

# Santa Clara River Parkway Restoration Strategy Maps – An Integrated Tool for Managing and Restoring Parkway Parcels

Zoey Diggory, Sebastian Araya,  
and Eric Panzer  
STILLWATER SCIENCES

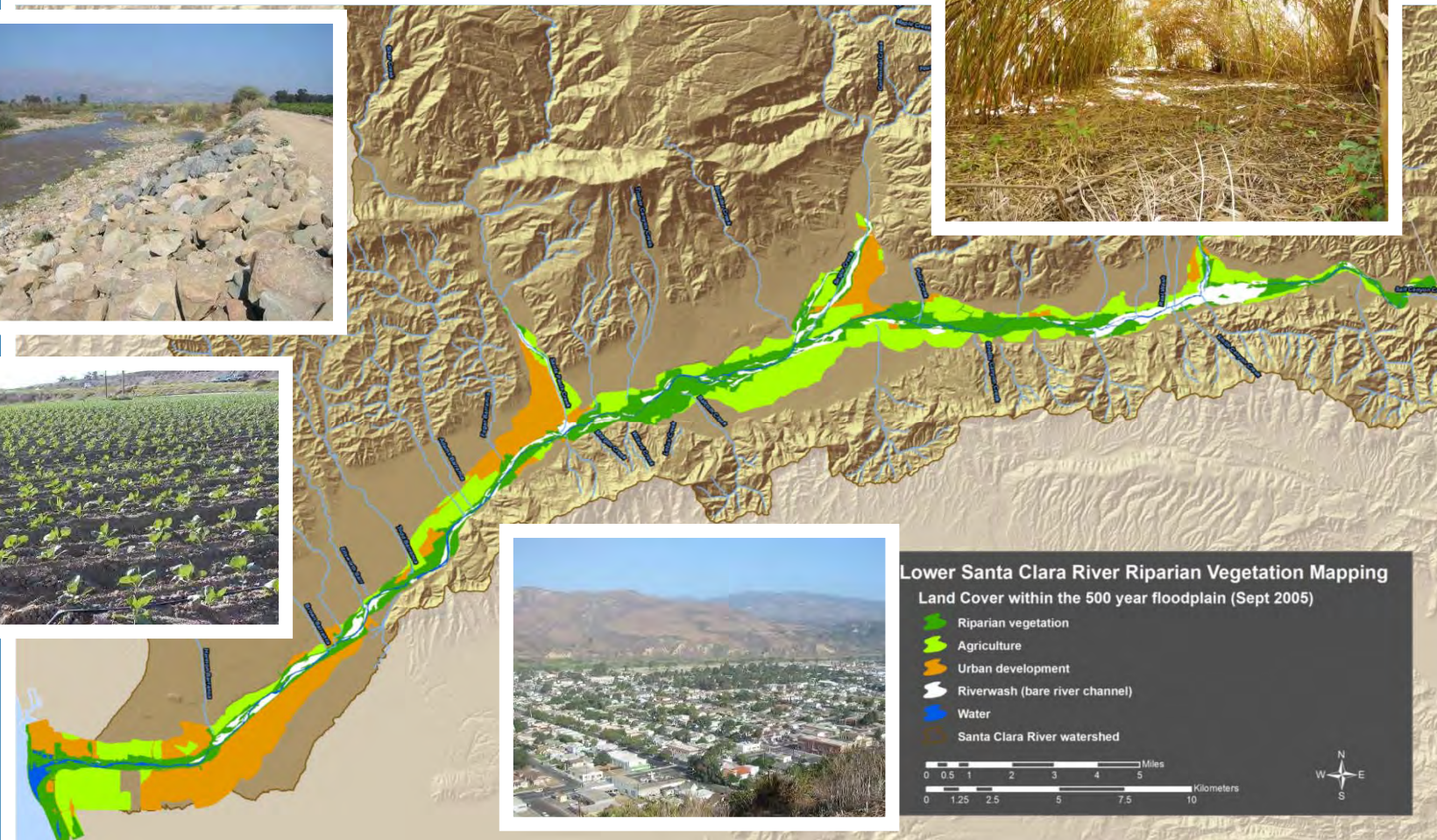
Presentation for the  
Santa Clara River Parkway Workshop

8 September 2011



# WATERSHED IMPACTS

- Agriculture
- Water supply and flood control development
- Levees and urban development
- Invasion by *Arundo donax*



