

# Biotic Resources Group

Biotic Assessments ♦ Resource Management ♦ Permitting

## Berryessa Asphalt Recycling Plant Riparian Revegetation Project

### Year 3 (2008) Monitoring Report



*Prepared for:*

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December 19, 2008

# BERRYESSA ASPHALT RECYCLING PLANT RIPARIAN REVEGETATION PROJECT

## YEAR 3 (2008) MONITORING REPORT

### INTRODUCTION

The Berryessa Asphalt Plant is located in the City of San Jose, along Berryessa Road between Highway 101 and Coyote Creek (Figure 1). The Riparian Revegetation Site encompasses approximately 20,400 square feet (0.468 acre) and provides riparian mitigation plantings for Granite Rock Company's recycling center. Development of the recycling project (e.g., storm drain outlet into Coyote Creek and future recycling activities adjacent to the creek) necessitated riparian mitigation activities pursuant to the requirements of the project's Conditions of Approval (City of San Jose) and regulatory agency permits (i.e., California Department of Fish and Game [CDFG] and California Regional Water Quality Control Board [RWQCB]).

A Revegetation Plan was prepared for the project that identified the activities necessary for the establishment of riparian woodland adjacent to the recycling facility and Coyote Creek, in conformance to the approved *Conceptual Landscape Plan* (Drawing No. 22199P01-104, Thomas Reid Associates, Sept. 2004). The revegetation area is located in a 30-foot wide previously disturbed area where the revegetation will increase the riparian habitat values of Coyote Creek. All existing wetland and riparian habitat along Coyote Creek were to be retained in their existing state, except for the removal of invasive non-native plant species (i.e., giant reed, *Arundo donax*). The revegetation area is located in an approximately 30-foot wide band extending outward from the existing riparian woodland (*Berryessa Asphalt Recycling Plant Riparian Revegetation Project – Year 1 As-Built Conditions Report*, Biotic Resources Group, December 2005).

Pursuant to these plans and permit conditions, the Year 3 (2008) condition of the revegetation area (i.e., status of plants) was documented. The result of this monitoring is described in this report.

### SUMMARY OF PROJECT PERMITS AND REQUIREMENTS BY AGENCY

The projects revegetation requirements are derived from the City of San Jose's and other regulatory agencies permit conditions and the need to create self-sustaining natural habitats within the projects 5-year reporting schedule. The maintenance requirements follow those outlined in the revegetation plan.

Specific revegetation plan goals include:

1. Establish mitigation plantings within a 0.468-acre area along the top-of-bank of Coyote Creek.
2. Utilize native plant materials collected from the Coyote Creek watershed.
3. Utilize an irrigation system during the plant establishment period (i.e., first 3 years).
4. Implement periodic weed control to benefit the mitigation planting area.
5. Maintain a minimum 80% survival rate of all container stock and 60% survival of willow and cottonwood cuttings during the first three years, replacing dead plants if survival rates fall below this performance standard.
6. Establish four photo stations to document progress of the revegetation.
7. Document the progress of the revegetation over a five-year period by monitoring plant survival, health, and vigor, as well as site maintenance.

8. Submit annual reports to City of San Jose, CDFG, and RWQCB by December 31 of each monitoring year.

The monitoring program for the revegetation areas is designed to ensure project compliance with applicable regulatory permits and conditions. This is to be accomplished by initiating a 3-year plant establishment maintenance program such that plant survival rates are maximized and desired habitat features are achieved. The program also includes implementation of a 2-year post-establishment period maintenance program, which also maximizes the potential for long-term plant survival and habitat features. The revegetation maintenance program includes the implementation of remedial actions on a yearly basis if plantings fail to meet performance standards. The success of the maintenance and management program are to be documented by implementing a 5-year monitoring program that documents the status of the habitat areas and reports the findings to regulatory agencies on a yearly basis.

