

Los Lagos Golf Course  
Environmental Mitigation Monitoring  
Year 7 (2008) Monitoring Report



# Biotic Resources Group

Biotic Assessments ♦ Resource Management ♦ Permitting

## Los Lagos Golf Course Environmental Mitigation Monitoring Year 7 (2008) Monitoring Report

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November 14, 2008

**LOS LAGOS GOLF COURSE**  
**ENVIRONMENTAL MITIGATION**  
**MONITORING REPORT**

**YEAR 7 (2008)**

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**LOS LAGOS GOLF COURSE**  
**ENVIRONMENTAL MITIGATION**  
**MONITORING REPORT**

**YEAR 7 (2008)**

**EXECUTIVE SUMMARY**

The Los Lagos Golf Course project site encompasses approximately 179 acres in southern San Jose. The project area consists of one eighteen-hole golf course, a driving range, clubhouse and associated facilities. The golf course is situated to the east and west of Coyote Creek. The golf course is located north of Capitol Expressway, approximately 0.5 mile west of State Highway 101. The golf course construction project resulted in the removal of 1.13 acres of riparian woodland and encroachment of golf activities within the riparian setback area. To mitigate direct and indirect impacts to the riparian habitat, the project incorporated a program to preserve and manage a 3.54-acre *riparian buffer area*, including establishing 1.98 acres of *riparian mitigation areas* (areas within the buffer area for the revegetation of riparian woodland). Pursuant to project permits, these areas must be established and meet performance criteria by the end of Year 5. Yearly monitoring reports (to Year 5) were submitted to CDFG of each monitoring year. Monitoring is also required in Year 7 (2008) and Year 10 (2011), pursuant to City conditions.

In spring 2002, riparian mitigation plantings were installed within the *riparian mitigation areas*. A total of 1,364 plants (container stock and acorn planting sites) were installed. Following plant installation, the contractors installed mulch around each planting. Aboveground browse protection cages were installed at all oak plantings. The Biotic Resources Group, under contract to the City of San Jose, monitored these areas in Year 1-5 (2002- 2006) with annual reports submitted to CDFG.

In 2008 (Year 7), Biotic Resources Group monitored the *riparian buffer area* (including the *riparian mitigation areas*) as per Year 7 protocols. The monitoring program consisted of a detailed monitoring session. The results of the Year 7 monitoring are presented in this report.

**Summary of Monitoring Results**

The 2008 monitoring revealed that plant health and survival was good to very good, as evidenced by observations of the plantings and plant growth. Maintenance of each of the *riparian mitigation areas* was rated good. In 2008 infestations of invasive non-native weeds were noted within the three planting areas. These weeds include yellow star thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), and jimson weed (*Datura sp.*).

The 2008 monitoring documented plant cover and plant survival at permanent sample plots. Environmental features within each of the planting areas were noted during the monitoring. Human disturbances were minimal. According to the riparian mitigation plan, the City is responsible for being on track to meet the Year 10 tree and shrub plant cover and tree height performance standards. As per the data collected in Year 7, the Los Lagos Golf Course currently meets the required tree and shrub cover values for Year 10. Tree heights are continuing to increase such that they are expected to meet the required thresholds in Year 10.

Site maintenance activities should be continued to remove and control infestations of invasive, non-native plant species, particularly thistles (yellow star, bull, and milk thistle) and poison hemlock within the planting areas. Early spring weeding of these plant species is required, with periodic follow-up treatments throughout the year. Thistles need to be hoed/weeded prior to the formation of flower heads. Golf course maintenance personnel should be alerted to the instructions for invasive plant removal/control in Section 1.8 of this report.

In addition, woody debris and golf course trimmings (including turf/sod pieces) that have been placed along the edge of the southeast mitigation area should be removed. Golf course debris is not allowed in the mitigation areas. All remaining tree stakes (i.e., rebar) should be removed; the irrigation system can be turned off, with drip emitters plugged or removed.

### **Summary of Recommendations for Years 8 (2009) through 10 (2011)**

The mitigation areas should continue to be weeded; the weeding should be focused on seasonal weed whipping to control invasive, non-native plant species (e.g., yellow star thistle, milk thistle, Italian thistle, jimson weed, tree tobacco). Particular attention should be given to the timing of weed control so as to reduce seed production and maximize the effectiveness of the weeding operations (see Section 1.8).

In addition, no woody debris or golf course trimmings (including turf/sod pieces) should be placed within the mitigation areas.

Pursuant to City permit conditions, the mitigation areas should be monitored in Year 10 (2011) to document the condition of the *riparian buffer area* and the status of the plantings within the *riparian mitigation areas*. Monitoring should follow the guidelines in the Environmental Maintenance Manual, which includes monitoring the sample plots for tree height and tree/shrub cover and a comparison to the Year 10 performance standards.

**LOS LAGOS GOLF COURSE**  
**ENVIRONMENTAL MITIGATION**  
**MONITORING REPORT**

**YEAR 7 (2008)**

**1.1 INTRODUCTION**

The Los Lagos Golf Course project site encompasses approximately 179 acres in southern San Jose. The project area consists of one eighteen-hole golf course, a driving range, clubhouse and associated facilities. The golf course is situated to the east and west of Coyote Creek. The golf course is located north of Capitol Expressway, approximately 0.5 mile west of State Highway 101.

The development of the golf course was designed to minimize impacts to the riparian resources associated with Coyote Creek, however, a bridge crossing, drainage outfall and some golf course development occurred in the riparian corridor and the riparian setback area. These actions were outlined in the project's Final Environmental Impact Report (*Tuers-Capitol Golf Course Project Draft EIR (plus First Amendment)*), City of San Jose, 1999 and 2000) and accompanying documents. Development of the golf course was determined to have direct and indirect impacts on cottonwood sycamore and oak riparian woodlands. Due to impacts to these sensitive resources, the City developed specific environmental mitigation measures for the project. These measures include riparian habitat replacement and long-term maintenance and enhancement of a *riparian buffer area*. Specific mitigation actions required for the site are addressed in the *Tuers-Capitol Golf Course Riparian Mitigation and Monitoring Plan*, H.T. Harvey & Associates, 2000). The maintenance and management of activities within the *riparian buffer area* are described in the project's Environmental Maintenance Manual.

**1.2 SUMMARY OF PROJECT PERMITS AND REQUIREMENTS**

**1.2.1 U.S. Fish and Wildlife Service Consultation (USFWS)**

The potential presence of a species listed by the Federal government necessitates a review of a project by the U.S. Fish and Wildlife Service (USFWS). For the Los Lagos Golf Course project, the project area was deemed potential upland habitat (i.e., non-breeding area) for the California red-legged frog, a species recognized as threatened under the Endangered Species Act. To minimize impacts that the golf course ponds may pose by creating potential habitat for the predatory bullfrog, the City will implement a bullfrog control/eradication program within all golf course ponds and drainage swales to prevent populations of bullfrogs from establishing.

**1.2.2 California Department of Fish and Game Agreement (CDFG)**

The riparian habitats within the golf course project area are under the jurisdiction of the California Department of Fish and Game (CDFG) under 1601 of the California Fish and Game Code. The golf course construction project resulted in the removal of 1.13 acres of riparian woodland (H. T. Harvey & Associates, 2000). To mitigate these direct impacts, the project incorporated the revegetation of approximately 1.98 acres of riparian woodland within designated *riparian mitigation areas* in a 3.54-acre *riparian buffer area*, as depicted on Figures 1 -3.