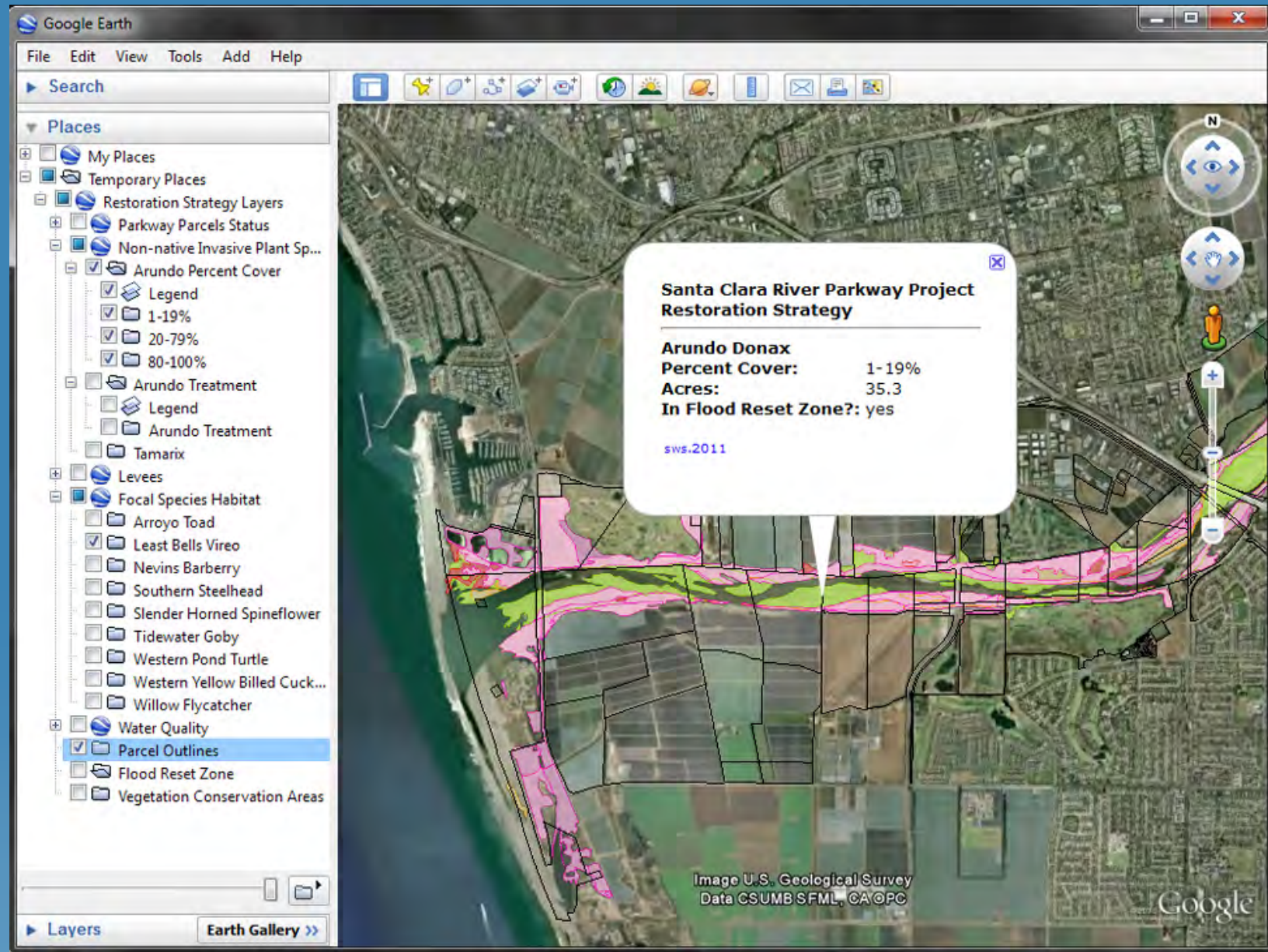
## ELEMENTS OF THE RESTORATION STRATEGY MAPS

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1. Historical flood mapping and fluvial geomorphic analysis
2. Riparian vegetation mapping and classification
3. *Arundo donax* percent cover mapping (also *Tamarix*)
4. Focal species habitat assessment
5. Synthesis to inform restoration strategies and management decisions
6. Strategic plan for arundo control and riparian restoration
7. Levee setback modeling and assessment