### YEAR 3 (2008) MONITORING

Native riparian plantings were installed within the designated revegetation area in October and November 2005. Central Coast Wilds, a landscape contractor, installed container plants (trees and shrubs) and cuttings of willow and cottonwood within the revegetation area as well as additional plantings around a previously installed storm drain outfall. A list of the plants specified in the Revegetation Plan is presented in Table 1. Replacement plantings were installed on site in winter 2007. In addition to the installation of two blue elderberry (*Sambucus mexicana*) plants required to meet Year 2 success criteria, additional plants were installed: five blue elderberry, six California rose (*Rosa californica*), six box elder (*Acer negundo*), and five California blackberry (*Rubus ursinus*), and three California buckeye (*Aesculus californica*).

**Table 1. As-Built Conditions for Riparian Revegetation Site (2005)**

Common Name	Scientific Name	Size of Propagule Installed	Quantity Specified in Revegetation Plan
Box Elder	<i>Acer negundo</i>	1-gallon	12
Fremont Cottonwood	<i>Populus fremontii</i>	Cutting	15
Willow	<i>Salix sp.</i>	Cutting	14
Blue Elderberry	<i>Sambucus mexicana</i>	1-gallon	12
California Blackberry	<i>Rubus ursinus</i>	1-gallon	20
California Rose	<i>Rosa californica</i>	1-gallon	20
<b>Total</b>			<b>93</b>