The *riparian mitigation areas* must be established and meet performance criteria by the end of Year 5. Yearly monitoring reports (to Year 5) have been submitted to CDFG. The last report submitted to CDFG was the Year 5 (2006) report.

### **1.2.3 City of San Jose Environmental Impact Report**

The City of San Jose completed their environmental review of the project in 2000. The Final Environmental Impact Report (DEIR plus First Amendment) identified mitigation measures for biological resources. The golf course construction project resulted in the direct impacts to 1.13 acres of riparian woodland. In addition, the project EIR identified the removal of ordinance-sized trees (i.e., trees greater than 18" in diameter). The EIR also identified the project's encroachment into the City's 100-foot riparian setback area. The golf course project encroaches into approximately 3.1 acres of this setback (H.T. Harvey & Associates, 2000). These encroachments occur from portions of the driving range, parking lots, golf cart paths, bunkers, fairways, tees for Holes 4, 9, 14 and 15 and the public trail. Impacts from this encroachment, as well as indirect impacts from actual golf course use (e.g., night lighting of the driving range) were so identified in the EIR. To mitigate these direct and indirect impacts, the project incorporated a program to preserve and manage a 3.54-acre *riparian buffer area*, including establishing 1.98 acres of *riparian mitigation areas* (areas within the buffer area for the revegetation of riparian woodland). These mitigation areas are depicted on Figures 1-3.

The *riparian mitigation areas* must be established and meet performance criteria by the end of Years 1-5, 7 and 10. Yearly monitoring reports (to Year 10) are to be prepared by the City by December 31 of Years 1-5, Year 7, and Year 10.

## **1.3 SUMMARY OF ENVIRONMENTAL MAINTENANCE REQUIREMENTS**

The golf course's environmental maintenance requirements are derived from the City's conditions of approval and regulatory agencies permit conditions, the need to create self-sustaining *riparian mitigation areas* within the projects 5 and 10-year reporting schedules (i.e., five years for CDFG conditions; 10 years for City conditions) and the need to maintain and manage the *riparian buffer area*. The maintenance requirements follow those outlined in the golf course's Mitigation and Monitoring Plan (H.T. Harvey & Associates, 2000) and further specified in agency permits and conditions.

The maintenance and management program for the golf course's *riparian mitigation areas* is designed to ensure project compliance with applicable permits and conditions of approval. This will be accomplished by implementing a 5-year plant establishment maintenance and monitoring program (which began in Year 1 [2002]), such that plant survival rates are maximized and desired habitat features are achieved. The *riparian buffer area* will also be maintained to ensure compliance with restricted uses. The program also includes implementation of a 5-year post-establishment period maintenance program, beginning in Year 5 and extending through Year 10. The post-establishment maintenance period will maximize the potential for long-term plant survival within the revegetation areas and maintenance of habitat within the remainder of the *riparian buffer area*. The maintenance program includes the implementation of remedial actions on a yearly basis if plantings or habitats fail to meet performance standards. The success of the maintenance and management program will be documented by implementing a 10-year monitoring program that documents the status of the habitat areas and reports the findings to the City Planning Department and CDFG (through Year 5, only) on a yearly basis.

## 1.4 SUMMARY OF REPORTING REQUIREMENTS

### 1.4.1 Annual Report Required by CDFG

Under the requirements of the project's Streambed Alteration Agreement with CDFG, the status of the golf course's compliance with these permits/agreements must be reported in a yearly monitoring report. The yearly report is to be submitted to CDFG by December 31 of Years 1-5; this monitoring began in 2002 and was completed in 2006.

### 1.4.2 Annual Report Required by City of San Jose Planning Department

Under the project's Conditions of Approval, the status of the golf course's compliance with these permits/agreements must be reported in a yearly monitoring report. The yearly report is to be submitted to the City Planning Department by December 31 of Years 1-5, 7, and 10; this monitoring began in 2002.

## 1.5 SUMMARY OF REVEGETATION ACTIVITIES IMPLEMENTED IN YEAR 7 (2008)

### 1.5.1 Initial Plantings in 2002 and Replacement Plantings

In spring 2002, Central Coast Wilds, a landscape contractor under contract to the City, installed riparian mitigation plantings within the *riparian mitigation areas*. Container stock plants and oak acorns were installed pursuant to plans and specifications developed for the project and as approved by the regulatory agencies. Table 1 identifies the species installed; replacement plantings were also installed in the subsequent fall/winter seasons as identified in each year's monitoring reports (to bring plantings to 80% survival rate). Gopher cages were used on all replacement plantings.

**Table 1. Trees and Shrubs Installed within Riparian Mitigation Areas (2002-2004)**

Habitat Area	Plant Species	Spacing	Container Size	Number of Plants Specified for Installation <sup>1</sup>	Number of Plants Installed in 2002 <sup>3</sup>
Cottonwood-Sycamore Riparian Planting Area					
	California sycamore	16' o.c.	Tree pot	3	3
	Fremont cottonwood	20' o.c.	Tree pot	7	7
	Box elder	14' o.c.	Tree pot	2	2
	Mexican elderberry	12' o.c.	Deepot	3	3
	Pacific blackberry	8' o.c.	Deepot	51	51
	California rose	8' o.c.	Deepot	17	17
	<b>Subtotal</b>				<b>83</b>
Oak Riparian Woodland					
	Coast live oak	16' o.c.	Acorn	879 <sup>2</sup>	293 <sup>4</sup>
	Valley oak	16' o.c.	Acorn	294 <sup>2</sup>	98 <sup>4</sup>
	Mexican elderberry	12' o.c.	Deepot	130	130
	Box elder	14' o.c.	Deepot	32	32
	Pacific blackberry	8' o.c.	Deepot	78	78
	Coyote brush	10' o.c.	Deepot	650	650
	<b>Subtotal</b>				<b>1,281</b>
<b>Total</b>					<b>1,364</b>

<sup>1</sup> City of San Jose, Project Plans and Specifications, 10/01; <sup>2</sup> Reflects number of acorns to be planted; multiple acorns installed at each planting site; <sup>3</sup> Central Coast Wilds, 8/02; <sup>4</sup> Reflects number of plantings sites; the number of acorns installed at each site is not available.