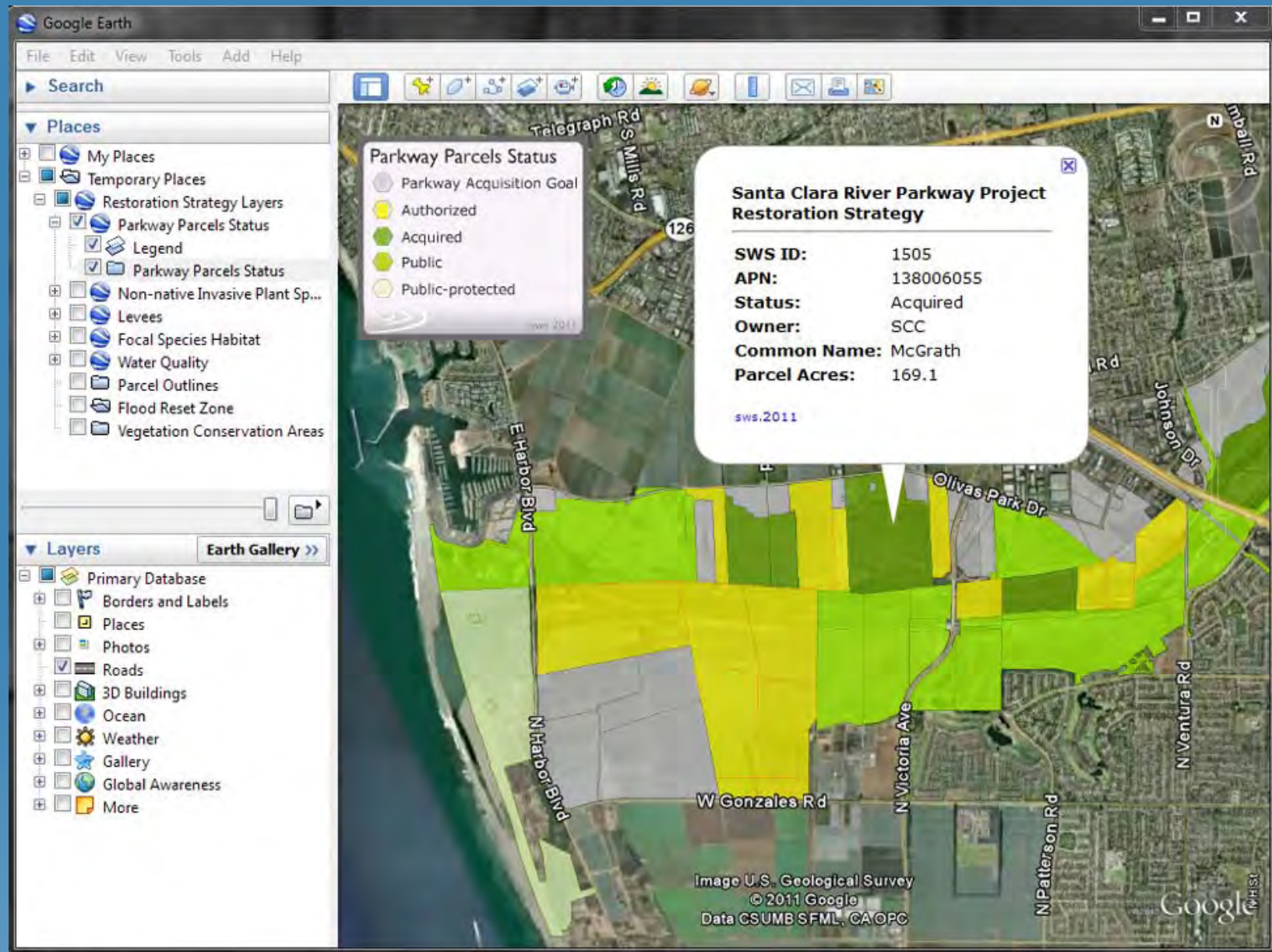


# RESTORATION STRATEGY MAPS



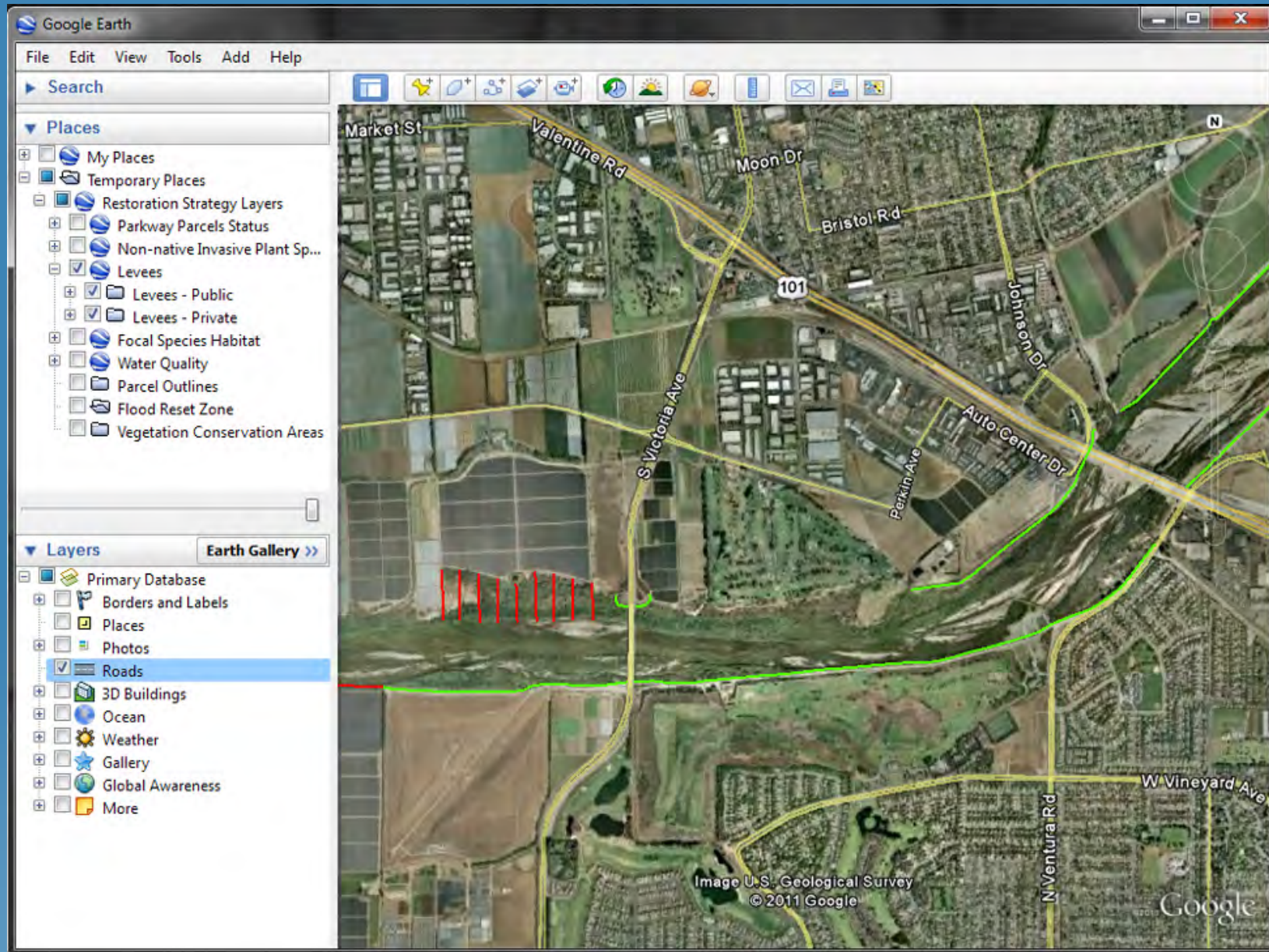


# PARCELS



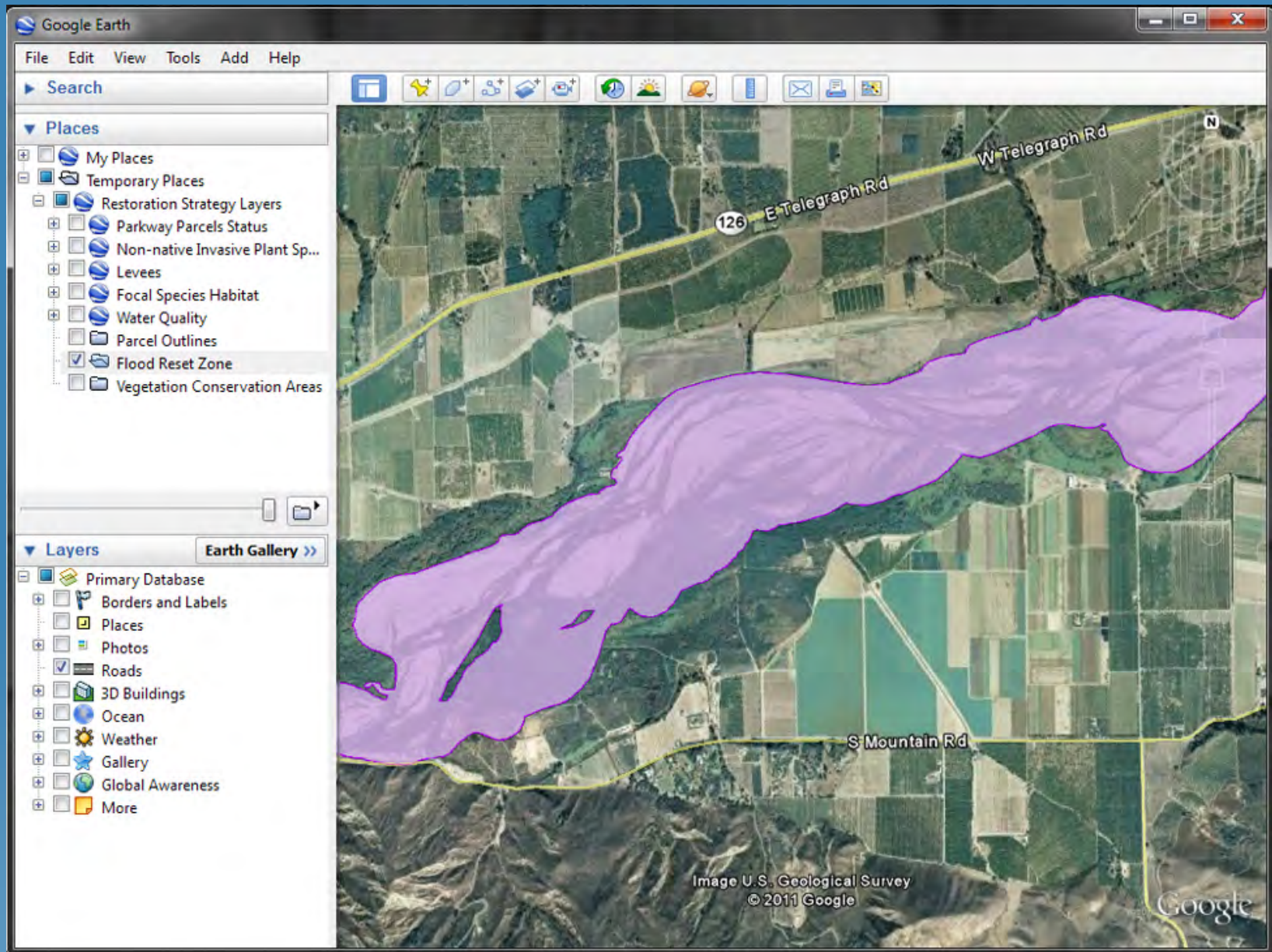


# INFRASTRUCTURE





# FLOOD RESET ZONE





# VEGETATION CONSERVATION AREAS

**Santa Clara River Parkway Project Restoration Strategy**

**Habitat type:** Mixed riparian forest

**Acres:** 1.8

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W Ventura St

126

Image U.S. Geological Survey  
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**Google Earth**

