QUAG	2'1"	4	4						
ROCA		3.9	4	lots leaves / volunteers hips / branches					
ROCA		3.5	3.5						
ROCA		1.8	2	brown leaves - drought stressed					
ROCA		2	2.5						
CETH		3.5	4						
QUAG	4'8"	3.5	3.8						
QUAG	3'5"	3	3						
QUAG	6'3"	4	4						
QUCH	7'	4	4	Prickly leaf canyon oak - white underside					
QUAG	4'1"	4	3.5						
QUAG	6'8"	3.8	4						
QUAG	2'5"	3	3						
QUAG	4'1"	3.8	3.5						

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9/10 Surveyors: M. Gioli & L. Thoreson

Time: 9:50 Weather Conditions: clear sunny ~67°

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	3'2"	3	3						
QUAG	1'2"	2.5	2	Blk berry crawling lots of leaves small					
QUAG	7'4"	4	4	full full					
QUAG	5'4"	4	4						
ROCA		3.8	4	full of hips Some flowers					
ROCA		3.8	4						
ROCA		3.7	3.8						
ROCA		3	3						
ROCA		2	2.5						
QUAG	3'3"	3.5	4	Volunteer					
CETH		3.8	4						
CETH		3.8	4						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
3	Good	50-74% healthy foliage	Vigorous new growth only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9/10 Surveyors: L. Thoresen M Gold

Time: 16:35 Weather Conditions: Clear warm ~70

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	2'	3	3.5						
ROCA		2.8	3						
ROCA		3.8	3.5						
ROCA		3.8	4						
ROCA		3.8	4	Some flowers					
ACNE	8'1"	3.9	4						
ROCA		3.8	4						
ROCA		3	3.5						
ROCA		3.8	3.8						
CETH		3	3.8						
CETH		0	0	dead					
ROCA		3.8	4						
ROCA		3.5	3.5						
ROCA		3.8	4						
QUAG	9'5"	4	4	Volunteer					
ROCA		3.5	3.5						
ROCA		3.4	3.5						
ROCA		3.2	3						
RICA				no leaves. Have buds					
RICA				no leaves. have buds					

2 dead wkwour

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9/10 Surveyors: L. THORESON & M. GOLLI

Time: ~~10:30~~ 10:30 Weather Conditions: clear warm

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
RICA				No leaves, have buds					
RICA				"					
RICA				"					
RICA				"					
QUAG	2'0"	3.3	3.8	Volunteer					
QUAG	4'4"	3.8	4	Volunteer					
QUAG	3'8"	3.8	4	Volunteer					
QUAG	2'2"	3.9	4	Volunteer in sandbag					
ZACA		3.8	4						
ROCA		3.2	3.5						
ZACA		3.5	3.8						
QUAG	5'3"	4	4						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
3	Good	50-74% healthy foliage	Vigorous new growth only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: L. THORESON M. Golic

Time: 11:01 Weather Conditions: warm/sunny, hot

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ROCA		3.8	4						
ROCA		3.8	4						
ROCA		3.8	4						
ROCA		2.5	3						
ACMA	9'6"	3.8	4						
QUAG	4'8"	3.7	3.8	Volunteer					
RICA		2.8	2.5						
RICA		2.8	3						
ZACA		3.2	3.5	flowering					
RICA		2.5	2.5						
RICA		1.5	1	mostly dead					
RICA		1.5	1	mostly dead					
QUAG	9'3"	4	4						
ZACA		3.7	4	flowering					
Ash?	4'3"	3.8	4	Volunteer opposite leaves not serrated					
ROCA		3	3						
ZACA		2	2	Spread a lot					
ROCA		3.4	3.8						
ROCA		3.5	3.8						
ROCA		3.9	4						

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9/10 Surveyors: LITHORESON · 3 M G10"

Time: '48 Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
SAME	10'	2.5	3						
RHCA		4	4	Short but healthy					
RHCA		3.9	4	large, full					
RHCA		4	4						
QUAG	4'8"	4	4	Volunteer					
QULO	4'1"	3.8	3.5						
QULO	3'5"	3.5	3.8						
RHCA		4	4						
QULO	15'+	4	4						
QULO	6'	3.5	3.5	[illegible] small [illegible] leaves					
RHCA		3.7	4						
RHCA		3.9	4						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
3	Good	50-74% healthy foliage	Vigorous new growth only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA

(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9/10 Surveyors: L TODESCO M GOH

