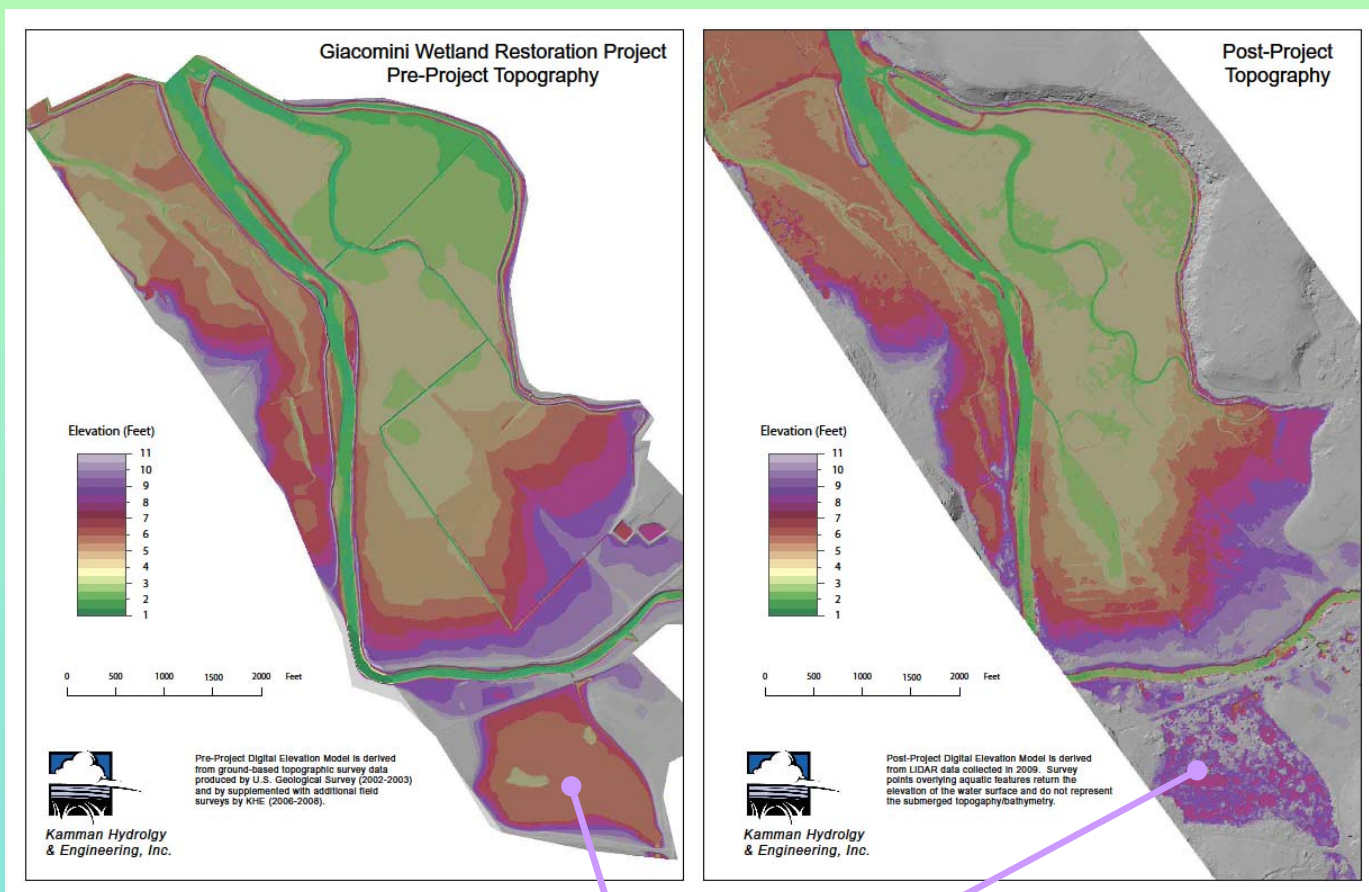




## The New Wetland Landscape

- In general, topographic maps demonstrate that restoration actually didn't change the face of the former Giacomini Dairy ranch much at all. Pre-restoration topographic surveys were compiled from ground-based surveys, while post-restoration were generated from LIDAR (Light Detection and Ranging) imagery. A comparison of the elevations between pre- and post-restoration shows almost no change in the West Pasture near Inverness Park and very little change in the East Pasture.
- The biggest change in the East Pasture comes from re-establishment of large and some small tidal channels (historic channels were eliminated through fill to increase the acreage of dairy pasture); shallow excavation of a portion of the southwestern area next to Lagunitas Creek – and, of course, removal of that thin band of purple along the edges – the more than 2 miles of levees that once kept tidewaters and small to moderate stormflows at bay.
- Unlike San Francisco Bay marshes, the Giacomini Wetlands have not subsided or dropped in elevation much at all since levee installation (<1-2 feet), which meant that restoration would not necessarily require a lot of mechanical intervention.
- The point during construction was to remove hydrologic and topographic obstacles (e.g., levees, tidegates, culverts, ditches), keep earthwork minimal by creating channels to improve water exchange, and then let Mother Nature do the final sculpting of the landscape.



### So What's Up with Olema Marsh? Has it Changed A Lot -- or Not?

While the topographic maps would suggest a lot of change pre- and post-restoration in Olema Marsh, the "change" comes more from a difference in how elevations were determined than any actual change in elevation. Restoration actions in Olema Marsh during 2008 only involved excavation of small internal channels. The difference in morphological appearance in Olema Marsh is an artifact of the difference in methods – 2003 was conducted doing cross-sectional surveys and generalizing to the marshplain, whereas 2009 was conducted using LIDAR that is evaluating elevation at a multitude of points through the marsh.

### Just What Is LIDAR?

LIDAR (Light Detection And Ranging) is an optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target. The prevalent method to determine distance to an object or surface is to use laser pulses, which is light that is not in the visible spectrum. Like the similar radar technology, which uses radio waves, the range to an object is determined by measuring the time delay between transmission of a pulse and detection of the reflected signal.