

Foxborough Witch Pond Wells IBT Staff Recommendation

**Massachusetts Water Resources
Commission June 20, 2013**

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Foxborough Wells 14 and 15

- IBT approved 1.44 MGD from Tenmile to Taunton basin with conditions
 - Baseline and Operational Monitoring/Reporting Requirements
 - Water Level shutoff thresholds to protect wetlands
 - Wetland monitoring
- Pumped at 0.2 MGD combined in summers 2010-2012

Foxborough Witch Pond Swamp

- Atlantic White Cedar (AWC) swamp
- Bungay Brook with 0.4 sq mi watershed
- Hessel's Hairstreak Rare and Endangered Species dependent on the Atlantic white cedar swamp ecosystem
- Spotted turtle also present and protected in IBT approval
- Shrub layer berry bushes nectar source for Hessel's Hairstreak

Spotted Turtle



Hessel's Hairstreak

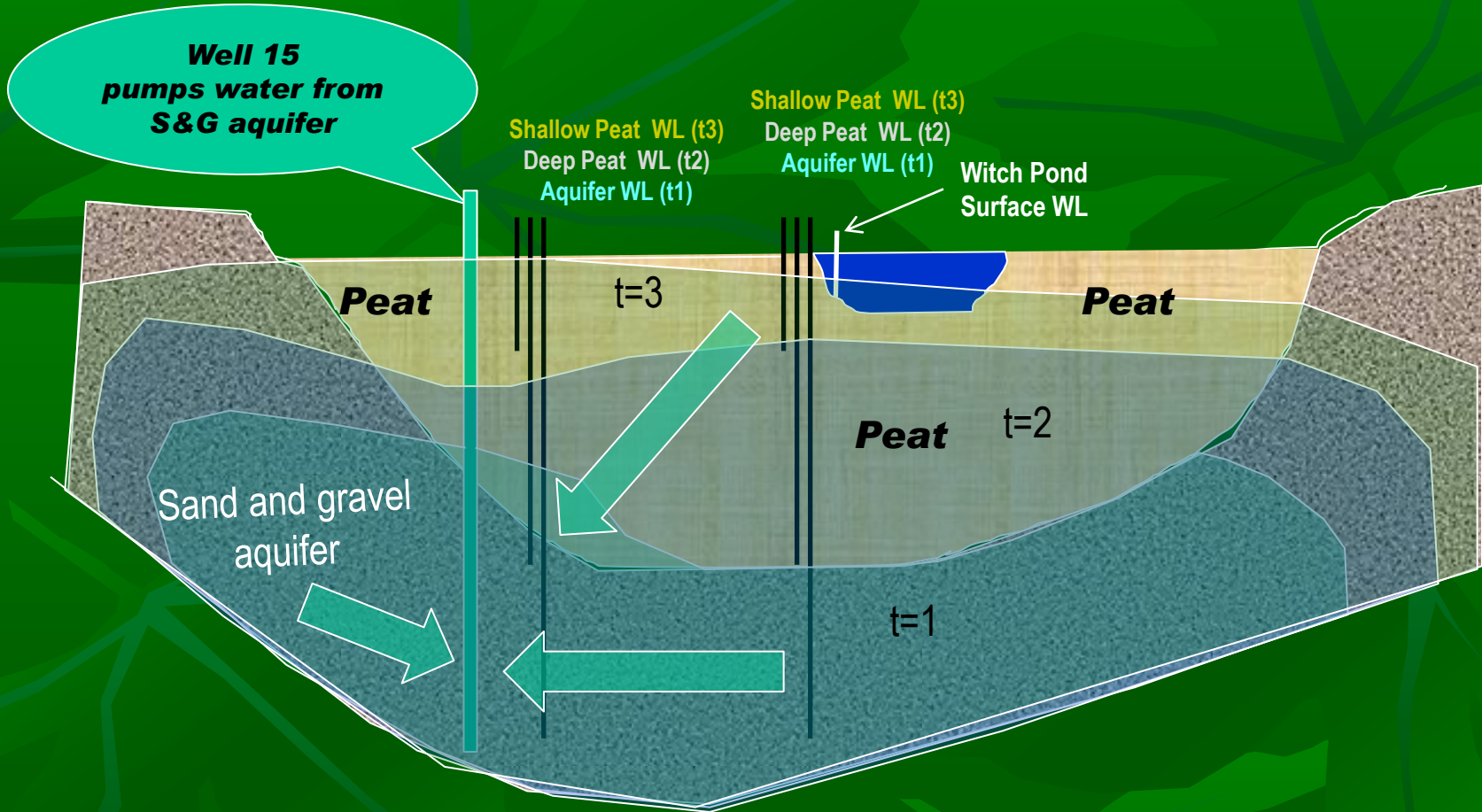


IBT Decision Conditions Adaptive Management

- “During the baseline monitoring period and the first five years of well operation, the threshold levels... will be used to verify the expected hydrologic responses to pumping in the various geologic layers. Following review of data collected..., adjustment of the threshold levels and/or the well usage may be appropriate.”