Source: Tuers-Capitol Golf Course Mitigation Plan, City of San Jose, 10/01

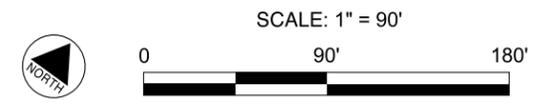
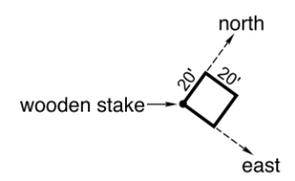
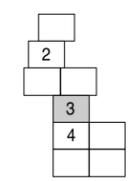
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**Los Lagos Golf Course - Riparian Buffer Area**

**Riparian Mitigation Area - Sampling Plots**

Figure 1  
 271-02

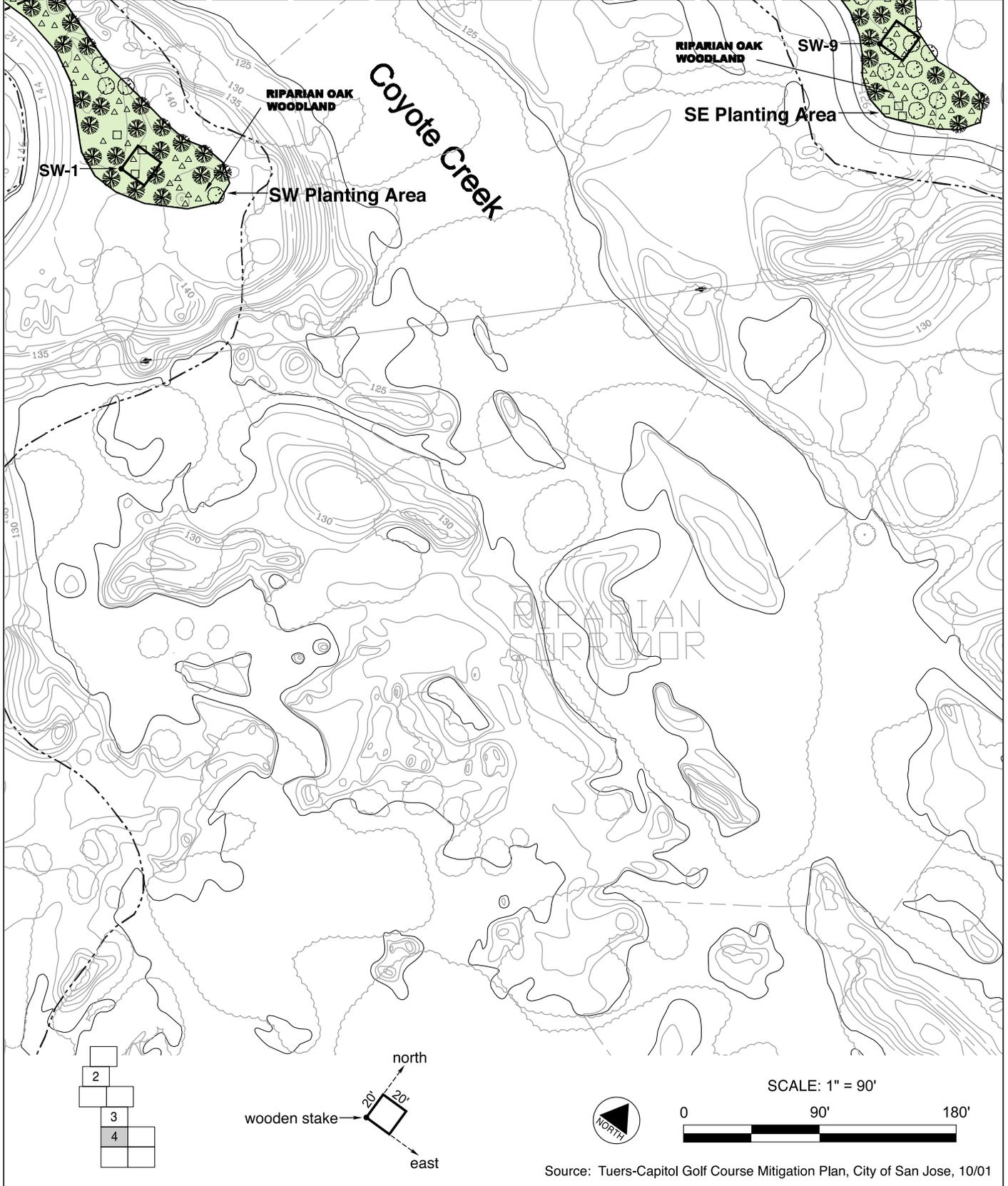


Source: Tuers-Capitol Golf Course Mitigation Plan, City of San Jose, 10/01

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Los Lagos Golf Course - Riparian Buffer Area  
 Riparian Mitigation Area - Sampling Plots

Figure 2  
 271-02



Source: Tuers-Capitol Golf Course Mitigation Plan, City of San Jose, 10/01

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Los Lagos Golf Course - Riparian Buffer Area

Riparian Mitigation Area - Sampling Plots

Figure 3

271-02

## 1.5.2 Year 7 (2008) Monitoring

The Biotic Resources Group, under contract to the City of San Jose, monitored the *riparian buffer area* (including the *riparian mitigation areas*). In October, Biotic Resources Group monitored the *riparian mitigation areas* site as per Year 7 protocols. The results of the Year 7 monitoring are presented in this report. The report also identifies whether the project has met its Year 7 performance standards identified for the project and if remedial actions are necessary to ensure the projects meets the projects long-term habitat goals.

## 1.6 METHODOLOGY

The Los Lagos Golf Course *riparian buffer area* was visited in October 2008. Kathleen Lyons of the Biotic Resources Group inspected the environmental features of the *riparian buffer area* (including plantings within the *riparian mitigation areas*) (i.e., surface erosion, human disturbances) as well as general plant species performance and buffer area maintenance.

Detailed monitoring was conducted to document the plantings within the *riparian mitigation areas*. At the monitoring, the permanent sampling plots that were established in 2002 were re-sampled. Twenty-six (26) sampling plots, each measuring 20 feet by 20 feet (a square, totaling 400 square feet) were sampled. Each plot was re-located; as the southwest corner of each plot was marked with rebar stakes covered with PVC pipe. The location, and orientation, of each sample plot is depicted on Figures 1-3. At each plot, data on plant survival, health and vigor and overall plant cover were recorded. The rating system used for plant health and vigor is listed on Table 2.

**Table 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

The *riparian mitigation areas* were also evaluated as to site maintenance and other disturbances. Photographs documenting each permanent sampling plot and the overall condition of the mitigation plantings and remainder of the riparian buffer areas were taken. Lagos Golf Course maintenance personnel maintained the riparian mitigation areas.

## 1.7 MONITORING RESULTS

### 1.7.1 Reconnaissance Inspection of Riparian Buffer Area

The reconnaissance inspection of the *riparian buffer area* documented the status of plant growth and maintenance activities within the area, as well as the general progress of the revegetation efforts within the *riparian mitigation areas*.

One function of the *riparian buffer area* is to provide foraging habitat for raptors (i.e., hawks and owls). With the exception of the *riparian mitigation areas*, which have been planted with trees and shrubs, the

remainder of the buffer area is to remain relatively open with grassland vegetation (small areas of shrubs will be retained). This mosaic of grassland and shrubs is to be maintained through seasonal mowing.

The 2008 inspection and the detailed monitoring session documented adherence to most of these maintenance requirements. However, occurrences of invasive, non-native plant species continue to be observed within all planting areas, indicating that these occurrences were not adequately controlled in 2007 or 2008. Thistle species (yellow star thistle, milk thistle, bull thistle) as well as jimson weed were observed within one or more mitigation areas.

Piles of cut tree/shrub materials were observed along the edge of the trail and the southeast mitigation area, resulting in a continuous line of tree limbs, logs, and other golf course cuttings/debris. The piles also include cut turf and soil. This material should not be deposited within the mitigation area (or elsewhere along the Coyote Creek corridor) and is not allowed in the *Tuers-Capitol Golf Course Riparian Mitigation and Monitoring Plan*. The debris also makes it difficult for maintenance workers to control the invasive weeds (thistles and poison hemlock) that are present along the trail/mitigation area edge.