File Edit View Tools Add Help

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**Places**

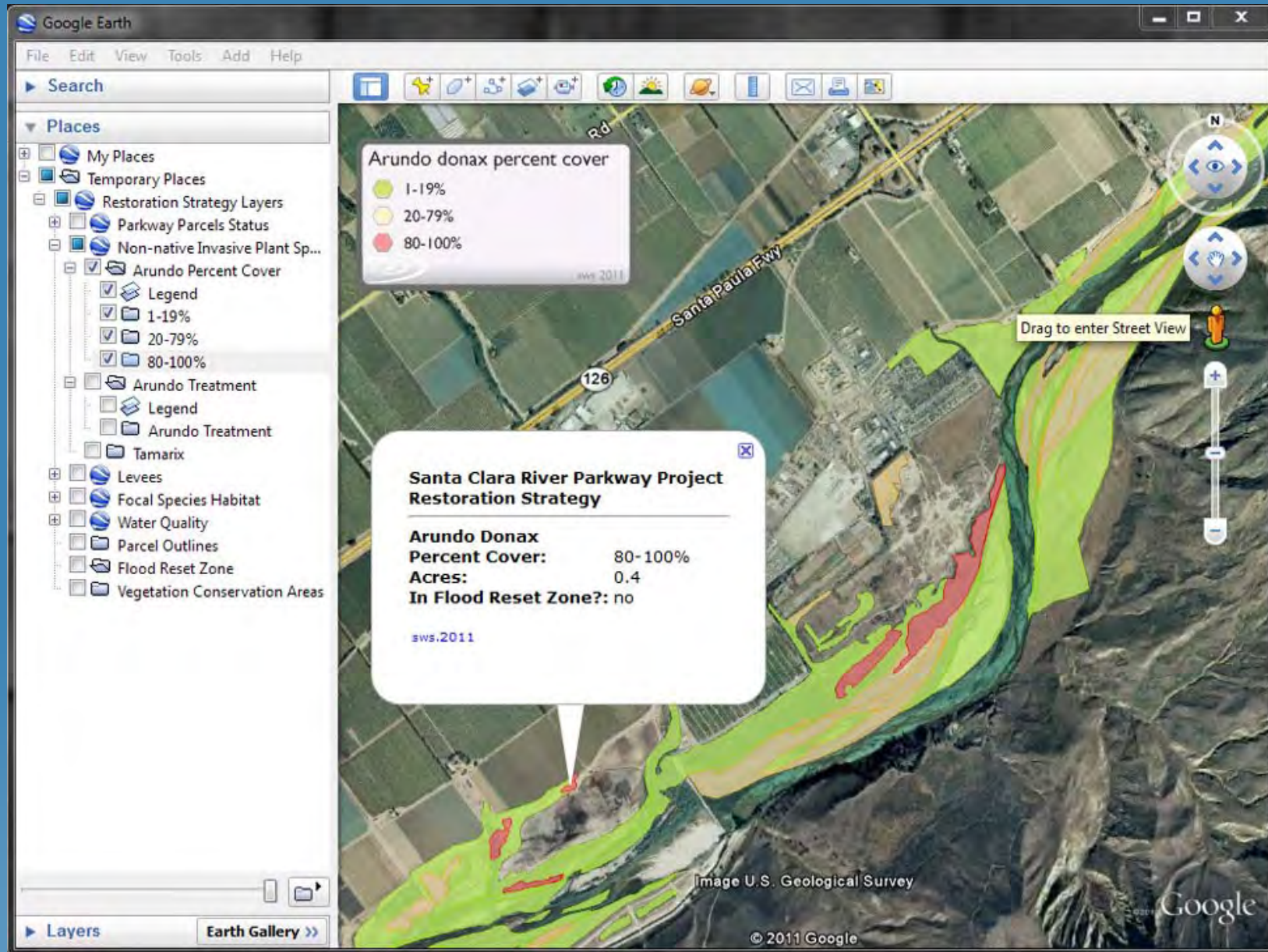
- My Places
- Temporary Places
- Restoration Strategy Layers
  - Parkway Parcels Status
  - Non-native Invasive Plant Sp...
  - Levees
  - Focal Species Habitat
  - Water Quality
  - Parcel Outlines
  - Flood Reset Zone
  - Vegetation Conservation Areas

**Layers** Earth Gallery >>

- Primary Database
- Borders and Labels
- Places
- Photos
- Roads
- 3D Buildings
- Ocean
- Weather
- Gallery
- Global Awareness
- More

