

**Salt River Ecosystem Restoration Project
Post-Construction Eelgrass Photo Documentation Report
Year 4 – 2017**

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INTRODUCTION

The Salt River is a tidally influenced slough tributary to the Eel River estuary located in Humboldt County near Ferndale, California. In 2013, the Salt River Ecosystem Restoration Project, a multi-benefit habitat and flood control restoration project, converted 330 acres of dairy ranch into a salt marsh estuary and excavated 2.5 miles of adjacent Salt River channel.

Prior to restoration activities, rare plant surveys were conducted throughout the project area in 2010. *Zostera marina*, a native species of eelgrass, was found in the Salt River for 2,286 meters, beginning upstream from the confluence with Cutoff Slough. The California Coastal Commission special conditions for CDP 1-10-32 states that within three years of completion of the project, the entire pre-construction eelgrass impact area plus the restored areas suitable for eelgrass recruitment shall have an extent of vegetative cover equal to at least 1.2 times the impacted area and have an average density equal to the pre-construction average density. The project reached these conditions in 2016.

Since the project reached the CDP's conditions and funding for the 2017 eelgrass survey monitoring was very limited, a modified survey methodology was developed with the California Department of Fish and Wildlife to fulfill an eelgrass monitoring survey grant deliverable.

METHODS

Previous eelgrass surveys included measuring and mapping the extent of eelgrass patches up the Salt River main channel. Percent cover of eelgrass patches were visually estimated within quarter meter² quadrats. Shoot density was measured at identified transects within established zones in the channel. Individual sites of non-native eelgrass were recorded. Photo documentation was taken at each measurement transect during the shoot density measurements. **Figure #1** shows identified eelgrass presence, transect locations, and patch locations during the 2016 survey.

Due to the limited funds remaining to perform eelgrass surveys, a modified survey of eelgrass presence in the main Salt River was agreed to between the Humboldt County Resource Conservation District and the California Department of Fish and Wildlife. The modified survey simply consists of taking photographs of eelgrass presence at six sites along the Salt River channel (see **Figure #2**). Photos are taken on the north or east side of the Salt River Channel and views are of across the channel from the site location, as well as downstream and upstream views.