The reconnaissance inspections revealed that overall plant health and survival was good, as evidenced by observations of the plantings and plant growth.

### **1.7.2 Monitoring of Riparian Mitigation Areas**

Detailed monitoring of the *riparian mitigation areas* was conducted in October 2008. Monitoring was conducted within the four planting areas: southeast planting area, southwest planting area, northwest planting area and the cottonwood/sycamore planting area. The location of these areas is depicted on Figures 1-3. The monitoring was conducted approximately 6.5 years after the plantings were installed.

The 26 sample plots (representing 15% of the area) that were established in Year 1 (2002) were re-sampled. At each sample plot, data was collected on plant survival, plant cover (percent cover), tree height, site maintenance, plant health and vigor and natural recruitment of native and non-native woody species. Within the four planting areas, herbaceous plant cover averaged 33%; this is a reduction from Year 5. Shrub cover increased to 50% (from 43% in Year 5). Tree cover increased to 14% (from 13% in Year 5). These data show the continuing progress of the developing riparian woodland as shrub and tree cover increases as plants grow and mature. The cover of invasive, non-native plant species cover decreased in all areas, yet still provides, on average, 3% of plant cover. Cover by invasive species was highest in the southwest planting area, where 10% of the plant cover was provided by invasive species (primarily yellow star thistle, Italian thistle and milk thistle).

#### **1.7.2.1 Northwest Planting Area**

This planting area is located in the northwest corner of the golf course, immediately west of Coyote Creek (Figure 1). The sample plot data yielded 29% cover by herbaceous species, 58% cover by shrubs, and 13% cover by trees. Natural recruitment of native trees and shrubs provided 1% of the plant cover; volunteer California walnut and coyote brush were documented. Invasive plant species were limited to a small patch of Jimson weed.

The sample plot data documented that most plants exhibited excellent health and vigor (Table 3). Valley oak trees are the tallest plants, averaging 8.5 feet. Valley oak tree plantings average 6.4 feet tall, although individual trees were recorded at 15 feet. Box elder trees average 7 feet tall. Coyote brush continues to provide significant plant cover. Plant heights average 8.7 feet, although individuals were recorded at 15

feet tall. Figures 4 and 5 depict the condition of the planting area in 2008. Figure 6 shows the trend of tree and shrub heights between 2002 (Year 1) and 2008 (Year 7).

**Table 3. Northwest Planting Area, Year 7 (2008) Sample Plot Data**

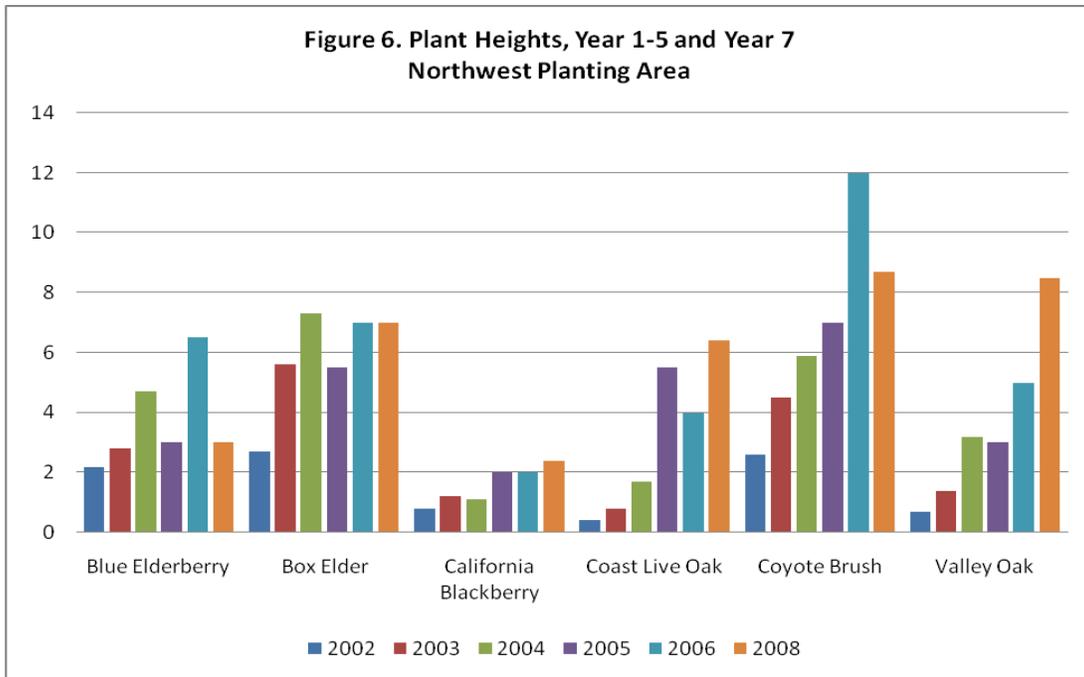
Plant Species	Average Height (Feet)	Average Vigor	Average Health
Blue Elderberry	3.0	3	3
Box Elder	7.0	4	4
Coast Live Oak	6.4	4	4
Valley Oak	8.5	4	4
Coyote Brush	8.7	3.8	3.8
California Blackberry	2.4	4	4



Figure 4. View of northwest planting area, looking south, October 2008.



Figure 5. Growth of shrubs and trees within northwest planting area, October 2008.



### 1.7.2.2 Southwest Planting Area

This planting area is located in the southwest portion of the golf course, immediately west of Coyote Creek. The sample plot data yielded 20% cover by herbaceous species, 62% cover by shrubs, and 8% cover by trees. Natural recruitment of native trees and shrubs provided <1% of the plant cover; volunteer coyote brush were documented. Invasive plant species provided 10% plant cover, which was provided by yellow star thistle, milk thistle, and Italian thistle.