Time: 1140 Weather Conditions: Hot

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
RHCA		3.7	3.5						
QuLO	10'	4	4						
QuLO	4'2"	3.8	3.8						
QuLO	15'	4	4						
QuLO	7'6"	4	4						
RHCA		4	4						
QuLO	1'6"	3	2	Part of the small pair on other side of trail. Not in found					
QuLO	.7"	2.5	2						
QuLO		0	0	Dead					
QuLO	.6"	1	1	mostly dead					
QuLO	2'8"	3.2	3.3	Part of 20					
QuLO	4'3"	3.3	3.5						
QuLO	3'	3.2	3						
QuLO	2'7"	3	3						
QuLO	3'1"	3.5	3.5						
QuLO	3'	3	3						
QuLO	2'	2.5	2.2						
QuLO	1'3"	3	2.5						
QuLO	6.9	4	4	Part of 21					
QuLO	4.6	4	4						

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: L. Thoreson M. Gold

Time: 1250 Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	2.7	3.8	3						
RHCA		3.9	4						
QULO	6.3	4	4						
RHCA		3.8	3.5						
RHCA		3.9	4						
QULO	5.3	3.9	4						
RHCA		3.7	3.5						
QULO	5.6	4	4						
QUAG	1	3.5	3						
QUAG	0.5	3	3						
ACMA	4.5	3	3.5	near bottle					
QUAG	8.1	3.8	4						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
3	Good	50-74% healthy foliage	Vigorous new growth only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: L. Thomas M Grow

Time: 12:56 Weather Conditions: [illegible]

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QULO	2.6	3.2	3.5						
ACMA	2.7	3.5	3.5						
QUAG	2.3	3.8	3	different vigor/size newly planted					
ACMA	0.7	1	1.5	brazed? / buds, no leaves					
QUAG	1.7	3	3.2						
ACMA	3.1	3.8	3.5						
SYAL		3.5	4						
SYAL		2.5	2.8						
RICA		2	2						
RICA		2.5	1.5						
SYAL		3.3	3.5						
SYAL		1	1						
SYAL		1.5	1						
RICA		0.5	0.5						
RICA		1.5	2						
RICA		1.5	1.5						
SYAL		3	3						
SYAL		3.2	3						
SYAL		3.5	3.5						
SYAL		2.8	3						

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: [illegible]

Time: 1:04 Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	0.5	3	2.5						
QULO	1.5	3.5	3						
QULO				Dead					
QULO	2.1	3.5	3.5						
QULO	2.1	3.5	3.5						
QULO	1.1	3	3						
QULO	0.8	2.5	2						
QULO	2.2	3.5	3						
ROCA		0.5	0.5	Dead					
ROCA		1.5	1	Need water					
ROCA		2	2.5						
ROCA		2	2						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
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2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE
(big leaf maple) Acer macrophyllum: ACMA
(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: L. Thoreson M. Grolli

Time: 1:30 Weather Conditions: Hot

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ZOA		3.2	3.5						
QUAG	2.7	3.2	3						
QUAG	4.7	3.8	3.8						
QUAG	4	3.6	3.8						
QUAG	3.4	3.8	3.8						
QUAG	3.9	3.5	3						
QUAG	4.2	3.4	3.5						
QUAG	2.1	2	2						
ROCA		3	3	(2d) water					
ROCA		2.8	3						
ROCA		2.8	2						
ROCA		2.5	3						
ROCA		3.2	3						
ROCA		2.8	2.5						
1 RICA		2	2	buds no leaves					
2 RICA		2	2	Dormant					
3 RICA		2	2						
4 RICA		2	2						
5 RICA		2	2						
6 RICA		2	2						

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: L. THORESON

Time: 1:40 Weather Conditions: Hot

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
RICA		2	2						
RICA		2	2						
RICA		2	2						
RICA		2	2						
QUAG	2.5	3.3	3.5						
RICA		0	0	Dead					
QUAG	4.6	3.5	3.8						
RICA		2	2	Buds, no leaves					
RICA		2	2	Dormant					
RICA		2	2						
RICA		2	2						
QUAG	2.1	3.	3						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
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(box elder) Acer negundo: ACNE
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(lilac) Ceanothus thrysiflorus: CETH
(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 Surveyors: L. THORESON M. GIOLLI

