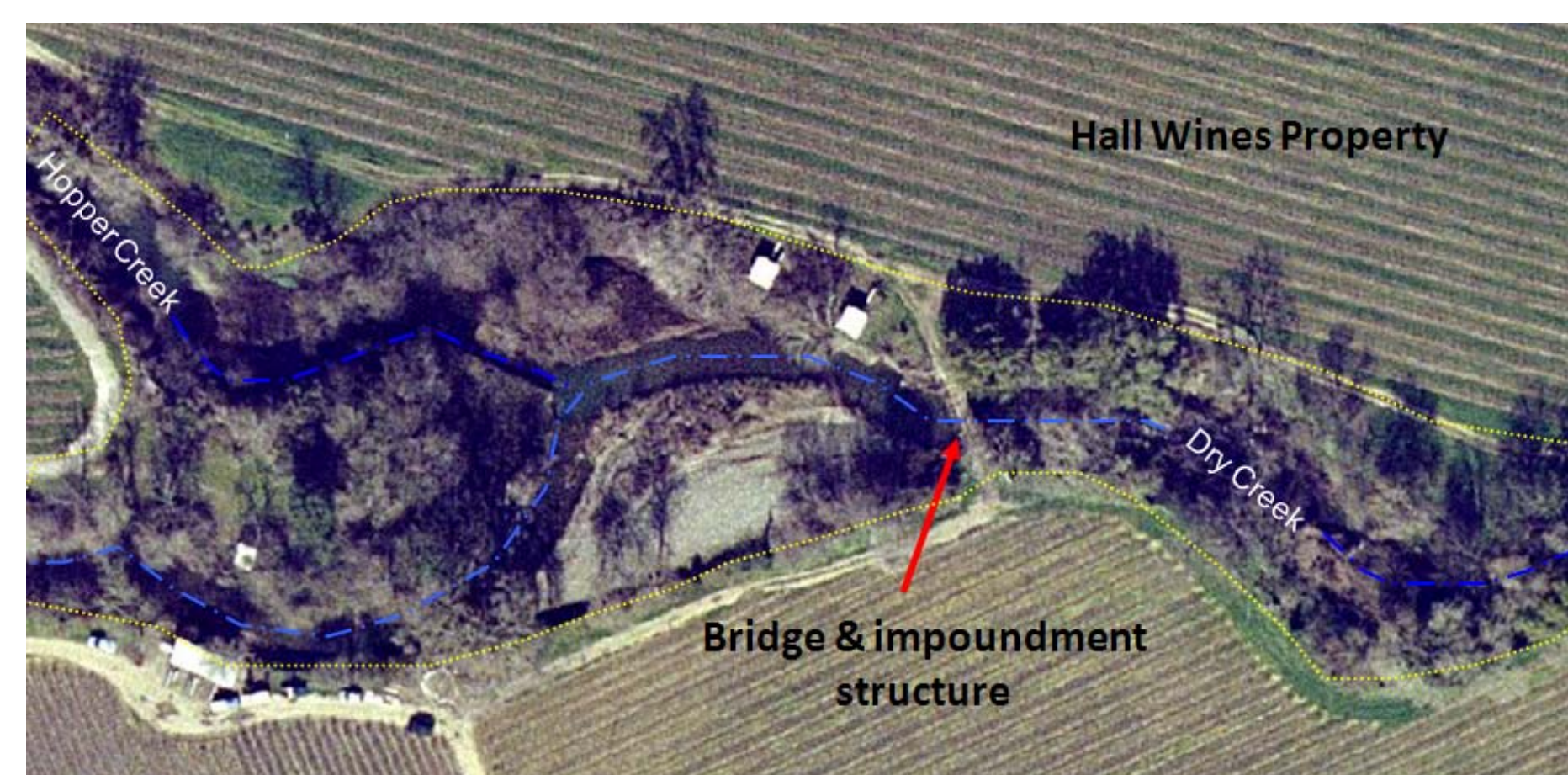


## 2007 – The Removal of a Fish Barrier

Napa County's migratory fish populations have reason to celebrate as an estimated 16.9 miles of stream in the Dry Creek watershed was made available to them in 2007 for migration, spawning, and rearing. The site was identified as a priority in 2001 during a habitat assessment and, subsequently, access to the high quality habitat was made possible through the actions of Hall Wines when they decided to partner with the RCD, NRCS, and the California Department of Fish and Game (DFG) to remove a seasonal in-stream water storage structure that was being utilized during the spring for frost protection. The storage structure, located approximately 1/2 mile upstream from the confluence of Dry Creek and the Napa River was limiting fish migration into and out of the Dry Creek watershed. Hall Wines and other neighboring vineyard owners took action to install wind machines as an alternative frost protection method and simultaneously sought assistance to develop an engineered plan to completely remove the structure and restore the creek banks. After a lot of cooperative planning, design, and evaluation, a solution was developed that took into account the long-term stability of the creek and its banks and also met the salmonid passage criteria established by NOAA's National Marine Fisheries Service (NMFS) and DFG, which takes into account maximum jump height for juvenile salmon, stream velocities, and the depth of the pools in the stream. During late summer in 2007 the barrier was completely removed by a team of local contractors. The railcar bridge came down, the concrete was jack hammered apart, and the non-functioning fish ladders were removed. Once all of the debris was hauled away as scrap, California Conservation Corps crews worked with the contractor to restore the creek banks with native willow plantings in the form of a bank-covering brush mattress. After several years of planning to meet various requirements, project construction was completed in less than two months. Steelhead and Chinook salmon were seen moving upstream just a few months later and juvenile steelhead were spotted upstream of the site in the spring. Hall Wines furthered the work in 2008 by establishing a riparian corridor of native plants along Dry Creek to provide wildlife habitat, stream shading, and bank stabilization and has continued to maintain the installation. The \$291,000 project was funded by NRCS' Wildlife Habitat Incentives Program (WHIP), DFG's Fisheries Restoration Program, the San Francisco Regional Water Quality Control Board, and the landowner.