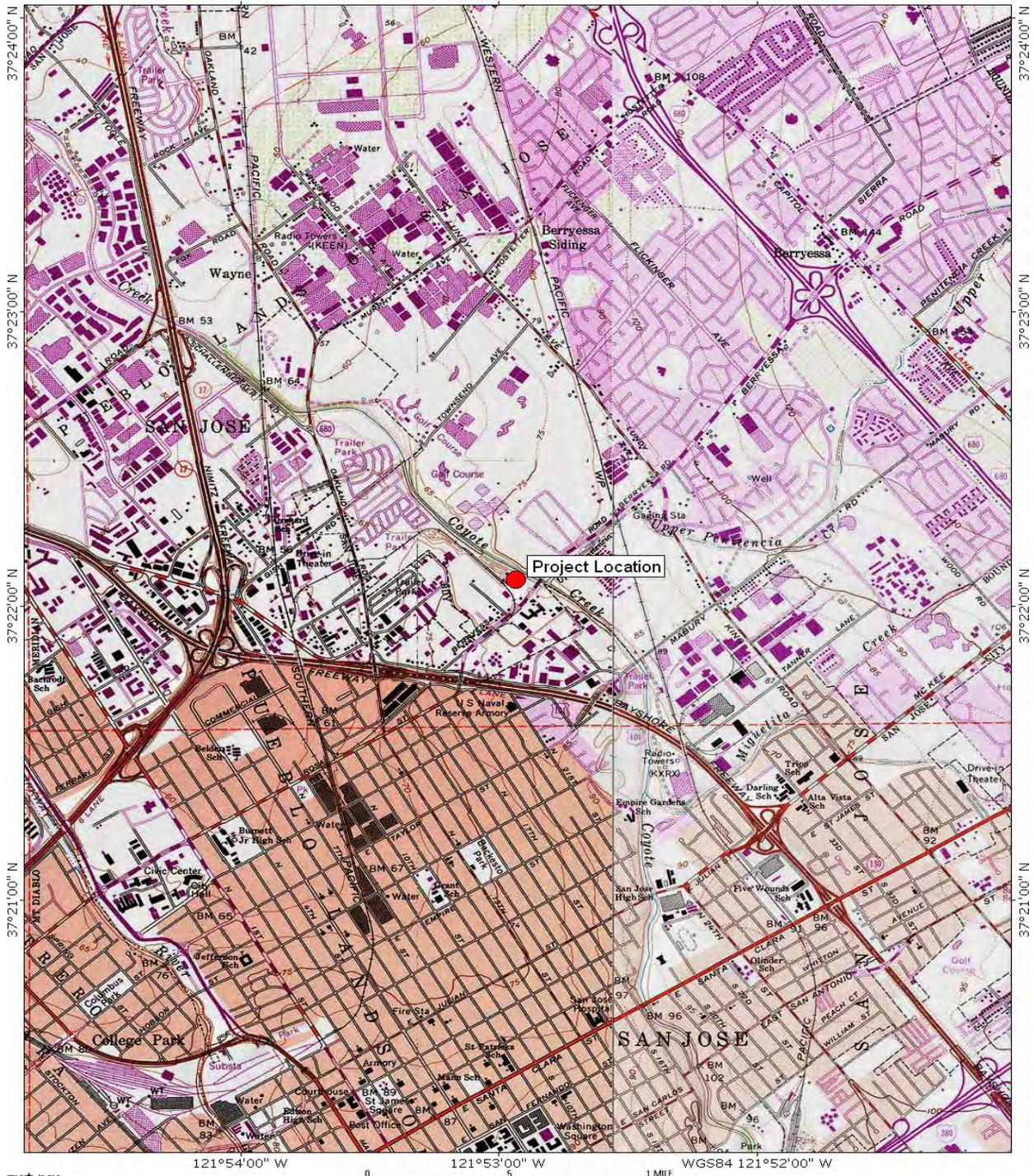
### Methodology

Kathleen Lyons of the Biotic Resources Group documented the Year 3 condition of the riparian mitigation area on December 17, 2008. At the monitoring session, environmental features of the planted area were noted (i.e., human disturbances) as well as plant species condition and the site's conformance to requirements of the *Revegetation Plan*. The riparian mitigation area was also evaluated as to site maintenance and other disturbances.

### Results

At the December field inspection the site exhibited adequate site maintenance. Weed growth was controlled through periodic weed-whipping and each plant was drip- irrigated. The monitoring documented plant survival, as well as each plants health and vigor (i.e., presence of chlorosis, limb dieback, drought stress). The rating system used for plant health and vigor is listed on Table 2.

TOPO! map printed on 12/12/05 from "California.tpo" and "Untitled.tpg"  
 121°54'00" W                      121°53'00" W                      WGS84 121°52'00" W



TN  $\nearrow$  MN  
 15°

0 1000 FEET 0 500 1000 METERS  
 1 MILE  
 Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

Base Map: USGS Topographic Map, San Jose

<p><b>Biotic Resources Group</b>                  2551 S. Rodeo Gulch Road #12 ♦ Soquel, CA 95073                  (831) 476-4803 ♦ Fax (831) 476-8038</p>	<p>Berryessa Asphalt Recycling Plant                  Riparian Revegetation Area</p> <p>Location Map</p>	<p>Figure 1                  12/08</p>
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**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 December monitoring was conducted approximately three years after the initial plantings were installed; 109 planting sites were documented to contain live trees or shrubs. All container stock trees and shrubs exhibit greater than 80% plant survival, which meets the performance standard set forth in the *Revegetation Plan*. The willow and cottonwood pole cuttings exhibit a greater than 60% plant survival, which also meets the performance standard set forth in the *Revegetation Plan*.