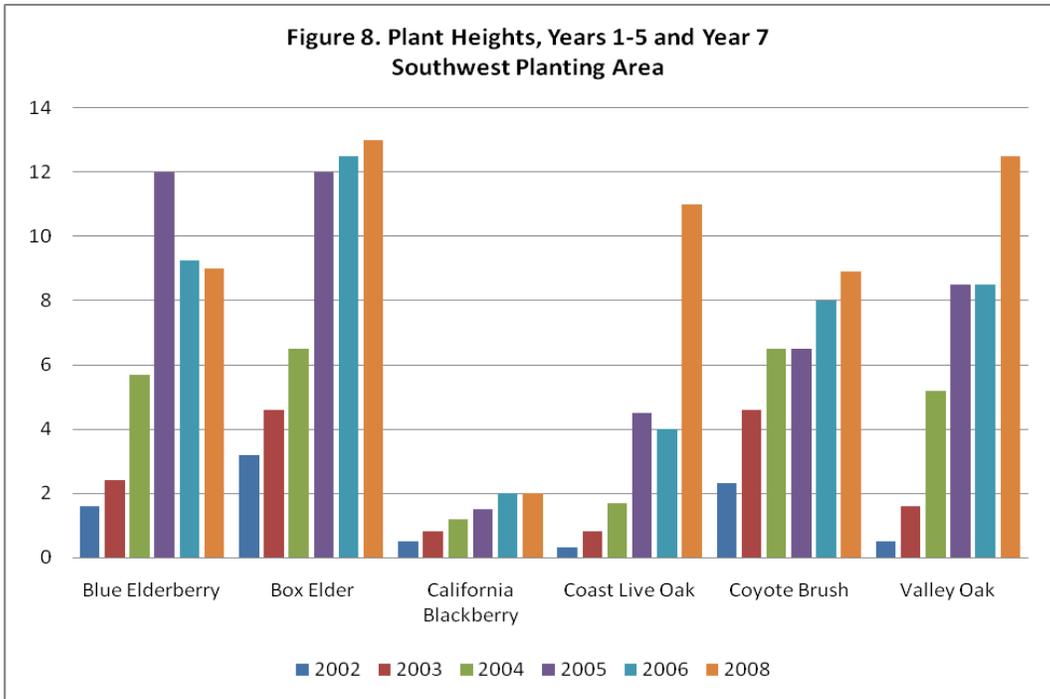
The sample plot data documented that most plants exhibited excellent health and vigor (Table 4). Valley oak and box elder trees continue to be the tallest plants, averaging 12.5 feet and 13.0 feet, respectively. Valley and coast live oaks showed a height increase of 4 feet since Year 5. Coyote brush continues to provide significant plant cover, with an average height of 8.9 feet. Figure 7 depicts the condition of the planting area in 2008. Figure 8 shows the trend of tree and shrub heights between 2002 (Year 1) and 2008 (Year 7).

**Table 4. Southwest Planting Area, Year 7 (2008) Sample Plot Data**

Plant Species	Average Height (Feet)	Average Vigor	Average Health
Blue Elderberry	9.0	3.8	3.8
Box Elder	13.0	4	4
Coast Live Oak	11.0	4	4
Valley Oak	12.5	4	4
Coyote Brush	8.9	4	4
California Blackberry	2.0	4	4



Figure 7. View of southwest planting area, looking north, October 2008.



### 1.7.2.3 Southeast Planting Area

This planting area is located in the southeast portion of the golf course, immediately east of Coyote Creek, near Hole 9. The sample plot data yielded 21% cover by herbaceous species, 61% cover by shrubs, and 19% cover by trees. Natural recruitment of native trees and shrubs provided 2% of the plant cover; volunteer California walnut, California blackberry, poison oak, and coyote brush were documented. Invasive plant species provide <1% cover, primarily by poison hemlock.

The sample plot data documented that most plants exhibited excellent health and vigor (Table 5). Valley oak, coast live oak, box elder, and blue elderberry are the tallest plants, averaging between 13 and 14 feet. Coyote brush continues to provide significant plant cover, with plants averaging 9.4 feet tall.

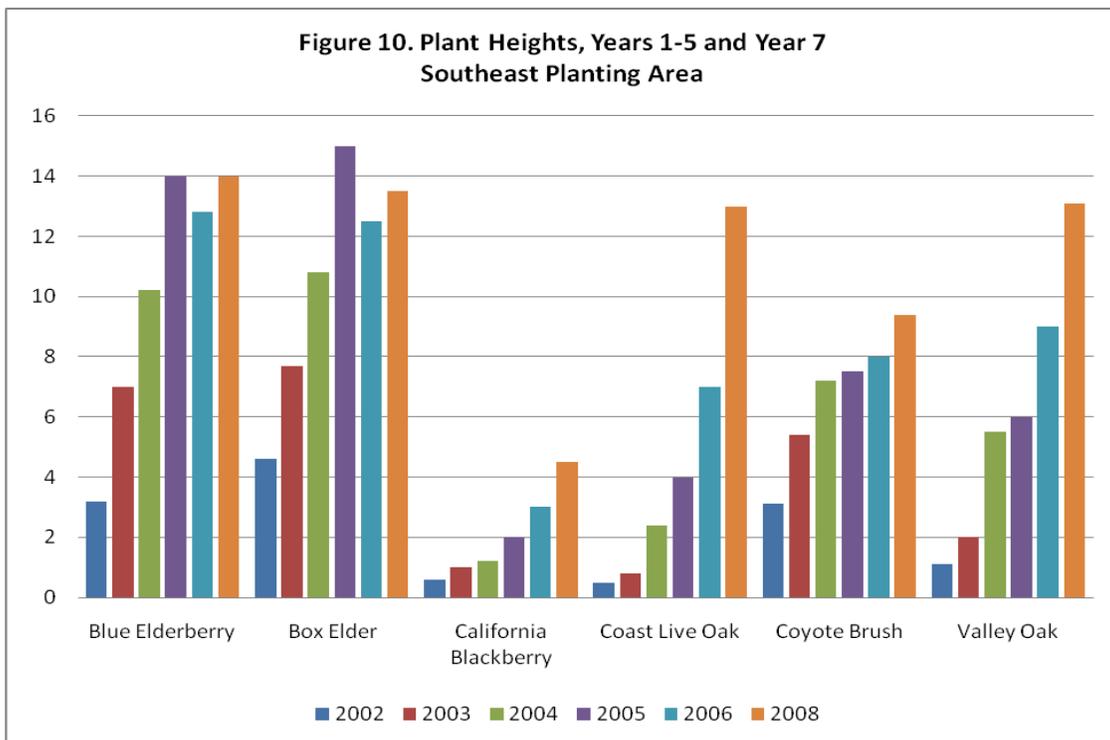
Figure 9 depicts the condition of the planting area. Figure 10 shows the trend of tree and shrub heights between 2002 (Year 1) and 2008 (Year 7).

**Table 5. Southeast Planting Area, Year 7 (2008) Sample Plot Data**

Plant Species	Average Height (Feet)	Average Vigor	Average Health
Blue Elderberry	14.0	4	4
Box Elder	13.5	4	4
Coast Live Oak	13.0	4	4
Valley Oak	13.1	4	4
Coyote Brush	9.4	4	4
California Blackberry	4.5	4	4



Figure 9. View of southeast planting area, September 2008.



#### 1.7.2.4 Sycamore/Cottonwood Planting Area

This planting area is located in the southeast portion of the golf course, immediately east of Coyote Creek, near the Coyote Creek Trail (Figure 3). The sample plot data yielded 33% cover by herbaceous species, 50% cover by shrubs, and 14% cover by trees. Natural recruitment of native trees and shrubs provided 5% of the plant cover; volunteer California walnut and poison oak were documented. Invasive plant species were limited to Himalaya berry that has runners into the revegetation area from the adjacent riparian woodland.

