

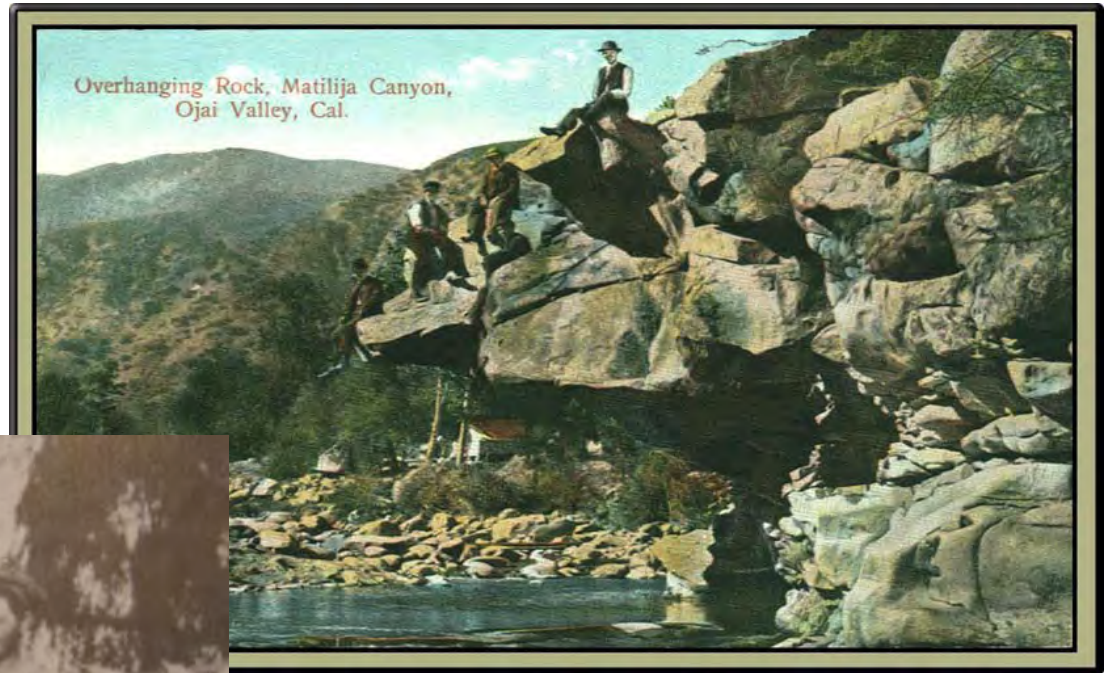


## Matilija Dam Ecosystem Restoration Project



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# Life Before the Dam



# Matilija Dam

- Built to supply water storage for local agriculture & provide limited flood control to downstream areas
- Completed in 1948 for the County of Ventura
- Built 198 feet high, notched in 1965 and 1978 to 160 feet
- Located 16 miles from the Pacific Ocean and just ½ mile upstream from the Matilija Creek confluence with the Ventura River



# Problems with the Dam

- Large volumes of sediment have deposited behind the dam
  - Losing the majority of the water supply and flood control functions
- Loss of sediment transport contributions from upstream of the dam
  - Resulting erosion downstream and at the beach
- Overall obstruction of wildlife migration
  - The Ventura River system once supported 5,000 spawning Southern Steelhead. Currently the population is less than 100.
- Degradation of the native habitat
  - Shallow warm water climate
- Deteriorating condition of the dam
  - Notched to extend life



# Matilija Challenges

- Largest dam ever considered for removal
- Removal procedure tested in 2000
- More than six million cubic yards of sediment
- Ensure safety of the local community
- Thousands of acres of invasive species
- Testing ground for how other dams will be removed



# Matilija Ecosystem Restoration Project

## Objectives

- Improve aquatic and terrestrial habitat along Matilija Creek and Ventura River
- Restore Natural Processes to support beach sand replenishment
- Enhance recreational opportunities
- Restore fish passage

## Order of Plan Components

### **1. Arundo Removal**

2. Foster Park Wells

3. Desilting Basins

4. Santa Ana Bridge

5. Live Oak Levee

6. Robles Diversion Modification

7. Meiners Oaks Levee

8. Camino Cielo Bridge

9. Slurry Disposal

10. Sediment Management

# Natures Image Role

- The primary concern was to remove the invasive plant species out of the watershed to begin the natural rehabilitation of the riparian areas
- Targeted species included *Tamarix aphylla*, *Ricinus communis*, *Spartium junceum* and *Arundo donax*
  - *A. donax* by far dominated the areas above and below the dam basically crowding out all other species in a near monoculture.
- By removing the targeted species we:
  - Reduced fuel for wildfires
  - Improved water supplies
  - Decreased flood and erosion hazards
  - Improved the terrestrial and aquatic habitats
- Worked with Ventura County Watershed Protection District to ensure the protection of the surface and ground water
- Started work in 2007

# Before Removals





# After Removal Was Complete



# Before Removal



# After Removal



# Pest Management Methods

Chemical Approach



Mechanical Approach



Cultural Approach



Biological Control



Environmental Control



Legal Control



# Natures Image Methods

- Integrated chemical & mechanical approaches
- Initial foliar treatment
- Mechanical removal
  - Shredding
  - Cut and Daub
- Bad *A. donax* turned good
  - Used as mulch in orchard
  - Used as biofuel
- Herbicide re-treatments continuing



# Chemical Application



# Mechanical Removal



# Protecting the Watershed

- Utilized the safest application methods possible
- Ventura County Watershed Protection District performed a long series of water sampling events in 6 different locations
- Water was sampled for:
  - temperature, pH, turbidity, dissolved oxygen, conductivity, stream flow, glyphosate (Roundup) and non-ionic surfactants.
- Natures Image was never informed when or where sampling would be performed
- Successful Results
  - None of the herbicide used was ever detected in the watershed



# Results

- It has been three years and the majority of the targeted species have been removed
- The native habitat is returning
- The project is now ready to move into the next component of the plan
- The surface and ground water continues to be tested and shows no contamination
- Since clearing the 1200 acres of the invasive weeds, the Ventura Watershed Protection District has noticed significant increases in the ground water level
- Matilija Dam has become a positive example of proper preparation to remove an antiquated dam

# References Used

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- Project Highlights. 2008. *Natures Image News*. NI Publications July 2008. [http://www.naturesimage.net/newsletters/news\\_0708.html](http://www.naturesimage.net/newsletters/news_0708.html)
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