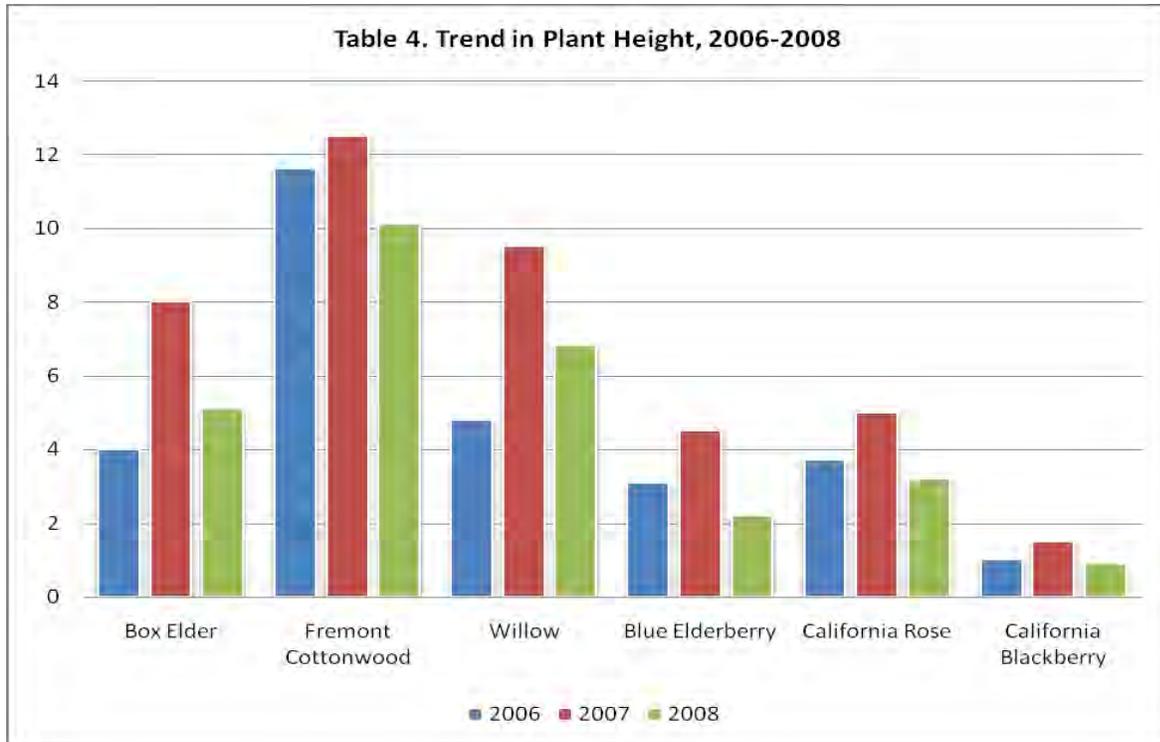
The Year 3 monitoring results are presented in Table 3. Average tree plant heights ranged from 1.8 feet (California buckeye) to 10.1 feet for Fremont cottonwood. Average shrub heights range from 0.9 feet to 3.5 feet. Plant vigor and health ratings ranged from a low of 2.75 (fair vigor and health) for box elder (due to stem dieback on a few trees) to excellent vigor for California blackberry, California rose, and snowberry.

**Table 3. Year 3 (2008) Plant Survival Data within Riparian Mitigation Area**

Plant Species	Number of Plants Specified in <i>Revegetation Plan</i>	Number of Plants Alive 12/08*	Percent Survival in Year 3	Average Vigor/Health	Average Height and Range (Feet)
<b>Trees</b>					
Box Elder	10	12	100%+	2.75/2.75	5.1 (0.1-12.5)
Fremont Cottonwood	15	13	87%	3.3/3.3	10.1 (4.0-17.75)
Willow	14	9	64%	3.4/3.4	6.8 (0.5-13.5)
Blue Elderberry	12	14	100%+	3.4/3.4	2.2 (0.1-6.5)
California Buckeye	-	3	100%	3.7/3.7	1.8 (1.5-5.5)
<b>Subtotal</b>	<b>51</b>	<b>51</b>	<b>100%</b>	<b>-</b>	<b>-</b>
<b>Shrubs</b>					
California Blackberry	20	19	95%	4.0/4.0	0.9 (0.3-1.5)
California Rose	20	38	100%+	3.9/3.9	3.2 (0.5-5.0)
Snowberry	0	1	100%	4.0/4.0	3.5
<b>Subtotal</b>	<b>40</b>	<b>58</b>	<b>100%</b>	<b>-</b>	<b>-</b>
<b>TOTAL</b>	<b>93</b>	<b>109</b>	<b>100%+</b>	<b>-</b>	<b>-</b>

\* Reflects survival of species over-planted in 2005 and replacement plantings in December 2007

The trend in plant height, in feet by species, from Year 1 (2006) to Year 3 (2008) is depicted in Table 4. The average plant height for each species decreased in 2008 due to some stem dieback (willows and cottonwoods) and the low stature of the replacement plantings (box elder, blue elderberry and California rose). An increase in average plant height is expected to increase as the replacement plants mature.



Minimal weeds were noted in and around the planting basins and each planting site had adequate mulch. Natural recruitment of native trees and shrubs was also evident within the mitigation area. Willow and cottonwood saplings have naturally established in the swale area and coyote brush shrubs are establishing in other areas of the site.