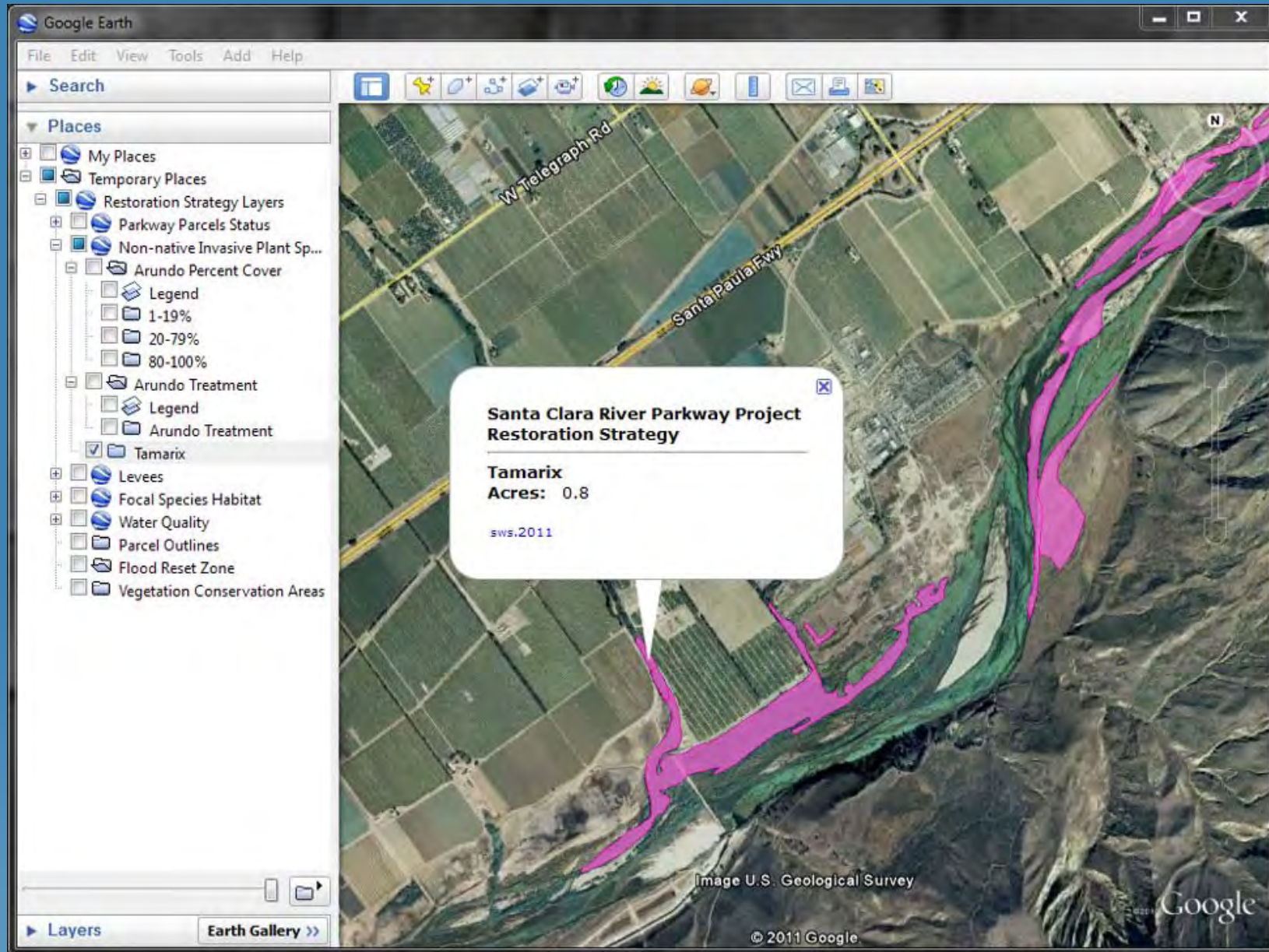


# ARUNDO PERCENT COVER





# PRESENCE OF TAMARIX





# ARUNDO STRATEGIC PLAN

**Arundo Treatment Priority**

- Low
- Medium
- High

**Santa Clara River Parkway Project Restoration Strategy**

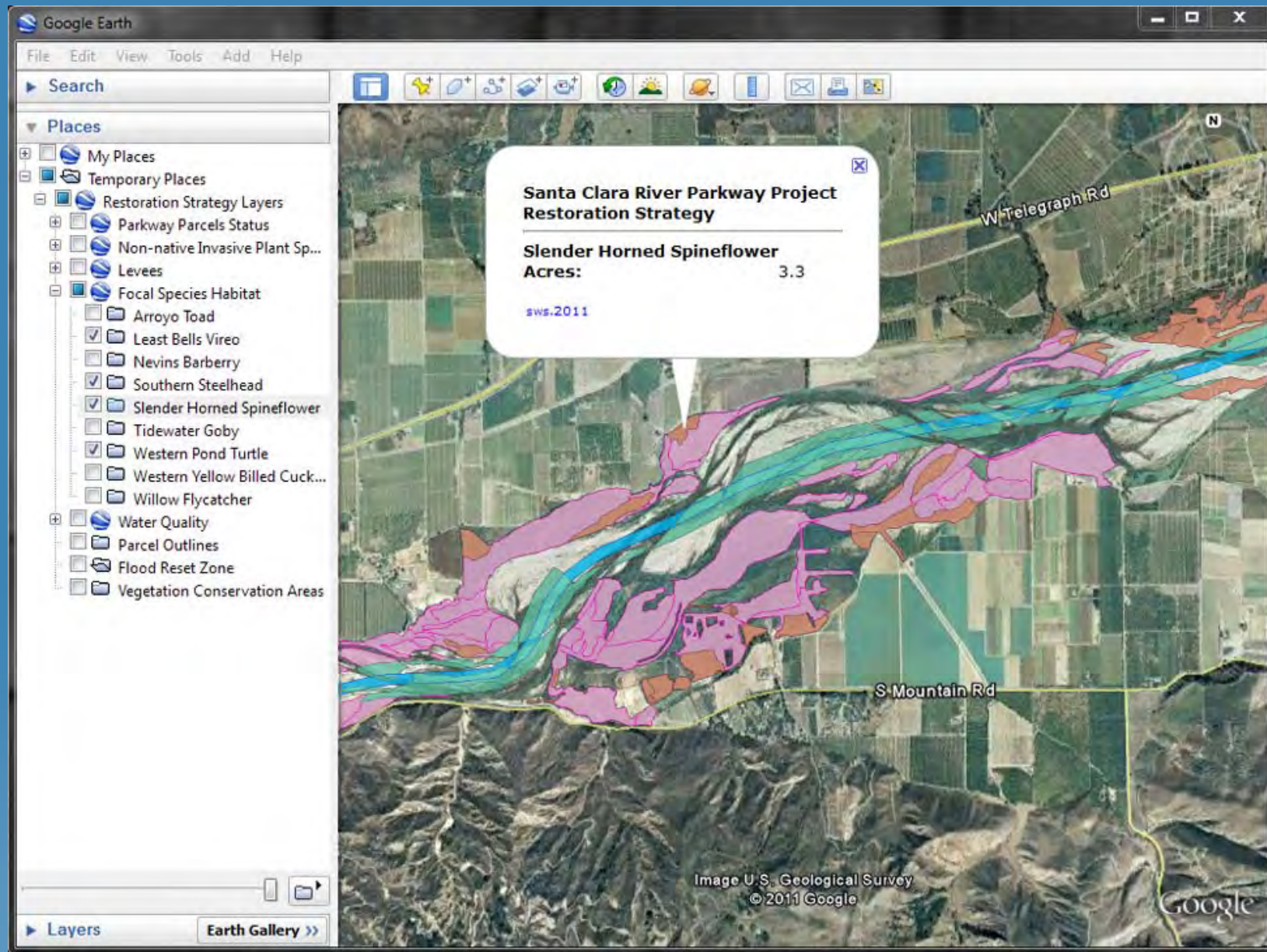
<b>Removal Type:</b>	Mixed
<b>Revegetation Type:</b>	Passive to limited active (mixed riparian scrub)
<b>Removal priority:</b>	Medium
<b>Arundo coverage (%):</b>	30
<b>Map unit (vegetation type):</b>	Mixed riparian scrub - Arundo donax
<b>Unit acres:</b>	169.1
<b>Parcel-complex name:</b>	McGrath
<b>Parcel name:</b>	McGrath
<b>Parcel acres:</b>	169.1

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Image U.S. Geological Survey © 2011 Google