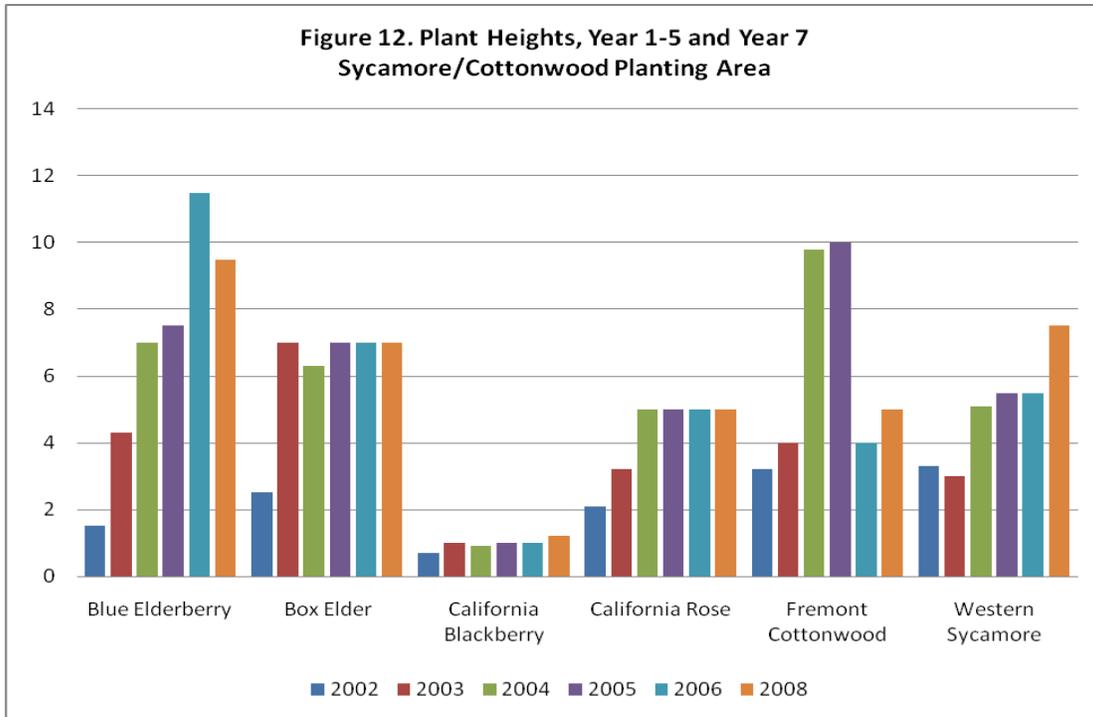
The sample plot data documented that most plants exhibited excellent health and vigor (Table 6). Blue elderberries are the tallest plants, averaging 9.5 feet, a decrease from 11.5 feet in Year 5; stem dieback was noticed on two plantings that account for the decline in average height. Sycamores average 7.5 feet tall. A two foot increase from Year 5. Shrubs of California rose average 5 feet, which is similar to previous sampling years. The 2008 monitoring documented that most plants exhibited good to excellent health and vigor (Table 6), although one cottonwood had died. Figure 11 shows this planting area vegetation. Figure 12 shows the trend of tree and shrub heights between 2002 (Year 1) and 2008 (Year 7).

**Table 6. Sycamore/Cottonwood Planting Area, Year 7 (2008) Sample Plot Data**

Plant Species	Average Height (Feet)	Average Vigor	Average Health
Blue Elderberry	9.5	3.5	3.5
Box Elder	7.0	4	4
Fremont Cottonwood	5.0	4	4
Western Sycamore	7.5	4	4
California Rose	5.0	4	4
California Blackberry	1.2	3.8	3.8

