

CONVERTING URBAN CANALS TO NATURAL STREAMS TO IMPROVE WATER QUALITY, HABITAT, AND RESILIENCE

Water conveyance features in Florida have long been used to facilitate flood control in a rapid and efficient manner, which provides little to no water quality treatment in terms of nutrient load reductions from stormwater runoff. These urban drainage canal systems and channelized streams have altered natural hydrology, which impacts water quality since they are susceptible to dramatic responses to rainfall events, excessive erosion and sedimentation, increased pollutant loads, and reduced habitat integrity as a result of poorly drained, surface runoff-dominated urban landscapes and channels with insufficient floodplains. Wood has developed a stream restoration design methodology that invokes natural channel design to lift canals up to a system that can function similarly to a natural stream, providing opportunities for preventing erosion, adjusting sediment transport, and providing multiple nutrient reduction mechanisms such as denitrification. These converted streams also offer a wide array of aquatic habitat enhancement benefits and improved resiliency. As space for regional treatment becomes more limited, stream restoration may be the best and only option to meet water quality goals. A stream restoration feasibility study on a canal in Pinellas County will be highlighted as a case study that can be used as a model to assess canals in urban areas across the state.