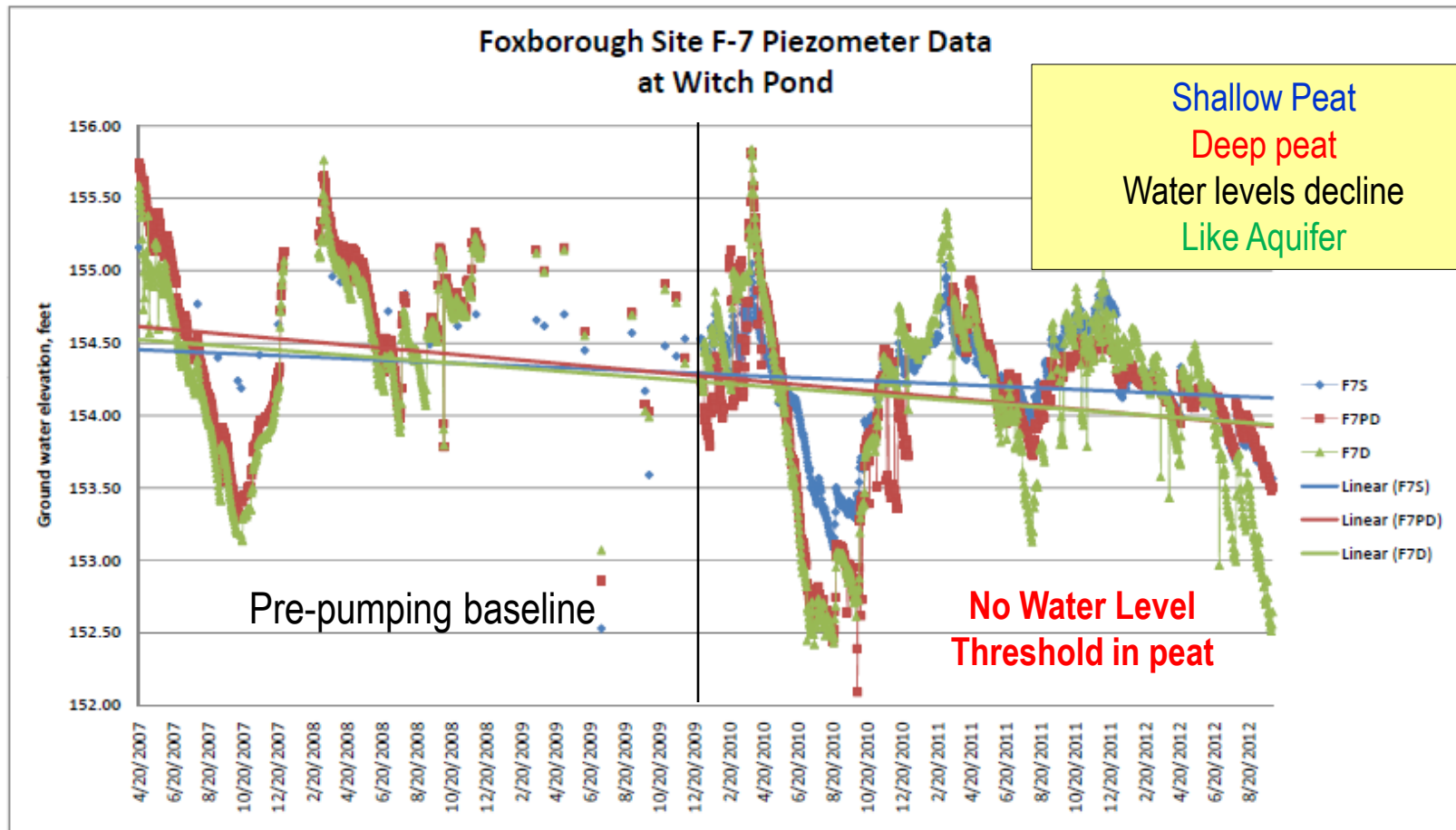


Propagation of Well 15 Impacts measured in observation wells



Impacts propagate upward from aquifer to surface over summer season

At Witch Pond– shallow and deep peat respond like aquifer to pumping



Long-term water level declines in all geologic layers

Wetland Monitoring Results

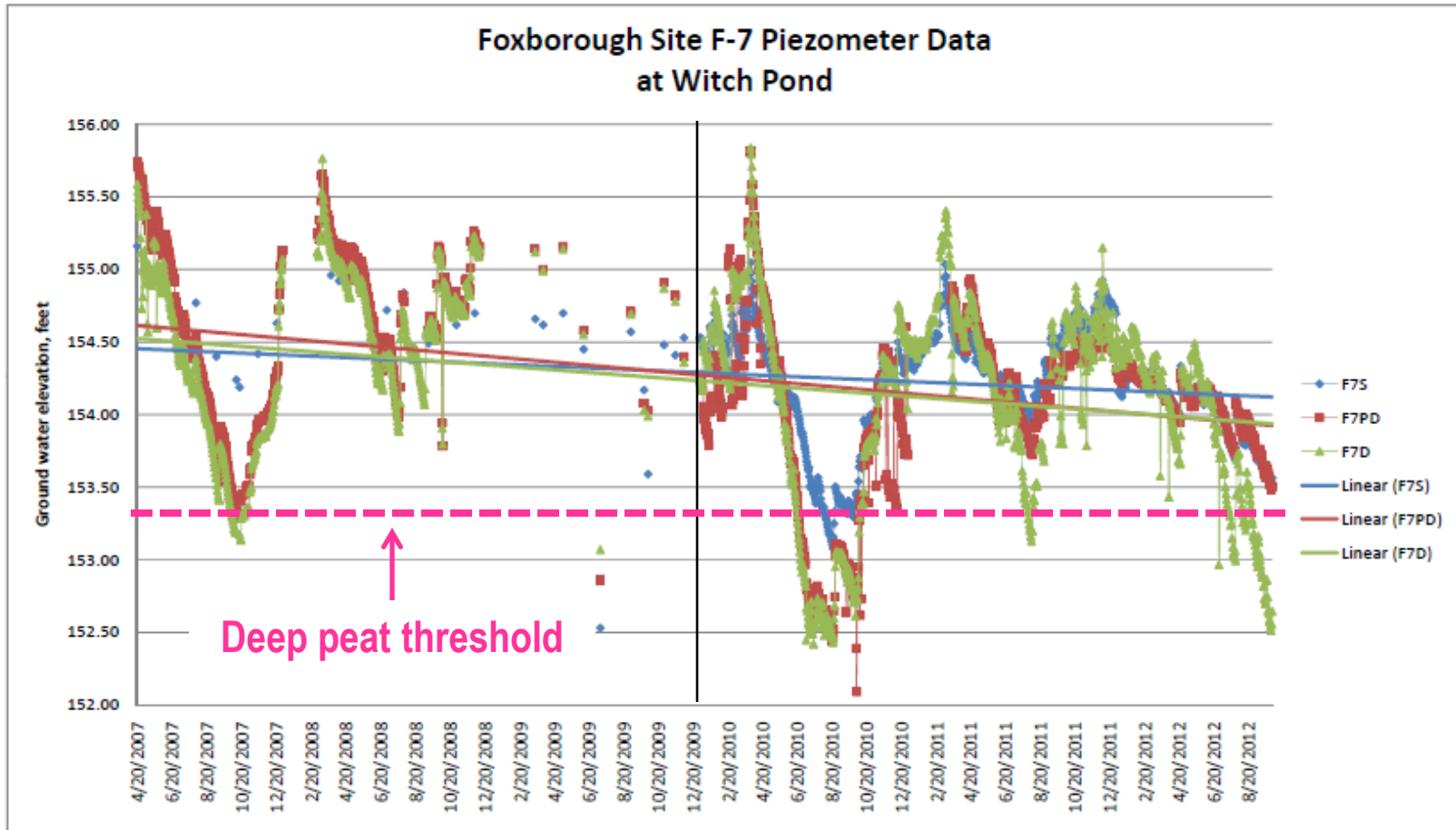
- WRC Decision: "...monitoring should be performed to verify that ... vegetative species that represent sources of nectar to Hessel's Hairstreak butterfly remain intact."
- Baseline completed and accepted in 2007
- 2011 Showed rapid changes in species composition (shift from highbush blueberry to sweet pepperbush— more tolerant of dry conditions)

Staff Recommendation

Additional Threshold

- Deep peat threshold adjacent to Witch Pond
- F-7PD threshold = 153.3 feet
- Threshold = Lowest elevation measured in deep peat during pre-pumping baseline period
- Threshold elevation measured October 2007 during Drought Advisory

Deep Peat Threshold 153.3 feet



Estimated effect of deep peat threshold

- Prevents pumping and additional loss of water from peat layer during dry periods
- Would have extended 57-day pumping shutoff period in summer 2010 by 50 days
- Would not have been met summers 2011 or 2012

Future deep peat threshold modification

- Foxborough may install alternative deep peat monitoring well (to become threshold compliance point with WRC approval)
- Foxborough may propose alternative deep peat threshold elevation supported by technical justification, requiring approval by WRC

Other Witch Pond Swamp Monitoring Plan Modifications

- Reference elevations for observation wells and ground surface must be resurveyed and reported annually;
- Foxborough may propose other monitoring plan modifications to WRC for approval in the future.