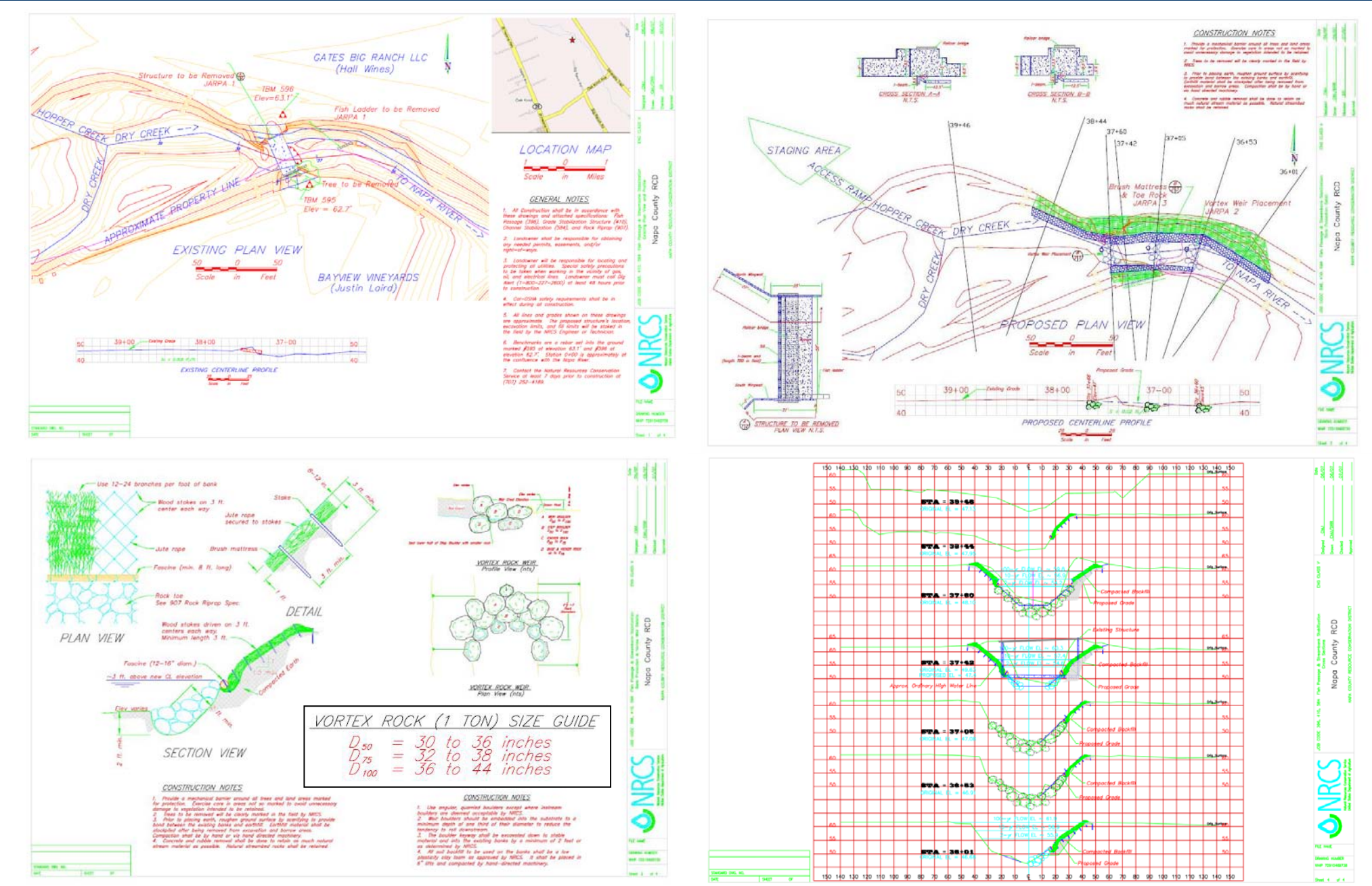
## The Site