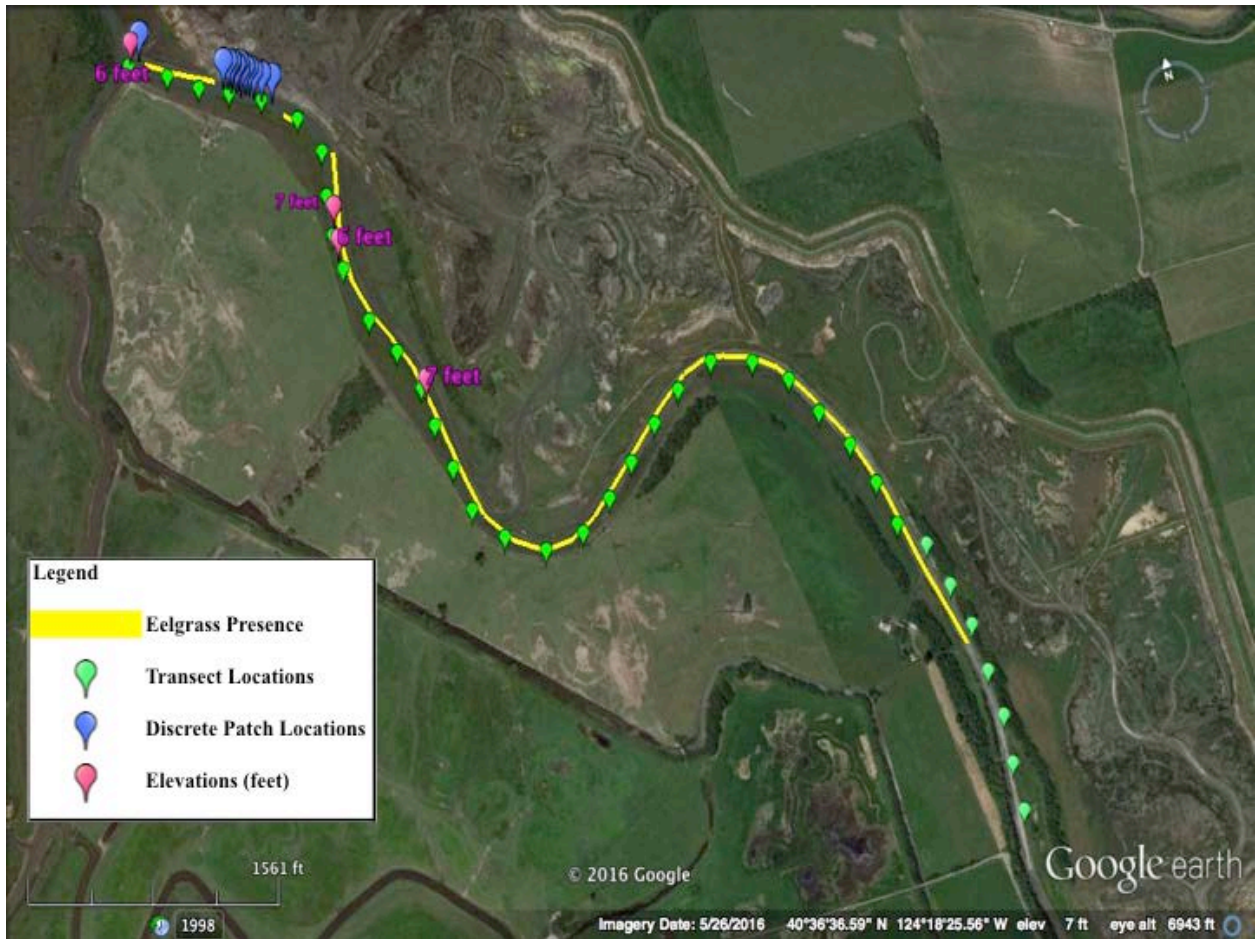


Figure 1: 2016 *Z. marina* extent cover, transect marker locations and channel elevations for Salt River



Figure #2: 2017 Eelgrass Survey Photo Sites along the Salt River channel

RESULTS

On August 11th, 2017 photos at each of the six sites were taken during a tidal height between 3 and 4 feet. Each photo sequence shows the presence, or absence, of eelgrass beds at each site. A short description of the eelgrass beds is also provided for each site.

Site #1



Across Channel

Downstream

Upstream

The eelgrass bed is observed to be on the north side of the channel at Site #1.

Site #2



Across Channel



Downstream



Upstream

The eelgrass bed is primarily located on the south side of the channel at directly across and downstream of Site #2. Looking upstream of Site #2, eelgrass beds are located on both the north and south sides of the channel.

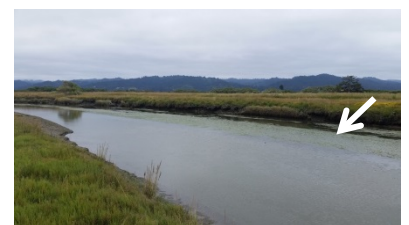
Site#3



Across Channel



Downstream



Upstream

The eelgrass bed is located on the south side of the channel at Site #3.

Site #4



Across Channel



Downstream



Upstream

The eelgrass beds at Site #4 appears to be sparse and on the south side of the channel.

Site #5



Across Channel



Downstream



Upstream

Eelgrass beds are located on both the south and north sides of the channel at Site #5.

Site #6



Across channel



Downstream



Upstream

At Site #6, no eelgrass beds are present.

SUMMARY

The successful reestablishment of eelgrass since restoration of the lower 2.5 miles of Salt River reach in 2013 is entirely due to steady natural recruitment. By 2016, eelgrass has successfully recruited in the restored channel 2,215 meters upstream of the downstream extent of the restoration. The 2017 observed eelgrass beds overlap with identified beds in the 2016 survey, thus verifying the 2016 established extent of eelgrass presence in the Salt River main channel.

It has been posited that eelgrass beds are utilized by salmonids and may increase the presence of salmonids in the restoration area. Eelgrass beds in the Salt River channel are present during the late spring to fall, but disappear, or become dormant, in the winter and early spring. Salmonid juveniles are consistently sampled/surveyed in the restoration area between November and April and later surveys have shown that they have migrated out of the area by May. Therefore any correlation between juvenile salmonid presence and eelgrass cannot be verified. Adult salmonids may be correlated with eelgrass beds; however survey methods have not captured larger fish. Yet, late spring and summer fish surveys demonstrate that juvenile marine species utilize the eelgrass beds for refugia, rather than the open channel.