Time: 1:45 Weather Conditions: Hot

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QULO	0.2	1	1						
QUAG	3.3	3.5	3.5						
QULO	1.2	3.5	1	1/2 dead					
QUAG	0.3	2	2						
QULO	0.8	3.5	2.5						
QULO	1.9	3.5	3						
QULO	0.5	1.5	1	1/2 dead					
QUAG	3.2	3.5	3.8						
QUAG	2.9	3.2	3						
SYAL		3.5	3.5						
SYAL		3.8	3.5						
SYAL		1	1	2 leaves mostly dead					
QUAG	4.2	3	3.5	Volunteer					
SYAL		3.5	3						
SYAL		3	3						
SYAL		3	3.2						
SYAL		2	2						
SYAL		1	1						
SYAL		1	1						
SYAL		1	1						

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/6 Surveyors: L. TORTSON M. [illegible]

Time: 2pm Weather Conditions: [illegible]

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
SYAL		0	0	dead					
SYAL		2	2						
SYAL		2.2	2						
SYAL		2.5	3						
SYAL		2.5	3						
SYAL		2.4	3						
SESE	8.5	4	4						
ROCA		3.3	3.8						
ROCA		3.5	3.8						
ROCA		3.5	3.8						
ROCA		3.5	3.8						
ROCA		3.5	3.8						

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
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(sticky monkey flower) Mimulus aurantiacus: MIAU
(wax myrtle) Myrica californica: MYCA
(coast live oak) Quercus agrifolia: QUAG
(valley oak) Quercus lobata: QULO
(coffeeberry) Rhamnus californica: RHCA
(gooseberry) Ribes californica: RICA
(CA rose) Rosa californica: ROCA
(willow) Salix spp.: SASP
(elderberry) Sambucus mexicana: SAME
(redwood) Sequoia sempervirens: SESE
(snowberry) Symphoricarpos albus: SYAL
(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/9 & 9/15 Surveyors: L. THORESON M. GIOLLI

Time: 2:40 Weather Conditions: hot

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
ROCA		3.5	3.8	
ROCA		3.6	4	
SESE	10'	3.5	4	
ROCA		3.6	4	
ROCA		3.6	4	
ROCA		3.6	4	
SYAL		3	3.5	
SYAL		3	3.5	
ACMA	11	3.8	4	
SYAL		0	0	dead
SYAL		3.2	3.6	
ACMA	7.5	3.5	3.8	
SYAL		3.5	3.5	
SYAL		3.3	3.5	
SYAL		3.5	3.3	
SYAL		3.6	3.8	
SYAL		3.5	3.5	
SYAL		3.2	3.5	
QUAG	5.3	3.8	4	
QUAG	0.7	3.4	2.8	

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	4.3	3.6	3.8	
QUAG	4.5	3.9	4	"landscaping"
ROCA		3.5	3	
ROCA		3.8	3	
ROCA		3.8	3	
QUAG	2.5	3.9	3	Volunteer
QUAG	3	3.8	3.3	"landscaping"
ROCA		3.5	3.4	
ROCA		3.4	3.7	
ROCA		3.5	3.6	
ROCA		3.3	3	
ROCA		3.3	3.2	
ROCA		3.5	1	
ROCA		3.2	3.5	
ROCA		3.0	3	
ROCA		3.4	3.5	
ROCA		3.2	3.1	
QUAG	5.6	3.9	4	
QUAG	4.5	3.9	4	
ROSA		3.2	3	

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/15/10 Surveyors: M. Gil L. Tipton

Time: 8:58 Weather Conditions:

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
SYAL		3.5	3.2	landscaping	ACNE	3.1	2.3	2.8	
SYAL		0	0	dead	MYCA	5.4	4	4	
ROSA		3	3		SYAL		0.5	0.5	
QUAG	2.7	3.5	3		Salix	7.5	4	4	volunteer
QUAG	1.6	3.5	3		SYAL		3.5	3.5	
Salix SP	20'	4	4		SESE	9.5	4	4	
Salix SP	20'	4	4		SYAL		3.8	3.7	
QUAG	3.4	3.8	4	volunteer	SYAL		3.8	3.7	
SAME	2.5	1	1		SYAL		3.8	3.7	
QUAG	3.7	3	2.8	volunteer	SYAL		3.8	3.7	
QUAG	2.8	3.4	2.5	volunteer	SYAL		3.8	3.5	
QUAG	2.5	3.8	3.5	volunteer	SYAL		4	4	
ACNE	5.0	3.5	4	leaves are turning, good health	SYAL		3.7	3.5	
QUAG	2.5	3.8	4	volunteer	SYAL		3.3	3.4	
QUAG	~~8.0~~ 7.5	4	4	volunteer	SYAL		3.9	3.7	
QUAG	2.3	3.8	3.5	volunteer	MYCA	5.2	3.7	3.5	
ACNE	3.8	0.1	0.1		SYAL		3.7	3.8	
ACNE	4.2	2.5	3.0		SYAL		3.5	3.3	
SYAL		~~3.0~~ 3.8	~~3.8~~ 3.0		QUAG	3.8	4	3.5	volunteer
SYAL		1	0.5		QUAG	5.0	4	4	