The outer (western) edge of the mitigation area was fenced with a wooden fence and no human disturbances were noted in the mitigation area. Invasive weeds, such as giant reed (*Arundo donax*), that occurs along the riparian corridor, was absent from the mitigation area due to removal of the species in 2008.

**Photo Stations**

Four permanent photo stations were established as part of the As-Built Conditions monitoring. The stations are located at the northern and southern ends of the mitigation area (looking south and north, respectively) and two stations are located in the mid section of the mitigation area, with views to the southwest and northeast. These photo stations, documenting the Year 0 (as-built) and Year 3 condition of the site are portrayed in Figures 3-6.

## Photo Station 1



Figure 3A. Photo Station #1, taken from southern end of revegetation area, looking northward along the top edge of Coyote Creek, December 2005.



Figure 3B. Photo Station #1, taken from southern end of revegetation area, looking northward along the top edge of Coyote Creek, December 2008.

## Photo Station 2



Figure 4A. Photo Station #2, taken from mid section of revegetation area, looking eastward toward top edge of Coyote Creek, December 2005.



Figure 4B. Photo Station #2, looking eastward along top edge of Coyote Creek, December 2008.

### Photo Station 3



Figure 5A. Photo Station #3, taken from mid section of revegetation area, looking southward along the top edge of Coyote Creek, December 2005.



Figure 5B. Photo Station #3, looking southward along the top edge of Coyote Creek, December 2008.

### Photo Station 4



Figure 6A. Photo Station #4, taken from northern end of revegetation area, looking southward along the top edge of Coyote Creek, December 2005.



Figure 6A. Photo Station #4, looking southward along the top edge of Coyote Creek, December 2008.

## **CONCLUSIONS AND RECOMMENDATIONS**

According to the mitigation plan for the project, Granite Rock is responsible for 80% survival of container stock trees and shrubs and 60% survival of willow and cottonwood pole cuttings. As per the data collected in December 2008 (Year 3), the project meets this performance standard. Site maintenance, such as weeding and supplemental irrigation, was adequate to control invasive weeds and to promote good health of the plantings.

### **RECOMMENDATIONS FOR YEAR 4 (2009)**

#### **Revegetation Area Maintenance**

The riparian plantings should continue to receive supplemental irrigation in 2009 to promote plant growth and survival. In general irrigation should occur between April and October, yet this schedule can be adjusted based on rainfall patterns and weather conditions. The revegetation area should continue to be weeded to reduce competition, as specified in the mitigation plan. Weed removal should include removal of weeds from planting basins as well as removal/control of any patches of giant reed that sprout within the mitigation area. Mulch should be replenished within the planting basins, if needed. If any container stock plants fail such that the 80% survival performance standard will not be met Granite Rock shall secure the services of a native plant nursery for replacement plants. If any pole cuttings (willow and cottonwood) fail such that the 60% survival performance standard will not be met Granite Rock shall schedule replanting with dormant pole cuttings (between December 15 and January 15) or obtain replacement riparian tree container stock from a native plant nursery.

Volunteer recruitment of willow, cottonwood, and coyote brush should be encouraged. All existing volunteer shrubs and trees should be retained, even those that are growing in close proximity to planted trees and shrubs. California blackberry plants should be allowed to spread their stems. Open areas where plantings are sparse should be monitored for natural recruitment of native trees and shrubs, such that a continuous canopy of plant cover can be achieved in the future.

#### **Monitoring**

The revegetation area should be monitored in fall 2009 to document the condition of the revegetation area and document plant survival and plant growth (e.g., height, health and vigor). The survey should include collecting quantitative data and photographing the development of the revegetation plantings. Replacement plantings should be installed if plant survival of container stock plants drops below 80% for any species or if plant survival of pole cuttings drops below 60% for any species (willow and cottonwood).

#### **Reporting**

The Year 4 (2009) monitoring report should be submitted to City of San Jose, CDFG, and RWQCB at the end of the monitoring year. The report is due to these agencies by December 31, 2009.