## Before



## The Design



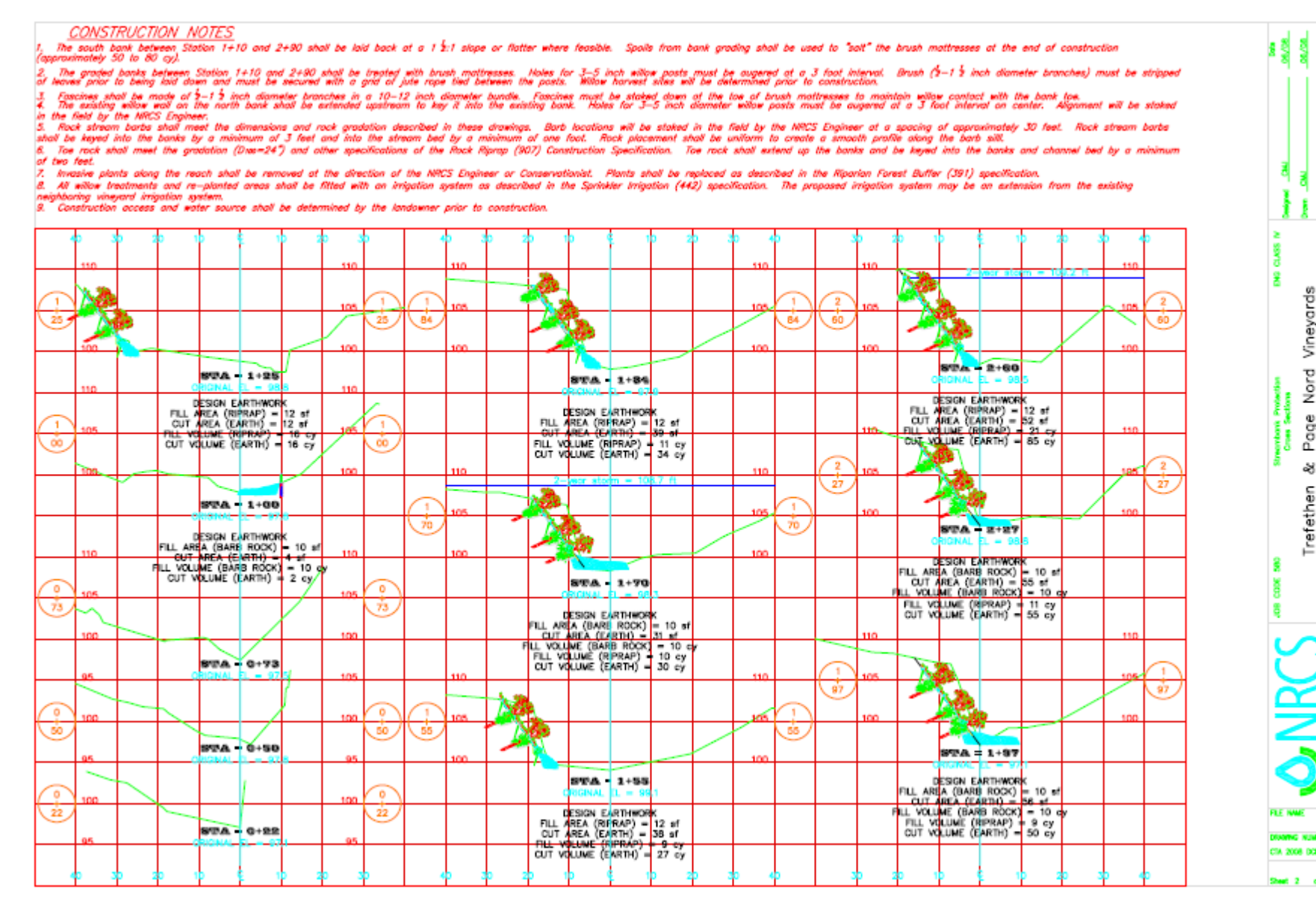