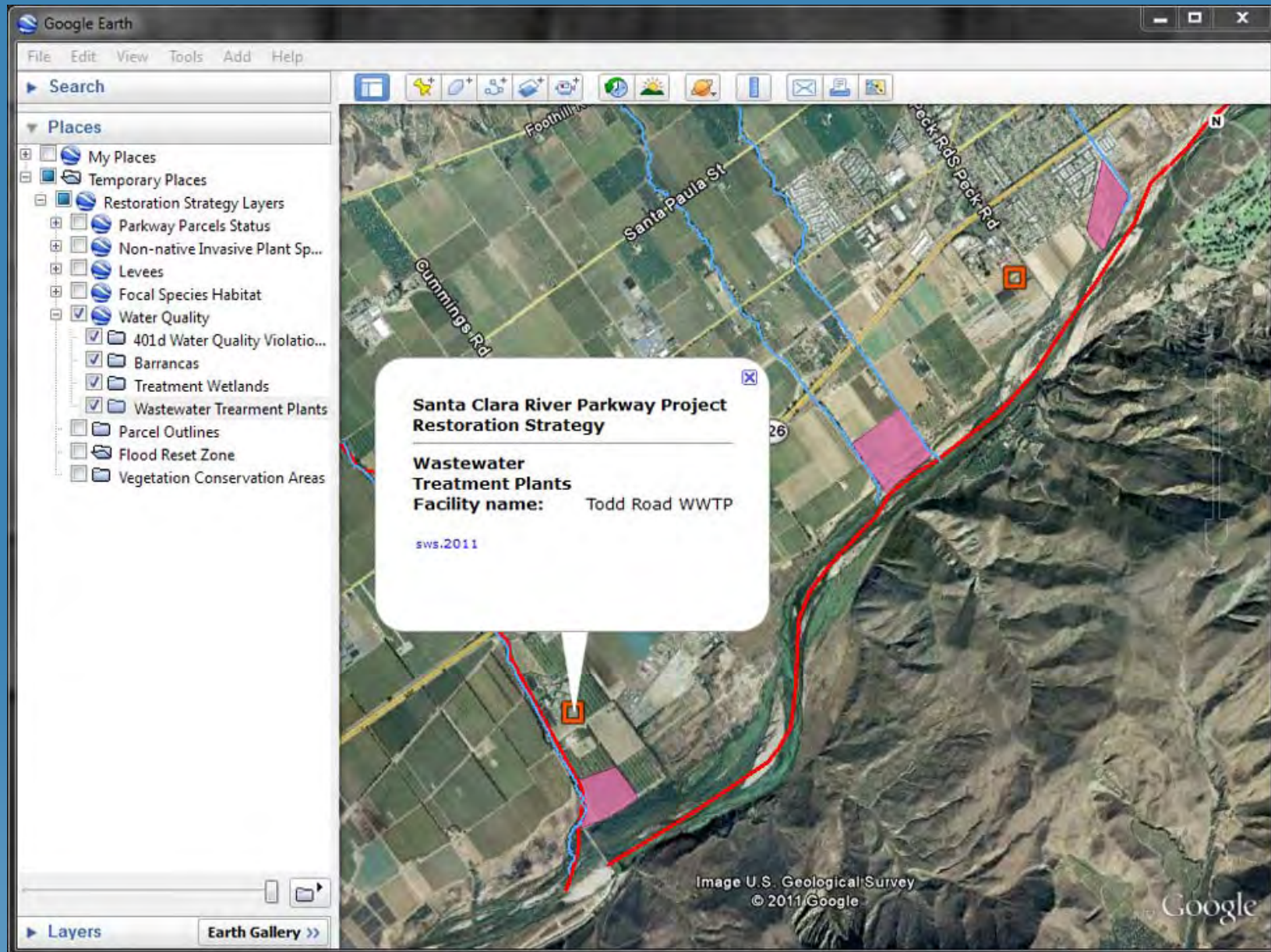


# FOCAL SPECIES HABITAT



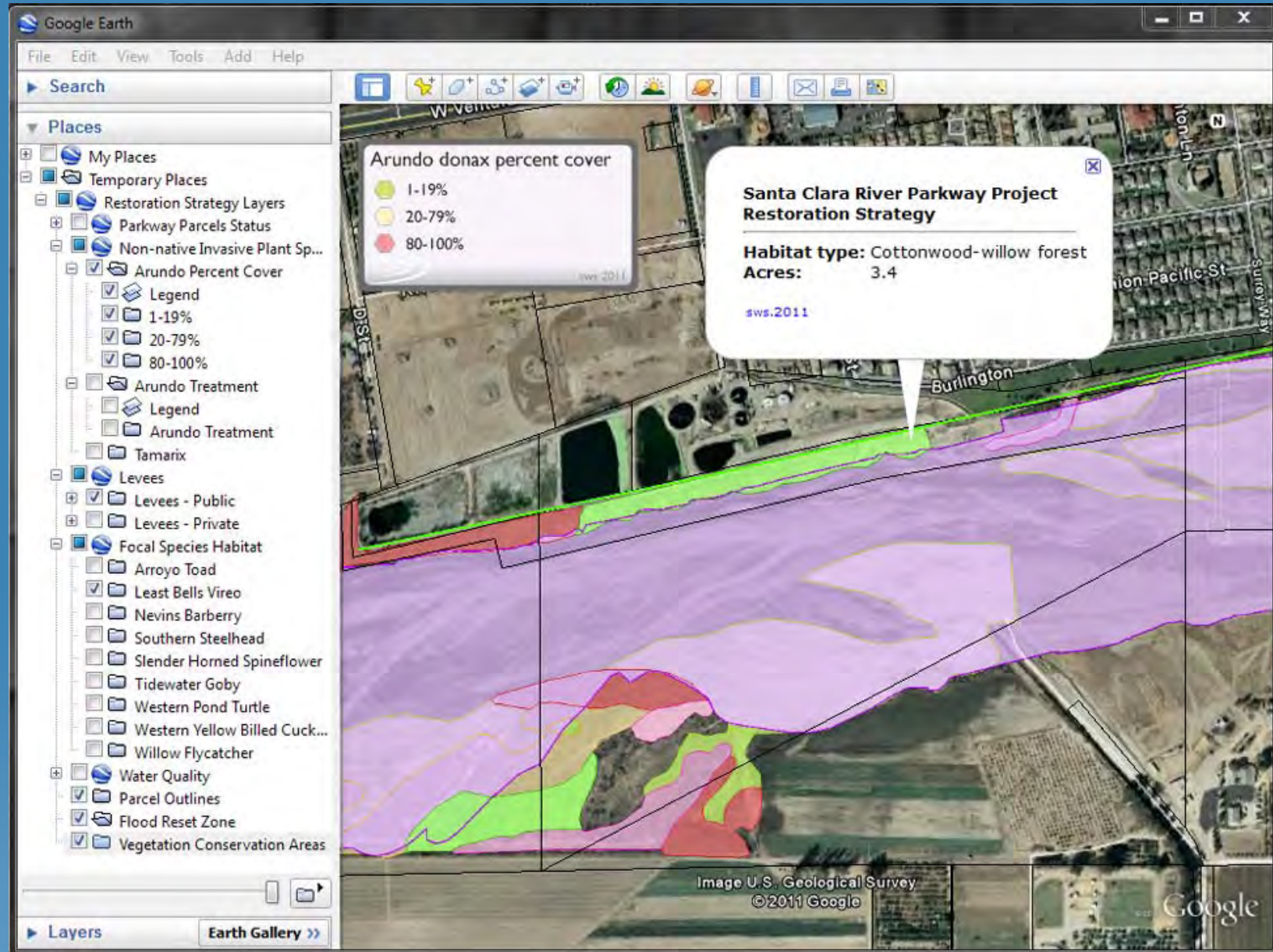


# WATER QUALITY





# RESTORATION STRATEGY MAPS





## NEXT STEPS

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- Levee setback modeling results
- Historical ecology components
- Public access components



# SANTA CLARA RIVER PARKWAY WEBSITE



the santa clara river parkway

a project of the California State Coastal Conservancy

 search

THE SANTA CLARA RIVER

THE PARKWAY PROJECT

WATERSHED KNOWLEDGE BASE



you are here: [home](#)

The Santa Clara River Parkway is a project of the [California State Coastal Conservancy](#), in collaboration with the [Nature Conservancy's LA-Ventura Project](#), [Friends of the Santa Clara River](#), private landowners and local governments, to acquire and restore floodplain land along the lower Santa Clara River for habitat, flood protection, and recreation. [Read more...](#)



#### [Santa Clara River in the news](#)

Read the latest news and information concerning the Santa Clara River watershed. Recent items include the Newhall Ranch development, water diversion, and emerging contaminants.