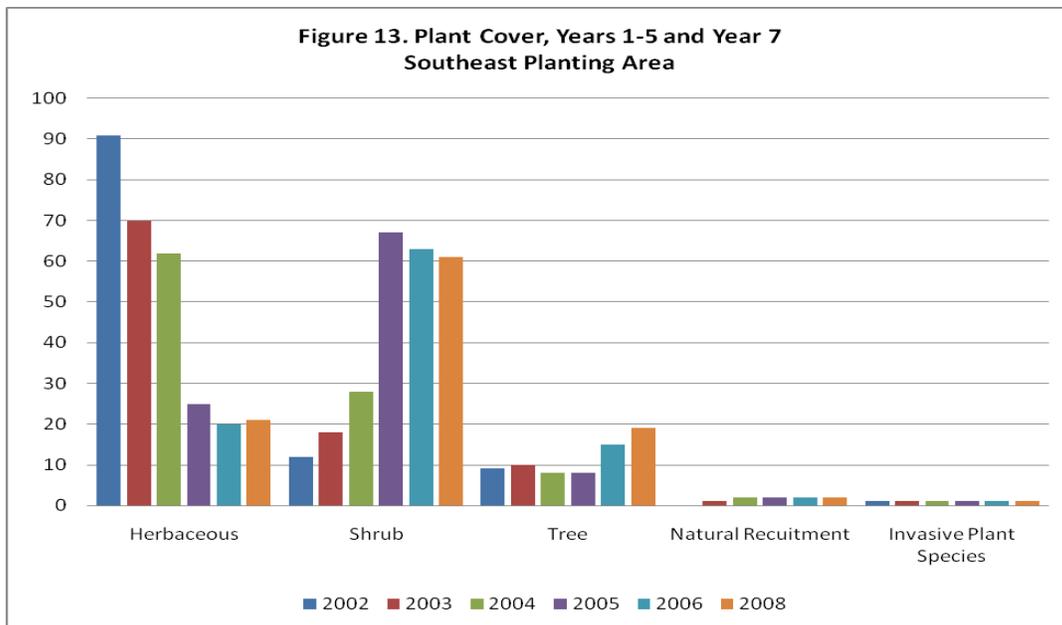


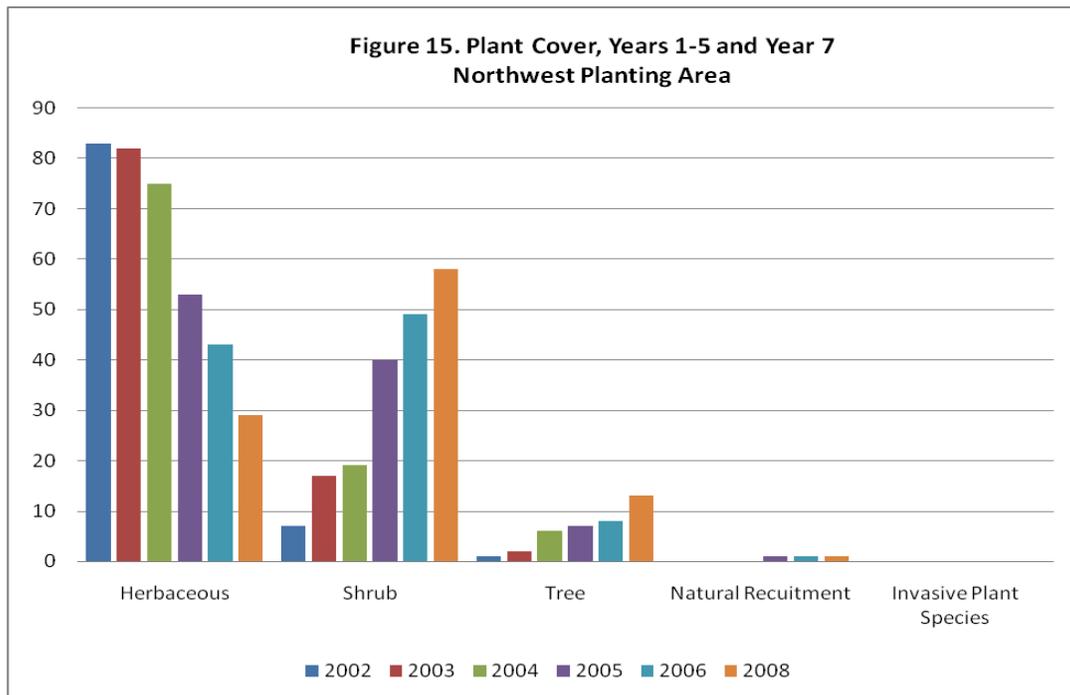
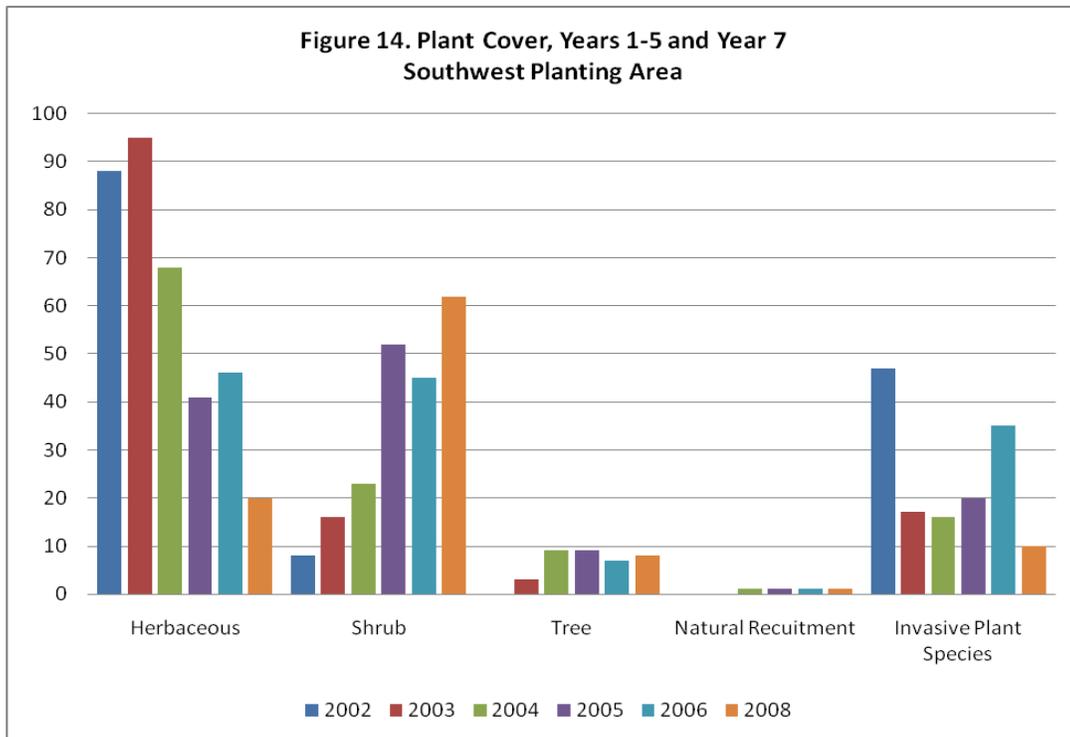
Figure 11. View of portion of sycamore cottonwood planting area, October 2008.

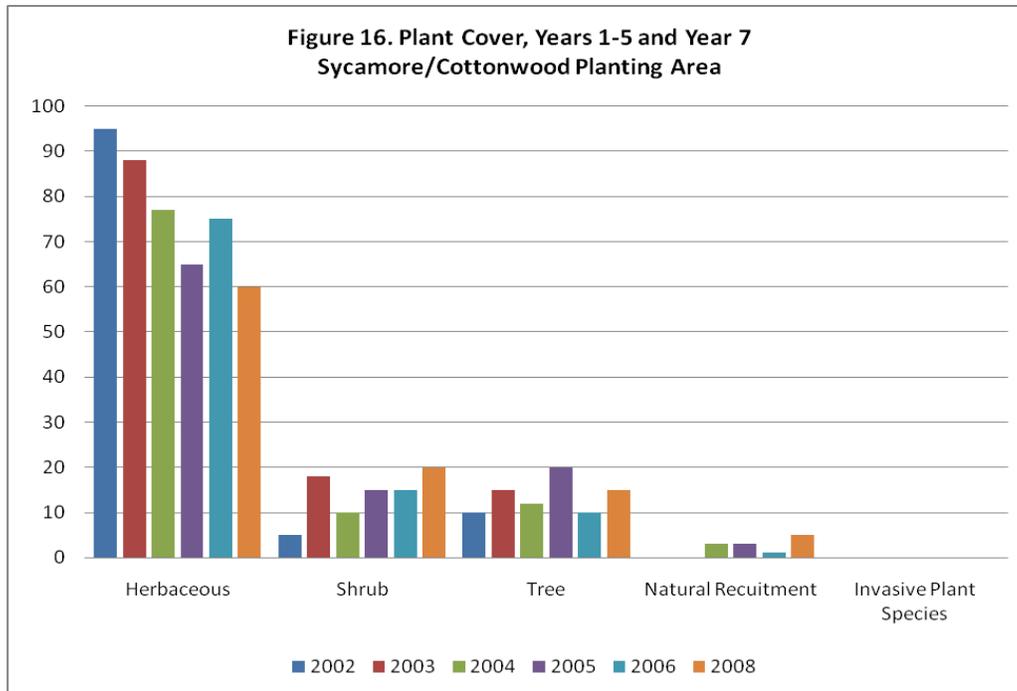


**1.7.2.5 Trends in Plant Cover and Tree Height, Years 1-5 and Year 7**

Figure 13 displays the trend in plant cover for the revegetation areas between Years 1 and 5 and Year 7. According to the riparian mitigation plan, the City is responsible for being on track to meet the Year 10 tree and shrub plant cover performance standards. The Year 10 performance standard for tree and shrub cover is 45%. As per the data collected in Year 7, the Los Lagos Golf Course currently meets the Year 10 tree and shrub cover values for the southeast, southwest, and northwest plantings areas. Tree and shrub cover within the sycamore/cottonwood planting area is 35%.







There are no established tree height performance standards for Year 7, except for a trend to reach the Year 10 requirements. Table 7 displays the Year 10 performance standard and the average height values recorded in October 2008 (Year 7) from all plantings sites. Tree heights are continuing to increase such that all species they are expected to meet the required thresholds in Year 10, with the exception of California sycamore and Fremont cottonwood. These trees were planted within the sycamore/cottonwood planting area, with many installed beneath the canopy of existing trees and, as such have below expected heights (average is 7.5 feet and 5 feet, respectively). Presently, valley oak and coast live oak meet or exceed the Year 10 requirements.

**Table 7. Tree Height Performance Standards and Year 7 Values**

Species	Performance Standard Year 10 (feet)	Average Tree Height Year 7 (feet)
Blue elderberry	16	9
Valley oak	10	11
California sycamore	22	7.5
Box elder	18	10
Fremont cottonwood	30	5
Coast live oak	10	10

## 1.8 CONCLUSIONS AND RECOMMENDATIONS

The 2008 monitoring revealed that plant health and survival was good to very good, as evidenced by observations of the plantings and plant growth. Maintenance of each of the *riparian mitigation areas* was rated good. In 2008 infestations of invasive non-native weeds were noted within the three planting areas. These weeds include yellow star thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), and jimson weed (*Datura sp.*).

The 2008 monitoring documented plant cover and plant survival within permanent sample plots.