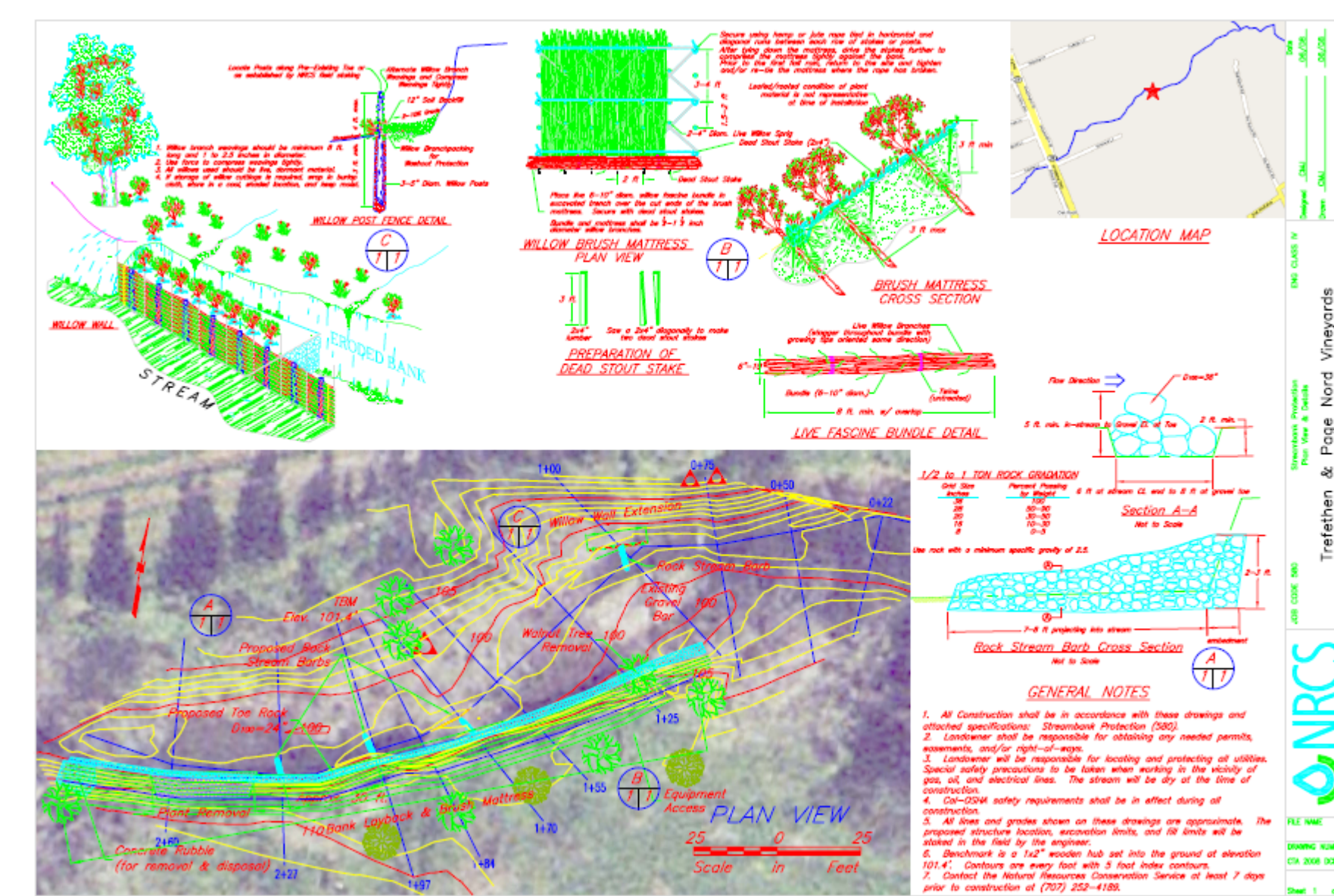
## The Result