#### [Search the knowledge base](#)

The watershed knowledge base has been designed as a portal for disseminating science-based information contributing to the conservation, sustainable management, and restoration of natural resources along the Santa Clara River.



#### regional news

[Historical Ecology of the lower Santa Clara River, Ventura River, and Oxnard Plain](#)  
September 02, 2011

[Santa Clara River Parkway Workshop](#)  
September 02, 2011

[Owner of metal recycling plant to pay for study of Santa Clara River estuary pollution](#)  
January 28, 2011

[Balancing the needs of people and nature - Water diversion on the Santa Clara River](#)  
January 28, 2011

[more...](#)

#### knowledge base additions

[Historical Ecology of the lower Santa Clara River, Ventura River, and Oxnard Plain](#)  
September 02, 2011

[Santa Clara River Watershed Feasibility Study](#)  
June 03, 2011

[Environmental Factors Correlated with Changes in Riparian Plant Composition along the Santa Clara River Floodplain, California](#)  
June 03, 2011

[SESPE CREEK HYDROLOGY, HYDRAULICS, AND SEDIMENTATION ANALYSIS: Watershed Assessment of Hillslope and River Geomorphic Processes](#)  
January 31, 2011

[more...](#)



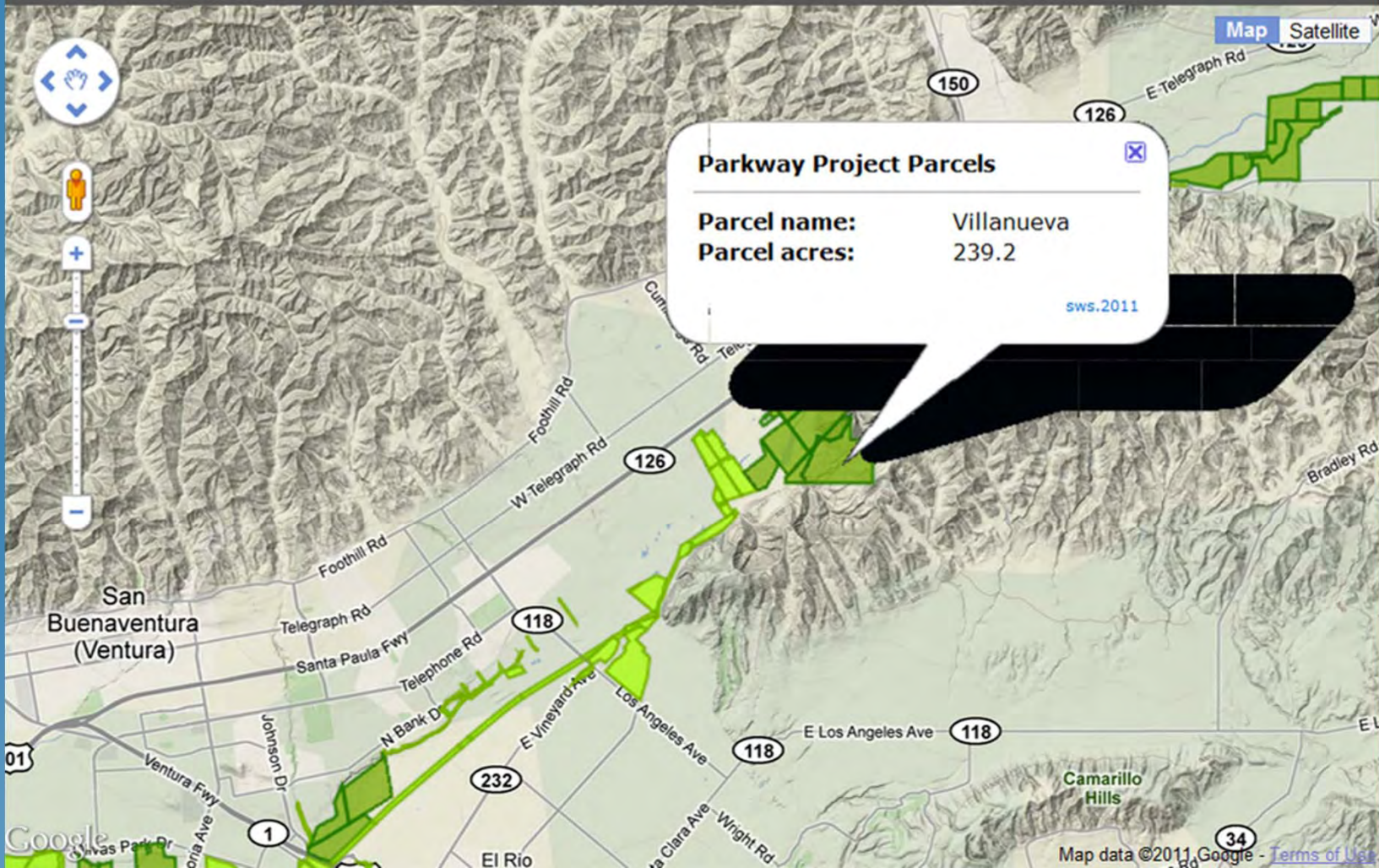
# SANTA CLARA RIVER PARKWAY WEBSITE



the santa clara river parkway

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Parkway Parcels (on/off)






