

Thomas Bay Salt Marsh Restoration



Location: Adams Road, Brunswick, northeastern Casco Bay, part of the New Meadows River Watershed

Background: Thomas Bay Marsh is a 70 acre tidal wetland with a significant freshwater input. The marsh is bisected by Adams Road, one of the oldest travel routes between Brunswick and Bath. Historically, Adams Road has restricted tidal exchange between the downstream and upstream marsh. A causeway forms the road bed across the high marsh. Until 2011, the tidal creek passed under the road in a collapsing 60" round metal pipe fitted within an older granite block structure. The round pipe restricted tidal flow, reducing the volume of saltwater that reached the landward side of the road during flood tides. The restricted tidal range has affected marsh

hydrology in the upstream marsh, leading to the expansion of scrub/shrub and freshwater wetland habitat. Over time, turbulent flows and scour produced 'dumbbell' shaped pools adjacent to the culvert's inlet and outlet.

CBEP Role: For several years, CBEP has worked in close collaboration with Brunswick through the New Meadows Watershed Partnership. The Adams Road project grew out of an exploratory site visit between CBEP staff and the Brunswick Natural Resource Planner during which the round pipe culvert was observed to be undersized and deteriorating. Subsequent discussions with Public Works revealed an opportunity to match Town infrastructure needs with habitat restoration goals, and plans were made to solicit external federal grant funding. CBEP subsequently wrote a successful habitat restoration grant proposal to the Gulf of Maine Council/NOAA Habitat

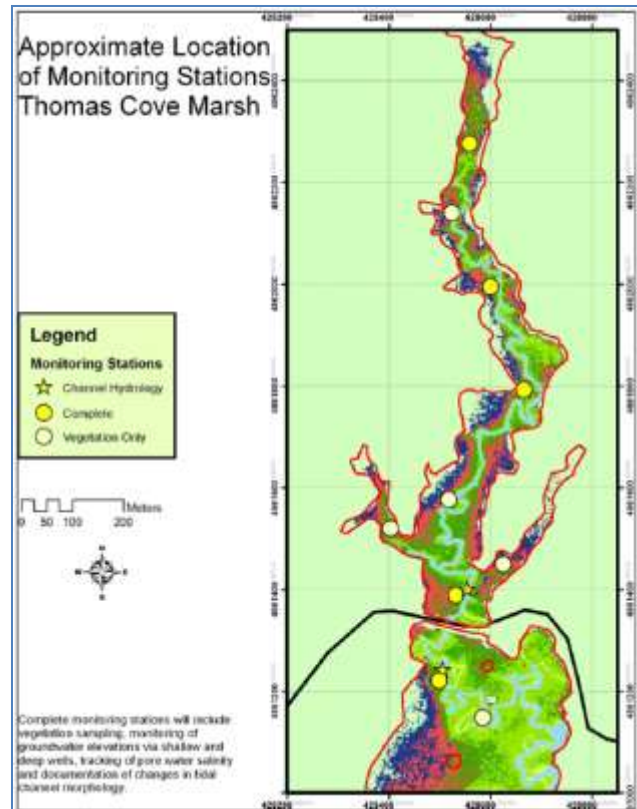


The Adams Road culvert at Thomas Bay Marsh was replaced in August 2011.

Restoration Partnership to replace the culvert with a larger volume pipe arch culvert. After close to a year spent on designs and permitting, the culvert was replaced on August 17, 2011.

Several partners collectively made the project happen: CBEP provided leadership, project management, federal cost-sharing, and continues to monitor pre- and post- construction conditions at the site, NOAA provided funding and significant support with design, permitting, and construction oversight, Brunswick provided cash and in-kind match on designs and installation, and the New Meadows Partnership provided cash match.

Assessment: In accordance with a project-specific monitoring plan, CBEP is assessing conditions over a period of 5 years to understand changes in hydrology, salinity, channel morphology, and vegetation in the marsh, especially in and around the area of the transition from salt-tolerant salt marsh dominants to species more typical of brackish or freshwater tidal marsh, resulting from the increased tidal exchange. In 2012, CBEP is entering its first year of post-construction monitoring, so we are still learning about the changes that are unfolding. Anecdotal observations suggest that the upstream marsh has begun adjusting to the increased delivery of salt water upstream of Adams Road:



- The upstream creek channel is evolving, with channel slumping and deepening evident, revealing bottles and other artifacts long buried by the built up sediment;
- Erosion adjacent to the upstream road bank has accelerated - possibly a sign that a long-filled channel meander may be reforming;
- Sediment has settled the once deep upstream scour pool, and a natural sandy substrate was observed this spring lining the culvert bottom;
- In patches, upland species, including most notably white pine, are dying off where salt water delivery over the high marsh surface during spring tides has apparently increased pore water salinity.