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/15 Surveyors: LLT, MEG

Time: 10:15 Weather Conditions: sunny

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
QUAG	7.0	3.8	4	volunteer	Salix	20+	4	4	
SYAL		3.2	3.5		Salix	15	4	4	
SYAL		3.5	3.9		Salix	10+	4	4	
SYAL		2.3	3.3		Salix	10+	4	4	
QUAG	2.5	3.7	4.0	volunteer	Salix	8-10	4	4	~30 cm
SYAL		3.4	3.5		Salix	8-10	↓	↓	
SYAL		3.7	3.3		Salix	8-10			
SYAL		3.4	3.4		Salix	8-10			
SYAL		3.3	3		Salix	8-10			
SYAL →		Dead			Salix	8-10			
Salix	20+	4	4		Salix	20+	4	4	
Salix	20+	3	3	choked by blackberry	Salix	20+	4	4	

Health Code	Rating	Health Characterisitics	Vigor Characteristics
4	Excellent	75-100% healthy foliage	Vigorous new growth overall
3	Good	50-74% healthy foliage	Vigorous new growth only at terminal bud
2	Fair	25-49% healthy foliage	No new growth evident
1	Poor	1-24% healthy foliage	Stem dieback observed

(box elder) Acer negundo: ACNE

(big leaf maple) Acer macrophyllum: ACMA

(lilac) Ceanothus thrysiflorus: CETH

(sticky monkey flower) Mimulus aurantiacus: MIAU

(wax myrtle) Myrica californica: MYCA

(coast live oak) Quercus agrifolia: QUAG

(valley oak) Quercus lobata: QULO

(coffeeberry) Rhamnus californica: RHCA

(gooseberry) Ribes californica: RICA

(CA rose) Rosa californica: ROCA

(willow) Salix spp.: SASP

(elderberry) Sambucus mexicana: SAME

(redwood) Sequoia sempervirens: SESE

(snowberry) Symphoricarpos albus: SYAL

(CA fuschia) Zauschneria californica: ZACA

San Tomas Aquino Tree and Shrub Height and Health Data Sheet

Date: 9/15/10 Surveyors: ULT, MEG
Time: 11:00 Weather Conditions: sunny

Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)	Planted Species	Height (trees)	Health Code	Vigor Code	Comments (volunteer?)
Salix	20+	4	4						
Salix	4'	4	4	volunteer					
Salix	4'	4	4	volunteer					
Salix	30+								
Salix	30+	4	4						
Salix	20+	4	4	volunteer					

APPENDIX B
Photodocumentation

Photo 1: View of riparian plantings. Photo facing south and upstream of the pedestrian bridge. April, 2006.

Photo 2: View of riparian plantings near the pedestrian bridge. Photo facing north of the same planting area shown in Photo 1. September, 2010.

Source: Biotic Resources Group, 2007; ESA, 2010

Figure B-1

Representative Photographs

Photo 3: View facing south of riparian plantings on either side of the trail. April, 2006.

Photo 4: View facing south of the riparian plantings on either side of the trail. Photo is slightly south of Photo 3, but of the same planting area. September, 2010.

Source: Biotic Resources Group, 2007; ESA, 2010

Figure B-2
Representative Photographs

Photo 5: View facing east of riparian plantings near the footbridge at the Oak Knoll Avenue trail entrance. April, 2006.

Photo 6: View facing southeast of riparian plantings near the footbridge at the Oak Knoll Avenue trail entrance. Photo of the same planting area shown in Photo 5. September, 2010.

Source: Biotic Resources Group, 2007; ESA, 2010

Figure B-3

Representative Photographs

Photo 7: View facing south of gooseberry plantings. April, 2006.

Photo 8: View facing north of riparian plantings. The gooseberry plantings located in Photo 7 are in the far right corner of this photo. September, 2010.

Source: Biotic Resources Group, 2007; ESA, 2010

Figure B-4
Representative Photographs