- [Comprehensive Water Quality Monitoring Plan for the Santa Clara River Watershed](#)
- [Santa Clara River Steelhead Trout: Assessment and Recovery Opportunities.](#)
- [Santa Clara River Parkway Floodplain Restoration Feasibility Study: Water Resources Investigations.](#)
- [Santa Clara River Enhancement and Management Plan. Final Document.](#)
- [Final Cultural Resources Report for the Santa Clara River Enhancement and Management Plan](#)
- [Santa Clara River Enhancement and Management Plan: Bibliography](#)
- [Santa Clara River Enhancement and Management Plan: Aggregate Resources Report - Los Angeles and Ventura Counties](#)
- [Santa Clara River Enhancement and Management Plan Study: Biological Resources, Volume I](#)
- [Santa Clara River Enhancement and Management Plan Study: Biological Resources, Volume II - Distribution of Potential Habitat for Sensitive Species](#)
- [Water Resources Report on the Santa Clara River](#)
- [Santa Clara River Enhancement and Management Plan: Flood Protection Report](#)
- [Santa Clara River Enhancement and Management Plan: Biology Overlays](#)
- [Santa Clara River Enhancement and Management Plan: Land Use and Flood Overlays](#)
- [Santa Clara River Enhancement and Management Plan: Water and Agriculture Overlays](#)
- [Urbanization and dryland fluvial systems - modeling hydrogeomorphic change in ephemeral streams](#)
- [Santa Clara River Estuary Macroinvertebrate Bioassessment Monitoring. Annual Report 2003](#)
- [Response of herbaceous riparian plants to rain and flooding on the San Pedro River, Arizona, USA](#)
- [Linking riparian dynamics and groundwater: An eco-hydrologic approach to modeling groundwater and riparian vegetation](#)
- [Turbidity-induced changes in reactive distance of rainbow trout](#)
- [Rational theory of delta formation](#)
- [Structural and topographic evolution of the central Transverse Ranges, California, from apatite fissiontrack, \(U/Th\)/He and digital elevation model analyses](#)
- [Tectonic implications of post-30 Ma Pacific and North American relative plate motions](#)
- [Riparian woodlands: an endangered habitat in southern California](#)
- [Riparian Species Distributions in Relation to Stream Dynamics, San Gabriel River, California](#)
- [Restoring the Southern California Steelhead](#)
- [The status of steelhead populations in California in regards to the endangered species act](#)
- [Plant distribution and dispersal mechanisms at the Hassayampa River Preserve , Arizona , USA](#)


- [Flood Disturbance and the Distribution of Riparian Species Diversity](#)
- [Santa Paula Creek Watershed Planning Project: Steelhead Habitat and Population Assessment](#)
- [Santa Clara River Parkway: Floodplain Restoration Feasibility Study](#)
- [Steelhead Trout Smolt Survival in the Santa Clara and Santa Ynez River Estuaries](#)
- [Santa Clara River - Upper Watershed Conservation Plan](#)
- [State of the Watershed: Report on Surface Water Quality for the Santa Clara River Watershed](#)
- [Population structure and ancestry of \*O. mykiss\* populations in South-Central California based on genetic analysis of microsatellite data](#)
- [Minimum Flow Requirements for Southern Steelhead Passage on the Lower Santa Clara River, CA](#)
- [Riparian Vegetation Mapping and Preliminary Classification for the Lower Santa Clara River, Ventura County, California. Spatial Data](#)
- [Santa Clara River Parkway Floodplain Restoration Feasibility Study: Analysis of Riparian Vegetation Dynamics for the Lower Santa Clara River and Major Tributaries, Ventura County, California.](#)
- [Santa Clara River Parkway Floodplain Restoration Feasibility Study: Focal Species Analysis and Habitat Characterization for the Lower Santa Clara River and Major Tributaries, Ventura County, California.](#)
- [Historical Ecology of the lower Santa Clara River, Ventura River, and Oxnard Plain: an analysis of terrestrial, riverine, and coastal habitats](#)
- [Conservation Plan for the Lower Santa Clara River Watershed and Surrounding Areas](#)
- [SESPE CREEK HYDROLOGY, HYDRAULICS, AND SEDIMENTATION ANALYSIS: Watershed Assessment of Hillslope and River Geomorphic Processes](#)
- [The influence of valley morphology and coarse sediment distribution on rainbow trout populations in Sespe Creek, California at the landscape scale](#)
- [Short-term \(1997-2000\) and Long-term \(1928-2000\) Observations of River Water and Sediment Discharge to the Santa Barbara Channel, California](#)
- [Environmental Factors Correlated with Changes in Riparian Plant Composition along the Santa Clara River Floodplain, California](#)
- [\[...\]](#)
- [Factors Influencing Invasion of Giant Reed \(\*Arundo donax\*\) in Riparian Ecosystems of Mediterranean-type Climate Regions \(PhD thesis\)](#)
- [Steelhead of the South-Central/Southern California Coast: Population Characterization for Recovery Planning](#)
- [Potential Steelhead Over-summering Habitat in the South-Central / Southern California Coast Recovery Domain: Maps Based on the Envelope Method](#)
- [Viability criteria for steelhead of the south-central and southern California coast \(DRAFT\)](#)
- [Santa Paula Creek Watershed Planning Project: Hydrology and Hydraulic Watershed Assessment \(DRAFT\)](#)
- [Santa Paula Creek Watershed Planning Project: Geomorphology and Channel Stability Assessment](#)
- [Santa Clara River Parkway Floodplain Restoration Feasibility Study: Riparian Vegetation Mapping and Preliminary Classification for the Lower Santa Clara River, Ventura County, California](#)



# SANTA CLARA RIVER PARKWAY WEBSITE

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- [The Santa Clara River](#)
- [Species profiles](#)
- [The Santa Clara River](#)
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- [Fires, floods, and watersheds](#)
- [Explore the watershed](#)**
- [Recommended reading](#)
- [Watershed conservation and restoration groups](#)
- [Santa Clara River Parkway](#)
- [Workshop Agenda](#)

### Explore the watershed



The view from Google Earth.

Google Earth is free software from [Google Labs](#) that allows anyone to view spatial data, including satellite imagery and aerial photography of the entire earth. The application has a built in scripting function that allows users to display their own data as well. Once you've installed Google Earth software, the KMZ file linked below will allow you to view the Santa Clara River watershed boundary, stream network, dams, levees and other watershed features. Spatial data from Parkway Floodplain Restoration Feasibility Study investigations are also available through the Watershed Knowledge Base.

To get started: Download and install [Google Earth](#). For best performance, a broadband Internet connection is recommended. To view Google Earth files, click the links below to download and select "open" in the pop-up window (this will launch Google Earth).

**Available data sets:**

- [Santa Clara River Stream and Watershed Boundaries](#)
- [Complete Google Earth Data \(all of the below\)](#)
  - [Vegetation Alliances](#)
  - [Arundo Percent Cover](#)
  - [Historical Flood Mapping](#)
  - [Focal Species Habitat](#)
  - [Land Use and Vegetation Types](#)
  - [Tamarix Presence](#)



## FOR MORE INFORMATION

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Zoey Diggory – Project Manager  
[zoey@stillwatersci.com](mailto:zoey@stillwatersci.com)

Sebastian Araya – GIS Analyst  
[sebastian@stillwatersci.com](mailto:sebastian@stillwatersci.com)

Eric Panzer – Website Manager  
[panzer@stillwatersci.com](mailto:panzer@stillwatersci.com)

Santa Clara River Parkway Website  
[www.santaclarariverparkway.org](http://www.santaclarariverparkway.org)

Stillwater Sciences Website  
[www.stillwatersci.com](http://www.stillwatersci.com)