## 2008 – Restoring an Eroding Riparian Corridor

After the restoration success seen in 2007, the restoration team considered the other sites previously identified as restoration priorities in Dry Creek. It was decided to take on the second priority site along the studied reach which was 1-2 miles upstream of the 2007 site at Trefethen Vineyards. The condition of Dry Creek is similar to many other tributary streams in Napa County. The channel is incised (lowered) and the creek banks are vertical, eroding, and sometimes inundated with non-native invasive plant species. This trend of "channel incision" and "bank erosion" threatens property and causes habitat degradation. In an effort to reverse the trend and improve habitat, Trefethen Family Vineyards and Page Nord Vineyards partnered with the RCD and NRCS to lay the banks of the creek back to a more gentle slope, thereby providing the creek with more room, which in turn will reduce the overall erosive force that the creek exudes on its bed and banks. The freshly formed creek bank was covered with the planting of a live willow brush mattress that will provide root structure, bank stability, wildlife habitat, and shading. The project was managed by the RCD, designed by NRCS, constructed by Prunuske Chatham, Inc. and the California Conservation Corps (CCC), funded by the California Department of Fish and Game (DFG) and the Napa County Wildlife Conservation Commission, and made possible by the support of Trefethen Family Vineyards and Page Nord Vineyards. It is another example of partnerships at work to improve watershed conditions.

## The Design



## Forming it to Function

**May 23, 2008**  
 Before construction (all looking upstream): The creek bank was vertical, soil was sloughing into the channel during large storm events and there was very little vegetation on the streambank.



**September 29, 2008**  
 During construction: The bank has been graded back to open the channel. The bank toe has been reinforced with toe rock and rock stream barbs. The bank has been planted with willow posts.



**October 6, 2008**  
 After construction: The willow brush mattress has been tied down. Irrigation uprights are at the channel top. The site is ready for late fall and winter rains.



**February 2, 2010**  
 After the rains: The treatments have endured the '08-09 and '09-10 storm seasons, the willows are growing, and the dynamic stream is adjusting to a new equilibrium.



## Contact Information



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