Environmental features within each of the planting areas were noted during the monitoring. Human disturbances were minimal. According to the riparian mitigation plan, the City is responsible for being on track to meet the Year 10 tree and shrub plant cover and tree height performance standards. As per the data collected in Year 7, the Los Lagos Golf Course currently meets the required tree and shrub cover values for Year 10. Tree heights are continuing to increase such that they are expected to meet the required thresholds in Year 10.

Site maintenance activities should be continued to remove and control infestations of invasive, non-native plant species, particularly thistles (yellow star, bull, and milk thistle) and poison hemlock within the planting areas. Early spring weeding of these plant species is required, with periodic follow-up treatments throughout the year. Thistles need to be hoed/weeded prior to the formation of flower heads.

In addition, woody debris and golf course trimmings (including turf/sod pieces) that have been placed along the edge of the southeast mitigation area should be removed. Golf course debris is not allowed in the mitigation areas. All remaining tree stakes (i.e., rebar) should be removed; the irrigation system can be turned off, with drip emitters plugged or removed.

### **1.8.1 Recommendations for Years 8 (2009) through 10 (2011)**

The mitigation areas should continue to be weeded; the weeding should be focused on seasonal weed whipping to control invasive, non-native plant species (e.g., yellow star thistle, milk thistle, Italian thistle, jimson weed, tree tobacco). Particular attention should be given to the timing of weed control so as to reduce seed production and maximize the effectiveness of the weeding operations.

In addition, no woody debris or golf course trimmings (including turf/sod pieces) should be placed within the mitigation areas.

Pursuant to City permit conditions, the mitigation areas should be monitored in Year 10 (2011) to document the condition of the *riparian buffer area* and the status of the plantings within the *riparian mitigation areas*. Monitoring should follow the guidelines in the Environmental Maintenance Manual, which includes monitoring the sample plots for tree height and tree/shrub cover and a comparison to the Year 10 performance standards.

The following actions are recommended for Years 6-10 to ensure project compliance and riparian revegetation success:

- 1. Weed and Maintain Riparian Mitigation Areas.** All mitigation areas should continue to be weeded to remove/control invasive non-native plant species, with focused actions in the spring months prior to the bud formation on all thistles (yellow star thistle, milk thistle and Italian thistle) as well as jimson weed. Weed whipping or hoeing of plants shall continue throughout the year to remove basal rosettes and any new occurrences. The following treatments are required:

Poison hemlock. This species should be removed from the site, control measures include:

- a. Hand pull small patches.
- b. Shovel cut or hoe plant, cutting taproot below crown (2-4") shortly before flowering. If the plant has flowered, remove seed head, bag and dispose. If possible, bag and remove the entire plant under any circumstances.
- c. Weed-whip in spring; 3 to 4 times into the fall; repeat for 3-5 years.

Weed-whipping is most efficient if it occurs after the stalk has formed and before the flowers

have opened. If weed whipping occurs after the flowers have opened, it should occur prior to seed formation. If poison hemlock is weed-whipped after the flowers have opened, the flower heads should be separated from the major mass of the stem and root and be bagged and removed from the site.

Although string heads are effective in the spring and early summer, plastic blades may be required later in the season. Repeated treatments will be required, as poison hemlock can have large root reserves. In some locations, poison hemlock can grow year-round and may require periodic site inspections, throughout the year. Multiple spring and fall mowing/weed-whipping should be done at the lowest height possible, without disturbing the soil (approximately 2-3 inches, depending upon equipment).

As poison hemlock is an annual/biennial species, with seed viability of three or four years, the mowing/whipping regime needs to occur intensively for 3-5 years. Weed-whipping plants that have dropped their seed is of limited usefulness for control, as the plant dies after seeding.

Thistles. Thistle species (yellow star, bull, Italian) should be hand-hoed from the site in the following manner:

- a. Hand pull plant and bag if they have flowered.
- b. Shovel cut or hoe plants, cutting taproot below crown 4-6”), after bolting and prior to flowers opening, or remove seed head, bag and dispose.
- c. Multiple mowing from late spring to late summer, after bolting, yet before seeds form.
- d. Any thistle flowers that have opened or about to open should be bagged and removed from the site

**2. Maintenance of Riparian Buffer Areas.** The buffer areas should continue to be maintained through seasonal mowing and removal of invasive, non-native plant species. Mowing should continue to be used to control invasive, non-native plants, such as poison hemlock. Spot weed whipping should also be used to control poison hemlock and thistles in areas not accessible by mower. If poison oak (*Toxicodendron diversilobum*) establishes within 6 feet of a cart path and its presence is deemed a hazard to golfers, the growth can be mowed to prevent its spread onto the cart path. All of the existing woody debris (from other golf course operations) that has been placed within the southeast planting area should be removed. No debris should be placed within the riparian mitigation areas in the future. Riparian plantings should not be pruned or trimmed, except as needed for public safety (e.g., branches overhanging the cart path or public trail that would obstruct access could be trimmed).

**3. Year 10 (2011) Monitoring.** A qualified biologist should conduct a reconnaissance and detailed monitoring survey to document the condition of the *riparian buffer area* and the status of the plantings within the *riparian mitigation areas*. Monitoring should follow the guidelines in the Environmental Maintenance Manual. The data from the sample plots should be compared to the Year 10 performance standards.

## Comparison Photos of Representative Sample Plots – Year 1 and Year 7



Figure 17a. View of **Sample Plot I, Southeast Planting Area, September 2002**. Sample plot contains 3 coyote brush (alive) and one dead plant. Herbaceous cover is 95%; shrub cover is 5% and tree cover is 0%.



Figure 17b. View of **Sample Plot I, Southeast Planting Area, October 2008**. Herbaceous cover is 0%; shrub cover is 90% and tree cover is 10%.



Figure 18a. View of **Sample Plot I, Northwest Planting Area, September 2002**. Sample plot contains 3 coyote brush (alive) and two dead plants. Herbaceous cover is 70%; shrub cover is 5% and tree cover is 0%.



Figure 18b. View of **Sample Plot I, Northwest Planting Area, October 2008**. Herbaceous cover is 5%; shrub cover is 90% and tree cover is 5%.



Figure 19a. View of Sample Plot 1, Sycamore/Cottonwood Planting Area, September 2002. Sample plot contains 1 blue elderberry, 1 California rose and 1 California blackberry. Herbaceous cover is 95%; shrub cover is 5% and tree cover is 10% (from adjacent trees).



Figure 19b. View of Sample Plot 1, Sycamore/Cottonwood Planting Area, October 2008. Herbaceous cover is 60%; shrub cover is 30% and tree cover is 10%.



Figure 20a. View of **Sample Plot 6, Southwest Planting Area, September 2002**. Sample plot contains 2 coyote brush, one coast live oak and one empty planting site. Herbaceous cover is 95%; shrub cover is 5% and tree cover is 10%. Yellow star thistle provides 75% of the herbaceous plant cover.



Figure 20b. View of **Sample Plot 6, Southwest Planting Area, October 2008**. Herbaceous cover is 10%; shrub cover is 70% and tree cover is 20%. Yellow star thistle provides 50% of the herbaceous plant cover.



Figure 21. Coast live oak and box elder within Northwest Planting Area, October 2008.



Figure 22. Seven-year oak valley oak over 18 feet tall within Northwest Planting Area, October 2008.